

116TH CONGRESS }
1st Session

SENATE

{ REPORT
116-48

**NATIONAL DEFENSE AUTHORIZATION
ACT FOR FISCAL YEAR 2020**

R E P O R T

[TO ACCOMPANY S. 1790]

ON

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2020 FOR
MILITARY ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR
MILITARY CONSTRUCTION, AND FOR DEFENSE ACTIVITIES OF
THE DEPARTMENT OF ENERGY, TO PRESCRIBE MILITARY PER-
SONNEL STRENGTHS FOR SUCH FISCAL YEAR, AND FOR OTHER
PURPOSES

COMMITTEE ON ARMED SERVICES
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Calendar No. 114

116TH CONGRESS }
1st Session }

SENATE

{ REPORT
116-48

TO AUTHORIZE APPROPRIATIONS FOR FISCAL YEAR 2020 FOR MILITARY ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CONSTRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF ENERGY, TO PRESCRIBE MILITARY PERSONNEL STRENGTHS FOR SUCH FISCAL YEAR, AND FOR OTHER PURPOSES

JUNE 11, 2019.—Ordered to be printed

Mr. INHOFE, from the Committee on Armed Services,
submitted the following

R E P O R T

[To accompany S. 1790]

The Committee on Armed Services reports favorably an original bill (S. 1790) to authorize appropriations for fiscal year 2020 for military activities of the Department of Defense, for military construction, and for defense activities of the Department of Energy, to prescribe military personnel strengths for such fiscal year, and for other purposes, and recommends that the bill do pass.

PURPOSE OF THE BILL

This bill would:

- (1) Authorize appropriations for (a) procurement, (b) research, development, test and evaluation, (c) operation and maintenance and the revolving and management funds of the Department of Defense for fiscal year 2020;
- (2) Authorize the personnel end strengths for each military active duty component of the Armed Forces for fiscal year 2020;
- (3) Authorize the personnel end strengths for the Selected Reserve of each of the reserve components of the Armed Forces for fiscal year 2020;
- (4) Impose certain reporting requirements;
- (5) Impose certain limitations with regard to specific procurement and research, development, test and evaluation actions and manpower strengths; provide certain additional legislative authority, and make certain changes to existing law;
- (6) Authorize appropriations for military construction programs of the Department of Defense for fiscal year 2020; and

(7) Authorize appropriations for national security programs of the Department of Energy for fiscal year 2020.

COMMITTEE OVERVIEW

For the past 58 consecutive years, Congress has fulfilled its constitutional responsibility to “provide for the common defense” by passing the National Defense Authorization Act (NDAA). This annual legislation authorizes funding and provides authorities for the U.S. military and other critical national defense priorities, and ensures our troops have what they need to defend our nation. On May 22, 2019, the Senate Armed Services Committee voted overwhelmingly, 25–2, to advance the National Defense Authorization Act of Fiscal Year 2020 to the Senate floor and keep our troops safe.

The committee takes seriously its obligation to national security as well as to our men and women in uniform and their families, who represent the best of our country. The NDAA acknowledges their service and sacrifice, and seeks to improve the quality of life for those who serve.

The committee markup of the National Defense Authorization Act for Fiscal Year 2020, supports a total of \$750 billion for national defense. The committee believes this authorization is necessary to implement the 2018 National Defense Strategy (NDS) and to compete, deter, and win in an era of long-term strategic competition.

The committee markup:

- Authorizes critical funding for the Department of Defense (DOD) to provide resources needed by combatant commands to implement the 2018 NDS and compete, deter, and win in an era of long-term strategic competition.
- Ensures the Military Services have the personnel, equipment, training, and organizational structure to accelerate measurable readiness recovery across the full range of assigned missions.
- Ensures the long-term viability of the all-volunteer force by improving the quality of life of the men and women of the total force (Active Duty, National Guard, and Reserve), and their families, including by reforming privatized on-base housing.
- Maintains maritime and air superiority by focusing on continuous fifth generation procurement growth, increasing the procurement of advanced munitions, and addressing critical deficiencies in land forces, especially long-range precision fires and air and missile defense.
- Augments the capability of the U.S. Armed Forces and the security forces of allied and friendly nations to counter and defeat near-peer adversaries, violent extremist organizations, and other shared threats to regional security, U.S. interests, and the U.S. homeland.
- Enhances deterrence by recapitalizing and modernizing the U.S. nuclear triad; ensuring the safety, security, and reliability of our nuclear stockpile, delivery systems, and infrastructure; increasing capability in theater and homeland missile defense; and strengthening nonproliferation programs.

- Drives DOD investment in next-generation operational capabilities and advanced technologies that will ensure U.S. military dominance, while protecting and strengthening our National Security Innovation Base.
- Improves the ability of our Armed Forces to counter threats and promote U.S. freedom of action in the information domain, including space, cyber, and electronic warfare.
- Strengthens existing U.S. alliances and partnerships, builds mutually beneficial new partnerships, and leverages opportunities in international cooperation to ensure U.S. success in competition and conflict against other great powers.
- Implements robust oversight of past year's reforms of acquisition enterprise organizations, policies, and programs, while authorizing more diverse and flexible contracting approaches that enable timely contract awards.
- Ensures proper stewardship and accountability for taxpayer dollars by promoting aggressive review of DOD management policies, extract efficiencies through improved business practices and/or the termination of unnecessary, outdated, or redundant programs, and exercising systematic oversight of the defense audit.

Preamble to the National Defense Authorization Act for Fiscal Year 2020

The world is more unstable and dangerous than it has been in recent memory. Our margin of military supremacy has eroded and is undermined by new threats from strategic competitors like China and Russia. At the same time, we are confronting persistent threats from North Korea, Iran, and terrorist organizations. Rapid technological advances have fundamentally altered the nature of warfare, and years of sustained armed conflict, underfunding, and budgetary instability have harmed our military readiness and dulled our combat edge. Our Congressional duty to provide for the security of our nation, protect our values, and support those who defend them is all the more important as the tide of war has risen rather than receded. We must pivot to meet the needs of a nation increasingly at risk.

The National Defense Strategy (NDS) and the NDS Commission report established a comprehensive roadmap to bolster our national security in light of this new challenge of strategic competition. Last year's defense authorization legislation, the John S. McCain National Defense Authorization Act for Fiscal Year 2019, was the first NDAA to support the implementation of this strategy, resulting in gains in readiness and improved capabilities. The National Defense Authorization Act for Fiscal Year 2020 keeps our Armed Forces on that trajectory, and builds on the recognition of this new reality—strengthening our force, investing in innovation, and improving the combat effectiveness of the DOD.

The committee continues to prioritize the timely passage of this legislation and predictable funding, completing its work on the fiscal year 2020 NDAA just over two months after receiving the administration's budget request. Our military leaders have repeatedly stated that stable, on-time, and adequate funding is key to implementing the recommendations of the NDS Commission report. The report serves to provide sharp guideposts to outfitting our Armed

Forces with the resources and authorities they need to advance U.S. national security interests.

However, timely and sufficient funding alone will not fix all of our security problems. We must establish clear priorities and reinforce them with strategic investments to pursue urgent change at significant scale. Difficult choices must be made and priorities established, particularly related to roles and missions, force employment, and resource allocation.

With the NDS and NDS Commission Report as the framework, the National Defense Authorization Act for Fiscal Year 2020 advances the following priorities:

(1) First, the NDAA invests in a lethal, ready all-volunteer force. The committee's top priority remains supporting the 2.15 million men and women who make up our all-volunteer force, particularly those troops in harm's way. The NDAA ensures that our warfighters will not only be equipped with the best equipment and munitions, but also that our military infrastructure supports the mission and a stable quality of life for service members and their families. In particular, the bill profoundly changes how on-base privatized housing is managed, increasing accountability to our military families, and guaranteeing future economic viability for the program. As critical initiatives, the legislation also increases employment opportunities for military spouses and improves the availability of child care on installations.

(2) Second, the NDAA works to restore our combat advantage through modernization, innovation, and cooperation. Our military superiority can no longer be taken for granted and is not guaranteed. For too many years, we assumed our equipment was better than everyone else's—but it's simply not true. Without increased investment, we risk falling behind, losing our ability to successfully deter aggression from strategic competitors, and inflicting lasting damage to our national security. To meet urgent needs across operating domains, the NDAA aligns service resources with the NDS—continuing to rebuild readiness, optimizing the force for innovation and effectiveness, and re-establishing warfighting dominance. Therefore, the NDAA authorizes investments in critical equipment, weapons, and missile defense platforms to improve munitions that enhance lethality. It modernizes key capabilities and increases preparedness for war.

This includes maintaining a safe, secure, sustainable, and credible nuclear deterrent—updating and securing our stockpile and infrastructure to prevent nuclear warfare and ensure nuclear weapons do not end up in the hands of malign actors. No one should doubt the capability or political will of the United States.

The NDAA passed by the committee drives innovation by authorizing funds and implementing policies to advance technology development and next-generation capabilities, including artificial intelligence, hypersonic weapons, and quantum computing. These investments will ensure our military is not fighting tomorrow's wars with yesterday's weapons and equipment.

As the global security dynamics shift, warfare has also expanded to new frontiers. To meet growing threats in the space domain, the NDAA establishes a U.S. Space Force as a new component of the Air Force. Our adversaries have Space Forces—we are behind. This new force will focus on cultivating a space warfighting ethos, unify

command of space operations and activities, and improve acquisition policies for space programs and systems,

Also a new frontier, the NDAA includes numerous provisions to advance the DOD's cybersecurity strategy and address our cyber warfighting capabilities. To reinforce our military might, the NDAA supports programs and policies that will cultivate key alliances and partnerships. These relationships will help maintain a favorable balance of power against near-peer adversaries and counter other growing threats.

(3) Finally, the NDAA continues efforts to improve effectiveness and efficiency within the Pentagon. The DOD's business operations provide the foundation for a responsive and innovative military. Building upon several years of reform, the NDAA continues to streamline operations—continuing acquisition policy reform, recalibrating contract reform, and strengthening program oversight. A more efficient bureaucracy will better utilize the full value of every taxpayer dollar spent on defense.

With the National Defense Strategy Commission Report as a framework, the Fiscal Year 2020 National Defense Authorization Act keeps our Armed Forces on the trajectory established last year—rebuilding readiness, improving lethality, investing in innovation, and reforming the DOD. These efforts will reassert our quantitative and qualitative military advantage and revitalize American military power and supremacy in the new landscape of global competition.

BUDGETARY EFFECTS OF THIS ACT (SEC. 4)

The committee recommends a provision that would require that the budgetary effects of this Act be determined in accordance with the procedures established in the Statutory Pay-As-You-Go Act of 2010 (title I of Public Law 111–139).

SUMMARY OF DISCRETIONARY AUTHORIZATIONS AND BUDGET AUTHORITY IMPLICATION

The administration's budget request for national defense discretionary programs within the jurisdiction of the Senate Committee on Armed Services for fiscal year 2020 was \$741.6 billion. Of this amount, \$544.6 billion was requested for base Department of Defense (DOD) programs, \$23.2 billion was requested for national security programs in the Department of Energy (DOE), and \$173.8 billion was requested for Overseas Contingency Operations (OCO).

The committee recommends an overall discretionary authorization of \$741.6 billion in fiscal year 2020, including \$642.5 billion for base DOD programs, \$23.2 billion for national security programs in the DOE, and \$75.9 billion for OCO.

The two tables preceding the detailed program adjustments in Division D of this bill summarize the direct discretionary authorizations in the committee recommendation and the equivalent budget authority levels for fiscal year 2020 defense programs. The first table summarizes the committee's recommended discretionary authorizations by appropriation account for fiscal year 2020 and compares these amounts to the request.

The second table summarizes the total budget authority implication for national defense by including national defense funding for

items that are not in the jurisdiction of the defense committees or are already authorized.

DIVISION A—DEPARTMENT OF DEFENSE AUTHORIZATIONS

TITLE I—PROCUREMENT

Subtitle A—Authorization of Appropriations

Authorization of appropriations (sec. 101)

The committee recommends a provision that would authorize the appropriations for procurement activities at the levels identified in section 4101 of division D of this Act.

Subtitle B—Army Programs

Sense of Senate on Army’s approach to capability drops 1 and 2 of the Distributed Common Ground System-Army program (sec. 111)

The committee recommends a provision that would express the Sense of the Senate on the Army’s approach to capability drops one and two of the Distributed Common Ground System-Army program.

Authority of the Secretary of the Army to waive certain limitations related to Distributed Common Ground System-Army Increment 1 (sec. 112)

The committee recommends a provision that would amend section 113(d) of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) by striking “Secretary of Defense” and inserting “Secretary of the Army.”

The waiver process for capability drops into the Distributed Common Ground System-Army system architecture is overly time-consuming. Capability drop one required over 12 months of processing time for approval. These delays slow progress and ultimately degrade the warfighter’s ability to analyze and act on time-sensitive intelligence.

Therefore, the committee recommends that the waiver authority be given to the Secretary of the Army for faster processing and approval.

Subtitle C—Navy Programs

Modification of prohibition on availability of funds for Navy port waterborne security barriers (sec. 121)

The committee recommends a provision that would amend section 130 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) to extend the prohibition on availability of funds for Navy port waterborne security bar-

riers through fiscal year 2020 and would require the Secretary of the Navy to notify the congressional defense committees if exigent circumstances, under which an exception is granted, are deemed to exist.

Capabilities based assessment for naval vessels that carry fixed-wing aircraft (sec. 122)

The committee recommends a provision that would require the Secretary of the Navy to conduct a capabilities-based assessment to clarify the future requirements for naval vessels that carry fixed-wing aircraft.

The committee notes that the budget request’s proposal to retire the USS *Harry S. Truman* (CVN-75) early would yield a force with 10 or fewer aircraft carriers for more than 20 years. The budget request also includes a 7-year gap until the funding of the next amphibious assault ship, LHA-9, which will likely result in a production break. The committee is concerned that both the CVN-75 and LHA-9 proposals are contrary to current Navy force structure requirements and will result in significant negative impacts for the shipbuilding industrial base.

The committee also notes that the Under Secretary of the Navy stated in February 2019, “If \$13 billion is unaffordable . . . what’s the next carrier look like? Is it going to be as advanced as [the USS *Gerald R. Ford*] or is it going to be smaller? . . . We don’t know the answers to that, but we’re looking at those.”

The committee also notes that all three future fleet platform architecture studies required by section 1067 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114-92) recommended that the Navy pursue a class of aircraft carriers smaller than the *Ford*-class. The committee believes that smaller aircraft carriers could both increase aircraft carrier capacity and provide a more efficient means to conduct a range of missions with lower sortie requirements, including support for amphibious operations.

Accordingly, the committee directs the Secretary of the Navy to consult the fleet architecture studies, as well as the report on alternative aircraft carrier options required by section 128 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114-92), and initiate a capabilities-based assessment to begin the process of identifying requirements for the naval vessels that will carry fixed-wing aircraft following CVN-81 and LHA-9.

Ford-class aircraft carrier cost limitation baselines (sec. 123)

The committee recommends a provision that would establish *Ford*-class aircraft carrier cost limitation baselines in title 10, United States Code, and repeal a superseded provision.

The committee notes that cost limitation baselines for *Ford*-class aircraft carriers were first enacted in section 122 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364). These cost limitation baselines have been amended in public law three times to account for cost estimate adjustments. The committee further notes that the Secretary of the Navy raised the cost limitation baseline for the CVN-78 to \$13.0 billion in May 2018.

The committee believes that *Ford*-class cost limitation baselines should now be adjusted to reflect the Navy's latest cost estimates for each of the four ships in the class and that the cost limitation baseline for each such ship should be codified in title 10, United States Code, due to the long-term nature of aircraft carrier construction and the benefits of greater clarity in oversight requirements.

The provision therefore would: (1) Update the cost limitation baseline for each *Ford*-class aircraft carrier; (2) Require notification of the congressional defense committees at least 30 days prior to the Secretary of the Navy's adjusting a limitation amount; (3) Eliminate adjustments that would be based on non-recurring engineering changes that are no longer applicable; and (4) Eliminate reporting requirements related to CVN-79, which would be maintained elsewhere.

Design and construction of amphibious transport dock designated LPD-31 (sec. 124)

The committee recommends a provision that would authorize the Secretary of the Navy to enter into and incrementally fund a contract for design and construction of the amphibious transport dock designated LPD-31.

The committee notes that in testimony before the Senate Armed Services Committee on April 7, 2019, the Secretary of the Navy and Chief of Naval Operations supported incremental funding authority for LPD-31.

LHA Replacement Amphibious Assault Ship Program (sec. 125)

The committee recommends a provision that would authorize the Secretary of the Navy to enter into and incrementally fund a contract for design and construction of the LHA replacement ship designated LHA-9.

The committee notes that in testimony before the Senate Armed Services Committee on April 7, 2019, the Secretary of the Navy and Chief of Naval Operations supported incremental funding authority for LHA-9.

The provision would also repeal section 125 of the John Warner National Defense Authorization Act for Fiscal Year 2007 (Public Law 109-364).

Limitation on availability of funds for the Littoral Combat Ship (sec. 126)

The committee recommends a provision that would prohibit funds from being used to exceed the total procurement quantity listed in revision five of the Littoral Combat Ship (LCS) acquisition strategy unless the Under Secretary of Defense for Acquisition and Sustainment submits to the congressional defense committees a certification.

The committee notes that the Navy force structure assessment requirement and LCS acquisition strategy total procurement quantity of 32 LCSs was met in fiscal year 2018. Three additional LCSs were authorized and appropriated by the Congress in fiscal year 2019.

Accordingly, the provision would require that, before further LCS procurement, the Under Secretary of Defense for Acquisition and Sustainment certify to the congressional defense committees that such procurement: (1) Is in the national security interests of the United States; (2) Will not result in exceeding the low rate initial production quantity approved in the LCS acquisition strategy in effect at the time of the certification; and (3) Is necessary to maintain a full and open competition for the guided missile frigate (FFG(X)) with a single source award in fiscal year 2020.

Limitation on the next new class of Navy large surface combatants (sec. 127)

The committee recommends a provision that would require that design changes identified during the full duration of the combat system ship qualification trials and operational test periods of the first *Arleigh Burke*-class destroyer in the Flight III configuration be incorporated prior to Milestone B approval for the next new class of Navy large surface combatants.

The provision would also require that the final results of test programs of engineering development models or prototypes be incorporated into the Navy large surface combatant program prior to Milestone B approval.

Refueling and complex overhauls of the USS John C. Stennis and USS Harry S. Truman (sec. 128)

The committee recommends a provision that would require the Secretary of the Navy to carry out the nuclear refueling and complex overhaul of the USS *John C. Stennis* (CVN-74) and USS *Harry S. Truman* (CVN-75).

The provision would also authorize the use of incremental funding for a period not to exceed 6 years after advance procurement funds for each nuclear refueling and complex overhaul effort are first obligated.

The committee notes that in testimony before the Armed Services Committee of the Senate on March 14, 2019, the Acting Secretary of Defense stated, “[The proposal not to refuel the USS *Harry S. Truman*] represents some of the strategic choices that we’ve made in this year’s budget. . . . The funds we freed up from making these decisions are invested in the future force.” The committee understands that this desired future force includes offensively armed unmanned or optionally-manned surface vessels, for which the budget request includes more than \$2.7 billion to procure in fiscal years 2020 through 2024.

While recognizing the need to modernize the U.S. military to support the National Defense Strategy, the committee has not received adequate justification to support a shift in funding from refueling an aircraft carrier to procuring unproven systems. Specifically, the committee is unaware of: a new joint warfighting plan that concluded that the Nation needs one fewer aircraft carrier; proven substitute capabilities for the combat power and reach of the *Truman* and its air wing; unmanned surface and undersea systems proven to be operationally effective and suitable in the threat environment; or a change in the Chief of Naval Operations’ requirement for 12 aircraft carriers.

The committee is also unaware of administration proposals to change section 8062 of title 10, United States Code, which requires the Navy to maintain not fewer than 11 operational aircraft carriers, or section 1025 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91), which made it the policy of the United States to achieve a 355-ship Navy comprised of the “optimal mix” of ships as soon as practicable. The “optimal mix” is defined as the mix of ships in the Navy’s 355-ship requirement, including 12 aircraft carriers.

The committee also notes that the Department of Defense estimates that not refueling the *Truman* would save approximately \$3.5 billion plus annual operating costs. The committee is unclear as to how these savings compare to the development, procurement, and annual operating costs of the systems that are envisioned to provide equivalent or better capability as compared to the *Truman* and its air wing. The committee is also unaware of the schedule necessary to field such systems.

Additionally, the committee notes that the Navy’s “Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020” states, “Unmanned and optionally-manned systems are not accounted for in the overall battle force[.] . . . The physical challenges of extended operations at sea across the spectrum of competition and conflict, the concepts of operations for these platforms, and the policy challenges associated with employing deadly force from autonomous vehicles must be well understood prior to replacing accountable battle force ships.” The committee does not believe that this standard has been met regarding the budget request’s *Truman* proposal.

Report on carrier wing composition (sec. 129)

The committee recommends a provision that would direct the Secretary of the Navy to submit a report to the congressional defense committees, no later than May 1, 2020, on the optimal composition of the carrier air wing in 2030 and 2040, as well as alternative force design concepts. The provision would also require the Secretary to provide a briefing on the report no later than March 1, 2020, to the congressional defense committees.

The committee is concerned, based on a number of independent analyses, that the Navy’s current stated goal of a 50/50 mix of 4th and 5th generation aircraft for the future carrier air wing will not be sufficient to meet the requirements of the National Defense Strategy.

Therefore, the report required by this provision would include: (1) Analysis and justification used to reach the 50/50 mix of 4th and 5th generation aircraft for 2030; (2) Analysis and justification for the optimal mix of carrier aircraft for 2040; and (3) A plan for incorporating unmanned aerial vehicles and associated communication capabilities to effectively implement the future force design.

Subtitle D—Air Force Programs

Requirement to align Air Force fighter force structure with National Defense Strategy and reports (sec. 141)

The committee recommends a provision that would require the Secretary of the Air Force to align the fighter force structure acquisition strategy with the results of the independent studies required by section 1064 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) and to transmit the new strategy in a report to the congressional defense committees no later than March 1, 2020. The committee is concerned that the Air Force’s current fighter force structure acquisition strategy does not comport with multiple reports required by the National Defense Authorization Act for Fiscal Year 2018 nor the service’s own stated requirements to meet the National Defense Strategy. The provision would prohibit the Air Force’s deviation from this strategy in its acquisition programs and related force structure until the Secretary of the Air Force receives a waiver and justification from the Secretary of Defense and until 30 days after notifying the congressional defense committees of the proposed deviation.

Requirement to establish the use of an Agile DevOps software development solution as an alternative for Joint Strike Fighter Autonomic Logistics Information System (sec. 142)

The committee recommends a provision that would require the Secretary of Defense to establish an agile software development activity as an alternative for the F–35 Autonomic Logistics Information System (ALIS). The committee is encouraged by the ongoing efforts to incorporate agile software development into the ALIS programs of record (ALIS-next and Madhatter) while also maintaining traditional development in order to avoid risk to the overall program timeline. The provision would separate the budget lines and require a competitive analysis of the efforts between ALIS, ALIS-next, and Madhatter by the Secretary of Defense in order to evaluate transition opportunities and timelines.

Finally, the provision would direct the Secretary of the Defense, in coordination with the Secretary of the Air Force, to brief the congressional defense committees on the findings of the competitive analysis no later than September 30, 2020.

Report on feasibility of multiyear contract for procurement of JASSM–ER missiles (sec. 143)

The committee recommends a provision that would require the Air Force to produce and submit a report assessing the feasibility of entering into a multi-year contract for the procurement of the JASSM–ER. The provision would require the Air Force to examine multiple multi-year contract scenarios, including one in which the Air Force would procure an annual quantity of 550 missiles for 5 years. The committee notes that the Air Force requirement for the JASSM–ER has recently increased. Further, the industrial base has recently expanded the capacity of its production facility to 550 missiles per year in order to meet the increased requirements of the Air Force.

The committee notes that multi-year contracts can provide significant cost savings and stability in funding over multiple years. Therefore, the report would include assessments of the impacts on: the cost of the missile, the industrial base, the Long Range Anti-Ship Missile, and future development or modification requirements for the JASSM-ER.

Air Force aggressor squadron modernization (sec. 144)

The committee recommends a provision that would require the Secretary of the Air Force to submit a report to the congressional defense committees on Air Force aggressor squadron modernization.

Air Force plan for the Combat Rescue Helicopter fielding (sec. 145)

The committee recommends a provision that would require the Air Force to provide a plan on the Combat Rescue Helicopter fielding.

Military type certification for AT-6 and A-29 light attack experimentation aircraft (sec. 146)

The committee recommends a provision that would require the Secretary of the Air Force to conduct a Military Type Certification for AT-6 and A-29 Light Attack Experimentation Aircraft.

Subtitle E—Defense-Wide, Joint, and Multiservice Matters

Limitation on availability of funds for communication systems lacking certain resiliency features (sec. 151)

The committee recommends a provision that would prohibit funding of any current or future Department of Defense (DOD) communications programs of record that do not meet certain resiliency requirements. The committee is concerned that, in the face of great power competition, the DOD has not assured servicemembers' ability to communicate and share data securely and consistently in a contested environment.

The committee defines these program resiliency requirements as features that: 1) Deny geo-location of a transmission that would allow enemy targeting of the force; 2) Securely communicate classified information in a jamming environment of like-echelon forces; and 3) Utilize a waveform that is made available in the DOD Waveform Information Repository.

The committee understands that there may be very limited cases where DOD communications equipment will be used to communicate in a garrison or peacetime situation and not in combat environments. Therefore, the provision would allow the Secretaries of the military departments to waive the aforementioned requirements for a system with a certification that the system does not require resiliency due to its expected use.

F-35 sustainment cost (sec. 152)

The committee recommends a provision that would require the F-35 Joint Program Office (JPO) to provide quarterly sustainment cost data, as part of the JPO quarterly briefings to the congress-

sional defense committees. The committee is concerned that the Department of Defense is making force structure decisions based on sustainment cost data that do not easily provide the user with valid comparable metrics. Therefore, the requested information should compare, in an itemized format, the cost of legacy aircraft to that of the F-35 program based on a standardized set of criteria.

The provision also requires the Under Secretary of Defense for Acquisition and Sustainment to: (1) Develop a plan for achieving significant reductions in the costs to operate and maintain the F-35 aircraft; (2) Submit a report on that plan; and (3) Provide quarterly updates on the progress of implementing the plan.

Economic order quantity contracting authority for F-35 Joint Strike Fighter program (sec. 153)

The committee recommends a provision that would authorize the Secretary of Defense to award F-35 contracts to procure material and equipment in economic order quantities for fiscal year 2021 (Lot 15) through fiscal year 2023 (Lot 17). The committee supports the Department of Defense's planning for a multi-year procurement for production Lots 15, 16, and 17.

Repeal of tactical unmanned vehicle common data link requirement (sec. 154)

The committee recommends a provision that would strike section 141 of the National Defense Authorization Act for Fiscal Year 2006 (Public Law 109-163). The committee is concerned that the standards set in the section 141 requirement do not keep pace with the current high threat environment and is thus out of step with the National Defense Strategy. The repeal would help the Services form an overall architecture for communications that is more resilient and allows for the inclusion and connection of manned and unmanned aircraft and weapons.

Budget Items

Army

Utility fixed wing aircraft

The budget request included \$16.0 million in line number 2 of Aircraft Procurement, Army (APA), for utility fixed wing aircraft.

The committee notes that line number 2 of APA for the remainder of the future years defense program contains no funding for the program.

Therefore, the committee recommends a decrease of \$16.0 million in line number 2 of APA for the procurement of utility fixed wing aircraft.

AH-64 Apache Block IIIB New Build

The budget request included \$0.0 million in line number 10 of Aircraft Procurement, Army (APA), for AH-64 Apache Block IIIB New Build.

The committee recognizes the importance of the Army's efforts to modernize and equip both the active component and the Army National Guard with the most advanced and capable attack heli-

copters in support of the National Defense Strategy. Consequently, the Army should field the Block IIIB aircraft as quickly as possible across the 24 attack battalions in the active component and the Army National Guard.

Therefore, the committee recommends an increase of \$105.0 million in line number 10 of APA for the procurement of three AH-64 Apache Block IIIB New Build aircraft.

UH-60M Blackhawk

The budget request included \$1.4 billion in line number 12 of Aircraft Procurement, Army (APA), for 73 UH-60M Blackhawk aircraft.

The committee recognizes the importance of the Army's efforts to field the most advanced and capable utility helicopters in support of the National Defense Strategy. However, the committee is concerned about the utility helicopter industrial base and the dramatic downturn in production of UH-60M aircraft through the proposed future years defense program. Further, the committee believes that the Army should take advantage of the current multiyear contract that will expire in fiscal year 2021 and more equitably distribute procurement to limit a steep production cut from fiscal year 2020 to fiscal year 2021.

Therefore, the committee recommends a decrease of \$140.0 million for 7 active component aircraft in line number 12 of APA for the procurement of UH-60M aircraft.

UH-60V Conversion

The budget request included \$169.2 million in line number 14 of Aircraft Procurement, Army (APA), for UH-60 Blackhawk L and V Models.

The committee recognizes the importance of the Army's efforts to field the most advanced and capable utility helicopters for the Army National Guard in support of the National Defense Strategy. As such, the Army should accelerate the conversion of Blackhawks to the upgraded V model, which provides enhanced situational awareness, as quickly as possible to optimize training and reduce operation and sustainment costs.

Therefore, the committee recommends an increase of \$35.0 million in line number 14 of APA for the conversion of 8 additional UH-60V aircraft.

Interim Indirect Fire Protection Capability Increment 2

The budget request contained \$0.0 million in line number 4 of Missile Procurement, Army, for Indirect Fire Protection Capability (IFPC) Increment 2.

The committee notes that, while the Army in February 2019 issued a letter of intent to procure two batteries of Iron Dome to meet the requirement articulated in section 112 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232) for an interim cruise missile defense capability, this decision was predicated on submission and approval of an above threshold reprogramming (ATR) by mid-April 2019. Because of the delay in submission of the ATR to the congressional defense committees, the committee is concerned that the Army will

be unable to meet the statutory requirement for interim base defense. Therefore, the committee recommends a realignment that would support procurement of two Iron Dome batteries with fiscal year 2020 funds as well as a realignment elsewhere in this report of research, development, test, and evaluation funding to support the procurement. The committee notes that, should the ATR be fully approved before the end of fiscal year 2019, this realignment would no longer be necessary.

Accordingly, the committee recommends an increase of \$229.9 million in line number 4 of Missile Procurement, Army, for IFPC Increment 2.

Terminal High Altitude Area Defense Army procurement

The budget request did not contain any funding in Missile Procurement, Army, for the Terminal High Altitude Area Defense (THAAD) system.

Elsewhere in this report, the committee has stated its views regarding the transition of the THAAD program from the Missile Defense Agency to the Department of the Army.

Therefore, the committee recommends an increase of \$425.9 million in line number 5 of Missile Procurement, Army.

Stryker lethality

The budget request included \$144.4 million in line number 3 of Weapons & Tracked Combat Vehicles (WTCV), Army, for Stryker modifications.

The Army also identified on its unfunded priority list a shortfall in funding of \$249.2 million in line number 3 of WTCV, Army, to fund Stryker lethality upgrades.

The committee acknowledges the need to increase Stryker lethality with a 30mm gun in order to improve standoff and survivability and retain overmatch in support of the National Defense Strategy.

Therefore, the committee recommends an increase of \$249.2 million in line number 3 of WTCV, Army.

Bradley program

The budget request included \$638.8 million in line number 5 of Weapons & Tracked Combat Vehicles (WTCV), Army, for the procurement of upgrades to the family of Bradley Fighting Vehicles.

The committee strongly supports the Bradley A4 upgrade program, which is essential to ensure that the armored brigade combat team remains relevant for the next 3 decades. However, the committee notes that, according to budget documents provided by the Department of the Army, the program is historically under-executing.

Therefore, the committee recommends a decrease of \$40.0 million in line number 5 of WTCV, Army.

Abrams upgrade program

The budget request included \$1.8 billion in line number 14 of Weapons & Tracked Combat Vehicles (WTCV), Army, for the upgrade of 165 Abrams tanks to the M1A2 SEPv3.

The M1A2 SEPV3 program is vital to the lethality and survivability of the Army's armored brigade combat team. The M1A2 SEPV3 incorporates multiple improvements such as: turret and hull armor upgrades for enhanced crew survivability; the Total Integrated Engine Revitalization program and upgraded transmission for improved power pack reliability and durability; improved computer systems including microprocessors, color flat panel displays, and memory capacity; and Block 1 second generation Forward Looking Infra-Red technology. The committee strongly supports the Abrams Upgrade Program and its alignment to the National Defense Strategy. However, the committee believes that funding could be better balanced throughout the future years defense program to reduce industrial base turbulence.

Therefore, the committee recommends a decrease of \$35.0 million in line number 14 of WTCV, Army.

Joint Light Tactical Vehicle

The budget request included \$996.0 million in line number 6 of Other Procurement, Army (OPA), for the procurement of 2,530 Joint Light Tactical Vehicles (JLTV).

The Army has requested a zero sum realignment of \$4.5 million from line number 6 of OPA to PE 65812A in Research, Development, Test, and Evaluation, Army, in order to complete the developmental portion of the Training, Aids, Devices, Simulators and Simulation Hands-On Trainers requirement for the JLTV.

Therefore, the committee recommends a decrease of \$4.5 million in line number 6 of OPA.

Joint Light Tactical Vehicle

The budget request included \$996.0 million in line 6 of Other Procurement, Army (OPA), for the procurement of 2,530 Joint Light Tactical Vehicles (JLTV).

The JLTV is capable of performing multiple mission roles and is designed to provide protected, sustained, and networked mobility for personnel and payloads across the full range of military operations.

However, the committee believes that the Army should make a full rate production decision as soon as possible. Therefore, the committee recommends a decrease of \$35.0 million in line 6 of OPA.

Q53 extended range radar

The budget request included \$16.4 million in line number 100 of Other Procurement, Army (OPA), for counterfire radars.

The Army identified in its unfunded priority list a shortfall in funding of \$62.5 million in line number 100 of OPA to fund the Q53 extended range radar.

The committee acknowledges the need to improve current radar systems with gallium-nitride technology to extend the range capabilities for indirect fire units in support of the National Defense Strategy.

Therefore, the committee recommends an increase of \$62.5 million to line number 100 of OPA.

Integrated Personnel and Pay System—Army

The budget request included \$18.7 million in line number 109 of Other Procurement, Army (OPA), for the Integrated Personnel and Pay System—Army.

The committee is concerned about unjustified cost growth and poor business process reengineering.

Accordingly, the committee recommends a decrease of \$18.7 million in line number 109 of OPA.

C4I life-cycle replacement at Joint Intelligence Operations Center Europe Analytic Center

The budget request included \$139.3 million in line number 113 of Other Procurement, Army (OPA), for Automated Data Processing Equipment.

The committee recommends an increase of \$8.0 million in line number 113 of OPA to support life-cycle replacement of command, control, communication, computer, and intelligence systems and infrastructure at the Joint Intelligence Operations Center Europe Analytic Center at RAF Molesworth, United Kingdom.

Army contract writing system

The budget request included \$15.0 million in line number 116 of Other Procurement, Army (OPA), for the Army Contract Writing System.

The committee remains concerned about duplication among the Services in contract writing systems.

Accordingly, the committee recommends a decrease of \$15.0 million in line number 116 of OPA.

Robotics and Applique Systems

The budget request included \$101.1 million in line number 138 of Other Procurement, Army (OPA), for Robotics and Applique Systems.

The Army has requested a zero sum realignment of \$12.8 million from PE 65053A within Research, Development, Test, and Evaluation, Army, to line number 138 of OPA for Ground Robotics, Squad Multipurpose Equipment Transport (S-MET) in order to accelerate the production and fielding of the S-MET.

Therefore, the committee recommends an increase of \$12.8 million in line number 138 of OPA.

Navy

F-35C

The budget request included \$2.3 billion in line number 3 of Aircraft Procurement, Navy (APN), for 20 F-35 aircraft.

The committee recognizes the importance of the Navy's and Marine Corps' efforts to modernize and equip themselves with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of fifth generation aircraft and understands that the Chief of Naval Operations has placed additional aircraft on his unfunded priority list.

Therefore, the committee recommends an increase of \$215.0 million in line number 3 of APN for the procurement of 2 additional F-35C aircraft.

F-35B

The budget request included \$1.3 billion in line number 5 of Aircraft Procurement, Navy (APN), for 10 F-35 aircraft.

The committee recognizes the importance of the Marine Corps' efforts to modernize and equip itself with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of fifth generation aircraft and understands that the Marine Corps has placed additional aircraft on its unfunded priority list.

Therefore, the committee recommends an increase of \$249.1 million in line number 5 of APN for the procurement of 2 additional F-35B aircraft.

F-5 aircraft procurement

The budget request included \$39.7 million in line number 22 of Aircraft Procurement, Navy (APN), for 22 F-5 aircraft.

The committee recognizes the importance of the Department of Defense's efforts to increase adversary air training capacity for the Navy and Marine Corps. However, the committee is concerned that the purchase of used third generation aircraft will not address the advanced training requirements laid out in the National Defense Strategy and could be met by the continued use of contracted adversary and close air support.

Therefore, the committee recommends a decrease of \$39.7 million in line number 22 of APN.

F-35B Spares

The budget request included \$2.2 billion in line number 67 of Aircraft Procurement, Navy (APN), for aircraft spares and repair parts.

The committee recognizes the importance of the Navy's and Marine Corps' efforts to modernize and equip themselves with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of fifth generation aircraft and understands that the Chief of Naval Operations has placed additional aircraft on his unfunded priority list.

Therefore, the committee recommends an increase of \$14.9 million in line number 67 of APN for spares.

F-35C Spares

The budget request included \$2.2 billion in line number 67 of Aircraft Procurement, Navy (APN), for spares and repair parts.

The committee recognizes the importance of the Navy's and Marine Corps' efforts to modernize and equip themselves with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of fifth generation aircraft and

understands that the Chief of Naval Operations has placed additional aircraft on his unfunded priority list.

Therefore, the committee recommends an increase of \$24.6 million in line number 67 of APN.

F-35B Engine

The budget request included \$2.2 billion in line number 67 of Aircraft Procurement, Navy (APN), for 10 F-35 aircraft.

The committee recognizes the importance of the Marine Corps' efforts to modernize and equip itself with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of fifth generation aircraft and understands that the Marine Corps has placed an additional engine on its unfunded priority list.

Therefore, the committee recommends an increase of \$28.8 million in line number 67 of APN for the procurement of 1 additional F-35B engine.

Tomahawk

The budget request included no funding in line number 3 of Weapons Procurement, Navy (WPN), for Tomahawk.

The committee notes that the Department of the Navy's original plan was to re-certify the existing inventory of Tomahawk missiles. Despite investment to facilitate the production line's transitioning from production to re-certification, the Navy is now requesting to re-start the Tomahawk production line. The committee is concerned that this reversal in acquisition strategy does not have a thorough plan or requirement.

Therefore, the committee recommends a decrease of \$56.3 million in line number 3 of WPN for test equipment and support of concurrent production and re-certification activities and encourages the Department of Navy to provide an updated plan for the Tomahawk missile.

LCS Over-the-Horizon missile

The budget request included no funding in line number 19 of Weapons Procurement, Navy (WPN), for the Littoral Combat Ship (LCS) Over-the-Horizon (OTH) Missile.

The committee notes that the OTH missile acquisition strategy is accelerated and contains unnecessary risk.

Therefore, the committee recommends a decrease of \$20.0 million in line number 19 of WPN for the LCS OTH Missile.

MK-48 torpedo

The budget request included no funding in line number 29 of Weapons Procurement, Navy (WPN), for the MK-48 Torpedo.

The Chief of Naval Operations' unfunded priorities list requested an increase in procurement by 13 torpedoes to maximize the production line.

Therefore, the committee recommends an increase of \$16.0 million for line number 29 of WPN for the MK-48 Torpedo.

Columbia-class submarine advance procurement

The budget request included \$1.7 billion in line number 1 of Shipbuilding and Conversion, Navy (SCN), for *Columbia*-class submarine advance procurement.

The committee believes that expanding the capabilities of the second- and third-tier contractors in the submarine industrial base should lead to greater cost savings and improved efficiency as production increases to meet the *Columbia*-class procurement schedule and higher requirement for *Virginia*-class attack submarines in the Navy's latest Force Structure Assessment.

The committee notes that the budget request includes some funding for submarine industrial base expansion to ensure that second- and third-tier contractors are able to meet increased production requirements. The committee understands that an additional \$125.0 million could be executed to further address such requirements.

Therefore, the committee recommends an increase of \$125.0 million in line number 1 of SCN for *Columbia*-class submarine advance procurement.

The committee directs the Secretary of the Navy to notify the congressional defense committees, in writing, within 30 days of obligating funds provided for submarine industrial base expansion. The notification shall include: obligation date, contractor name or names, location, description of the shortfall to be addressed, actions to be undertaken, desired end state, usable end items to be procured, period of performance, dollar amount, projected associated savings including business case analysis if applicable, contract name, and contract number.

Carrier replacement program

The budget request included \$2.3 billion in line number 2 of Shipbuilding and Conversion, Navy (SCN), for the carrier replacement program.

The committee notes that the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) authorized the aircraft carrier designated CVN–81.

Therefore, the committee recommends a quantity decrease from 1 to 0 in line number 2 of SCN for the carrier replacement program.

Virginia-class submarine program

The budget request included \$7.2 billion in line number 3 of Shipbuilding and Conversion, Navy (SCN), for *Virginia*-class submarines.

The committee notes that the typical procurement funding profile for *Virginia*-class submarines consists of 2 years of advance procurement followed by 1 year of full funding procurement. The committee further notes that the budget request's proposed procurement of a third submarine (SSN–812) includes funds only in fiscal year 2020 and is underfunded by \$667.0 million. Based partially on this funding approach, SSN–812 is scheduled to be delivered after the 2 submarines planned to be procured in fiscal year 2023, requiring, in effect, 3 years of advance procurement and 1 year of full funding.

The committee also understands that the Navy is considering a significant design change for SSN-812, which would require approximately \$1.2 billion in additional funding, potentially bringing the total cost of SSN-812 to \$5.0 billion with an unfunded liability of more than \$1.8 billion as compared to the budget request.

The committee is concerned that the budget request for SSN-812 is significantly underfunded, departs from the traditional funding profile for attack submarines, may include a significant design change not reviewed as part of this budget request, and does not account for the effect of SSN-812's increased demand on critical suppliers already struggling to meet existing Navy procurement plans.

Accordingly, the committee directs the Secretary of the Navy to submit an updated SSN-812 acquisition strategy to the congressional defense committees concurrent with the Navy's fiscal year 2021 budget request. This strategy shall include an updated Component Cost Estimate, design changes that depart from the Block V *Virginia*-class submarine design, and an assessment of the effect SSN-812 will have on critical suppliers.

Additionally, the committee is concerned that the budget request's proposal to remove the Virginia Payload Module (VPM) from SSN-804 would introduce excessive operational and acquisition risk as the Navy seeks to replace the strike capacity of the retiring *Ohio*-class guided missile submarines with VPM on *Virginia*-class submarines.

Therefore, the committee recommends a decrease of \$3.0 billion for SSN-812 and an increase of \$522.1 million for SSN-804 VPM, for a net decrease of \$2.5 billion, in line number 3 of SCN for *Virginia*-class submarines.

Virginia-class submarine advance procurement

The budget request included \$2.8 billion in line number 4 of Shipbuilding and Conversion, Navy (SCN), for *Virginia*-class submarine advance procurement.

The committee notes that attack submarines provide critical capabilities necessary to execute the National Defense Strategy. The committee is concerned that, under current plans, the Navy will not meet its requirement of 66 attack submarines until fiscal year 2048.

Therefore, the committee recommends an increase of \$1.5 billion in line number 4 of SCN for *Virginia*-class submarine advance procurement.

Refueling and complex overhauls of aircraft carriers

The budget request included \$647.9 million in line number 5 of Shipbuilding and Conversion, Navy (SCN), for refueling and complex overhauls (RCOH) of aircraft carriers.

The committee notes unjustified cost growth from the CVN-73 RCOH to the CVN-74 RCOH in basic construction/conversion and ordnance.

Therefore, the committee recommends a decrease of \$50.0 million in line number 5 of SCN for refueling and complex overhauls of aircraft carriers.

Refueling and complex overhaul advance procurement

The budget request included no funding in line number 6 of Shipbuilding and Conversion, Navy (SCN), for refueling and complex overhaul (RCOH) advance procurement.

The committee does not support the budget request's proposal to not refuel the USS *Harry S. Truman* (CVN-75).

Therefore, the committee recommends an increase of \$16.9 million to restore the CVN-75 RCOH in line number 6 of SCN for refueling and complex overhaul advance procurement.

Arleigh Burke-class destroyers

The budget request included \$5.1 billion in line number 8 of Shipbuilding and Conversion, Navy (SCN), for *Arleigh Burke*-class destroyer procurement.

The committee notes that the budget request includes procurement of three *Arleigh Burke*-class destroyers, which is one additional destroyer in fiscal year 2020 as compared to last year's request. The committee has not received sufficient justification for the unit cost increases of the fiscal year 2020 destroyers, as compared to last year's request. In addition, the committee notes that this program has available prior years funds, which are excess to need.

Therefore, the committee recommends a decrease of \$20.0 million in line number 8 of SCN.

Arleigh Burke-class destroyer advance procurement

The budget request included \$224.0 million in line number 9 of Shipbuilding and Conversion, Navy (SCN), for *Arleigh Burke*-class destroyer advance procurement.

The committee notes that the Navy future years defense program includes procurement of two *Arleigh Burke*-class destroyers in fiscal year 2021, which would be procured using a multiyear procurement contract. The committee understands that advance procurement of long lead time material could reduce component costs and enable optimal ship construction intervals.

Therefore, the committee recommends an increase of \$260.0 million in line number 9 of SCN.

LPD-class amphibious transport ship

The budget request included no funding in line number 12 of Shipbuilding and Conversion, Navy (SCN), for procurement of LPD Flight II-class amphibious transport ships.

The committee notes that the Navy has identified LPD-30, which was authorized and appropriated in fiscal year 2018, as the first Flight II LPD. In the fiscal year 2019 budget request, the Navy planned to procure the next Flight II LPD, LPD-31, in fiscal year 2020. The committee is concerned that the fiscal year 2020 budget request's delay of procurement of LPD-31 to fiscal year 2021 could result in production inefficiency, increased cost, and delay in reaching the Navy's requirement for 38 amphibious ships.

Therefore, the committee recommends an increase of \$525.0 million in line number 12 of SCN for incremental funding of the amphibious transport ship designated LPD-31.

The committee's intent is for the Navy to use the \$350.0 million appropriated in SCN line number 13 in fiscal year 2019 and additional fiscal year 2020 funds in SCN line number 12 to procure LPD-31 long-lead material and start construction as efficiently as possible. Consistent with the budget request, the committee expects the Navy to request the balance of costs for LPD-31 in fiscal year 2021.

LPD-class amphibious transport ship advance procurement

The budget request included \$247.1 million in line number 13 of Shipbuilding and Conversion, Navy (SCN), for advance procurement of LPD Flight II-class amphibious transport ships.

The committee recommends transferring the funds requested in line number 13 of SCN to line number 12 of SCN to support incremental funding of the amphibious transport ship designated LPD-31.

Therefore, the committee recommends a decrease of \$247.1 million in line number 13 of SCN for advance procurement of LPD Flight II-class amphibious transport ships.

LHA replacement amphibious assault ship

The budget request included no funding in line number 15 of Shipbuilding and Conversion, Navy (SCN), for procurement of LHA replacement amphibious assault ships.

The committee remains concerned with the Navy procurement profile for large deck amphibious assault ships, which includes a span of 7 years until the next large deck amphibious assault ship (LHA-9) would be procured in fiscal year 2024.

The committee notes that efficiencies could be gained by reducing this span, including steadier workflow with an increased learning curve, material and equipment suppliers with more predictable delivery contracts, and a more effective continuous improvement schedule.

The committee urges the Secretary of the Navy to accelerate procurement of LHA-9, including putting the \$356.0 million appropriated in fiscal year 2019 for this ship on contract to procure long lead-time material as soon as possible and leveraging the incremental funding authority provided elsewhere in this Act to start construction and build LHA-9 as efficiently as possible.

Therefore, the committee recommends an increase of \$650.0 million in line number 15 of SCN.

Outfitting

The budget request included \$754.7 million in line number 23 of Shipbuilding and Conversion, Navy (SCN), for outfitting.

Based on planned delivery dates, the committee notes that post-delivery funding is early-to-need for LCS-21 (\$5.0 million). The committee also notes the unjustified outfitting cost growth for SSN-793, SSN-794, SSN-795, and SSN-796 (\$20.0 million). The committee further notes unjustified post-delivery cost growth for DDG-1000 (\$25.0 million).

Therefore, the committee recommends a decrease of \$50.0 million in line number 23 of SCN.

Service craft

The budget request included \$56.3 million in line number 25 of Shipbuilding and Conversion, Navy (SCN), for service craft.

In order to increase training opportunities for Surface Warfare Officer candidates from all accession sources, the committee believes that the Navy should replace the six YP-676 class craft slated for disposal with upgraded YP-703 class craft that incorporate modernization, training, and habitability improvements derived from lessons learned with existing YP-703 craft.

The committee urges the Secretary of the Navy to release a request for proposals for the detail design and construction of upgraded YP-703 class craft not later than fiscal year 2020. The committee notes that the Navy's current cost estimate for acquisition of the first upgraded YP-703 class craft is \$25.5 million.

Therefore, the committee recommends an increase of \$25.5 million in line number 25 of SCN.

Expeditionary Fast Transport (T-EPF 14) conversion

The budget request included \$55.7 million in line number 28 of Shipbuilding and Conversion, Navy (SCN), for completion of prior year shipbuilding programs.

The committee notes that the Chief of Naval Operations' unfunded priority list states that additional funding could provide for the conversion of an Expeditionary Fast Transport (T-EPF 14) into an Expeditionary Medical Transport to better fulfill distributed maritime medical requirements.

Therefore, the committee recommends an increase of \$49.0 million in line number 28 of SCN.

Ship to shore connector advance procurement

The budget request included no funding in line number 29 of Shipbuilding and Conversion, Navy (SCN), for ship to shore connector advance procurement.

The committee understands that additional funding could provide needed stability for certain suppliers in the ship to shore connector program.

Therefore, the committee recommends an increase of \$40.4 million in line number 29 of SCN.

Hull, mechanical, and electrical upgrades for Arleigh Burke-class destroyers

The budget request included \$31.6 million in line number 2 of Other Procurement, Navy (OPN), for surface combatant hull, mechanical, and electrical equipment.

The committee notes that the Chief of Naval Operations' unfunded priority list states that additional funding could provide for reliability upgrades to the Integrated Bridge and Navigation and associated systems, including the addition of physical throttles to the ship control console, a voyage data recorder, and software upgrades to the steering and propulsion control system.

Therefore, the committee recommends an increase of \$19.0 million in line number 2 of OPN.

Expeditionary mine countermeasures

The budget request included \$71.2 million in line number 20 of Other Procurement, Navy (OPN), for underwater explosive ordnance disposal programs.

The committee notes that the Mark 18 unmanned underwater vehicle (UUV) program is proven and remains the only mine countermeasures (MCM) UUV program with Milestone C approval and in full rate production.

Additionally, the committee understands that the Navy has a validated need for eight additional expeditionary MCM (ExMCM) companies beyond the eight already outfitted. The committee further understands that \$11.0 million in additional funding could outfit 4 additional ExMCM companies with the full complement of Mark 18 UUVs.

Therefore, the committee recommends an increase of \$11.0 million in line number 20 of OPN.

Littoral Combat Ship mine countermeasures mission modules

The budget request included \$197.1 million in line number 30 of Other Procurement, Navy (OPN), for the procurement of Littoral Combat Ship mine countermeasures mission module equipment.

The committee notes that the Navy is requesting funding to purchase equipment that has not yet undergone operational testing, which is an approach that, as the Government Accountability Office has shown, leads to cost growth and schedule delays. The committee believes that the following requested systems would constitute excessive procurement ahead of satisfactory testing: 6 unmanned surface vehicle and minesweeping payload delivery systems, 4 minehunting payload delivery systems (new), 3 minehunting payload delivery systems (backfit), and 2 buried minehunting modules, including support equipment.

Therefore, the committee recommends a decrease of \$129.8 million in line number 30 of OPN.

Knifefish

The budget request included \$40.5 million in line number 34 of Other Procurement, Navy (OPN), for the procurement of small and medium unmanned underwater vehicles.

The committee notes that the two Knifefish systems which are to be procured with this funding require further testing, including the initial operational test and evaluation period that is currently scheduled for fiscal year 2021.

Therefore, the committee recommends a decrease of \$29.9 million in line number 34 of OPN.

Surface Electronic Warfare Improvement Program

The budget request included \$420.2 million in line number 44 of Other Procurement, Navy (OPN), for the procurement of electronic warfare equipment.

The committee notes that procurement of at least two of the three Surface Electronic Warfare Improvement Program Block 3 units is early-to-need based on the Navy's installation plan.

Therefore, the committee recommends a decrease of \$62.0 million in line number 44 of OPN.

Ship's signal exploitation equipment expansion

The budget request included \$194.8 million in line number 45 of Other Procurement, Navy (OPN), for shipboard information warfare exploitation.

The committee notes that the Chief of Naval Operations' unfunded priority list states that additional funding could provide for expansion of ship's signal exploitation space and installation of ship's signal exploitation equipment modifications on Flight I *Arleigh Burke*-class destroyers.

Therefore, the committee recommends an increase of \$8.0 million in line number 45 of OPN.

Next Generation Surface Search Radar

The budget request included \$168.4 million in line number 70 of Other Procurement, Navy (OPN), for the procurement of items less than \$5 million.

The committee notes that procurement of 28 Next Generation Surface Search Radars is early-to-need based on the Navy's installation plan.

Therefore, the committee recommends a decrease of \$23.8 million in line number 70 of OPN.

Sonobuoys

The budget request included \$260.6 million in line number 85 of Other Procurement, Navy (OPN), for the procurement of sonobuoys.

The committee notes that greater-than-expected sonobuoy expenditures in fiscal year 2019 resulted in the Chief of Naval Operations' requesting procurement of additional sonobuoys as a fiscal year 2020 unfunded priority.

Therefore, the committee recommends an increase of \$50.0 million in line number 85 of OPN.

Electronic Procurement System

The budget request included \$66.1 million in line number 122 of Other Procurement, Navy (OPN), for Command Support Equipment, including \$6.3 million for Electronic Procurement System.

The committee remains concerned about unnecessarily bespoke contract writing systems and processes.

Accordingly, the committee recommends a decrease of \$6.3 million in line number 122 of OPN.

Air Force

F-35A

The budget request included \$4.3 billion in line number 1 of Aircraft Procurement, Air Force (APAF), for 48 F-35 aircraft.

The committee recognizes the importance of the Air Force's efforts to modernize and equip itself with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of

procurement of fifth generation aircraft and understands that the Chief of Staff of the Air Force has placed additional aircraft on his unfunded priority list.

Therefore, the committee recommends an increase of \$1.1 billion in line number 1 of APAF for the procurement of 12 additional F-35 aircraft.

F-35 advanced procurement

The budget request included \$655.5 million in line number 2 of Aircraft Procurement, Air Force (APAF), for advanced procurement of F-35 aircraft.

The committee recognizes the importance of the Air Force's efforts to modernize and equip itself with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of fifth generation aircraft and understands that the Chief of Staff of the Air Force has placed additional aircraft on his unfunded priority list.

Therefore, the committee recommends an increase of \$156.0 million in line number 2 of APAF for advanced procurement to support 12 additional F-35A aircraft.

F-15X

The budget request included \$1.1 billion in line number 3 of Aircraft Procurement, Air Force (APAF), for 8 F-15X aircraft.

The committee recognizes the importance of the Air Force's efforts to modernize its aging air superiority fighters. The committee also understands that the use of existing non-developmental aircraft already in inventory allows for the continued readiness of current F-15 squadrons. However, the committee is concerned that the associated non-recurring engineering costs, as programmed, are above what should be for a non-developmental aircraft.

Therefore, the committee recommends a decrease of \$162.0 million in line number 3 of APAF.

KC-46

The budget request included \$2.2 billion in line number 5 of Aircraft Procurement, Air Force (APAF), for 12 KC-46 aircraft.

The committee recognizes the importance of the Air Force's efforts to modernize and equip itself with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of tanker aircraft and understands that the Chief of Staff of the Air Force has placed additional aircraft on his unfunded priority list.

Therefore, the committee recommends an increase of \$471.0 million in line 5 of APAF for the procurement of 3 additional KC-46 aircraft.

F-15 ADCP

The budget request included \$481.1 million in line number 25 of Aircraft Procurement, Air Force (APAF), for the procurement of new avionics radars.

The committee recognizes the importance of the Air Force efforts to modernize the legacy 4th generation fleet in support of the National Defense Strategy. The committee also understands the Air Force's intention to recapitalize the F-15 fleet with new F-15X aircraft.

Therefore, the committee recommends a decrease of \$75.1 million in line 25 of APAF as a reduction of the procurement of F-15 avionics.

F-15 IFF modernization

The budget request included \$481.1 million in line number 25 of Aircraft Procurement, Air Force (APAF), for procurement of new IFF.

The committee recognizes the importance of the Air Force efforts to modernize the legacy fourth generation fleet in support of the National Defense Strategy. The committee also understands the Air Force's intention to recapitalize the F-15 fleet with new F-15X aircraft.

Therefore, the committee recommends a decrease of \$29.6 million in line 25 of APAF as a reduction of the procurement of F-15 IFF.

F-15 Longerons

The budget request included \$481.1 million in line number 25 of Aircraft Procurement, Air Force (APAF), for the procurement of 64 F-15 Longerons.

The committee recognizes the importance of the Air Force efforts to modernize the legacy fourth generation fleet in support of the National Defense Strategy. The committee also understands the Air Force's intention to recapitalize the F-15 fleet with new F-15X aircraft.

Therefore, the committee recommends a decrease of \$24.6 million in line number 25 of APAF as a reduction of the procurement of F-15 Longerons.

F-15 Radar

The budget request included \$481.1 million in line 25 of Aircraft Procurement, Air Force (APAF), for procurement of new radars.

The committee recognizes the importance of the Air Force efforts to modernize the legacy 4th generation fleet in support of the National Defense Strategy. The committee also understands the Air Force's intention to recapitalize the F-15 fleet with new F-15X aircraft.

Therefore, the committee recommends a decrease of \$23.7 million in line number 25 of APAF as a reduction of the procurement of F-15 radars.

F-16 modernization

The budget request included \$234.8 million in line number 26 of Aircraft Procurement, Air Force (APAF).

The committee recognizes the importance of the Air Force's efforts to modernize its fourth generation fighter fleet and equip itself with the most advanced and capable radars in support of the National Defense Strategy. However, the committee is concerned

about the quantity and timing of procurement of advanced radars for the entire F-16 fleet.

Therefore, the committee recommends an increase of \$75.0 million in line number 26 of APA for the procurement of 30 additional radars.

F-15C EPAWSS

The budget request included \$149.0 million in line number 31 of Aircraft Procurement, Air Force (APAF), for F-15 Eagle Passive Active Warning Survivability System (EPAWSS).

The committee recognizes the importance of the Air Force's efforts to modernize and equip itself with the most advanced electronic warfare capability available in support of the National Defense Strategy. However, the committee also understands the Air Force's intention to recapitalize the F-15 fleet with new F-15X aircraft already equipped with the EPAWSS.

Therefore, the committee recommends a decrease of \$67.2 million in line number 31 of APAF as a reduction of the procurement of additional F-15 EPAWSS kits.

Command and control sustainability

The budget request included \$28.8 million in line number 58 of Aircraft Procurement, Air Force (APAF), for E-8.

The committee notes that command and control nodes are at a significant disadvantage due to aging communications.

Therefore, the committee recommends an increase of \$30.0 million in line 58 of APAF for next-generation satellite communication radios that are both SATURN and Mobile User Objective System capable as well as Multifunctional Information Distribution System-Joint Tactical Radio System terminals.

F-35A Spares

The budget request included \$708.0 million in line number 69 of Aircraft Procurement, Air Force (APAF), for spares and repair parts.

The committee recognizes the importance of the Air Force's efforts to modernize and equip itself with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of fifth generation aircraft and understands that the Chief of Staff of the Air Force has placed additional aircraft on his unfunded priority list.

Therefore, the committee recommends an increase of \$96.0 million in line number 69.

KC-46 Spares

The budget request included \$708.0 million in line number 69 of Aircraft Procurement, Air Force (APAF), for spares and repair parts.

The committee recognizes the importance of the Air Force's efforts to modernize and equip itself with the most advanced and capable aircraft in support of the National Defense Strategy. However, the committee is concerned about the quantity and timing of procurement of tanker aircraft and understands that the Chief of

Staff of the Air Force has placed additional aircraft on his unfunded priority list.

Therefore, the committee recommends an increase of \$141.0 million in line number 69 of APAF for spares.

RQ-4 spare parts

The budget request included \$708.0 million in line number 69 of Aircraft Procurement, Air Force (APAF), for spares and repair parts.

The committee is concerned about the quantity and timing of spare parts for the RQ-4.

Therefore, the committee recommends an increase of \$25.0 million in line number 69 of APAF.

Minuteman III Modifications

The budget request included \$50.8 million in line number 14 of Missile Procurement, Air Force (MPAF), for Minuteman III modifications.

The committee supports the request of the Air Force to re-align certain funds from other projects to support implementation of the Intercontinental Ballistic Missile Crypto Upgrade II program.

Accordingly, the committee recommends an increase of \$8.9 million in line number 14 of MPAF for Minuteman III Modifications.

Air-Launched Cruise Missile

The budget request included \$77.4 million in line number 17 in Missile Procurement, Air Force (MPAF), for the Air-Launched Cruise Missile.

The committee supports the request of the Air Force to re-align certain funds from the Support Equipment sub-project to support other Air Force nuclear priorities.

Accordingly, the committee recommends a decrease of \$8.9 million in line number 17 of MPAF for the Air-Launched Cruise Missile.

F-35 training and range modernization

The budget request included \$234.0 million in line number 32 of Other Procurement, Air Force (OPAF), for Combat Training Ranges.

The committee recognizes the importance of modernizing USAF training ranges for 5th generation aircraft. The committee notes that 35 percent of the current F-35A training curriculum requires pilot training scenarios involving use of joint threat emitters (JTEs) in order to simulate combat-like training conditions.

Therefore, the committee recommends an increase of \$28.0 million in Other Procurement, Air Force, for line number 32 to install four JTEs for F-35A training.

Air Force Integrated Personnel and Pay System

The budget request included \$20.9 million in line number 36 of Other Procurement, Air Force (OPAF), for Integrated Personnel and Pay System.

The committee is concerned about poor agile implementation and infrequent capability delivery.

Accordingly, the committee recommends a decrease of \$20.9 million in line number 36 of OPAF.

Defense Wide

Sharkseer transfer

The budget request included \$3.3 million in line number 8 of Procurement, Defense-wide, Information Systems Security.

The committee included a provision in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) that required the Secretary of Defense to transfer the operations and maintenance for the Sharkseer cybersecurity program from the National Security Agency to the Defense Information Systems Agency.

Therefore, the committee recommends an increase of \$1.4 million in line number 8 for Procurement, Defense-wide, for the Sharkseer program.

Terminal High Altitude Area Defense Missile Defense Agency procurement

The budget request included \$425.9 million in line number 28 of Procurement, Defense-wide, for Terminal High Altitude Area Defense (THAAD) procurement by the Missile Defense Agency (MDA).

Elsewhere in this report, the committee has stated its views regarding the transition of the THAAD program from the MDA to the Department of the Army.

Therefore, the committee recommends a decrease of \$425.9 million in line number 28 of Procurement, Defense-wide.

Sharkseer transfer

The budget request included \$1.5 million in line number 44 of Procurement, Defense-wide, Information Systems Security Program (ISSP).

The committee included a provision in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) that required the Secretary of Defense to transfer the operations and maintenance for the Sharkseer cybersecurity program from the National Security Agency to the Defense Information Systems Agency.

Therefore, the committee recommends a decrease of \$1.4 million in line number 44 of Procurement, Defense-wide, for the Sharkseer program.

Radio Frequency Countermeasure System

The budget request included \$173.4 million in line number 61 of Procurement, Defense-wide (PDW), AC/MC–130J, of which \$41.6 million is for the AC/MC–130J Radio Frequency Countermeasure System (RFCM).

The committee understands that the RFCM program is experiencing schedule delays due to integration and compatibility issues with the technology.

Therefore, the committee recommends a decrease of \$8.8 million to line number 61 of PDW, AC/MC–130J, for a total of \$32.8 million for RFCM. The committee notes that, elsewhere in the Act,

there is a symmetric increase to U.S. Special Operations Command's future vertical lift research and development efforts, a high priority unfunded requirement identified by the command.

Transfer OCO to Base

The budget request included \$118.9 billion for Procurement in base funding. The committee notes that the President's budget request included \$97.9 billion in the Overseas Contingency Operations (OCO) account for activities that are traditionally funded out of base accounts. The committee believes that OCO for Base funding should be transferred into the base accounts.

Accordingly, the committee recommends an increase of \$13.5 billion to Procurement.

Items of Special Interest

A-10 modernization

The committee is encouraged that the Air Force is executing a modernization strategy to provide unmatched air power and believes that modernizing the A-10 fleet is integral to this strategy. The committee also believes that upgrades to weapons delivery, management systems, and the electronic warfare and communications suite that keep pace with threat advancements and proliferation are critical to the continued success of the weapons system. The committee notes that these enhancements and the aircraft wing replacements will maintain the effectiveness of the A-10C through the 2030s.

Therefore, the committee recommends that continuous funding for the modernization of the A-10C be provided from fiscal year 2020 through fiscal year 2030 in order to achieve upgrades that are long overdue.

Acquisition strategy for LHA-9 and LHA-10

The committee notes that the Navy estimates that \$4.0 billion will be saved using a block buy acquisition strategy for the procurement of CVN-80 and CVN-81.

The committee believes that such an approach for LHA-9 and LHA-10 could provide substantial cost savings as well as needed stability and predictability for the shipbuilder and its vendor base.

Accordingly, not later than October 1, 2019, the committee directs the Secretary of the Navy to submit a report to the congressional defense committees on the merits of pursuing a block buy acquisition strategy for LHA-9 and LHA-10.

This report shall include a business case analysis comparing the cost and schedule of single ship contracts for LHA-9 and LHA-10 with a block buy contract for such ships as well as a description of other key considerations that the Secretary deems appropriate.

If the business case analysis shows that pursuing a block buy strategy for LHA-9 and LHA-10 has merit, the committee strongly encourages the Secretary to consider inclusion of such a proposal in the Navy's budget request for fiscal year 2021.

Acquisition strategy for LPD Flight II-class ships

The committee notes that the Navy estimates that \$4.0 billion will be saved using a block buy acquisition strategy for the procurement of CVN-80 and CVN-81.

The committee believes that a block buy or multiyear procurement approach for LPD Flight II-class amphibious transport ships could provide substantial cost savings as well as needed stability and predictability for the shipbuilder and its vendor base.

Accordingly, not later than October 1, 2019, the committee directs the Secretary of the Navy to submit a report to the congressional defense committees on the merits of pursuing a block buy or multiyear procurement acquisition strategy for LPD Flight II-class ships.

This report shall include a business case analysis comparing the cost and schedule of single ship contracts with a block buy or multiyear contract for such ships as well as a description of other key considerations that the Secretary deems appropriate.

If the business case analysis shows that pursuing a block buy or multiyear procurement strategy for LPD Flight II-class ships has merit, the committee strongly encourages the Secretary to consider inclusion of such a proposal in the Navy's budget request for fiscal year 2021.

Active Protection System for Stryker

Active Protection Systems (APS) can be a critical capability to protect our warfighters on the battlefield. The committee notes that the Army is currently procuring four brigade sets of Trophy for the M1 Abrams tank and that a decision was recently made to procure a brigade set of the Iron Fist system for the M2 Bradley.

The Army has evaluated various systems for integration on to Stryker vehicles but has not made a final decision on what system is most effective and suitable for the platform. According to a congressionally directed report that was submitted in October 2018, the Army had anticipated making a vendor selection during the second quarter of fiscal year 2019. However in testimony before the Senate Armed Services Committee Subcommittee on Airland in April 2019, senior Army leadership testified that it may take significantly more time for the Army to make a determination on whether to proceed with either of the systems being evaluated.

Therefore, the committee directs the Secretary of the Army to provide a briefing to the committee by October 1, 2019, that provides an update on the Army's efforts to assess APS vendors for integration onto the Stryker platform, including the effectiveness of systems tested, plans for future testing, proposals for future development, and a timeline for fielding.

Adaptive Threat Force

The committee notes that the Marine Corps Warfighting Laboratory's Adaptive Threat Force efforts in concept-based experimentation seek to replicate future operating environments and future adversaries. The committee believes that predictive understanding of potential asymmetric advantages of adversaries can be identified during experimentation through the use of red teams and live ad-

versary forces. Further, the committee notes that these efforts can also lead to improved training of warfighters.

Advanced Helicopter Training System

The committee believes that the Department of the Navy must rapidly develop realistic rotary training platforms to help ensure that the next generation of naval aviators remains proficient in conducting sustained air operations at sea. The Advanced Helicopter Training System (AHTS) addresses the capacity and capability gaps for the Chief of Naval Air Training rotary wing training pipeline. Through the AHTS program, the Navy will revamp its training syllabus by acquiring 130 helicopters and advanced simulators to produce more than 600 student naval aviators and execute 90,000 flight hours annually. The committee concurs with the Navy's insistence that the TH-XX be Federal Aviation Administration-Instrument Flight Rules (FAA-IFR) certified prior to awarding a contract, thereby assuring that the Navy student pilot training benefits from safety features and standards inherent in a fully developed and FAA-IFR certified aircraft.

Advanced survivability modeling capability for air-launched weapons

The emergence of great power competition is the central long-term planning challenge for the Department of Defense (DOD). More capable adversaries employing highly advanced integrated air defense systems can create heavily contested environments that deny U.S. forces the freedom to operate. Such integrated air defense systems present a threat not only to launch systems but also to their air-launched conventional weapons. Launch platforms and their suite of strike weapons must possess sufficient range, autonomy, survivability, and lethality for mission effectiveness in order to remain relevant in future scenarios.

The committee is concerned that current air-launched conventional weapons do not adequately account for advanced terminal defense systems that often protect high-value mobile targets both on land and at sea. Advanced integrated air defenses are expected to be effective against weapons that were designed to be survivable by virtue of a single attribute (e.g., speed) rather than a combination of attributes that enable successful engagement of high-value targets with state-of-the-art, close-in weapon systems.

In addition, the committee is concerned about the fidelity of DOD models that simulate the effectiveness of adversary close-in defensive systems on conventional strike weapons. The committee strongly encourages the Departments of the Navy and Air Force to emphasize munitions survivability attributes that together improve probability of mission success.

Therefore, the committee directs both the Secretary of the Air Force and the Secretary of the Navy to provide a briefing, not later than March 1, 2020, that outlines the mission effectiveness of current and planned air-launched conventional weapons for use against high-value mobile targets protected by advanced integrated air defense systems. The briefing must address the following:

- (1) Stand-off requirements;
- (2) Survivability characteristics;

- (3) Weapon lethality;
- (4) A cost-per-kill assessment to evaluate mission effectiveness; and
- (5) A comparison of existing autonomous capability.

Aerospace ground equipment for B-52 Stratofortress

The committee understands that the Air Force bomber vector plans to keep the B-52 weapon system available for conventional and nuclear missions well into the 2040s. Efforts are now underway to update the plane's radars, engines, communications, and navigation equipment. Relatively little effort has been given to the aerospace ground equipment that provide power, inert gas, munitions loading, and other support functions in preparation for a mission, yet this ground support equipment is just as important to mission success as components on the B-52. The committee is concerned that the failure of ground electrical carts can cause a delay of several hours to a bomber mission.

Therefore, the committee directs the Air Force to brief the congressional defense committees, no later than April 30, 2020, on the age of the aerospace ground support equipment currently supporting the B-52 weapon system, their average reliability, and plans to replace or update this equipment in line with keeping the B-52 weapon system operational through 2040.

Air Force Active Association

The committee supports the Air Force's Total Force Integration (TFI) concept to leverage the capabilities of both the Air Force Active Duty and its reserve components. The committee believes that Active Associations are an important component of TFI, providing the opportunity for Active-Duty pilots and personnel to access reserve component aircraft and train with reserve component pilots and maintenance personnel.

The committee remains concerned about the delayed deliveries of the KC-46A aerial refueling tanker and the impact it will have on the existing tanker fleet, most notably extending the service of KC-135 tankers. The committee is further concerned about the continued operation of legacy air refueling platforms and the impact on the Air Force's Active Associations. Therefore, the committee directs the Air Force and Air Mobility Command to notify the congressional defense committees regarding any plans to draw down Active Associations because KC-46A deliveries have been later than planned and, if there are such reductions, to provide a report on plans to restore these existing Active Associations to full strength.

Air Force Future ISR Integration Strategy

The committee is aware of the recent publication of the United States Air Force Next Generation Intelligence, Surveillance, and Reconnaissance (ISR) Dominance Flight Plan and the Air Force's desire to modernize its ISR enterprise. The committee is encouraged by the Air Force's intent to field a resilient, integrated ISR network of manned and unmanned systems to prevail in contested environments, and it believes that this goal aligns with the National Defense Strategy.

The committee notes that the Air Force's future ISR enterprise will comprise both manned and unmanned systems that are integrated with space and cyber assets. While the fielding of advanced autonomous systems and ISR networks will allow for added resiliency, large manned platforms such as the RC-135 are forecasted to remain an integral part of the Air Force ISR system for decades to come, and they offer a unique set of capabilities that are central to meeting the needs of combatant commanders. The committee believes that the Air Force must have the capability to integrate information from both manned and unmanned assets in its future ISR enterprise in order to capitalize on the strengths offered by both platforms. In its effort to realize the goals of its Next Generation ISR Dominance Flight Plan, the Air Force must ensure that all assets and platforms are integrated into a unified concept of operations.

Therefore, the committee directs the Secretary of the Air Force to provide a report to the congressional defense committees, no later than March 1, 2020, detailing the Air Force's plan for integrating both manned and unmanned systems into its future force mix and ISR enterprise. The report shall detail how the Air Force plans to use manned ISR assets alongside unmanned platforms as well as space-based ISR platforms and a networked sensor architecture in support of the warfighter. The report shall also detail planned modernization and survivability upgrades to the manned assets and networks. The report shall:

- (1) Detail the strengths and vulnerabilities in both manned and unmanned ISR elements;
- (2) Provide a detailed description of the data links for both control and data processing;
- (3) Describe the next generation of data link to succeed Link 16 capability; and
- (4) Provide funding data to support this concept across the future years defense program.

Air Force ISR SIGINT data integration

The committee notes the efforts of the Air Force to develop an integrated, capability-focused SIGINT architecture and investment strategy. The committee observes that the investment has already produced significant advances in Air Force SIGINT capability, particularly within the medium-altitude RC-135 Rivet Joint program. The committee is also aware that some significant capability gaps exist against current threats and that the Air Force has not yet addressed diminishing industrial base issues with the high-altitude Airborne Signals Intelligence Payload program. Additionally, the Air Force has not yet achieved a unified enterprise for SIGINT processing, exploitation, and dissemination, despite having a distributed technical architecture within both the RC-135 Rivet Joint and Air Force distributed common ground system programs.

Therefore, the committee directs the Secretary of the Air Force to provide a briefing to the congressional defense committees, no later than March 1, 2020, on how the Air Force is implementing its Next Generation Intelligence, Surveillance, and Reconnaissance Dominance Flight Plan in order to make Air Force airborne SIGINT data from the RC-135, U-2, RQ-4, MQ-9, and future

SIGINT capabilities discoverable and available to the joint warfighter. The briefing shall address, among other things, cloud-based technologies and distributed crew concepts.

Army rotary wing munitions capabilities, capability gaps, and solutions

The committee is concerned that the standoff range advantages of U.S. rotary wing aircraft munitions have eroded when compared to near peer and regional adversaries like Russia, China, Iran, and North Korea. Munitions with greater standoff range and the ability to operate in a GPS-denied or -degraded environment are critical to restoring the Army's dominance in air-to-surface fires.

Therefore, the committee directs the Secretary of the Army to provide a briefing by October 1, 2019, on Army rotary wing munitions capabilities, capability gaps, and potential off-the-shelf solutions. The briefing should include:

- (1) Current U.S. rotary wing munitions capabilities and capability gaps against munitions fielded by Russia, China, Iran, and North Korea;
- (2) Potential off-the-shelf solutions that would bridge these capability gaps, including any munitions that the U.S. tests in calendar year 2019; and
- (3) Detailed information on any testing of non-program of record munitions by the U.S. Army in calendar year 2019, including:
 - (a) An assessment of the effectiveness of the tested munitions to meet threats from near peer adversaries and any operational needs statements from combat aviation brigades for Europe and the Indo-Pacific;
 - (b) An assessment of whether the tested munitions would complement capabilities for current programs of record;
 - (c) A comparison of the tested systems' capabilities against current munitions; and
- (4) The cost and timeline for the Army to field the necessary capability to close this gap, including:
 - (a) Interim fielding to meet current requirements; and
 - (b) Potential enduring solutions.

ATACMS Requirement

The committee is concerned that the current Army Tactical Missile System (ATACMS) inventory is insufficient to meet requirements, especially in light of the National Defense Strategy. The Army total munition requirement for ATACMSs is 4,417 missiles but the current quantity is 1,725 missiles. Despite the shortfall, the Army's plan is to extend the life of existing ATACMSs rather than growing additional capacity. However, the Army has had a difficult time retrieving existing ATACMSs to put them into the shelf-life extension program and thus has relied on new missile production to replace existing inventory. The committee notes that, in the budget request for fiscal year 2020, \$340.6 million of the \$425.9 million for the ATACMS program is for new missile procurement.

The committee also notes that the Army's unfunded priorities list requested funding for Cross-Domain ATACMSs to support a United

States Indo-Pacific Combatant Command requirement. Further, the committee notes that the Precision Strike Missile, which would replace ATACMS, will not include cross-domain capabilities until fiscal year 2024 at the earliest. Therefore, the committee recommends that the Army reevaluate decisions to not grow the ATACMS inventory given: (1) The substantial shortfall in inventory as compared to the actual requirement; (2) That the Army is already procuring new all-up rounds; and (3) The new capabilities that the Cross-Domain ATACMS now adds to the program.

Bomber roadmap

The committee is concerned with the timing of multiple programs involving the Air Force bomber force. The committee notes that the strategic threat from peer competitors like China and Russia will only continue to increase, as highlighted in the National Defense Strategy, which will increase demand on the critical bomber force.

Therefore, the committee directs the Secretary of the Air Force to provide a briefing, no later than February 1, 2020, to the congressional defense committees that delineates the strategy and the pathway for legacy bombers as well as the acquisition of the B-21 and its integration in the bomber force. The briefing shall include an updated Air Force bomber roadmap and the Air Force's plans for timing and synchronization of:

- (1) B-52 re-engining and modernization;
- (2) Construction of weapons generation facilities;
- (3) Basing of B-21 conventional and nuclear aircraft; and
- (4) Life cycle sustainment of B-1, B-2, and B-52 aircraft.

Bradley program

The budget request included \$638.8 million in line 5 of Weapons & Tracked Combat Vehicles (WTCV), for the procurement of upgrades to the family of Bradley Fighting Vehicles. As an integral part of the Army's Armored Brigade Combat Team (ABCT), the Bradley is being modernized in a program approved by the Army Acquisition Executive in July 2011 to enhance survivability, mobility, and lethality by procurement of hardware for modifications. These modifications include two Engineering Change Proposals in this plan, with the Bradley A4 upgrade being the most significant.

As the Army works to align itself with the National Defense Strategy and its focus on near-peer competition, the committee understands that the Army plans to gradually phase out the Bradley and replace it with a new Optionally Manned Fighting Vehicle (OMFV). To achieve this strategy, the Army has formulated a plan to end M2A4 production in fiscal year 2022, following the procurement of 859 vehicles (fielding 5 ABCTs plus 1 prepositioned set), which will enable sufficient funding for the procurement of the OMFV.

The committee supports the Army's planning and budgeting to achieve force modernization with the OMFV and understands that it will take at least 6 years to develop and begin fielding the OMFV. The committee also notes that the Bradley A4 upgrade program is essential to ensuring that the ABCT remains relevant for the next 3 decades. Nonetheless, the committee encourages the Army to ensure that the Bradley industrial base is properly main-

tained until the Army has a high level of confidence that the OMFV program will not be delayed.

Therefore, the committee supports the procurement of upgrades for the family of Bradley Fighting Vehicle modernization across five ABCTs, efforts to sustain the entire fleet, and the incorporation of an Active Protection System into the fleet.

Building Partner Combat Air Capacity

The committee understands the importance of building partner capacity as part of the U.S. National Security Strategy. The committee supports ongoing Department of Defense (DOD) efforts to increase the combat air capability and interoperability of U.S. coalition partners. Proficiency in air combat requires training in a realistic air-combat environment with the ability to provide post-mission reconstruction of maneuvers and tactics, participant pairings, and integration of range targets and simulated threats. That is achieved today around the world using air combat maneuvering instrumentation (AGMI) systems.

Therefore, the committee directs the Secretary of Defense to brief the congressional defense committees, no later than 180 days after the date of the enactment of this Act on DOD's ability to increase the utilization of U.S. approved and interoperable AGMI systems worldwide. The briefing shall, at a minimum, identify current approved world-wide AGMI locations and identify and prioritize locations where new AGMI systems could increase combat air capability of U.S. and partner forces.

Capability to counter supersonic and hypersonic cruise missiles

The committee believes that the Department of Defense is late-to-need on dealing with the current threat of fielded or soon-to-be fielded supersonic and hypersonic missiles in both the Indo-Pacific and European areas of responsibility.

In addition, the committee believes there is a disconnect between Joint Force doctrine, the responsibility of the area air defense commander, which is normally the Air Component Commander, and the responsibility for air and missile defense, which resides with the U.S. Army, as established in law. This issue is most pronounced with theater air and missile defense, and it has the potential to yield a gap between joint force requirements and available capabilities that will only be increased with constrained spending.

Therefore, the committee directs the Secretary of Defense, in consultation with the Joint Force Air Component Commanders for U.S. Indo-Pacific Command and U.S. European Command, to provide a briefing, not later than January 1, 2020, to the congressional defense committees, on countering supersonic cruise missiles and hypersonic missiles. The briefing must include:

- (1) Currently fielded or soon-to-be fielded adversary supersonic or hypersonic missiles;
- (2) An evaluation of the ability to counter supersonic threats against airfields and Army preposition sites by 2023, based on available forces or potential programs available to be fielded in that timeframe;

(3) An evaluation of the ability to counter hypersonic threats against airfields and Army preposition sites by 2023, based on available forces or potential programs available to be fielded in that timeframe;

(4) Any other subjects or recommendations that the Secretary or Component Commanders wish to include.

Carbon fiber wheels and graphitic foam for Next Generation Combat Vehicle

The committee recognizes the recent effort related to Metal Matrix Composite (MMC) technologies and is encouraged by the U.S. Army Ground Vehicle Systems Center's (GVSC) decision to transition into lower-cost, wider application carbon fiber composite wheels and graphitic carbon foam research to support the Next Generation Combat Vehicle (NGCV). Carbon fiber wheels may reduce vehicle weight, reduce fuel consumption, increase payload capacity, and extend service life for the NGCV. Graphitic Carbon Foam may also reduce vehicle heat signatures and improve heat dissipation from engine and electronics compartments and protect against blast energy, directed energy weapons, and electromagnetic pulse threats. Finally, these products lend themselves to be produced at remote locations with additive manufacturing processes in support of NGCV operation and maintenance.

The Defense Logistics Agency has designated both graphite and carbon fiber as strategic materials. The committee notes that the GVSC has identified low-cost mesophase pitch as a United States-based source of graphite that can be used to produce carbon fiber, graphitic carbon foam, and battery technologies for the NGCV. The committee acknowledges the versatility and broad application that carbon fiber technology provides for the armed services by reducing the weight of parts by over 50% as compared to traditional steel components.

The committee recommends that the GVSC continue to develop, test, and field low-cost mesophase pitch carbon fiber and graphitic carbon foam components that can reduce vehicle weight, reduce fuel consumption, increase payload capacity, extend service life, improve survivability, and utilize additive manufacturing technology for the NGCV program.

CH-47F Block II Program

The budget request contained \$174.4 million in PE 67137A within Research, Development, Test, and Evaluation (RDT&E), Army for the CH-47 Block II program. The CH-47F Block II program is designed to upgrade the current CH-47F Block I heavy-lift rotorcraft in order to improve readiness and commonality, extend the useful life of the Block I helicopter, and restore additional payload capacity for the airframe. The committee understands that the budget request fully funds the completion of the Engineering and Manufacturing Development (EMD) phase of the Block II program. The committee also understands that, subject to successful completion of the EMD phase, the Army plans to conduct a Milestone C low-rate production decision beginning in fiscal year 2021. However, the committee notes that the current Future Years Defense

Program (FYDP) provides no additional procurement funding for the CH-47 Block II program.

Further, the committee notes that the formal Analysis of Alternatives for the CH-47 Block II indicated that, in order to maintain fleet readiness, the Army must begin to remanufacture CH-47 Block I rotorcraft between fiscal years 2024 and 2028 and sustain full-rate production of 12 aircraft per year by fiscal year 2030. The committee is concerned about the impact from the lack of programmed funding in the FYDP for CH-47 Block II production on the heavy-lift rotorcraft industrial base and the Army's long-term plans to maintain fleet readiness post-FYDP.

Therefore, the committee directs the Secretary of the Army to provide a briefing by October 1, 2019, on the following topics: potential readiness impacts to the current CH-47F fleet should Block II production be delayed post-FYDP; a cost-benefit analysis comparing the CH-47 Block II upgrade program to CH-47F remanufacture efforts; the impacts to current MH-47G aircraft production given the delay of Block II production; the analysis the Army used to assess the strategic risk to the industrial base, including the supplier base; and the Army's current strategy for modernizing the heavy-lift rotorcraft fleet.

CH-53K King Stallion program

The committee notes that the U.S. Marine Corps validated a requirement for heavy-lift expeditionary rotary wing aviation to support ship-to-shore, shore-to-shore, and shore-to-ship movement of personnel and equipment. With the existing heavy lift platform, the CH-53E, nearing the end of its service life, the Marine Corps has embarked on a procurement effort for the CH-53K King Stallion to maintain or improve the current capability. The committee notes, however, that this program is at least 19 months behind schedule and has experienced cost growth of over 20 percent above the 2005 baseline. At a cost now estimated to exceed \$85 million per aircraft, the committee is concerned that the cost of this program is pulling resources away from other urgently needed modernization efforts.

Therefore, the committee urges the Department of the Navy and the U.S. Marine Corps to ensure that this program receives sufficient acquisition oversight to eliminate further cost growth and schedule delays.

Close combat lethality task force

In February 2018, the Secretary of Defense established the Close Combat Lethality Task Force (CCLTF), a cross-functional task force charged with improving combat capabilities of infantry formations to increase lethality, survivability, and resiliency on the battlefield. The CCLTF has focused its efforts on reforming manpower policy, improving training, and fielding cutting-edge equipment and weapons systems for these formations. These efforts are particularly noteworthy as technology proliferation has eroded the comparative advantage of these forces, and, with renewed great power competition, it is imperative that the Department of Defense focus on investments that support close combat formations that historically account for the majority of U.S. casualties.

Therefore, the committee urges the Department to continue its support of the CCLTF, including through sufficient resourcing of the task force and by maintaining the exceptional quality of its leadership as well as the direct reporting relationship to the Secretary of Defense and the Deputy Secretary of Defense.

Columbia-class schedule

The committee continues to have great interest in actions taken by the Department of Defense (DOD) to develop, build, and deploy *Columbia*-class ballistic missile submarines.

The committee notes that a Government Accountability Office (GAO) report, published on April 8, 2019, titled “*Columbia* Class Submarine: Overly Optimistic Cost Estimate Will Likely Lead To Budget Increases” (GAO-19-947), found that challenges with critical new systems, including the integrated power system and common missile compartment, have eroded available lead ship schedule margin such that there is less time available to address issues without resulting in overall lead ship schedule delays.

The committee is concerned by these challenges, as well as several other findings in this report, and the associated potential for delays in delivering the lead ship of the *Columbia*-class in fiscal year 2028 and deploying the lead ship in fiscal year 2031.

The committee also notes that the GAO published a report on June 6, 2018, titled “Navy Shipbuilding: Past Performance Provides Valuable Lessons for Future Investments” (GAO-18-238SP), which assessed Navy shipbuilding performance over the past 10 years and found that each of the 8 most recently delivered lead combatant ships (CVN-78, DDG-1000, LCS-1, LCS-2, LHA-6, LPD-17, SSN-774, and SSN-775) was delivered to the fleet at least 6 months late and 5 of these 8 lead ships were delayed by more than 2 years.

Therefore, not later than December 1, 2019, the committee directs the Secretary of the Navy to submit a report to the congressional defense committees on the *Columbia*-class schedule and impact of potential lead ship delays. The report shall include a description of the: (1) Current schedule margin and critical path(s) for the lead ship in order to meet planned delivery and deployment dates; (2) Potential risks to the lead ship schedule, including the associated potential schedule impact for each such risk; (3) Potential operational impacts, shipbuilding impacts, and mitigation options if the lead ship delivery date is delayed by 6 months, 12 months, 2 years, or 3 years; and (4) Recommendations for congressional or DOD action to reduce the likelihood or mitigate the impact of potential lead ship schedule delays.

DOD efforts to improve friendly force identification

The committee acknowledges that the inadvertent loss of U.S. military personnel to friendly fire is a long-standing and tragic reality of military operations, including ongoing operations in Afghanistan and Iraq. While the Department of Defense (DOD) has made strides in processes and technologies to help distinguish between friendly and enemy forces, incidents of friendly fire continue to exist. The committee is aware that joint terminal air controllers use a variety of friendly force identification systems in close air support operations and that the DOD continues to seek improve-

ments in its ability to identify friendly forces. The committee is also concerned that ongoing efforts by the DOD to upgrade these capabilities are not being adequately coordinated or synchronized to ensure the expeditious integration of new technologies and the interoperability of these systems as they are fielded. Accordingly, the committee directs the Comptroller General of the United States to evaluate the following issues:

(1) What actions has the DOD taken to ensure a common understanding of requirements and challenges related to friendly force identification by close air support aircraft, including visibility over ongoing efforts to meet those requirements;

(2) What efforts does the DOD have underway to enhance its friendly force identification capabilities, to include efforts to identify, evaluate, and incorporate new technologies in an expeditious and cost-effective manner;

(3) To what extent does the DOD coordinate and communicate friendly force identification requirements and evaluations to ensure that the programs it is developing are complementary and interoperable; and

(4) Any other issues that the Comptroller General determines appropriate with respect to efforts to improve DOD's ability to identify friendly forces and minimize friendly fire incidents.

The committee further directs the Comptroller General to provide a report to the congressional defense committees not later than 270 days after the date of the enactment of this Act.

Future Vertical Lift Capability Set 3 potential acceleration

The budget request included \$31.9 million in PE 63801A within Research, Development, Test, and Evaluation (RDT&E), Army for the continued development of the Future Long Range Assault Aircraft (FLRAA) as part of the Army's Future Vertical Lift (FVL) family of systems. The FVL family of systems consists of aircraft across five capability sets based on size, and the FLRAA effort is capability set three.

The committee understands that the FLRAA platform will replace a portion of the Army's utility helicopter fleet to provide considerable capability improvements in speed, range, agility, endurance, and sustainability as compared to current legacy utility helicopters. The committee notes that the current acquisition strategy for the FLRAA represents a traditional approach. However, the committee understands that the Army is considering multiple courses of action to accelerate this program through the use of acquisition reform authorities. Further, the committee understands that the Army is nearing completion of the Joint Multi-Role Technology Demonstration (JMR-TD) effort that successfully demonstrated several transformational vertical lift capabilities and technologies.

Given the substantial investment and knowledge gained by the successful JMR-TD, the committee expects the Army to possess a much better understanding of the technology readiness levels required for the FLRAA development program. As such, the committee believes that the Army should be in a position to reasonably accelerate the FLRAA schedule and acquisition strategy. The com-

mittee encourages the Secretary of the Army to consider using a more tailored acquisition approach for the FLRAA program, to include developing prototypes to expedite the procurement of critical technologies. The committee expects that, following any such prototyping effort, the Army would pursue a follow-on production contract using competitive procedures.

Therefore, the committee directs the Secretary of the Army to provide a briefing, not later than October 1, 2019, to the Committees on Armed Services of the Senate and House of Representatives that details a course of action to accelerate the FLRAA program, to include potential use of tailored acquisition strategies, procedures, and authorities with appropriate oversight, management, and technical rigor.

Global Broadcast System Technologies

The committee recognizes that new Global Broadcast System (GBS) technologies and services may be able to augment satellite communication (SATCOM) bandwidth for the warfighter at both home-base and deployed locations where users continue to struggle with congested networks. The GBS is a critical element of the Department of Defense's (DOD) Intelligence, Surveillance, and Reconnaissance capability and, though its primary focus has been to transmit full motion video from unmanned aircraft systems to tactically deployed forces, it could have value for all types of data needed by the warfighter in a deployed or garrison environment. Portable, rucksack GBS systems could provide a cost-effective way of supporting those goals as the DOD moves into a new era of hybrid SATCOM networks, the innovative use of GBS should be considered as the Department decides on how to provide a holistic solution.

The committee encourages the DOD to procure and rapidly field commercially-available, secure Satellite Portable Receive Suites and Rucksack Portable Receive Suites to test their ability and contribute to meeting communications requirements for deployed warfighter operations as well as base installation operational training activities.

Guided missile frigate (FFG(X))

The committee applauds the Navy's decision to procure a guided missile frigate (FFG(X)) with increased lethality, survivability, and endurance to meet the requirement for Small Surface Combatants in the most recent Navy Force Structure Assessment. While maintaining the Navy's "high/low" mix of ships, the FFG(X) program greatly expands upon the capabilities of the Littoral Combat Ship program, returning to the force and improving on many of the multi-mission warfighting attributes of *Oliver Hazard Perry*-class frigates, including the ability to operate in more contested environments.

As the Navy prepares to issue the FFG(X) request for proposals, the committee continues to support a full and open competition with a single source detail design and construction award in fiscal year 2020. The committee also supports the Navy's approach to commonality with existing Navy platforms, such as the Mark-41 Vertical Launch System and Enterprise Air Surveillance Radar, to

reduce acquisition and sustainment costs. The committee encourages the Navy not to sacrifice warfighting capability for other considerations.

Improved Turbine Engine Program

The Improved Turbine Engine Program (ITEP) is an acquisition program to develop a more powerful engine that would enhance performance at high altitudes and at elevated temperatures while improving operational readiness of the current UH-60 Blackhawk and AH-64 Apache helicopter fleets. The ITEP also has a goal to improve fuel efficiency, which will ease the mission of sustainment forces.

The committee notes that this program represents a cost-effective approach to modernizing aviation assets. Therefore, the committee encourages the Army to pursue opportunities to accelerate the fielding of this capability.

Improving Air Force acquisition and sustainment processes

The committee notes that the Air Force has identified acquisition reform as a key priority and has made progress in taking advantage of authorities that the Congress has provided in recent National Defense Authorization Acts to accelerate prototyping and experimentation. The Air Force reports that it has cut 93 years from previous program schedules, and it cites this as a positive indicator of progress toward the goal of reducing timelines and enabling more agile fielding of systems and technology.

The committee supports the Air Force's effort to fully use authorities provided by the Congress to improve its acquisition processes while ensuring that proper internal and external oversight over programs is maintained, deployed systems are operationally effective and suitable, and systems are developed, deployed, and sustained in the most cost-effective and -efficient manner. The committee encourages the Air Force to continue focusing on improvements in these areas while leveraging proven methods to accelerate acquisition and sustainment across the total enterprise.

Marine Corps nano vertical takeoff and landing unmanned aerial systems

The Marine Corps has indicated a need for Nano Vertical Takeoff and Landing Unmanned Aerial Systems for the purpose of providing individual squads with an airborne intelligence, surveillance, and reconnaissance (ISR) capability with real time video and imagery of the tactical environment. The Army is pursuing a similar solution, the Soldier Borne Sensor program, for its squads and small units. The committee encourages the Marine Corps to review the Army's effort, which may help facilitate development of an ISR capability that can increase the lethality and survivability of Marine Corps squads.

Metrics for evaluating potential impacts to airspace

The committee is aware of ongoing discussions with individual project developers, military installations, and the Services regarding proposed energy projects and potential conflicts with military airspace needs. The committee urges the Department of Defense to

also initiate non-project-specific policy-level discussions with industry, affected military installations, and military service leadership to develop clearly defined, objective criteria, measures, and metrics that provide guidance as to when potential impacts to airspace rise to unacceptable levels. This will help installations assess proposed projects and assist industry in avoiding areas of concern.

Mobile aircrew restraint system

The committee noted in the the Senate report accompanying S. 1519 (S. Rept. 115–125) of the National Defense Authorization Act for Fiscal Year 2018 that the use of the Mobile Aircrew Restraint System (MARS) by the U.S. Air Force on its fleet of HH–60 aircraft is to provide survivability improvements over legacy restraint systems. The committee encouraged the U.S. Army to utilize available testing and approval data from the Air Force for incorporation into the UH–60 aircraft fleet. However, there has been little progress on the potential incorporation of the MARS on the Army’s UH–60 fleet.

Therefore, the committee directs the Secretary of the Army to provide a briefing, not later than October 1, 2019, on the MARS, including: the status of the Army’s Airworthiness Release (AWR) on the use of MARS, potential costs to implement AWR modifications, and the timeline to execute AWR implementation.

Modular rugged power devices

The committee notes that National Guard units are frequently deployed to assist with emergency management situations, including responding to natural disasters. Often in these circumstances, the deployed servicemembers cannot depend upon the established electrical grid for energy needs in support of the mission, and mobile power generation is critical to support their operations. Therefore, the committee encourages the Chief of the National Guard Bureau to consider acquiring modular rugged power devices that are self-contained and lightweight zero-emission power generation systems to meet equipping and energy needs.

Mounted A–PNT solutions

Assured Positioning, Navigation, and Timing (A–PNT) solutions are critical to the warfighter due to the reliance of military systems on the Global Positioning System (GPS) and the ability of near-peer competitors to deny or disrupt access to GPS. In order to address this challenge, the Army has established a cross-functional team for A–PNT to ensure that the Army’s ground maneuver forces have access to trusted PNT information even in a GPS-denied environment.

The committee understands that the Army has made progress in the fielding of a Mounted A–PNT solution (MAPS) for Army ground platforms and encourages the Army to field the most capable solution as quickly as possible. The committee directs the Secretary of the Army to provide a briefing to the congressional defense committees by October 1, 2019, on the status of the Army’s MAPS program to include fielding timelines, system capabilities, and how the system will be scalable and compatible with future upgrades.

MQ-1 Gray Eagle briefing

The committee notes the significant capability that the MQ-1 Gray Eagle fleet of unmanned aircraft systems (UAS) provides to the Army. This capability is game-changing and reduces risk for Army soldiers by providing extended surveillance coverage and the ability to self-transit to distant locations by virtue of its long endurance and ease of use, itself deriving from its automatic takeoff and landing system, which the aircraft to be launched and recovered with minimal operator interaction.

The current fleet consists of over 200 Gray Eagle aircraft, half of which are the original configuration and the other half are the Gray Eagle Extended Range (GE-ER) configuration. The GE-ER is the next-generation advanced derivative, providing longer-endurance UAS surveillance, communications relay, and weapons delivery missions in support of maneuver.

However, the committee is concerned that a mixed fleet of Gray Eagle aircraft may not be sufficient to meeting ever increasing operational requirements.

Therefore, the committee directs the Secretary of the Army to provide a briefing, not later than October 1, 2019, to the Senate Armed Services Committee on the capabilities and capacity of the MQ-1 Gray Eagle fleet. The briefing shall include:

- (1) A fleet optimization plan to meet long-term surveillance requirements in multi-domain operations in support of the National Defense Strategy;
- (2) Potential readiness impacts to the Army of operating a mixed fleet of Gray Eagle aircraft; and
- (3) Cost-benefit analysis comparing operations of the current mixed fleet of aircraft to operations of a pure GE-ER fleet.

Multiyear block buy for F-35

The committee notes that both the production and sustainment costs for the F-35 program continue to decrease. However, the committee believes that further savings may be realized through multiyear block buy contracts.

Therefore, the committee directs the Under Secretary of Defense for Acquisition and Sustainment, no later than February 1, 2020, to deliver a report to the congressional defense committees that examines the business case for a combined domestic and international 3-to-5 year multiyear contract for procurement of the F-35A/B/C, beginning with Lot 15. The report shall include: analysis of the appropriate government furnished equipment, such as propulsion systems savings; an assessment of the design stability and technical risk, given the Block 4 changes introduced to the baseline beginning in Lot 15; and an evaluation of the potential to achieve significant net savings for the Department of Defense and international partners through economies of scale. Additionally, the report shall articulate the optimal multiyear contract length for the F-35.

Operational energy of generator sets

Generator sets used by the Services supply critical power that supports the Army's top modernization priorities to make its soldiers and units more lethal. The committee is pleased with Depart-

ment of Defense (DOD) efforts to increase fuel efficiency, improve combat capability, decrease tactical risk, and reduce the cost of generators. Specifically, the committee is encouraged by efforts to reduce fuel requirements by eliminating the need to operate redundant generator sets.

The Army and Marine Corps are incorporating microgrid control capability on all current 30kW to 60kW generator set models, which automatically start and stop generator sets based on load demand. This capability increases fuel savings for the DOD and improves system-level reliability. The committee also encourages the Services to incorporate an energy storage module with generator sets to provide more energy-efficient power. This ability will further increase system efficiency and reliability, decrease maintenance frequency, enable silent watch operations, and facilitate integration of renewable energy sources.

Persistent Intelligence, Surveillance and Reconnaissance (ISR) and heavy payloads

The committee remains concerned that the combatant commands are not being given sufficient airborne intelligence, surveillance, and reconnaissance (ISR) support assets to adequately provide force protection, situational awareness, maritime domain awareness (MDA), combat identification, high-precision geolocation, and other necessary capabilities to support deployed forces as they execute missions. In their respective testimonies before the Senate Armed Services Committee, the Combatant Commanders of U.S. Africa Command (AFRICOM), U.S. European Command (EUCOM), U.S. Indo-Pacific Command (INDO-PACOM), and U.S. Southern Command (SOUTHCOM) all stated that they have significant gaps between ISR requirements and ISR capacity.

Increased ISR could enhance AFRICOM's Counter-Violent Extremist Organizations missions, EUCOM's European Deterrence Initiative (EDI), INDO-PACOM's MDA, and SOUTHCOM's counter-narcotics missions. The Commander of INDO-PACOM stated that "ISR is a critical need in the region" and that "less than half of my requirements are served by the ISR that's available in the region." The Commander of SOUTHCOM testified that SOUTHCOM is "deficient in [its] ISR for the counter-narcotics mission." He further stated that the Joint Interagency Task Force-South (JIATFS) only interdicted about six percent of known drug movements. The committee agrees with the testimony of the Commander of EUCOM—that there is a global shortage of high demand, low density assets and that there may be commercial technologies that could help mitigate the capability gaps.

The committee notes that there are commercial technologies in development that could help address many of the combatant commands' ISR gaps. Heavy payload, solar-powered unmanned aerial vehicles (UAV) are being developed that, because of their unique power source and electric engines, may be able to operate aloft and on station in an enduring, quiet, and persistent manner. These systems present the possibility of basing in friendly territory and deployment in advance of planned missions to provide ISR pre-mission, during the mission, and post-mission. Some solar-powered candidate systems have modular designs and payload capacities of

more than 300 pounds. These assets may be able to serve as a multi-intelligence platform able to provide agile sensor suites in response to mission requirements.

The technological challenge to realizing the potential of such systems would be developing payloads that have overall dependability and sufficient reliability to stay aloft and continue performing missions for long periods of time. Such reliability is not usually found in current airborne ISR systems.

The committee supports additional resources for payload improvements and to evaluate a persistent, quiet, heavy payload, solar-powered, multi-intelligence ISR asset.

Personal recovery devices for servicemembers

As the Army pivots to great power competition and multi-domain operations, Assured-Position, Navigation, and Timing (A-PNT) technologies will be critical in enabling the U.S. military to conduct operations in a Global Positioning System-contested environment. Furthermore, the Personnel Recovery Support System (PRSS), which includes the PRSS 1b Secure Personal Locator Beacon, can leverage A-PNT technology to assist in the location of missing and captured servicemembers on the battlefield.

The committee supports the Army's initial procurement and deployment of a personal recovery device that can operate in GPS-denied or -degraded environments. In addition, the committee notes the Army has stood up a cross-functional team to rapidly assess material development solutions to address the A-PNT mission area and potential capability gaps. Therefore, the committee encourages the Army to continue investment and deployment of proven A-PNT solutions and PRSSs.

Reliability growth of systems on Ford-class aircraft carriers

The committee notes that the Government Accountability Office (GAO) published a report on June 6, 2018, titled "Navy Shipbuilding: Past Performance Provides Valuable Lessons for Future Investments" (GAO-18-238SP), which assessed Navy shipbuilding performance over the past 10 years and concluded that ". . . the Navy's shipbuilding programs have had years of construction delays and, even when the ships eventually reached the fleet, they often fell short of quality and performance expectations."

The committee is concerned that Navy ships are being delivered to the fleet with incomplete and underperforming systems, which often leads to the reliability of key systems falling short of Navy requirements.

The reliability of key systems on the lead ship in the Ford-class of aircraft carriers, USS *Gerald R. Ford* (CVN-78), is particularly concerning. While the Navy accepted delivery of CVN-78 from the shipbuilder in May 2017, 20 months later than initially planned, reliability measured through September 30, 2018, of four key systems is either orders of magnitude below the Navy's stated requirement or unknown.

As reported by the Department of Defense's Director of Operational Test and Evaluation (DOT&E) in December 2018, through the first 747 shipboard launches, the Electromagnetic Aircraft Launch System (EMALS) suffered 10 critical failures, well below

the requirement of 4,166 mean cycles between critical failures, where a cycle represents the launch of one aircraft. Through the first 763 attempted shipboard landings, the Advanced Arresting Gear (AAG) suffered 10 operational mission failures, well below the re-baselined reliability growth curve and well below the requirement of 16,500 mean cycles between operational mission failures, where a cycle represents the recovery of one aircraft. For the Dual Band Radar (DBR) and Advanced Weapons Elevators (AWE), only engineering reliability estimates, not actual data, have been provided by the Navy to the DOT&E.

The committee is concerned that inadequate reliability of key shipboard systems, such as those on CVN-78, will result in degraded operational performance that will not meet combatant commander needs.

Therefore, beginning on October 1, 2019, the committee directs the Secretary of the Navy to submit quarterly reports to the congressional defense committees on the reliability of the EMALS, AAG, DBR, and AWE until each system meets its full reliability requirement. Each report shall utilize the DOT&E measures and metrics to report measured reliability for each system for the previous fiscal year quarter. Each report shall also include projected reliability growth estimates, in graphical and tabular form, to achieve the Navy's reliability requirement for each system with the associated schedule. In addition, the reports shall include descriptions of actions being taken to improve the reliability of each system.

Report on future force design alternatives for Department of the Air Force

While the committee acknowledges that the Air Force force structure report as directed by section 1064 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115-91) recommended that the Air Force grow to 386 squadrons from the current 312, it also observes that this recommendation emerged from analysis using current operations plans and concepts of operations. The committee believes that alternative force designs could significantly change the inventory requirements.

Therefore, the committee directs the Secretary of the Air Force to submit a report to the congressional defense committees, not later than March 1, 2020, on future force design alternatives for the Air Force. The Secretary shall ensure that the report includes the following matters with an accompanying unclassified summary:

- (1) An assessment of the analysis used to conclude that the Air Force requires growth to 386 operational squadrons;
- (2) An assessment of the anticipated global strategic operating environment through 2040;
- (3) Required capabilities and concepts that are common to all future force design alternatives;
- (4) Multi-domain command and control architectures and associated communication capabilities required to effectively implement the future force design;
- (5) Prioritized technologies and prototyping required for development and fielding to support the future force design;

- (6) Other capabilities and capacities required for the Air Force to be an effective joint and coalition warfighting partner; and
- (7) Other matters that the Secretary considers relevant for future force designs.

Report on impact to force structure of using aircraft for missile defense

The committee notes that the 2019 Missile Defense Review (MDR) tasked the Secretary of the Air Force and the Director of the Missile Defense Agency to deliver a report on how best to integrate the F-35 into the missile defense system for both regional and homeland defense. The committee is concerned that the potential use of air assets to meet theater missile defense requirements could put additional mission demand on an already limited force structure and is not accounted for in the current Air Force force structure planning.

Therefore, the committee directs the Secretary of the Air Force to conduct a study on how this additional mission requirement would change combatant commander requests for forces, including impacts to basing and Time Phased Force Development Data in current war plans. The Secretary shall provide a report consisting of the findings of this study to the congressional defense committees no later than January 1, 2020.

Robotics and autonomous systems

The committee recognizes the importance and growing role of robotics and autonomous systems on the battlefield. For example, the committee acknowledges that the Army's Robotic and Autonomous Systems Strategy and the Functional Concept for Movement and Maneuver identifies robotic systems as a critical enabling technology. Further, the committee understands that these capabilities at the Brigade Combat Team level may facilitate the effective execution of missions in a contested multi-domain environment.

With the establishment of cross functional teams and Army Futures Command, the Army is bringing various Department of Defense stakeholders together to explore concepts, ideas, and develop potential solutions. The committee urges the Army to continue creating opportunities to explore options in the advancement of emerging robotic and autonomous technologies for fielding at echelon across all of its warfighting functions.

Therefore, the committee directs the Secretary of the Army to provide a briefing, not later than October 1, 2019, on robotics and autonomous systems to the Senate Armed Services Committee. The briefing shall include:

- (1) The feasibility, acceptability, and suitability of establishing a Robotic Development Center nested within the Army's Maneuver Center of Excellence; and
- (2) The current and future plans to build partnerships with institutions of higher education, government laboratories, and industry in order to lead the integrated development of prototypes.

Size, weight, power reductions of naval combat systems

The committee understands that the Navy and Marine Corps are interested in options to reduce the size, weight, and power (SWaP) of mission systems. By migrating applications from multiple under-utilized servers to fewer optimally-utilized physical servers, the Navy may be able to significantly reduce footprint, hardware costs, energy costs, and sustainment costs.

To fully understand the potential opportunity of SWaP reductions in mission systems, the committee directs the Secretary of the Navy to provide a briefing to the Senate Armed Services Committee, not later than October 1, 2019, on the Department of the Navy's efforts to reduce the SWaP of such systems. The briefing shall include, at a minimum: (1) A description of ongoing SWaP reduction efforts for mission systems; (2) An analysis by the Program Executive Office for Integrated Warfare Systems (PEO IWS) of programs and projects that could be virtualized on existing PEO IWS hardware baselines; (3) An evaluation of the Navy's ability to virtualize and consolidate existing warfare systems onto virtual platforms; (4) An assessment of the Navy's ability to migrate applications to platforms that utilize "cloud"-type technology; and (5) An estimation of savings that could be achieved through SWaP reduction efforts.

Small-Unit Support Vehicle replacement

As the Department of Defense pivots to addressing the demands of great-power competition, the committee understands that the military must refocus on operating in a cold-weather environment. The committee acknowledges that the Small-Unit Support Vehicle (SUSV) is uniquely capable of supporting maneuver forces in cold-weather and off-road operations. With the capacity to transport 14 personnel and a footprint of just 1.8 pounds per square inch, the SUSV is extremely well-equipped to traverse difficult terrain such as deep snow, tundra, mud, swamps, and wetlands.

However, as the SUSV ages, the readiness and cost of maintaining the fleet of 30-year-old vehicles may become unsustainable. The committee notes the U.S. Army's recent decision to approve the Cold-Weather All-Terrain Vehicle as the replacement for the SUSV. The committee encourages the Army to procure its entire 163-vehicle Army Acquisition Objective and consider further fielding to attain a fleet similar in size to the SUSV's original fleet size. Finally, the committee encourages other military services to consider joining the Army's procurement in order to meet their cold-weather, all-terrain vehicle transport needs.

Submarine industrial base and parts availability

The committee commends the Navy on its efforts to evaluate and improve material demand visibility from submarine public shipyards. The committee is aware that the lack of material availability for *Virginia*-class submarine maintenance has contributed to an increased reliance on cannibalization of material from operational platforms, consequently decreasing readiness. The committee is also aware of efforts to improve and forecast material demand, which would enable more timely procurement actions to support the public shipyards.

The committee encourages the Navy to better communicate the capability of their submarine forecasting model and its impact on material obsolescence and manufacturing capability in industry to the Committees on Armed Services of the Senate and the House of Representatives. The committee also encourages the Navy to communicate needs in a timely fashion, such as a need for Research, Development, Test, and Evaluation funding, in order to further reduce material and parts availability issues at public shipyards.

The committee encourages the Secretary of Defense to support shipbuilding industrial base initiatives in order to maintain readiness and a strong submarine industrial base.

Supporting and expanding the submarine sub-contracting industrial base

The committee believes that expanding the capability and capacity of the submarine industrial base workforce is imperative to keeping pace with Navy shipbuilding requirements. Numerous manufacturing capabilities must be addressed, including the need for more qualified and Navy-certified welders.

The committee is concerned that the Navy-certified welding workforce may be insufficient to meet Navy demands on time with the required quality. The committee understands that Navy-certified welders must undergo significant training and possess a higher level of job skills compared to the standard welding workforce. The committee further understands that the welding of high strength submarine steel requires welders to be qualified to MIL-STD-1688 and that this work must be performed in Navy-certified facilities.

The committee is aware of the need to support the specific skill sets necessary to enable the Navy to achieve the submarine build plan. The committee encourages the Navy to conduct a thorough assessment of the current workforce and produce a plan for closing the gaps in capability and capacity.

Survivable artillery

The committee understands that there is a need for self-propelled, survivable 155mm and 105mm howitzer solutions that can emplace, fire, and displace rapidly enough to evade enemy counter-battery fires. The committee strongly encourages Army leaders to allocate funds to acquire both systems in sufficient quantity to address the requesting units' immediate needs and to further initiate an Army-wide fielding of these enhanced capabilities. Light, self-propelled 155mm and 105mm artillery systems will substantially improve the deterrence posture of the U.S. Army and allied armies in Europe and Asia that will face sophisticated, quick-fire counter-battery systems in the event of a conflict.

Tactical wheeled vehicle industrial base

The committee is concerned that the fiscal year 2020 budget request reduced funding from what was planned in the future years defense program for the majority of the Army's tactical wheeled vehicle fleets, including the Joint Light Tactical Vehicles, the Family of Medium Tactical Vehicles, and the Heavy Expanded Mobile Tactical Trucks. The committee acknowledges that reducing funding

across the light, medium, and heavy tactical wheeled vehicle fleet could threaten the fragile networks of suppliers, many of which are small businesses. Such businesses may be forced to exit the defense industry or cease operations altogether. In addition, if production does not support minimum sustaining rates for the tactical wheeled vehicle industrial base, it would impact overall readiness rates by reducing the availability of parts and spares.

Therefore, the committee encourages the Army to pursue predictable funding levels in the future for the tactical wheeled vehicle industrial base in order to avoid production breaks that could adversely impact Army readiness and modernization efforts.

TH-57 replacement

The committee supports the replacement of the Department of the Navy's current fleet of TH-57 training helicopters with the Advanced Helicopter Training System, included in the President's budget request, to ensure continued training of the student naval aviators in the Navy, Marine Corps, and Coast Guard. The committee strongly encourages the Secretary of the Navy to ensure predictable and sufficient funding through the future years defense program and to work to expedite procurement of the Advanced Helicopter Training System aircraft, thereby ensuring that rotary-wing training is not interrupted.

UH-1N replacement

The committee supports the procurement and fielding of the MH-139 aircraft as the replacement for the UH-1N. The committee notes that the contract for up to 84 helicopters, training devices and associated support equipment, and operations, maintenance, training systems, and support equipment is valued at \$2.4 billion. The committee also understands that the fielding of the MH-139 will close significant mission capability gaps associated with the current fleet of UH-1N aircraft. The committee strongly encourages the Secretary of the Air Force to maintain predictable and sufficient funding through the future years defense program, ensuring that the critical missions of nuclear deterrence and transportation of U.S. government and security forces are executed. The committee also encourages the Air Force to consider expediting procurement of the MH-139 aircraft.

Therefore, the committee directs the Secretary of the Air Force to provide a briefing to the congressional defense committees on the UH-1N replacement program by October 1, 2019. That briefing shall include information on the following topics:

- (1) The timeline for procurement and fielding of the MH-139 at Minuteman III bases;
- (2) Any military construction projects needed to field the helicopter and cost and schedule for any such projects;
- (3) The program costs to procure and operate the MH-139 fleet; and
- (4) The implications of potential program delay for procurement or operating and support costs.

Unmanned aerial systems training locations

The committee recognizes the vital importance of providing the best trained unmanned aerial systems (UAS) operators and maintainers in order to meet operational and training requirements in support of the National Defense Strategy. In order to meet the unique and specific training requirements for UAS operations, the Army needs training locations that possesses dedicated restricted air space, favorable weather conditions, access to large military operating areas, varied types of terrain, and available spectrum.

Therefore, as the Army conducts its assessment of the best possible locations for UAS training, the committee encourages the Secretary of the Army to consider the attributes to select a training location that: (1) Best meets the requirements of training; and (2) Possesses the capability to increase throughput for both initial qualification and unit training. Further, before any assessment progresses to a stage where specific courses of action are being evaluated, the committee directs the Army to provide a briefing to the congressional defense committees on specific criteria that will be used to conduct the assessment.

Vehicle Reconnaissance System

The committee is encouraged by the Army's recent award of the Soldier Borne Sensor (SBS) program. The committee has been supportive of this program due to the significant need to provide squads and small units with enhanced intelligence, surveillance, and reconnaissance (ISR) capabilities.

The committee is interested in how this program could further increase situational awareness in ground combat vehicle operations. Specifically, the committee is interested in the potential for adapting the SBS technology to develop a vehicle reconnaissance system for use on-board ground combat vehicles and unmanned vehicles. Such a system would allow for on-demand ISR ahead of vehicles and convoys on the move and around stationary vehicles.

Therefore, the committee directs the Secretaries of the Army and Navy to brief the congressional defense committees, not later than February 1, 2020, on existing plans for incorporating a vehicle reconnaissance system into both manned and unmanned ground combat vehicles. At a minimum, this briefing should include an assessment of current technologies being examined and other efforts for incorporating such systems on current and future vehicle platforms.

Virginia-class hull treatment briefing

The committee is aware of press reporting from 2011 and 2017 that indicated problems with *Virginia*-class submarine hull treatments, including delamination.

The committee is concerned that the *Virginia*-class submarine program may continue to experience challenges with hull treatments, including with the "Mold-in-Place" (MIP) material.

Therefore the committee directs the Secretary of the Navy, not later than October 1, 2019, to provide a briefing to the Senate Armed Services Committee that describes the following related to the *Virginia*-class submarine program: (1) Past and current challenges with hull treatments; (2) Percentage of original hull treat-

ment remaining on each delivered *Virginia*-class submarine; (3) Cost of MIP repair and replacement by *Virginia*-class submarine hull number; (4) Assessment of the operational implications of degraded hull treatments, specifically reduced MIP coverage, including interruptions of operational tasking; (5) Root causes and corrective actions for hull treatment deficiencies; and (6) The approach to hull treatments on the *Columbia*-class submarine program.

Western Army Aviation Training Site (WAATS) for FMS

The committee acknowledges that the Western Army Aviation Training Site (WAATS) in Marana, Arizona, is a premier rotary wing training location and is integral to the mission of the U.S. Army Aviation Center of Excellence (USAACE) to provide trained and ready aircrews in support the National Defense Strategy. However, the committee notes that the required increase of U.S. personnel throughput at the USAACE due to pilot shortages in the Active-Duty component, Army National Guard, and Army Reserve limits the available training quotas of foreign military students sent by our allies and partners.

The WAATS currently provides both rated and nonrated crew flight training for both U.S. and foreign military students in UH-60 Blackhawk and UH-72 Lakota aircraft courses and possesses excess capacity to assist USAACE throughput. Additionally, the WAATS provides hundreds of square miles of airspace specifically dedicated to aviation training and an above average number of days allowing flight operations.

Therefore, the committee requires the Secretary of the Army to brief the Senate Armed Services Committee, not later than October, 1, 2019, on the aviation training at the WAATS and include the:

- (1) Forecasted schedule for UH-60 and UH-72 flight training courses in fiscal years 2020–2023;
- (2) Feasibility and suitability of the WAATS to conduct all foreign military flight training for UH-60 and UH-72 courses;
- (3) Excess capacity at the WAATS, including classrooms, simulators, hangar space, and aircraft parking; and
- (4) Potential expansion of training missions at the WAATS.

TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Subtitle A—Authorization of Appropriations

Authorization of appropriations (sec. 201)

The committee recommends a provision that would authorize the appropriations for research, development, test, and evaluation activities at the levels identified in section 4201 of division D of this Act.

Subtitle B—Program Requirements, Restrictions, and Limitations

Development and acquisition strategy to procure secure, low probability of detection data link network capa- bility (sec. 211)

The committee recommends a provision that would require the Chief of Staff of the Air Force (CSAF) and Chief of Naval Operations (CNO) to develop a joint development and acquisition strategy to procure a resilient, low latency, and low probability of detection data link network capability that would enable effective operation in the contested environments highlighted in the National Defense Strategy. The strategy's solution should ensure that the network is affordable with minimal impact to existing host platforms and minimal overall integration costs. The CSAF and CNO would submit the strategy to the congressional defense committees no later than March 1, 2020.

Additionally, the provision would limit the obligation or expenditure of fiscal year 2020 funds for operation and maintenance for the Office of the Secretary of the Air Force and the Office of the Secretary of the Navy to 50 percent of those funds until 15 days after submission of the plan required in the provision.

Establishment of secure next-generation wireless network (5G) infrastructure for the Nevada Test and Training Range and base infrastructure (sec. 212)

The committee recommends a provision, funded elsewhere in this Act, that would require the Secretary of Defense to establish a secure fifth generation (5G) wireless network at the Nevada Test and Training Range as part of the Department of Defense (DOD) test infrastructure in order to provide an advanced cellular range for the Department. The committee recognizes the revolutionary effect that 5G technology will have on the DOD. However, the committee is concerned that the DOD lacks the ability to test and develop tactics to leverage 5G technology as well as to negate enemy use of this advanced capability.

In addition, the provision would require the installation of a secure 5G base infrastructure network at a second location in order to improve the DOD's understanding of the impacts of 5G technology on continental United States base operations.

Limitation and report on Indirect Fire Protection Capability Increment 2 enduring capability (sec. 213)

The committee recommends a provision that would prohibit the obligation or expenditure of any funds for fiscal year 2020 for the Army's Indirect Fire Protection Capability Increment 2 (IFPC Inc 2) enduring capability program until the Secretary of the Army submits a report to the congressional defense committees containing: (1) An assessment of whether the enduring IFPC Inc 2 requirements are still relevant for the threat anticipated for the period when the program would be fielded; (2) A list of candidate systems considered for IFPC Inc 2, including those developed outside of the Army; (3) An assessment of the systems against representative threats; (4) An assessment of other relevant characteristics, including cost of development, cost per round, technological maturity, and logistics and sustainment; and (5) A plan for how the Army would integrate the chosen system into the Integrated Air and Missile Defense Battle Command System.

The provision would also require the Secretary of the Army to identify a program of record in the President's budget request for fiscal year 2021 that addresses the Army's responsibility per Department of Defense Directive 5100.01 to "conduct air and missile defense to support joint campaigns," specifically as it pertains to defense against supersonic cruise missiles.

The committee notes that the Army's plan to procure two Iron Dome batteries in accordance with section 112 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232) meets the intent of the Congress as an interim solution for defense against cruise missiles. The committee is concerned, however, that the Army has artificially constrained the options considered for the enduring program, including holding some candidate systems to different standards than other systems and excluding some options altogether. Further, the committee is concerned that the requirements for IFPC Inc 2 are not representative of the current threat posed to U.S. and allied air bases and other fixed sites in theater and will be even further disconnected from the future threat. The committee commends the efforts of Army Futures Command in this area thus far and encourages the command to aggressively pursue a technological solution that will provide the defense necessary to enable joint theater campaign plans.

Electromagnetic spectrum sharing research and development program (sec. 214)

The committee recommends a provision that would require the Secretary of Defense, in consultation with the Administrator of the National Telecommunications and Information Administration and the Federal Communications Commission, to establish an electromagnetic spectrum sharing research and development program for fifth-generation wireless network technologies, Federal systems,

and non-Federal incumbent systems that would focus on expanding sharing of electromagnetic spectrum. The committee believes that this program is important in assessing the benefits and risks to the Department of Defense (DOD) of spectrum sharing and its impacts on the warfighter.

The provision would require, within 180 days, the establishment of test beds to demonstrate the potential of cohabitation between these systems. The provision would also require the Secretary of Defense, in coordination with the appropriate Federal agencies, to propose a strategy to integrate Federal and non-Federal electromagnetic spectrum enterprises not later than May 1, 2020. The Secretary of Defense, in consultation with the Administrator and the Commission, would also provide to the relevant congressional committees periodic briefings on the status of the test beds, including the incorporation of sharing technologies into international standards, and reports identifying recommendations to facilitate sharing frameworks in the bands of electromagnetic spectrum that are the subject of the test beds.

Sense of the Senate on the Advanced Battle Management System (sec. 215)

The committee recommends a provision that would express the sense of the Senate on the Air Force's approach to the Advanced Battle Management System (ABMS). The committee is supportive of the Air Force's vision for the ABMS as a system of systems that can integrate and fuse data from disaggregated sensors. However, the committee remains concerned about the speed of fielding based on the current projected end of life for the Joint Surveillance and Target Attack Radar System aircraft.

Modification of proof of concept commercialization program (sec. 216)

The committee recommends a provision that would make the pilot program authorized in section 1603 of the National Defense Authorization Act for Fiscal Year 2014 (Public Law 113-66; 10 U.S.C. 2359 note) permanent. The provision would also add a section that includes commercialization of dual-use technology with a focus on priority defense technology areas that attract public and private sector funding as well as private sector investment capital, including from venture capital firms in the United States.

Modification of Defense quantum information science and technology research and development program (sec. 217)

The committee recommends a provision that would amend section 234 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232) by specifying a list of organizations to be consulted in developing the research and investment plan required in the provision and by requiring the Department of Defense to develop, in coordination with appropriate Federal entities, a taxonomy for quantum science activities and requirements for relevant technology and standards.

Technology and National Security Fellowship (sec. 218)

The committee recommends a provision that would authorize a technology and national security fellowship for individuals that possess an undergraduate or graduate degree that focuses on science, technology, engineering, or mathematics course work.

Direct Air Capture and Blue Carbon Removal Technology Program (sec. 219)

The committee recommends a provision that would require the Secretary of Defense, in coordination with the Secretary of Homeland Security, the Secretary of Energy, and the heads of other Federal agencies as deemed appropriate by the Secretary of Defense, to carry out a program on the research, development, testing, evaluation, study, and demonstration of technologies related to blue carbon capture and direct air capture.

Subtitle C—Reports and Other Matters

National security emerging biotechnologies research and development program (sec. 231)

The committee recommends a provision that would direct the Department of Defense (DOD) to develop a coordinated research program in emerging biotechnologies. The committee notes that advances are occurring in biotechnology at an intersection of traditional biology, synthetic biology, engineering, and biotechnology. Advances in these areas could lead to improvement in many capabilities relevant to defense missions, including enhancing servicemembers' performance, increasing lethality and survivability, and improving battlefield healthcare. This progress could also yield commercial advances in areas such as gene editing, cloning, and faster development of new drugs and vaccines.

Such potential advances in emerging biotechnologies include: new bacteria or implantable devices that could enhance warfighter cognitive and physical performance; improved information and information use to create more realistic computer simulations of warfighter physiology; development of biosensors to monitor warfighter performance or environmental conditions; engineered biomaterials for defense applications; and improved novel wound-healing or casualty care and diagnosis technologies and systems.

The committee believes that the Department needs a coordinated research effort to ensure that programs in this area are consistently aligned to current DOD strategies and informed by global and commercial developments in the field. Further, since these technologies may also develop into future threats to the military and the Nation, the provision would require the Department to develop policies on the control of research information and products as needed to protect national security. The provision would further require the Secretary of Defense, in carrying out this program, to develop strong partnerships with industry, universities, and inter-agency partners so that the DOD can leverage the best investments made across the country and world and to ensure that the biotechnology research mission area is served by the best possible technical talent and world-class research facilities.

Cyber science and technology activities roadmap and reports (sec. 232)

The committee recommends a provision that would direct the Under Secretary of Defense for Research and Engineering to develop a roadmap for the science and technology activities of the Department of Defense in support of the Department's cyber needs and missions. The provision would also require the Under Secretary to submit an annual report on these activities. The committee believes that long-term science and technology cyber research is critical to developing capabilities that will enable the warfighter to maintain dominance in cyberspace in the long run.

Requiring certain microelectronics products and services meet trusted supply chain and operational security standards (sec. 233)

The committee recommends a provision that would require the Secretary of Defense to establish, by January 1, 2021, supply chain and operational security standards and requirements for microelectronics and to purchase microelectronics and related services to the maximum practicable extent from providers that meet these standards. In addition, the provision would require that the Secretary ensure that manufacturers of secure microelectronics are able to use the same production lines, facilities, and personnel for microelectronics products and related services intended for both Department of Defense (DOD) and commercial end-uses. The provision would require the Secretary to take such actions as are necessary and appropriate to foster a competitive secure industrial base. The committee directs the Secretary of Defense to brief the congressional defense committees on the supply chain and operational security standards not later than February 1, 2021.

The committee believes that changes are needed to the traditional approach to ensuring a supply of trusted microelectronics. The current approach is not economical for existing or prospective suppliers of trusted microelectronics, because the DOD buys most of its microelectronics from purely commercial companies and prevents its trusted suppliers from selling commercially products that are built on trusted microelectronics production lines. The committee encourages the Secretary of Defense to work with Five Eyes partners, North Atlantic Treaty Organization (NATO) allies, and other allies to promote a shared secure microelectronics industrial base for secure 5G and other applications.

The committee believes that the standards and procurement preferences that the DOD develops for secure microelectronics products and services should be developed such that they are applicable for adoption by the Federal government, our allies, the carriers implementing 5G wireless networks, critical infrastructure, and other industrial sectors where security and trust are vital. The committee also encourages the Secretary of Defense to continue pursuing additional means to secure microelectronics. These include split fabrication approaches, design and engineering innovations to defeat theft and compromise, and other measures to achieve security on networks and using devices that are not trusted.

**Technical correction to Global Research Watch Program
(sec. 234)**

The committee recommends a provision that makes a technical correction to section 2365 of title 10, United States Code.

Additional technology areas for expedited access to technical talent (sec. 235)

The committee recommends a provision that would add rapid prototyping and infrastructure resilience to the technical areas eligible for the rapid contracting processes authorized under section 217 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91). The committee notes that these processes are intended to give Department of Defense (DOD) officials expedited access to world-class technical talent at universities, for the purposes of providing technical analyses, engineering support, and other expert services. The committee notes that the Nation’s universities have significant capacity to support the DOD in these ways, as a complement to their current robust efforts in basic research, and that many university faculty and staff already work with industry, including the defense industry, in these kinds of activities. Finally, the committee notes that the Secretary of Defense has yet to comply with the mandate to establish a contractual mechanism to execute the original provision. The committee directs the Under Secretary of Defense for Acquisition and Sustainment and the Under Secretary of Defense for Research and Engineering to jointly deliver an annotated briefing to the congressional defense committees on actions taken to comply with this mandate, no later than February 1, 2020.

Sense of the Senate and periodic briefings on the security and availability of fifth-generation (5G) wireless network technology and production (sec. 236)

The committee recommends a provision that would express the sense of the Senate on the importance of secure fifth-generation (5G) wireless networks for the Department of Defense. The provision would also include a requirement for the Secretary of Defense to provide quarterly briefings to the congressional defense committees on Department of Defense (DOD) activities to develop and utilize secure 5G wireless networking technology. The committee understands that utilization of secure 5G wireless networking technology will be critical to achieving future warfighting advantages. The committee is frustrated by the slow pace of DOD research and adoption of these technologies and encourages the DOD to brief the committee on all efforts underway to advance secure 5G wireless networks.

**Transfer of Combating Terrorism Technical Support Office
(sec. 237)**

The committee recommends a provision that would require, not later than March 1, 2020, the transfer of responsibilities for the authority, direction, and control of the Combating Terrorism Technical Support Office (CTTSO) from the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict to the Under Secretary of Defense for Research and Engineering

(USD(R&E)). The committee believes that the mission of the CTTSO to “identify and develop capabilities to combat terrorism and irregular adversaries and to deliver these capabilities to Department of Defense components and interagency partners through rapid research and development” is better aligned with the mission and responsibilities of the USD(R&E). Additionally, the provision would require the Secretary of Defense to report on CTTSO’s efforts in relation to the implementation of the National Defense Strategy.

Briefing on cooperative defense technology programs and risks of technology transfer to China or Russia (sec. 238)

The committee recommends a provision that would require the Secretary of Defense, in consultation with the Director of National Intelligence, to provide a briefing to the congressional defense committees on cooperative defense technology programs of the Department of Defense and mitigation of the risk of technology transfer, relevant to these programs, to the People’s Republic of China or the Russian Federation.

Modification of authority for prizes for advanced technology achievements (sec. 239)

The committee recommends a provision that would authorize the office of the Under Secretary of Defense for Acquisition and Sustainment to award prizes as part of competitions to develop or demonstrate technologies relevant to defense missions. The committee notes the Defense Advanced Research Projects Agency’s and the Services’ successful use of these types of prize competitions, which have spurred the advancement of robotics, driverless cars, and cybersecurity technologies.

Use of funds for Strategic Environmental Research Program, Environmental Security Technical Certification Program, and Operational Energy Capability Improvement (sec. 240)

The committee recommends a provision that would require the Secretary of Defense to expend specific amounts appropriated for fiscal year 2020 for the Strategic Environmental Research Program, Operational Energy Capability Improvement, and Security Technical Certification Program.

Funding for the Sea-Launched Cruise Missile-Nuclear analysis of alternatives (sec. 241)

The committee recommends a provision that would increase the amount of funding available by \$5.0 million for the Department of the Navy’s analysis of alternatives regarding a nuclear sea-launched cruise missile (SLCM–N). The provision would also require the Secretary of Defense to create a program of record for the SLCM–N, a capability that could be carried by U.S. nuclear submarines in the future.

Review and assessment pertaining to transition of Department of Defense-originated dual-use technology (sec. 242)

The committee recommends a provision that would require the Under Secretary of Defense for Research and Engineering to conduct a review of the Department of Defense science and technology enterprise's intellectual property and strategy for awarding exclusive commercial rights to industry partners and submit a report summarizing the results of this review to the congressional defense committees no later than May 1, 2020. This review would study: the Department's intellectual property and commercialization rights management; the Department's efforts to promote the commercialization of DOD-funded research; the potential for prize-based research as an alternative to traditional research funding; and the potential of DOD's funding of basic and applied research for public use and without commercialization monopolies, akin to the Extramural Research Program of the National Institutes of Health, as an alternative to traditional research funding.

The committee understands that much of the Department of Defense's (DOD) science and technology investment and especially its basic research—for example, some of the Defense Advanced Research Projects Agency's cybersecurity research—is predicated on the transfer of DOD-originated dual-use technology to members of the defense industrial base and the broader commercial sector. The committee is also aware of a growing body of economics research on the frictions associated with intellectual property and exclusive commercialization monopolies.

Budget Items

Army

Defense research sciences for counter unmanned aerial vehicle research

The budget request included \$298.0 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 61102A defense research sciences.

The committee notes the importance of basic research in meeting long-term national security needs and supports increased counter-unmanned aircraft systems (UAS) university research. The committee is aware of the proliferation and increased capabilities of UAS, and research is needed to respond to this growing threat.

Therefore, the committee recommends an increase of \$5.0 million, for a total of \$303.0 million, in RDT&E, Army, for PE 61102A for basic research.

3D printing research

The budget request included \$86.2 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 61104A university and industry research centers.

The committee notes the importance of increased basic research for fundamental scientific knowledge related to long-term national security needs, and the committee supports increased research for 3D printing.

Therefore, the committee recommends an increase of \$2.0 million, for a total of \$88.2 million, in RDT&E, Army, for PE 61104A for 3D printing research.

Cyber Collaborative Research Alliance

The budget request included \$5.0 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 61121A Cyber Collaborative Research Alliance.

The committee notes the importance of cyber basic research and supports increased cyber collaboration with the Cyber Collaboration Research Alliance. The committee believes that long-term science and technology cyber research is critical to developing capabilities that will enable the warfighter to maintain dominance in cyberspace in the long run.

Therefore, the committee recommends an increase of \$5.0 million, for a total of \$10.0 million, in RDT&E, Army, for PE 61121A for cyber basic research.

Multi-Domain Task Force for the Indo-Pacific region

The budget request included \$115.3 million in Research, Development, Test, & Evaluation (RDT&E), Army, for PE62143A Soldier Lethality Technology.

The committee recommends an increase of \$3.0 million, for a total of \$118.3 million, for RDT&E, Army, for PE 62143A for camouflage, concealment, and deception materiel in support of the Multi-Domain Task Force for the Indo-Pacific region. This increase would support essential capabilities for Multi-Domain Operations-Pacific as described in the Chief of Staff of the Army's unfunded priorities list.

The committee supports the efforts of the Army and U.S. Indo-Pacific Command (INDOPACOM) to develop capabilities and operational concepts to maintain or restore the comparative military advantage of the United States in the Indo-Pacific region and to reduce the risk of executing contingency plans of the Department of Defense. As it develops, the Multi-Domain Task Force will have significant implications for force posture, force structure, and procurement priorities. Going forward, the committee urges the Department of the Army and INDOPACOM to keep the committee fully apprised of developments relating to activities associated with the Multi-Domain Task Force.

Advanced materials manufacturing processes

The budget request included \$35.2 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 62144A ground technology.

The committee is aware that advances in novel manufacturing could allow for the development of materials and components with superior properties and performance. The committee understands that the application of modeling tools in the development of new manufacturing techniques, such as additive manufacturing, could enable the production of new materials that provide increased strength, hardness, and ductility. These alloys could be useful in applications such as armor and would be a critical enabling technology that could increase warfighter protection.

Therefore, the committee recommends an increase of \$2.0 million in RDT&E, Army, for PE 62144A for advanced materials manufacturing processes research.

Biopolymer structural materials research

The budget request included \$35.2 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 62144A ground technologies.

The committee notes the importance of earthen structures to support force protection missions for deployed forces. To improve the protective capacities of these structures, reduce potential harmful medical impacts of many structural materials, and reduce costs of building and maintaining these structures, the committee notes the value of research in the use of soil microbiological systems and biopolymers to improve native soils for military earthen structures construction. This type of research is also consistent with the Department of Defense's emphasis on the importance of synthetic biology and biotechnology to defense missions.

Therefore, the committee recommends an increase of \$2.0 million in RDT&E, Army, for PE 62144A for applied research on biopolymer structural materials.

Advanced materials for infrastructure

The budget request included \$35.2 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 62144A for applied research on ground technology.

The committee notes the importance of biology research to meet long-term national security needs and supports increased research on cellulose structural materials that will improve Army force protection capabilities through the development and deployment of rapidly manufacturable, lightweight, and low-cost construction materials, structural systems, and bridging systems, including identification and characterization of materials that could be sourced locally during deployment.

Therefore, the committee recommends an increase of \$2.5 million in RDT&E, Army, for PE 62144A for research in cellulose nanocomposite-based structural materials for light weight, lower life cycle and logistics costs, and increased use of local materials to meet Army requirements.

Next Generation Combat Vehicle technology

The budget request included \$219.0 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 62145A Next Generation Combat Vehicle Technology.

The Department of Defense faces growing challenges in providing increasingly efficient operational energy, when and where it is needed to meet the demands of the National Defense Strategy. The committee understands that the Energy Storage and Power Systems incorporate composite flywheel-based technology and may address several energy objectives for the Army, such as: (1) Increased power efficiencies; (2) Maximized use of renewables; (3) Reduced system energy consumption with improved size, weight, and power; (4) Extended operational duration, reducing the need for energy resupply; and (5) Enhanced environmental characteristics.

Therefore, the committee recommends an increase of \$15.0 million in RDT&E, Army, for PE 62145A.

Composite tube and propulsion research

The budget request included \$74.3 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 62147A long range precision fires technology.

The committee notes the need for improved artillery tubes and improved propulsion for 105mm and 155mm howitzers. The committee believes that research to develop technologies for lighter, shorter tubes could potentially support stronger propulsion and extend the range of projectiles in support of the National Defense Strategy.

Therefore, the committee recommends an increase of \$10.0 million in RDT&E, Army, for PE 62147A for composite tube and propulsion research.

Printed armament components

The budget request included \$74.3 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 62147A long range precision fires technology.

The committee is aware of continued investment in additive manufacturing technologies to rapidly design, prototype, and manufacture critical novel printed armaments components. These technologies could be used to print replacement parts, customizable grenades, and embedded electronics. The committee is encouraged by progress made toward the eventual goal of fully printing munitions on a single production line in an ammunition plant.

Therefore, the committee recommends an increase of \$2.0 million in RDT&E, Army, for PE 62147A for applied research in long range precision fires technology.

C3I Applied Cyber

The budget request included \$18.9 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 62213A C3I Applied Cyber.

The committee believes that long-term science and technology cyber research is critical to developing capabilities that will enable the warfighter to maintain dominance in cyberspace in the long run.

The committee recommends an increase of \$5.0 million, for a total of \$23.9 million, in RDT&E, Army, for PE 62213A for applied cyber research.

Female warfighter performance research

The budget request included \$99.2 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 62787A medical technologies.

The committee notes the importance of leveraging academic research to better understand the unique challenges facing the female warfighter. The committee notes that additional research and technology development must be conducted to optimize equipment, protective gear, medical treatments, and nutrition for female warfighters. The committee also notes that there is a lack of data

on female warfighter performance in previous studies, which for the most part only included males as research subjects—leaving servicewomen largely unresearched and yielding a gap in the scientific literature on female performance outcomes under different stresses.

Therefore, the committee recommends an increase of \$3.0 million, for a total of \$102.2 million, in RDT&E, Army, for PE 62787A for additional research on performance of the female warfighter,

Long duration battery storage

The budget request included \$12.1 billion in Research, Development, Test, and Evaluation (RDT&E), Army, of which \$66.1 million was for the PE 0603119A Ground Advanced Technology.

The committee believes that, in order to improve combat capability and resilience on installations, the Department of Defense must invest in and acquire on-site long duration battery storage for at least 100 hours, in the event of an intentional or unintentional power outage.

Accordingly, the committee recommends an increase of \$10.0 million in RDT&E, Army, for PE 0603119A for the development and eventual demonstration of a 100-hour battery for distributed energy assets.

Computational manufacturing engineering

The budget request included \$12.6 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 63119A for ground advanced technology.

The committee understands that defense components are often designed and manufactured with assumptions made about the environment in which they will be used. The committee notes that collecting data on these systems can be used to optimize their designs through the use of computational materials engineering software.

Therefore, the committee recommends an increase of \$2.0 million in RDT&E, Army, for PE 63119A for computational manufacturing engineering.

Lightweight protective and hardening materials research

The budget request included \$12.6 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 63119A ground advanced technology.

The committee understands the importance of conducting material development research to develop lightweight protective and hardening materials usable as either a standalone or composite protective element. These materials can be applied to a wide range of field conditions and environments.

Therefore, the committee recommends an increase of \$3.0 million in RDT&E, Army, for PE 63119A for increased research in lightweight protective and hardening materials.

Robotic construction research

The budget request included \$12.6 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 63119A ground advanced technology.

The committee is aware of the challenges in constructing expeditionary structures for the Department of Defense (DOD). The current methods for building structures on the battlefield present numerous challenges to ensuring warfighter safety, security, and efficiencies. The committee understands that development of a robotic arm and robotic vehicle could potentially allow larger structures to be built. Therefore, the committee supports an increase in robotic construction research.

Therefore, the committee recommends an increase of \$5.0 million in RDT&E, Army, for PE 63119A for robotic construction research.

Ground vehicle sustainment research

The budget request included \$160.0 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 63462A Next Generation Combat Vehicle Advanced Technology Development.

The committee notes the potential for using emerging additive manufacturing techniques for on-demand production of replacement parts, in both depot repair and deployed environments. The committee notes that more work remains to be done to improve these manufacturing techniques, understand the materials being produced by these techniques, and ensure that the materials meet all safety and reliability standards.

Therefore, the committee recommends an increase of \$5.0 million in RDT&E, Army, for PE 63462A for ground vehicle sustainment research on the use of additive manufacturing for advanced technology development.

Next generation combat vehicle advanced technology for fuel cell propulsion and autonomous driving control

The budget request included \$160.0 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 63462A Next Generation Combat Vehicle Advanced Technology.

The committee notes the importance of hydrogen fuel cell propulsion and autonomous driving control and encourages the Department of Defense to continue research in this area to maintain a military advantage.

Therefore, the committee recommends an increase of \$20.0 million in RDT&E, Army, for PE 63462A for advanced technology development in fuel cell propulsion and autonomous driving control.

Hypersonics testing research

The budget request included \$174.4 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 63464A long range precision fires advanced technology.

The committee notes that the development of hypersonics capabilities is a key element of the National Defense Strategy and represents an area of intense technological competition between the United States, People's Republic of China, and Russian Federation.

Therefore, the committee recommends an increase of \$4.0 million in RDT&E, Army, for PE 63464A for hypersonics research and testing.

Future Long Range Assault Aircraft (FLRAA)

The budget request included \$459.3 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 63801A Aviation Advanced Development, of which \$31.9 million is for the Future Long Range Assault Aircraft (FLRAA) and Capability Set 3 (CS3).

The Army also identified on the unfunded priority list a shortfall in funding of \$75.6 million for PE 63801A to accelerate the CS3 program.

The committee notes that the current acquisition strategy for FLRAA/CS3 represents a traditional approach; however, the committee understands that the Army is considering multiple courses of action to accelerate this program through the use of acquisition reform authorities. Further, the committee understands that the Army recently completed the Joint Multi-Role Technology Demonstration effort that successfully demonstrated several transformational vertical lift capabilities and technologies. As such, the committee believes that the Army should be in a position to reasonably accelerate the FLRAA/CS3 schedule and acquisition strategy.

Therefore, the committee recommends an increase of \$75.6 million in RDT&E, Army, for PE 63801A.

Hypersonic weapon system

The budget request included \$228.0 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 64182A Hypersonics. The Chief of Staff of the Army identified a shortfall in funding for this program in his unfunded priorities list.

Therefore, the committee recommends an increase of \$130.6 million in RDT&E, Army, for PE 64182A to accelerate the development of hypersonic weapon systems.

Next Generation Squad Weapon—Automatic Rifle

The budget request included \$106.1 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 64601A Infantry Support Weapons, of which \$33.1 million is for Next Generation Squad Weapon—Automatic Rifle.

The Army also identified a shortfall in funding of \$19.9 million for PE 64601A to fund rapid prototyping agreements on the unfunded priority list.

The committee acknowledges the need to improve close combat lethality in support of the National Defense Strategy and the need to field weapon systems that improve standoff, ballistics, and penetrating power.

Therefore, the committee recommends an increase of \$19.9 million in RDT&E, Army, for PE 64601A.

Integrated Personnel and Pay System—Army

The budget request included \$142.8 million in Research, Development, Test, & Evaluation (RDT&E), Army, for PE 65018A Integrated Personnel and Pay System—Army.

The committee is concerned about unjustified cost growth and poor business process reengineering.

Accordingly, the committee recommends a decrease of \$142.8 million, for a total of \$0.0 million, in RDT&E, Army, for PE 65018A.

Army contract writing system

The budget request included \$19.7 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 65047A Army Contract Writing System.

The committee remains concerned about duplication among the Services in contract writing systems.

Accordingly, the committee recommends a decrease of \$19.7 million, for a total of \$0.0 million, in RDT&E, Army, for PE 65047A.

Indirect Fire Protection Capability Increment 2

The budget request contained \$243.2 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 65052A Indirect Fire Protection Capability (IFPC) Increment 2—Block 1. Of this, \$73.2 million was requested to support the interim IFPC solution and \$39.3 million was proposed to support the enduring solution, in accordance with section 112 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232).

The committee notes that, while the Army in February 2019 issued a letter of intent to procure two batteries of Iron Dome to meet the requirement articulated in section 112 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) for an interim cruise missile defense capability, this decision was predicated on submission and approval of an above threshold reprogramming (ATR) by mid-April 2019. Because of the delay in submission of the ATR to the congressional defense committees, the committee is concerned that the Army will be unable meet the statutory requirement for interim base defense. Therefore, the committee recommends a realignment elsewhere in this report that would support procurement of two Iron Dome batteries with fiscal year 2020 funds. The committee notes that, should the ATR be fully approved before the end of fiscal year 2019, this realignment would no longer be necessary.

Accordingly, the committee recommends an increase of \$20.6 million in RDT&E, Army, for PE 65052A for IFPC Increment 2 for Iron Dome testing and delivery.

Indirect Fire Protection Capability Increment 2 EMAM

The budget request included \$243.2 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 65052A Indirect Fire Protection Capability (IFPC) Increment 2—Block 1. The request includes \$124.2 million for the development of the Expanded Mission Area Missile interceptor. The committee believes that funds for the development of the interceptor, before a defined solution for the enduring IFPC Increment 2 is selected, are ahead of need.

Therefore, the committee recommends a decrease of \$124.2 million in RDT&E, Army, for PE 65052A.

Multi-Domain Artillery

The budget request included \$243.2 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 65052A Indirect Fire Protection Capability (IFPC) Increment 2—Block 1. The

Chief of Staff of the Army requested funding for Multi-Domain Artillery in his unfunded priorities list.

The committee supports the efforts of the Army and U.S. Indo-Pacific Command (INDOPACOM) to develop capabilities and operational concepts to maintain or restore the comparative military advantage of the United States in the Indo-Pacific region and to reduce the risk of executing contingency plans of the Department of Defense. As it develops, the command's Multi-Domain Task Force will have significant implications for force posture, force structure, and procurement priorities. Going forward, the committee urges the Department of the Army and INDOPACOM to keep the committee fully apprised of developments relating to activities associated with the Multi-Domain Task Force.

Therefore, the committee recommends an increase of \$10.0 million in RDT&E, Army, for PE 65052A for multi-domain artillery.

Ground Robotics Squad Multipurpose Equipment Transport (S-MET)

The budget request included \$41.3 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 65053A Ground Robotics, Squad Multipurpose Equipment Transport (S-MET).

The Army has requested a zero sum realignment of \$12.8 million from PE 65053A within RDT&E, Army, for S-MET to line 138 of Other Procurement, Army (OPA).

Therefore, the committee recommends a decrease of \$12.8 million in RDT&E, Army, for PE 65053A.

Next Generation Combat Vehicle 50mm gun

The budget request included \$378.4 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 65625A Manned Ground Vehicle.

The Army also identified a shortfall in funding of \$40.0 million in RDT&E, Army, for PE 65625A on the unfunded priority list for the procurement of 15 XM-913 weapon systems (50mm gun, ammunition handling system, and fire control hardware).

The committee acknowledges the need to improve lethality for the Next Generation Combat Vehicle to retain overmatch in support of the National Defense Strategy and the need to field weapon systems that improve standoff and survivability.

Therefore, the committee recommends an increase of \$40.0 million in RDT&E, Army, for PE 65625A for 50mm gun upgrades.

Joint Light Tactical Vehicle

The budget request included \$2.7 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 65812A Joint Light Tactical Vehicle (JLTV) Engineering and Manufacturing Development.

The Army has requested a zero sum realignment of \$4.5 million from line number 6 of Other Procurement, Army (OPA), to PE 65812A in RDT&E, Army.

Therefore, the committee recommends an increase of \$4.5 million in RDT&E, Army, for PE 65812A.

Cybersecurity threat simulation research

The budget request included \$14.1 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 64256A Threat Simulator Development.

The committee notes the importance of cybersecurity to long-term national security needs and supports increased research in cybersecurity threat simulation to model emerging and proliferating threats to weapons systems and networks.

Therefore, the committee recommends an increase of \$2.0 million in RDT&E, Army, for PE 64256A.

Directed energy test capabilities

The budget request included \$334.5 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 65601A Army Test Ranges and Facilities.

The committee notes that directed energy is a key technology for the implementation of the National Defense Strategy. The committee further notes that the FY 2018–FY 2028 Strategic Plan for DOD T&E Resources indicated that the demand for directed energy test capabilities will soon expand from demand for testing to address specific objectives of laboratory demonstrations to demand for testing to address requirements for validating a weapon system for operational use. The plan also indicated that past and projected activities point to the necessity for growth in directed energy test capability and workforce and called for increased collaboration across the directed energy technology development and test communities.

Accordingly, the committee recommends an increase of \$15.0 million in RDT&E, Army, for PE 65601A to fund directed energy test range capabilities.

CD ATACMS

The budget request included no funding in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 23802A Other Missile Product Improvement Programs.

The committee notes that the Chief of Staff of the Army requested funding in his unfunded priorities list for Cross-Domain Army Tactical Missile Systems (CD ATACMS).

Therefore, the committee recommends an increase of \$24.1 million in RDT&E, Army, for PE 23802A for the CD ATACMS.

Nanoscale materials manufacturing

The budget request included \$59.8 million in Research, Development, Test, and Evaluation (RDT&E), Army, for PE 78045A End Item Industrial Preparedness Activities to support Army manufacturing technology activities.

The committee notes that the government-wide National Nanotechnology Initiative (NNI), which includes the Department of Defense, has highlighted that nanotechnology research, and the eventual nanomanufacturing of products, requires advanced and often very expensive equipment and facilities. Further the NNI program has indicated that, in order to realize the potential of nanotechnology, agencies should invest heavily in nanomanufacturing research and infrastructure.

Accordingly, the committee recommends an increase of \$3.0 million in RDT&E, Army, for PE 78045A to increase Army efforts in developing nanoscale materials manufacturing capabilities.

Navy

University Research Initiatives

The budget request included \$116.9 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 61103N University Research Initiatives.

The committee notes the importance of basic research in supporting long-term national security needs and supports increasing cyber basic research. The committee believes that long-term science and technology cyber research is critical to developing capabilities that will enable the warfighter to maintain dominance in cyberspace in the long run.

Therefore, the committee recommends an increase of \$10.0 million, for a total of \$126.9 million, in RDT&E, Navy, for PE 61103N for basic research.

Carbon capture increase

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$119.5 million was for PE 62123N Force Protection Applied Research.

The committee notes that elsewhere in this Act the committee recommends a provision that requires the Secretary of Defense, in coordination with the Secretary of Homeland Security, the Secretary of Energy, and the heads of such other Federal agencies as the Secretary of Defense considers appropriate, to carry out a program on research, development, testing, evaluation, study, and demonstration of technologies related to blue carbon capture and direct air capture.

Accordingly, the committee recommends an increase of \$8.0 million in RDT&E, Navy, for PE 62123N for electric propulsion research for carbon capture.

Electric propulsion research

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$119.5 million was for PE 62123N Force Protection Applied Research.

The committee supports increased electronic propulsion research to support the Navy's emerging need to align platform electric power systems with mission systems development and to address the importance of energy management and storage as part of integrated power and energy systems solutions for naval ships and vessels.

Therefore, the committee recommends an increase of \$2.5 million in RDT&E, Navy, for PE 62123N for electric propulsion research.

Energy resilience research

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$119.5 million was for PE 62123N Force Protection Applied Research.

The committee notes that, as the Navy develops and fields increasing numbers of high-power sensors and weapon systems, the importance of the energy resilience of these systems continues to increase. Energy resilient systems will improve performance, reduce costs, and reduce logistical burdens on operational forces.

Therefore, the committee recommends an increase of \$3.0 million in RDT&E, Navy, for PE 62123N for energy resilience research.

Force protection applied research

The budget request included \$119.5 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 62123N Force Protection Applied Research.

The committee supports a program reduction to increase coordination of activities in material research across the Department of Defense to reduce duplication of effort.

Therefore, the committee recommends a decrease of \$5.0 million in RDT&E, Navy, for PE 62123N.

Test bed for autonomous ship systems

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$119.5 million was for PE 62123N Force Protection Applied Research.

The committee understands that autonomous naval vessels could be required to operate for more than a month between performances of human-assisted maintenance. As a result, the machinery on such vessels must be robust, resilient, and reliable, requiring the ability to avoid failures, repair damage, and redirect systems as needed.

Accordingly, the committee recommends an increase of \$8.0 million in RDT&E, Navy, for PE 62123N.

Interdisciplinary cyber research

The budget request included \$56.6 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 62131M Marine Corps Landing Force Technology.

The committee notes the importance of cybersecurity to long-term national security needs and supports increased interdisciplinary cybersecurity research. The committee believes that long-term science and technology cyber research is critical for developing capabilities that will enable the warfighter to maintain dominance in cyberspace in the long run.

Therefore, the committee recommends an increase of \$3.0 million, for a total of \$59.6 million, in RDT&E, Navy, for PE 62131M for interdisciplinary cyber research.

Common picture applied research

The budget request included \$49.3 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 62235N Common Picture Applied Research.

The committee supports a program reduction in common picture applied research and encourages the Navy to increase coordination of space activities with other research activities throughout the Department of Defense.

Therefore, the committee recommends a decrease of \$5.0 million, for a total of \$44.3 million, in RDT&E, Navy, for PE 62235N.

Applied warfighter safety and performance research

The budget request included \$63.8 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 62236N Warfighter Sustainment Applied Research.

The committee notes the importance of warfighter safety and performance research in enhancing the individual performance of elite operators under adverse and extreme conditions. The committee is aware that research to study and mitigate the effects of stresses to human safety, performance, and resilience, especially undersea, will result in better care for warfighters conducting missions that require exposure to extreme environments. The committee supports increased research to address undersea diving stresses, including: pressure extremes, extended low temperature exposure, neurologic dysfunction, and chemical and oxygen toxicity.

Therefore, the committee recommends an increase of \$2.0 million, for a total of \$65.8 million, in RDT&E, Navy, for PE 62236N for applied warfighter safety and performance research.

Electromagnetic systems applied research

The budget request included \$83.5 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 62271N Electromagnetic Systems Applied Research.

The committee supports a program reduction in electromagnetic systems applied research and encourages the Navy to increase coordination in electronic warfare activities with the rest of the Department of Defense's related activities to reduce duplication of effort.

Therefore, the committee recommends a decrease of \$5.0 million, for a total of \$78.5 million, in RDT&E, Navy, for PE 62271N.

Navy industry-university undersea vehicle technologies

The budget request included \$57.1 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 62747N Undersea Warfare Applied Research.

The committee notes that the Center for Strategic and Budgetary Assessment's recent report titled "The Emerging Era In Undersea Warfare" noted that "America's superiority in undersea warfare is the product of decades of research and development (R&D), a sophisticated defense industrial base, operational experience, and high-fidelity training. This superiority, however, is far from assured." The committee notes the importance of industry-university partnerships and recognizes their valuable role in advancing undersea vehicle technology to support undersea warfare capabilities.

Therefore, the committee recommends an increase of \$7.5 million, for a total of \$64.6 million, in RDT&E, Navy, for PE 62747N for university-industry partnerships in applied research to support undersea warfare capabilities.

USMC Advanced Technology Demonstration (ATD)

The budget request included \$172.8 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 63640M United States Marine Corps Advanced Technology Demonstration.

The committee supports a program reduction in order to consolidate efforts in artificial intelligence, machine learning, and similar areas in which separate research and development activities are occurring across the Services and to ensure coordination and reduce duplication of effort across the Department of Defense.

The committee recommends a decrease of \$5.0 million in RDT&E, Navy, for PE 63640M.

Mobile Unmanned/Manned Distributed Lethality Airborne Network

The budget request included \$172.8 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 63640M United States Marine Corps Advanced Technology Demonstration.

The committee supports the development of capabilities to further the ability of aircraft, sensors, and command and control assets to share information and recognizes that the mobile unmanned/manned distributed lethality airborne network, one such capability, is listed on the Chief of Naval Operations' unfunded priority list. The committee is concerned that the lack of funding in fiscal year 2020 will delay the development of an objective system.

Therefore, the committee recommends an increase of \$9.0 million in RDT&E, Navy, for PE 63640M for the continued maturation and development of the mobile unmanned/manned distributed lethality airborne network.

Innovative Naval Prototypes (INP) advance technology development

The budget request included \$133.3 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 63801N Innovative Naval Prototypes advance technology development.

The committee supports a program reduction in innovative naval prototype development in the area of electronic maneuver and encourages continued coordination of these efforts across the Department of Defense.

Therefore, the committee recommends a decrease of \$5.0 million, for a total of \$127.3 million, in RDT&E, Navy, for PE 63801N for naval prototype development in the area of electronic maneuver.

Littoral battlespace sensing autonomous undersea vehicle

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$32.6 million was for PE 63207N Air and Ocean Tactical Applications.

The committee understands that additional funding could provide for the procurement of 1 additional REMUS 600 littoral battlespace sensing autonomous undersea vehicle, which would accelerate the achievement of Navy inventory goals.

Accordingly, the committee recommends an increase of \$6.0 million, for a total of \$38.6 million, in RDT&E, Navy, for PE 63207N.

Large unmanned surface vessels

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$507.0 million was for PE 63502N Surface and Shallow Water Mine Countermeasures.

The committee notes that the budget request for this program element provides for the prototyping and testing of Large Unmanned Surface Vessels (LUSV), including procurement of two additional LUSVs in conjunction with a Strategic Capabilities Office (SCO) initiative, in project 3066. The committee understands that the two LUSVs procured by the SCO beginning in fiscal year 2018, at a cost of \$237 million, are sufficient to achieve the objectives of the SCO initiative, which is scheduled to be completed in the fourth quarter of fiscal year 2021.

The committee is concerned that the budget request's concurrent approach to LUSV design, technology development, and integration as well as a limited understanding of the LUSV concept of employment, requirements, and reliability for envisioned missions pose excessive acquisition risk for additional LUSV procurement in fiscal year 2020. The committee is also concerned by the unclear policy implications of LUSVs, including ill-defined international unmanned surface vessel standards and the legal status of armed or potentially armed LUSVs.

Additionally, the committee notes that the Navy's "Report to Congress on the Annual Long-Range Plan for Construction of Naval Vessels for Fiscal Year 2020" acknowledges similar issues: "Unmanned and optionally-manned systems are not accounted for in the overall battle force[.] . . . The physical challenges of extended operations at sea across the spectrum of competition and conflict, the concepts of operations for these platforms, and the policy challenges associated with employing deadly force from autonomous vehicles must be well understood prior to replacing accountable battle force ships."

The committee believes that further procurement of LUSVs should occur only after the lessons learned from the current SCO initiative have been incorporated into the next solicitation to enable incremental risk reduction.

In addition, the committee believes that the LUSV program, which appears likely to exceed the Major Defense Acquisition Program cost threshold, would benefit from a more rigorous requirements definition process, analysis of alternatives, and deliberate acquisition strategy.

Accordingly, the committee recommends a decrease of \$372.5 million, for a total of \$134.5 million, in RDT&E, Navy, for PE 63502N.

Advanced submarine system development

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$148.8 million was for PE 63561N Advanced Submarine System Development.

The committee understands that emergent repairs are needed at the Acoustic Research Detachment located in Bayview, Idaho, to prevent delays in critical test programs.

Accordingly, the committee recommends an increase of \$5.0 million, for a total of \$153.8 million, in RDT&E, Navy, for PE 63561N.

Large Surface Combatant concept advanced design

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$81.8 million was for PE 63563N Ship Concept Advanced Design.

The committee notes that the Chief of Naval Operations stated in March 2019, referring to the next Large Surface Combatant (LSC) class of ships, that the “. . . first question that we have to do is prove to ourselves that we need a large surface combatant. What is the unique contribution of something like that in the face of all these emerging technologies? Right now the discussions point to the fact that it brings a unique capability in terms of hous[ing] larger types of weapons, larger missiles; you certainly get more aperture on a bigger sensor[.]”

Given the uncertain requirements for the next LSC class of ships and the lack of clarity on the new systems under consideration for such class, including the associated technical maturity of such systems, the committee believes that funding design efforts for a new LSC class is early to need.

The committee urges the Navy to identify capability gaps, set LSC requirements, and engage in robust component-level prototyping of potential new critical systems, including those related to propulsion, electrical distribution, radar, and missile launching systems, prior to initiating LSC design efforts.

Accordingly, the committee recommends a decrease of \$24.0 million, for a total of \$57.8 million, in RDT&E, Navy, for PE 63563N.

Large Surface Combatant preliminary design

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$69.1 million was for PE 63564N Ship Preliminary Design and Feasibility Studies.

The committee notes that the Chief of Naval Operations stated in March 2019, referring to the next Large Surface Combatant (LSC) class of ships, that the “. . . first question that we have to do is prove to ourselves that we need a large surface combatant. What is the unique contribution of something like that in the face of all these emerging technologies? Right now the discussions point to the fact that it brings a unique capability in terms of hous[ing] larger types of weapons, larger missiles; you certainly get more aperture on a bigger sensor[.]”

Given the uncertain requirements for the next LSC class of ships and the lack of clarity on the new systems under consideration for such class, including the associated technical maturity of such systems, the committee believes that funding design efforts for a new LSC class is early to need.

The committee urges the Navy to identify capability gaps, set LSC requirements, and engage in robust component-level prototyping of potential new critical systems, including those related to propulsion, electrical distribution, radar, and missile launching systems, prior to initiating LSC design efforts.

Accordingly, the committee recommends a decrease of \$46.6 million, for a total of \$22.5 million, in RDT&E, Navy, for PE 63564N.

Advanced surface machinery system component prototyping

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$25.4 million was for PE 63573N Advanced Surface Machinery Systems.

The committee notes the Chief of Naval Operations stated in March 2019, referring to the next Large Surface Combatant (LSC) class of ships, that the “. . . first question that we have to do is prove to ourselves that we need a large surface combatant. What is the unique contribution of something like that in the face of all these emerging technologies? Right now the discussions point to the fact that it brings a unique capability in terms of hous[ing] larger types of weapons, larger missiles; you certainly get more aperture on a bigger sensor[.]”

In addition, in testimony before the Subcommittee on Seapower on March 27, 2019, the Assistant Secretary of the Navy for Research, Development, and Acquisition stated in response to a question related to actions necessary to improve acquisition performance on lead ships, “The second piece is really improved sub-system prototyping like we have done on *Columbia*. Try and get everything prototyped as soon as we can. [The Navy] learn[ed] some lessons on *Ford* by not having land-based prototypes for all the sub-systems.” The committee supports the Assistant Secretary’s intent to improve sub-system prototyping well in advance of difficult-to-reverse ship design decision points.

The committee urges the Navy to identify capability gaps, set LSC requirements, and engage in robust component-level prototyping of potential new critical systems, including those related to propulsion, electrical distribution, radar, and missile launching systems, prior to initiating LSC design efforts.

Accordingly, the committee recommends an increase of \$125.0 million, for a total of \$150.4 million, in RDT&E, Navy, for PE 63573N for advanced surface machinery system component prototyping.

Columbia-class submarines

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$419.1 million was for PE 63595N *Columbia*-class submarines.

The committee understands that additional funding could enable reductions in the production time and cost of propulsor components for *Columbia*-class submarines through development of composites technology.

Accordingly, the committee recommends an increase of \$15.0 million, for a total of \$434.1 million, in RDT&E, Navy, for PE 63595N.

Littoral Combat Ship mission modules

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$108.5 million was for PE 63596N Littoral Combat Ship (LCS) mission modules.

The committee notes that an operational testing period of the surface warfare mission package was delayed from fiscal year 2018 to fiscal year 2019.

Accordingly, the committee recommends a decrease of \$5.0 million, for a total of \$103.5 million, in RDT&E, Navy, for PE 63596N for LCS mission modules.

U.S. Marine Corps Additive Manufacturing Logistics Software Pilot Program

The budget request included \$4.4 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 64289M Next Generation Logistics.

The committee notes that the U.S. Marine Corps (USMC) has fielded 165 3D Printers, 5 metal printers, and 1 prototype concrete printer across the fleet and is seeing great benefit from their use through innovative programs like Marine Maker. However, the digital infrastructure to create, support, document, and provide a digital thread, digital twin, and augmented reality capability for the parts being manufactured and used is non-existent. The USMC needs an Additive Manufacturing Logistics Software Pilot Program and formally highlighted this need in its unfunded priorities list. The pilot program would use commercial-off-the-shelf software and services to support several use cases and lay the groundwork for providing the digital infrastructure for all USMC next generation additive manufacturing activities. Funding would cover government costs, software procurement, and services support work at multiple US locations.

The committee recommends an increase of \$9.0 million, for a total of \$13.4 million, in RDT&E, Navy, for PE 64289M to fund the USMC Additive Manufacturing Logistics Software Pilot Program.

Nuclear sea-launched cruise missile

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$19.7 million was for PE 64659N for the Precision Strike Weapon Development Program. Of this, \$5.0 million was designated for a nuclear sea-launched cruise missile analysis of alternatives (AoA).

The committee recommends an increase of \$5.0 million for this AoA, for a total of \$24.7 million in RDT&E, Navy, for PE 64659N.

V-22 nacelle improvement program

The budget request included \$185.5 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 64262N for the V-22.

The committee recognizes the importance of the Common Configuration-Readiness and Modernization (CC-RAM) nacelle improvement program for better reliability and commonality across the fleet of V-22s. Reduced vibrations in nacelles decreases maintenance degraders and costs while increasing readiness rates. The committee encourages the Navy and Marine Corps to test, develop, and incorporate active vibration control systems for the V-22 nacelles as part of the overall nacelle improvement program.

Therefore, the committee recommends an increase of \$5.5 million in RDT&E, Navy, for PE 64262N for nacelle improvements on the V-22.

Mine Development—Quickstrike JDAM ER

The budget request included \$29.0 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 64601N Mine Development. The Chief of Naval Operations requested funding in his unfunded priorities list for the Quickstrike Joint Direct Attack Munition Extended Range (JDAM ER).

Therefore, the committee recommends an increase of \$71.3 million in RDT&E, Navy, for PE 64601N for the Quickstrike JDAM ER.

Information Technology Development

The budget request included \$384.2 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 65013N Information Technology Development, including \$55.4 million for Electronic Procurement System.

The committee is concerned about developing unnecessarily bespoke contract writing systems and processes.

Accordingly, the committee recommends a decrease of \$55.4 million in RDT&E, Navy, for PE 65013N.

CH-53K King Stallion program

The budget request included \$517.0 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 65212M CH-53K RDTE.

The committee recognizes that the U.S. Marine Corps validated a requirement for heavy-lift expeditionary rotary wing aviation to support ship-to-shore, shore-to-shore, and shore-to-ship movement of personnel and equipment. The committee recently approved an above-threshold reprogramming request for additional funding to continue developmental testing external to the fiscal year 2020 budgeting cycle.

Therefore, the committee recommends a decrease of \$10.0 million in RDT&E, Navy, for PE 65212M.

Ship to Shore Connector

The budget request included \$20.3 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$4.9 million was for PE 65220N Ship to Shore Connector.

The committee understands that additional funding could enable quality improvements and cost reductions in the Ship to Shore Connector and Landing Craft Air Cushioned programs through expanded development and use of composite materials.

Accordingly, the committee recommends an increase of \$15.0 million, for a total of \$19.9 million, in RDT&E, Navy, for PE 65220N.

Transformational Reliable Acoustic Path Systems

The budget request included \$20.4 billion in Research, Development, Test, and Evaluation (RDT&E), Navy, of which \$88.4 million was requested for PE 24311N Integrated Surveillance System.

The committee notes that, since fiscal year 2015, the Navy has utilized Transformational Reliable Acoustic Path Systems (TRAPS) in anti-submarine warfare missions. The committee understands that these deployable systems have performed satisfactorily and comprise a critical element of the Navy's overall integrated under-sea surveillance system. The committee is concerned that capability or capacity gaps may result if additional TRAPS units are not procured in fiscal year 2020.

Accordingly, the committee recommends an increase of \$15.0 million, for a total of \$103.4 million, in RDT&E, Navy, for PE 24311N for TRAPS.

Intelligent Power Management Systems

The budget request included \$37.8 million in Research, Development, Test, and Evaluation (RDT&E), Navy, for PE 26624M Marine Corps Combat Services Support, of which \$3.0 million is for Marine Air Ground Task Force (MAGTF) Combat Service Support Element & Supporting Establishment (CSSE & SE).

The committee recognizes the need for the Marine Corps to reduce logistical requirements in forward deployed areas. Intelligent Power Management Systems (IPMS) provide a robust, modular, and scalable solution to interconnect, control, store, and distribute power from various sources. As a result, with IPMS, power requirements will be met in a more efficient manner by matching power production to load demand, reducing spinning reserve, extending maintenance cycle times, and reducing fuel consumption.

Therefore, the committee recommends an increase of \$5.0 million in RDT&E, Navy, for PE 26624M for MAGTF CSSE & SE.

Air Force

High energy X-ray materials structures research

The budget request included \$128.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 62102F applied research in advanced materials.

The committee notes the importance of advanced materials high energy X-ray research for better understanding the characteristics and performance of advanced materials and structures for Air Force missions, including high temperature engine materials, advanced sensors, and aerodynamic systems. The committee notes that the Department of Defense would benefit from leveraging National Science Federation and Department of Energy investments in facilities to support Air Force research needs.

Therefore, the committee recommends an increase of \$4.0 million in RDT&E, Air Force, for PE 62102F for high energy x-ray materials structures research.

Materials research

The budget request included \$128.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 62102F applied research in materials.

The committee notes that there is duplicative funding for material research within the budget request and encourages increased coordination within the Department of Defense.

Therefore, the committee recommends a decrease of \$10.0 million in RDT&E, Air Force, for PE 62102F.

Aerospace Vehicle Technologies

The budget request included \$147.7 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 62201F aerospace vehicle technologies.

The committee believes that the increase of these activities is not fully aligned with other efforts and supports a reduction in program growth for aerospace vehicle technologies.

The committee recommends a decrease of \$10.0 million in RDT&E, Air Force, for PE 62201F.

Counter unmanned aerial systems research

The budget request included \$181.7 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 62788F dominant information sciences and methods.

The committee notes that counter-swarm capabilities are becoming more critical for Department of Defense (DOD) force protection. Currently, various development and acquisition activities are underway to counter the swarming unmanned aircraft systems (UAS) threat, and DOD entities are currently testing several potential system solutions, but, to date, no approach provides a complete answer to the threat. The committee further notes the importance of increased cyber research and supports increasing cyber and communications research to support counter-UAS capabilities.

Therefore, the committee recommends an increase of \$2.5 million in RDT&E, Air Force, for PE 62788F for counter-UAS research.

Cyberspace dominance technology research

The budget request included \$181.6 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 62788F dominant information sciences and methods.

The committee notes the importance of increased support for academic cyber institutes to meet long-term national security needs in support of the National Defense Strategy. The committee believes that long-term science and technology cyber research is critical to developing capabilities that will enable the warfighter to maintain dominance in cyberspace in the long run. The committee also understands that the Department of Defense requires technologies to deliver a full range of options in cyberspace, akin to its current air and sea dominance programs, to achieve cyber dominance.

Therefore, the committee recommends an increase of \$10.0 million in RDT&E, Air Force, for PE 62788F for research in cyberspace dominance technology research.

Quantum science research

The budget request included \$181.6 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 62788F dominant information sciences and methods.

The committee notes the importance of quantum science research for the implementation of the National Defense Strategy and in the priorities of the Under Secretary of Defense for Research and Engineering. This technical area shows great promise in enhancing de-

fense capabilities in communications, computing, cryptography, and countless other areas. The committee notes that there is a global competition for preeminence in this emerging field.

Therefore, the committee recommends an increase of \$5.0 million in RDT&E, Air Force, for PE 62788F for quantum science research.

High power microwave research

The budget request included \$44.2 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 62890F High Energy Laser Research.

The committee supports increased research in high power microwaves as an element of an emerging set of directed energy technologies that support the National Defense Strategy and the priorities of the Under Secretary of Defense for Research and Engineering. High powered microwave capabilities could defeat adversary electronics systems and create other battlefield effects.

Therefore, the committee recommends an increase of \$5.0 million in RDT&E, Air Force, for PE 62890F for additional high powered microwave research.

Metals affordability research

The budget request included \$36.6 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63112F Advanced Materials for Weapon Systems.

The committee notes that the Metals Affordability Initiative is a collaborative effort, which includes the entire domestic specialty aerospace metals industrial manufacturing base, to ensure the continued advancement of metals technologies for the defense and commercial sectors and continues to grow a robust and responsive aerospace metals domestic supply base that provides critical turbine engine, airframe, and space components at lower cost and with shortened production lead times.

Therefore, the committee recommends an increase of \$2.0 million, for a total of \$38.6 million, in RDT&E, Air Force, for PE 63112F for metals affordability research.

Acceleration of development of hypersonic quick reaction capability and hypersonic airbreathing weapon

The budget request included \$102.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63211F Aerospace Technology Development/Demonstration.

The committee notes that the development of hypersonics capabilities is a key element of the National Defense Strategy and represents an area of intense technological competition between the United States, People's Republic of China, and Russian Federation. The committee is encouraged by and supportive of the Air Force's activities in hypersonic weapons.

However, the committee is concerned that there is a lack of focus on air-launched and air-breathing hypersonic capability inside the Department of Defense. Therefore, the committee recommends an increase of \$75.0 million in RDT&E, Air Force, for PE 63211F for the continued development and transition of the Hypersonic Air Breathing Weapons Concept.

Shape morphing aircraft structures development

The budget request included \$102.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63211F Aerospace Technology Development/Demonstrations.

The committee notes ongoing research that supports the design and manufacture of shape-morphing aircraft control surfaces, including wings, winglets, inlets, and stabilizers that have demonstrated reduced drag, increased fuel savings, and decreased maintenance requirements for Air Force platforms. The committee believes that research in this area will support improving the performance of and reducing operational and life cycle costs for air platforms.

Therefore, the committee recommends an increase of \$5.0 million in RDT&E, Air Force, for PE 63211F for research in shape morphing materials for active winglets.

Combat Search and Rescue advanced prototyping

The budget request included \$102.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63211F Aerospace Technology Development/Demonstration.

The committee supports the Chief of Staff of the Air Force's request for additional funds for a high speed vertical lift demonstration, such as Agility Prime, to prove the employment of non-runway jet operations in a contested environment, which could be crucial to the Air Force's ability to develop a lethal, agile, and resilient force posture and employment.

Therefore, the committee recommends an increase of \$25.0 million in RDT&E, Air Force, for PE 63211F for the continued development of Agility Prime.

Low Cost Attributable Aircraft Technology

The budget request included \$102.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63211F Aerospace Technology Development/Demonstration.

The committee supports the Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics' intent to accelerate the Air Force Research Laboratory's Low-Cost Attributable Aircraft Technology (LCAAT) program for collaborative pairing with manned platforms, potentially including the F-35. The committee views the combined application of commercial technology, autonomy, and artificial intelligence as an innovative solution to meeting the demands of the National Defense Strategy.

Therefore, the committee recommends an increase of \$100.0 million in RDT&E, Air Force, for PE 63211F for the continued development and transition of the LCAAT.

Aerospace propulsion and power technology

The budget request included \$114.0 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63216F Aerospace Propulsion and Power Technology.

The committee understands the importance of developing and demonstrating core engine technologies for small turbines used in current and future aircraft, missile, and remotely piloted aircraft propulsion systems. The committee believes that improved tech-

nologies in this area could reduce cost, improve mission flexibility, and increase aircraft range.

Therefore, the committee recommends an increase of \$10.0 million, for a total of \$124.0 million, in RDT&E, Air Force, for PE 63216F.

Electronic combat technology

The budget request included \$48.4 million for Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63270F Electronic Combat Technology.

The committee notes that there is duplicative electronic warfare and positioning, navigation, and timing research being performed across the Department of Defense and encourages increased coordination to reduce duplication of effort.

Therefore, the committee recommends a decrease of \$10.0 million, for a total of \$38.4 million, in RDT&E, Air Force, for PE 63270F.

Advanced spacecraft technology

The budget request included \$70.5 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63401F Advanced Spacecraft Technology.

The committee understands that the Department of Defense (DOD) relies extensively on weapons and communication systems that must operate in environments with high levels of ambient radiation. The committee notes a lack of commercially available technologies that meet these requirements and also notes the importance of DOD research on strategic radiation hardened microelectronic processors.

Therefore, the committee recommends an increase of \$3.0 million, for a total of \$73.5 million, in RDT&E, Air Force, for PE 63401F for advanced research on radiation-tolerant systems.

Advanced materials and materials manufacturing

The budget request included \$43.1 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63680F Manufacturing Technology Program.

The committee notes the importance of supporting mitigations for industrial base vulnerabilities, including those identified in the September 2018 Department of Defense report titled “Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States” and the August 2018 MITRE Corporation report titled “Deliver Uncompromised: A Strategy for Supply Chain Security and Resilience in Response to the Changing Character of War.” The committee notes that strong partnerships between academia and the aerospace industry can support original equipment manufacturers with research and development in advanced materials.

Accordingly, the committee recommends an increase of \$7.0 million in RDT&E, Air Force, for PE 63680F.

Battlespace knowledge and development demonstration

The budget request included \$56.4 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 63788F Battlespace Knowledge Development and Demonstration.

The committee notes the importance of increased cyber applied research and supports increasing cyber and command and control research. The committee believes that long-term science and technology cyber research is critical to developing capabilities that will enable the warfighter to maintain dominance in cyberspace in the long run.

Therefore, the committee recommends an increase of \$10.0 million, for a total of \$64.4 million, in RDT&E, Air Force, for PE 63788F for increased cyber applied research.

M-Code acceleration—advanced component development & prototypes

The budget request included \$92.6 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 64201F Positioning, Navigation, and Timing Resiliency, Modifications, and Improvements.

The committee understands the importance of the ability of the Global Positioning System (GPS) to provide resilient position, navigation, and timing capability to the Joint Force and acknowledges GPS Military-Code receiver development's presence on the Chief of Staff of the Air Force's unfunded priorities list.

Accordingly, the committee recommends an increase of \$32.0 million in RDT&E, Air Force, for PE 64201F for Embedded GPS/Inertial Navigation System modernization.

Rapid repair and sustainability increase

The budget request included \$128.5 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 64858F Tech Transition Program.

The committee notes that advanced repair and qualification processes can repair parts damaged, worn, or corroded in service without introducing undesirable distortion. The committee further notes that additional funds are needed to establish a means to qualify repair components to increase readiness by bringing systems back into service faster.

Accordingly, the committee recommends an increase of \$6.0 million in RDT&E, Air Force, for PE 64858F for rapid repair and sustainability.

Ground-Based Strategic Deterrent

The budget request included \$570.4 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 65230F Ground-Based Strategic Deterrent (GBSD).

The committee understands that the Air Force has chosen to consolidate an existing program into a similar element of the GBSD and that this approach will reduce risk and may save \$850 million across the life of the programs.

Accordingly, the committee recommends an increase of \$22.0 million in RDT&E, Air Force, for PE 65230F.

Light Attack experiment

The budget request included \$35.0 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 27100F Light Attack Armed Reconnaissance Squadrons.

The committee supports the increase of combat capability and readiness at a reduced cost and the development of advanced capabilities for close air support, armed reconnaissance, strike coordination and reconnaissance, airborne forward air control, and interdiction. The committee also supports the Department of Defense's intent to lower the cost of countering violent extremism in accordance with the National Security Strategy. However, the committee is concerned that the pace of research and prototyping in this area has not kept pace with the threat or the current capability available to the Department.

Additionally, the committee is aware that, on a modern battlefield, it is expected that friendly forces will be in close proximity to the enemy and will require integrated joint fires in order to achieve the effects demanded by the Joint Force Commander. The committee believes that the Department of Defense has been slow to develop and field capabilities to provide battlefield situational awareness of enemy and friendly actors. The committee is also aware of current technical solutions that would provide the required identification of friend and foe in environments, like that in which close air support is demanded, in which the friendly forces are in close proximity to the enemy.

Therefore, the committee recommends an increase of \$50.0 million in RDT&E, Air Force, for PE27100F to conduct additional RDT&E.

Cyber National Mission Force capabilities

The budget request included \$198.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 36250F Cyber Operations Technology Development.

The committee is aware of the growing capabilities needed to counter adversaries in the cyberspace domain as highlighted in the National Defense Strategy. The committee supports continued development of capabilities for the cyber warfighter and understands the importance of improving the capabilities of the Cyber Mission Force. The committee therefore supports the request of U.S. Cyber Command to increase funding for the Cyber National Mission Force Capability Acceleration Plan.

Therefore, the committee recommends an increase of \$13.6 million in RDT&E, Air Force, for PE 36250F to accelerate the development of Cyber National Mission Force capabilities.

ETERNALDARKNESS program development

The budget request included \$198.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 36250F Cyber Operations Technology Development.

The committee is aware of the growing capabilities needed to counter adversaries in the cyberspace domain as highlighted in the National Defense Strategy. The committee supports continued development of capabilities for the cyber warfighter and understands the importance of improving the capabilities of the Cyber Mission

Force. The committee therefore supports the request of U.S. Cyber Command to increase funding to develop the ETERNALDARKNESS program.

Therefore, the committee recommends an increase of \$7.1 million in RDT&E, Air Force, for PE 36250F for the ETERNALDARKNESS program.

Joint Common Access Platform

The budget request included \$198.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 36250F Cyber Operations Technology Development.

The committee is aware of the growing capabilities needed to counter adversaries in the cyberspace domain as highlighted in the National Defense Strategy. The committee supports continued development of capabilities for the cyber warfighter and understands the importance of improving the capabilities of the Cyber Mission Force. The committee therefore supports the request of U.S. Cyber Command to increase funding to develop the Joint Common Access Platform to be used by the Cyber Mission Force.

Therefore, the committee recommends an increase of \$20.5 million in RDT&E, Air Force, for PE 36250F for the Joint Common Access Platform.

Protected Tactical Enterprise Service

The budget request included \$105.0 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 1206760F Protected Tactical Enterprise Service (PTES).

The committee is concerned that the prototype development of PTES, which constitutes \$72.5 million of the overall request, has experienced unjustified growth.

Therefore, the committee recommends a decrease of \$10.0 million in RDT&E, Air Force, for PE 1206760F.

Protected Tactical Service

The budget request included \$173.7 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 1206761F Protected Tactical Service (PTS).

The committee is concerned that the rapid prototyping of PTS, which constitutes \$111.8 million of the overall request, has experienced unjustified growth.

Therefore, the committee recommends a decrease of \$10.0 million in RDT&E, Air Force, for PE 1206761F.

ERWn

The budget request included \$246.2 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 64200F Aerospace Technology Development/Demonstration.

The committee acknowledges the importance of the mission of the Extended Range Weapons program; however, the committee understands that the Air Force is moving away from prototyping to an ongoing analysis of alternatives to better understand alternative technical solutions.

Therefore, the committee recommends a decrease of \$149.1 million in RDT&E, Air Force, for PE 64200F.

M-Code acceleration—system development & demonstration

The budget request included \$67.8 million in Research, Development, Test and Evaluation (RDT&E), Air Force, for PE 64201F Positioning, Navigation, and Timing Resiliency, Modifications, and Improvements.

The committee understands the importance of the ability of the Global Positioning System (GPS) to provide resilient position, navigation, and timing capability to the Joint Force and acknowledges GPS Military-Code receiver development's presence on the Chief of Staff of the Air Force's unfunded priorities list.

Accordingly, the committee recommends an increase of \$81.0 million in RDT&E, Air Force, for PE 64201F for system development and demonstration.

Space Fence

The budget request included no funding in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 1206426F Space Fence.

The committee understands that the Air Force is still considering procurement of a second Space Fence site, which is an option in the Department of Defense's Space Fence contract. Given the knowledge gained during the development of the first Space Fence site and the importance of developing an effective space situational awareness capability, the committee recommends that the Air Force evaluate construction of a second Space Fence site.

Accordingly, the committee recommends an increase of \$20.0 million in RDT&E, Air Force, for PE 1206426F for the completion of the second Space Fence design in order to fully understand its associated costs.

Major T&E Investment

The budget request included \$181.7 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 64759F Major Test and Evaluation Investment.

The committee recognizes the important role that space test infrastructure plays in initially testing and evaluating the capability and resilience of Department of Defense space systems in a contested environment. The committee also notes the presence of foundational infrastructure elements used to test both terrestrial and space-based assets on the Chief of Staff of the Air Force's unfunded priorities list. The committee believes that this infrastructure should support testing of a comprehensive survey of systems.

Accordingly, the committee recommends an increase in \$36.0 million in RDT&E, Air Force, for PE 64759F for space test infrastructure.

Utah test range instrumentation

The budget request included \$181.7 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 64759F Major Test and Evaluation Investment.

The committee notes that the Department of Defense has indicated that the capability to conduct test and evaluation over broad geographic areas must include net-centric and distributed test capability. Modernized test facility data systems must integrate mod-

eling and simulation with operations, training, and flight tests to achieve the required level of complexity and realism.

The committee recommends an increase of \$15.0 million in RDT&E, Air Force, for PE 64759F for enhancements of Utah test range instrumentation for software-configurable test systems that address current and future Department of Defense data requirements.

Investment in hypersonic research and infrastructure

The budget request included \$717.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 65807F Test and Evaluation Support.

The committee notes that the development of hypersonic capabilities is a key element of the National Defense Strategy and represents an area of intense technological competition between the United States, People's Republic of China, and Russian Federation. The committee remains concerned that more attention needs to be focused on the expedient development and maturation of key hypersonic flight technologies. In addition to the need to improve ground-based test facilities such as wind tunnels, the Department of Defense (DOD) also needs to increase its flight test rate to expedite the maturation and fielding of hypersonic technologies. The combination of ground-based testing and flight testing is critical to fully maturing the fundamental technologies needed to field a hypersonic flight system. High-rate hypersonic flight test programs would help mature six critical technology areas:

- (1) Thermal protection systems and high temperature flight structures;
- (2) Seekers and sensors for hypersonic vehicles;
- (3) Advanced navigation, guidance, and control;
- (4) Communications and data links;
- (5) High speed aerodynamic characterization; and
- (6) Advanced avionics and vehicle communication systems for hypersonic vehicles.

To address this concern, the committee believes that the DOD must increase investment in research and test infrastructure. Therefore, the committee recommends an additional \$5.0 million in RDT&E, Air Force, for PE 65807F for the High-Speed Systems Test activity. Further, the committee directs the Secretary of Defense to report to the congressional defense committees, by June 1, 2020, on how the DOD plans to improve its test infrastructure and increase its flight test rate in fiscal year 2020 and beyond and the budget profile necessary to implement this plan.

5G Military Operational Test Capability

The budget request included \$717.9 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 65807F Test and Evaluation Support.

The committee notes the Defense Science Board's recommendation to build a secure fifth generation (5G) wireless network on a Department of Defense (DOD) installation. The committee recognizes the revolutionary effect that 5G technology will have on the Department but is concerned that the DOD lacks the ability to test

and develop tactics to leverage 5G technology as well as to negate enemy use of this advanced capability.

Therefore, the committee recommends an increase of \$49.0 million in RDT&E, Air Force, for PE 65807F for the establishment of a 5G test network and associated infrastructure at the Nevada Test and Training Range.

Advanced Battle Management System base architecture

The budget request included \$35.6 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 64003F Advanced Battle Management System (ABMS).

The committee notes the potential of secure fifth generation (5G) wireless networks for moving large amounts of data with very low latency. The Defense Science Board recommended building secure 5G wireless networks on a base in order to understand the potential of these advanced networks. The committee recognizes the revolutionary effect that 5G technology will have on the Department of Defense and the potential for use for data transfer for the ABMS. However, the committee is concerned that the Department lacks the base infrastructure to test, develop, and leverage 5G technology.

Therefore, the committee recommends an increase of \$49.0 million in RDT&E, Air Force, for PE 64003F for the establishment of a 5G base network that could be used for ABMS at an Air Force installation in the continental U.S.

Air Force Integrated Personnel and Pay System

The budget request included \$40.6 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 65018F Air Force Integrated Personnel and Pay System.

The committee is concerned about poor agile implementation and infrequent capability delivery.

Accordingly, the committee recommends a decrease of \$40.6 million, for a total of \$0.0 million, in RDT&E, Air Force, for PE 65018F.

HC-130 RDT&E

The budget request included \$17.2 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 65278F HC/MC-130 Recapitalization RDT&E.

The committee supports the program and the modernization of current aircraft to meet the requirements of the National Defense Strategy. The committee understands that the program requirements have changed and that the current request is above need for this fiscal year.

Therefore, the committee recommends a decrease of \$12.4 million in RDT&E, Air Force, for PE 65278F.

Airborne Launch Control System Replacement

The budget request included \$129.0 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 11213F Minuteman Squadrons, which includes the Airborne Launch Control System–Replacement (ALCS–R) program.

The committee understands that the Air Force has chosen to consolidate the ALCS-R program into the Ground-Based Strategic Deterrent program and that this approach will reduce risk and may save \$850 million across the life of the programs. The committee encourages the Air Force to ensure careful sustainment of the existing ALCS systems before they are replaced.

Accordingly, the committee recommends a decrease of \$22.0 million in RDT&E, Air Force, for PE 11213F.

Advanced data transport flight test

The budget request included \$0.0 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 31004F.

The committee supports the development of capabilities to advance the ability of aircraft, sensors, and command and control assets to share information. The committee also understands that the development of this type of capability requires live flight testing.

Therefore, the committee recommends an increase of \$21.0 million in RDT&E, Air Force, for PE 31004F to conduct live flight testing of the concept and associated capabilities.

ISR automation

The budget request included \$19.0 million in Research, Development, Test, and Evaluation (RDT&E), Air Force, for PE 35022F Intelligence, Surveillance, and Reconnaissance Modernization and Automation Development.

The committee supports the idea of modernizing the intelligence, surveillance, and reconnaissance enterprise and the continued use of prototyping to reduce technological risk.

However, the committee is concerned with the fidelity of the current plan. Therefore, the committee recommends a decrease of \$19.0 million in RDT&E, Air Force, for PE 35022F.

Defense Wide

Defense Established Program to Stimulate Competitive Research

The budget request included \$48.9 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 61110D8Z basic research initiatives.

The committee notes the importance of basic research in meeting long-term national security needs and supports the Defense Established Program to Stimulate Competitive Research (DEPSCOR) efforts to expand the base of universities and states that support defense research and innovation missions. The committee notes that this program is attempting to engage faculty and students from DEPSCOR state universities through partnerships with defense research programs and defense laboratories.

Therefore, the committee recommends an increase of \$10.0 million, for a total of \$58.9 million, in RDT&E, Defense-wide, for PE 61110D8Z for DEPSCOR.

Submarine industrial base workforce development

The budget request included \$92.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 61120D8Z National Defense Education Program.

The committee notes the current shortfall in Columbia-class technical workforce and supports increased submarine industrial base workforce training and education to make up for this shortfall.

Therefore, the committee recommends an increase of \$10.0 million, for a total of \$102.1 million, in RDT&E, Defense-wide, for PE 61120D8Z for submarine industrial base workforce development.

Aerospace education and research

The budget request included \$30.7 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 61228D8Z basic research at historically black colleges and universities and minority institutions.

The committee notes the importance of fundamental scientific knowledge and the pipeline of highly qualified technical talent related to long-term national security needs. The committee supports increased funding for aerospace education and research activities at Historically Black Colleges and Universities/Minority Institutions to promote the expansion of the future aerospace technical workforce, especially among U.S. citizens and to enhance research in areas including fatigue damage tolerance, experimental aerodynamics, and the performance of materials and components under extreme environmental conditions.

Therefore, the committee recommends an increase of \$2.0 million, for a total of \$32.7 million, in RDT&E, Defense-wide, for PE 61228D8Z for aerospace education and research.

Computer modeling of PFAS

The budget request included \$62.2 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 62251D8Z applied research for the advancement of science and technology priorities.

The committee notes the potential for advanced computer modeling to improve the characterization and understanding of per- and polyfluoroalkyl substances (PFAS) and supports an increase in applied research in computational biology research efforts to meet long-term national security needs in support of the National Defense Strategy.

Therefore, the committee recommends an increase of \$2.0 million in RDT&E, Defense-wide, for PE 62251D8Z for government-university-industry partnerships in computer modeling of PFAS.

Cyber Security Research

The budget request included \$15.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 62668D8Z cyber security research.

The committee notes the importance of increased support for academic cyber institutes in meeting long-term national security needs in support of the National Defense Strategy. The committee believes that long-term science and technology cyber research is crit-

ical to developing capabilities that will enable the warfighter to maintain dominance in cyberspace in the long run.

Therefore, the committee recommends an increase of \$10.0 million, for a total of \$25.1 million, in RDT&E, Defense-wide, for PE 62668D8Z.

Artificial intelligence commercial solutions

The budget request included \$29.4 million in Research, Development, Test and Evaluation, Defense-wide, for PE 0603342D8Z Defense Innovation Unit (DIU).

The committee notes the importance of accelerating Artificial Intelligence (AI) applications in support of the Joint Artificial Intelligence Center's (JAIC) National Mission Initiatives, including disaster response and predictive maintenance. The committee supports the use of commercial artificial intelligence (AI) solutions and urges the DIU to coordinate with the JAIC to identify problem sets facing the Department of Defense and to seek commercial AI solutions.

Therefore, the committee recommends an increase of \$7.5 million for PE 0603342D8Z to accelerate AI commercial solutions.

Joint capability technology demonstrations

The budget request included \$107.4 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 63648D8Z joint capability technology demonstrations.

The committee supports a program reduction in joint capability technology demonstrations due to a lack of coordination of activities across the Department of Defense.

Therefore, the committee recommends a decrease of \$17.5 million, for a total of \$89.9 million, in RDT&E, Defense-wide, for PE 63648D8Z.

Emerging capabilities technology development

The budget request included \$80.9 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 63699D8Z emerging capabilities technology development.

The committee supports a program reduction in emerging capability technology development due to concerns about duplication of efforts across the Department of Defense.

Therefore, the committee recommends a decrease of \$10.0 million, for a total of \$70.9 million, in RDT&E, Defense-wide, for PE 63699D8Z.

SERDP increase

The budget request included \$5.2 billion in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, of which \$66.2 million was for PE 63716D8Z Strategic Environmental Research and Development Program (SERDP).

The committee notes that both SERDP and the Environmental Security Technology Certification Program (ESTCP) develop, demonstrate, and validate the most promising innovative technologies that can meet the Department's most urgent requirements, provide a return on investment, and are executed through free and open competitions. The committee directs the Department to use the in-

creases in SERDP to address the following urgent concerns: (1) Help ensure the safety and welfare of the servicemembers and their dependents by eliminating or reducing the generation of pollution and use of hazardous materials and reducing the cost of remedial actions and compliance with environmental laws and regulations, specifically as it relates to per- and polyfluoroalkyl substances; (2) Develop, demonstrate, validate, and field fluorine-free firefighting foam; (3) Develop, demonstrate, and validate long-term energy storage batteries tied to distributed energy assets; and (4) Develop other technologies deemed appropriate.

Accordingly, the committee recommends an increase of \$10.0 million in RDT&E, Defense-wide, for PE 63716D8Z for SERDP.

Program increase to support National Defense Strategy technologies

The budget request included \$175.6 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 63941D8Z test and evaluation science and technology.

The committee notes that the Department of Defense established the Test and Evaluation/Science and Technology Program in recognition of the development of advanced technology and transformational weapon systems, such as directed energy weapons and hypersonics, without corresponding advances in test technologies, such as means to measure directed energy effects or security testing of cloud computing environments. The committee further notes that in 2018 the People's Republic of China announced the construction of a 265 meter long wind tunnel, which is to be complete by 2020, to simulate the acceleration environment from Mach 10 to Mach 25. China already has tunnels capable of simulating conditions between Mach 5 to 9. In contrast, the committee notes that, although the U.S. has hypersonic tunnels, most are small and designed for tests lasting less than a few seconds.

The committee recommends an increase of \$10.0 million in RDT&E, Defense-wide, for PE 63941D8Z to fund development of test capabilities to support high-priority National Defense Strategy technology development efforts.

ESTCP increase

The budget request included \$5.2 billion in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, of which \$66.6 million was for PE 63851D8Z Environmental Security Technology Certification Program (ESTCP).

The committee notes that both the Strategic Environmental Research and Development Program (SERDP) and ESTCP develop, demonstrate, and validate the most promising innovative technologies that can meet the Department's most urgent requirements, provide a return on investment, and are executed through free and open competitions. The committee directs the Department to use the increases in SERDP to address the following urgent concerns: (1) Help ensure the safety and welfare of the servicemembers and their dependents by eliminating or reducing the generation of pollution and use of hazardous materials and reducing the cost of remedial actions and compliance with environmental laws and regulations, specifically as it relates to per- and

polyfluoroalkyl substances; (2) Develop, demonstrate, validate, and field fluorine-free firefighting foam; (3) Develop, demonstrate, and validate long-term energy storage batteries tied to distributed energy assets; and (4) Develop other technologies deemed appropriate.

Accordingly, the committee recommends an increase of \$10.0 million in RDT&E, Defense-wide, for PE 63716D8Z for SERDP.

MDA special programs

The budget request included \$377.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 63891C for Missile Defense Agency (MDA) special programs.

The committee recommends an increase of \$125.0 million, for a total of \$502.1 million, in RDT&E, Defense-wide, for PE 63891C.

Neutral particle beam

The budget request included \$303.5 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, in PE 64115C for Missile Defense Agency (MDA) Technology Maturation Initiatives, of which \$34.0 million was for a Neutral Particle Beam program.

The committee notes that this program, intended for an on-orbit demonstration within 5 years, would constitute a space-based interceptor capability. The committee also notes that the 2019 Missile Defense Review (MDR) tasked the MDA with a study of development and fielding of a space-based intercept capability, to be delivered to the Under Secretaries of Defense for Policy and Research and Engineering. According to the MDR, this study will, along with another study directed by the Deputy Secretary of Defense on boost-phase intercept capability, inform considerations regarding a space-based intercept layer for boost-phase defense. The committee believes that proceeding with any single technology program is premature before these studies are completed, the associated policy decisions are made concerning the operation of such a capability in space, and the relevant space-based sensor architecture is finalized.

Accordingly, the committee recommends a decrease of \$34.0 million in PE 64115C, RDT&E, Defense-wide, Technology Maturation Initiatives, for a total of \$269.5 million.

Hypervelocity Gun Weapon System

The budget request contained \$1.3 billion in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 64250D8Z advanced innovative technologies of the Strategic Capabilities Office (SCO), of which no funds were requested for the Hypervelocity Gun Weapon System (HGWS).

The committee notes that this system may be a promising pathway to provide more cost-effective point defense in theater and encourages the SCO to continue to prove out the capability in order to facilitate transition to one or more military departments.

Accordingly, the committee recommends an increase of \$81.0 million in RDT&E, Defense-wide, for PE 64250D8Z for HGWS.

Strategic Capabilities Office

The budget request included \$1.3 billion in Research, Development, Testing, and Evaluation (RDT&E), Defense-wide, for PE 64250D8Z Advanced Innovative Technologies.

The committee notes that the Strategic Capabilities Office (SCO) was established to support rapid development, prototyping, and deployment of operational capabilities to meet emerging threats in the U.S. Indo-Pacific area of responsibility. Since then, the SCO has drifted from its original purpose and has seen significant budget growth not commensurate with its transition success and has undertaken projects with questionable technical merit and operational utility. The committee recommends reductions in the following projects, LiTE Saber, Quiet Riot, and StormSystem.

Therefore, the committee recommends a reduction of \$50.0 million in RDT&E, Defense-wide, for PE 64250D8Z.

Trusted and assured microelectronics

The budget request included \$542.4 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 64294D8Z trusted and assured microelectronics.

The committee notes the importance of trusted and assured microelectronics research for many applications, including fifth-generation wireless networking microelectronics. The committee believes that it is important to develop technologies that could help in supply chain risk management.

Therefore, the committee recommends an increase of \$5.0 million, for a total of \$547.4 million, in RDT&E, Defense-wide, for PE 64294D8Z.

Rapid prototyping program

The budget request included \$101.0 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 64331D8Z rapid prototyping program.

The committee notes that the Services and Defense Agencies are aggressively investing in prototyping activities, through programs using “Section 804” acquisition authorities, rapid capability offices, and shifting science and technology programs toward prototyping and away from innovation activities. The committee further notes that the Rapid Prototyping Fund, previously authorized by the Congress, is also funding prototyping activities. Finally, the committee notes that there is no central coordinating body in the Department of Defense to oversee its many prototyping efforts and ensure that they are focused on key issues, such as informing requirements development and assessing the technical feasibility of proposed technological approaches.

Therefore, the committee recommends a decrease of \$50.0 million, for a total of \$51.0 million, in RDT&E, Defense-wide, for PE 64331D8Z.

Space Development Agency missile defense programs

The budget request included \$85.0 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, in PE 1206410SDA, for Space Development Agency (SDA) Space Technology Development and Prototyping, of which \$15.0 million was

for a Space-Based Interceptor Study and \$15.0 million was for a Space-Based Discrimination Study.

The committee notes that the SDA was unable to provide further details on these two efforts at the time of the budget release. The committee further notes that elements of both studies appear to be duplicative of ongoing efforts within the Missile Defense Agency.

Accordingly, the committee recommends a decrease of \$30.0 million in PE 1206410SDA, RDT&E, Defense-wide, Space Technology Development and Prototyping, for a total of \$55.0 million.

Hypersonic and Ballistic Tracking Space Sensor

The budget request included \$27.6 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 1206895C Ballistic Missile Defense System (BMDS) Space Programs of the Missile Defense Agency (MDA), of which no funding was requested for a space-based sensor layer for missile defense purposes.

The committee is deeply concerned about the growing threat posed by hypersonic glide and cruise missiles, which challenge existing sensor capabilities for both homeland and theater missile defenses. Integral to any defense against this threat is the ability to track low-flying or maneuverable missiles and glide vehicles, a mission that can only be performed effectively from space. The committee also notes that the space-based sensor technology would be required before a space-based intercept layer—which was included in the budget request—could be deployed.

The committee notes that, after several years of consistent testimony from senior Department of Defense officials regarding the importance of space-based sensors for a missile defense capability, the Congress has strongly supported MDA's space-based sensor program. Both the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) and the Department of Defense Appropriations Act for Fiscal Year 2019 (Public Law 115–245) increased funding for the Space Sensor Layer program from \$0.0 to \$73.0 million.

Finally, the committee notes that this program, now called the Hypersonic and Ballistic Tracking Space Sensor, was included in the unfunded requirements lists of the MDA Director and the Commander of U.S. Strategic Command.

Accordingly, the committee recommends an increase of \$108.0 million, for a total of \$135.6 million, in RDT&E, Defense-wide, for PE 1206895C.

Joint Mission Environment Test Capability

The budget request included \$83.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 65100D8Z Joint Mission Environment Test Capability.

The committee notes the importance of cyber range development to meet future national security needs. The committee believes that cyber test range capabilities will be critical in training our warfighters to effectively counter the threats posed by our adversaries as specified in the National Defense Strategy.

Therefore, the committee recommends an increase of \$6.0 million, for a total of \$89.1 million, in RDT&E, Defense-wide, for PE 65100D8Z.

Technical Studies, Support, and Analysis

The budget request included \$18.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 65104D8Z for technical studies and analyses.

The committee recommends a reduction of \$5.0 million in RDT&E, Defense-wide, for PE 65104D8Z.

Systems engineering

The budget request included \$37.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 65142D8Z systems engineering.

The committee supports a program reduction in systems engineering due to the lack of coordination of efforts across the Department of Defense.

Therefore, the committee recommends a decrease of \$5.0 million, for a total of \$32.1 million, in RDT&E, Defense-wide, for PE 65142D8Z for management support.

Defense Digital Service development support

The budget request included \$1.0 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 66589D8W Defense Digital Service (DDS) Development Support.

The committee recognizes the importance of the Defense Digital Service in helping the Department of Defense to build, buy, and deploy technology and digital services.

Accordingly, the committee recommends an increase of \$5.0 million in RDT&E, Defense-wide, for PE 66589D8W for additional development support activities.

Advanced manufacturing systems

The budget request included \$10.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 67210D8Z Industrial Base Analysis and Sustainment Support.

The committee notes that the university research community has contributed significantly to the development of new defense capabilities, including in advanced manufacturing. The committee believes that the U.S. academic research enterprise should play a bigger role in promoting innovation in the defense industrial base.

Accordingly, the committee recommends an increase of \$5.0 million in RDT&E, Defense-wide, for PE 67210D8Z for interdisciplinary centers for research on advanced manufacturing.

Composite manufacturing technologies

The budget request included \$10.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 67210D8Z industrial base analysis and sustainment support.

The committee notes that the September 2018 Department of Defense report titled “Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States” stressed the “imperative that producers and

supply chains of materials deemed essential to U.S. defense and civilian demand are robust, resilient, competitive, and responsive to support current and long-term economic security, current military operations, future wartime mobilization, and unanticipated surge demand.”

Accordingly, the committee recommends an increase of \$15.0 million in RDT&E, Defense-wide, for PE 67210D8Z to fund the development of composite manufacturing technologies.

Printed circuit boards

The budget request included \$10.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 67210D8Z industrial base analysis and sustainment support.

The committee notes that the September 2018 Department of Defense report titled “Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States” stated, “90% of worldwide printed circuit board production is in Asia, over half of which occurring in China; and the U.S. printed circuit board sub-sector is aging, constricting, and failing to maintain the state of the art for rigid and rigid-flex printed circuit board production capability.”

Accordingly, the committee recommends an increase of \$15.0 million in RDT&E, Defense wide, for PE 67210D8Z to fund printed circuit board manufacturing.

Rare earths materials research

The budget request included \$10.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 67210D8Z industrial base analysis and sustainment support.

The committee notes the importance of supporting mitigations for continuous and growing industrial base shortfalls and vulnerabilities, including those identified in the September 2018 Department of Defense report titled “Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States.” This report specifically recommended expanding direct investment in the lower tier of the industrial base through the Department’s Industrial Base Analysis and Sustainment program to address critical bottlenecks, support fragile suppliers, and mitigate single points-of-failure. It further noted that “China’s domination of the rare earth element market illustrates the potentially dangerous interaction between Chinese economic aggression guided by its strategic industrial policies and vulnerabilities and gaps in America’s manufacturing and defense industrial base.”

Accordingly, the committee recommends an increase of \$3.5 million in RDT&E, Defense-wide, for PE 67210D8Z to fund development of capability to produce rare earth elements from coal ash.

Sharkseer transfer

The budget request included \$289.1 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 33140G Information Systems Security Program.

The committee included a provision in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law

115–232) that required the Secretary of Defense to transfer the operations and maintenance for the Sharkseer cybersecurity program from the National Security Agency to the Defense Information Systems Agency.

Therefore, the committee recommends a decrease of \$1.9 million in RDT&E, Defense-wide, for PE 33140G for the Sharkseer program.

Sharkseer transfer

The budget request included \$42.8 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 33140K Information Systems Security Program.

The committee included a provision in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) that required the Secretary of Defense to transfer the operations and maintenance for the Sharkseer cybersecurity program from the National Security Agency to the Defense Information Systems Agency.

Therefore, the committee recommends an increase of \$1.9 million in RDT&E, Defense-wide, for PE 33140K for the Sharkseer program.

Defense Counterintelligence and Security Agency activities

The budget request included \$2.4 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 0305128V Security and Investigative Activities.

The committee recommends an increase of \$15.0 million in RDT&E, Defense-wide, for PE 0305128V for the Defense Counterintelligence and Security Agency to carry out a set of activities relating to facilitating access by the Agency to local criminal records historical data.

Future Vertical Lift

The budget request included \$245.8 million in Research, Development, Test, and Evaluation (RDT&E), Defense-wide, for PE 1160403BB aviation systems, of which \$1.2 million is for the development and integration of special operations-unique equities and requirements into a multi-service future vertical lift (FVL) capability set 3 (CS3) aircraft.

The committee understands that U.S. Special Operations Command (SOCOM) is working with the Army to identify specific special operations-unique requirements early in the design phase of the FVL CS3 in order to reduce duplication of design, engineering, and post-production costs. The committee notes that the SOCOM Program Executive Officer-Rotary Wing and the Army Program Manager-FVL estimate that there could be approximately \$188 million in RDT&E savings resulting from this co-development approach as compared to making post-production modifications to the aircraft.

The committee also understands that the Army's decision to accelerate FVL CS3 development has resulted in a shortfall in SOCOM's related development efforts, an identified high priority unfunded requirement for the command. Therefore, the committee recommends an additional \$8.8 million in RDT&E, Defense-wide,

for PE 1160403BB, for the development and integration of special operations-unique equities and requirements into a multi-service FVL CS3 aircraft.

Next Generation Information Communications Technology (5G)

The budget request included no funding in Research, Development, Testing, and Evaluation (RDT&E), Defense-wide, for PE 64011D8Z Next Generation Information Communications Technology.

The committee believes that fifth-generation wireless networks and associated technologies will be a foundation for future economic growth, will have an important nexus with national security, and should be of high interest to the Department of Defense. The committee is aware that, in future wireless networks, the ability to use dynamic spectrum sharing technologies will be critical to more efficient spectrum use.

The committee recommends an increase of \$25.0 million, for a total of \$25.0 million, in RDT&E, Defense-wide, for PE 64011D8Z in support of a Department of Defense spectrum sharing program.

Transfer from OCO to Base

The budget request included \$102.6 billion for Research, Development, Test, and Evaluation (RDT&E) in base funding. The committee notes that the President's budget request included \$97.9 billion in the Overseas Contingency Operations (OCO) account for activities that are traditionally funded out of base accounts. The committee believes that OCO for Base funding should be transferred into the base accounts.

Accordingly, the committee recommends an increase of \$748.0 million to RDT&E base funding.

Items of Special Interest

Acquisition roadmaps for certain Navy unmanned systems

The committee notes that the Navy's fiscal year 2020 future years defense program (FYDP) includes a substantial increase in funding for various unmanned systems, including unmanned surface vessels (USVs) and unmanned underwater vessels (UUVs). The committee further notes that Navy leaders envision some of these systems' operating autonomously with the ability to employ weapons.

While recognizing the need for prototypes to reduce acquisition risk, the committee is concerned that the acquisition strategies for the Large USV, Medium USV, Orca UUV, and Snakehead UUV could lead to procurement of an excessive number of systems before the Navy is able to determine if the USVs and UUVs meet operational needs.

Therefore, the committee directs the Secretary of the Navy to submit a report to the congressional defense committees, not later than November 1, 2019, that provides acquisition roadmaps for the Large USV, Medium USV, Orca UUV, and Snakehead UUV. Each roadmap shall: (1) Identify the applicable requirements document (e.g., Top Level Requirements); (2) Describe the threshold and ob-

jective values for each characteristic, key performance parameter (KPP), or other measure in the applicable requirements document; (3) Identify increments of vessels in each program; (4) For each such increment, identify specific entrance and exit criteria that build toward the specified requirements (e.g., characteristic, KPP, or other measure), including demonstrated hardware and software functionality; (5) Identify the quantity of vessels needed in each increment to perform the required testing or meet operational needs; (6) Describe the concept of operations for each increment; (7) Identify the key pieces of hardware and software needed for each increment, including communications security material, off-board line-of-sight and satellite communications, and military datalinks; (8) Describe the extent to which each increment of vessels will be equipped with weapons, enumerate such weapons, and describe the associated target detect-to-engage sequence of events for each such weapon; (9) Provide the subsystem-level prototyping plan for each increment, including for each such effort the planned cost, schedule, and performance; and (10) Provide the acquisition plan for each increment, including the planned cost, schedule, and performance.

Advance power electronics

The committee supports the Navy's efforts in developing advanced power electronics, including silicon carbide power modules, which could reduce the size and weight of power conversion modules and other electronic systems needed to power advanced sensors and weapon systems. The committee recognizes that available space and power density will continue to be a concern when fielding naval systems on legacy Navy ships.

The committee encourages the Navy to continue its efforts to develop silicon carbide power modules to support planned deployment of high-power, mission critical systems on Navy platforms.

Army Futures Command research budget realignments

The committee understands that the Army has reorganized certain research offices, laboratories, and engineering centers within the Combat Capability Development Command (CCDC), a subordinate command of Army Futures Command. The committee is aware that, as part of this reorganization, certain program elements for basic research, applied research, and advanced technology development were realigned from research, development, and engineering centers to Army Futures Command headquarters.

The committee directs the Secretary of the Army to enter into an agreement with the National Academy of Sciences to evaluate these changes and their impact on the Army's ability to efficiently and effectively develop and deploy needed capabilities and new technologies in the near, mid, and far terms. The review should also include recommendations for policy and organizational options that would better optimize the Army research enterprise to support Army missions in the near, mid, and far terms. The committee directs that this study be delivered to the congressional defense committees no later than February 1, 2021.

Artificial intelligence and sensor fusion for force protection

The committee acknowledges the success of ongoing rapid fielding of commercially-available technologies that use artificial intelligence and sensor fusion to deliver enhanced force protection for Department of Defense (DOD) personnel and installations. The committee notes that recent advances in commercially available technology, including artificial intelligence, computer vision, and sensor technology, have made it possible to develop, manufacture, and deploy reconnaissance, surveillance, and target acquisition technologies that are far more effective, more efficient, and lower cost than legacy systems. The committee is aware that artificial intelligence can significantly improve situational awareness and security for DOD personnel through faster and better processing and exploitation of sensor data, recognition and classification of potential threats, and dissemination of that information to human operators for the purposes of enhanced self-defense.

The committee believes that artificial-intelligence- and sensor-fusion-based technologies for personnel security and base defense will reduce manpower and improve operators' ability to detect, classify, and respond to threats. Accordingly, the committee directs the DOD to review the application of artificial intelligence that could improve the safety of DOD personnel and installations and prioritize such efforts as appropriate.

Artificial intelligence for Army air and missile defense

The committee supports the Army's efforts to conduct operationally realistic assessments of Army Air and Missile Defense (AMD) performance, identify system vulnerabilities, and develop mitigations against threats across the cyber and electromagnetic spectrum. The committee remains concerned about any potential vulnerabilities in AMD weapon systems and understands the importance of conducting periodic assessments of these weapon systems. The committee is also aware that the Army is developing tools, including modeling and simulation and virtual models of critical hardware and software to allow for testing in a lab environment. The committee encourages the Army to look at methods for incorporating artificial intelligence and machine learning into assessments of AMD weapon systems to help identify and mitigate current and future threats.

Back-packable Communications Intelligence System

The committee is aware of expressed support by United States Army Special Operations Command (USASOC) for continued development of the Back-packable Communications Intelligence System (BPCS), an ultra-capable, low size, weight, and power, high-frequency direction finding system currently managed by the U.S. Army. The committee understands that BPCS performance was demonstrated at the Special Operations Forces Acquisition, Technology and Logistics (SOF AT&L) Technical Experiment 18-3 and encourages USASOC to continue working in close coordination with SOF AT&L and the Army to advance BPCS development and testing.

Battlefield situational awareness

The committee is aware that, on a modern battlefield, it is expected that friendly forces will be in close proximity to the enemy and will require integrated joint fires in order to achieve the effects demanded by the Joint Force Commander. The committee believes that the Department of Defense has been slow to develop and field capabilities to provide battlefield situational awareness of enemy and friendly forces. The committee is also aware of current technical solutions that could provide the required identification of friend and foe in environments such as battlefield interdiction, close combat attack, or close air support.

Therefore, the committee directs the Chairman of the Joint Chiefs of Staff, in consultation with the service chiefs, to provide a briefing, no later than March 30, 2020, on a technical solution and an acquisition strategy that would provide the Joint Force with continuous battlefield situational awareness to identify friendly and enemy personnel in both highly contested and permissive environments.

Briefing on detection of uncharted wires and obstacles to prevent aviation incidents

Uncharted wires and obstacles pose a threat to rotary wing and tiltrotor aircraft particularly in degraded visual environments. This problem can be exacerbated for special operations and combat search and rescue (CSAR) aircraft that often operate in non-permissive conditions.

The committee understands that multiple systems that may increase visibility for aircrews in order to avoid obstacles in both low altitude flying and landing environments are currently in development. However, the committee is concerned that the Department of Defense has not taken demonstrable steps toward fielding such technology. Furthermore, the development and fielding of such a capability should be fully coordinated across the Services to expeditiously field this technology to aircrews.

Therefore, the committee directs the Under Secretary of Defense for Research and Engineering, in coordination with the Chief of Staff of the Army, the Chief of Staff of the Air Force, the Chief of Naval Operations, the Commandant of the United States Marine Corps, and the Commander, U.S. Special Operations Command, to provide a briefing to the committee no later than October 1, 2019, on efforts to identify, develop, and procure capabilities for rotary wing and tiltrotor aircraft to detect and avoid uncharted wires and obstacles. The briefing shall include an evaluation of current commercially available systems as well as an estimate of the funding required to, if necessary, develop and acquire such a system for rotary wing and tiltrotor aircraft.

Demonstration pilots to demonstrate cost savings and enhanced performance of anti-corrosion nanotechnologies

The committee is aware of new advances in nanotechnology being used in the commercial sector, particularly in the aviation and energy industries, that reduce corrosion, improve performance, and reduce costs. The committee is concerned that, although the fundamental science was developed in part by the Department of De-

fense, the Department has failed to even try these new materials that could significantly reduce the military's operating costs while improving readiness and performance.

Accordingly, the committee directs the Under Secretary of Defense for Acquisition and Sustainment and the Under Secretary of Defense for Research and Engineering to brief the committee, no later than February 1, 2020, on the economic, performance, and readiness impacts regarding the potential for testing and applying these technologies in various operating assets, like pipelines, heat exchangers, fuel storage tanks, water lines, aircraft, and others deemed appropriate by the Department.

Department of Defense artificial intelligence investment inventory

The committee believes that it is important that the Department of Defense (DOD) has accurate insight as to the nature and extent of investments made in artificial intelligence (AI). The committee is aware that one impediment to such insight is that AI Research, Development, Test, and Evaluation (RDT&E) is spread throughout generally titled program elements (PEs) and incorporated into funding for larger systems with AI components or even extends beyond RDT&E into Operation and Maintenance and Procurement.

The committee therefore directs the Under Secretary of Defense (Comptroller) to brief the congressional defense committees by September 1, 2019, on the total array of AI investments, to include PEs, line numbers, and funding amounts with sufficient detail and description of those investments. The committee also expects the Under Secretary to include the methodology for tracking AI investments in future budget requests. Further, the committee recommends that the Department consider summarizing these AI investments in the annual information technology budget exhibit.

Flame resistant military uniforms with multi-spectral sensor protection

The committee notes that infrared and multi-spectral sensor detection is an emerging threat to members of the Armed Forces. Soldiers, sailors, airmen, and marines are under an ever increasing threat of long-range detection by these sensors in use by hostile near-peer as well as non-state actors. Given recent technical developments in sensor technologies and sensor mitigation, the committee feels that it is in the best interest of the Services to explore multi-spectral sensor mitigation technologies and to incorporate them into the current suite of flame resistant (FR) uniforms presently in use by the Services.

Therefore, the committee directs the Secretary of the Army, in coordination with the Secretaries of the Navy and the Air Force, to conduct a feasibility study on incorporating these mitigation technologies into FR uniforms and to provide a briefing to the congressional defense committees on this study by December 1, 2019.

High powered microwave test range asset

The committee supports the transitioning of new and game-changing directed energy technologies to the warfighter. An enduring testing and evaluation capability for high powered microwaves

(HPM) would help the Services develop the doctrine and concepts of operation that will bring these technologies to operational use. Currently, an enduring frequency agile and tunable HPM asset is not available at Major Range and Test Facility Bases for evolving doctrine and HPM Directed Energy Concept of Operations. The committee supports the Air Force's development of such an asset at the Nation's test ranges.

Historically black colleges and universities support for minority women in science, technology, engineering and mathematics fields

The committee acknowledges the ongoing efforts of the Department of Defense (DOD) to increase the participation of women and other underserved populations in science, technology, engineering and mathematics-related (STEM) areas of research. The committee urges the DOD to continue funding for center of excellence efforts at historically black colleges and universities (HBCUs) that support training and education of minority women in STEM fields of interest to the military, particularly through research funding, fellowships, and internships and cooperative work experiences at defense laboratories. The committee recommends that the Department of Defense consider increasing investments in these kinds of activities in future budgets to support administration initiatives on HBCUs.

Hostile fire detection technology

The committee is aware of advancements in the development of hostile fire detection technology and the importance of these capabilities in providing deployed forces with the ability to quickly detect, locate, and discriminate hostile fire and related threats. The committee believes that efforts to reduce the size, weight, power requirements, and cost for hostile fire detection technologies could provide important benefits to battlefield effectiveness and survivability of our forces. The committee therefore directs the Commander of U.S. Special Operations Command (SOCOM) to provide to the committee a briefing not later than October 1, 2019, on SOCOM's current requirements for hostile fire detection and an assessment of available technologies that may fulfill these requirements.

Human factors modeling and simulation

The committee notes that section 227 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) required the Secretary of Defense to develop and provide for the execution of human factors modeling and simulation activities with the purpose of accelerating research and development that enhances capabilities for human performance, human-systems integration, and training for the warfighter.

The committee directs the Secretary to provide a briefing on the status of this requirement and activities taken to fulfill the requirement no later than 90 days after the date of the enactment of this Act. The briefing shall include information on the extent of the activities that are being carried out, the effects of these activities with respect to their purpose, activity participants, locations where

activities are being carried out, and the plan to sustain these activities in the future.

Hypersonic development

The committee understands that developing hypersonic technology is a high priority modernization effort for the Department of Defense (DOD). The committee recognizes that, in an effort to accelerate the development of hypersonics and to coordinate simultaneous development efforts across the DOD, the Under Secretary of Defense for Research and Engineering signed a memorandum of agreement with the Services, with each contributing to and collaborating on the land-, sea-, and air-based prototyping of hypersonic technology.

The committee notes that, for over 30 years, Sandia National Laboratories (SNL) has made significant contributions to the prototyping and testing of hypersonic vehicles. SNL houses experienced scientists and engineers in the development of this technology, who utilize SNL's hypersonic wind tunnel and advanced laser diagnostic technology. Over 7 years ago, Sandia conducted a successful flight test of a hypersonic concept for the U.S. Army Space and Missile Defense Command. This test provided SNL with significant additional data on hypersonic boost-glide technologies and test range performance for long-range atmospheric flight with an emphasis on aerodynamics, navigation, guidance and control, and thermal protection technologies.

SNL is now integrating artificial intelligence into the designing and planning stages, which may significantly expedite the development and design process.

The committee believes that the technical expertise at SNL and the laboratory has been and will continue to be instrumental to the development and eventual production of hypersonics. Therefore, the committee encourages the Department to utilize the technical and scientific expertise at labs, including SNL, necessary for the development of prototypes and to assist commercial industry in manufacturing.

Importance and use of United States Active Ionospheric Research Facilities

The committee recognizes the unique importance of U.S. active ionospheric research facilities, also known as "ionospheric heaters." These facilities transmit high frequency (HF) radio waves and play a crucial role in the research of ionospheric effects on national security systems. The research possible at these facilities is useful to national security in the realms of domain awareness, radar, atmospheric effects on space systems, and over-the-horizon communications. The committee recognizes that, while there are four ionospheric research facilities in the world, two are in the United States, including the High-frequency Active Auroral Research Program (HAARP) in Gakona, Alaska, and the HF heater at the Arecibo Observatory (AO) in Arecibo, Puerto Rico. Both of these centers are available to support scientific investigations and national security programs for the Department of Defense, Department of Energy, and the National Science Foundation.

The committee is aware that the HAARP has supported investigations of ionospheric effects on high latitude communications and navigation capabilities and the remediation of high energy “killer” electrons in the magnetosphere as a result of an extreme solar event or a high-altitude nuclear detonation. The HAARP facility supports strategic applications for over-the-horizon radar, global communication, and diagnostics for satellite communication. The committee is aware that the AO facility supports investigations of ionospheric effects at mid- and low latitudes with applications including radio communications and radar detection. These experimental sites provide insights and diagnostics for ionospheric effects that are extremely challenging to obtain.

The committee encourages continued use of these facilities and believes that these facilities can be used, when appropriate, to support the national security space program.

Interdisciplinary expeditionary cybersecurity research

The committee is encouraged by current research efforts to understand expeditionary cyber challenges. The committee understands the challenge of operating within a complex and evolving cyber and physical environment where warfighters are in close proximity and contact with adversaries and believes that this is simultaneously a growing threat and opportunity. The committee believes that an interdisciplinary approach to developing new capabilities for cyber systems while including consideration of the role of human behavior in the tactical cyber environment is critical. The committee encourages the Department of Defense to continue to conduct multidisciplinary research in the areas of: dynamic cyber defense; tactical cyberspace operations and signals intelligence; sensing; and computation and communications.

Light attack experiment

The committee supports the increase of combat capability and readiness at a reduced cost and the development of advanced capabilities for close air support, armed reconnaissance, strike coordination and reconnaissance, airborne forward air control, and interdiction. The committee also supports the Department of Defense’s intent to lower the cost of countering violent extremism in accordance with the National Security Strategy. However, the committee is concerned that the pace of research and prototyping in this area has not kept up with the threat or the current capability available to the Department.

Therefore, the committee directs the Secretary of the Air Force to deliver a briefing, no later than March 30, 2020, to the congressional defense committees on the acceleration of the light attack experiment using existing aircraft and any other aircraft that the Chief of Staff of the Air Force deems appropriate and capable of reaching initial operating capability by 2023.

Multifunction capability to provide communications in contested environments

The committee is concerned about the ability of the Department of Defense to maintain its advantage in full spectrum operations in the future. Recent conflicts have highlighted our adversaries’ in-

creasing abilities to geolocate, jam, and intercept electronic communications, putting at risk the U.S. military's ability to communicate and conduct effective command and control in contested environments.

To better prepare for future combat operations against a near-peer adversary, the committee believes that the DOD needs to expedite testing of multi-domain capabilities and systems that provide distributed, shared, full spectrum situational awareness and spectrum maneuver. This testing should include cognitive machine learning or artificial intelligence applications to assess new and unknown electronic signals in real-time. Such testing would also demonstrate advanced technologies, such as modern waveforms that are designed to be low-probability-of-intercept, low-probability-of-detection, and ultra-wideband radio frequency converged apertures that permit the U.S. to maintain spectrum dominance. These systems should also enable secure communications across networks with different security levels and between both legacy and advanced systems.

Therefore, the committee directs the Secretary of Defense to provide the congressional defense committees with a briefing, no later than March 1, 2020, on the plan for the conduct of live testing of technologies and capabilities designed to permit secure full spectrum operations in the fiscal years 2020–2021 timeframe.

Navy laser integration plans

The committee is greatly encouraged by the Navy's rapid demonstration of laser weapon systems on surface ships. In 2014, the Navy deployed a 30 kW Laser Weapon System (LaWS) on USS *Ponce*, which will be followed by a 150 kW LaWS on USS *Portland* (LPD-27), planned for 2019. The committee understands that the improvements in power and beam quality make the 150 kW LaWS nearly a 100-fold improvement in lethality.

The committee is also encouraged by the Navy's plans to integrate the 60 kW High Energy Laser and Integrated Optical-dazzler with Surveillance (HELIOS) program into *Arleigh Burke*-class destroyers beginning in 2021.

If the HELIOS effort succeeds, the committee believes there may be additional opportunities to integrate High Energy Laser (HEL) systems on large capital ships, including aircraft carriers and large amphibious ships, to increase the defensive capabilities and lethality of our carrier strike groups and expeditionary forces.

If the Navy has continued positive results at increased radiated power, there may also be broader applications of laser weapons for providing capability for fleet air defense from more Navy vessels.

Therefore, the committee directs the Secretary of the Navy to provide a briefing to the Senate Armed Services Committee, not later than October 1, 2019, describing the path forward for ship-board integration of HEL systems and the risk reduction plan to achieve improved technology and manufacturing readiness levels for such higher power systems. The committee also directs the Secretary to provide briefings on the progress of laser systems development and testing every 6 months through fiscal year 2021.

Production-ready sources for hypersonic materials

Hypersonic systems require high performance, heat resistant materials to survive demanding flight regimes. For mission critical structures such as radomes and apertures, currently available materials and manufacturing infrastructure cannot meet anticipated requirements for hypersonic systems. The committee notes that the September 2018 Report of the Interagency Task Force in fulfillment of Executive Order 13806 recommends that the Department of Defense expand direct investment in the lower tier of the industrial base through Title III of the Defense Production Act (Public Law 81-774), Department of Defense Manufacturing Technology, and Industrial Base Analysis and Sustainment programs to address critical bottlenecks, support fragile suppliers, and mitigate single points-of-failure. The committee strongly agrees with this recommendation and directs the Department to use the respective authorities and funding within these programs to accelerate material qualification and establishment of production ready sources for critical materials and components to support hypersonic systems.

Requirement for briefing on Advanced Battle Management System acquisition strategy

The committee is concerned with the progress of the Advanced Battle Management System (ABMS). The Air Force has taken a significant amount of time to hire what they refer to as an architect to analyze the problem and produce a solution that would be fielded at Robins Air Force Base. The committee understands that the problem is currently well-defined to include potential sensor and communication requirements for a disaggregated solution to battle management. However, the committee remains concerned that the ABMS comprises a number of programs and, as a result, may cross multiple program elements.

Therefore, the committee directs the Secretary of the Air Force to biannually provide briefings to the congressional defense committees on the progress of the ABMS acquisition. The first briefing shall be provided no later than January 1, 2020, and the subsequent briefings shall be provided once every 6 months until system is fielded.

These briefings shall include: (1) the ABMS acquisition strategy; (2) Progress made in meeting that strategy; (3) An unclassified plan that lays out a personnel transition strategy in order to develop the initial cadre for the ABMS from the current workforce, including active duty, Reserve, Air National Guard, and civilians, at Robins Air Force Base; and (4) The plan to fill the capability gap that could emerge post-JSTARS and pre-ABMS.

Use of commercial cloud services to support high performance computing needs

The committee notes that the Department of Defense (DOD) has many needs for high performance computing systems to support weapons design and testing, weather forecasting, scientific research, data analysis, and other missions. The committee further notes that commercial cloud computing services may provide a novel, efficient, and lower cost method for obtaining high performance computing capabilities. The committee directs the Under Sec-

retary of Defense for Research and Engineering (USD(R&E)) and the Chief Information Officer (CIO) to jointly develop a report analyzing the potential use of cloud computing capabilities, including commercial services, to help support the high performance computing needs of the DOD. The committee directs that the report be delivered to the congressional defense committees no later than January 1, 2021.

TITLE III—OPERATION AND MAINTENANCE

Subtitle A—Authorization of Appropriations

Authorization of appropriations (sec. 301)

The committee recommends a provision that would authorize the appropriations for operation and maintenance activities at the levels identified in section 4301 of division D of this Act.

Subtitle B—Energy and Environment

Use of operational energy cost savings of Department of Defense (sec. 311)

The committee recommends a provision that would amend section 2912 of title 10, United States Code, to require that operational energy cost savings realized by the Department of Defense be used for the implementation of additional operational energy cost saving methods.

Use of proceeds from sales of electrical energy generated from geothermal resources (sec. 312)

The committee recommends a provision that would amend section 2916(b) of title 10, United States Code, to provide the Department of Defense more flexibility when using geothermal revenue.

Energy resilience programs and activities (sec. 313)

The committee recommends a provision that would make technical corrections to the Annual Energy Management and Resilience Report, would require a report on funding levels for certain energy program offices, and would establish targets for reduction in water use.

Native American Indian lands environmental mitigation program (sec. 314)

The committee recommends a provision, as requested by the Department of Defense (DOD), that would amend chapter 160 of title 10, United States Code, to allow the Secretary of Defense to establish a program to mitigate the environmental impacts of DOD activities on Native American Indian lands.

Reimbursement of Environmental Protection Agency for certain costs in connection with the Twin Cities Army Ammunition Plant, Minnesota (sec. 315)

The committee recommends a provision that would allow the Secretary of Defense to reimburse the Environmental Protection Agency for remedial actions performed at the Twin Cities Army Ammunition Plant (TCAAP). The committee understands that this au-

thority will be used to satisfy the interagency agreement for the TCAPP.

Prohibition on use of perfluoroalkyl substances and polyfluoroalkyl substances for land-based applications of firefighting foam (sec. 316)

The committee recommends a provision that would prohibit the Department of Defense from procuring firefighting foam that contains perfluoroalkyl and polyfluoroalkyl substances after October 1, 2022.

Transfer authority for funding of study and assessment on health implications of per- and polyfluoroalkyl substances contamination in drinking water by Agency for Toxic Substances and Disease Registry (sec. 317)

The committee recommends a provision that would amend section 316(a) of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) to extend the authority of the Secretary of Defense to transfer funds to the Secretary of Health and Human Services for the study and assessment of the health implications of per- and polyfluoroalkyl substances.

Cooperative agreements with States to address contamination by perfluoroalkyl and polyfluoroalkyl substances (sec. 318)

The committee recommends a provision that would encourage the Secretary of Defense to work expeditiously to finalize a cooperative agreement upon request from the governor of a State if there is suspected contamination from perfluoroalkyl and polyfluoroalkyl substances. If an agreement is not finalized or amended within 1 year, the Secretary of Defense is required to submit a report to the appropriate congressional committees.

Modification of Department of Defense environmental restoration authorities to include Federal Government facilities used by National Guard (sec. 319)

The committee recommends a provision that would establish environmental restoration accounts for the Army National Guard and the Air National Guard.

Budgeting of Department of Defense relating to extreme weather (sec. 320)

The committee recommends a provision that would require the Secretary of Defense to include a dedicated budget line item for adaptation to and mitigation of effects of extreme weather on military networks, systems, installations, facilities, and other assets and capabilities of the Department of Defense in the annual budget submission of the President.

Pilot program for availability of working-capital funds for increased combat capability through energy optimization (sec. 321)

The committee recommends a provision that would allow the Secretary of Defense and the military departments to use the working

capital fund established pursuant to section 2208 of title 10, United States Code, to conduct a pilot program for energy optimization initiatives. Further, this provision would require the Secretary of Defense to submit an annual report to the congressional defense committees on the use of the authority during the preceding fiscal year. The annual report would be required to be submitted not later than 60 days after the President's budget is submitted to the Congress.

Report on efforts to reduce high energy intensity at military installations (sec. 322)

The committee recommends a provision that would require the Under Secretary of Defense for Acquisition and Sustainment to submit a report on efforts to achieve cost savings at military installations with high energy intensity to the congressional defense committees not later than September 1, 2020.

Technical and grammatical corrections and repeal of obsolete provisions relating to energy (sec. 323)

The committee recommends a provision that would provide technical corrections to title 10, United States Code.

Subtitle C—Logistics and Sustainment

Requirement for memoranda of understanding between the Air Force and the Navy regarding depot maintenance (sec. 331)

The committee recommends a provision that would require a joint memorandum of understanding in such cases where one military service would provide depot maintenance for an air platform of another military service. The memorandum would address the requirements and oversight responsibilities for administration, supply, and maintenance and would be executed by officials of both services in a grade of O-7 or higher with responsibilities for administration, supply, and maintenance.

The committee wants to ensure that the different maintenance practices required by the Navy and the Air Force are well-understood by both services.

Modification to limitation on length of overseas forward deployment of naval vessels (sec. 332)

The committee recommends a provision that would amend section 323 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232) relating to the limitation on length of overseas forward deployment of naval vessels.

Subtitle D—Reports

Report on modernization of Joint Pacific Alaska Range Complex (sec. 341)

The committee recommends a provision that would require the Secretary of the Air Force to submit to the congressional defense committees a report on the long-term modernization of the Joint Pacific Alaska Range Complex.

Subtitle E—Other Matters

Strategy to improve infrastructure of certain depots of the Department of Defense (sec. 351)

The committee recommends a provision that would require the Secretary of Defense to deliver a comprehensive strategy to the congressional defense committees, no later than October 1, 2020, for improving the depot infrastructure of the military departments with the objective of ensuring that the depots have the capacity and capability to support the readiness and material availability goals of current and future weapon systems of the Department of Defense. The provision would require that the strategy include a review of the current conditions and performance of each depot, a business-case analysis comparing the minimum investment necessary required under section 2476 of title 10, United States Code, with the actual investment needed to execute the planned mission and a plan to improve the conditions and performance utilizing this data.

The provision would also require the Comptroller General of the United States to review and submit to the congressional defense committees, no later than January 1, 2021, a report on the extent to which the submitted strategy meets the requirements set forth.

The committee notes that, although section 2476e of title 10, United States Code, established minimum investment requirements for the military departments' depots, the committee is aware that recent reporting by the Comptroller General indicates that the condition of depot facilities is poor and the age of depot equipment is often past its expected useful life. The intent of section 2476e was to require a minimum level of investment to ensure that the military depots would receive adequate investment in facilities, equipment, and processes. The committee is concerned, however, that this requirement may not be adequate to maintain the organic industrial base infrastructure over its useful life.

Limitation on use of funds regarding the basing of KC-46A aircraft outside the continental United States (sec. 352)

The committee recommends a provision that would limit Air Force funds until the Secretary of the Air Force submits to the Congress a report on the projected plan and timeline for strategic basing of the KC-46A aircraft outside the continental United States.

Prevention of encroachment on military training routes and military operations areas (sec. 353)

The committee recommends a provision that would require projects to file 1 year before construction if they are proposed within wide area surveillance over-the-horizon radar. Additionally, the provision allows the governor of a State to recommend geographical areas of concern to the Secretary of Defense.

Expansion and enhancement of authorities on transfer and adoption of military animals (sec. 354)

The committee recommends a provision that would amend section 2583 of title 10, United States Code, to require veterinary

screening and care for military working dogs prior to retirement or transfer to law enforcement agencies. The provision would also, as requested by the Department of Defense, extend transfer and adoption authorities to Department-owned mules and donkeys, in order to provide consistency for use of the word “transfer” throughout this section of law.

Limitation on contracting relating to Defense Personal Property Program (sec. 355)

The committee recommends a provision that would prohibit the Secretary of Defense from entering into or awarding any contract for the Defense Personal Property Program (DP3) any sooner than 60 days after the Comptroller General of the United States delivers a report to Congress, previously directed, on DP3. The provision would allow the Secretary of Defense to review and evaluate any solicited or unsolicited proposal intended to improve DP3.

The committee notes the concerns and frustration of servicemembers across the Department of Defense with the delivery of services under the current DP3 structure. The committee understands that U.S. Transportation Command (TRANSCOM) has efforts underway to improve servicemember experiences for the 2019 and 2020 peak moving seasons and develop a long-term solution for managing the DP3 system through a single contractor. While the committee is encouraged by TRANSCOM’s desire to improve the program’s delivery of services to servicemembers, the committee believes that both TRANSCOM and the Congress need additional information before making a determination on the best path forward.

Prohibition on subjective upgrades by commanders of unit ratings in monthly readiness reporting on military units (sec. 356)

The committee recommends a provision that would prohibit the commander of a military unit who is responsible for monthly reporting of readiness from making any subjective upgrade of the overall rating of the unit. The provision would also include a waiver authority if the first flag or general officer above the reporting unit in the chain of command approves of the upgrade. Finally, the provision would require that any such waiver, and subsequent upgrades, be included in the Quarterly Readiness Report to Congress.

The committee notes that too often certain military services have abused the flexible authority of subjective upgrades, with the Department of Defense and the Congress lacking a truly accurate portrayal of unit readiness as a result.

Extension of temporary installation reutilization authority for arsenals, depots, and plants (sec. 357)

The committee recommends a provision that would amend section 345(d) of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2667 note) by striking “September 30, 2020” and inserting “September 30, 2025.”

The committee notes that the permissive authority that would be extended under this provision allows to the Secretary of the Army to authorize leases and contracts for up to 25 years under section

2667 of title 10, United States Code, if the Secretary determines that a lease or contract will promote the national defense by maintaining the viability of an arsenal, depot, plant, or military installation on which such facility is located. The committee further notes that any lease is subject to a 90-day hold period for the purposes of review by the Army real property manager.

Clarification of food ingredient requirements for food or beverages provided by the Department of Defense (sec. 358)

The committee recommends a provision that would require the Secretary of Defense to publish a notice of proposed action before making any final rule, statement, or determination on the limitation or prohibition of a food or beverage ingredient provided by the Department of Defense (DOD).

The committee notes that the Department of Defense and the Defense Logistics Agency (DLA) are engaging with private industry regarding decisions made that impact food supply chains. In order to assess the impact of these decisions on farms, vendors, suppliers, and supply chain activities, the committee directs the Comptroller General of the United States to evaluate the current DOD/DLA joint subsistence policy board, DOD menu standards, and DLA's process map designed to ensure industry engagement. The committee further directs the Comptroller General to provide a briefing to the committee on the preliminary observations of this review, not later than February 1, 2020, and to submit a report on a date agreed to at the time of the briefing.

Technical correction to deadline for transition to Defense Readiness Reporting System Strategic (sec. 359)

The committee recommends a provision that would amend section 358(c) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232) by striking "October 1, 2019" and replacing it with "October 1, 2020."

The committee notes that the original provision required the Services to complete a transition to the Defense Readiness Reporting System Strategic no later than October 1, 2019. The technical correction to October 1, 2020 adjusts the deadline to conform with the report language and original intent.

Budget Items

Multi-Domain Task Force for the Indo-Pacific region

The budget request included \$417.1 million in Operation and Maintenance, Army (OMA), for SAG 122 Land Forces System Readiness.

The committee recommends an increase of \$29.2 million in OMA for SAG 122 in support of exercises and experimentation, wargaming, concept development, and other activities associated with the Multi-Domain Task Force for the Indo-Pacific region. This increase would support essential capabilities for Multi-Domain Operations-Pacific as described in the Chief of Staff of the Army's unfunded priorities list.

The committee supports the efforts of the Army and U.S. Indo-Pacific Command to develop capabilities and operational concepts to maintain or restore the comparative military advantage of the United States in the Indo-Pacific region and to reduce the risk of executing contingency plans of the Department of Defense. As it develops, the Multi-Domain Task Force will have significant implications for force posture, force structure, and procurement priorities. Going forward, the committee urges the Department of the Army and U.S. Indo-Pacific Command to keep the committee fully apprised of developments relating to activities associated with the Multi-Domain Task Force.

Army Base Operations Support under execution

The budget request included \$22.8 billion in Operation and Maintenance, Army (OMA), of which \$0.0 million was for SAG 131 Base Operations Support. The committee notes that the budget request included a transfer of \$8.0 billion from base to overseas contingency operations for SAG 131 Base Operations Support.

The committee notes according to analysis conducted by the Government Accountability Office, Base Operations Support has historically under executed.

Accordingly, the committee recommends a decrease of \$46.0 million in OMA to SAG 131 Base Operations Support.

Army savings from revised housing cost share

The budget request included \$22.8 billion in Operation and Maintenance, Army (OMA), of which \$0.0 million was for SAG 131 Base Operations Support. The committee notes that the budget request included a transfer of \$8.0 billion from base to overseas contingency operations for SAG 131 Base Operations Support.

The committee notes that this Act contains a provision that would amend the 5 percent cost share requirement for the Services to 2 percent with the additional 3 percent left to the discretion of the Secretary of the relevant military department on a project by project basis.

Accordingly, the committee recommends a decrease of \$50.4 million in OMA for SAG 131 Base Operations Support.

C4I life-cycle replacement at Joint Intelligence Operations Center Europe Analytic Center

The budget request included \$146.4 million in Operation and Maintenance, Army (OMA), for SAG 142 US European Command.

The committee recommends an increase of \$7.8 million in OMA for SAG 142 to support life-cycle replacement of command, control, communication, computer, and intelligence systems and infrastructure at the Joint Intelligence Operations Center Europe Analytic Center at RAF Molesworth, United Kingdom.

Army advertising and recruiting budget decrease

The budget request included \$22.8 billion in Operation and Maintenance, Army (OMA), of which \$716.1 million was for SAG 331 Recruiting and Advertising.

The committee notes that the Army requested \$73.2 million in addition to its baseline advertising budget of \$256.5 million and

\$36.9 million in addition to its baseline recruiting budget of \$349.9 million. The committee further notes that the request represents a 28.5 percent increase to advertising and a 10.5 percent increase to recruiting. When compared to its end strength increases over the future years defense program, the committee believes that this request is ahead of need.

Accordingly, the committee recommends a decrease of \$80.0 million in OMA to SAG 331 Recruiting and Advertising. The committee notes that the specific decreases recommended are \$70.0 million for advertising and \$10.0 for recruiting.

Army Other Personnel Support under execution

The budget request included \$22.8 billion in Operation and Maintenance, Army (OMA), of which \$391.9 million was for SAG 434 Other Personnel Support.

The committee notes according to analysis conducted by the Government Accountability Office, Other Personnel Support has historically under executed.

Accordingly, the committee recommends a decrease of \$28.0 million in OMA to SAG 434 Other Personnel Support.

Army Claims Activities under execution

The budget request included \$22.8 billion in Operation and Maintenance, Army (OMA), of which \$198.8 million was for SAG 436 Army Claims Activities.

The committee notes according to analysis conducted by the Government Accountability Office, Army Claims Activities has historically under executed.

Accordingly, the committee recommends a decrease of \$15.0 million in OMA to SAG 436 Army Claims Activities.

Cyber operations-peculiar capabilities—Army

The budget request included \$22.8 billion in Operation and Maintenance, Army (OMA).

Elsewhere in this Act, the committee recommended a provision that would allow the Secretaries of the military departments to use money authorized for appropriation for Operation and Maintenance (O&M) up to \$3.0 million to develop cyber operations-peculiar capabilities. The provision would allow the Department of Defense to use its O&M funds for the rapid creation, testing, fielding, and operation of cyber capabilities that would be developed and used within the 1-year appropriation period.

Accordingly, the committee recommends an undistributed increase of \$3.0 million in OMA for cyber operations-peculiar capabilities.

Family housing pilot program

The budget request included \$22.8 billion in Operation and Maintenance, Army (OMA).

The committee notes that in title XXX in this Act, the committee recommends a provision that would require the Secretary of the Army to carry out a pilot program to build and monitor the use of not fewer than five single family homes for members of the Army and their families.

Accordingly, the committee recommends an undistributed increase of \$1.0 million to OMA for the single family home pilot program.

Terminal High Altitude Area Defense Army sustainment

The budget request included \$22.8 billion in Operation and Maintenance, Army (OMA), of which no funds were for Terminal High Altitude Area Defense (THAAD) sustainment.

Elsewhere in this report, the committee has stated its views regarding the transition of the THAAD program from the Missile Defense Agency to the Department of the Army.

Therefore, the committee recommends an undistributed increase of \$99.8 million in OMA for THAAD sustainment.

Army National Guard facilities sustainment disaster recovery increase

The budget request included \$3.3 billion in Operation and Maintenance, Army National Guard (OMARNG), of which \$1.1 billion was for SAG 132 Facilities Sustainment, Restoration & Modernization.

The committee notes that the Army National Guard has increasing facilities sustainment costs due to the catastrophic flooding in Nebraska impacting Camp Ashland and other guard equities.

Accordingly, the committee recommends an increase of \$7.2 million in OMARNG for SAG 132 Facilities Sustainment, Restoration & Modernization for disaster recovery.

Army National Guard recruiting and advertising decrease

The budget request included \$3.3 billion in Operation and Maintenance, Army National Guard (OMARNG), of which \$250.4 million was for SAG 434 Other Personnel Support.

The committee notes that the Army National Guard requested \$3.5 million in addition to its baseline marketing budget of \$77.5 million and \$3.5 million in addition to its baseline recruiting budget of \$7.9 million. The committee further notes that the request represents a 4.5 percent increase to marketing and a 44.3 percent increase to recruiting. When compared to its end strength increases over the future years defense program, the committee believes that this request is ahead of need.

Accordingly, the committee recommends a decrease of \$3.0 million in OMARNG for SAG 434. The committee notes that the specific decreases recommended are \$1.5 million for marketing and \$1.5 million for recruiting.

Navy depot maintenance unfunded requirement increase

The budget request included \$53.0 billion in Operation and Maintenance, Navy (OMN), of which \$0.0 billion was for SAG 1B4B Ship Depot Maintenance. The committee notes that the budget request included a transfer of \$8.0 billion from base to overseas contingency operations for SAG 1B4B Ship Depot Maintenance.

The committee notes that the Chief of Naval Operations' unfunded priority list included depot maintenance that directly impacts readiness through both submarine and ship maintenance.

Accordingly, the committee recommends an increase of \$814.0 million in OMN for SAG 1B4B to improve both submarine and ship maintenance.

Posture site assessments in the Indo-Pacific region

The budget request included \$25.9 billion in Operation and Maintenance, Navy (OMN), of which \$94.0 million was for SAG 1CCM Combatant Commanders Direct Mission Support.

The committee notes the National Defense Strategy's emphasis on evolving United States force posture to meet the challenges of strategic competition. In particular, the National Defense Strategy prioritizes forward force maneuver, posture resilience, and resilient and agile logistics. The committee is concerned with the insufficient pace of the transition from large, centralized, and unhardened infrastructure to smaller, dispersed, resilient, and adaptive basing in the Indo-Pacific region. Accelerating this transition and reducing the risk of executing Department of Defense contingency plans will require support site assessments, planning and design, and follow-on military construction investments.

Therefore, the committee recommends an increase of \$5.0 million in OMN for SAG 1CCM to support the conduct of posture site assessments in the Indo-Pacific region.

Navy housing cost share

The budget request included \$25.9 billion in Operation and Maintenance, Navy (OMN), of which \$0.0 billion was for SAG BSS1 Base Operating Support. The committee notes that the budget request included a transfer of \$4.4 billion from base to overseas contingency operations for SAG BSS1 Base Operating Support.

The committee notes that this Act contains a provision that would amend the 5 percent cost share requirement for the Services to 2 percent with the additional 3 percent left to the discretion of the Secretary of the relevant military department on a project by project basis. The committee further notes that the Navy did not request this funding in its base request and instead treated this cost share mandate as an unfunded requirement.

Accordingly, the committee recommends an increase of \$18.8 million in OMN for SAG BSS1 Base Operating Support.

Navy advertising reduction

The budget request included \$25.9 billion in Operation and Maintenance, Navy (OMN), of which \$209.3 million was for SAG 3C1L Recruiting and Advertising.

The committee notes that the Navy requested \$27.9 million in addition to its baseline advertising budget of \$183.4 million. The committee further notes that the request represents a 15.2 percent increase to advertising. When compared to its end strength increases over the future years defense program, the committee believes that this request is ahead of need.

Accordingly, the committee recommends a decrease of \$20.0 million in OMN for SAG 3C1L Recruiting and Advertising.

Navy administration decrease

The budget request included \$25.9 billion in Operation and Maintenance, Navy (OMN), of which \$1.1 billion was for SAG 4A1M Administration.

The committee recommends a decrease of \$1.0 million in OMN for SAG 4A1M.

Navy audit reduction

The budget request included \$25.9 billion in Operation and Maintenance, Navy (OMN), of which \$1.1 billion was for SAG 4A1M Administration.

The committee notes that within this request was an increase of \$158.4 million for audit efforts, which has a baseline of \$370.9 million. The committee notes that the Department of Defense has reported to the committee that the Navy is ranked last among 27 organizations within the DOD for progress in achieving a clean audit. While the committee notes the importance of the audit to making the Department of Defense more efficient, the committee believes that this increase is unjustified.

Accordingly, the committee recommends a decrease of \$50.0 million in OMN for SAG 4A1M for Navy audit efforts.

Resilient Energy Program Office

The budget request included \$25.9 billion in the Operation and Maintenance, Navy (OMN), of which \$485.3 million was for SAG 4B2N Planning, Engineering, and Program Support.

The committee continues to strongly support the Navy's Resilient Energy Program Office (REPO), which has successfully executed over 49 energy resilience projects leveraging non-Department of Defense funding in Texas, Tennessee, Mississippi, Florida, North Carolina, Virginia, Georgia, South Carolina, Arizona, Nevada, California, Maryland, New Jersey, New York, Connecticut, Rhode Island, Washington, Hawaii, Italy, and Japan. However, the committee understands that some fiscal year 2020 projects are at risk due to lack of funding in Texas, North Carolina, and several other states.

Accordingly, the committee recommends an increase of \$5.0 million in OMN for SAG 4B2N for the REPO office to ensure that all fiscal year 2020 projects are executed.

Cyber operations—peculiar capabilities—Navy

The budget request included \$25.9 billion in Operation and Maintenance, Navy (OMN).

Elsewhere in this Act, the committee recommended a provision that would allow the Secretaries of the military departments to use money authorized for appropriation for Operation and Maintenance (O&M) up to \$3.0 million to develop cyber operations—peculiar capabilities. The provision would allow the Department of Defense to use its O&M funds for the rapid creation, testing, fielding, and operation of cyber capabilities that would be developed and used within the 1-year appropriation period.

Accordingly, the committee recommends an undistributed increase of \$3.0 million in OMN for cyber operations—peculiar capabilities.

Cyber operations—peculiar capabilities—Marine Corps

The budget request included \$3.9 billion in Operation and Maintenance, Marine Corps (OMMC).

Elsewhere in this Act, the committee recommended a provision that would allow the Secretaries of the military departments to use money authorized for appropriation for Operation and Maintenance (O&M) up to \$3.0 million to develop cyber operations—peculiar capabilities. The provision would allow the Department of Defense to use its O&M funds for the rapid creation, testing, fielding, and operation of cyber capabilities that would be developed and used within the 1-year appropriation period.

Accordingly, the committee recommends an undistributed increase of \$3.0 million in OMMC for cyber operations—peculiar capabilities.

Air Force savings from revised housing cost share

The budget request included \$21.2 billion in Operation and Maintenance, Air Force (OMAF), of which \$0.0 million was for SAG 011Z Base Support. The committee notes that the budget request included a transfer of \$7.2 billion from base to overseas contingency operations for SAG 011Z Base Support.

The committee notes that this Act contains a provision that would amend the 5 percent cost share requirement for the Services to 2 percent with the additional 3 percent left to the discretion of the Secretary of the relevant military department on a project by project basis.

Accordingly, the committee recommends a decrease of \$32.4 million in OMAF for SAG 011Z Base Support.

US CYBERCOM

The budget request included \$323.1 million in Operation and Maintenance, Air Force (OMAF), for SAG 015E US CYBERCOM.

The committee is aware of the growing capabilities needed to counter adversaries in the cyberspace domain as highlighted in the National Defense Strategy. The committee recognizes the need to improve the capabilities of Cyber National Mission Force and therefore supports the request of U.S. Cyber Command (CYBERCOM) to re-align certain funds to support the Cyber National Mission Force Capability Acceleration Plan. The committee also supports CYBERCOM's request to increase funding for the Cyber National Mission Force Mobile and Modular Hunt Forward Kit and the ETERNALDARKNESS program.

Therefore, the committee recommends an increase of \$1.5 million to accelerate the development of Cyber National Mission Force capabilities, an increase of \$5.3 million for the Cyber National Mission Force Mobile and Modular Hunt Forward Kit, and an increase of \$18.0 million for ETERNALDARKNESS in OMAF for SAG 015E.

Air Force advertising reduction

The budget request included \$21.2 billion in Operation and Maintenance, Air Force (OMAF), of which \$167.7 million was for SAG 033A Recruiting and Advertising.

The committee notes that the Air Force requested \$9.1 million in addition to its baseline advertising budget of \$96.7 million. The

committee further notes that the request represents a 9.4 percent increase to advertising. When compared to its end strength increases over the future years defense program, the committee believes that this request is ahead of need.

Accordingly, the committee recommends a decrease in OMAF of \$6.0 million for SAG 033A for Recruiting and Advertising.

Cyber operations—peculiar capabilities—Air Force

The budget request included \$21.2 billion in Operation and Maintenance, Air Force (OMAF).

Elsewhere in this Act, the committee recommended a provision that would allow the Secretaries of the military departments to use money authorized for appropriation for Operation and Maintenance (O&M) up to \$3.0 million to develop cyber operations—peculiar capabilities. The provision would allow the Department of Defense to use its O&M funds for the rapid creation, testing, fielding, and operation of cyber capabilities that would be developed and used within the 1-year appropriation period.

Accordingly, the committee recommends an undistributed increase of \$3.0 million in OMAF for cyber operations—peculiar capabilities.

Innovative Readiness Training increase

The budget request included \$37.4 billion in Operation and Maintenance, Defense-Wide (OMDW), of which \$165.7 million was for SAG 4GT3 Civil Military Programs.

The committee notes that \$15.7 million of the request for Civil Military Programs was for Innovative Readiness Training (IRT). The committee is aware that the Armed Forces continue to face readiness challenges due to budgetary constraints. The committee continues to recognize the value of IRT, which affords to the Armed Forces the most realistic joint training opportunities for National Guard, Reserve, and Active-Duty members.

The committee understands that IRT offers complex and challenging training opportunities for domestic and international crises. The committee is also aware that Alaska, Arizona, Arkansas, California, Colorado, Hawaii, Indiana, Kentucky, Louisiana, Maine, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, New York, North Carolina, North Dakota, South Dakota, Texas, Virginia, West Virginia, and Wyoming all use IRT.

Accordingly, the committee recommends an increase of \$14.3 million in OMDW for SAG 4GT3 for IRT.

STARBASE program

The budget request included \$34.7 billion for Operation and Maintenance, Defense-wide (OMDW), of which \$165.7 million was for SAG 4GT3 Civil Military Programs.

The committee notes that the Science and Technology Academies Reinforcing Basic Aviation and Space Exploration (STARBASE) program is a highly effective program that improves the knowledge and skills of students in kindergarten through 12th grade in science, technology, engineering, and mathematics. Therefore, the committee recommends an increase of \$15.0 million for SAG 4GT3 Civil Military Programs for the STARBASE program.

Defense Information Systems Agency MilCloud

The budget request included \$2.0 billion in OMA for SAG 4GT9 Defense Information Systems Agency.

The committee recommends a reduction of \$5.0 million for SAG 4GT9 for MilCloud.

Sharkseer transfer

The budget request included \$601.2 million in Operation and Maintenance, Defense-wide(OMDW), SAG 4GU9 Defense Information Systems Agency—Cyber.

The committee included a provision in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) that required the Secretary of Defense to transfer the operations and maintenance for the Sharkseer cybersecurity program from the National Security Agency to the Defense Information Systems Agency.

Therefore, the committee recommends an increase of \$35.1 million in OMDW, SAG 4GU9 for the Sharkseer program.

Assessment, monitoring, and evaluation

The budget request includes \$697.0 million in Operation and Maintenance, Defense-Wide (OMDW), for SAG 4GTD Defense Security Cooperation Agency, of which \$9.1 million is for assessment, monitoring, and evaluation (AM&E).

The committee notes that section 383 of title 10, United States Code, requires the Secretary of Defense to maintain an AM&E program of the security cooperation programs and activities of the Department of Defense (DOD). This requirement was included as an integral component of the security cooperation reforms contained in the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) to ensure that the DOD allocates sufficient emphasis and resourcing to developing and implementing an AM&E program that is rigorous and comprehensive, that provides for the continuous review of security cooperation programs from inception to completion, and that measures outcomes against clearly defined objectives. DOD’s progress to date in developing the organizational capacity and expertise to conduct AM&E across the security cooperation enterprise is wholly inadequate. The committee notes that the Defense Security Cooperation Agency’s fiscal year 2020 base and overseas contingency operations budget request for its security cooperation account, the Indo-Pacific Maritime Security Initiative, and the Ukraine Security Assistance Initiative—all programs largely focused on providing equipment and training to tactical and operational-level forces of foreign partners—is approximately \$1.6 billion while its budget request for AM&E is \$9.1 million.

Therefore, the committee recommends an increase of \$11.0 million in OMDW for SAG 4GTD for AM&E.

Defense Security Cooperation Agency

The budget request included \$697.0 million in Operation and Maintenance, Defense-Wide (OMDW), for SAG 4GTD Defense Security Cooperation Agency, of which \$397.0 million is for the security cooperation account.

The committee notes that the reforms to the Department of Defense's (DOD) security cooperation enterprise required by the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) sought to rationalize and streamline the authorities and associated funding available for security cooperation and enhance the effectiveness of DOD planning, execution, and oversight. Additionally, that law emphasized the critical importance of non-materiel solutions to the effectiveness of DOD security cooperation efforts, namely through an increased emphasis on building the institutional capacity of foreign partners to more competently manage and sustain their own forces and the equipment and related assistance provided by the United States. The reforms also highlighted the need to mature the DOD security cooperation workforce and the development and implementation of a rigorous assessment, monitoring, and evaluation (AM&E) program to ensure that DOD programs are appropriately scoped and meeting clearly defined objectives.

However, while funding for DSCA's security cooperation account—which is primarily used to provide equipment and training to foreign partners to build capacity at the tactical and operational levels—has grown from approximately \$895 million in fiscal year 2018 for base and OCO to the \$1.2 billion requested for fiscal year 2020 for base and OCO, the DOD continues to insufficiently prioritize and resource congressionally-mandated efforts relating to DOD security cooperation workforce development, AM&E, and institutional capacity building. The committee believes that this imbalance inhibits appropriate security cooperation program design, execution, and oversight, which could lead to suboptimal outcomes and wasted taxpayer dollars.

Accordingly, the committee recommends a decrease of \$11.0 million in OMDW for SAG 4GTD for the security cooperation account.

Consolidated adjudication facility

The budget requested included \$889.7 million in Operations and Maintenance, Defense-wide (OMDW), for SAG 4GTE Defense Security Service.

The committee recommends an increase of \$10.0 million for the Consolidated Adjudication Facility of the Defense Counterintelligence and Security Agency, for a total of \$899.7 million in OMDW for SAG 4GTE Defense Security Service.

Impact aid

The budget request included \$45.8 billion in Operation and Maintenance, Defense-wide (OMDW), of which \$2.9 billion was for SAG 4GTJ Department of Defense Education Activity. The amount authorized to be appropriated for OMDW includes the following changes from the budget request. The provisions underlying these changes in funding levels are discussed in greater detail in title V of this committee report.

[Changes in millions of dollars]

Impact aid for schools with military dependent students	+40.0
Impact aid for children with severe disabilities	+10.0
Total	+50.0

Terminal High Altitude Area Defense Missile Defense Agency sustainment

The budget request included \$37.4 billion in Operation and Maintenance, Defense-wide (OMDW), of which \$522.5 million was for SAG011A Missile Defense Agency (MDA).

Elsewhere in this report, the committee has stated its views regarding the transition of the Terminal High Altitude Area Defense program from the MDA to the Department of the Army.

Therefore, the committee recommends a decrease of \$99.8 million in OMDW for SAG011A MDA.

Bien Hoa dioxin cleanup

The budget request included \$1.6 billion in Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTN Office of the Secretary of Defense, of which no funds were proposed for Bien Hoa dioxin cleanup in Vietnam.

Accordingly, the committee recommends an increase of \$15.0 million in OMDW for SAG 4GTN for Bien Hoa dioxin cleanup.

Centers for Disease Control and Prevention nation-wide human health assessment

The budget request included \$1.6 billion in Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTN Office of the Secretary of Defense, of which no funds were proposed for the ongoing Centers for Disease Control and Prevention (CDC) Nation-wide human health assessment related to contaminated sources of drinking water from per- and poly-fluoroalkyl substances.

The committee continues to strongly support the ongoing human health assessment. Accordingly, the committee recommends an increase of \$10.0 million in OMDW for SAG 4GTN for the ongoing CDC assessment.

Department of Defense Emerging Contaminants increase

The budget request included \$1.6 billion in the Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTN Office of the Secretary of Defense, of which no funds were for the Department of Defense (DOD) Emerging Contaminants.

The committee continues to support the mission of the office to study, analyze and evaluate threats to warfighters and their families. However, the committee is also concerned that the DOD has not allocated enough resources to the office given its workload and the likelihood that the DOD will have to address an increasing number of emerging contaminants in the future—for example, 1,4 Dioxane, Perfluorohexane sulfonic acid, and 1,2,3 Trichloropropane—much like it has with per- and polyfluoroalkyl substances in sources of drinking water.

Accordingly, the committee recommends an increase of \$1.0 million in OMDW for SAG 4GTN for the DOD Emerging Contaminants.

Industrial Policy program support

The budget request included \$1.6 billion in Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTN Office of the Sec-

retary of Defense, including funds for Industrial Policy program support.

The committee notes that the September 2018 Department of Defense report titled “Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States” includes numerous recommendations for addressing risks in the industrial base.

Therefore, the committee recommends an increase of \$15.0 million in OMDW for SAG 4GTN to fund Industrial Policy program support to facilitate the acquisition of tools and performance of analysis needed to address industrial base risks.

Improvement of occupational license portability for military spouses through interstate compacts

The budget request included \$1.6 billion in Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTN Office of the Secretary of Defense.

The committee remains concerned about the lack of portability of employment licenses and credentials across State lines, which hinders military spouse employment. Due to the delays and expense involved in re-licensure and re-credentialing, many military spouses decide not to practice their professions. This becomes a financial and career choice issue for military families, impacting servicemembers’ desire to stay in the military.

Accordingly, the committee recommends an increase of \$4.0 million in OMDW for SAG 4GTN, for the activities outlined in title V of this Act. The relevant provision would require the Secretary of Defense to enter into a cooperative agreement with the Council of State Governments to assist with the funding and development of interstate compacts on licensed occupations.

National Commission on Military Aviation Safety

The budget request included \$1.6 billion in Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTN Office of the Secretary of Defense.

Elsewhere in this Act, the committee is recommending a provision that extends the term for the National Commission on Military Aviation Safety. The committee notes that this extension will require additional funding.

Accordingly, the committee recommends an increase of \$3.0 million in OMDW for SAG 4GTN for the National Commission on Military Aviation Safety.

Supplemental funding for the National Commission on Military, National, and Public Service

The budget request included \$1.6 billion in Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTN Office of the Secretary of Defense.

As required by law, the National Commission on Military, National, and Public Service is expected to deliver its final report in the spring of 2020. This unique commission will make important recommendations that, if realized, could affect every American. Due to the breadth of the Commission’s mandate and the extensive outreach required to engage with Americans across the country,

the commission may exceed its original funding authorization by a modest amount.

Therefore, the committee recommends an increase of \$1.0 million in OMDW for SAG 4GTN to provide supplemental funding for the National Commission on Military, National, and Public Service.

Readiness and Environmental Protection Initiative

The budget request included \$1.6 billion in Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTN Office of the Secretary of Defense, of which \$75.0 million was for the Readiness and Environmental Protection Initiative (REPI).

The committee notes that encroachment resulting from incompatible development and loss of habitat continues to pose a long-term threat to readiness and to the viability of military installations, ranges, and airspace throughout the country. The REPI involves partnerships between the Department of Defense (DOD), State and local governments, and conservation organizations to share the costs of acquiring proactive easements from willing landowners.

The committee continues to support the mission of the REPI and believes that the program has proven to be highly effective in addressing encroachment. The committee supports REPI's mission to "protect mission capability by cost-sharing the long-term protection of high-value habitat and limiting incompatible land uses around DOD ranges and installations" and to "help avoid more expensive costs, such as the need for training workarounds or segmentation and future military construction to modify or relocate training assets to less-restricted locations."

However, the committee is concerned that the DOD continues to underfund the REPI despite its success to date and the high degree of leverage from partner contributions. The Department has expressed concerns about the growing need to protect key installations, ranges, and airspace yet has failed to match those concerns with adequate resources.

Accordingly, the committee recommends an increase of \$25.0 million in OMDW for SAG 4GTN for the REPI and strongly encourages the Department to reflect in future REPI budget requests the urgency of the problem of encroachment and the success the REPI has achieved in addressing this problem.

Defense Digital Service expert civilians

The budget request included \$324.0 million in Operation and Maintenance, Defense-wide (OMDW), for SAG 4GTQ Washington Headquarters Services.

The committee recognizes the importance of the Defense Digital Service in helping the Department of Defense to build, buy, and deploy technology and digital services.

Accordingly, the committee recommends an increase of \$5.0 million in OMA for SAG 4GTQ Washington Headquarters Services for the Defense Digital Service.

Sharkseer transfer

The budget request included \$15.7 billion in Operation and Maintenance, Defense-wide (OMDW), SAG 9999 Classified Programs.

The committee included a provision in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) that required the Secretary of Defense to transfer the operations and maintenance for the Sharkseer cybersecurity program from the National Security Agency to the Defense Information Systems Agency.

Therefore, the committee recommends a decrease of \$35.1 million in OMDW, SAG 9999 for the Sharkseer program.

Foreign currency fluctuation reduction

The budget request included \$158.1 billion for Operation and Maintenance.

The committee believes that, when foreign currency fluctuation (FCF) rates are determined by the Department of Defense, the balance of the FCF funds should be considered. Accordingly, the committee recommends an undistributed decrease of \$607.0 million for FCF.

Junior Reserve Officers' Training Corps increase

The budget request included \$292.8 billion in total Operations and Maintenance funding, of which \$316.3 million was for Junior Reserve Officers' Training Corps (JROTC).

The committee believes that JROTC programs are an important program for the Nation and have historically been underfunded by the Department of Defense.

Accordingly, the committee recommends an increase of \$25.0 million in Operations and Maintenance, to be allocated to the Services for Junior Reserve Officers' Training Corps programs.

Printing inefficiency reduction

The budget request included \$158.1 billion for Operation and Maintenance.

The committee notes that a recent Government Accountability Report found numerous inefficiencies in the printing operating of the Department of Defense.

Accordingly, the committee recommends an undistributed decrease of \$8.0 million for printing inefficiencies.

Transfer of OCO to Base account

The budget request included \$123.9 billion for Operation and Maintenance in base funding. The committee notes that the President's budget request included \$97.9 billion in the Overseas Contingency Operations (OCO) account for activities that are traditionally funded out of base accounts. The committee believes that OCO for Base funding should be transferred into the base accounts.

Accordingly, the committee recommends an increase of \$81.3 billion to Operation and Maintenance base funding.

Items of Special Interest

Arctic search and rescue

The committee is aware that growing international interest and changing environmental conditions in the Arctic have led to increased commercial and governmental activity in the High North.

With this steady surge, the committee believes the capabilities of the United States to conduct search and rescue operations throughout the Arctic needs to be commensurate for the activity in the region. The committee notes that the Department of Defense's Report to Congress on Strategy to Protect United States National Security Interests in the Arctic Region, a report required by section 1068 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114-92), identified the need for additional personnel recovery capability in this region. Specifically, the report calls for "forward-deployed/based assets in a sustainable location and/or rapidly deployable air drop response/sustainment packages suitable to remote land, cold water, or ice pack operating environments."

The committee understands that the 176th Wing of the Alaska National Guard is the closest and only dedicated response force with the refueling capability to respond to a search and rescue incident in the Arctic. The committee notes that the unit currently possesses 2 air-dropped, palletized Arctic Sustainment Packages to enable the survival of 50 individuals for 3 or more days in extreme Arctic conditions.

Accordingly, the committee encourages the Department of Defense to review how additional resources could benefit search and rescue operations throughout the Arctic region.

Army Training Next virtual reality pilot program

The committee recognizes the advantages of augmenting rotary wing initial entry aviator training with virtual reality flight capabilities. The United States Army Aviation Center of Excellence is executing a series of pilot programs to validate the effectiveness and potential cost savings of virtual flight training throughout fiscal year 2019. The committee is encouraged by the Army's adoption of this training approach, which will increase frequency and repetitions of basic flight maneuvers using a low-cost commercial off-the-shelf virtual training solution.

Therefore, the committee directs the Secretary of the Army to provide a briefing to the committee no later than January 1, 2020, comparing the results of the three pilot programs to the traditional training curriculum and detailing the results of the three separate iterations with an emphasis on student proficiency, comprehension, progress, and cost avoidance.

Battle Record Information Core Environment (BRICE) maintenance application

The committee is encouraged by the Air Force's Battle Record Information Core Environment program (BRICE), which was developed in partnership with industry and validated to the National Security Agency's National Information Assurance Partnership standard. This has enabled BRICE to become the Department of Defense's (DOD) first connected mobile application authorized for mission-enabling tasks to be performed with DOD controlled unclassified information leveraging both cloud (United States Air Force Cloud Computing Environment) and legacy mainframe systems. The limited introduction of BRICE to the Air Force Reserve Center aircraft maintenance community at Davis Monthan AFB has resulted in time savings per maintenance action, improved

data accuracy, and increased efficiency in repairs and maintenance on A-10 aircraft. The committee is encouraged by the Air Force's BRICE program and its mission to increase flight readiness while driving down the cost of maintaining the fleet of A-10 aircraft. The committee recommends that the Air Force examine opportunities to expand the BRICE iOS app to all Active-Duty and reserve maintainers that support the A-10 and the F-16 fleets.

Cold spray technology

The committee recognizes the advancements of cold spray technologies and the need to accelerate the delivery of technical capabilities to impact the warfighter and to advance dominant technologies in a timely manner. The committee notes that the use of cold spray technologies in certain applications during the production, repair, and maintenance process may lead to significant cost savings for the Department of Defense. The committee strongly recommends continued development and use of this technology across the Services to include science and technology, manufacturing, and procurement programs.

Comptroller General review of Department of Defense utility resilience planning to support cybersecurity threats

The committee recognizes that on-base utilities systems within the Department of Defense (DOD) are increasingly being connected to the internet. The benefits of such connection could include improved utilities efficiencies and the collection of more near-real-time data for improved utilities management. At the same time, the connectivity could expose DOD utilities systems to cyber threats that could undermine installation mission capability. Accordingly, the committee directs the Comptroller General of the United States to evaluate: (1) To what extent have the military departments implemented a DOD instruction to enhance the cybersecurity of industrial control systems and what, if anything, remains incomplete as of the time of the start of this review; (2) What challenges have the military departments encountered in implementing DOD Instruction 8510.01 and how effectively have the challenges been overcome; (3) How effectively have the military departments implemented industry leading practices to enhance utilities industrial control systems cybersecurity; and (4) How effectively do the military departments conduct tests of the cybersecurity of industrial control systems and implement improvements to security to counter any identified weaknesses.

The committee further directs the Comptroller General of the United States to provide a briefing on the preliminary findings to the congressional defense committees not later than March 1, 2020, with a final report to be provided at a mutually agreed upon time.

Comptroller General review of mobility in contested environments

The committee recognizes that the United States has the most advanced military equipment and the best-trained troops in the world. The committee notes, however, that military strength means little if the United States cannot deploy and sustain its forces wherever they are needed. Moving U.S. troops and military cargo

is the role of strategic mobility-airlift to fly cargo and personnel, sealift to steam cargo and equipment from the United States, and ships or warehouses based abroad that pre-position key equipment and sustainment supplies. The committee understands that future military conflicts are increasingly likely to occur in an environment contested across all domains, subsequently restricting freedom of mobility assets and putting these forces at risk. Operational plans must reflect the anticipated attrition of both combat and mobility assets and associated personnel. The committee notes that the Department of Defense is in the process of a critical examination of how it executes mobility in contested environments, but it remains concerned that strategic mobility requirements may not be fully addressed.

Accordingly, the committee directs the Comptroller General of the United States to submit a report to the congressional defense committees to address the following: (1) How are strategic mobility mission requirements evolving, and what implications, if any, are there for strategic mobility force structure; (2) What challenges does the Department face in protecting strategic mobility forces, and what impact, if any, do these have on maintaining needed warfighting capabilities and readiness; (3) To what extent has the Department developed mitigation plans to address any challenges and risk areas, to include relevant training, exercises, and concept development; and (4) Any other related matters deemed appropriate in order to provide a comprehensive examination of mobility in contested environments.

The committee further directs the Comptroller General to provide a preliminary classified briefing to the Senate Armed Services Committee not later than February 1, 2020, with the report to be submitted at a date to be determined at the time of the briefing.

Corrosion prevention briefing

The committee is aware of the significant problem caused by corrosion, which can lead to costly repairs and decreased readiness of military forces. The committee notes that according to a 2016 Department of Defense report, corrosion costs in 2016 alone were \$20.6 billion, and the Government Accountability Office has produced numerous report citing the direct correlation between corrosion and readiness. The committee believes that, to most effectively meet mission-critical demands for military painter training at bases across the United States, which directly impacts corrosion, the Department could establish a competitive bidding process for a National Center for Military Painter Training and Applied Research. The committee believes that such a program could enable the Department to maximize readiness, safety, and cost savings through corrosion prevention and control by meeting the demand for trained military painters, growing partnerships in the military paint industry, and expanding the role of technology in painter training and certification.

Accordingly, the committee directs the Department to provide a briefing, no later than November 1, 2019, to the congressional defense committees on the following: (1) A list of facilities, labs, and universities focused on corrosion prevention, to include a description of work for each location; (2) Current funding sources for each

location; (3) Return on investment, if applicable, for each location; and (4) A determination by the Department if a National Center for Military Painter Training and Applied Research could benefit the Department, and, if so, the cost, steps, and process required to create and establish such a center.

Data collection and reporting to validation of small arms simulation readiness improvements and resourcing planning

The committee continues to recognize that substantial value can be gained through small arms simulation training systems that use biometrics, advanced human performance techniques, and robust data collection and reporting to maximize and verify improved lethality and readiness requirements. The committee particularly notes the importance of next generation internet technology-based systems capable of automatically collecting and reporting on hundreds of points of trainee data, such as shooter baselines, rounds fired, target engagement, live-fire readiness, and qualification standards outcomes. Some of these systems also use algorithms to determine remediation requirements.

The committee believes that this type of data collection and analysis is essential to validating that the appropriate military servicemembers are receiving the lethality and warfighter readiness training that they require and to driving more data-informed resourcing determinations during the planning, programming, and budgeting process. The committee is concerned, however, that there continues to be a reliance across the Services on legacy small arms training systems and programs of record that are not capable of, or are not required to, deliver advanced human performance, biometrics, and overall trainee data collection and reporting capabilities, making it difficult to validate a system's true training effectiveness, its cost savings (in ammunition, reduced training time, travel, and range safety), and overall justification for system sustainment and budget submissions.

Accordingly, the committee directs each of the Secretaries of the military departments to provide a report, no later than February 1, 2020, detailing plans to ensure that all existing and new small arms training systems, or training-as-a-service contracts, are capable of delivering advanced human performance techniques, biometrics, and robust shooter data collection, to include descriptions of how these data will be used to: (1) Validate each system's effectiveness in delivering readiness, lethality requirements, and measurable live fire qualification improvements; and (2) Drive more informed determinations for training and readiness resourcing across the planning, programming, budget, and execution process.

Defense energy resilience tools for project development

The committee is encouraged by the progress made by the Office of the Secretary of Defense and the Secretaries of the military departments to standardize tools to encourage the implementation of policies that accelerate energy resilience project development, such as the Massachusetts Institute of Technology, Lincoln Laboratories (MIT-LL) life-cycle cost analysis tool. The tool allows the Department of Defense to align its mission requirements with cost effec-

tive energy resilience solutions and to meet National Defense Strategy objectives. The committee notes that senior leaders across the Department have stated that the Department is developing and implementing this life-cycle cost analysis tool for use across the enterprise.

Accordingly, the committee directs the Secretary of Defense to provide an implementation plan for the MIT-LL life cycle cost analysis tool to ensure the effective adoption of mission-based decision-making and for the successful implementation of energy resilience projects across the Department of Defense. At a minimum, the committee directs that the Department provide the list of military installations that have and will implement the life-cycle cost analysis tool, along with the funding required by fiscal year to implement the tool's adoption and use. This plan shall include the necessary partnerships needed to develop, implement, and integrate the life-cycle cost analysis tool in the most cost-effective manner. The Secretary shall provide this plan to the Senate Armed Services Committee no later than February 1, 2020.

Development and fielding of expeditionary energy technology in the Department of Defense

The committee acknowledges the significant logistical burden that fossil fuel generators place on expeditionary forces operating at home and abroad. Further, the committee understands the necessity of increasing agility in the future operating environment by reducing the logistical footprint required to sustain forces. Therefore, the committee encourages the Department of Defense to invest broadly in emerging technology to harness, integrate, and store energy from multiple energy sources to extend the operational reach of Active-Duty, reserve, and National Guard forces.

Encroachment on military installations

The committee notes that the Military Aviation and Installation Assurance Siting Clearinghouse was established years ago to deconflict and strike a balance with potential encroachment from energy projects near military installations while assuring that military operations and training continue unabated and with minimal impact. The committee strongly encourages the Clearinghouse to continue to ensure mission compatibility and appropriately collaborate with individual military installations, States, and developers on any mitigation measures. Lastly, the committee encourages the Clearinghouse to consider future military requirements when reviewing and approving any energy projects to ensure that such projects are consistent with the National Defense Strategy.

Extended funding obligation period for private contracted ship maintenance

The committee notes that the administration submitted a legislative proposal that would enable the Navy to conduct a ship depot maintenance pilot program to evaluate the benefits of an extended funding obligation period for private contracted ship maintenance.

This pilot program would include an extension of the obligation period of fiscal year 2020 funding for private contracted ship maintenance through September 30, 2021.

The committee supports the inclusion of this administration legislative proposal in the Defense Appropriations Act for Fiscal Year 2020.

The committee believes that the pilot program would demonstrate that the performance of lengthy maintenance availabilities, which often cross fiscal years, improves with additional flexibility to more efficiently employ funds appropriated by the Congress, before, during, and after scheduled maintenance availabilities.

Improving Navy radar training and readiness

The committee is aware that the Navy currently lacks schoolhouse radar training assets for three ship classes, resulting in no hands-on training for sailors destined for these ships before reporting aboard ship. The committee notes the criticality of radar to a ship's defensive capabilities and that a lack of training has the potential to impact both overall readiness and combat capability of the fleet. The committee believes that sailors will be best positioned to operate, maintain, and fully utilize the capabilities of the radar with enhanced hands-on training prior to reporting aboard ship.

Accordingly, the committee directs the Secretary of the Navy to provide a report to the congressional defense committees no later than February 1, 2020, with a plan to determine what schoolhouse training assets are required for all ship radar systems to include what resources would be required. The report shall include at a minimum a complete listing of all Navy radar systems, land-based assets used to train sailors on those radar systems, radar systems that do not currently have land-based radar training assets, and a timeline to acquire missing land-based radar training assets.

Improving oversight of pilots in non-operational staff positions

The committee has been concerned about the Air Force's ability to sustain the required numbers of aviators in the face of competing demands for their services, including increased demand for aviators in remotely piloted aircraft (RPA) operating units and continued demand for rated officers in non-flying positions. The committee commends the Government Accountability Office (GAO) for its report, published in February 2019, titled "Unmanned Aerial Systems: Air Force Pilot Promotion Rates Have Increased but Oversight Process of Some Positions Could Be Enhanced" (GAO-19-155).

In the report, the GAO observed that "[t]he Air Force has not reviewed its oversight process to ensure that it is efficiently managing its non-operational staff positions that require aviator expertise. Air Force officials explained that over the last 10 years, the Air Force reduced the number of squadrons but had not reviewed the number of non-operational staff positions. Similarly, the Air Force has had no widely accessible oversight process to monitor whether it had established an accurate number of non-operational staff positions required to support the new RPA career field." As a result, the committee believes that, at a minimum, the Air Force must regularly review justifications for non-operational staff posi-

tions requiring pilot expertise as part of a broader strategy to address the pilot shortage.

Therefore, the committee directs the Secretary of the Air Force to establish a mechanism to review the justifications for non-operational staff positions requiring pilot expertise at regular intervals and to report to the committee by September 30, 2020, on the mechanism to be established to accomplish these periodic reviews. The Secretary's review and report shall include evaluation of the mix of positions requiring pilot expertise as well as the mix of operational positions and support positions required to support operations.

Liability exposure for electric companies during national emergencies

The committee understands that the Department of Defense's (DOD) Mission Assurance Strategy emphasizes the importance of grid-provided power and the ability of DOD installations to execute their full range of missions. The committee is concerned that in the event of intentional or unintentional power outages, DOD installations may not be currently structured to have assured access to such energy as needed to implement the National Defense Strategy. Accordingly, the committee strongly encourages the DOD, in coordination with other federal agencies, to work with the Congress to find a solution.

Lightweight ammunition

The committee is aware of continued progress in reducing weight for vehicle, helicopter, and soldier platforms through the development and qualification of polymer ammunition and polymer link systems. These developments support urgent requirements in reducing the weight burden on all weapon systems and, in particular, helicopter systems. Further, the committee understands that, over the last several years, initial polymer ammunition and polymer links have been qualified, fielded, and combat proven. There remains a continued urgent need for further polymer ammunition and polymer link weight reduction. As such, the committee recommends continued support to develop and qualify further weight savings in polymer ammunition and polymer link systems.

Marine Depot Maintenance Command facilities review

The committee notes the organic industrial base serves as the backbone of our Nation's military readiness. Specific to the Marine Corps, the committee notes that the Marine Corps' Marine Depot Maintenance Command (MDMC), comprised of Production Plant Albany and Production Plant Barstow, provides worldwide expeditionary logistics support to the Fleet Marine Force, other forces, and agencies. The committee understands that the MDMC is responsible for the maintenance, repair, and overhaul of ground equipment that keeps the Nation's fighting forces' weapon systems in a constant state of readiness.

The committee notes that the facilities at Production Plant Albany average 26 years, which hinders its ability to adopt and sustain innovative processes and equipment solutions, thereby hampering its overall effectiveness and hurting the overall readiness of

the Marine Corps. For example, the committee understands that automation and robotics in the blast and paint processes would greatly improve throughput but the current facilities will not support the technology. The committee further notes that welding operations need welding positions to increase safety, efficiency, and quality but the facilities do not have sufficient space and overhead clearance.

Accordingly, the committee directs the Secretary of the Navy to review the current facilities of the MDMC and provide a briefing to the congressional defense committees, not later than February 1, 2020, on how the facilities at Production Plant Albany and Production Plant Barstow impact the Marine Corps' ability to adopt and sustain innovative process and equipment solutions. The briefing shall include cost estimates and timelines for improving throughput and increasing efficiency with items such as but not limited to automation, robotics, and welding positions.

National Guard Unit equipped flying squadrons

The committee recognizes that the Air National Guard enterprise is based on established capstone principles that notionally set the foundational framework for mission allocation in the 54 states and territories. One of those Capstone Principles is to allocate at least one unit-equipped wing and flying squadron to each State. New Mexico is one of three states-the others being Virginia and Washington-that have an operational flying mission, but, due to the classic associate construct, it lacks ownership of aircraft. Therefore, the committee directs the Secretary of the Air Force, in consultation with the Chief of the National Guard Bureau, to report to the committee within 60 days of the date of the enactment of this Act to present additional options for achieving an operational flying mission in each State.

Prepositioned Assets in the Indo-Pacific Region

The committee understands that the Department of Defense (DOD) positions billions of dollars' worth of assets, including combat vehicles, rations, medical supplies, and repair parts, at strategic locations around the world to use during early phases of operations. In the 2018 National Defense Strategy, the DOD acknowledged an increasingly complex global security environment, characterized by the re-emergence of long-term, strategic competition among nations such as China and Russia. In addition, the strategy emphasized the need for investments to prioritize prepositioned stocks in order to enable resilient and agile logistics during initial operations. In February 2019, the Commander of U.S. Indo-Pacific Command (INDOPACOM) called China and Russia-with their expanding and modernizing militarizes-key threats to the region. For many years, the Government Accountability Office has identified the potential for duplication among the Services' prepositioned stock programs due to limited joint oversight and fragmented management within the DOD. Further, the committee has had an ongoing interest in DOD's strategy and oversight of its prepositioning programs.

Accordingly, given these issues and the National Defense Strategy's priorities, the committee directs the Comptroller General of

the United States to evaluate the following: (1) What types of equipment and materiel does the DOD preposition in the Pacific region and what is the condition of these assets; (2) To what extent has DOD assessed its strategy for prepositioning assets in the Pacific region based on the 2018 National Defense Strategy; (3) To what extent do the Services coordinate their prepositioning programs in the Pacific region in order to achieve efficiencies and reduce unnecessary duplication; (4) What challenges, if any, does DOD face in prepositioning assets in the Pacific region; (5) What do the Services' operational and logistics concepts mean for future prepositioning requirements; (6) What types of equipment is necessary and at what locations; and (7) Are future plans being coordinated by the Services and informed by INDOPACOM contingency plans?

The committee further directs the Comptroller General to provide a briefing to the committee on the preliminary observations of this review, not later than February 1, 2020, and to submit a report on a date agreed to at the time of the briefing.

Preservation of the Force and Families initiative

The committee notes that nearly 2 decades of continuous combat operations and the associated effects of an extraordinarily high operational tempo in physically and mentally demanding environments has placed enormous stress on our special operations forces (SOF) and their families. In response to the unique requirements of SOF, U.S. Special Operations Command (SOCOM) established the Preservation of the Force and Families (POTFF) initiative in order to provide holistic physiological, psychological, family, and spiritual performance support programs at all echelons of SOCOM and the SOF components. The committee strongly supports the POTFF program and believes that it is integral for ensuring the readiness, health, and mission effectiveness of SOF while also providing SOF families with support to deal with the unique challenges that they face, including unpredictable training and deployment cycles. The committee encourages SOCOM to continue to prioritize the POTFF program and seek innovative opportunities to ensure POTFF remains effective and responsive to the needs of SOF and their families.

Public-to-public partnerships briefing requirement

The committee recognizes the Department of Defense's continuing efforts to control costs and increase reliability in its installation utility systems. Whether through energy savings performance contracts, utility energy savings contracts, or some other contract vehicle, the committee commends the Department for leveraging private partnerships to reduce costs and enhance installation resiliency.

The committee notes with interest that the Department commissioned a report in 2016 on the use of public-to-public partnerships by military installations. Such partnerships, including intergovernmental service agreements, may be one approach to sustaining operations and services for military installations. The committee believes that public-to-public partnerships should continue to be a

tool for the Services to increase installation readiness and resiliency and to enhance military families' quality of life.

The committee recommends that the Department work with State and local communities to lower barriers that inhibit consideration or implementation of public-to-public partnerships. The committee is interested in novel approaches to installation readiness and resiliency and is willing to consider providing new authorities to support such efforts. Therefore, the committee directs the Department to provide a briefing to the congressional defense committees, not later than December 1, 2019, on current public-to-public partnerships. The briefing shall include at a minimum the number of public-to-public partnerships in place, the estimated cost savings such partnerships provide, barriers preventing broader use of such partnerships, and partnerships that are currently under consideration.

Recycled content in clothing items

The committee commends the Department of Defense (DOD) on its most recent update to DOD Instruction 4105.11, "Procurement of Sustainable Goods and Services," dated August 31, 2018. Further, the committee supports the DOD's efforts to give preference to the procurement of sustainable goods and recycled content products. These efforts were highlighted in the DOD's October 2012 Report to Congress on the Preference for Uniforms, Organizational Clothing, and Personal Equipment that Contain Recycled Materials, a report required by the Senate report accompanying S. 1253 (S. Rept. 112-26) of the National Defense Authorization Act for Fiscal Year 2012. This report cited four military clothing items that, at the time, used recycled materials, including the Protective Combat Uniform for the Special Forces, the Third Generation Extended Cold Weather Clothing System, underwear, and the Army fleece jacket. Accordingly, the committee directs the Secretary of Defense to submit a report to the congressional defense committees, not later than February 1, 2020, on the feasibility of incorporating more recycled content products into these clothing items and other environmental protection clothing items.

Report on future Combat Search and Rescue in support of National Defense Strategy

The committee acknowledges that the Air Force is the only service with a Combat Search and Rescue (CSAR) capability to provide to a Joint Force Commander and is concerned with maintaining this critical mission in the face of great power competition. Therefore, the committee directs the Chief of Staff of the Air Force to complete a comprehensive study on the future combat search and rescue mission in the near peer threat environment expected in the 2030s. Prior to any realignment of rescue assets and by September 30, 2020, the Chief of Staff of the Air Force shall present the findings and recommendations of the study to the congressional defense committees. This study shall address:

- (1) The evolving threat environment and its significance to the CSAR mission;
- (2) The optimal organizational responsibility for CSAR and components of a task force;

(3) Alternative solutions to maintaining the social contract with isolated personnel (IP) that a rescue force is available to return the IP to friendly forces;

(4) Title 10 service responsibilities and joint force mission sets, to include command and control, planning and execution, and IP recovery; and

(5) Any other matters that the Chief of Staff deems relevant.

Report on guidelines for maintenance and preservation of Department of Defense historic aircraft and spacecraft

The committee is concerned that the Department of Defense lacks clear and consistent guidelines for maintaining and disposing historic aircraft and spacecraft. The national collection of historic military aircraft and spacecraft is an important asset that helps honor our veterans and educates the public about key milestones in American history and military technology. However, there have been recent instances of historical aircraft being destroyed or sold for scrap without opportunity for the Department or an aviation museum to consider their preservation. It is in the best interest of the public to ensure that the Department has a clear process to determine disposition of historic aircraft and spacecraft given their historical value.

Therefore, the committee directs the Secretary of Defense to conduct a study that reviews the existing process for retiring and disposing historical military aircraft and spacecraft. The study shall also recommend a strategy with clear and consistent guidelines for the preservation, restoration, or disposition of historic aircraft and spacecraft. In addition, the study shall consider the merits of creating a review board comprised of representatives from service aviation museums and other public aircraft museums to ensure that deliberations relating to historic aircraft and spacecraft are inclusive of various perspectives. The Secretary shall present the results of the study in a report to the congressional defense committees no later than February 1, 2020.

Report on Perfluorooctane Sulfonate and Perfluorooctanoic Acid contamination on military installations

The committee directs the Secretary of Defense, in coordination with the Commandant of the Coast Guard, to submit to the congressional defense committees, not later than March 1, 2020, a report listing military and Coast Guard installations or facilities potentially germane to the Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic Acid Lifetime Drinking Water (PFOA) Health Advisories established by the Environmental Protection Agency and those whose drinking water supply may exceed the PFOA and PFOS levels recommended in these advisories. The Secretary shall consult with the Administrator of the Environmental Protection Agency and affected States, tribes, and local governments, using information on PFOA and PFOS manufacturing and use.

Report on Special Federal Aviation Regulation waivers for U.S. air carriers and recommendations to expedite re-designation of civil aircraft as state aircraft

The committee is aware that there are cases in which U.S. forces do not have organic capacity to provide for personnel recovery and medical evacuation and are forced to rely on contract aircraft and aircrew to meet this critical mission requirement. The committee encourages the Department of Defense (DOD) to utilize U.S. companies to fill the mission requirement to the maximum extent possible. Additionally, the committee is concerned that the existing process for DOD to obtain Special Federal Aviation Regulation (SFAR) waivers for U.S. air carriers prevents the Department from executing critical missions in a safe, effective, and timely manner.

Therefore, the committee directs the Secretary of Defense to promptly notify the congressional defense committees, beginning on the date of the enactment of this Act, on Special Federal Aviation Regulation (SFAR) waivers requested by the DOD from the Federal Aviation Administration (FAA) that are: (1) Approved; (2) Denied; or (3) Still awaiting action from the FAA 15 days after the original request date. The committee also directs the Secretary to conduct a study on the existing process for DOD's re-designating civil aircraft as state aircraft and, based on the findings, to provide a report to the congressional defense committees, not later than February 1, 2020, with recommendations that would expedite the designation process.

Rotary-wing aviation foreign internal defense

The committee notes that, in 2012, U.S. Special Operations Command (SOCOM) decided to transfer responsibility for the rotary-wing aviation foreign internal defense (RW AvFID) mission from U.S. Air Force Special Operations Command to U.S. Army Special Operations Command (USASOC). At the time, the committee expressed concern about the planned transfer of responsibility and the potential degradation of the quality and availability of special operations-unique RW capabilities to meet the requirements of the geographic combatant commanders, particularly those capabilities resident in the 160th Special Operations Aviation Regiment (SOAR). While the committee understands the importance of training partner nation aviation forces and supports the broader AvFID mission, there remain concerns about whether the current designation of USASOC and, in particular, the use of the 160th SOAR as the principal special operations forces aviation unit for RW AvFID is the most efficient and effective approach to meet related requirements. Therefore, the committee directs the Commander of SOCOM to provide a briefing not later than July 1, 2019, on SOCOM's current approach to the RW AvFID mission. The briefing shall address, at a minimum, the following:

- (1) A description of SOCOM's current RW AvFID requirements;
- (2) A description of any changes to USASOC's organization, manning, and resourcing as a result of its assumption of the RW AvFID mission;
- (3) An assessment of USASOC's operational readiness and ability to meet RW AvFID requirements;

- (4) An assessment of the impact of USASOC's assuming the RW AvFID mission on its ability to meet its other non-FID-related RW operational and training requirements;
- (5) Any other matters that the Commander deems relevant.

Storm water utilities privatization

The committee has repeatedly expressed its support for the utilities privatization (UP) program, which enhances energy supply, efficiency, reliability, and resilience. Privatization of storm water systems is especially important, particularly in light of recent devastating storms that imperil base infrastructure inland and along the coasts. Despite clear direction from the Congress, elements of the Department have taken positions on storm water privatization that contravene the intent of the Congress and prevent the Services from realizing the financial and readiness benefits of UP. The Army's policy, however, has been a welcome exception to this general recalcitrance. The Army successfully privatized storm water systems at Fort Knox pursuant to section 2688 of title 10, United States Code, in 2004. Because the committee supports a data-driven approach as outlined in the Department's supplemental guidance on UP issued in February 2019, the committee directs the Secretary of the Army to provide a report, no later than March 1, 2020, analyzing the savings and efficiencies that it has realized from the Fort Knox privatization effort. The report shall be submitted in unclassified form and for public distribution, but it may contain a restricted annex.

Study on fire extinguishers

The committee is aware that portable fire extinguishers are essential to the safety of members of the Armed Forces and their families. The committee notes that protection of servicemembers and their families is imperative to the readiness of the force. Every Department of Defense building should apply building and fire codes that are in line with national model codes and State building and fire codes. The committee notes that national model codes promulgated by the National Fire Protection Association (NFPA) and the International Code Council (ICC) have been adopted by almost every State in the Nation. The committee is concerned that the removal of these devices and subsequent adherence to the change in Unified Facilities Criteria (UFC) has the potential to harm force readiness and protection across the Services.

Accordingly, the committee directs the Secretary of Defense to deliver a report to the congressional defense committees, no later than March 1, 2020, on the current fire suppression mechanisms, with emphasis on the need for portable fire extinguishers, employed by the Department. The study should include but not be limited to: (1) A breakdown of all fire codes that the Department follows in accordance with requirements set forth by the national model fire codes developed by the NFPA and the ICC; (2) Any fire codes the Department does not follow with justification for why it is waived; (3) The types of buildings that currently employ both sprinklers and extinguishers; (4) A list of high-risk types of buildings that would benefit from redundant fire suppression that include risks to personnel or egress concerns; (5) Specific to on-base

housing, what, if any, fire extinguishers are supplied for cooking areas by either the Department or private contractors; (6) Recommendations, including a timeline, on how to implement redundant fire suppression mechanisms and what changes to the UFC would be required.

Westover Air Reserve Base—Defense Logistics Agency study of fuel pipeline

The committee is concerned that the Defense Logistics Agency (DLA) has chosen to transition fuel services to Westover Air Reserve Base (ARB) from pipeline services to tank trucks as a delivery method. The DLA solicited a jet fuel requirement and evaluated both the Buckeye pipeline and tank truck services, utilizing a bid evaluation model (BEM) and a mixed integer linear optimization program that evaluates a variety of factors, including product prices, transportation costs, additive costs, and excessive throughput charges. The committee understands that, after utilizing the BEM, the laid-down cost for fuel tank truck services was over 1 cent lower than the laid-down cost for pipeline delivery, and the resultant savings were \$42,000. The committee notes that the DLA claims that the Buckeye jet fuel pipeline to Westover ARB is still available for use in the event of delivery interruptions.

The committee needs to understand the strategic impacts of this action to Department of Defense operators who may rely on this pipeline during surge conditions and contingency operations, especially given that Westover ARB is the largest reserve airbase in the country. Part of its core mission and function is to provide surge capacity to the expeditionary Air Force during any rapid deployment to Europe, the Middle East, and elsewhere. The committee notes that Westover ARB has demonstrated this surge capacity during real world contingencies in the past. The decision to switch from pipeline to truck delivery was based solely on cost, and the savings, while noteworthy, are not significant. The committee is concerned that this action could have profound impacts during an emergency and questions whether the movement from pipeline to fuel trucks may increase risk for rather small cost savings.

Therefore, the committee directs the DLA to provide a report to the congressional defense committees, no later than February 1, 2020, on: (1) How emergency and contingencies were factored into the DLA's analysis; (2) How emergencies and contingencies will be handled when there is a rapid increase in the need for fuel; (3) How quickly the Buckeye pipeline can be activated during an emergency or during any day-to-day disruptions of fuel delivery to Westover; and (4) Whether there would be any cost implications of re-activating the fuel pipeline to Westover ARB.

Women servicemember personal protective equipment

The committee understands that a leading cause of injury among servicemembers is ill-fitting personal protective equipment (PPE) and combat gear and that women disproportionately incur such injuries. The committee further recognizes that properly fitting equipment enhances performance and reduces safety risks. The committee believes that all servicemembers should be properly equipped with correctly fitting PPE and combat gear during train-

ing and deployment, especially given that consistent physical training with PPE used in a combat environment has been demonstrated to decrease the likelihood of injury. Although the committee acknowledges recent progress made by the Services to provide appropriate PPE and combat gear for a variety of body types, the committee directs the Secretary of Defense to identify and address barriers to equipment access and delays in delivery, particularly when servicemembers require custom or nonstandard-size equipment.

Accordingly, the committee encourages the Department to prioritize testing, contracting, procuring, and fielding new PPE—particularly with regard to appropriate sizes for women servicemembers—to ensure operational readiness and safety, which will enhance performance, lethality, and combat readiness while improving gender integration across the Services. The Secretary should in turn encourage the Services to pay particular attention to women-specific body armor, helmets—including those used by tankers and pilots—and coveralls in sizes that fit women mechanics, tankers, and pilots. Additionally, the committee encourages the Services to make available lightweight, adjustable, and modular ruck frames being used by the Marine Corps but not available in other Services. Lastly, the committee believes that the Department should ensure that all equipment is sourced in quantities that allow them to be issued at initial training and used during deployment.

TITLE IV—MILITARY PERSONNEL AUTHORIZATIONS

Subtitle A—Active Forces

End strengths for active forces (sec. 401)

The committee recommends a provision that would authorize Active-Duty end strengths for fiscal year 2020, as shown below:

Service	FY 2019 Authorized	FY 2020		Change from	
		Request	Recommendation	FY 2020 Request	FY 2019 Authorized
Army	487,500	480,000	480,000	0	− 7,500
Navy	335,400	340,500	340,500	0	+5,100
Marine Corps	186,100	186,200	186,200	0	+100
Air Force	329,100	332,800	332,800	0	+3,700
DOD Total	1,338,100	1,339,500	1,339,500	0	+1,400

Subtitle B—Reserve Forces

End strengths for Selected Reserve (sec. 411)

The committee recommends a provision that would authorize Selected Reserve end strengths for fiscal year 2020, as shown below:

Service	FY 2019 Authorized	FY 2020		Change from	
		Request	Recommendation	FY 2020 Request	FY 2019 Authorized
Army National Guard	343,500	336,000	336,000	0	− 7,500
Army Reserve	199,500	189,500	189,500	0	− 10,000
Navy Reserve	59,100	59,000	59,000	0	− 100
Marine Corps Reserve	38,500	38,500	38,500	0	0
Air National Guard	107,100	107,700	107,700	0	600
Air Force Reserve	70,000	70,100	70,100	0	100
DOD Total	817,700	800,800	800,800	0	0
Coast Guard Reserve	7,000	7,000	7,000	0	0

End strengths for Reserves on active duty in support of the reserves (sec. 412)

The committee recommends a provision that would authorize full-time support end strengths for fiscal year 2020, as shown below:

Service	FY 2019 Authorized	FY 2020		Change from	
		Request	Recommendation	FY 2020 Request	FY 2019 Authorized
Army National Guard	30,595	30,595	30,595	0	0
Army Reserve	16,386	16,511	16,511	0	125
Navy Reserve	10,110	10,155	10,155	0	45

Service	FY 2019 Authorized	FY 2020		Change from	
		Request	Recommendation	FY 2020 Request	FY 2019 Authorized
Marine Corps Reserve	2,261	2,386	2,386	0	125
Air National Guard	19,861	22,637	22,637	0	2,776
Air Force Reserve	3,849	4,431	4,431	0	582
DOD Total	83,062	86,715	86,715	0	3,653

End strengths for military technicians (dual status) (sec. 413)

The committee recommends a provision that would authorize military technicians (dual status) for the reserve components of the Army and Air Force for fiscal year 2020, as shown below:

Service	FY 2019 Authorized	FY 2020		Change from	
		Request	Recommendation	FY 2020 Request	FY 2019 Authorized
Army National Guard	22,294	22,294	22,294	0	0
Army Reserve	6,492	6,492	6,492	0	0
Air National Guard	15,861	13,569	13,569	0	-2,292
Air Force Reserve	8,880	8,938	8,938	0	58
DOD Total	53,527	51,293	51,293	0	-2,234

The provision would prohibit under any circumstances the coercion of a military technician (dual status) by a State into accepting an offer of realignment or conversion to any other military status, including as a member of the Active, Guard, and Reserve program of a reserve component. The provision would further specify that if a technician declines to participate in such a realignment or conversion, no further action may be taken against the individual or the individual's position. The provision would require the Chief of the National Guard Bureau to certify by January 1, 2020, to the Committees on Armed Services of the Senate and House of Representatives the number of positions realigned from military technician (dual status) to a position in the Active, Guard, and Reserve (AGR) program of the Air National Guard during fiscal year 2019. Finally, the provision would specify that if the number so certified is less than 3,190, that the authorized strength for Air National Guard military technicians be increased by the difference between the number certified and 3,190 (with a maximum increase of 2,292) and that authorized AGR strength for the Air National Guard be decreased by that same amount.

The committee is concerned that the Air National Guard did not properly validate its requirements under its realignment initiative, relying instead on a wishlist from the States rather than a rigorous and analytical process to determine what positions should be realigned, could be realigned, and what should remain technician. While the committee tentatively supports the Administration's request for fiscal year 2020, subject to the adjustment mechanism provided in the provision, the committee reserves the right to reassess this authorization as the National Defense Authorization Act for Fiscal Year 2020 moves through the legislative process, based on the reporting requirements set forth below.

The committee directs the Chief of the National Guard Bureau to provide to the committee quarterly reports on the number of positions that have been realigned from technician to AGR, by state, occupational specialty, and grade, beginning immediately with data available for fiscal year 2019 and continuing quarterly through May 1, 2021.

Maximum number of reserve personnel authorized to be on active duty for operational support (sec. 414)

The committee recommends a provision that would establish limits on the number of reserve personnel authorized to be on Active Duty for operational support under section 115(b) of title 10, United States Code, as of September 30, 2020, as shown below:

Service	FY 2019 Authorized	FY 2020		Change from	
		Request	Recommendation	FY 2020 Request	FY 2019 Authorized
Army National Guard	17,000	17,000	17,000	0	0
Army Reserve	13,000	13,000	13,000	0	0
Navy Reserve	6,200	6,200	6,200	0	0
Marine Corps Reserve	3,000	3,000	3,000	0	0
Air National Guard	16,000	16,000	16,000	0	0
Air Force Reserve	14,000	14,000	14,000	0	0
DOD Total	69,200	69,200	69,200	0	0

Authorized strengths for Marine Corps Reserves on active duty (sec. 415)

The committee recommends a provision that would amend section 12011(a)(1) and section 12012(a) of title 10, United States Code, by adjusting the controlled grade caps for field grade officers and senior enlisted marines to account for increased end strength in the Marine Corps Active Reserve Program. The provision would also expand the field grade officer and senior enlisted strength tables to allow for future end strength increases.

Subtitle C—Authorization of Appropriations

Military personnel (sec. 421)

The committee recommends a provision that would authorize the appropriations for military personnel activities at the levels identified in section 4401 of division D of this Act.

Budget Items

Military personnel funding changes

The amount authorized to be appropriated for military personnel programs includes the following changes from the budget request:

[Changes in millions of dollars]

Military personnel underexecution	– 918.98
Total	– 918.98

The committee recommends a total reduction in the Military Personnel (MILPERS) appropriation of \$918.98 million. This amount includes: (1) A reduction of \$918.98 million to reflect the Govern-

ment Accountability Office's most recent assessment of average annual MILPERS under execution.

TITLE V—MILITARY PERSONNEL POLICY

Subtitle A—Officer Personnel Policy

Repeal of codified specification of authorized strengths of certain commissioned officers on active duty (sec. 501)

The committee recommends a provision that would amend section 523 of title 10, United States Code, to require the Congress to authorize annually the number of officers serving on Active Duty in the grades of major, lieutenant colonel, and colonel in the Army, Air Force, and Marine Corps or lieutenant commander, commander, and captain in the Navy. This provision would take effect in fiscal year 2021 and repeal the authorized officer strength table, including all of the previous exceptions to the officer strength table.

The committee notes the officer strength table was originally included as a fundamental feature of the Defense Officer Personnel Management Act (DOPMA) (Public Law 96–513). The strength table was designed to serve as an effective limitation on the number of mid-grade officers within each service. The House report to accompany the legislation (H. Rept. 96–1462) explained that the table would be adjusted over time to align with emerging officer manpower requirements. However, in practice, the authorized strength table is rarely updated and it is no longer linked to strategy or actual officer requirements.

As of the end of fiscal year 2018, each service is largely unaffected by the limitations imposed by the strength table. For example, the Army finished fiscal year 2018 at approximately 78 percent of its authorization for officers serving in the grade of major. Majors in the Air Force and Marine Corps were respectively at 94 percent and 89 percent of authorized levels. The Navy finished fiscal year 2018 at 89 percent of authorized levels in the grade of lieutenant commander. While each service operates more closely to the strength table limit for progressively higher grades (e.g., the Army was manned at approximately 86 percent of authorized lieutenant colonel end strength), the table does not effectively limit the Services in the manner envisioned by the original DOPMA legislation.

The committee authorizes annual end strength levels for the overall active and reserve components and numerous other subsets of total force manpower. This allows end strength to fluctuate to meet strategic and budgetary necessities. Similarly, this provision would require each military service annually to justify required mid-grade officer manpower needs to support an annual authorization from Congress. This provision would provide greater flexibility to the military, while also ensuring Congress continues to perform its vital oversight role in ensuring the officer corps is effectively managed.

The provision would not take effect until fiscal year 2021, which would provide the Department of Defense the amount of time necessary to include an officer end strength request in the fiscal year 2021 budget request.

Maker of original appointments in a regular or reserve component of commissioned officers previously subject to original appointment in other type of component (sec. 502)

The committee recommends a provision that would amend section 531 of title 10, United States Code, to require the Secretary of Defense to make regular officer transfer appointments onto the Active-Duty list for reserve officers currently included on the reserve active-status list.

The provision would also amend section 12203 of title 10, United States Code, to require the Secretary of Defense to make reserve officer transfer appointments onto the reserve active-status list for regular officers currently included on the Active-Duty list. The provision would also deem an officer who receives an original appointment as a regular commissioned officer in a grade under section 531 of title 10, United States Code, to have also received an original appointment as a reserve officer.

The committee notes that each of the military departments has expressed a desire to expedite the transfer of officers between the active and reserve components. One hurdle in the current transfer process is the requirement for separate appointments into each component. This requirement sometimes results in a break-in-service for officers who are attempting to transfer from the active component into the reserve component, which can adversely affect a servicemember's pay and benefits. Additionally, the delay experienced by many officers as a result of the current transfer process sometimes discourages officers from transitioning into a different component.

Of particular importance is retaining regular officers as they transition off of Active Duty. As a practical matter, the Services have only one opportunity to retain an officer as a member of a reserve component. It is rare for an officer to return to the reserve component after fully separating from the military. Therefore, the committee believes that removing barriers that unnecessarily delay the active-to-reserve transfer process is an important step in retaining well-trained officer personnel.

Furnishing of adverse information on officers to promotion selection boards (sec. 503)

The committee recommends a provision that would modify section 615 of title 10, United States Code, to expand the grades of officers for which credible information of an adverse nature must be furnished to a promotion selection board. In addition, the provision would require that credible information of an adverse nature be furnished to a promotion selection board and its members at each stage or phase of the board, concurrent with the screening, rating, assessment, evaluation, discussion, or other consideration of the officer or of the officer's official military personnel file.

Limitation on number of officers recommendable for promotion by promotion selection boards (sec. 504)

The committee recommends a provision that would amend section 616 of title 10, United States Code, to limit the number of officers who may be recommended for promotion by a promotion selection board to no more than 95 percent of officers who are in a given promotion zone.

Expansion of authority for continuation on active duty of officers in certain military specialties and career tracks (sec. 505)

The committee recommends a provision that would correct a technical oversight in section 506 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) by amending section 637a of title 10, United States Code, to authorize each of the Secretaries of the military departments to continue certain officers serving in the pay grades of O–3 and O–4 in an occupational specialty, rating, or specialty code, as designated by the relevant secretary, who are not yet retirement eligible but would otherwise be subject to statutory separation to complete up to 40 years of active service.

Higher grade in retirement for officers following reopening of determination or certification of retired grade (sec. 506)

The committee recommends a provision that would modify section 1370 of title 10, United States Code, to require that any increase in the retired grade of an officer resulting from the reopening of the determination or certification of that officer's retired grade be made by the Secretary of Defense, by and with the advice and consent of the Senate. Any associated modification of the officer's retired pay would go into effect on the effective date of the increase in the officer's retired grade and would not be retroactive to the date of the officer's retirement. The provision would apply to any increase in retired grade that occurs after the date of the enactment of this Act, regardless of when the officer retired.

Availability on the Internet of certain information about officers serving in general or flag officer grades (sec. 507)

The committee recommends a provision that would require each of the Secretaries of the military departments to make available on a public website certain biographical, assignment-related information about the relevant military department's general and flag officers, including public notice when a general or flag officer has been reassigned to a new duty position. Each secretary may decline to publish such information only for reasons of risk to the individual officer or to national security and only after informing the Committees on Armed Services of the Senate and the House of Representatives in writing.

Subtitle B—Reserve Component Management

Repeal of requirement for review of certain Army Reserve officer unit vacancy promotions by commanders of associated active duty units (sec. 511)

The committee recommends a provision that would repeal section 1113 of the Army National Guard Combat Readiness Reform Act of 1992, which was included in the National Defense Authorization Act for Fiscal Year 1993 (Public Law 102–484). This section required the review of a recommended unit vacancy promotion of an officer in the Selected Reserve by the commander of the Active-Duty unit associated with the Selected Reserve unit of that officer.

Subtitle C—General Service Authorities

Modification of authorities on management of deployments of members of the Armed Forces and related unit operating and personnel tempo matters (sec. 515)

The committee recommends a provision that would amend section 991 of title 10, United States Code, to limit the ability of the Secretary of Defense to delegate deployment threshold exceptions to Senate-confirmed civilian officials within the Department of Defense. The provision would also require the Secretary of Defense to prescribe a separate policy to track dwell time for reserve members of the Armed Forces.

Repeal of requirement that parental leave be taken in one increment (sec. 516)

The committee recommends a provision that would amend section 701 of title 10, United States Code, to remove the requirement that military leave taken in connection with the birth or adoption of a child be taken only in one increment.

Digital engineering as a core competency of the Armed Forces (sec. 517)

The committee recommends a provision that would establish a policy of the Department of Defense to promote and maintain digital engineering as a core competency of the civilian and military workforces of the Department. The provision would require the Secretary of Defense to appoint a civilian official of the Department of Defense, at a level no lower than assistant secretary of defense, for the development and discharge of the policy. The provision would also require the Secretary of Defense to submit an implementation plan to the congressional defense committees not later than June 1, 2020.

Modification of notification on manning of afloat naval forces (sec. 518)

The committee recommends a provision that would amend section 525 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) to make technical changes to congressional notifications germane to the manning of afloat naval forces.

Report on expansion of the Close Airman Support team approach of the Air Force to the other Armed Forces (sec. 519)

The committee recommends a provision that would require the Secretaries of the military departments to submit to the Committees on Armed Services of the Senate and the House of Representatives a joint report on the feasibility and advisability of expanding the Close Airman Support team approach employed by the Air Force for use by the other Armed Forces.

Subtitle D—Military Justice and Related Matters

Part I—Matters Relating to Investigation, Prosecution, and Defense of Sexual Assault Generally

Department of Defense-wide policy and military department-specific programs on reinvigoration of the prevention of sexual assault involving members of the Armed Forces (sec. 521)

The committee recommends a provision that would require the Secretary of Defense to promulgate a comprehensive policy to reinvigorate the prevention of sexual assault among members of the Armed Forces, within 180 days after enactment of this Act.

The provision would require in the comprehensive policy inclusion of programs that: (1) Provide education and training on the prevention of sexual assault; (2) Promote healthy relationships; (3) Are designed to empower and enhance the role of non-commissioned officers in the prevention of sexual assault; (4) Foster social courage to promote interventions to prevent sexual assault; (5) Address behaviors across the continuum of harm; (6) Counter alcohol abuse, including binge drinking; and (7) Encompass such other matters as the Secretary of Defense deems appropriate.

Enactment and expansion of policy on withholding of initial disposition authority for certain offenses under the Uniform Code of Military Justice (sec. 522)

The committee recommends a provision that would vest only in a commissioned officer in a grade not below O-6, who is authorized to convene special courts-martial, the authority to determine the disposition of specified offenses under the Uniform Code of Military Justice (Chapter 47 of title 10, United States Code).

The provision would establish that, when the victim of any such offense is in a different chain of command than the subject, only an officer of like grade with special court-martial convening authority in the chain of command of the victim may determine the disposition of offenses in connection with the victim's alleged misconduct arising out of the incident.

The permissible dispositions determinations that may be rendered by such an officer include: (1) No action; (2) Administrative action; (3) Imposition of non-judicial punishment; (4) Preferral of charges; (5) Dismissal or referral of charges to court-martial for trial if charges were preferred by a subordinate; or (6) Forwarding the charges to a superior or subordinate authority for further disposition.

Generally, if an officer's disposition determination differs from the recommendation made by the officer's legal advisor, the matter will be referred to a Special Victim Prosecutor, Senior Trial Counsel, or Regional Trial Counsel not in the chain of command of the officer making the initial disposition determination for review and recommendation to a staff judge advocate in the chain of command. That staff judge advocate would advise the next superior commander, who will decide whether to endorse or supersede the initial disposition determination.

The training provided to commissioned officers in the grades of O-6 and above on the exercise of such disposition determination authority must include specific training on sexual harassment, sexual assault, and family abuse and domestic violence, as the Secretary of Defense deems appropriate, to inform such disposition determinations.

Training for Sexual Assault Initial Disposition Authorities on exercise of disposition authority for sexual assault and collateral offenses (sec. 523)

The committee recommends a provision that would require comprehensive training for Sexual Assault Initial Disposition Authorities, as defined by the April 20, 2012, Secretary of Defense memorandum, "Withholding Initial Disposition Authority Under the Uniform Code of Military Justice in Certain Sexual Assault Cases," on the exercise of their authorities in such cases, with a view to enhancing the capabilities of such authorities and promoting trust and confidence in the military justice system.

Expansion of responsibilities of commanders for victims of sexual assault committed by another member of the Armed Forces (sec. 524)

The committee recommends a provision that would require the commander of a member of the Armed Forces who is the victim of a sexual assault by another member of the Armed Forces to provide notification to the victim of every significant event associated with the investigation and prosecution of the sexual assault and, as applicable, to the confinement of the offender. Commanders would not be required to provide such notifications to a victim who elects not to receive them. Commanders would be charged to document any notifications provided to a victim as well as any election by a victim not to receive notifications.

Further, were an alleged offender subject to prosecution by both court-martial and Federal or State civilian court, the provision would require the commander to create and maintain documentation of the victim's preference as to the forum in which the alleged offender should be prosecuted.

Training for commanders in the Armed Forces on their role in all stages of military justice in connection with sexual assault (sec. 525)

The committee recommends a provision that would require training provided to all military commanders to include comprehensive training on the role of a commander: (1) In all stages of the military justice process in connection with sexual assault committed by

a member of the Armed Forces, including investigation and prosecution; (2) In ensuring that a victim of sexual assault is informed of, and has the opportunity to obtain, the assistance available by law; (3) In ensuring that the victim is afforded all due process rights and protections authorized under law; (4) In preventing retaliation; (5) In establishing and maintaining a healthy command climate; and (6) In any other matters in connection with sexual assault deemed appropriate by the Secretary of Defense.

The provision would further require that the training provided to commanders incorporate best practices in all matters covered. These best practices should be identified and brought current through periodic surveys and reviews.

Notice to victims of alleged sexual assault of pendency of further administrative action following a determination not to refer to trial by court-martial (sec. 526)

The committee recommends a provision that would require the Secretary of Defense to promulgate regulations to require a commander who determines not to refer a case of alleged sexual assault for trial by court-martial to provide the victim with notification, no less frequently than monthly, of the status of any further action in the case, including non-judicial punishment, administrative action, or no action, until a final determination of such further action is made.

Safe to report policy applicable across the Armed Forces (sec. 527)

The committee recommends a provision that would require the Secretary of Defense to prescribe a Safe to Report policy applicable to all members of the Armed Forces, across both active and reserve components, and to cadets and midshipmen at the military service academies. A Safe to Report policy is one in which a victim of sexual assault who may have committed minor collateral misconduct at or about the time of the assault or whose minor collateral misconduct is discovered only as the result of the investigation of the sexual assault may report the assault to authorities without fear of discipline, except in cases in which aggravating circumstances increase the gravity of the minor collateral misconduct or its impact on military good order and discipline.

The provision would define minor collateral misconduct as including: (1) Improper use and possession of alcohol; (2) Consensual intimate behavior, including adultery or fraternization; (3) Presence in off-limits areas; and (4) Other misconduct specified in the regulations promulgated.

The provision would further require that the regulations promulgated by the Secretary specify the aggravating circumstances that would increase the gravity of minor collateral misconduct or its impact on good order and discipline.

Report on expansion of Air Force safe to report policy across the Armed Forces (sec. 528)

The committee recommends a provision that would require the Secretary of Defense, in consultation with the Secretaries of the military departments and the Secretary of Homeland Security, to

submit a report assessing the feasibility and advisability of applying across the Armed Forces, the Safe to Report policy currently applicable only in the Air Force to the Committees on Armed Services of the Senate and the House of Representatives within 180 days of the enactment of this Act.

The Safe to Report policy currently in effect in the Air Force provides that a member of the Armed Forces who is a victim of a sexual assault committed by another member of the Armed Forces but who may have committed minor collateral misconduct at or about the time of the sexual assault or whose minor collateral misconduct is discovered only as a result of the investigation of the sexual assault may report the assault to authorities without fear or receipt of discipline in connection with that minor collateral misconduct.

Proposal for separate punitive article in the Uniform Code of Military Justice on sexual harassment (sec. 529)

The committee recommends a provision that would require the Joint Service Committee on Military Justice to submit to the Committees on Armed Services of the Senate and the House of Representatives a report setting forth legislative and administrative actions required to establish a punitive article on sexual harassment in the Uniform Code of Military Justice. The report would be required to be submitted within 180 days of the date of the enactment of this Act.

Treatment of information in Catch a Serial Offender Program for certain purposes (sec. 530)

The committee recommends a provision that would exclude reports filed with the Catch a Serial Offender Program from application of the Freedom of Information Act (5 U.S.C. 552).

Further, the provision would make plain that transmittal or receipt of a restricted report of sexual assault to or by the Catch a Serial Offender Program would not terminate the report's treatment or status as restricted.

Report on preservation of recourse to restricted report on sexual assault for victims of sexual assault following certain victim or third-party communications (sec. 531)

The committee recommends a provision that would require the Secretary of Defense to submit to the Committees on Armed Services of the Senate and the House of Representatives a report on the feasibility and advisability of a Department of Defense policy that would permit a victim of a sexual assault, when the victim is a member of the Armed Forces or an adult dependent of such a member, to have a report of the assault made by the victim to a member of the Armed Forces in the victim's or victim's sponsor's chain of command, or to military law enforcement, treated as a restricted report. A report on the assault made by any individual other than the victim would be similarly treated. In preparing the report, which would be due not later than 180 days after the date of the enactment of this Act, the Secretary would be required to consult with the Defense Advisory Committee on Investigation, Prosecution, and Defense of Sexual Assault in the Armed Forces.

Authority for return of personal property to victims of sexual assault who file a Restricted Report before conclusion of related proceedings (sec. 532)

The committee recommends a provision that would amend section 586 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81) to require the Secretary of Defense to prescribe procedures under which a victim of sexual assault who files a restricted report may, at any time and on a confidential basis, request the return of the victim’s personal property obtained as part of the sexual assault forensic examination. Any such request on the part of the victim would not affect the restricted nature of the victim’s report of sexual assault. The provision would also require a Sexual Assault Response Coordinator or Sexual Assault Prevention and Response Victim Advocate to inform the victim of his or her right to request the return of personal property under these procedures but also that any such return might negatively affect a subsequent adjudication of the case, should the victim later decide to convert the restricted report to an unrestricted report. The provision would not affect the requirement to retain a sexual assault forensic examination kit for the period required in law.

Extension of Defense Advisory Committee on Investigation, Prosecution, and Defense of Sexual Assault in the Armed Forces (sec. 533)

The committee recommends a provision that would amend section 546(f)(1) of the Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113–291) to extend the term of the Defense Advisory Committee on Investigation, Prosecution, and Defense of Sexual Assault in the Armed Forces by 5 years.

Defense Advisory Committee for the Prevention of Sexual Misconduct (sec. 534)

The committee recommends a provision that would require the Secretary of Defense to establish and maintain within the Department of Defense a Defense Advisory Committee on the Prevention of Sexual Misconduct. The Advisory Committee would be established not later than 180 days after the enactment of this Act and would comprise of not fewer than 20 members, including persons with expertise in the prevention of sexual assault and behaviors on the sexual assault continuum of harm, the prevention of suicide, and the change in culture of large organizations. The Advisory Committee would coordinate with the Defense Advisory Committee on Investigation, Prosecution, and Defense of Sexual Assault in the Armed Forces on matters of joint interest and, not later than March 30 of each year, would submit an annual report on its activities to the Committees on Armed Services of the Senate and the House of Representatives.

Independent reviews and assessments on race and ethnicity in the investigation, prosecution, and defense of sexual assault in the Armed Forces (sec. 535)

The committee recommends a provision that would require the Defense Advisory Committee on Investigation, Prosecution, and Defense of Sexual Assault in the Armed Forces to conduct a review and assessment of the race and ethnicity of servicemembers accused, charged, or convicted of certain sexual offenses.

Report on mechanisms to enhance the integration and synchronization of activities of Special Victim Investigation and Prosecution personnel with activities of military criminal investigation organizations (sec. 536)

The committee recommends a provision that would require the Secretary of Defense to submit to the Committees on Armed Services of the Senate and the House of Representatives a report setting forth proposals to enhance the integration and synchronization of Special Victim Investigation and Prosecution personnel with the activities of military criminal investigative organizations in investigations in which both may be involved, together with the legislative and administrative actions required to implement those proposals.

Comptroller General of the United States report on implementation by the Armed Forces of recent statutory requirements on sexual assault prevention and response in the military (sec. 537)

The committee recommends a provision that would require the Comptroller General of the United States to study the Armed Forces' implementation of statutory requirements on sexual assault prevention and response enacted by the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–136) and each succeeding National Defense Authorization Act through the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232). The provision also would require the Comptroller General to submit a report on this study to the Committees on Armed Services of the Senate and the House of Representatives. For each statutory requirement still in force, the report would include an assessment of: (1) Whether the requirement has been or is being implemented; (2) The actions taken by the Armed Forces to determine whether the actions taken pursuant to each requirement have proven effective in meeting the intended objective; and (3) Any other matters deemed appropriate. Finally, the provision would require the Comptroller General to provide to the Committees on Armed Services of the Senate and the House of Representatives, not later than May 1, 2020, one or more briefings on the status of the study, including any findings and recommendations generated by the study to date.

Part II—Special Victims' Counsel Matters

Legal assistance by Special Victims' Counsel for victims of alleged domestic violence offenses (sec. 541)

The committee recommends a provision that would authorize the Secretaries of the military departments to provide Special Victims' Counsel services to certain military and military-affiliated civilian personnel who are the victims of an alleged domestic violence offense, if a given secretary determines that resources are available for this purpose without impairing capacity to provide such services to the victims of alleged sex-related offenses already authorized by law to receive them. The provision would also authorize a given secretary to extend the provision of Special Victims' Counsel services, under the same terms and conditions, to certain civilian persons who are the victims of an alleged sex-related offense or alleged domestic violence offense but who are not currently authorized to receive such services.

Other Special Victims' Counsel matters (sec. 542)

The committee recommends a provision that would expand the legal assistance authorized to be provided by Special Victims' Counsel to include legal consultation and assistance in connection with an incident of retaliation, whether occurring before, during, or after the conclusion of any criminal proceedings.

The provision would also codify the Special Victims' Counsel's duty to solicit the preference of a victim of an alleged sex-related offense as to whether the offense should be prosecuted by court-martial or in a civilian court with jurisdiction over the offense and to advise appropriate military prosecutors of the victim's preference.

Finally, within 120 days of enactment of this Act, the provision would require the Secretary of Defense to provide a report to the Committees on Armed Services of the Senate and the House of Representatives, detailing the manner—including the additional personnel, resources, and training required—in which the Department of Defense would extend eligibility for Special Victims' Counsel services to certain military and military-affiliated civilian victims of alleged domestic violence offenses and to certain other civilian victims of an alleged sex-related or domestic violence offenses, were expansion of the program to be authorized in law.

Availability of Special Victims' Counsel at military installations (sec. 543)

The committee recommends a provision that would require that, in circumstances in which a Special Victims' Counsel is not available at a military installation to provide services to a member of the Armed Forces who requests such a Counsel, such a Counsel be made available not later than 72 hours after the member's request.

Further, the provision would require each of the Secretaries of the military departments to submit to the Committees on Armed Services of the Senate and the House of Representatives a report assessing the feasibility and advisability of establishing for each Special Victims' Counsel, one or more civilian positions to support the Counsel and to ensure continuity and the preservation of insti-

tutional knowledge related to the provision of Special Victims' Counsel services. The report would be submitted not later than 180 days after enactment of this Act.

Training for Special Victims' Counsel on civilian criminal justice matters in the States of the military installations to which assigned (sec. 544)

The committee recommends a provision that would require that, on the assignment of a Special Victims' Counsel (including a Victim Legal Counsel of the Navy) to a military installation in the United States, such Counsel will be provided appropriate training on the law and policies governing criminal justice matters in the State or States in which the military installation is located. Such training would include: (1) Victim rights; (2) Protective orders; (3) Prosecution of criminal offenses; and (4) Sentencing for conviction of a criminal offense.

Part III—Boards for Correction of Military Records and Discharge Review Board Matters

Repeal of 15-year statute of limitations on motions or requests for review of discharge or dismissal from the Armed Forces (sec. 546)

The committee recommends a provision that would eliminate the 15-year statute of limitations on requests by or on behalf of a former servicemember for review by a discharge review board of the member's discharge or dismissal from the Armed Forces.

Reduction in required number of members of discharge review boards (sec. 547)

The committee recommends a provision that would amend section 1553 of title 10, United States Code, to reduce the minimum number of members comprising a Discharge Review Board from five to three.

Enhancement of personnel on boards for the correction of military records and discharge review boards (sec. 548)

The committee recommends a provision that would expand the types of healthcare professionals whose provision of medical evidence or diagnosis that a current or former servicemember is or has experienced post-traumatic stress disorder, traumatic brain injury, or another mental health disorder must be accorded consideration by a board for the correction of military records or discharge review board in the matter of such an applicant to include social workers with training on mental health issues connected with post-traumatic stress disorder, traumatic brain injury, or other trauma as well as psychologists, psychiatrists, or other specially-trained physicians, as currently permitted in law.

Further, the provision would expand the types of health care professionals authorized to render a medical advisory opinion to a board for the correction of military records or to be a member of a discharge review board considering the application of such a servicemember to include social workers with training on mental health issues connected with post-traumatic stress disorder, traumatic

brain injury, or other trauma as well as psychologists, psychiatrists, or other specially-trained physicians, as currently permitted in law.

Inclusion of intimate partner violence and spousal abuse among supporting rationales for certain claims for corrections of military records and discharge review (sec. 549)

The committee recommends a provision that would expand the types of cases in which boards for the correction of military records and discharge review boards must accord liberal consideration to the evidence presented by the servicemember or former servicemember in support of an application to the board and/or grant expedited consideration of such an application to include cases in which post-traumatic stress disorder or traumatic brain injury related to sexual trauma, intimate partner violence, spousal abuse, or combat serves as all or part of the justification for the member or former member's request for relief.

Advice and counsel of trauma experts in review by boards for correction of military records and discharge review boards of certain claims (sec. 550)

The committee recommends a provision that would require a board for the correction of military records or a discharge review board reviewing a case in which a current or former servicemember's request for relief is based on post-traumatic stress disorder or traumatic brain injury to seek advice and counsel from a psychiatrist, psychologist, or social worker with training on mental health issues associated with post-traumatic stress disorder, traumatic brain injury, or other trauma.

The provision would further require that, if the member or former member applicant claims sexual trauma, intimate partner violence, or spousal abuse, the board seek advice and counsel from an expert in trauma specific to sexual assault, intimate partner violence, or spousal abuse.

Training of members of boards for correction of military records and discharge review boards on sexual trauma, intimate partner violence, spousal abuse, and related matters (sec. 551)

The committee recommends a provision that would require that the curriculum of training for members of boards for the correction of military records and discharge review boards include training in sexual trauma, intimate partner violence, spousal abuse, and the various responses of individuals to trauma.

Further, the provision would require that, to the extent practicable, any such training be uniform across the Armed Forces.

Limitations and requirements in connection with separations for members of the Armed Forces who suffer from mental health conditions in connection with a sex-related, intimate partner violence-related, or spousal abuse-related offense (sec. 552)

The committee recommends a provision that would require that, before a member of the Armed Forces—who was the victim of a sex-related, intimate partner violence-related, or spousal abuse-related offense during the period of the member’s military service and who has a mental health condition not amounting to a disability—is separated, discharged, or released from military service based on that condition, the diagnosis of the condition must be both corroborated by a competent mental health care professional at or above the level of the healthcare professional rendering the diagnosis and endorsed by the Surgeon General of the military department concerned.

This provision would apply to all separations, discharges, and releases from the Armed Forces that occur on or after the date that is 180 days after the date of the enactment of this Act.

Liberal consideration of evidence in certain claims by boards for the correction of military records and discharge review boards (sec. 553)

The committee recommends a provision that would require military department boards for the correction of military records and discharge review boards to review all claims relating to a claimant’s discharge or dismissal, or the characterization of that discharge or dismissal, with liberal consideration of all evidence and information presented by or on behalf of the former servicemember.

Part IV—Other Military Justice Matters

Expansion of pre-referral matters reviewable by military judges and military magistrates in the interest of efficiency in military justice (sec. 555)

The committee recommends a provision that would amend article 30a of the Uniform Code of Military Justice (10 U.S.C. 830a) to require the President to prescribe regulations governing proceedings related to an expanded set of matters that would be authorized to be conducted by military judges and military magistrates prior to the referral of court-martial charges. Such expanded matters would include the pre-trial confinement of, mental capacity of, or responsibility of an accused and an accused’s request for individual military counsel.

Policies and procedures on registration at military installations of civilian protective orders applicable to members of the Armed Forces assigned to such installations and certain other individuals (sec. 556)

The committee recommends a provision that would require the Secretary of Defense to establish policies and procedures for the registration at military installations of any civilian protective order issued against: (1) A member of the Armed Forces assigned to the installation; (2) A civilian employee employed at the installation; or

(3) A spouse or intimate partner of a member of the Armed Forces on Active Duty assigned to the installation or of a civilian employee employed at the installation.

The provision would specify that the policies and procedures established by the Secretary must include a requirement for notice between and among the commander, installation military law enforcement elements, and military criminal investigative elements, whenever such a civilian protective order is registered. The provision would require that a failure to register a civilian protective order may not be offered as justification for a lack of enforcement of the order by military law enforcement and other personnel who have knowledge of it.

Further, the provision would require that, as soon as practicable after establishing the requisite policies and procedures, the Secretary of Defense submit to the Committees on Armed Services of the Senate and the House of Representatives a letter describing those policies and procedures and certifying that they have been implemented on each military installation.

Increase in number of digital forensic examiners for the military criminal investigation organizations (sec. 557)

The committee recommends a provision that would require each of the Secretaries of the military departments to increase the number of digital forensic examiners in each military criminal investigative organization (MCIO) under that secretary's jurisdiction by not fewer than 10 examiners above the baseline number of digital forensic examiners in each MCIO as of September 30, 2019.

Survey of members of the Armed Forces on their experiences with military investigations and military justice (sec. 558)

The committee recommends a provision that would require the Secretary of Defense to conduct a periodic survey—at least once every 4 years but not more frequently than once every 2 years—to be known as the Military Investigation and Justice Experience Survey, on the experience of members of the Armed Forces with military investigations and military justice. Those surveyed would include members of the Armed Forces who are victims of an alleged sex-related offense and who made an unrestricted report of that offense. Participants would be surveyed on their experience with a Special Victims' Counsel and, if charges in the victim's case were referred to court-martial, with the prosecutor and the court-martial in general.

Public access to dockets, filings, and court records of courts-martial and other records of trial of the military justice system (sec. 559)

The committee recommends a provision that would amend Article 140a of the Uniform Code of Military Justice (10 U.S.C. 940a) to clarify that the Secretary of Defense must act in coordination with the Secretary of Homeland Security to apply to the United States Coast Guard the uniform standards and criteria governing the administration of the military justice system, including those associated with: (1) The collection and analysis of data; (2) Case

processing and management; (3) Timely, efficient, and accurate production and distribution of records of trial; and (4) Facilitating public access to docket information, filings, and records of court-martial proceedings. The provision would also clarify that the Privacy Act (5 U.S.C. 552a) would not apply to court-martial records of trial or to docket information, filings, and records made accessible to the public as prescribed. As practicable, public access to personally identifiable information of minors and victims of crime, including victims of sexual assault and domestic violence, would be redacted, however. Finally, the provision would affirm that its public access requirement would not apply to court-martial docket information, filings, or records that are classified, subject to a judicial protective order, or ordered sealed.

Pilot programs on defense investigators in the military justice system (sec. 560)

The committee recommends a provision that would require each of the Secretaries of the military departments to execute a pilot program to determine whether the presence and utilization of defense investigators makes the military justice system more fair and efficient and more effective in determining the truth. Defense investigators engaged in each secretary's pilot shall participate in the military justice system in a manner similar to that in which defense investigators participate in civilian criminal justice systems, and the personnel and activities of pilot program defense investigators should be uniform across all military departments, to the extent practicable.

The provision would specify that a defense investigator participating in the pilot may question a victim only upon a request made through a Special Victims' Counsel or other counsel of the victim or the trial counsel.

Further, the provision would require that, not later than 3 years after the date of the enactment of this Act, the Secretary of Defense submit to the Committees on Armed Services of the Senate and the House of Representatives a consolidated report on the defense investigator pilot program with an assessment of the feasibility and advisability of establishing and maintaining defense investigators as a permanent element of the military justice system.

Report on military justice system involving alternative authority for determining whether to prefer or refer charges for felony offense under the Uniform Code of Military Justice (sec. 561)

The committee recommends a provision that would require the Secretary of Defense to submit to the Committees on Armed Services of the Senate and the House of Representatives a report setting forth the results of a study on the feasibility and advisability of an alternative military justice system in which determinations to prefer or refer charges for trial by court-martial offenses for which the maximum punishment includes confinement for more than one year under the Uniform Code of Military Justice (Chapter 47 of title 10, United States Code) would be made by a judge advocate officer in a grade of O-6 or higher, who has significant experience in criminal litigation and is outside the chain of command of

the member of the Armed Forces who is the subject of the charges, rather than by a commanding officer in the subject's chain of command. The report would further assess the feasibility and advisability of conducting a pilot program to assess any such alternative military justice system and would be required to be submitted not later than 300 days after the date of the enactment of this Act.

Report on standardization among the military departments in collection and presentation of information on matters within the military justice system (sec. 562)

The committee recommends a provision that would require the Secretary of Defense to submit a report to the Committees on Armed Services of the Senate and the House of Representatives, describing plans to standardize across the military departments, to the extent practicable, the collection and presentation of matters within their military justice systems, including information collected and maintained to facilitate public access to court-martial docket information, filings, and records and for other purposes set forth in article 140 of the Uniform Code of Military Justice (10 U.S.C. 940a). In particular, the provision would require the Secretary to assess the feasibility and advisability of establishing and maintaining a single, Department of Defense-wide military justice data management system. The report would be submitted not later than 180 days after the date of the enactment of this Act.

Report on establishment of guardian ad litem program for certain military dependents who are victim or witness of offenses under the Uniform Code of Military Justice involving abuse or exploitation (sec. 563)

The committee recommends a provision that would require the Secretary of Defense to submit to the Committees on Armed Services of the Senate and the House of Representatives a report on the feasibility and advisability of establishing a guardian ad litem program for military dependents, under 12 years of age or who lack mental or other capacity, who are victims or witnesses to an offense under the Uniform Code of Military Justice (Chapter 47 of title 10, United States Code) that involves an element of abuse or exploitation. Should the Secretary determine that establishment of such a program is feasible and advisable, the report must include a description of: (1) The administrative requirements, including resources, required for the program; (2) Best practices, determined in consultation with civilian experts on child advocacy; and (3) Recommendations for legislative and administrative action required to implement the program. The report would be required to be submitted not later than 1 year after the date of the enactment of this Act.

Subtitle E—Member Education, Training, Transition, and Resilience

Consecutive service of service obligation in connection with payment of tuition for off-duty training or education for commissioned officers of the Armed Forces with any other service obligations (sec. 566)

The committee recommends a provision that would amend section 2007 of title 10, United States Code, to require that an Active-Duty service obligation incurred by an officer for the acceptance of tuition assistance for off-duty training or education be served sequentially with any other service obligation already incurred by the officer.

Authority for detail of certain enlisted members of the Armed Forces as students at law schools (sec. 567)

The committee recommends a provision that would modify section 2004 of title 10, United States Code, to permit the detail of certain enlisted members, as well as officers as authorized by current law, as students at law schools for a period of training leading to a juris doctor degree. The provision would limit the number of enlisted persons and officers so detailed to 25 per year and would retain the requirement for the competitive selection of detailees. To qualify for such detail, an enlisted person must: (1) Have served on Active Duty for not less than 4 and nor more than 8 years; (2) Be in the pay grade E-5, E-6, or E-7 as of the time law school training begins; (3) Meet all requirements for acceptance of a commission as a commissioned officer in the Armed Forces; (4) Agree to accept transfer to be a judge advocate, upon completion of law school; and (5) Agree to serve on Active Duty for a period of 2 years for each year or partial year of legal training received.

Connections of members retiring or separating from the Armed Forces with community-based organizations and related entities (sec. 568)

The committee recommends a provision that would require the Secretaries of Defense and Veterans Affairs to enter jointly into a memorandum of understanding or other agreements with State veterans agencies to transmit information from Department of Defense form DD-2648 on individuals undergoing retirement, discharge, or release from the Armed Forces, if elected by such individuals, to provide or connect veterans to benefits or services.

Subtitle F—Defense Dependents' Education and Military Family Readiness Matters

Part I—Defense Dependents' Education Matters

Continuation of authority to assist local educational agencies that benefit dependents of members of the Armed Forces and Department of Defense civilian employees (sec. 571)

The committee recommends a provision that would authorize \$40.0 million in Operation and Maintenance, Defense-wide, for con-

tinuation of the Department of Defense (DOD) assistance program to local educational agencies impacted by enrollment of dependent children of military members and DOD civilian employees.

Impact aid for children with severe disabilities (sec. 572)

The committee recommends a provision that would authorize \$10.0 million in Operation and Maintenance, Defense-wide, for impact aid payments for children with disabilities (as enacted by Public Law 106–398; 114 Stat. 1654A–77; 20 U.S.C. 7703a), using the formula set forth in section 363 of the Floyd D. Spence National Defense Authorization Act for Fiscal Year 2001 (Public Law 106–398), for continuation of Department of Defense assistance to local educational agencies that benefit eligible dependents with severe disabilities. Subsection (b) of the provision would allow the Secretary of Defense to use \$5.0 million of the total amount authorized for payments to local educational agencies with higher concentrations of military children with severe disabilities at the Secretary’s discretion and without regard to the section 343 formula.

Ri’katak Guest Student Program at United States Army Garrison-Kwajalein Atoll (sec. 573)

The committee recommends a provision that would authorize the Secretary of the Army to conduct an assistance program to educate up to five local national students per grade, per academic year, on a space-available basis at the contractor-operated schools on United States Army Garrison-Kwajalein Atoll. Under this provision, the Secretary would be authorized to provide: (1) Classroom instruction; (2) Extracurricular activities; (3) Student meals; and (4) Transportation.

Part II—Military Family Readiness Matters

Two-year extension of authority for reimbursement for State licensure and certification costs of spouses of members of the Armed Forces arising from relocation to another State (sec. 576)

The committee recommends a provision that would amend section 476(p)(4) of title 37, United States Code, to extend the authority for reimbursement of state licensure and certification costs of military spouses arising from relocation to another State to December 31, 2024, due to the delayed implementation of this authority.

Improvement of occupational license portability for military spouses through interstate compacts (sec. 577)

The committee recommends a provision that would amend section 1784 of title 10, United States Code, to require the Secretary of Defense to enter into a cooperative agreement with the Council of State Governments to assist with the funding and development of interstate compacts on licensed occupations.

The committee understands that the lack of portability of employment licenses and credentials across State lines hinders military spouse employment. According to the most recent survey data, in 2018, 30 percent of military spouses were unemployed and actively seeking work, and approximately 34 percent of working mili-

tary spouses require an occupational license for their work. Occupational licenses and credentials often have State-specific conditions and processes, causing lengthy employment and re-employment delays and high costs for military spouses moving between States.

Due to the delays and expense involved in re-licensure and re-credentialing, many military spouses decide not to practice their chosen professions. This becomes a financial and career choice issue for military families, impacting servicemembers' desire to stay in the military. This provision supports the process of developing State-based solutions to these issues, helping to alleviate the burdens military spouses face when moving to new locations in the country and impediments to their continued gainful employment.

Modification of responsibility of the Office of Special Needs for individualized service plans for members of military families with special needs (sec. 578)

The committee recommends a provision that would amend subparagraph (F) of section 1781(c)(d)(4) of title 10, United States Code, to require the Department of Defense to develop an individualized service plan for military family members with special needs when requested in connection to the completion of a family needs assessment.

Clarifying technical amendment on direct hire authority for the Department of Defense for childcare services providers for Department child development centers (sec. 579)

The committee recommends a provision that would clarify section 559(e) of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) by including family childcare coordinator services and school age childcare coordinator services.

Pilot program on information sharing between Department of Defense and designated relatives and friends of members of the Armed Forces regarding the experiences and challenges of military service (sec. 580)

The committee recommends a provision that would require the Secretary of Defense, within 1 year of the date of the enactment of this Act, to enter into an agreement with the American Red Cross to conduct a pilot program to encourage members of the Armed Forces to designate up to 10 persons to whom certain information regarding the military service of each such member would be shared. The provision would require the Secretary, within 2 years after the pilot program begins, to administer a survey to persons who elected to receive information under the program to receive feedback on the quality of the information they received. Finally, the provision would require the Secretary to submit a final report on the pilot program to the congressional defense committees within 3 years after the program begins.

Briefing on use of Family Advocacy Programs to address domestic violence (sec. 581)

The committee recommends a provision that would require that, not later than 180 days after the date of the enactment of this Act, the Secretary of Defense provide to the Committees on Armed Services of the Senate and the House of Representatives a briefing on the various mechanisms by which the Family Advocacy Programs of the military departments could be used and enhanced to end domestic violence among members of the Armed Forces and to support survivors of such violence and their dependents.

Subtitle G—Decorations and Awards

Authorization for award of the Medal of Honor to John J. Duffy for acts of valor in Vietnam (sec. 585)

The committee recommends a provision that would authorize the President, notwithstanding the time limitations specified in section 3744 of title 10, United States Code, or any other time limitation with respect to awarding certain medals to members of the Armed Forces, to award the Medal of Honor under section 3741 of such title to John J. Duffy for acts of valor during the Vietnam War.

Standardization of honorable service requirement for award of military decorations (sec. 586)

The committee recommends a provision that would amend Chapter 57 of title 10, United States Code, to standardize the requirement for honorable service for awards of medals, crosses, bars, and associated emblems. Currently, the requirements for honorable service for awards given in recognition of distinguished acts vary among the military departments, creating confusion and resulting in inequitable treatment of servicemembers. This provision would establish a single statutory standard that would provide parity in treatment of servicemembers across the Department of Defense.

Authority to award or present a decoration not previously recommended in a timely fashion following a review requested by Congress (sec. 587)

The committee recommends a provision that would amend section 1130 of title 10, United States Code, authorizing the Secretary of Defense to present an award or decoration following the favorable review of a proposal upon request of a Member of Congress.

Authority to make posthumous and honorary promotions and appointments following a review requested by Congress (sec. 588)

The committee recommends a provision that would amend section 1563 of title 10, United States Code, to authorize the Secretary of Defense to prescribe regulations to make a posthumous or honorary promotion following the submission to the requesting Member of Congress and to the Committees on Armed Services of the Senate and the House of Representatives of a determination as to the merits of approving the posthumous or honorary promotion or appointment. The promotion or appointment would not affect re-

tired pay or other benefits based upon the individual's military service.

Subtitle H—Other Matters

Military funeral honors matters (sec. 591)

The committee recommends a provision that would amend section 1491(b) of title 10, United States Code, to require the Secretaries of the military departments to provide full military honors for the funeral of a veteran who: (1) Is first interred or inurned in Arlington National Cemetery after the date of the enactment of this Act; (2) Was awarded the medal of honor or the prisoner-of-war medal; and (3) Is not entitled to full military honors by the grade of that veteran. Additionally, the provision would require each commander of a relevant military installation to maintain and carry out a plan for the provision, upon request, of full military funeral honors at funerals for veterans for whom funeral honors details are authorized under section 1491 of title 10, United States Code. The provision would prescribe elements of the required plans, including the provision of a gun salute by either appropriate personnel of the installation, reserve component members, or members of veterans' organizations or other organizations referred to in section 1491(b)(2) of such title.

Inclusion of homeschooled students in Junior Reserve Officers' Training Corps units (sec. 592)

The committee recommends a provision that would amend section 2031 of title 10, United States Code, to require public secondary educational institutions that maintain a Junior Reserve Officers' Training Corps unit to permit membership in the unit of home-schooled students residing in the area served by the institution and who would otherwise be qualified for membership in the unit if they were enrolled in the institution.

Sense of Senate on the Junior Reserve Officers' Training Corps (sec. 593)

The committee recommends a provision that would express the sense of the Senate on the Junior Reserve Officers' Training Corps.

Items of Special Interest

Active-Duty Service Commitment for Personnel Graduating Cybersecurity Courses

The committee remains concerned about recruitment and retention of cybersecurity personnel. Of particular concern is retention of cybersecurity personnel with significant qualifications derived from the Department of Defense's institutional training programs. Given the heavy demand for these personnel from both the private sector and the public sector outside of the uniformed services, the committee directs that, not later than February 1, 2020, the Department complete an analysis of the desirability of one or more Active-Duty service obligations for these personnel. This analysis should include an assessment of recruitment impacts. The committee directs the Secretary of Defense to brief the congressional defense committees on the results of the analysis by March 1, 2020.

Active-Duty service obligations for military service academy graduates

The committee notes that it has been over 20 years since initial Active-Duty service obligations for service academy graduates have been modified. Since that time, the real cost per graduate has increased by nearly 20 percent. Recent studies suggest service academy graduates have lower junior officer retention rates than other officer commissioning sources. Meanwhile, the increasingly technical nature of officer careers results in new officers' spending less time at their first duty stations due to lengthier, more demanding, initial skills training courses.

Therefore, the committee directs the Secretary of Defense, in coordination with the Secretaries of the military departments, to submit a report, no later than April 1, 2020, that answers the following questions:

- (1) How has the real cost per military service academy graduate changed since 1996;
- (2) How do service academy graduate retention rates compare to those of other commissioning sources after servicemembers' initial Active Duty service obligation is complete;
- (3) What effect would an increase in the initial Active Duty service obligation for service academy graduates have on academy application rates;
- (4) How could service academies implement a policy that awards preference for admission to a service academy in exchange for an agreement to serve on Active Duty longer than the required amount of time; and
- (5) What other policies could the Services implement to ensure an adequate return on investment for a service academy graduate?

Adequacy of childcare workforce and capacity across the Department of Defense

The committee remains concerned that the Department of Defense (DOD) and the Services are not adequately prioritizing the childcare needs of military families. There is demand for highly qualified childcare providers and increased child development center (CDC) capacity across the DOD. With 7,000 military family children requiring but not receiving childcare, the Services should further prioritize childcare to improve military family readiness.

The committee understands that 68 percent of the childcare need across the DOD is clustered in four geographic regions—San Diego, the National Capital Region, Hawaii, and Norfolk. At some of these locations, there is an insufficient workforce available to staff CDCs. At other locations, there is a highly qualified workforce available; however, local military installations do not have the facility space to expand CDC capacity.

Therefore, the committee directs the Secretary of Defense to review the CDCs in these four geographic regions and to submit a report to the Committees on Armed Services of the Senate and the House of Representatives, not later than March 1, 2020, that includes the following: (1) Data on CDC waitlists, workforce inadequacies, and facility capacities in each region; (2) Specific locations

where either CDC construction or public-private partnerships with private sector childcare providers would increase capacity; and (3) Monetary and non-monetary incentives that could be utilized to recruit and retain childcare providers at those CDCs.

Air battle manager accessions

The committee recognizes the important role that air battle managers have in establishing command and control in battlespace and ensuring that American and allied combat aircraft find, identify, and destroy their targets. The committee is concerned by the lack of air battle manager accessions over the last 5 years compared to what is recommended for a sustainable inventory.

Therefore, the committee directs the Secretary of the Air Force to provide to the Committees on Armed Services of the Senate and the House of Representatives a briefing on current accession and retention rates for members of the Air Force assigned to the Air Force Specialty Code of Air Battle Manager by December 1, 2019. The briefing shall include: (1) A description and assessment of plans of the Air Force to meet Air Battle Manager requirements as provided by Headquarters of the Air Force guidance letters; and (2) A comparison of aviation retention bonus take rates for pilots versus air battle managers and an explanation of how current air battle manager retention bonus amounts were determined.

Assessment and report on expanding the eligibility for the My Career Advancement Account program

The committee shares the Department of Defense's (DOD) commitment to military family readiness, part of which is improving military spouse education and employment opportunities. In the 2018 Blue Star Families Military Family Lifestyle Survey, 30 percent of military spouses reported they were unemployed and actively seeking work, while 56 percent of employed military spouses stated they were underemployed. When compared to the current national unemployment rate of 3.8 percent, it is clear military spouses experience greater impediments when seeking full-time employment than their civilian counterparts.

The My Career Advancement Account (MyCAA) program offers eligible military spouses, who are pursuing licenses, certifications, or associate's degrees in portable career fields, financial assistance toward completing their studies. The program is currently open to spouses of certain junior servicemembers to jump-start their career paths. The committee was encouraged to see the RAND Corporation's study on the MyCAA program, "An Early Evaluation of the My Career Advancement Account Scholarship for Military Spouses," which found: (1) MyCAA program users were more likely to find employment; (2) MyCAA scholarships reach the intended population; and (3) MyCAA usage positively affects servicemember retention.

Therefore, the committee directs the Secretary of Defense to conduct an assessment and to report on the feasibility and advisability of expanding the MyCAA program. The assessment should include: (1) Analysis of a tailored expansion of program eligibility for military spouses, to include but not be limited to extending MyCAA financial assistance through the completion of users' educational pro-

grams; (2) Analysis on expanding scholarship eligibility to include vocational schools, professional licensure, and medical field clinical supervision hours; (3) Costs associated with categories identified for potential expansion; (4) Impact on the program if eligibility is expanded; (5) Suggestions for improved data collection, to include but not be limited to data on program completion after a military spouse transitions out of the eligibility window; and (6) A determination on whether or not expansion is feasible and advisable. The Secretary of Defense shall submit the report to the Committees on Armed Services of the Senate and the House of Representatives no later than March 1, 2020.

Basic training athletic shoe variant analysis for new recruits

The committee notes that the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) required the Services to provide American-made athletic shoes at no cost to recruits to provide higher quality footwear and to reduce injuries during basic training. In order to accommodate different sizes and running styles, the Defense Logistics Agency awarded contracts for three different variants of athletic shoes. The committee is aware, however, that the Services vary on how they conduct assessments to determine the best shoe variant for each recruit. Therefore, the committee directs the Services to brief the Committees on Armed Services of the Senate and the House of Representatives no later than January 1, 2020, on the analysis or assessment provided to new recruits to determine the most appropriate shoe variant for them. This briefing shall include an assessment of whether exchange store retail clerks are trained to conduct a basic foot and gait analysis of recruits and to recommend the best shoe variant for recruits.

Briefing on Staff Judge Advocates' trial experience

The committee notes that Article 34 of the Uniform Code of Military Justice (10 U.S.C. 834) requires that, before referral of charges and specifications to a general court-martial, the general court-martial convening authority must submit the matter to his or her staff judge advocate. The staff judge advocate is required to provide written advice to the convening authority, including a recommendation as to disposition of the charges and specifications.

The committee perceives that in order to provide the best advice on these matters, it is important that a staff judge advocate possess significant knowledge of and experience in the military justice system.

Therefore, the committee directs the Secretaries of the military departments to brief the Committees on Armed Services of the Senate and the House of Representatives, not later than December 6, 2019, on the military justice experience required for assignment as a staff judge advocate in their respective services. As to the judge advocates assigned as a staff judge advocate in the military service(s) under the jurisdiction of such secretary at any time over the 5 years preceding the date of the enactment of this Act, the report shall include the average time assigned to perform duties as a trial counsel, defense counsel, chief of military justice, chief of defense

services, or military judge and to other duties that contributed to the breadth and depth of the military justice knowledge and experience of the officer.

Childcare Parity

The committee is concerned about the lack of availability of childcare for Active-Duty servicemembers on military installations and the Services' implementation of childcare eligibility priority lists, which dictate the order in which children are allocated available spaces in Department of Defense (DOD) childcare facilities. In those facilities, over 3,500 Active-Duty families appear on waiting lists for childcare, especially infant care. In DOD Instruction 6060.02, the Department has established a priority list to ensure that children of Active-Duty servicemembers receive childcare before other eligible beneficiary categories. However, the children of DOD civilian employees often fill slots in DOD childcare facilities, even as Active-Duty servicemembers find themselves on waiting lists for many months. Additionally, DOD's priority list does not sufficiently address the childcare needs of Active-Duty servicemembers who may be single, unmarried, separated, or divorced parents.

The committee is aware that each of the Services treats single, unmarried, separated, or divorced parents differently regarding their priority for childcare. The committee believes that military family stability is an important pillar of military family readiness. Therefore, the committee strongly encourages the Department to: (1) Standardize the childcare eligibility policies of the Services to ensure that single, unmarried, separated, or divorced servicemembers receive the same opportunities as married servicemembers for childcare, regardless of the individual servicemember's residency or geographic location; and (2) Ensure the Department prioritizes childcare for Active-Duty servicemembers over the childcare needs of DOD civilians. The committee directs the Secretary of Defense to provide a briefing to the committee, no later than February 1, 2020, on changes the DOD will make to ensure equity in the delivery of its childcare benefits.

Command climate assessment in officer and enlisted appraisal reports

Section 508 of the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113–291) requires that the performance appraisals of a commanding officer indicate the extent to which the commanding officer has or has not established a command climate in which allegations of sexual assault are properly managed and fairly evaluated and the extent to which a victim of criminal activity, including sexual assault, can report the criminal activity without fear of retaliation, including ostracism and group pressure from other members of the command. The committee believes that these are not "check-the-block" requirements. They should be given serious consideration when evaluating these commanding officers and accurately reflected in performance appraisals.

The committee recognizes that the command climate of an organization is greatly influenced by officer and enlisted leadership of that organization. Accordingly, the committee encourages the Secretaries of the military departments to require that all officer and enlisted evaluations include a meaningful assessment of the rated officer or enlisted member's contribution to a positive command climate.

Comptroller General Study on Effectiveness of Student Loan Forgiveness Program on Readiness and Recruiting

The committee recognizes the importance of the mission of the Public Service Loan Forgiveness (PSLF) program, authorized in section 455(m) of the Higher Education Act of 1965 (Public Law 89-329), to encourage more Americans to pursue careers serving their communities in critical jobs-including careers in military service and civilian careers at the Department of Defense. The committee further recognizes that a well-administered PSLF program allows members of the uniformed services with student loans to serve their country without spending decades repaying federal student loan debt and contributes to the successful recruitment and retention of highly qualified and educated recruits by eliminating a barrier to entry to military or civilian service. For the Services, this broadens the supply of eligible recruits, which, in the long term, can reduce recruiting and retention costs.

Therefore, the committee directs the Comptroller General of the United States to provide to the Committees on Armed Services of the Senate and House of Representatives, not later than June 30, 2020, a report assessing the effectiveness of the PSLF program at promoting military readiness and the effect of the PSLF program on military and civilian recruitment. The committee further directs the Comptroller General of the United States to make any recommendations to strengthen military readiness and military and civilian recruitment the Comptroller General deems appropriate to the Congress and to the Secretary of Education regarding the implementation of the PSLF program.

Concern over hunger and food security in military families

Since 2000, the Congress has worked to ensure that military families, particularly those of lower ranking enlisted servicemembers, do not have to endure the painful reality of food insecurity. Various programs at the Federal, State, and Department of Defense levels have attempted to address this issue, yet the committee continues to hear reports that problems remain.

The committee notes that the Quadrennial Review of Military Compensation, underway and expected to report next year, is assessing the adequacy of military compensation in order to obtain better demographic fidelity about the usage of benefits under the Supplemental Nutrition Assistance Program by servicemembers. The committee urges the Department to give this issue a thorough review and to continue to work collaboratively with the Congress to further study the root causes of food insecurity and hunger in military families and develop lasting solutions in order to protect the families of those who protect the Nation.

Concurrent use of Montgomery G.I. Bill and Department of Defense-funded tuition assistance

The benefits provided by the Montgomery G.I. Bill and Department of Defense-funded tuition assistance are valuable incentives that can help the military meet its recruiting and retention goals by providing financial means for servicemembers to complete college courses. The committee is aware that due to a Department of Defense (DOD) policy change to DOD Instruction 1322.25 in July 2014, reserve component members receiving tuition assistance are no longer allowed to receive Montgomery G.I. Bill—Selected Reserve (MGIB–SR) benefits for the same college course. The committee is aware that tuition assistance is paid directly to schools and is authorized only for tuition while the MGIB–SR benefits are paid directly to servicemembers and may be used to cover education-related costs such as books, fees, and housing. Therefore, the committee encourages the DOD to re-evaluate this policy and strongly consider reinstating simultaneous use of tuition assistance and MGIB–SR for reserve component members.

Department of Defense cooperation with United States Interagency Council on Homelessness

The committee is aware that the Subcommittee on Transportation, Housing and Urban Development, and Related Agencies (THUD) of the Senate Appropriations Committee, in the Senate report accompanying S. 2844 (S. Rept. 114–243) of the THUD Appropriations Bill for Fiscal Year 2017, required that the United States Interagency Council on Homelessness (USICH) work with the Department of Defense (DOD) and the Department of Veterans Affairs (VA) to evaluate and report to the Committees on Appropriations of the Senate and House of Representatives on how the process of becoming a veteran can be improved to minimize veteran homelessness. The committee recently became aware that DOD's cooperation with the USICH in this regard may have partially contributed to an unsatisfactory report.

The committee believes that eliminating veteran homelessness must be a national effort that crosses executive agency jurisdictions. The committee directs the Secretary of Defense to ensure that the DOD works with the USICH to report by October 1, 2019, to the Subcommittee on THUD and the Committees on Armed Services of the Senate and House of Representatives on DOD's progress in identifying transitioning servicemembers who may not have viable post-transition housing plans and on steps taken to ensure that each of those servicemembers receives a useful referral to the VA or the Department of Labor (DOL). Additionally, the committee directs the DOD to provide to USICH the following data for fiscal year 2018 and 2019:

- (1) The number and percentage of transitioning servicemembers evaluated regarding their post-transition housing plan;
- (2) The number and percentage of transitioning servicemembers identified as not having a viable post-transition housing plan;
- (3) The number and percentage of transitioning servicemembers identified as not having a viable post-transi-

tion housing plan and referred to the appropriate VA liaison; and

(4) The number and percentage of transitioning servicemembers who are evaluated as not having a viable post-transition housing plan and referred to the appropriate DOL Liaison.

Further, the committee directs the Secretary to provide data records to the VA and DOL that will enable those agencies to track actions and report outcomes associated with such referrals.

Department of Defense credentialing

The committee strongly encourages the Secretary of Defense to integrate an open registry of credentials and descriptive schema into existing Department of Defense (DOD) credentialing databases. The committee believes that the Department should provide better metrics and data on quality indicators and outcomes to include: (1) The extent to which credentials will improve a veteran's ability to gain employment; (2) Which credentials are transferable across state lines; and (3) Locations and regions where certain credentials are in demand. Finally, the committee believes that these data could inform which programs are eligible for education benefits administered by the DOD and the Department of Veterans Affairs.

Development of strategic basing factors to support military families

The committee notes that on February 23, 2018, the Secretaries of the military departments sent a memorandum to the National Governors Association, expressing their intent to consider the quality of education in local schools and reciprocity of professional licensure for military spouses in future basing or mission alternative decisions. The committee applauds the Services for their efforts to address the needs of military families. Additionally, the committee salutes the Department of the Air Force for taking the lead in developing strategic basing factors to support military families while engaging community stakeholders for feedback relevant to K-12 education and military spouse license reciprocity. The committee encourages the Departments of the Army and Navy to work collaboratively with the Air Force on strategic basing factors to ensure military children receive a high quality education and to relieve military spouses of the burdens that come with re-licensure and re-credentialing with every permanent change of station move.

Digital engineering as a core competency of the Armed Forces

The committee notes that, in June 2018, the Under Secretary of Defense for Research and Engineering released a Digital Engineering Strategy that seeks to incorporate the use of digital computing, analytical capabilities, and new technologies to conduct engineering in more integrated model-based environments. The Department of Defense correctly notes that defense programs are becoming increasingly complex, as evidenced by the complex and continuously changing software and electronics needed to operate nearly every major platform fielded by the military. The responsibility to under-

stand, manage, and use these complex systems resides not just with the Department's scientists and laboratories but is increasingly relevant to personnel on the battlefield and in every facet of military service. Accordingly, the committee believes that, as a general matter, the Department and the Services should consider promoting and maintaining digital engineering as a core competency of the Armed Forces and increasing the digital and technical skills of all servicemembers. The committee believes that the Department should consider the development, maintenance, and integration of increased capability among all members of the Armed Forces, in every branch and occupational specialty, in digital engineering and related digital competencies (including, but not limited to, data science, machine learning, software engineering, software product management, and user experience design). This effort should include the development and maintenance of training, education, talent management, incentives, and promotion policies in support of members at all levels.

Therefore, the committee directs the Secretary of Defense to enter into an arrangement with an independent research organization or study board for an identification of policy options and cost-benefit analysis of these options to strengthen digital engineering and related capabilities of the DOD civilian and military workforces. The report shall be delivered to the Committees on Armed Services of the Senate and the House of Representatives no later than July 1, 2020.

Duty to intervene

The committee notes that Department of Defense annual reports on sexual assault in the military have consistently concluded that sexual assaults are more likely to occur in units with a command climate that tolerates sexual harassment. The fiscal year 2018 report found that "women who experienced sexual harassment were at 3 times greater risk for sexual assault than average" and men who experienced sexual harassment were at 12 times greater risk for sexual assault than average.

Current bystander intervention programs do not appear to be effective in reducing tolerance for sexual harassment and sexual assaults. Servicemember bystanders should have a duty to intervene when they observe conduct that constitutes sexual misconduct, including sexual harassment and sexual assault, or retaliation for reporting harassment and assault.

Therefore, the committee directs the Secretary of Defense to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives, not later than December 6, 2019, on the feasibility of establishing a legally enforceable duty to intervene when a servicemember witnesses sexual misconduct.

Encouraging victims of domestic violence and sex-related offenses to secure military and civilian protection orders

The committee believes that a Military Protection Order (MPO) and a Civilian Protection Order (CPO), taken together, afford a victim of domestic violence or a sex-related offense the most com-

prehensive protection available under law from further abuse, assault, or harm.

Further, the committee is aware that Federal law requires military commanders and installation law enforcement personnel to take all reasonable measures necessary to ensure that a CPO is given full force and effect on all Department of Defense (DOD) installations. But in order to enforce a CPO involving a military servicemember or other affiliated person, commanders, military law enforcement officers, and Family Advocacy Program personnel must know that such an order exists. Although DOD policy provides military commanders the option to establish procedures for registering CPOs on a DOD installation, few commanders have done so.

Therefore, the committee encourages the Family Advocacy Program, Special Victims' Counsel Program, and other victim advocate programs of the DOD to provide victims in their care with advice and assistance in obtaining both an MPO and a CPO, as expeditiously as possible. In addition, the committee encourages all military commanders to establish procedures for registering and sharing CPOs with all appropriate installation personnel and programs, with a view toward ensuring victim safety through consistent, across-the-board awareness and enforcement of any such protective order.

Enlistment and accession testing and standards for non-native English speaking recruits

The committee is concerned about the shrinking pool of qualified recruits interested in military service. The all-volunteer force is now over 45 years old, and, while it has served the Nation well, its limits are being tested after 17 years of war. The challenge is most acute in military service recruitment efforts. The Services continue to pay more each year for fewer Active-Duty servicemembers. In November 2013, the Chief of Staff of the Army testified that the cost of an Army soldier had doubled since 2001 and would double again by 2025. While the percentage of the Department of Defense's total budget spent on military personnel has remained generally steady since 1980, at roughly one third, the cost of military personnel, in real dollars, has soared. It buys far less today than it did then. In 1980, the active component end strength of the Armed Forces was 2.1 million. The Department's request for fiscal year 2020, the largest in history in budgetary terms, included 1.33 million Active-Duty servicemembers. The Army in particular has struggled, and it will miss its 2019 authorized strength by 8,000 soldiers. All of this results from having to pay more to attract qualified recruits in an ever shrinking pool of candidates. Portending a different, perhaps more serious, problem, those who do join are increasingly culled from a homogeneous pool of military-connected families that are not representative of the Nation as a whole. It is clear to the committee that money alone cannot solve this issue and that the Nation, as a matter of national security, must rethink how and who it recruits.

The committee recently met with a number of the Army's top recruiters to hear about their experiences and challenges in recruiting today and to explore what we might do differently. Among

many topics discussed, the Armed Services Vocational Aptitude Battery (ASVAB) was a particular source of frustration. While the ASVAB identifies qualified recruits, it leaves many would-be highly qualified recruits behind, specifically those who do not speak English as a native language. Due to the timed nature of the test and nuances of language, many non-native English speakers do not pass, even though their academic records in American high schools are strong.

Accordingly, the committee directs the Secretary of Defense to review the effectiveness of current enlistment testing practices, including the ASVAB, in identifying high-potential recruits for military service, specifically among the non-native English speaking population of the United States eligible to enlist, in light of evolving standards and methods in civilian education of measuring mental ability and academic potential. This review should analyze and take into account methods of measuring academic potential being used across local school districts in the United States to ensure that current testing methodologies used by the Department and the Services comport with best practices in the field and serve to identify to the fullest range possible those individuals who are likely to succeed in their terms of military service. The review shall include a survey of the latest research on academic achievement of non-native English speakers. The Department shall report to the Committees on Armed Services of the Senate and House of Representatives by no later than April 1, 2020, on the results of this review. The Secretary may utilize the services of outside, independent organizations, including federally funded research and development centers, as the Secretary determines appropriate, to access the expertise and research necessary to conduct this review.

Expanding the Military Ballot Tracking Pilot to additional military voters and their families

The committee commends the Department of Defense Federal Voting Assistance Program (FVAP) for its initiatives to counter the myth that absentee ballots cast by military members and their eligible family members are considered for tabulation and counted only in close elections. FVAP, in conjunction with the United States Postal Service, piloted two-way military ballot tracking for overseas military members during the 2016 general election. The Military Ballot Tracking Pilot (MBTP) allowed members of the military to track their ballots in the same way that consumers track commercial packages. The MBTP was successful—85 to 90 percent of all ballots were successfully delivered with end-to-end tracking—and surveys of servicemembers who voted with absentee ballots indicated significant satisfaction with being able to track their ballots. The committee believes that servicemembers and their families should be able to track their ballots from the time of mailing until they are received by election officials. The continuation of the MBTP will help to improve customer service and will facilitate the acquisition of valuable data that can be used to assess the overall reliability of military mail.

The committee encourages the FVAP to continue and expand the MBTP to additional military voters and their eligible family members. The committee directs the Director, FVAP, to submit to the

Committees on Armed Services of the Senate and the House of Representatives, the Senate Committee on Rules and Administration, and the House Committee on Administration, not later than January 29, 2021, a report on the expanded MBTP. This report shall include: (1) The scope and cost of the expanded program; (2) The projected cost of extending this program to all eligible voters under the Uniformed and Overseas Citizens Absentee Voting Act (Public Law 99–410); (3) The organizations that provided the FVAP substantial support in conducting the pilot, a description of the support, and costs associated with that support; and (4) Recommendations on the process and steps necessary to expand the program to all eligible overseas members and their families. The committee also directs the Director, FVAP, to provide an interim briefing to the committees listed not later than February 3, 2020.

Expansion of the Military Spouse Employment Partnership across the Department of Defense

The Military Spouse Employment Partnership (MSEP), a program established by the Department of Defense (DOD), creates a strong network for military spouses and industry, providing companies and agencies with direct access to military spouses seeking career opportunities. The MSEP currently has more than 390 industry and government partners that have hired over 130,000 military spouses. However, the committee notes that only five DOD agencies partner with the MSEP to post employment opportunities for military spouses online—the Defense Commissary Agency, Defense POW/MIA Accounting Agency, Department of Defense Education Activity, Commander, Navy Installations Command-NAF, and Department of the Air Force. The committee recognizes the unique challenges military spouses face to maintain suitable employment with frequent moves between duty stations. Therefore, the committee encourages the DOD to expand MSEP Department-wide and to: (1) Streamline access for hiring managers across the Department to improve utilization and communication about military spouse hiring; (2) Ensure military spouses are made aware of all potential employment opportunities available to them as they undergo moves between duty stations; and (3) Ensure DOD prioritizes the training of hiring managers in military spouse hiring authorities and preferences.

Expedited naturalization of non-citizen servicemembers

The committee notes that the Department of Defense (DOD) provides non-citizen servicemembers an expedited path to naturalization upon: (1) Successful completion of basic training; (2) Completion of 180 consecutive days of Active-Duty service, including service in basic training; and (3) Honorable characterization of their military service. Section 530 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) requires the Secretary of Defense to ensure that members of the Army, Navy, Air Force, and Marine Corps, who are lawful permanent residents, are informed of the availability of and process for naturalization through service in the military and that resources are available to assist qualified members in applying for naturalization. The committee encourages the Secretaries of the military departments to

establish procedures to identify all non-citizen servicemembers, who will be eligible for expedited naturalization upon fulfillment of the requirements discussed above, to take affirmative action to inform these servicemembers of their eligibility to apply for citizenship upon fulfillment of these requirements and to assist such servicemembers in applying for and obtaining citizenship, to the maximum extent practicable.

Extended paid family leave for secondary caregivers

The committee notes that the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) increased the maximum allowed leave for secondary caregivers of newborn infants from 10 to 21 days and that the military's expanded primary caregiver parental leave program went into effect in March 2018. The committee notes that the Services continue to differ in how they implement this new policy. Now that the policy has been in effect for more than 1 year, the committee directs the Services to brief the Committees on Armed Services of the Senate and the House of Representatives no later than May 1, 2020, on the impact that this policy change has had in the following areas: recruitment; retention; readiness; health and family wellness; and morale.

Family Child Care home expansion

For many years, Family Child Care (FCC) homes have been an essential element of the military childcare system. Operated by military spouses in on-base housing, FCC homes relieve demand for care at installation child development centers (CDCs), provide a reliable childcare option for families who prefer in-home care or need flexible scheduling, and offer employment opportunities for military spouses. FCC providers receive rigorous training through the Department of Defense (DOD), must be licensed, and must pass background checks and regular inspections.

Unfortunately, the number of FCC homes in operation has declined over time. Currently, there are fewer than 1,000 homes in the program. With the demand for childcare continuing to increase, the DOD is educating military families on all of the options available to them and encouraging families to enroll their children in FCC homes. The DOD also encourages military spouses to consider enrolling their homes in the FCC program, as an employment opportunity, while expanding childcare capacity on an installation.

The committee has heard reports, however, of military spouses operating unlicensed childcare centers from their on-base homes. These unlicensed childcare centers may not adhere to the strict standards required of CDCs and licensed FCC homes, putting the health and safety of military children at risk. When faced with long waiting lists at CDCs and few affordable options off base, some families feel that their only option is an unlicensed care provider.

Therefore, the committee directs the Secretary of Defense to produce data on the number of unlicensed childcare centers in military homes and to determine the barriers preventing childcare providers from entering the FCC program. The Department shall brief the Committees on Armed Services of the Senate and the House of Representatives on these data and barriers no later than March 1, 2020.

Full time support manpower study

The committee directs the Secretary of Defense to conduct a manpower study of the full time support requirements of the Department of Defense to determine the proper allocation of military technicians (dual status), Active Guard and Reserve personnel, and Federal civilian employees employed under title 5, United States Code, under the supervision of State Adjutants General. The Secretary shall submit the results of this review to the Committees on Armed Services of the Senate and House of Representatives by no later than April 1, 2021.

Military childcare system study on outcomes for children and parents

The committee recognizes the importance of providing childcare services to servicemembers. Data on the positive effects of the Department of Defense's childcare program on children and servicemembers provide important information on the program's best practices and the benefits of the program's focus on affordability, quality, and access. Therefore, the committee directs the Comptroller General of the United States to provide to the Committees on Armed Services of the Senate and the House of Representatives, not later than January 1, 2023, a report with an assessment of the positive effects of the Department's childcare program on children, servicemembers, and military families. The assessment shall include: (1) A comparison to services provided in the private sector; (2) An evaluation of children's developmental outcomes, school readiness, and performance in school; (3) Parental outcomes such as productivity and military family engagement; (4) An examination of how affordability, access, quality, and childcare workforce training and requirements contribute to the program's success; and (5) An assessment as to how the Department's investments in these areas promote military readiness.

Rapidly incorporating data tools to enhance military recruiting

The committee notes that while the Services, and in particular the Army, are making progress in effective marketing, advertising, and recruiting investments, much more remains to be done. One major part of solving recruiting shortfalls is the integration of commercial data analytics into existing military marketing and advertising practices. The committee understands that the Under Secretary of the Army is presently evaluating such commercial tools, commends this initiative, and directs the Army and the other services to move as expeditiously as is feasible to incorporate these capabilities into the Services' suite of marketing, advertising, and recruitment tools while taking steps necessary to ensure that such data analytics tools are free of gender or racial bias.

Reliability and completeness of information in inspector general case management systems

Department of Defense (DOD) component inspectors general serve a critical role by providing an independent and impartial channel outside of the chain of command through which servicemembers can report fraud, waste, abuse, and other mis-

conduct. The committee believes that it is important that all matters reported to the DOD Office of Inspector General and DOD component inspectors general and investigated, whether by an inspector general or the command, are properly documented and retained in accordance with records retention policies applicable to inspector general case management systems, regardless of the subject's rank and the disposition of the matter and even when the matter might also be documented in a non-inspector general system of records.

This committee and the DOD must have confidence in the integrity, reliability, and completeness of the data in the DOD component inspector general case management systems. The DOD Office of Inspector General and DOD component inspector general case management systems are searched in support of personnel actions that require Presidential, Secretary of Defense, and Under Secretary of Defense for Personnel and Readiness approval and Senate confirmation. These systems are also searched for service promotion boards and professional military education boards, and their data are screened for command and appointment to other sensitive positions, including inspectors general, recruiters, and sexual assault response coordinators.

Inspector general case management systems are also important as a comprehensive source for assessing multiple complaints against the same subject, even if each individual complaint against a subject is not substantiated. The completeness and reliability of these databases are also important to analyses of trends in misconduct across the Department.

Therefore, the committee believes that, at a minimum, the DOD Inspector General and DOD component inspector general case management systems should include: (1) The subject's name in the corresponding subject data field; (2) The allegation(s) in the corresponding allegation data field; (3) Whether the allegation(s) are substantiated or not substantiated; and (4) Corrective action(s) taken in the corresponding corrective action data field.

Reserve Officers' Training Corps Scholarship Program and Recruiting of Future Cyber Officers

Section 1649 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) amended chapter 112 of title 10, United States Code, to establish the Department of Defense Cyber Scholarship Program. The committee believes that the Cyber Scholarship program may help alleviate the challenges that the Department of Defense is experiencing in recruiting and retaining cybersecurity personnel. The committee also believes that Reserve Officers' Training Corps (ROTC) programs at universities that offer degrees in cyber studies and related fields provide an opportunity to leverage and expand partnerships to assist in closing the gap of trained cyber warriors in the military. The committee directs the Secretary of Defense to provide a briefing to the Senate Armed Services Committee by February 1, 2020, on potential means to leverage the ROTC scholarship program to help alleviate the challenges that the Department is experiencing in recruiting and retaining cybersecurity personnel.

Review of support services provided to military servicemembers assigned to designated remote bases

The committee has received concerning anecdotal reports about the Department of Defense's (DOD) inconsistent approach to designating installations as remote or isolated and the implications for support services available at such installations. The committee notes that remote or isolated installations often have reduced medical and Morale, Welfare, and Recreation (MWR) services. While servicemembers and dependents appear to be screened before being assigned to these installations, it is unclear whether the support services available are sufficient to meet their needs, particularly regarding medical services. It also remains unclear whether the DOD has standard metrics for designating installations as "remote" and ensuring that resources are distributed evenly across such installations.

Therefore, the committee directs the Comptroller General of the United States to conduct a study assessing the process by which the DOD designates installations as "remote" or "isolated" and the process for ensuring the sufficiency of support services provided at those installations. The study shall review: (1) DOD's process for defining remote and isolated installations; (2) DOD's process for defining the type and level of support services, such as medical, MWR, educational, housing, and childcare, at such installations; (3) How those support services provided at such installations differ, if at all, across the Services; and (4) DOD's process for assessing the sufficiency of support services at such locations, including the extent to which the DOD measures the needs of the assigned military population and their dependents and assesses the capabilities of the local community to meet those needs. The Comptroller General shall brief, at a minimum, preliminary observations from the study no later than February 28, 2020, to the Committees on Armed Services of the Senate and the House of Representatives.

Rights of sexual assault survivors to testify at court-martial sentencing proceedings

The committee recognizes the importance of providing survivors of sexual assault an opportunity to provide a full and complete description of the impact of the assault on the survivor during court-martial sentencing hearings related to the offense. The committee is concerned by reports that some military judges have interpreted Rule for Courts-Martial (RCM) 1001A too narrowly, limiting what survivors are permitted to say during sentencing hearings in ways that do not fully inform the court of the impact of the crime on the survivor.

Therefore, the committee urges military judges to provide great deference to victims of crimes who exercise their right to be heard under RCM 1001A at sentencing hearings. Military judges should also be lenient in permitting other witnesses to testify about the impact of the crime under RCM 1001.

Safe to Report policy

One of the most significant and recurring barriers to the reporting of sexual assaults is assault victims' concern about being punished for collateral misconduct. The committee commends the Safe

to Report policy of the United States Air Force Academy (USAFA). This policy requires commanders to consider each instance of collateral misconduct by a victim of sexual assault on a case-by-case basis. In addition to the seriousness of the collateral misconduct, a commander is required to consider whether he or she would have been aware of the collateral misconduct had the victim not reported the assault. In the absence of aggravating circumstances, USAFA cadets who report a sexual assault are not punished for violations of Air Force Cadet Wing instructions involving alcohol use or possession, consensual intimate behavior in the cadet area, unprofessional relationships/fraternization among cadets, or exceeding cadet-area limits. The Safe to Report policy encourages common-sense limits on punishing victims of sexual assault—all in an effort to encourage victims to report assaults so that the Academy can address that significantly more serious criminal misconduct. The committee encourages the Secretaries of the military departments to consider whether collateral misconduct policies akin to USAFA's Safe to Report policy could be adapted to other organizations and contexts.

Special Victims' Counsel legal consultation and assistance to victims subject to retaliation

The Special Victims' Counsel (SVC) and Victims' Legal Counsel (VLC) play critical roles in the military justice system, providing survivors of alleged sex-related offenses with legal representation and advocacy, legal consultation and assistance, and support. The offense of retaliation, as established in section 932 of title 10, United States Code, and in the laws and cases governing equal employment opportunity and non-discrimination, is not expressly cited in section 1044a of title 10, United States Code, which enumerates the scope of services that an SVC or VLC is authorized to provide. While SVCs and VLCs will generally assist victims who are subject to incidents of retaliation, the committee is aware that victims may not be aware that this additional support is available, particularly when the retaliatory acts occur after the conclusion of any military justice proceedings associated with the sex-related offense.

Therefore, the committee recommends the expansion of the guiding principles and regulations applicable to the SVC/VLC programs to require an SVC/VLC to inform his or her client of the availability of legal consultation and assistance in connection with any incident of retaliation to which the victim may be subject, including incidents that occur after any military justice proceedings in regard to a sex-related offense have concluded.

Support for Air Force Junior Reserve Officers' Training Corps Flight Academy

As the United States confronts a shortage of pilots and aviation professionals, both the military and the private sector must look to increase awareness and enthusiasm for aviation-related careers among today's youth. The committee supports the Air Force's attempts to boost interest in aviation professions through its Air Force Junior Reserve Officers' Training Corps (ROTC) Flight Academy program.

First year results of the program are promising. 85 percent of participants completed the required curriculum and obtained a private pilot's license. Additionally, 20 participants are now enrolled in university ROTC programs and on a path to earning commissions as Air Force officers. More than 33 percent of participants come from historically underrepresented groups in the aviation community.

The committee encourages the Air Force to expand this important program. As pilot shortages continue to grow in the other services, this program should serve as a model to motivate young Americans to pursue careers in military aviation.

Telework option for military spouses in Department of Defense contracts

The committee is aware that Department of Defense (DOD) contracts do not normally allow for offsite work options like telework, which hinders the entire workforce and notably, military spouses. If a military spouse employed by a DOD contractor moves with their servicemember on government orders, regardless of their employment performance, they are typically unable to continue working for a DOD contractor in a remote capacity due to standard contract requirements written by the DOD.

Telework has expanded across the Federal government because it improves employee morale, enhances work-life balance for employees, improves recruiting and retention of the best and brightest workforce, and maximizes organizational productivity. DOD policy, Department of Defense Instruction 1035.01, states that "telework shall be: Used to help create employment and return-to-work opportunities for veterans, people with disabilities, and spouses of Service members and employees being relocated." Meanwhile, telework is performed routinely in the private sector to the benefit of companies and employees alike.

Military families continually make sacrifices to support the missions of servicemembers and should not be further disadvantaged in employment due to an outdated contract requirement for onsite work. Military spouses have an unemployment rate of 30 percent, more than 7 times the unemployment rate for the United States as a whole. Therefore, the committee directs the Secretary of Defense to review the inclusion of an offsite work option in DOD contracts to encourage continuity of employment for workforces that often include military spouses and to brief the Committees on Armed Services of the Senate and the House of Representatives on the review no later than March 1, 2020.

Timely response to inspector general referral of reports of investigation substantiating reprisal

The committee is aware that a report of investigation documenting an allegation of reprisal substantiated by an inspector general must be referred to the Secretary of Homeland Security or the Secretary of the military department concerned for review and appropriate action. Although applicable law affords the secretary concerned the authority to determine that corrective or disciplinary action against the perpetrator is not warranted in a particular case, the law does not permit the secretary's determination that an

act of reprisal did not occur, contrary to the inspector general's finding. The law further prescribes strict timelines within which the receiving secretary must review the report of investigation, determine whether or not corrective or disciplinary action is warranted, and advise others of that determination, including the Secretary of Defense, the relevant inspector general, and the complainant in the case.

The committee is aware of numerous reprisal cases in which a secretary's response to the relevant inspector general has been delayed by months or years. Furthermore, in some of those late cases, the secretary's response advised that no corrective or disciplinary action had been taken against the perpetrator because of a belief that the inspector general's substantiation determination was erroneous or improper.

Therefore, the committee directs the Department of Defense Inspector General and the Inspector General of the Department of Homeland Security, as applicable, to include in their semiannual reports to the Congress a listing of the substantiated reprisal cases in which: (1) More than 180 days have elapsed since the relevant inspector general provided the report of investigation to the secretary concerned, without response; (2) More than 180 days have elapsed between the date on which the relevant inspector general provided the report of investigation to the secretary concerned and the date on which the secretary's response was received by the inspector general; and (3) the secretary's response takes issue with the inspector general's determination that an act of reprisal occurred. Each listing shall include: (1) The case name and number; (2) The date on which the inspector general provided the case to the secretary concerned; (3) Whether the inspector general received the response of the secretary concerned and the date of that response; and (4) The name, grade, and duty position of the officer or employee who took issue with the inspector general's determination that an act of reprisal occurred, as applicable, together with any explanation, rationale, or comments on the matter provided by that officer or employee.

Training Department of Defense and military department human resources personnel to assist military spouses seeking employment

Military spouse employment is an essential component of military family readiness. Bringing qualified, highly-motivated military spouses into the Department of Defense (DOD) civilian workforce also benefits the Department. The committee is aware that human resources systems and practices within the DOD continue to pose significant barriers to military spouse employment. Specifically, DOD human resources personnel have demonstrated a lack of familiarity with the authorities and processes for the non-competitive appointment of military spouses to DOD positions for which they are qualified. Notwithstanding the issuance of Executive Order (EO) 13473, dated September 25, 2018, which allowed agencies to make noncompetitive appointments of certain military spouses of members of the Armed Forces, and the enactment of section 573 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232), which expanded non-competitive

appointment eligibility to all spouses of Active-Duty servicemembers through 2023, the committee is aware of circumstances in which DOD human resources personnel have advised military spouse applicants that their only option for securing employment with the DOD is to compete for appointment via USAJobs.

Therefore, the committee directs the Secretary of Defense to provide a briefing on the processes it has or will employ: (1) To disseminate information about military spouse non-competitive appointment policies and processes throughout the DOD; (2) To train and educate DOD and military department human resources personnel—from headquarters to the installation level—to apply such policies and processes to hiring actions for individual military spouse applicants; and (3) To modify human resources systems to better accommodate military spouse employment actions. In addition, the briefing shall detail the oversight mechanisms that each of the Services and the Office of the Secretary of Defense have applied or will apply to assess policy compliance by human resources personnel across the Department and to measure both military spouse and hiring official satisfaction with the hiring process. The briefing shall be provided to the committee no later than February 1, 2020.

Transition Assistance Programs at remote and isolated installations

The committee notes the importance of ensuring that military skills and experience can be applied to gainful civilian employment after separation and discharge. The committee is aware that Transition Assistance Programs (TAPs) provide transitioning servicemembers with job skills training and apprenticeships that could help prevent above average rates of suicide, drug addiction, and unemployment found in veteran populations. The committee encourages military installation commanders to consider these factors—especially at more remote and isolated permanent military installations where these issues compound—when considering civilian training opportunities for transitioning servicemembers. The committee also encourages installation commanders to ensure that TAPs are accessible to servicemembers and to allow them to use appropriate time off to pursue civilian training.

Tuition assistance in the Reserves and National Guard

Tuition assistance is a valuable incentive that can help the military meet its recruiting and retention goals. The committee is aware that there may be differences in how each military department implements its tuition assistance program, particularly as it pertains to the Reserves and National Guard, which often struggle to achieve authorized end strength levels. Therefore, the committee encourages the Secretary of the Air Force and the Secretary of the Army to review their respective tuition assistance policies to identify and rectify any inconsistencies that may adversely affect the Air National Guard, Air Force Reserve, Army National Guard, and Army Reserve.

TITLE VI—COMPENSATION AND OTHER PERSONNEL BENEFITS

Subtitle A—Pay and Allowances

Expansion of eligibility for exceptional transitional compensation for dependents to dependents of current members (sec. 601)

The committee recommends a provision that would amend section 1059(m) of title 10, United States Code, to authorize the Secretaries of the military departments to provide transitional compensation, in exceptional circumstances, to certain dependents before an eligible servicemember is discharged from Active Duty. By eliminating the requirement that a servicemember be separated from Active Duty before a secretary of a military department may authorize exceptional eligibility for transitional compensation, this provision would ensure that all dependents and former dependents who have been subjected to dependent abuse are treated in a fair, equitable, and similar manner.

Subtitle B—Bonuses and Special and Incentive Pays

One-year extension of certain expiring bonus and special pay authorities (sec. 611)

The committee recommends a provision that would extend, through December 31, 2020, various expiring bonus and special pay authorities for military personnel. The provision would extend special pay and bonus authority for reserve personnel, military healthcare professionals, and nuclear officers and consolidated pay authorities for officer and enlisted personnel. The provision would also extend the authority to provide temporary increases in the rate of Basic Allowance for Housing in certain circumstances.

Subtitle C—Travel and Transportation Allowances

Extension of pilot program on a Government lodging program (sec. 621)

The committee recommends a provision that would amend section 453 of title 37, United States Code, to extend by 1 year the Secretary of Defense's authority to execute a Department of Defense (DOD) lodging program.

The Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113–291) originally authorized a 5-year DOD lodging pilot program. The pilot program successfully demonstrated increased hotel quality and substantial discounts in room rates paid by the government. Additionally, overall traveler satisfaction remains high. In 2017, the

pilot program achieved average savings of 16 percent across 189 participating hotels.

The Department has informed the committee that it will submit its final report on the lodging pilot program by May 31, 2019. Based on current information, the committee expects to be satisfied that the pilot program accomplished its stated goal of achieving significant savings while increasing the quality of temporary lodging for DOD-funded travelers.

Reinvestment of travel refunds by the Department of Defense (sec. 622)

The committee recommends a provision that would provide the Secretary of Defense with the authority to receive and effectively reinvest miscellaneous receipts obtained through a travel rebate or refund program, a repayment of inaccurate charges, or a collection of an unused travel segment (e.g., airline ticket).

Subtitle D—Disability Pay, Retired Pay, and Survivor Benefits

Contributions to Department of Defense Military Retirement Fund based on pay costs per Armed Force rather than on Armed Forces-wide basis (sec. 631)

The committee recommends a provision that would amend section 1465 of title 10, United States Code, to require the Secretary of Defense to make contributions to the Military Retirement Fund based on an actuarial calculation of each service's planned pension obligations, beginning with fiscal year 2021.

The committee notes that, since 1984, the Department of Defense (DOD) has funded its military retirement program using a financing procedure in which the DOD makes monthly contributions based on percentages of basic pay. This method of funding, known as accrual accounting, requires the Department to set aside funds from current budgets for retirement annuities that will eventually be received by today's military personnel.

Current law requires the DOD to develop a single contribution rate across the Department for all Active-Duty personnel and a single rate for all reserve component personnel. For example, in fiscal year 2017, the Department contributed an amount equal to 28.9 percent of Active-Duty personnel basic pay and an amount equal to 22.8 percent of selected reserve personnel basic pay to the Military Retirement Fund.

The committee notes that the current system produces a disparity between the Services. Those services that have fewer personnel who reach full retirement eligibility, like the Marine Corps, contribute more to the Military Retirement Fund than needed to pay for retired marines' pensions. Meanwhile, those Services that have larger numbers of personnel who reach full retirement eligibility, like the Air Force, effectively receive a discount on their Military Retirement Fund contributions by paying less than the service will need to fund retired airmen's pensions.

The Government Accountability Office (GAO) published a report on December 4, 2018, titled "Military Retirement: Service Contributions Do Not Reflect Service Specific Estimated Costs and Full Ef-

fect of Proposed Legislation is Unknown” (GAO–19–195R). The GAO found that “the mandated single, aggregate contribution rate does not reflect service specific retirement costs.” Additionally, the GAO found that “the estimated probability of reaching 20 years of service was almost 15 percentage points higher—and more than three times higher—for the Air Force than the Marine Corps.” Further, a recent DOD Office of Cost Assessment and Program Evaluation assessment of the Military Retirement Fund contribution method found that the current procedure creates “large cross-subsidies among the services” and “does not provide clear signals and incentives for shaping an efficient experience mix of personnel.”

As each service updates its overall force profile to support the National Defense Strategy and implement other reforms, like those to the Blended Retirement System, the committee believes that it is critical that senior leaders in the DOD accurately account for the fully-burdened life-cycle cost of each service’s manpower plans.

Modification of authorities on eligibility for and replacement of gold star lapel buttons (sec. 632)

The committee recommends a provision that would amend section 1126 of title 10, United States Code, to authorize the Department of Defense to determine the eligible recipients of the gold star lapel button. Additionally, the provision would authorize the Department to replace a lapel button upon application and without cost.

Subtitle E—Commissary and Non-Appropriated Fund Instrumentality Benefits and Operations

Defense resale system matters (sec. 641)

The committee recommends a provision that would require the Under Secretary of Defense for Personnel and Readiness, in coordination with the Chief Management Officer of the Department of Defense, to maintain oversight of the business transformation efforts of the defense commissary system and the exchange stores system to ensure: (1) Development of an inter-component business strategy that maximizes efficiencies and results in a viable defense resale system in the future; (2) Preservation of patron savings and satisfaction from and in the defense commissary system and exchange stores system; and (3) Sustainment of financial support of the defense commissary and exchange systems for morale, welfare, and recreation services of the Armed Forces. The provision would require the Executive Resale Board of the Department to advise the Under Secretary on the implementation of sustainable, complementary operations of the defense commissary system and the exchange stores system. Additionally, the provision would require the Defense Commissary Agency and the Military Exchange Service to identify and implement best commercial business practices and shared-services systems while integrating certain services provided by the exchange stores system within commissary system facilities. The provision would also require the modernization of information technology and implementation of cutting-edge marketing in the defense resale system. Finally, the provision would amend section 2483(b) of title 10, United States Code, to authorize

inclusion of advertising expenses in the operating expenses of commissary stores.

The committee notes that military commissaries and exchanges provide a critical and highly valued in-kind benefit to military personnel and their families as they help to supplement servicemembers' incomes through savings on purchases of food and household items. As the Department implements changes to the defense resale system to ensure its long-term viability, the committee anticipates that future modernization efforts will result in a system that can compete with the private sector while preserving the in-kind benefit that patrons expect.

Treatment of fees on services provided as supplemental funds for commissary operations (sec. 642)

The committee recommends a provision that would amend section 2483(c) of title 10, United States Code, to authorize retention of fees collected on services provided to secondary patron groups, such as Department of Defense contractors living overseas, by the Defense Commissary Agency to offset commissary operating costs.

Procurement by commissary stores of certain locally sourced products (sec. 643)

The committee recommends a provision that would require the Secretary of Defense to ensure that dairy products, fruits, and vegetables procured for defense commissary stores are, to the extent practicable, locally sourced.

Items of Special Interest

Blended Retirement System implementation study

The committee notes that the period for eligible members to elect whether to transition to the new Blended Retirement System (BRS) has concluded and that all new recruits are now automatically enrolled in the system. To monitor the effectiveness of the BRS on both recruitment and retention of the all-volunteer force, the committee directs the Secretary of Defense, in coordination with the Secretaries of the military departments and the service chiefs, to review the implementation of the BRS and provide details regarding ongoing decisions associated with the new retirement system by submitting a report, no later than May 1, 2020, that provides the following information:

- (1) An assessment of the BRS transition period, to include:
 - (a) An enumeration of members who elected to transition into the BRS broken out by service, grade, gender, race, marital status, occupation, duty location, and other pertinent demographics;
 - (b) The proportion of members who elected to transition by demographic; and
 - (c) Whether the differences in choice structure (e.g., marines were required to elect to either remain in the legacy retirement system or switch to BRS) contributed to disparities in enrollment rates between the Services.
- (2) An analysis of Thrift Savings Plan (TSP) matching contributions, to include:

- (a) The TSP contribution level of servicemembers enrolled in the BRS broken out by demographic information;
 - (b) Whether servicemembers who receive special pay or incentives are more inclined to contribute and receive matching contributions;
 - (c) The extent to which the Services are supporting servicemembers in making sound financial decisions regarding matching contributions; and
 - (d) Whether actual TSP contribution rates and investment choices are creating a wealth disparity in retirement among servicemembers.
- (3) An explanation of planned continuation pay policy, to include:
- (a) The method the Services will use to determine continuation pay levels, to include details on how the Services will determine when a member will receive notification of the continuation pay offer, the amount of the multiplier, the timing of payment, whether the pay will vary by occupation, skill, or other factors, and the duration of the required service obligation; and
 - (b) An econometric analysis of possible methods to increase the effectiveness and efficiency of continuation pay.
- (4) An analysis of BRS impacts, including:
- (a) Whether the BRS has affected or is likely to affect historic recruitment and retention trends; and
 - (b) An assessment of the tools inherent in DOD BRS policy that will allow the Services to achieve necessary recruitment and retention levels; and
- (5) Recommendations for statutory change necessary to address issues of fairness and equity identified by the review.

Commissary store operations

The committee recognizes the importance of commissary stores to military families, who rely on these stores for purchase of food and dry goods at substantial discounts. When commissaries either undergo periods of closure or reductions of operating hours, military families cannot use this important in-kind benefit. Moreover, with prolonged closures during government shutdowns, military families dependent on commissaries face even greater hardship. Therefore, the committee strongly urges the Department of Defense to maintain commissary operations during any future government shutdowns.

Comptroller General assessment on defense resale reform

The committee directs the Comptroller General of the United States to conduct an assessment of the Department of Defense's efforts to reform the business operations of the defense resale system and to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives no later than December 1, 2019. The assessment shall include reviews of: (1) The potential impact of reform on the Defense Commissary Agency's (DECA) overall sales, expenses, customer satisfaction, and expense structure; (2) The potential courses of action that may increase competitiveness, reduce the DECA's reliance on annual appropriations, and

position commissaries and military exchanges for annual sales growth; (3) Positive and negative effects of reform on commissary and military exchange patrons and employees; (4) The potential of the military exchanges to increase financial support to the Services' morale, welfare, and recreation programs; and (5) Accounting procedures pertaining to the sources and uses of funds generated by and allocated to commissaries to ensure that sufficient internal controls are in place to safeguard funding.

TITLE VII—HEALTH CARE PROVISIONS

Subtitle A—TRICARE and Other Health Care Benefits

Contraception coverage parity under the TRICARE program (sec. 701)

The committee recommends a provision that would amend sections 1074d(b)(3), 1075(c), 1075a(b), and 1074g(a)(6) of title 10, United States Code, to require coverage of contraception services for covered beneficiaries under the TRICARE program. The provision would prohibit cost-sharing for any method of contraception provided by a network provider under TRICARE Select or a provider under TRICARE Prime. Additionally, a beneficiary would pay no cost-share for any prescription contraceptive on the uniform formulary that is provided by a network retail pharmacy provider or the mail-order pharmacy program. The effective date of this provision would be January 1, 2020.

TRICARE payment options for retirees and their dependents (sec. 702)

The committee recommends a provision that would amend section 1099 of title 10, United States Code, to require that a premium owed by a member, former member, or dependent, eligible for medical and dental care under section 1074(b) or 1076 of such title, be withheld, to the maximum extent practicable, from the individual's retired, retainer, or equivalent pay. The provision would authorize the Secretary of Defense to determine the method and frequency of payment when circumstances prevent payment through an allotment from retired, retainer, or equivalent pay. The amendments in this provision would apply to health care coverage beginning on or after January 1, 2021.

Lead level screening and testing for children (sec. 703)

The committee recommends a provision that would require the Secretary of Defense to establish clinical practice guidelines (CPGs) for Department of Defense healthcare providers on screening, testing, and reporting of blood lead levels in children. The provision would require dissemination of the CPGs within 1 year of the date of the enactment of this Act. Additionally, the provision would require the Secretary to share test results with the parent or guardian of the child, the health department for the State in which the child resides in the United States, or the Centers for Disease Control and Prevention and the appropriate in-country authority if the child lives outside the United States. Finally, the provision would require the Secretary to submit a report to the congressional defense committees on the number of children screened, tested, and

treated for elevated blood lead levels beginning on the date of the enactment of this Act up to the date of the report.

Provision of blood testing for firefighters of Department of Defense to determine exposure to perfluoroalkyl and polyfluoroalkyl substances (sec. 704)

The committee recommends a provision that would require the Secretary of Defense, beginning on October 1, 2020, to provide blood testing to determine and document potential exposure to perfluoroalkyl and polyfluoroalkyl substances for firefighters of the Department of Defense during their annual physical exams.

Subtitle B—Health Care Administration

Modification of organization of military health system (sec. 711)

The committee recommends a provision that would amend section 1073c of title 10, United States Code, to make clarifying and technical amendments on the administration of the Defense Health Agency and military medical treatment facilities.

Support by military health system of medical requirements of combatant commands (sec. 712)

The committee recommends a provision would amend section 712 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–332) to modify and clarify the military health system’s support to the medical requirements of the combatant commands.

Tours of duty of commanders or directors of military treatment facilities (sec. 713)

The committee recommends a provision that would require the Secretary of Defense, not later than January 1, 2021, to establish a minimum length of 4 years for tours of duty, with limited exceptions, for commanders or directors of military treatment facilities to ensure greater stability in health system executive management at each facility and throughout the military health system.

The committee remains concerned that military treatment facility commanders or directors typically rotate to new duty stations every 2 years and that these frequent transfers lead to great instability in the management of hospitals and clinics. The rapid turnover of military hospital commanders and directors creates turmoil in hospital executive leadership and management, negatively affecting the performance of the local facility and the overall performance of the military health system. The committee believes that this provision would steady the executive management of military hospitals and clinics and improve the performance of those facilities.

Expansion of strategy to improve acquisition of managed care support contracts under TRICARE program (sec. 714)

The committee recommends a provision that would amend section 705(c)(1) of the National Defense Authorization Act for Fiscal

Year 2017 (Public Law 114–328) to include overseas medical support contracts in the strategy to improve the acquisition of managed care support contracts under the TRICARE program.

Establishment of regional medical hubs to support combatant commands (sec. 715)

The committee recommends a provision that would require the Secretary of Defense, not later than October 1, 2022, to establish up to four regional medical hubs, consistent with section 712 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232), to support the operational medical requirements of the combatant commands. Under this provision, each regional hub would include a major military medical center to provide complex, specialized medical services in that region. The regional medical center would be geographically located to maximize medical support to combatant commands. The provision would authorize the Secretary to establish or maintain additional medical centers in locations with large beneficiary populations or locations that serve as the primary readiness platforms of the Armed Forces.

Monitoring of adverse event data on dietary supplement use by members of the Armed Forces (sec. 716)

The committee recommends a provision that would require the Secretary of Defense to modify the Department’s electronic health record (EHR) system to include data regarding use of dietary supplements by members of the Armed Forces and any adverse events associated with such use. The provision would also require the Secretary to educate healthcare providers in the military health system on the importance of including adverse event data in the EHR and reporting those data to the Food and Drug Administration.

Enhancement of recordkeeping with respect to exposure by members of the Armed Forces to certain occupational and environmental hazards while deployed overseas (sec. 717)

The committee recommends a provision that would amend section 1074f of title 10, United States Code, to require the Department of Defense to include occupational or environmental health exposures during deployment in its medical tracking system. The provision would also require the Department to provide healthcare providers with questions to ask servicemembers about occupational or environmental health exposures during post-deployment health assessments and to ensure that the medical records of servicemembers include information on the external cause relating to a medical diagnosis of the member. Finally, the provision would require the Secretary of Defense to ensure that the Department’s medical personnel have access to information in the burn pit registry maintained by the Department of Veterans Affairs.

Subtitle C—Reports and Other Matters

Extension and clarification of authority for Joint Department of Defense-Department of Veterans Affairs Medical Facility Demonstration Fund (sec. 721)

The committee recommends a provision that would amend title XVII of the National Defense Authorization for Fiscal Year 2010 (Public Law 111–84) to make certain technical corrections to such title. Additionally, the provision would permit the James A. Lovell Federal Health Care Center to enter into personal services contracts to carry out healthcare responsibilities at the Center to the same extent and subject to the same conditions and limitations as in medical treatment facilities of the Department of Defense. Finally, the provision would extend the authority for the joint Department of Defense-Department of Veterans Affairs Demonstration Fund from September 30, 2020, to September 30, 2021.

Appointment of non-ex officio members of the Henry M. Jackson Foundation for the Advancement of Military Medicine (sec. 722)

The committee recommends a provision that would amend subparagraph (C) of paragraph (1) of section 178(c) of title 10, United States Code, to authorize the appointment of a member of the council of the Henry M. Jackson Foundation for the Advancement of Military Medicine by currently serving members upon the expiration of the term of a member. The provision would also amend paragraph (2) of such section to repeal an obsolete authority establishing staggered terms of members of the council. The provision would not terminate or otherwise alter the appointment or term of service of council members serving on the date of the enactment of this Act.

Officers authorized to command Army dental units (sec. 723)

The committee recommends a provision that would amend section 7081(d) of title 10, United States Code, to authorize Army Medical Department Officers to command Army dental units. The provision would give the Secretary of the Army greater flexibility in managing officers within the Army Medical Department.

Establishment of Academic Health System in National Capital Region (sec. 724)

The committee recommends a provision that would amend chapter 104 of title 10, United States Code, by inserting a new section that would authorize the Secretary of Defense to establish an Academic Health System in the National Capital Region to integrate the healthcare, health professions education, and health research activities of the military health system in that region. The provision would authorize the Secretary to appoint employees of the Department of Defense to leadership positions in the Academic Health System in addition to similar leadership positions for members of the Armed Forces. Moreover, the provision would authorize the Secretary to use the authorities under chapter 104 for the administration of the Academic Health System.

Provision of veterinary services by veterinary professionals of the Department of Defense in emergencies (sec. 725)

The committee recommends a provision that would amend chapter 53 of title 10, United States Code, to authorize a licensed veterinary professional of the Department of Defense (DOD) to provide veterinary services in any state, the District of Columbia, and any territory or possession of the United States, if the services provided fall within the scope of authorized duties of the veterinary professional for the DOD. This provision would ensure that the DOD can rapidly respond to requests for veterinary services assistance from lead Federal departments and agencies supporting emergency management responses.

Five-year extension of authority to continue the DOD-VA Health Care Sharing Incentive Fund (sec. 726)

The committee recommends a provision that would amend section 8111(d)(3) of title 38, United States Code, to extend the authorization of the Department of Defense-Department of Veterans Affairs Health Care Sharing Incentive Fund to September 30, 2025.

Pilot Program on civilian and military partnerships to enhance interoperability and medical surge capability and capacity of National Disaster Medical System (sec. 727)

The committee recommends a provision that would authorize the Secretary of Defense to conduct a pilot program for no more than 5 years to establish partnerships with public, private, and non-profit health care organizations, institutions, and entities in collaboration with the Secretaries of Veterans Affairs, Health and Human Services, Homeland Security, and Transportation to enhance interoperability and medical surge capability and capacity of the National Disaster Medical System. Under this pilot, the Secretary of Defense would establish these partnerships at no fewer than five major aeromedical transport hub regions of the Department of Defense in the United States. The provision would require, if the pilot were to proceed, the Secretary of Defense to submit an initial report to the Committees on Armed Services of the Senate and the House of Representatives, not later than 180 days after commencement of the pilot program, and a final report to the same committees within 180 days of the completion of the program.

Modification of requirements for longitudinal medical study on blast pressure exposure of members of the Armed Forces (sec. 728)

The committee recommends a provision that would amend section 734 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115-91) to modify the requirements of the Longitudinal Medical Study on Blast Pressure Exposure on Members of the Armed Forces. The provision would require the Secretary of Defense to submit annual status reports on the study to the Committees on Armed Services of the Senate and the House of Representatives not later than January 1 of each year until completion of the study.

Items of Special Interest

Armed Forces Institute for Regenerative Medicine

The Armed Forces Institute of Regenerative Medicine (AFIRM) is a multi-institutional, interdisciplinary network of universities, military health system laboratories, and investigators designed to promote regenerative medicine therapies. The AFIRM is dedicated to repairing battlefield injuries with regenerative medicine technology, and it has supported several clinical trials treating hundreds of patients with novel therapeutic strategies in wound repair and tissue replacement. The committee understands that fiscal year 2019 is the final year of funding for the AFIRM and encourages the Department of Defense to build upon AFIRM's successes by renewing the program, using a public-private consortium model, for another 5-year term.

Chronic Migraine and Post-Traumatic Headaches

The committee understands that chronic migraine (CM) is often associated with post-traumatic headaches (PTH) of patients who suffer from traumatic brain injury (TBI). There appear to be minimal data, however, on the follow-up and treatment of PTH and post-traumatic chronic migraine beyond 2 years after a TBI. Furthermore, there is very little biochemical understanding of these disease processes and their interrelationships, and no biomarkers exist to help diagnose, classify, and monitor these headache disorders. Therefore, the committee encourages the Department of Defense to support research to develop biomarkers useful in diagnosing and monitoring TBI patients with CM or PTH.

Comptroller General Review of Enlisted Medical Workforce

The committee notes that enlisted medical personnel, such as medics and corpsmen, represent over half of the total medical force and that they are essential to maintaining the Department of Defense's (DOD) substantial health care delivery capability in both an operational setting and at home for military families and retirees. At the direction of Congress, the DOD has taken initial steps to review the readiness of medical providers. The DOD has also provided some opportunities for its military physicians to practice at civilian hospitals; however, many of its enlisted medical personnel are often utilized differently than comparable professionals in civilian hospitals and are not required to obtain many of the same certifications or licenses. Therefore, enlisted medical personnel may have fewer such opportunities. Given the efforts that the DOD has initiated to address medical provider readiness and to ensure that enlisted medical personnel have skills that are easily transferable to the civilian sector, the committee is concerned about the overall readiness of the enlisted medical workforce.

The committee therefore directs the Comptroller General of the United States to conduct a study assessing the enlisted medical workforce. The study shall review DOD's: (1) Metrics to assess the clinical currency and readiness of the enlisted medical workforce; (2) Plans for providing the medical workload and training necessary to maintain clinical currency and readiness of enlisted medical personnel, including the DOD's use of the direct care system;

and (3) Enlisted medical workforce reenlistment rates and efforts to retain those personnel. The Comptroller General shall present preliminary observations from the study to the Committees on Armed Services of the Senate and the House of Representatives no later than March 27, 2020.

Department of Defense Briefing on the Rate and Incidence of Pregnancy-Associated Deaths

The committee believes that caring for servicemembers and their families is the essential foundation of readiness. The committee is aware that the United States is the only industrialized nation with a rising maternal mortality rate. Data suggest more than half of pregnancy-related deaths are preventable, and approximately half of maternal injuries could be reduced or eliminated with better care and enhanced maternal mortality information systems.

Therefore, the committee directs the Secretary of Defense to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives by February 1, 2020, reporting the rate and incidence of pregnancy-associated deaths, defined as the death of a woman while pregnant or during the 1-year period following the date of the end of pregnancy, and severe maternal morbidities, defined as unintended outcomes of pregnancy, labor, or delivery that result in significant short- or long-term consequences to a woman's health. The briefing should also disaggregate data by cause of death, race, age, and rank of the woman (if applicable).

Expansion of Studies of Exposure to Blast in Training And Operations and Documentation of Blast Exposure in Individual Longitudinal Exposure Records

Traumatic brain injury (TBI) affects the mood and memory of more than 260,000 servicemembers, often disrupting one's ability to continue to serve, maintain a job, reenter the community, or even reconnect with family upon returning home from deployment. The committee is aware of the novel research undertaken by U.S. Special Operations Command and the Uniformed Services University of the Health Sciences to identify and measure the effects on brain and spine health of repeated exposure to the blast and acceleration effects associated with military training and operations. The committee commends and encourages continued innovative experimentation in emerging strategies and technologies for the prevention of TBI.

Therefore, the committee urges the Department to: (1) Expand its blast and acceleration effects research and assessment protocols to other military occupations, weaponry and equipment, and training experiences, as appropriate; (2) Formalize the documentation of servicemembers' measurable exposures to blast and acceleration effects in a longitudinal exposure record, individual to each servicemember and able to be shared with the Department of Veterans Affairs; and (3) Take appropriate actions to inform servicemembers of opportunities to participate in the programs of the Department of Defense's Center for Neuroscience and Regenerative Medicine brain tissue repository to advance traumatic brain injury research.

Healthy Food Options on Military Installations

The committee remains concerned about the growing obesity crisis in the Nation and its potential impact on our national defense. The lack of healthy food options on military installations, coupled with servicemembers' poor eating habits, negatively affects force readiness and retention. Military dining facilities are currently the healthiest food option on installations; however, the committee understands that young servicemembers eat fewer than half of their meals at these facilities. Instead, they choose to purchase less healthy food at other on- or off-base venues.

Therefore, the committee directs the Secretary of Defense to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives, not later than November 1, 2019, on the feasibility of continuing and expanding food service transformation efforts, focusing on nutritious food options, with the goal of modernizing the on-installation food service system. The briefing should include a plan for improving on-base accessibility to healthful prepared and pre-prepared food, leveraging leading practices from college and university dining facilities and lessons learned from previous Department of Defense food service transformation efforts. In addition, the plan should include a description of the potential to establish partnerships with local communities to improve the food service environment on military installations and to encourage healthful eating. Finally, the plan should include tests of various business models that increase the availability, affordability, and acceptability of healthy performance foods.

Home healthcare services

The committee supports the adoption of a program that would authorize a parent or family member to become a certified nursing assistant (CNA) to provide approved and medically-necessary skilled services for an eligible dependent child of that parent or family member under the TRICARE program. The parent or family member would be required to complete all required education and clinical training to become a licensed CNA before being authorized to provide physician-ordered care to the child. By authorizing family members to become certified home health care providers, the TRICARE program might experience a reduction in direct costs associated with the provision of home health care services.

Objective diagnostic capabilities for traumatic brain injury

The committee commends the Department of Defense (DOD) for its significant efforts to improve the diagnosis of traumatic brain injury (TBI). Nevertheless, the DOD must do more work to develop advanced capabilities to diagnose TBI in all its forms, including mild TBI (mTBI)/concussion, which accounts for the vast majority of TBIs. To maintain the readiness of the total force and to protect service personnel better, it is imperative that the Department deploy capabilities that provide objective diagnostics for TBI in all its forms, particularly mTBI/concussion. Therefore, the committee encourages the DOD to deploy mTBI/concussion multi-modal diagnostic devices, already cleared by the Food and Drug Administration, for echelons four and five medical care.

Pilot program on partnerships with civilian organizations for specialized medical training

The committee encourages the Secretary of Defense to conduct a pilot program to assess the feasibility and advisability of establishing partnerships with public, private, and non-profit organizations and institutions to provide short-term specialized medical training to advance the medical skills and capabilities of military medical providers.

If the Secretary determines to conduct the pilot program, the Secretary should first establish metrics to evaluate the effectiveness of the program. The committee considers such a pilot program an important element in helping military medical providers advance their skills and capabilities in medical specialties, such as orthopedic surgery, which would improve the medical readiness of the total force.

Prescription drug labels

As prescription drug manufacturers consider adoption of e-labels for some of their products, the committee encourages the Department of Defense to ensure that prescription drugs made available through the facilities of the uniformed services are accompanied by printed labels that are physically located on or within the package from which the drug is dispensed. These labels importantly provide adequate directions for a drug's intended purposes. In situations where servicemembers are stationed in remote, internet-free locations, physical labels can often provide more reliable access to information than electronic labels.

Study on infertility in members of the Armed Forces

The committee directs the Secretary of Defense to conduct a study on the incidence of infertility among members of the Armed Forces and provide a report, not later than June 1, 2020, to the Committees on Armed Services of the Senate and the House of Representatives. The study shall include the following elements: (1) Determination of the numbers of currently serving members of the Armed Forces who have been diagnosed with a common cause of infertility; (2) Determination of the number of servicemembers whose infertility has no known cause; (3) Determination of the incidence of miscarriage among female servicemembers by service and military occupation; (4) Comparison of infertility rates of female servicemembers to the infertility rates of their civilian counterparts; (5) Determination of demographic information about such servicemembers to include race, ethnicity, sex, age, military occupation, and possible hazardous environmental exposures during service; (6) Determination of the availability of infertility services for those servicemembers who desire such treatment, including waitlist times at the military treatment facilities providing those services; (7) Criteria used by each of the Services to determine service-connection for infertility, including whether screenings for environmental toxins were performed when the cause of infertility could not be determined; and (8) Current policies of the Department of Defense for ensuring geographic stability during the treatment of servicemembers' undergoing medical treatment for infertility.

Survey to determine providers' attitude towards contraceptive services, their knowledge on obligations to dispense and counsel on contraception and assess potential cultural barriers to providing contraceptive services

The committee recognizes that access to contraception contributes to operational force readiness by ensuring that servicemembers can utilize contraception to prevent unintended pregnancies, manage their menstrual cycles, and for other non-contraceptive benefits. The committee is also aware that menstruation can be problematic during deployment and access to contraception, including for menstrual suppression, is a critical part of women's preventive health care. The committee is pleased that the Armed Forces have made significant strides in improving access to contraception for military servicemembers, including ensuring that military facilities stock a broad range of Food and Drug Administration-approved methods of contraception and allowing contraception to be provided for the length of a servicemember's deployment. However, the committee is concerned that misconceptions remain among both servicemembers and military healthcare providers about limitations on access to contraception for and during deployment.

Therefore, the committee directs the Secretary of Defense to conduct a survey of active military and civilian healthcare providers who may counsel on or provide contraception in military treatment facilities, assessing their knowledge on prescribing and providing contraception for and during deployment. The survey should include questions on: (1) Whether the provider dispenses contraceptives in deployment settings; (2) Whether the provider believes that it is permitted to dispense contraception when a General Order prohibits sexual activity during deployment; (3) How large a supply of contraceptives a provider believes that it is authorized to dispense at a time; and (4) Circumstances under which the provider may not dispense requested contraception. Additionally, the survey should address the training a provider has received in contraceptive counseling, including whether the provider is knowledgeable about and provides information on the use of contraception for menstrual suppression and other deployment-relevant aspects of contraceptive methods such as shelf life and storage requirements. The survey shall disaggregate data by service branch.

The Department shall provide a briefing on the survey results to the Committees on Armed Services of the Senate and the House of Representatives no later than 90 days after the completion of the survey.

Tactical combat casualty care training

Department of Defense (DOD) Instruction 1322.24 requires all warfighters to complete Tactical Combat Casualty Care (TCCC) training as part of basic mobilization readiness, because TCCC is an important step in ensuring that military personnel receive the best pre-hospital medical care available. The committee has received reports, however, of substantial variation in TCCC training, including the teaching of incomplete or incorrect TCCC concepts. To address this variation, the committee strongly encourages the Secretary of Defense to: (1) Evaluate best practices for TCCC in the

Services; and (2) Establish standards to ensure uniform TCCC training for military personnel, to include training standards for best instructional practices for personnel conducting TCCC training.

TRICARE coverage of continuous glucose monitors

Approximately 420,000 military members or their family members have diabetes, with 180,000 of these patients currently using insulin. If not treated, diabetics face higher risks of heart disease, kidney failure, limb amputations, and blindness. The committee is aware that innovations in diabetes treatment options include recent technological advancements to continuous glucose monitoring systems (CGMS). These devices provide continuous glucose readings for patients and their physicians, allowing for more effective prevention strategies and better health outcomes. In 2017, Medicare expanded its diabetes treatment coverage for beneficiaries to include CGM coverage for type 1 and type 2 diabetes, among other criteria. The Veterans Health Administration subsequently updated its criteria for determining eligibility for CGM in January 2019, a change that has the potential to make this life-improving and cost-saving technology available to more veterans. Private payers are also providing coverage for these devices at an increasing rate. Given the detrimental health impact of diabetes as well as the increased costs incurred for direct treatment and co-morbid medical complications of this disease, TRICARE should ensure that its beneficiaries have appropriate access to innovative and effective diabetes treatment options, access at least comparable to that enjoyed by veterans and Medicare beneficiaries. The committee encourages the Secretary of Defense to update the TRICARE criteria for use for CGMS and directs the Secretary to provide an update on its progress not later than 90 days after the date of the enactment of this Act.

TRICARE improper medical claims payments

The committee remains concerned about improper payments to TRICARE network providers. The Government Accountability Office published a report on February 18, 2015, titled “Improper Payments: TRICARE Measurements and Reduction Efforts Could Benefit from Adopting Medical Record Reviews” (GAO-15-269), that recommended that the Department of Defense implement more comprehensive TRICARE improper payment measurement methods that include medical record reviews. The Department concurred with this recommendation. Almost 4 years after the publication of this report, however, the Department has yet to implement this recommendation.

Therefore, not later than November 1, 2019, the Secretary of Defense shall submit to the Committees on Armed Services of the Senate and the House of Representatives a comprehensive report detailing: (1) The extent to which the Department will conduct medical record reviews; (2) The processes to request and receive such records from civilian network providers; (3) The manner in which cases will be coded if medical records are not returned; and (4) How the Department plans to use the results of the medical record reviews to improve its processes to identify improper pay-

ments and to lower the improper payment error rate. Additionally, within 270 days of the Department's submission of this report, the Comptroller General of the United States shall provide a report to the Committees on Armed Services of the Senate and the House of Representatives on the extent to which the Department's plan for including medical record reviews in its improper payment error rate calculation addresses the four areas outlined above and whether the Department's medical record reviews process will result in a more robust and meaningful measure of improper medical claims payments by TRICARE.

TITLE VIII—ACQUISITION POLICY, ACQUISITION MANAGEMENT, AND RELATED MATTERS

Subtitle A—Contracting and Acquisition Provisions

Pilot program on intellectual property evaluation for acquisition programs (sec. 801)

The committee recommends a provision that would permit the Secretary of Defense and the Secretaries of the military departments to jointly carry out a pilot program evaluating intellectual property in acquisition programs, using commercially available intellectual property valuation analysis and techniques, in order to determine these techniques' utility in the formation of strategies and in assessing the value and costs of intellectual property during acquisition and sustainment activities. The committee notes that this provision is based on the recommendation of the Congressionally-mandated Technology Data Rights Study ("Section 813") panel.

Under the provision, if the pilot program were to be carried out, the Secretary of Defense would submit a report on the pilot to the congressional defense committees not later than November 1, 2020, and annually thereafter through 2023.

Pilot program to use alpha contracting teams for complex requirements (sec. 802)

The committee recommends a provision that would require the Secretary of Defense to establish a pilot program to use third-party industry, academia, or not-for-profit technical organizations as part of alpha contracting teams for complex technical requirements for services. The committee notes that this construct revives in a modern context the "alpha contracting" concept that is more than a decade old. Further, it brings together all government personnel involved in the functions that support acquisition actions, to include contracting staff as well as technical staff, operators, and cost personnel. This is intended to ensure that technical requirements are appropriately valued and that the most effective acquisition strategy to achieve these requirements is identified.

Modification of written approval requirement for task and delivery order single contract awards (sec. 803)

The committee recommends a provision that would amend section 2304a(d)(3) of title 10, United States Code, to eliminate the requirement that single award task or delivery order contracts over \$100.0 million receive additional approval when already authorized under one of the exceptions to full and open competition.

Extension of authority to acquire products and services produced in countries along a major route of supply to Afghanistan (sec. 804)

The committee recommends a provision that would extend the authority to acquire products and services produced in countries along a major route of supply to Afghanistan until December 31, 2021.

Modification of Director of Operational Test and Evaluation report (sec. 805)

The committee recommends a provision that would require the Director of Operational Test and Evaluation to solicit comments from the Secretaries of the military departments for inclusion in the Director's annual report to Congress, retaining the Director's discretion to issue the report without comments if they are not timely. This provision does not change or alter any Director of Operational Test and Evaluation authorities.

Department of Defense use of fixed-price contracts (sec. 806)

The committee recommends a provision that would require the Under Secretary of Defense for Acquisition and Sustainment to review how the Department of Defense uses fixed-price contracts, including fixed-price incentive contracts, to support acquisition objectives. The committee is concerned about the extent to which the Department is using fixed-price contracts in situations in which other contract types would be more appropriate. Under this provision, the Under Secretary of Defense for Acquisition and Sustainment would provide a briefing to the congressional defense committees on the results of this review not later than February 1, 2020.

The provision would further require the Comptroller General of the United States to submit a report on the Department's use of fixed-price contracts over time, to include costs, incentives, duration, and close-out procedures, to the congressional defense committees no later than February 1, 2021.

Finally, the provision would delay the implementation of regulations requiring the use of fixed-price contracts for foreign military sales until after 2020.

Pilot program to accelerate contracting and pricing processes (sec. 807)

The committee recommends a provision that would amend a pilot established in section 890 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232). That law authorized the Secretary of Defense to reform and accelerate the contracting and pricing processes for 10 programs on a pilot basis. The amendment would remove the 10-program limitation and would delay the program's sunset from January 2, 2021, to January 2, 2022.

Pilot program to streamline decision-making processes for weapon systems (sec. 808)

The committee recommends a provision that would require the service acquisition executive for each military department to rec-

commend at least one major defense acquisition program to participate in the pilot program not later than February 1, 2020, and require the Under Secretary of Defense for Acquisition and Sustainment to brief the congressional defense committees on these programs not later than May 1, 2020.

The committee is aware that Department of Defense (DOD) weapon system programs often proceed slowly through the acquisition milestone decision process. In 2015, the Comptroller General of the United States recommended that the Secretary of Defense direct efforts to improve this process by piloting different approaches to streamline acquisition milestone decisions in major defense acquisition programs, with results that could be evaluated on and reported for potentially wider use. The committee notes that this reflects the “Skunk Works” approach described in DOD’s “Better Buying Power 3.0” memorandum. To date, the Government Accountability Office reports that only two weapon systems programs have participated in this program.

Documentation of market research related to commercial item determinations (sec. 809)

The committee recommends a provision that would amend section 2377(c) of title 10, United States Code, to require that market research be documented, at a level appropriate to the size and complexity of the acquisition, when procuring commercial products and services.

Modification to small purchase threshold exception to sourcing requirements for certain articles (sec. 810)

The committee recommends a provision that would lower the threshold for which the Department of Defense must comply with the rules of section 2533a of title 10, United States Code, known as the Berry Amendment, to \$150,000. The committee further directs the Secretary of Defense to provide an annual briefing on the impacts of this provision to: Department of Defense costs and procurement efficiency and the health of the affected portions of the domestic industrial base.

Subtitle B—Provisions Relating to Major Defense Acquisition Programs

Naval vessel certification required before Milestone B approval (sec. 821)

The committee recommends a provision that would require a certification of compliance with section 8669b of title 10, United States Code, for naval vessel programs prior to Milestone B approval.

Subtitle C—Industrial Base Matters

Modernization of acquisition processes to ensure integrity of industrial base (sec. 831)

The committee recommends a provision that would require the Secretary of Defense to modernize mitigation of risks to the integrity of the supply chain, to include those cited in recent studies on the defense industrial base.

The committee observes that contracting is the mechanism by which the Department of Defense operationalizes its relationship with the defense industrial base/national security innovation base.

The committee notes that certain risks to the defense industrial base are not being appropriately considered. These include but are not limited to risks associated with: insufficient insight into ownership structures, fragile sources of supply, and cybersecurity concerns, as well as contractors' violations of law pertaining to fraud, human trafficking, and worker health and safety.

The committee further notes that, even where risks may be a high priority, the existing acquisition processes and procedures are not effective or timely in mitigating such risks. As such, the provision would require the Department to rigorously optimize the policy, processes, and procedures throughout the contracting life cycle, beginning with market research, responsibility determination, technical evaluation/award, mobilization, contract administration, contract management and oversight (to include contractor business systems reviews), and contract audit for closeout. It is critical that this optimization incorporate modern sources of data and methods to conduct appropriate and continuous risk assessment for contractors doing business with DOD.

The provision would also require the Comptroller General of the United States to coordinate individual reviews in these risk areas, report on them collectively, and begin annual reviews of the Department's progress in this area.

Assessment of precision-guided missiles for reliance on foreign-made microelectronic components (sec. 832)

The committee recommends a provision that would require the Air Force to assess its reliance on foreign sources for all microelectronics in precision guided munitions currently in production. The Air Force would be required to identify which tier subcontractor supplied the microelectronics and evaluate the cybersecurity risk to precision guided munitions posed by foreign-made microelectronics. The provision would require the Air Force to brief the findings of its assessment to the congressional defense committees no later than August 31, 2020.

Mitigating risks related to foreign ownership, control, or influence of Department of Defense contractors or subcontractors (sec. 833)

The committee recommends a provision that would require the Secretary of Defense to amend policy and regulation to take steps to enhance the process for assessing and mitigating risks related to foreign ownership, control, or influence (FOCI).

The committee is concerned by the growing threat to the integrity of the defense industrial base from strategic competitors, like the Russian Federation, the People's Republic of China, and their proxies, seeking to gain access to sensitive defense information or technology through contractors or subcontractors. The committee recognizes the need for the Department's acquisition community to have greater visibility into the potential FOCI of contractors and subcontractors seeking to do business with the Department to ensure that they do not pose a risk to the security of sensitive data,

systems, or processes such as personally identifiable information, cybersecurity systems, or national security systems.

In order to aid in identifying the actual individual or individuals owning or controlling each contractor or subcontractor, the provision would require the companies to make certain disclosures. Such disclosures would then be considered in determining the responsibility of the contractor being considered for a contract or subcontract and standards under which a contract or subcontract could be terminated due to unmitigable risks.

Extension and revisions to Never Contract With the Enemy (sec. 834)

The committee recommends a provision that would extend the Never Contract With the Enemy program through 2023 and would provide for various expansions, including the contracts covered and the authorities of the combatant commands to mitigate threats posed by vendors supporting operations outside the United States.

Subtitle D—Small Business Matters

Reauthorization and improvement of Department of Defense Mentor-Protégé Program (sec. 841)

The committee recommends a provision that would make the Department of Defense's Mentor-Protégé Program (MPP) permanent and repeal the half-size standard restriction for protegee participants, restoring eligibility to disadvantaged small business concerns. The committee notes that the Government Accountability Office published a report on April 11, 2017, titled "Small Business Contracting: DOD Should Take Actions To Ensure that Its Pilot Mentor-Protégé Program Enhances the Capabilities of Protégé Firms" (GAO-17-172), which recommended that the Department take steps to ensure that the MPP achieves its mission by conducting periodic reviews of the processes for approving agreements and by developing performance goals and measures. Accordingly, the provision would also require the Secretary of Defense to direct the Defense Business Board to study the effectiveness of the program and make recommendations for program improvements.

Modification of justification and approval requirement for certain Department of Defense contracts (sec. 842)

The committee recommends a provision that would revise authorities relating to Department of Defense approval of certain sole source awards to 8(a) firms, which include tribes, Alaska Native, and Hawaiian firms. Specifically, the threshold for requiring justification and approval would be increased to \$100.0 million and the approving authority would be the head of procuring activity or a designee. The provision would also require the Department of Defense to collect data and the Comptroller General of the United States to report to the congressional defense committees on the impact of the provision.

The committee directs the Secretary of Defense to ensure compliance with all appropriate acquisition regulations and Small Business Administration rules, including those regarding ownership of 8(a) firms and in managing the subcontracting of work contracted

to 8(a) firms. In ensuring such compliance, the committee directs the Under Secretary of Defense for Acquisition and Sustainment to establish mechanisms to collect and analyze relevant data.

Subtitle E—Provisions Related to Software-Driven Capabilities

Improved management of information technology and cyberspace investments (sec. 851)

The committee is concerned that the Department of Defense’s process to account for, manage, and report its information technology and cyberspace investments—which account for at least \$50.0 billion annually—is inefficient. Further, the committee believes that the process results in unnecessary delays in preparing the annual budget exhibit and in regulatory reporting under the Federal Information Technology Acquisition Reform Act of 2015, incorporated into the Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113–291). After years of legislation and regulation, the definitions pertaining to and the methods of grouping and accounting for spending on these investments have become cumbersome and obscure and as such hinder, rather than assisting with, insight into and oversight of spending plans and portfolio management.

Accordingly, the committee recommends a provision that would require the Chief Information Officer (CIO) to work with the Chief Data Officer to optimize this process. Such optimization should include alternative methods of presenting budget justification materials to the public and congressional staff to more accurately communicate when, how, and with what frequency capability is delivered to end users, in accordance with best practices for managing and reporting on information technology investments. The committee directs the CIO to brief the congressional defense committees and recommend any necessary legislative changes not later than February 3, 2020.

Special pathways for rapid acquisition of software applications and upgrades (sec. 852)

The committee recommends a provision that would require the Secretary of Defense to establish guidance, not later than 180 days after the enactment of this Act, authorizing the use of special pathways for the rapid acquisition of software applications and upgrades that are intended to be fielded within 1 year. These new pathways would prioritize continuous integration and delivery of working software in a secure manner and prioritize continuous oversight from automated analytics.

Further, the committee commends the work of the Defense Innovation Board (DIB) in conducting its “Software Acquisition and Practices” study and further commends the Under Secretary of Defense for Acquisition and Sustainment’s commitment to adopting the DIB’s recommendations. The committee agrees with the premise outlined in the report that “software is never done” and with the emphasis on the distinct role of software development in both applications and embedded systems. The committee categorically agrees with the three themes of the report: “Speed and cycle

time are the most important metrics for managing software”; “Software is made by people and for people, so digital talent matters”; and “Software is different than hardware (and not all software is the same).”

Subtitle F—Other Matters

Notification of Navy procurement production disruptions (sec. 861)

The committee recommends a provision that would require the Secretary of the Navy to require prime contractors of any Navy procurement program to report, within 15 calendar days of any contractor or subcontractor stop work order or within 15 days of a contractor or subcontractor manufacturing disruption that has lasted 15 calendar days, to the respective program manager and Navy technical authority. The provision would also require the Secretary of the Navy to provide a quarterly notification of such disruptions to the congressional defense committees.

The committee is concerned by the delay in reporting of recent stop work orders and other manufacturing disruptions to Navy program management officials. The committee notes that multiple shipbuilding programs have been negatively impacted by unacceptable delays in reporting such disruptions. The committee believes that more timely notifications of such disruptions will decrease the time required to initiate and complete corrective actions necessary to resume production.

Modification to acquisition authority of the Commander of the United States Cyber Command (sec. 862)

The committee recommends a provision that would modify section 807 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92), which established the acquisition authority of the Commander of U.S. Cyber Command, to change the applicability of the annual limit to new contract efforts.

Prohibition on operation or procurement of foreign-made unmanned aircraft systems (sec. 863)

The committee recommends a provision that would prohibit the operation or procurement of foreign-made unmanned aircraft systems by the Department of Defense.

Prohibition on contracting with persons that have business operations with the Maduro regime (sec. 864)

The committee recommends a provision that would prohibit the Department of Defense from awarding contracts to certain persons and entities affiliated with the illegitimate Maduro regime of Venezuela.

Comptroller General of the United States report on Department of Defense efforts to combat human trafficking through procurement practices (sec. 865)

The committee recommends a provision that would direct the Comptroller General of the United States to report on the Depart-

ment of Defense's efforts to combat trafficking in persons through procurement practices.

Items of Special Interest

Alternatives to cost or pricing data

The committee notes that the Department of Defense (DOD) produces and develops many goods and services outside of traditional commercial markets, often in situations where there is only one customer and one or few viable vendors. In the absence of market forces, the Department is forced to use other mechanisms to ensure that it is obtaining the best value and paying a fair price for these goods and services. This commonly requires the delivery of certified cost or pricing data from vendors to achieve this necessary goal. However, this creates a time and cost burden on both the vendors and the government customer, which in some cases slows procurement processes. Ultimately this leads to operational systems and technologies being behind the pace of global innovation and is unnecessarily expensive for the taxpayer. In addition, the government-unique activities associated with this practice often create a barrier to entry into the defense market for potential commercial and small business suppliers.

The committee notes that there may be alternative practices that could speed the process of determining fair prices and best value for customers in the absence of a market but that these practices require research, development, prototyping, and testing before they can be employed at scale. The committee directs that the Under Secretary of Defense for Acquisition and Sustainment and the Under Secretary of Defense for Research and Engineering jointly develop a university research program, modeled on the current university basic research activities of the DOD, with experts in academia to explore and develop alternatives to certified cost or pricing data. The committee notes that these academic researchers should be partnered with the Defense Acquisition University and other DOD organizations to promote the sharing of relevant data and the transition of research products into practice. The committee further notes that the Defense Acquisition Workforce Development Fund account is already authorized to fund research of this type and recommends the use of this funding to support these activities. The committee directs the Department to provide a report to the congressional defense committees on activities to support this effort not later than February 1, 2020, as well as any research products that result from these activities over time.

Annual report on denials of contracting officer data requests

The committee is encouraged that, in response to recommendations from a 2019 Department of Defense (DOD) Inspector General report on price reasonable determinations, the Acting Principal Director for Defense Pricing and Contracting agreed to: (1) Update policy on reporting requirements for contractor denial of cost data and establish a framework for quarterly reporting on such denials; and (2) Recommend that a group of experts assess the data reported to identify contractors a high-risk for unreasonable pricing.

The committee directs the Under Secretary of Defense for Acquisition and Sustainment to submit to the congressional defense committees an annual report detailing instances where potential contractors denied requests by the DOD to provide contracting officers with requested uncertified cost or pricing data to allow for the determination of fair and reasonable pricing for acquisitions. The report should contain at a minimum a summary of the individual cases in which contracting officers were denied requested data by potential contractors. The initial report shall be submitted not later than December 31, 2020.

Appreciation for the work of the Advisory Panel on Streamlining and Codifying Acquisition Regulations

The committee commends the work of the Advisory Panel on Streamlining and Codifying Acquisition Regulations, established by section 809 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92). The committee notes that, since the Panel was established, it has made 98 recommendations across 3 report volumes and continues to identify areas where United States Code can be reorganized for clarity and efficiency. The Congress has enacted a number of the recommendations from the first two volumes in prior National Defense Authorization Acts. This committee continues to carefully consider the recommendations of the Panel.

Army strategies to manage intellectual property

The committee notes that the Army has recently approved a new intellectual property management policy that seeks to address the shortcomings of how the Army has managed intellectual property with previous acquisition programs. The committee believes that, as the Army pursues its major modernization priorities, it is important to appropriately determine rights and access related to intellectual property and technical data to facilitate the sustainment of these new systems for the next several years, and the committee encourages the Army to pursue innovative strategies to do so.

Comptroller General assessment of Internet Protocol version four (IPv4) utilization

The committee directs the Comptroller General of the United States to submit a report to the appropriate congressional committees, no later than March 1, 2020, on the Department of Defense's utilization of Internet Protocol version four (IPv4) addresses. The report's elements shall include: (1) Actual utilization, comparing IPv4 addresses assigned vs. those being used; (2) Statutory, policy, and security requirements affecting the Department's ability to grant or sell underutilized addresses to the private sector (whether due to underutilization or post-transition to Internet Protocol version six (IPv6)); (3) Status of transition from IPv4 to IPv6; and (4) Additional matters that the Comptroller General determines appropriate.

Comptroller General review of Army's Logistics Civil Augmentation Program contract

The committee notes that the U.S. military has long relied on contractors to support deployed U.S. forces, especially under the Army's Logistics Civil Augmentation Program (LOGCAP), a contract which provides for food service, sanitation, billeting, maintenance, and power generation for military operations and associated civilian support. The Department has persistently faced challenges with such contracts, to include: limited insight into the nature and extent of reliance on contractors; cost and requirements growth; and military commanders' inconsistent understanding of their roles and responsibilities in theater.

Accordingly, the committee directs the Comptroller General of the United States to assess the following: (1) What lessons the Department learned from prior LOGCAP contracts and how these lessons were incorporated into the requirements and acquisition strategy for LOGCAP V; (2) Whether the Department developed plans to transition services being provided under LOGCAP IV to the LOGCAP V contract and the sufficiency of those plans; (3) The Army's construct for LOGCAP V planners and the extent to which it is sufficient; (4) The sufficiency of the Army's plans to designate and train contracting officer representatives; and (5) Any other issues that the Comptroller General determines appropriate with respect to the LOGCAP program.

The committee further directs the Comptroller General to provide a briefing to the congressional defense committees not later than February 28, 2020, on the preliminary findings of this review and to submit a report to the congressional defense committees on a date agreed to at the time of the briefing.

Contractor workplace safety

The committee notes the September 2018 Department of Defense report titled "Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States," which cited diminishing manufacturing sources and material shortages as risks and the corresponding need to expand certain domestic manufacturing to address these risks.

The committee is therefore concerned by a February 2019 Government Accountability Office report, "Defense Contracting: Enhanced Information Needed on Contractor Workplace Safety" (GAO-19-235), which detailed violations of certain workplace safety and health regulations by Department contractors in high-risk industries, including construction and manufacturing. Among the recommendations were advising all contracting officials of the availability of data published by the Occupational Safety and Health Administration and exploring the feasibility of requiring a safety performance rating for contracts in high-risk industries.

The committee strongly supports a thriving defense industrial base, especially in manufacturing, where the Department expects to see growth to address risks and objectives of the National Defense Strategy. Given that the Department agreed with the GAO recommendations, the committee expects the Department to fully and expeditiously implement them.

The committee further recommends that the Department explore other measures to ensure that data on contractors' compliance with workplace safety and health regulations are available and assessed during the acquisition process in an efficient and effective manner.

Implications of acquisition reform for the organic industrial base

The committee notes that, in September 2018, the Department of Defense (DOD) released the report "Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States." The report stated that, while commercial industry is the dominant component of the industrial base, the DOD organic industrial base—composed of government-owned, government-operated maintenance depots, shipyards, and manufacturing arsenals—is critical to our defense. The report also noted that prior acquisition reforms have had unintended negative impacts on the DOD organic industrial base.

To fully understand the impacts of these changes, the committee directs the Under Secretary of Defense for Acquisition and Sustainment, with inputs from the sustainment commands of the Services, to assess the effects that acquisition changes over the last 5 years have had on the DOD organic industrial base. This assessment shall be provided to the congressional defense committees not later than February 1, 2020.

Notifications related to exercising an option on a contract

The committee observes that regulation requires the government, on an active contract, to notify the contractor if it will exercise an option on the contract 60 days prior to the exercise date. The committee is concerned that 60 days notice may create hardship for some contractors doing business with the Department of Defense and encourages the cognizant contracting official at the Department of Defense to the maximum extent practicable to notify the contractor whether or not the Department intends to exercise the option earlier than 60 days prior to the option exercise date.

Optimizing processes and acquisition of contract writing capabilities

The committee notes that significant direction was provided to the Department of Defense to rationalize the business portfolio area of contract-writing in the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) and the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232). This direction included funding reductions, reporting requirements, and required commitments by the Services to reduce the number of contract-writing systems in use from 17 to 1 by 2020.

The committee further notes that, despite this direction, there are still two different solutions and three different contracting arrangements being pursued by the Department. The committee remains concerned about the inability of disparate acquisition strategies to leverage common requirements, commercial processes, and solutions for writing contracts. As such, elsewhere in this Act, the committee recommends a number of specific reductions in funds for

contract-writing systems to encourage the Department to complete the rationalization of contract-writing systems.

Place of performance in Department of Defense contracts

The committee is aware that contracts awarded by the Department of Defense sometimes include place of performance clauses that can be advantageous to areas that have higher costs and higher populations. To understand the logistical and national security necessity of these place of performance clauses, the committee directs the Chief Management Officer to commission a study that analyzes the number of contracts awarded that include place of performance clauses. Additionally, the study should include analysis of the labor, real estate, cost of living, contractor retention rates, and other financial costs and benefits of including such a requirement in Department of Defense contracts.

Proper evaluation of past performance and experience of potential offerors

The committee notes that changing business models and corporate practices have led to alternative ownership structures and partnership arrangements for potential and current defense contractors. The committee also notes that current acquisition regulations give the Department of Defense flexibility in evaluating past performance information regarding predecessor companies, key personnel who have relevant experience, or subcontractors that will perform major or critical aspects of requirements when such information is relevant to the acquisition. The committee, however, also recognizes that there are concerns about the consistency and clarity in how the Department, as well as other federal agencies, are considering the past performance and experience of parent, subsidiary, and sister organizations of firms, including those associated with Alaskan Native Corporation/Tribal/Native Hawaiian corporations, when soliciting and evaluating potential offers to meet federal requirements.

The committee believes that providing additional guidance and training to contracting personnel to ensure that solicitations clearly state the extent to which and how the DOD will consider the past performance and experience of these sister organizations during the evaluation of an offeror's bid will reduce miscommunication and frustration with the federal procurement process, lead to more informed selection of vendors, help establish more strategic relationships with high performing vendors, and support improved performance by contractors. Therefore, the committee directs the Secretary of Defense to: (1) Develop policies to ensure that solicitations are clear and transparent; and (2) Provide training to its contracting personnel to ensure the proper consideration of the past performance and experience of predecessor companies, sister subsidiaries, and key personnel that will perform major or critical aspects of the requirement when soliciting and evaluating offers.

Report on service contract management and oversight

The committee directs the Secretary of Defense, in consultation with the Chief Management Officer, the Under Secretary of Defense for Acquisition and Sustainment, and the Secretaries of the

military departments, to review current mechanisms for overseeing defense service contracts, including the service contract inventories, and to identify ways to update the approach to improve the management and oversight of service contracts. The committee notes that the Section 809 Panel “Report of the Advisory Panel on Streamlining and Codifying Acquisition Regulations” recommends that the Department of Defense center its service contracts reporting on broad strategic purposes, objectives, and key performance results of the contracts being assessed.

The Department’s review shall leverage the expertise of the Chief Data Officer to ensure that the approaches identified align with and support the analytic capabilities of the Department of Defense. Further, the review shall ensure the implementation of continuous business process changes and supporting information technology investments to deploy and sustain a capability to continuously monitor, analyze, and oversee these types of contracts and associated spending. Finally, the Department’s review shall address how the identified approaches support the oversight, data analytics, and outcome measurements for service contracts specified in section 2329 of title 10, United States Code. This report shall be submitted to the congressional defense committees no later than December 1, 2019.

The committee directs the Comptroller General of the United States to assess the Department’s report and its proposed approach to determine the extent to which they have the potential to improve the Department’s management of service contracts. This assessment would consider prior reviews of the Department’s service contracts, including the service contract inventories. The Comptroller General shall report to the congressional defense committees no later than March 1, 2020, or 3 months after the Department’s report is submitted to Congress, whichever occurs later.

Secure development operations software stacks

The committee notes that the Department of Defense has several programs and activities underway to explore the concepts, technologies, roles and responsibilities, and procedures associated with secure development operations or DevSecOps. The committee encourages the Department to continue these activities and, in doing so, recommends that the Secretary of Defense designate a single official responsible for coordinating these activities to identify best practices and recommend policy and guidance to unify the activities across the Department.

Stakeholder engagement practices of the Defense Innovation Board

The committee commends the Defense Innovation Board’s process for conducting its study on software acquisition and practices under section 872 of the National Defense Authorization Act for 2018 (Public Law 115–91). The committee notes the benefit of the Board’s process for identifying stakeholders and encouraging their active engagement in the Board’s work, to include: the formulation of working hypotheses; iteratively publishing draft content and white papers; exposing potential recommendations; encouraging meaningful public dialogue and enabling transparency; and

prioritizing content and recommendations for inclusion in the final report. This engagement resulted in a refined product whose premises had been tested and improved by a deep bench of knowledge both within and outside the Department of Defense. This yielded recommendations pertaining to Congress' role that were relevant, actionable, and useful to this committee.

Training of skilled technicians for the defense industrial base

The committee notes that the September 2018 Department of Defense report "Assessing and Strengthening the Manufacturing and Defense Industrial Base and Supply Chain Resiliency of the United States" stated: "Without concerted action that provides both a ready workforce and a continuously charged pipeline of new employees, the U.S. will not be able to maintain the large, vibrant, and diverse machine tools sector needed to produce the required number and types of products when needed."

Accordingly, the committee directs the Secretary of Defense to develop a plan, cost estimate, and schedule for a pilot program to train skilled technicians for immediate placement in the Defense Industrial Base, including critical shipbuilding skills such as welding, metrology, quality assurance, machining, and additive manufacturing. The committee notes that these activities may benefit from partnering with State-level efforts to leverage investment and infrastructure in training and education and existing workforce development partnerships with the Defense Industrial Base as well as relevant federal programs, such as the National Network of Manufacturing Institutes and the Department of Defense Industrial Base Analysis and Sustainment program. The committee directs the Secretary to provide an annotated briefing on the plan, cost estimate, and schedule for a potential pilot program to the Senate Armed Services Committee no later than September 15, 2020.

Uncertified cost data

The committee notes that the Truth in Negotiations Act authorizes the contracting officer to require that other than certified data be submitted when deemed necessary to determine price reasonableness. Contracting officers have this authority even as it relates to commercial items. The committee also notes that the Congress strengthened the Department of Defense's ability to get uncertified data in section 808 of the Strom Thurmond National Defense Authorization Act for Fiscal Year 1999 (Public Law 105-261) by directing that the Federal Acquisition Regulation be amended to provide that a contractor's "compliance with a requirement to submit data for a contract or subcontract in accordance with section 2306a(d)(1) of title 10, United States Code . . . shall be a condition for the offeror to be eligible to enter into the contract or subcontract, subject to such exceptions as the Federal Acquisition Regulatory Council determines appropriate."

Other statutory authorities are available to the Department of Defense to ensure price reasonableness, including the Defense Production Act (Public Law 81-774), as amended, and section 2304(b) of title 10, United States Code, which authorizes the head of an

agency to exclude a particular source in order to establish an alternative source of supply if doing so would “likely result in reduced overall costs for such procurement, or for any anticipated procurement, of property or services.” The committee directs the Department to use all applicable authorities to protect the taxpayer from predatory practices by companies that refuse to provide data to establish price reasonableness. The committee further encourages the Department to take all steps necessary to ensure that the acquisition workforce is sufficiently trained on and empowered to use available authorities to protect the Department and taxpayers from price gouging.

Wider adoption of model contracts for Small Business Innovation Research (SBIR) program awards

The committee notes that the Air Force is using model contracts and “pitch days” for Small Business Innovation Research (SBIR) program awards. This simplifies and accelerates awards in ways that are critical to small businesses. The committee encourages other military services and offices awarding SBIR contracts to consider similar approaches to improve efficiency.

TITLE IX—DEPARTMENT OF DEFENSE ORGANIZATION AND MANAGEMENT

Subtitle A—Office of the Secretary of Defense and Related Matters

Headquarters activities of the Department of Defense mat- ters (sec. 901)

The committee recommends a provision that would amend subsection 921(b) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) to repeal the certification of cost savings under that subsection and to require periodic assessments from the Secretary of Defense, through the Chief Management Officer, on enterprise business operations of the Department of Defense and efforts taken to minimize duplication of efforts and to maximize efficiency and effectiveness in mission execution. The first such assessment would be required not later than January 1, 2020, with subsequent assessments to occur not less frequently than once every 5 years thereafter.

The provision would also require the Secretary to report, not later than January 1, 2020, on the total number of civilian and military employees assigned or employed in the Office of the Chief, National Guard Bureau, and on the National Guard Joint Staff, together with a recommendation on the number of employees necessary to execute the missions and functions of the National Guard Bureau and National Guard Joint Staff.

The provision would repeal certain outdated provisions of law and would further amend sections 143, 155, 7014, 8014, and 9014 of title 10, United States Code, to provide modest increases in the statutory caps on the number of personnel that may be employed in the Office of the Secretary of Defense, the Joint Staff, and the Offices of the Secretary of the Army, Secretary of the Navy, and Secretary of the Air Force, respectively.

Finally, the provision would clarify that the requirements of section 346 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92), relative to Major Headquarters Activity spending, sunset at the end of fiscal year 2019.

Responsibility of Under Secretary of Defense for Acquisition and Sustainment for Procurement Technical Assistance Cooperative Agreement Program (sec. 902)

The committee recommends a provision that would make the Under Secretary of Defense for Acquisition and Sustainment, rather than the Director of the Defense Logistics Agency, responsible for the Procurement Technical Assistance Cooperative Agreement Program.

Return to Chief Information Officer of the Department of Defense of responsibility for business systems and related matters (sec. 903)

The committee recommends a provision that would return the responsibilities for business systems from the Chief Management Officer back to the Chief Information Officer and would realign the Chief Data Officer to report to the Chief Information Officer instead of the Chief Management Officer. This realignment would facilitate the Department of Defense's implementation of the Foundations for Evidence-Based Policymaking Act of 2018 (Public Law 115–435) and ensure the Chief Data Officer's visibility into all data across the enterprise. The provision would further explicitly provide that the Chief Data Officer has access to all Department of Defense data.

Senior Military Advisor for Cyber Policy and Deputy Principal Cyber Advisor (sec. 904)

The committee recommends a provision that would require the designation of a general or flag officer of the Armed Forces to serve within the Office of the Under Secretary of Defense for Policy as the Senior Military Advisor for Cyber Policy and, concurrently, as the Deputy Principal Cyber Advisor. As a result of the level of responsibility and complexity of the duties associated with these functions, the committee recommends that the military individual fulfilling these two roles be designated from among qualified commissioned regular officers of the Armed Forces in the grade of major general or rear admiral. The committee believes that Department of Defense cyber policy is uniquely advanced through the coupling of civilian and military expertise at the Office of the Secretary of Defense-level. Finally, the committee recognizes the critical work of the Principal Cyber Advisor, the Deputy Principal Cyber Advisor, and its cross-functional team and believes that this effective model should be sustained.

Limitation on the transfer of Strategic Capabilities Office (sec. 905)

The committee recommends a provision that would prohibit any reorganization to the Department of Defense (DOD) that would impact the Strategic Capabilities Office (SCO) until the Chief Management Officer provides to the congressional defense committees a report assessing the impacts of such an organizational change. Specifically, the report shall assess at a minimum the following options: (1) Transferring the SCO so that the Director of the SCO reports directly to the Under Secretary of Defense for Acquisition and Sustainment; (2) Maintaining the current arrangement such that the Director of the SCO reports directly to the Under Secretary of Defense for Research and Engineering; and (3) Transferring the SCO to the Defense Advanced Research Projects Agency.

The report should include the justification for any organizational changes and detail how specific changes would impact SCO's ability to execute its traditional missions, including: (1) Responding to combatant commanders' critical needs, (2) Augmenting cross-DOD efforts with respect to developing strategic capabilities; (3) Developing new and innovative ways to counter advanced threats; and

(4) Partnering with and responding to senior leadership across the DOD.

**Subtitle B—Organization and Management of Other
Department of Defense Offices and Elements**

Assistant Secretaries of the military departments for Energy, Installations, and Environment (sec. 911)

The committee recommends a provision that would amend sections 3016(a), 5016(a), and 8016(a) of title 10, United States Code, to require that each military department maintain an assistant secretary for energy, installations, and environment.

The committee believes that any person nominated for these positions should have relevant experience in the energy, installations, and environment portfolio.

Repeal of conditional designation of Explosive Ordnance Disposal Corps as a basic branch of the Army (sec. 912)

The committee recommends a provision that would repeal section 582 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91), which established the conditional designation of explosive ordnance disposal as a basic branch of the Army.

Subtitle C—Other Matters

Exclusion from limitations on personnel in the Office of the Secretary of Defense and Department of Defense headquarters of fellows appointed under the John S. McCain Defense Fellows Program (sec. 921)

The committee recommends a provision that would amend section 932(f)(3) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) to stipulate that an individual appointed to a fellowship under this section shall not count against the limitation on the number of Office of the Secretary of Defense personnel in section 143 of title 10, United States Code, or any similar limitation in law on the number of personnel in headquarters of the Department of Defense.

Report on resources to implement the civilian casualty policy of the Department of Defense (sec. 922)

The committee recommends a provision that would require, not later than 30 days after the date of the enactment of this Act, the Secretary of Defense to submit to the congressional defense committees a report on the resources necessary to fulfill the requirements of section 936 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) over the future years defense plan.

Items of Special Interest

Cross-functional teams

The committee notes that section 911 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) expressly empowered and directed Department of Defense (DOD) leadership to establish cross-functional teams (CFTs) and that the

law defined the characteristics and authorities common to such teams. The committee understands, however, that the DOD has not established a single CFT under that law and that it is severely delinquent in meeting the provision's requirements and milestones.

Although DOD components have established various task forces and working groups, including the Close Combat Lethality Task Force and the Protecting Critical Technology Task Force, none of these entities were established under section 911 authorities. Therefore, the committee directs the Secretary of Defense to provide the committee, not later than February 1, 2020, an explanation as to why section 911 authorities have not been utilized to date.

Remote and isolated research and testing installations

The committee recommends that the Under Secretary of Defense for Research and Engineering and the Chief Management Officer jointly establish a working group to identify and develop solutions to immediate and long-term programmatic challenges facing remote and isolated installations. The effort should be focused on research and testing organizations and address issues that would have negative impacts on innovation, streamlined and successful development and acquisition efforts, and support for National Defense Strategy goals. This working group should provide a briefing to the congressional defense committees no later than December 1, 2019.

The committee notes that a number of organizations that perform critical research and testing missions are located on installations that are remote and isolated from population centers and have limited access to goods, services, and technical talent. For example, the committee notes that both the Army's Dugway Proving Grounds and the Navy's Atlantic Undersea Test and Evaluation Center face these types of challenges while attempting to maintain robust test capabilities to support the National Defense Strategy. Remote and isolated installations face challenges in maintaining adequate government and support contractor personnel and capabilities and often experience negative impacts when attempting to implement government-wide, Department of Defense-wide, or service-wide policies and regulations that are designed for more traditional and larger installations and not always appropriate or applicable to the unique circumstances of these smaller installations.

Secretariat for Special Operations

The committee strongly supports continued efforts to implement section 922 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114-328) to enable greater oversight of and advocacy for special operations forces by the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict (ASD SOLIC). While important progress has been made in implementing these reforms, the Department has been unable to fully realize the Congress' intent for the ASD SOLIC to act as the "service secretary-like" civilian counterpart to the Commander of U.S. Special Operations Command more than 2 years after the law's passage.

In particular, the committee is concerned that the Department of Defense has failed to establish clear timelines for the implementation of tasks necessary to fully implement the ASD SOLIC reforms.

Additionally, the committee is concerned that sufficient efforts have not been made to update and clarify Departmental guidance to accurately reflect the ASD SOLIC's enhanced role with respect to the oversight and advocacy of special operations forces.

Lastly, while the committee is encouraged by efforts to more adequately staff the ASD SOLIC Secretariat for Special Operations, the committee is concerned that new personnel actions are not adequately tied to a strategic workforce plan, potentially leading to the hiring of staff that may not have the requisite experience or may be serving only in a temporary capacity. The committee is also concerned that the title and grade of personnel leading the day-to-day operations of the Secretariat for Special Operations may not be commensurate with their responsibilities.

Therefore, the committee encourages the Department to address these issues expeditiously and would welcome legislative or other proposals to remove any remaining challenges to full implementation of the ASD SOLIC reforms.

TITLE X—GENERAL PROVISIONS

Subtitle A—Financial Matters

General transfer authority (sec. 1001)

The committee recommends a provision that would allow the Secretary of Defense to transfer up to \$4.0 billion of fiscal year 2020 funds authorized in division A of this Act to unforeseen higher priority needs in accordance with normal reprogramming procedures. Transfers of funds between military personnel authorizations would not be counted toward the dollar limitation in this provision.

Modification of required elements of annual reports on emergency and extraordinary expenses of the Department of Defense (sec. 1002)

The committee recommends a provision that would amend section 127 of title 10, United States Code, to modify the annual reporting requirement.

Inclusion of military construction projects in annual reports on unfunded priorities of the Armed Forces and the combatant commands (sec. 1003)

The committee recommends a provision that would amend section 222a of title 10, United States Code, to require the Services and combatant commands to submit separate lists of unfunded priorities for military construction. The provision would require the lists to be in priority order.

Prohibition on delegation of responsibility for submittal to Congress of Out-Year Unconstrained Total Munitions Requirements and Out-Year Inventory numbers (sec. 1004)

The committee recommends a provision that would amend section 222c of title 10, United States Code, by prohibiting the chief of staff of each of the Services from delegating the munitions reporting requirement established in that section outside the service concerned. The committee notes that, for the fiscal year 2020 budget submission, the Joint Staff and the Under Secretary of Defense for Acquisition and Sustainment delivered the required report on behalf of the Services, despite statutory requirements, and as a result have failed to meet the requirement in a timely manner.

Element in annual reports on the Financial Improvement and Audit Remediation Plan on activities with respect to classified programs (sec. 1005)

The committee recommends a provision that would amend section 240b(b)(1) of title 10, United States Code, to include audit re-

sults and activities for classified programs in the Financial Improvement and Audit Remediation Plan. The plan shall remain unclassified and include a classified annex, if required.

Modification of semiannual briefings on the consolidated corrective action plan of the Department of Defense for financial management information (sec. 1006)

The committee recommends a provision that would amend section 240b(b) of title 10, United States Code, to require the Under Secretary of Defense (Comptroller) to track the costs of the audit corrective action plans.

Update of authorities and renaming of Department of Defense Acquisition Workforce Development Fund (sec. 1007)

The committee recommends a provision that would amend section 1705 of title 10, United States Code, to rename the Defense Acquisition Workforce Development Fund to the Defense Acquisition Workforce Development Account in recognition that it is funded by appropriations.

Subtitle B—Counterdrug Activities

Modification of authority to support a unified counterdrug and counterterrorism campaign in Colombia (sec. 1011)

The committee recommends a provision that would amend section 1021 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005 (Public Law 108–375), as most recently amended by section 1011 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91), to modify authorized assistance to the Government of Colombia to address the emergence of new threats.

The committee strongly supports the partnership between the United States and Colombia and notes the remarkable security gains that the Government of Colombia has achieved over nearly 2 decades and its ongoing contributions to regional security. The committee believes that an enduring security relationship between the United States and Colombia is essential to sustaining and building on these gains and supporting the successful implementation of the 2016 peace accord. However, the committee notes with concern reports of record high yields of coca and the emergence of other illegally armed groups, ranging from terrorist organizations to drug trafficking organizations, that threaten peace, stability, and security in Colombia and the broader region. In light of the continuing threat posed by drug trafficking and illegal armed groups, it is imperative that the Department of Defense's (DOD's) authorities to engage with and provide support to the Government of Colombia are reflective of the evolving nature of the security environment. In particular, the splintering of armed groups since the 2016 peace agreement poses challenges to the applicability of the existing DOD authority to provide support to the Government of Colombia. The committee intends for the modifications contained in this provision to ensure that United States support to the Government of Colombia remains relevant and effective against these serious

and evolving threats. Further, the committee notes that the modifications contained in this provision would not alter the prohibition of U.S. persons' engaging in combat operations.

Two-year extension of authority for joint task forces to provide support to law enforcement agencies conducting counter-terrorism activities (sec. 1012)

The committee recommends a provision that would extend for 2 years the authority established in section 1022(b) of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–136).

Subtitle C—Naval Vessels and Shipyards

Modification of authority to purchase vessels using funds in National Defense Sealift Fund (sec. 1016)

The committee recommends a provision that would amend section 2218(f)(3) of title 10, United States Code, in subparagraph (E) by striking “10 new sealift vessels” and inserting “10 new sealift vessels, auxiliary vessels, or a combination of such vessels”.

Senior Technical Authority for each naval vessel class (sec. 1017)

The committee recommends a provision that would require the designation of a Senior Technical Authority for each class of naval vessels.

The committee notes the Government Accountability Office (GAO) published a report on June 6, 2018, titled “Navy Shipbuilding: Past Performance Provides Valuable Lessons for Future Investments” (GAO–18–238SP), which assessed Navy shipbuilding performance over the past 10 years and concluded that “[the Navy] has received \$24 billion more in funding than originally planned but has 50 fewer ships in its inventory today, as compared to the goals it first established in [2007.] . . . Ship costs exceed[ed] estimates by over \$11 billion during this time frame.”

This report found that lead ships in new classes of naval vessels regularly failed to meet expectations. For the 8 most recently delivered lead combatant ships (CVN–78, DDG–1000, LCS–1, LCS–2, LHA–6, LPD–17, SSN–774, and SSN–775), the report found that: a total of \$8 billion more than the initial budget was required to construct these ships; each lead ship experienced cost growth of at least 10 percent, and 3 lead ships exceeded their initial budgets by 80 percent or more; each lead ship was delivered to the fleet at least 6 months late with 5 lead ships delayed by more than 2 years; and most lead ships had dozens of uncorrected deficiencies when accepted by the Navy.

As this report highlights, a key step in successful shipbuilding programs is technology development: the maturation of key technologies into actual system prototypes and demonstration of them in a realistic environment prior to the detailed design of the lead ship. This type of technology maturation was not performed effectively on the CVN–78, DDG–1000, LCS–1, LCS–2, and LPD–17 programs.

The committee also notes that the Navy is planning the largest fleet expansion in over 30 years with several costly and complex acquisitions planned for the coming years, including the *Columbia*-class ballistic missile submarines and new classes of guided missile frigates and fast attack submarines. The Chief of Naval Operations has also called for the first Large Surface Combatant, Large Unmanned Surface Vehicle, Future Small Auxiliary, and Future Large Auxiliary (CHAMP) to each be on contract in 2023. Additionally, large and extra large undersea vehicles are projected to transition from research and development to procurement within the next decade.

While recognizing the importance of modernizing the fleet to face growing threats, the committee finds the Comptroller General's findings to be compelling and believes that additional actions are needed to improve shipbuilding cost, schedule, and performance outcomes, particularly of lead ships.

If such outcomes are not improved, the committee is concerned that the trends of the past 10 years will continue and that the Navy battle force could lack the capability and capacity necessary to prevail in great power competition as described in the National Defense Strategy.

Accordingly, this provision would establish a Senior Technical Authority (STA) for each class of naval vessels. Each STA would be responsible for establishing, monitoring, and approving technical standards, tools, and processes for the class of naval vessels for which he or she is designated under this section in conformance with applicable Department of Defense and Department of the Navy policies, requirements, architectures, and standards.

In addition, beginning on October 1, 2020, funds authorized to be appropriated for Shipbuilding and Conversion, Navy, could not be obligated on the lead vessel in a new class of naval vessels until the Secretary of the Navy has submitted a certification containing information from the STA on such class of vessels.

The committee recognizes that implementation of this provision may require additional government employees, including senior executives, in the Naval Systems Engineering Directorate of the Naval Sea Systems Command (SEA 05) and would support such increases as may be warranted.

Permanent authority for sustaining operational readiness of Littoral Combat Ships on extended deployment (sec. 1018)

The committee recommends a provision that would amend section 8680 of title 10, United States Code, to provide the Secretary of the Navy with additional flexibility to maintain Littoral Combat Ships (LCS) by allowing government or contractor personnel to conduct maintenance on deployed LCS vessels regardless of ship location.

This provision would codify the authorities successfully employed in a pilot program authorized by section 1025 of the Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113-291).

The pilot program was conducted to evaluate maintenance options for LCS vessels on extended deployments from December

2014 to September 2016. The Navy's assessment of the pilot program, which was submitted in a March 2017 report to the Congress, stated, "Based on the pilot program results, cost savings are expected to be notable. Even more importantly, the flexibility to provide timely maintenance in support of schedule changes and mission execution is crucial to long-term success of the LCS Fleet[.]"

The committee concurs with the Navy's assessment of the pilot program and recommends codifying the associated authorities in title 10, United States Code.

Subtitle D—Counterterrorism

Extension of prohibition on use of funds for transfer or release of individuals detained at United States Naval Station, Guantanamo Bay, Cuba, to the United States (sec. 1021)

The committee recommends a provision that would extend until December 31, 2020, the prohibition on the use of funds provided to the Department of Defense to transfer or release individuals detained at United States Naval Station, Guantanamo Bay, Cuba, to the United States.

Extension of prohibition on use of funds to construct or modify facilities in the United States to house detainees transferred from United States Naval Station, Guantanamo Bay, Cuba (sec. 1022)

The committee recommends a provision that would extend until December 31, 2020, the prohibition on the use of funds provided to the Department of Defense to construct or modify facilities in the United States to house detainees transferred from United States Naval Station, Guantanamo Bay, Cuba.

Extension of prohibition on use of funds for transfer or release of individuals detained at United States Naval Station, Guantanamo Bay, Cuba, to certain countries (sec. 1023)

The committee recommends a provision that would extend until December 31, 2020, the prohibition on the use of funds provided to the Department of Defense to transfer or release individuals detained at United States Naval Station, Guantanamo Bay, Cuba, to Libya, Somalia, Syria, and Yemen.

Extension of prohibition on use of funds to close or relinquish control of United States Naval Station, Guantanamo Bay, Cuba (sec. 1024)

The committee recommends a provision that would extend until fiscal year 2020 the prohibition on the use of funds provided to the Department of Defense: (1) To close or abandon United States Naval Station, Guantanamo; (2) To relinquish control of Guantanamo Bay to the Republic of Cuba; or (3) To implement a material modification to the Treaty between the United States of America and Cuba signed at Washington, D.C., on May 29, 1934, which

modification would constructively close United States Naval Station, Guantanamo Bay.

Authority to transfer individuals detained at United States Naval Station Guantanamo Bay, Cuba, to the United States temporarily for emergency or critical medical treatment (sec. 1025)

The committee recommends a provision that would authorize the temporary transfer of individuals detained at United States Naval Station, Guantanamo Bay, Cuba, to the United States for emergency or critical medical treatment not available at Guantanamo.

Chief Medical Officer at United States Naval Station, Guantanamo Bay, Cuba (sec. 1026)

The committee recommends a provision that would require the establishment of a Chief Medical Officer (CMO) at United States Naval Station, Guantanamo Bay, Cuba, to conduct oversight of medical care provided to individuals detained at Guantanamo to ensure that such medical care meets the standard of care as defined in the provision. The CMO would report directly to the Assistant Secretary of Defense for Health Affairs and hold a grade not below that of colonel, or captain in the Navy. The CMO would make medical determinations, including: (1) Decisions regarding assessment, diagnosis, and treatment; and (2) Determinations concerning medical accommodations to living conditions and operating procedures for detention facilities. In the event of the commander of Joint Task Force Guantanamo's declination to follow a determination of the CMO, the provision would require the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict and the Assistant Secretary of Defense for Health Affairs to jointly resolve the matter of such determination within 7 days of receipt of the notification of such declination. Additionally, the provision would authorize the CMO to secure access from the Department of Defense to any individual, information, or assistance that the CMO considers necessary to carry out the duties of the position.

The committee believes that detainees at Guantanamo should receive timely access to appropriate medical care. The committee is concerned that medical providers at Guantanamo may not have access to information in certain medical records that would inform diagnosis and treatment of medical conditions of detainees. The committee believes that this provision would help to ensure that detainees receive timely assessment, diagnosis, and treatment of their medical conditions.

Subtitle E—Miscellaneous Authorities and Limitations

Clarification of authority of military commissions under chapter 47A of title 10, United States Code, to punish contempt (sec. 1031)

The committee recommends a provision that would amend subchapter IV of chapter 47A of title 10, United States Code, to permit a judge of the United States Court of Military Commission Review or a military judge detailed to a military commission to punish con-

tempt. The provision would also provide that the punishment for contempt may not exceed confinement for 30 days, a fine of \$1,000, or both and would establish the conditions under which punishment for contempt is reviewable.

Comprehensive Department of Defense policy on collective self-defense (sec. 1032)

The committee recommends a provision that would require, not later than 60 days after the date of the enactment of this Act, the Secretary of Defense to promulgate a comprehensive written policy, detailing all aspects of the Department of Defense's approach to authorizing and providing collective self-defense by any member or unit of the U.S. Armed Forces to designated foreign nationals, their facilities, and their property, and to provide such comprehensive written policy to the congressional defense committees.

The committee understands that the Department of Defense defines collective self-defense as the defense of designated non-U.S. military forces, irregular partner forces, and/or their property from a hostile act or demonstrated hostile intent. Furthermore, the committee understands that the Department views collective self-defense as an extension of U.S. unit self-defense, regardless of whether U.S. personnel or facilities are threatened themselves.

The committee unquestionably supports the inherent right of U.S. military forces to defend themselves whenever and wherever they are deployed. However, the committee seeks greater understanding of the legal and policy basis for the provision of collective self-defense to designated foreign nationals, their facilities, and their property. This is especially true in situations in which U.S. personnel and facilities are not directly threatened. The committee believes that such issues merit detailed review by the Department and the promulgation of a comprehensive written policy to ensure appropriate clarity.

Oversight of Department of Defense execute orders (sec. 1033)

The committee recommends a provision that would require the Secretary of Defense, except in extraordinary circumstances, to provide the congressional defense committees with an execute order approved by the Secretary of Defense or a combatant commander for review within 30 days of receiving a written request from the Chairman or Ranking Member of any such committee.

Prohibition on ownership or trading of stocks in certain companies by Department of Defense officers and employees (sec. 1034)

The committee recommends a provision that would prohibit Department of Defense officials who participated personally and substantially in an acquisition valued in excess of \$10,000,000 and occupy a position on the Executive Schedule, are a member of the Senior Executive Service, or are a General or Flag Officer or who served as program manager, deputy program manager, procuring contracting officer, administrative contracting officer, source selection authority, member of a source selection evaluation board, or chief of a financial or technical evaluation team for a contract in

excess of \$10.0 million from owning or trading a publicly traded stock of a company that, during the preceding calendar year, received more than \$1.0 billion in revenue from the Department of Defense, including through contracts with the Department.

The provision would further provide that no officer or employee of the Department of Defense may own or trade a publicly traded stock of a company that is a contractor or subcontractor of the Department, if the Standards of Conduct Office of the Office of the General Counsel of the Department of Defense determines that the value of the stock may be directly or indirectly influenced by any official act of that officer or employee.

Any official who knowingly fails to comply with these requirements would be subject to administrative action by the Secretary of Defense. The definition of publicly traded stock does not include a widely-held investment fund, for purposes of this provision.

Policy regarding the transition of data and applications to the cloud (sec. 1035)

The committee recommends a provision that would require the Chief Information and Chief Data Officers of the Department of Defense to develop and implement a policy relating to the transition of data and applications to the cloud under the Department's cloud strategy.

Modernization of inspection authorities applicable to the National Guard and extension of inspection authority to the Chief of the National Guard Bureau (sec. 1036)

The committee recommends a provision that would amend section 105 of title 32, United States Code, to authorize the Chief of the National Guard Bureau to conduct inspections to determine whether units and members of the Army National Guard and Air Force National Guard comply with Federal law and policy applicable to the National Guard.

Enhancement of authorities on forfeiture of Federal benefits by the National Guard (sec. 1037)

The committee recommends a provision that would amend section 108 of title 32, United States Code, to provide that the availability of Federal funds provided to the National Guard of individual States is contingent upon compliance with Federal law and policy applicable to the National Guard. The provision would also authorize the President to withdraw Federal recognition of National Guard units and members for failure to comply with Federal law and policy and would authorize the President to bar units and individuals from receiving Federal funds if the unit or individuals fail to comply with Federal law and policy.

Modernization of authorities on property and fiscal officers of the National Guard (sec. 1038)

The committee recommends a provision that would amend section 708 of title 32, United States Code, to require the Chief of the National Guard Bureau, subject to the approval of the secretary of the military department concerned, to assign, designate, or detail

property and fiscal officers for each State, each territory, and the District of Columbia.

Limitation on placement by the Under Secretary of Defense for Personnel and Readiness of work with federally funded research and development centers (sec. 1039)

The committee recommends a provision that would prohibit the Under Secretary of Defense for Personnel and Readiness from placing any work with a federally funded research and development center (FFRDC) until a report containing a list of all studies, reports, and other analyses being undertaken for the Under Secretary is submitted to the Committees on Armed Services of the Senate and the House of Representatives.

Federally funded research and development centers are closely monitored by the Congress due to their unique access to sensitive, pre-decisional government information. Every year, the Department of Defense must submit a report outlining the number of staff years of technical effort and funding allocated to each FFRDC. In fiscal year 2017, the Under Secretary of Defense for Personnel and Readiness spent in excess of \$50 million on FFRDC products.

In performing its oversight role over the Department of Defense, the committee frequently receives pre-decisional, sensitive, and confidential information. For hardware acquisition, the committee reviews analyses of alternatives and requirements documents to determine whether a particular acquisition strategy is appropriate. For personnel management, the committee is entitled to similar information related to assessments of possible policy decisions.

The committee emphasizes the continued importance of FFRDC analyses. The limitation included in this provision is not intended to harm or otherwise threaten any particular FFRDC.

Termination of requirement for Department of Defense facility access clearances for joint ventures composed of previously-cleared entities (sec. 1040)

The committee recommends a provision that would prohibit the requirement for joint ventures that are composed entirely of entities that already have been granted facility clearances to obtain an additional clearance for the venture.

Designation of Department of Defense Strategic Arctic Ports (sec. 1041)

The committee recommends a provision that would require the Secretary of Defense, in consultation with the Chairman of the Joint Chiefs of Staff, the Commanding General of the United States Army Corps of Engineers, the Commandant of the Coast Guard, and the Administrator of the Maritime Administration, to submit a report to the congressional defense committees evaluating potential sites for one or more strategic ports in the Arctic region. The provision would also require the Secretary of Defense to designate one or more ports as Department of Defense Strategic Arctic Ports not later than 90 days after the submission of the report.

Extension of National Security Commission on Artificial Intelligence (sec. 1042)

The committee recommends a provision that would delay the termination of the National Security Commission on Artificial Intelligence to March 1, 2021. The provision also modifies the due date of the initial report to not later than August 1, 2019, requires two interim reports that shall be submitted not later than December 1, 2019, and December 1, 2020, and requires a final report that shall be submitted not later than March 1, 2021.

Authority to transfer funds for Bien Hoa dioxin cleanup (sec. 1043)

The committee recommends a provision that would allow the Secretary of Defense to transfer to the Secretary of State, for use by the United States Agency for International Development, funds to be used for the Bien Hoa dioxin cleanup.

Limitation on use of funds to house children separated from parents (sec. 1044)

The committee recommends a provision that would prohibit the use of funds authorized to be appropriated by this Act to house a child separated from a parent.

Subtitle F—Studies and Reports

Modification of annual reporting requirements on defense manpower (sec. 1051)

The committee recommends a provision that would amend section 115a of title 10, United States Code, to rename, change the due date of, and modify the elements of the Defense Manpower Requirements Report. The provision would also require that the (renamed) Defense Manpower Profile Report be delivered to the Congress each year by April 1. Additionally, the provision would repeal reporting requirements related to contractor personnel, major military force unit justifications, support and overhead manpower functions, overseas manpower, medical personnel, and the military technician program. Finally, the provision would set separate due dates for reporting requirements related to major Department of Defense headquarters activities and the diversity of the Armed Forces.

Report on Department of Defense efforts to implement a force planning process in support of implementation of the 2018 National Defense Strategy (sec. 1052)

The committee recommends a provision that would require the Under Secretary of Defense for Policy to provide a report, not later than February 1, 2020, on Department of Defense efforts to institute a force planning process that supports the implementation of the National Defense Strategy.

The National Defense Strategy asserts that the U.S. military advantage with respect to strategic competition with the People's Republic of China and the Russian Federation has been eroding. The strategy concludes that the Department must pursue "urgent change at significant scale" to avoid a joint force that is irrelevant

to the threats it will face. The Department must make difficult choices to prioritize rapid adaptation of the joint force to meet these challenges. Furthermore, the lack of a rigorous analytical force planning process that includes joint analytical capability makes it difficult to overcome the interests of the Services in protecting their force structure equities.

Key products of the force planning process include concepts of operations that the Services can use to help evaluate their individual force structure requirements. The National Defense Strategy Commission report highlights that “[o]perational concepts constitute an essential link between strategic objectives and the capability and budgetary priorities needed to advance them.” The commission concluded, “Unfortunately, the innovative operational concepts we need do not currently appear to exist.”

The committee notes that the Government Accountability Office made three recommendations in a March 2019 report titled “Revised Analytic Approach Needed to Support Force Structure Decision-Making” (GAO-19-385) to improve the Department’s analytic approach to force planning: (1) Determine the analytic products needed at the right level of detail; (2) The Secretary of Defense should ensure that specific guidance requiring the Services to explore a range of innovative force structure approaches is given; and (3) The Secretary of Defense should establish an approach for conducting joint analyses in addition to current disparate service-specific analyses.

The committee is concerned that an anemic force planning process that does not provide a rigorous analytical basis to evaluate and prioritize force structure approaches will at worst preclude successful implementation of the National Defense Strategy and will at best make the process inefficient.

Extension of annual reports on civilian casualties in connection with United States military operations (sec. 1053)

The committee recommends a provision that would extend through December 31, 2025, the reporting requirement established by section 1057 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115-91).

Report on joint force plan for implementation of strategies of the Department of Defense for the Arctic (sec. 1054)

The committee recommends a provision that would require the Secretary of Defense, in coordination with Secretaries of the military departments, to submit a joint force plan for implementing the Department of Defense’s December 2016 Report to Congress on the Strategy to Protect United States National Security Interests in the Arctic Region and the updated Arctic strategy to improve and enhance joint operations, which was mandated in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232).

Report on use of Northern Tier bases in implementation of Arctic strategy of the United States (sec. 1055)

The committee recommends a provision that would direct the Secretary of Defense to submit a report to the congressional de-

fense committees on the use of bases in northern latitudes, including Northern Tier bases, for implementing the recommendations in the December 2016 “Report to Congress on Strategy to Protect United States National Security Interests in the Arctic Region” and the updated Arctic strategy required to be submitted to the congressional defense committees under section 1071 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232).

Report on the Department of Defense plan for mass-casualty disaster response operations in the Arctic (sec. 1056)

The committee recommends a provision that would require the Secretary of Defense, in coordination with the Secretary of Homeland Security, to submit a report on the plan of the Department of Defense for assisting mass-casualty disaster response operations in the Arctic.

Annual reports on approval of employment or compensation of retired general or flag officers by foreign governments for Emoluments Clause purposes (sec. 1057)

The committee recommends a provision that would modify section 908 of title 37, United States Code, to require the Secretaries of the military departments to submit annually to appropriate committees and Members of Congress a joint report enumerating each approval issued during the preceding year for a retired general or flag officer to accept civil employment or compensation for which the consent of Congress is required by the last paragraph of Section 9 of Article I of the Constitution, related to acceptance of emoluments, offices, or titles from a foreign government. The provision would require the first report to cover the 5-year period preceding the year in which the report is submitted.

Transmittal to Congress of requests for assistance received by the Department of Defense from other departments (sec. 1058)

The committee recommends a provision that would require the Secretary of Defense to transmit electronically requests for assistance received from the Department of Homeland Security or the Department of Health and Human Services to the Committees on Armed Services of the Senate and the House of Representatives not later than 7 calendar days after receiving those requests. The provision also requires the Secretary to transmit any responses to such requests.

Semiannual report on Consolidated Adjudication Facility of the Defense Counterintelligence and Security Agency (sec. 1059)

The committee recommends a provision that would require, not less frequently than semi-annually until the Director of the Defense Counterintelligence and Security Agency (DCSA) determines that a steady-state level has been achieved for the Consolidated Adjudication Facility of the Agency, the Director to submit to the congressional defense committees a report on inventory and timeliness metrics relating to such facility. The committee notes that

elsewhere in this Act is a recommended increase of \$10.0 million to support the Consolidated Adjudication Facility of the DCSA.

Comptroller General of the United States report on post-government employment of former Department of Defense officials (sec. 1060)

The committee recommends a provision that would require the Comptroller General of the United States to initiate a review, not later than 90 days after the date of the enactment of this Act, updating the information and findings contained in the Government Accountability Office report titled “Defense Contracting: Post-Government Employment of Former DOD Officials Needs Greater Transparency” (GAO-08-485).

Subtitle G—Treatment of Contaminated Water Near Military Installations

Treatment of contaminated water near military installations (secs. 1071–1075)

The committee recommends a series of provisions (secs. 1071–1075) that would allow the Secretaries of the military departments to provide uncontaminated water sources or to treat water contaminated with perfluoroalkyl and polyfluoroalkyl substances if the water is used for agricultural purposes leading to products destined for human consumption. Additionally, these provisions would authorize the Secretary of the Air Force to acquire real property that has shown signs of contamination from perfluorooctanoic and perfluorooctane sulfonate.

Subtitle H—Other Matters

Revision to authorities relating to mail service for members of the Armed Forces and Department of Defense civilians overseas (sec. 1081)

The committee recommends a provision that would amend section 3401 of title 39, United States Code, to clarify that Active-Duty servicemembers and Department of Defense civilian employees providing support to military operations are authorized to mail personal correspondence at no cost when deployed for a contingency operation in an area designated by the President. The provision would also extend the free mail program to all hospitalized servicemembers wounded in a designated area. Finally, the provision would allow certain mail between military post offices or from a military post office to a point of entry into the United States to be transported by surface shipment.

Access to and use of military post offices by United States citizens employed overseas by the North Atlantic Treaty Organization who perform functions in support of military operations of the Armed Forces (sec. 1082)

The committee recommends a provision that would modify section 406 of title 39, United States Code, to permit the Secretary of Defense to authorize the use of military post offices in locations outside the United States by citizens of the United States who are

employed by the North Atlantic Treaty Organization and who perform functions in support of the Armed Forces.

Guarantee of residency for spouses of members of uniformed services (sec. 1083)

The committee recommends a provision that would amend Title VI of the Servicemembers Civil Relief Act (Public Law 108–189; 50 U.S.C. 4021 et seq.) to allow military spouses to use the same residences as their servicemembers for any purpose, regardless of the date on which the marriage occurred.

Extension of requirement for briefings on the national bio-defense strategy (sec. 1084)

The committee recommends a provision that would amend section 1086(d) of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) by extending to March 1, 2025, the requirement for annual briefings on the status and implementation plan of the National Biodefense Strategy.

The committee recognizes the broad spectrum of stakeholders in the biodefense sector and directs the Secretary of Defense to solicit and consider input from these stakeholders as it develops and implements the National Biodefense Strategy. Stakeholders include private industry partners responsible for the development and production of medical countermeasures, experts with relevant expertise in biological and emerging infectious diseases, State and local public health departments, and other organizations, as appropriate.

The committee also directs the Comptroller General of the United States to conduct a review of Department of Defense investments in biodefense. This review shall include assessment of historical funding levels, an analysis of investments in research and development, and an analysis of investments in procurement. The Comptroller General shall provide a briefing on the preliminary findings to the congressional defense committees not later than March 1, 2020, with a final report to be provided at a mutually agreed upon time.

Extension of National Commission on Military Aviation Safety (sec. 1085)

The committee recommends a provision that would delay the due date of the report of the National Commission on Military Aviation Safety by 9 months to December 1, 2020. The committee believes that the Secretary of Defense should take all appropriate actions to increase aircraft maintenance availability and pilot training and proficiency to ensure the highest levels of flight safety. The committee is concerned that the current due date would not afford the commission the time needed to fully examine and make recommendations regarding military mishaps.

Items of Special Interest

Allocation of Military Forces

The committee notes, and in general concurs with, the concerns of the 2018 National Defense Strategy Commission, which was charged with reviewing the National Defense Strategy and making

recommendations to Congress. Specifically, the Commission raised significant concerns about the current state of civilian-military relationships, particularly in the decision-making process for allocating military forces. As the Commission states, “Put bluntly, allocating priority and allocating forces across theaters of warfare is not solely a military matter. It is an inherently political-military task, decision authority for which is the proper competency and responsibility of America’s civilian leaders.” The Commission further recommends that, “It is critical that DoD—and Congress—reverse the unhealthy trend in which decision-making is drifting away from civilian leaders on issues of national importance.”

The principle of civilian control of the Armed Forces is the bedrock of civilian-military relations, and it is one of the defining tenets of our democracy. While this committee has previously supported enhancing the responsibilities and functions of the Chairman of the Joint Chiefs of Staff, we underscore that the Chairman serves in an advisory role to the President and the Secretary of Defense and remains outside the chain of command. Therefore, the committee restates that it is appropriate and necessary that the decision-making authority for force allocation resides with the civilian leadership of the Department of Defense and notes the requirement elsewhere in this Act to reestablish a more robust and analytically sound force planning process to support that decision-making.

Assessment of the Requirement for a Strategic Arctic Port

The Committee notes that the report titled “Department of Defense Assessment of Requirement for a Strategic Arctic Port,” which was mandated in section 1095 of the Fiscal Year 2017 National Defense Authorization Act (Public Law 114–840) and delivered to the congressional defense committees in early 2018, concluded that, “existing [Department of Defense] infrastructure in the [Arctic] region is adequate to meet its current operational requirements.” The committee directs the Secretary of Defense to update the committee on whether the conclusion of this report has changed.

Assignment of responsibility for the Arctic to a deputy assistant secretary of defense

The committee notes that the strategic importance of the Arctic continues to increase as the United States and other countries recognize the military significance of the Arctic’s sea lanes and choke points and its potential for power projection into multiple regions. The committee also recognizes that the Department of Defense’s mission requirements in the Arctic are expected to grow, as increases in human and maritime activity bring heightened risk of maritime accidents, oil spills, illegal fishing, harvesting of other natural resources in the exclusive economic zone of the United States, and other potential threats or challenges to United States sovereignty.

Therefore, the committee strongly urges the Secretary of Defense to assign to an existing deputy assistant secretary of defense the primary responsibility for the Arctic region, in order to coordinate the formation of Arctic defense policy with relevant Department of Defense entities.

The committee also notes that a similar request was made in the Senate report accompanying S. 2987 (S. Rept. 115–262) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019; the Department has yet to act on this request.

Briefing on civilian casualties

The committee directs the Secretary of Defense to provide, not later than August 1, 2019, a briefing to the Senate Armed Services Committee on the most recent annual report on civilian casualties in connection with United States military operations that has been submitted to Congress pursuant to section 1057 of the National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–91), as most recently amended by section 1062 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232), which shall include, at a minimum, a discussion of the roles of manned and unmanned aircraft in operations that were confirmed to have resulted in civilian casualties and lessons learned from such operations.

Combatant command pandemic planning

The committee directs the Chairman of the Joint Chiefs of Staff to submit a report to the congressional defense committees no later than March 31, 2021, on efforts at each combatant command for pandemic planning. This report shall be coordinated with the Centers for Disease Control and Prevention as well as other appropriate federal agencies that the combatant commanders deem appropriate.

Eliminating delays in initiating support to Government Accountability Office audits

The ability of the Congress to conduct effective oversight of federal agencies, including the Department of Defense (DOD), is enhanced through the timely completion of Government Accountability Office (GAO) audits. Longstanding GAO protocols, coordinated with the DOD and other federal agencies and updated most recently in 2019, establish general principles governing GAO's relationships with audited agencies. These protocols require agencies to assist the GAO in scheduling an initial meeting, called an entrance conference, within 14 calendar days of receiving notice of a new GAO audit. This initial meeting allows the GAO to communicate the initial objectives for its audit, and enables key agencies to task points of contact to support GAO's work. The DOD has not been meeting the protocol target for the timely conduct of entrance conferences, and a number of entrance conferences and the associated audits have been unduly delayed.

Therefore, for a 1-year period, beginning on October 1, 2019, the committee directs the GAO and the DOD to provide quarterly updates to congressional defense committees on the extent to which entrance conferences with the DOD are being scheduled in accordance with GAO protocols and held in a timely manner.

GAO's update shall include the following information for the prior 3-month period: (1) The number of new GAO audits for which the GAO requested an entrance conference with the DOD during the period; (2) The unique identifier for each audit for which an en-

trance conference was not scheduled within 14 calendar days of the DOD's being notified of GAO's request for an entrance conference; and (3) The unique identifier for each audit for which an entrance conference was not held within 30 calendar days of the DOD's being notified of the request for an entrance conference.

The GAO shall provide this report to the congressional defense committees and the DOD within 30 calendar days of the end of each 3-month period. The DOD shall deliver a written response to the committees and the GAO not later than 15 calendar days after the GAO provides its report to the DOD.

DOD's response shall include the following information: (1) Of the entrance conferences that the GAO identified as not having been scheduled within 14 calendar days or not having been held within 30 calendar days, which entrance conferences, by unique GAO audit identifier, have since been scheduled and/or held; (2) The factors that contributed to delays in scheduling and holding entrance conferences; and (3) Actions the DOD has taken or plans to take to address factors that contributed to delays and to ensure future adherence to the established timeframes for entrance conferences.

Evaluation of modeling and simulation used for force planning and theater operational requirements

The committee notes that the Department of Defense uses a large number and variety of computer models and simulations to support decision-making about force structure, resource allocation, war gaming, and priority weapons platforms and technologies to develop and deploy in support of likely operational scenarios. These models are used to develop information to brief decision makers, including the Congress, about, for example, the current state of the balance of forces in the Pacific and European theaters, the outcomes of likely war scenarios, and the need for investments in advanced technologies and new warfighting capabilities.

The committee is concerned that the quality, accuracy, and dependability of these models, given their important role in decision making processes, has not been adequately validated. The committee notes that technical and engineering computer models used to develop systems such as body armor and missiles are rigorously verified and validated for veracity of assumptions and technical accuracy using real world data. Other models, such as those used in the financial sector, are developed using expertise from a variety of disciplines, including economics, sociology, and advanced mathematics. The committee is concerned that the models used by organizations including the Joint Staff, Office of Net Assessment, war colleges, and service-level planning entities are simplistic by comparison and not subject to the same level of scrutiny.

Therefore, the committee directs the Secretary of Defense to establish an independent team of academic and industry modeling and subject matter experts to review the quality of modeling and simulation used for force planning, war gaming, resource allocation, and other senior leader decision-making associated with implementation of the National Defense Strategy. The team shall review the technical quality of models currently in use, including their ability to simulate as required by application: physics and en-

gineering, socio-economic impact, readiness, global financial markets, politics, and other relevant inputs and outputs. The team shall assess the quality of these models and make recommendations for investments or policy changes needed to enhance and continuously validate current and future modeling and simulation tools employed to enable senior-level decision-making.

The committee directs the Secretary to support the team with expertise as needed from the Joint Staff, Office of Net Assessment, Under Secretary of Defense for Research and Engineering, and other relevant organizations. The Secretary shall ensure that the team has sufficient resources and access to all data and records necessary to perform its analysis. The committee directs the Secretary to deliver a report on the independent team's assessments and recommendations with any additional comments, and a specific concurrence or non-concurrence for each recommendation, to the Committees on Armed Services of the Senate and House of Representatives no later than December 31, 2020.

Information on Defense Spending

The committee notes that past years' appropriations bills have required recipients of funds from the Departments of Defense, Agriculture, Education, Health and Human Services, and Labor to disclose in statements, press releases, and other documents that describe projects or programs the total cost of the activities that were paid for with federal dollars. This requirement no longer applies to the Department of Defense and Department of Agriculture. The committee believes this requirement should again apply to the Department of Defense. The committee believes that this would ensure transparency in Department of Defense spending on grants and individual projects.

The committee directs the Under Secretary of Defense (Comptroller) to provide a briefing to the congressional defense committees, no later than March 1, 2020, on how the Department would implement such a requirement.

Public availability of Department of Defense reports required by law

The committee notes that the Department of Defense is required by section 122a of title 10, United States Code, to ensure that reports are made available to the public, to the maximum extent practicable, by posting the reports on a publicly accessible website. Although the committee understands that exceptions to such posting requirements exist for reports containing classified or proprietary information, or information exempt from disclosure under the Freedom of Information Act (Public Law 89-487; 5 U.S.C. 552) the committee believes that the Department should make at least reasonable efforts to post all other reports on a publicly accessible website. Were the Department to demonstrate compliance with section 122a, the committee would be interested in exploring means of reducing the administrative burden to the Department associated with generating and delivering hard copy paper reports to the committee.

Report on the impacts of continuing resolutions

The committee is concerned by the lack of stability and predictability associated with the congressional budget and appropriations process and, specifically, the effect that Continuing Resolutions (CRs) have on the operations of the Department of Defense (DOD). While the Department often identifies anecdotal detrimental effects of CRs, the DOD has never conducted a comprehensive study that analyzes the exact damage caused by a CR or series of CRs. Therefore, the committee directs the Under Secretary of Defense (Comptroller) to provide a report to the Committees on Armed Services of the Senate and House of Representatives by March 2, 2020, detailing the impacts of CRs on the DOD.

The report shall, at a minimum, include assessments of how CRs affect: (1) Operations and activities of the Services; (2) Operations and activities of the combatant commands; (3) Acquisition and contracting, including the awarding of new contracts, obligations, and expenditures; (4) The defense industrial base; (5) Budgets, with an estimate of the additional costs to the DOD caused by CRs; and (6) Such other operations, programs, projects, and activities as the Secretary considers appropriate in order to provide to the Congress a comprehensive understanding of the full impacts of CRs.

TITLE XI—CIVILIAN PERSONNEL MATTERS

Modification of temporary assignments of Department of Defense employees to a private-sector organization (sec. 1101)

The committee recommends a provision that would amend section 1599g(e)(2)(A) of title 10, United State Code, to allow the Department of Defense to temporarily transfer or reassign other personnel within the Department to perform the normal duties and functions of employees who are participating in a public-private talent exchange.

Modification of number of available appointments for certain agencies under personnel management authority to attract experts in science and engineering (sec. 1102)

The committee recommends a provision that would increase the number of section 1599h billets available to the Defense Advanced Research Projects Agency (DARPA) by 30, bringing the total from 100 to 130, and decreasing the number of section 1599h billets available to the laboratories of the military departments from 40 to 10. Consistent with its support of the National Defense Strategy, the DARPA is accelerating its work in hypersonics, artificial intelligence, and microelectronics and is standing up rapid deployment efforts with other parts of the Department of Defense (DOD), all of which require bringing on additional specialized expertise.

The committee believes that it is important for the DOD to be able to hire experts in science and engineering. Section 1599h of title 10, United States Code, authorizes an expedited hiring processes in order to attract and quickly employ world-class experts from the private sector and academia. The committee understands that allocating additional billets to the DARPA for this expedited hiring process is critical in developing emerging technologies critical to the DOD.

One-year extension of temporary authority to grant allowances, benefits, and gratuities to civilian personnel on official duty in a combat zone (sec. 1103)

The committee recommends a provision that would extend by 1 year the discretionary authority of the head of a Federal agency to provide allowances, benefits, and gratuities comparable to those provided to members of the Foreign Service to the agency's civilian employees on official duty in a combat zone.

One-year extension of authority to waive annual limitation on premium pay and aggregate limitation on pay for Federal civilian employees working overseas (sec. 1104)

The committee recommends a provision that would amend section 1101 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law 110–417), as most recently amended by section 1104 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232), to extend through 2020 the authority of heads of executive agencies to waive limitations on the aggregate of basic and premium pay of employees who perform work in an overseas location that is in the area of responsibility of the commander of U.S. Central Command (CENTCOM), or a location that was formerly in CENTCOM but is now in the area of responsibility of the Commander, U.S. Africa Command, in support of a military operation or an operation in response to a declared emergency.

Reimbursement of Federal employees for Federal, State, and local income taxes incurred during travel, transportation, and relocation (sec. 1105)

The committee recommends a provision that would amend section 5724b of title 5, United States Code, to authorize Federal agencies to reimburse individuals associated with the Federal civil service for all taxes incurred as a result of travel, transportation, or relocation expenses reimbursed, or furnished in-kind, by the agency concerned. This provision would apply to travel, transportation, or relocation expenses incurred on or after the date of the enactment of this Act.

Items of Special Interest

Analysis of competitive salary and benefits for STEM professionals

As the Department of Defense (DOD) continues to field increasingly sophisticated equipment and technology, it is crucial that the Department build a workforce that is capable of maximizing the benefit such new technology provides. The committee recognizes that the military and civilian personnel required in the future must be well-trained in the fields of science, technology, engineering, and math (STEM). Despite this well-known need, the committee believes that the Department of Defense is currently poorly suited to attracting personnel who have the necessary STEM backgrounds. The committee notes that new authorities to enhance competition for a small set of technical experts can help balance a compensation mismatch with the private sector but will not be enough to match private sector salaries. The committee notes that only the institution of improved “total compensation packages,” including student loan repayments, flexibility in schedules and work environments, professional development experiences and opportunities, and other non-financial rewards, will enable the government to compete with the private sector and foreign governments for a limited pool of global STEM talent.

Therefore, the committee directs the Under Secretary of Defense for Personnel and Readiness to coordinate with the Office of Per-

sonnel Management and Bureau of Labor Statistics to conduct an analysis of compensation for the STEM workforce required by the Department of Defense. The analysis shall include: (1) An identification of the categories of STEM workers the DOD will require to meet the needs of the National Defense Strategy; (2) A comparison of private-sector compensation and the compensation provided by the Department of Defense for the identified STEM worker categories, including an assessment of the level of compensation necessary to recruit and retain qualified STEM workers in the DOD; and (3) Policy options and recommendations to improve DOD's ability to provide competitive total compensation packages to the STEM workforce. The committee notes that the Department has a need to hire STEM experts at the entry-, mid-career, and senior technical and managerial levels, and thus the analysis should reflect this diversity of needs and recommend appropriately differentiated policy options. The Under Secretary shall provide a briefing on the results of this analysis to the Committees on Armed Services of the Senate and the House of Representatives by April 1, 2020.

Appointments of retired members of the Armed Forces to positions in the Department of Defense

Section 1111 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) repealed the authority of the Secretaries of the military departments to waive the restriction on the appointment of retired members of the Armed Forces to positions in the civil service in the Department of Defense within 180 days of a servicemember's retirement based on a state of national emergency. At the time, the committee was concerned that the Department was abusing the national security waiver and undermining the long-standing merit principles upon which the Federal civil service is based.

The committee remains supportive of this change and notes that the relevant statute provides a straightforward process to the Secretaries of the military departments in the event that they wish to hire retired servicemembers within the 180-day post-retirement timeframe. In particular, section 3326(c) of title 5, United States Code, outlines the process that the Secretaries of the military departments must perform to hire a recently retired servicemember. The assurances provided in this process guarantee that the best qualified applicant, regardless of prior military service, is hired into a vacant Department of Defense civil service position. In short, the Secretaries of the military departments must demonstrate that minimum competitive procedures were followed in assessing the pool of eligible and interested applicants prior to making the selection.

The committee notes that current law does not prevent retirees from applying for a position within the 180-day post-retirement timeframe nor does the law prohibit the hiring of such individual. The law merely requires that the Secretaries of the military departments give due consideration to other qualified and interested candidates prior to making the selection. The committee urges the Secretaries of the military departments to make full use of the ex-

isting process for hiring recently retired servicemembers, consistent with applicable law, policy, and merit principles.

Promulgation and delegation of Department of Defense direct hire authority

Section 1101 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) provided direct hire authority for an extensive number of Department of Defense (DOD) civil service positions, giving the Secretary of Defense the necessary tools to expedite hiring of civilian personnel into positions involving maintenance, depots, cybersecurity, acquisition, and science, technology, and engineering.

The authority to hire qualified personnel using this authority can and should be delegated to Secretaries of the military departments, directors of Defense Agencies, and directors of DOD field activities. The committee encourages the Secretary of Defense to delegate this authority to the lowest practical level to ensure that the Department achieves the maximum benefit of this authority while ensuring proper oversight.

Report on investments in national security human capital

The committee acknowledges the clear recommendations of the National Defense Strategy, National Defense Strategy Commission Report, and Defense Innovation Board report emphasizing the growing need for investment in human capital to support U.S. national security objectives. Further, the committee acknowledges and supports the substantial investments made by the Department of Defense and others to better develop expertise in critical national security-related career fields. The committee is eager to identify additional opportunities to support initiatives with the goal of increasing the number of Americans who have the skills required to advance national security.

Therefore, the committee directs the Under Secretary of Defense for Personnel and Readiness, in consultation with the Chief Information Officer, to provide a report to the Committees on Armed Services of the Senate and the House of Representatives no later than March 1, 2020, that discusses investments in national security human capital. This report shall identify and summarize programs that currently exist to educate and recruit personnel who possess critical skills. Critical skills include, but are not limited to, those in cybersecurity, science, technology, engineering, math, innovation, computer science, and critical languages. The report shall evaluate the effectiveness of each program and identify common factors that contribute to programs' successes or failures to achieve their goals. In addition, this report shall: (1) Identify opportunities to facilitate, enhance, streamline, or enable these programs; (2) Assess the feasibility of those options; and (3) Provide recommendations to improve the overall outreach and effectiveness of these programs through reorganization and additional investment or resources.

Specific attention should be paid to efforts to recruit recent graduates with the necessary security clearances and propensity to serve in national security-related fields, in both uniformed and civilian capacities. In preparing this report, opportunities to align

and enhance ongoing research and development partnerships or other national security innovation activities with education and recruiting activities through consortia or other methods should also be considered.

TITLE XII—MATTERS RELATING TO FOREIGN NATIONS

Subtitle A—Assistance and Training

Extension of support of special operations for irregular warfare (sec. 1201)

The committee recommends a provision that would extend for 5 years section 1202 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91).

Extension of authority for cross servicing agreements for loan of personnel protection and personnel survivability equipment in coalition operations (sec. 1202)

The committee recommends a provision that would extend the authority for cross-servicing agreements for loan of personnel protection and survivability equipment in coalition operations in Afghanistan through 2024.

Two-year extension of program authority for Global Security Contingency Fund (sec. 1203)

The committee recommends a provision that would extend for 2 years section 1207 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81; 22 U.S.C. 2151 note), relating to the Global Security Contingency Fund.

Modification of reporting requirement for use of funds for security cooperation programs and activities (sec. 1204)

The committee recommends a provision that would amend section 381(b) of title 10, United States Code, to change the deadline for submission of the quarterly report on the use of security cooperation funds from 30 days after the end of each calendar quarter to 60 days after the end of each calendar quarter.

Institutional legal capacity building initiative for foreign defense forces (sec. 1205)

The committee recommends a provision that would authorize the Secretary of Defense to carry out, consistent with section 332 of title 10, United States Code, a program of institutional legal capacity building with one or more foreign countries to enhance the capacity to organize and administer the military legal institutions of such country or countries. The committee notes that this provision is consistent with the direction of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) for the Department of Defense to prioritize institutional capacity building as a critical component of its security cooperation efforts with foreign partners.

Department of Defense support for stabilization activities in national security interest of the United States (sec. 1206)

The committee recommends a provision that would authorize the Secretary of Defense, with the concurrence of the Secretary of State and in consultation with the Administrator of the United States Agency for International Development, to provide certain support for the stabilization activities of other Federal agencies.

Subtitle B—Matters Relating to Afghanistan and Pakistan

Extension of authority to transfer defense articles and provide defense services to the military and security forces of Afghanistan (sec. 1211)

The committee recommends a provision that would extend authority to transfer defense articles and provide defense services to the military and security forces of Afghanistan through December 31, 2021.

Afghanistan Security Forces Fund (sec. 1212)

The committee recommends a provision that would authorize the appropriation of funds for the Afghanistan Security Forces Fund for fiscal year 2020. The provision would also authorize the Secretary of Defense to accept any equipment that was procured using funds appropriated for the Afghanistan Security Forces Fund that the security forces of Afghanistan did not accept. The provision would authorize a portion of the amount appropriated to the Afghanistan Security Forces Fund to be used for recruiting and integrating women into the Afghan National Defense and Security Forces.

The committee understands that the Resolute Support Mission leadership, and in particular the Combined Security Transition Command—Afghanistan, has conducted significant analysis to ensure that our advisory efforts, both at the institutional and the operational levels, are right-sized and effectively aligned to refocus the advisory effort on strategic capabilities development. The committee commends the command for this examination and seeks further information regarding this realignment and refocus.

Extension of Commanders' Emergency Response Program (sec. 1213)

The committee recommends a provision that would extend the authorization for the Commanders' Emergency Response Program in Afghanistan through December 31, 2020, and would authorize \$5.0 million for that program for use during calendar year 2020.

Extension and modification of reimbursement of certain coalition nations for support provided to United States military operations (sec. 1214)

The committee recommends a provision that would extend the authority for reimbursement of certain coalition nations for support provided to United States military operations through December 31, 2020. The provision would also modify this authority to eliminate the authorization of these reimbursements for Pakistan, as reimbursements for Pakistan's efforts to sustain security along its

border with Afghanistan are already authorized under section 1213 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232).

Support for reconciliation activities led by the Government of Afghanistan (sec. 1215)

The committee recommends a provision that would authorize the Department of Defense to provide support for bottom-up, Government of Afghanistan-led reconciliation activities.

Sense of Senate on special immigrant visa program for Afghan allies (sec. 1216)

The committee recommends a provision that would express support for the special immigrant visa program for Afghan allies. The committee views this program as vital to the United States mission in Afghanistan. Afghans routinely risk their lives to assist United States military and diplomatic personnel and further U.S. interests. The committee supports making an additional 4,000 visas available to those eligible for special immigrant status under the Afghan Allies Protection Act of 2009 (8 U.S.C. 1101 note).

Subtitle C—Matters Relating to Syria, Iraq, and Iran

Modification of authority to provide assistance to vetted Syrian groups (sec. 1221)

The committee recommends a provision that would modify section 1209 of the Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113–291) by extending the authority to provide assistance to vetted Syrian groups through 2020. The provision would additionally modify the authority to support the temporary detention and repatriation of Islamic State of Iraq and Syria (ISIS) foreign terrorist fighters in accordance with the Laws of Armed Conflict and Geneva Conventions. The provision would also expand the section 1209 reporting requirement to include: a description of the training and support provided to appropriately vetted Syrian groups, a description of U.S. government stabilization activities being carried out in areas that these groups control, and a description of U.S. government support provided to facilitate the repatriation of ISIS foreign terrorist fighters.

Extension of authority and limitation on use of funds to provide assistance to counter the Islamic State of Iraq and Syria (sec. 1222)

The committee recommends a provision that would extend the authority to provide assistance to counter the Islamic State of Iraq and Syria through December 31, 2021. The provision would authorize the use of Overseas Contingency Operations funds to this effect. However, under this provision, not more than \$375.0 million authorized for such purposes could be obligated or expended until the Secretary of Defense submits a report to the congressional defense committees that includes: an identification of specific units of the Iraqi Security Forces to be trained and equipped; a plan for normalizing security assistance to the Iraqi Security Forces under per-

manent authorities; an explanation of efforts to transition responsibility for funding the Iraqi Security Forces to the Iraqi government in future years; and other matters. The committee supports a transition towards a normalized and sustainable bilateral defense relationship with Iraq. The committee remains strongly committed to Iraq's internal security and stability and urges the Department of Defense to continue assistance to the Iraqi government for such purposes, including through cooperative defense programs.

Extension and modification of authority to support operations and activities of the Office of Security Cooperation in Iraq (sec. 1223)

The committee recommends a provision that would extend the authorization for the Office of Security Cooperation in Iraq through Fiscal Year 2020 and would amend the Office's authority to support security cooperation activities in Iraq. The provision would reduce the funds available for this authority from \$45.3 million to \$30.0 million. The committee expects the Office of Security Cooperation in Iraq to transition to a normalized security cooperation office and directs the department to report on its strategy for implementing this transition.

Coordinator of United States Government activities and matters in connection with detainees who are members of the Islamic State of Iraq and Syria (sec. 1224)

The committee recommends a provision that would require the President, in consultation with the Secretary of Defense, the Secretary of State, the Director of National Intelligence, and the Attorney General, to designate an existing official within the Executive Branch as a senior-level coordinator to coordinate all matters for the United States Government relating to the long-term disposition of members of the Islamic State of Syria and Iraq and associated forces.

Report on lessons learned from efforts to liberate Mosul and Raqqa from control of the Islamic State of Iraq and Syria (sec. 1225)

The committee recommends a provision that would require the Secretary of Defense to submit a report to the congressional defense committees on lessons learned from coalition operations to liberate Mosul, Iraq, and Raqqa, Syria, from control of the Islamic State of Iraq and Syria.

Subtitle D—Matters Relating to Europe and the Russian Federation

Prohibition on availability of funds relating to sovereignty of the Russian Federation over Crimea (sec. 1231)

The committee recommends a provision that would prohibit funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2020 for the Department of Defense to be obligated or expended to implement any activity that recognizes the sovereignty of the Russian Federation over Crimea.

Prohibition on use of funds for withdrawal of Armed Forces from Europe in the event of United States withdrawal from the North Atlantic Treaty (sec. 1232)

The committee recommends a provision that would prohibit funds authorized to be appropriated by this Act to be obligated, expended, or reprogrammed for the withdrawal of the United States Armed Forces from Europe during the 1-year period beginning on the date that the President should ever provide notice of withdrawal of the United States from the North Atlantic Treaty, done at Washington, D.C. on April 4, 1949, pursuant to Article 13 of the treaty.

Extension of limitation on military cooperation between the United States and the Russian Federation (sec. 1233)

The committee recommends a provision that would extend through fiscal year 2020 the prohibition established in section 1232 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328), as most recently amended by the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232). This section prohibits funds authorized to be appropriated for the Department of Defense from being used for bilateral military-to-military cooperation between the United States and the Russian Federation without certain certifications by the Secretary of Defense, made in coordination with the Secretary of State, or unless certain waiver conditions are met.

Modification and extension of Ukraine Security Assistance Initiative (sec. 1234)

The committee recommends a provision that would extend through December 31, 2022, the authority under section 1250 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92), as amended by section 1246 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232), for the Secretary of Defense, in coordination with the Secretary of State, to provide security assistance, including defensive lethal assistance, and intelligence support to military and other security forces of the Government of Ukraine. The provision would also add coastal defense cruise missiles and anti-ship missiles to the categories of appropriate security assistance and intelligence support. The provision would authorize up to \$300.0 million in fiscal year 2020 to provide security assistance to Ukraine, of which \$100.0 million would be available only for lethal assistance.

The committee believes that the November 25, 2018, Russian attack on and seizure of 3 Ukrainian naval vessels and the capture of 24 Ukrainian sailors in that incident represent a provocative escalation of Russia’s violation of Ukrainian sovereignty and is in contravention of international law and numerous Russian commitments. The committee calls on Russia to immediately release the Ukrainian sailors and vessels it continues to unjustly detain, end its harassment of Ukrainian and international shipping transiting the Kerch Strait between the Black Sea and the Sea of Azov, and cease its violations of Ukrainian sovereignty and territorial integrity, including those against Ukrainian territorial waters.

The committee directs the Secretary of Defense to keep the congressional defense committees fully informed of the security situation in the Black Sea, including by promptly informing the committees regarding further aggressive acts by Russia in the region. The committee remains concerned about the impact of this Russian escalation on U.S., North Atlantic Treaty Organization (NATO), and Ukrainian interests in and around the Black Sea and supports ongoing military and diplomatic steps to protect those interests. Such steps include the provision of assistance by the United States and NATO allies, individually and collectively, to Ukraine to build its capabilities to defend its territorial waters.

Extension of authority for training for Eastern European national security forces in the course of multilateral exercises (sec. 1235)

The committee recommends a provision that would extend through December 31, 2022, the authority provided in section 1251 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92), as amended by section 1205 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91), for the Secretary of Defense, with the concurrence of the Secretary of State, to provide multilateral or regional training, and pay the incremental expenses of participating in such training, for countries in Eastern Europe that are signatories to the Partnership for Peace Framework Documents but not members of the North Atlantic Treaty Organization (NATO) or that became NATO members after January 1, 1999.

Limitation on transfer of F–35 aircraft to the Republic of Turkey (sec. 1236)

The committee recommends a provision that would prohibit funds authorized to be appropriated by this Act or otherwise made available for the Department of Defense to be used to: (1) Transfer, or facilitate the transfer, of F–35 aircraft to the territory of the Republic of Turkey; (2) Transfer equipment, intellectual property, or technical data necessary for or related to any maintenance or support of the F–35 aircraft to the territory of the Republic of Turkey; or (3) Construct facilities for, or otherwise associated with, the storage of F–35 aircraft in the territory of the Republic of Turkey. The provision would permit the Secretary of Defense, with the concurrence of the Secretary of State, to waive this limitation upon a written certification to the congressional defense committees and the Foreign Relations Committee of the Senate and the congressional defense committees and Foreign Affairs Committee of the House of Representatives that: (1) The Government of Turkey has not accepted delivery of the S–400 air and missile defense system from the Russian Federation; and (2) The Government of Turkey has provided reliable assurances that it will not accept delivery of the S–400 air and missile defense system from the Russian Federation in the future.

Modifications of briefing, notification, and reporting requirements relating to non-compliance by the Russian Federation with its obligations under the INF Treaty (sec. 1237)

The committee recommends a provision that would terminate a number of congressional reporting, briefing, and notification requirements germane to the Intermediate-Range Nuclear Forces Treaty if the treaty is no longer in force.

The committee expects that the intelligence community will continue to track closely and report in intelligence channels the development and deployment of Russian weapons systems that were previously prohibited under the treaty.

Extension and modification of security assistance for Baltic nations for joint program for interoperability and deterrence against aggression (sec. 1238)

The committee recommends a provision that would amend section 1279D of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) by modifying and extending the authority of the Secretary of Defense, with the concurrence of the Secretary of State, to conduct or support a single joint program of the Baltic nations to improve interoperability and build their capacity to deter and resist aggression by the Russian Federation. The provision would modify the authority by: adding command, control, communications, computers, intelligence, surveillance, and reconnaissance equipment to defense articles and services eligible for a joint program; increasing the total amount of assistance that may be provided under the authority to \$125.0 million; requiring that the amount of assistance provided may not exceed the aggregate amount contributed to the joint program by the Baltic nations; and extending the date of termination of the authority to December 31, 2022.

According to the annual report of the Secretary General of the North Atlantic Treaty Organization (NATO), Estonia, Latvia, and Lithuania each spend at least 2 percent of gross domestic product on defense, focusing their investments on the capabilities necessary to deter and resist Russian aggression. They have also made other important contributions to the alliance. Each Baltic nation hosts one of NATO's Enhanced Forward Presence battlegroups, for which they provide critical host nation support. Moreover, all three countries contribute troops to the NATO-led Resolute Support Mission in Afghanistan.

However, despite a demonstrated commitment to defense investment and burden-sharing in the NATO alliance, Estonia, Latvia, and Lithuania have significant unmet defense requirements that are unlikely to be met solely through their individual national defense budgets. The committee believes that joint procurement could enable Estonia, Latvia, and Lithuania to strengthen security cooperation, improve key military capabilities, and realize cost savings through economies of scale. With support from the United States, such as assistance provided by the section 1279D authority, as well as participation by other allies and partners, a joint program could accelerate the ability of the Baltic nations to address

their unmet defense requirements and bolster deterrence against Russian aggression.

Report on North Atlantic Treaty Organization Readiness Initiative (sec. 1239)

The committee recommends a provision that would require the Secretary of Defense to submit a report to the congressional defense committees on the North Atlantic Treaty Organization Readiness Initiative not later than October 1, 2020.

Reports on contributions to the North Atlantic Treaty Organization (sec. 1240)

The committee recommends a provision that would require the Secretary of Defense to submit to certain congressional committees a report containing a summary of the key findings of the annual report of the Secretary General of the North Atlantic Treaty Organization (NATO) as well as assessments of various elements of burden-sharing and defense cooperation with and among NATO allies.

Future years plans for European Deterrence Initiative (sec. 1241)

The committee recommends a provision that would require the Secretary of Defense, in consultation with the Commander of United States European Command (EUCOM), to submit to the congressional defense committees a future years plan on activities and resources of the European Deterrence Initiative (EDI) for fiscal year 2020 and not fewer than the 4 succeeding fiscal years. The provision would require that the plan include: a description of the objectives of the EDI, including a description of the intended force structure and posture of the assigned and allocated forces within the area of responsibility of EUCOM for the last fiscal year of the plan and the manner in which such force structure and posture support the implementation of the National Defense Strategy; an assessment of capabilities requirements to achieve the objectives of the EDI; an assessment of logistics requirements, including personnel, equipment, supplies, storage, and maintenance needs, to achieve the objectives of the EDI; an identification of required infrastructure and military construction investments to achieve the objectives of the EDI, including potential infrastructure investments by host nations; an assessment of security cooperation investments required to achieve the objectives of the EDI; and a plan to fully resource United States force posture and capabilities, including a detailed assessment of the resources necessary to address the aforementioned requirements with specific cost estimates for each project in the EDI and a detailed timeline to achieve the intended force structure and posture for the last fiscal year of the plan.

The provision would further require that, not later than the date on which the Secretary of Defense submits to Congress the budget request for the Department of Defense for fiscal year 2021, the Secretary, in consultation with the Commander of EUCOM, submit to the congressional defense committees a future years plan on activities and resources of the EDI for fiscal year 2021 and not fewer than the 4 succeeding fiscal years.

Modification of reporting requirements relating to the Open Skies Treaty (sec. 1242)

The committee recommends a provision that would realign an annual report required by section 1235 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) with the calendar year planning process of the Open Skies Treaty. The provision would also reduce the frequency of the submission of a report required by section 1236 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) from quarterly to annually.

Report on nuclear weapons of the Russian Federation and nuclear modernization of the People's Republic of China (sec. 1243)

The committee recommends a provision that would require the Secretary of Defense, in coordination with the Director of National Intelligence and the Secretary of State, to submit to the appropriate congressional committees a report describing: Russia's deployed non-strategic nuclear weapons; Russia's nuclear weapons in development that would not be covered by the New START if deployed; Russia's non-deployed strategic weapons; China's nuclear modernization program; and the implications thereof on the New START central limits.

Sense of Senate on the 70th anniversary of the North Atlantic Treaty Organization (sec. 1244)

The committee recommends a provision that would express the sense of the Senate in commemoration of the 70th anniversary of the North Atlantic Treaty Organization's establishment.

Sense of Senate on United States force posture in Europe and the Republic of Poland (sec. 1245)

The committee recommends a provision that would express the sense of the Senate that the United States should increase the persistent presence of United States forces in the Republic of Poland, including key combat enabler units such as warfighting headquarters elements, in order to enhance deterrence against Russian aggression and reduce the risk of executing Department of Defense contingency plans.

Sense of Senate on United States partnership with the Republic of Georgia (sec. 1246)

The committee recommends a provision that would express the sense of the Senate that the United States should promote its enduring strategic partnership with the Republic of Georgia.

Subtitle E—Matters Relating to the Indo-Pacific Region

Limitation on use of funds to reduce the total number of members of the Armed Forces in the territory of the Republic of Korea (sec. 1251)

The committee recommends a provision that would prohibit the use of funds authorized to be appropriated by this Act to reduce the total number of members of the Armed Forces in the territory of

the Republic of Korea (ROK) below 28,500 until 90 days after the date on which the Secretary of Defense certifies to the congressional defense committees that: such a reduction is in the national security interests of the United States and will not significantly undermine the security of United States allies in the region; such a reduction is commensurate with a reduction in the threat posed to the security of the United States and its allies in the region by the conventional military forces of the Democratic People's Republic of Korea (DPRK); and the Secretary has appropriately consulted with allies of the United States, including the ROK and Japan, regarding such a reduction.

The committee recognizes that U.S. military forces deployed on the Korean Peninsula remain vital to deterring and, if necessary, defeating aggression by the DPRK, which continues to threaten the national security interests of the United States and the peace and stability of the Indo-Pacific region through both its conventional forces and weapons of mass destruction. While the committee supports diplomatic efforts to achieve the complete, verifiable, and irreversible denuclearization of the DPRK, the committee believes that the significant removal of United States military forces from the Korean Peninsula is non-negotiable in such efforts.

The committee believes that the U.S.-ROK alliance remains fundamental to peace and security in the Indo-Pacific region and to U.S. national security interests. As diplomatic efforts concerning denuclearization continue, the committee believes that the United States and the ROK should prioritize preserving and strengthening the alliance and reject cynical efforts by other nations to undermine it.

The committee commends the ROK for its significant "burden-sharing" contributions. At approximately 2.5 percent of gross domestic product, ROK defense spending is among the highest of any U.S. ally. This level of investment is reflected in the advanced capabilities and high readiness of the ROK military. Moreover, the ROK has made substantial financial contributions to strengthening common security, including through direct cost-sharing and other alliance-related expenditures, such as the construction of Camp Humphreys for U.S. forces. Therefore, the committee believes that it is critical that negotiations concerning a new Special Measures Agreement between the United States and the ROK covering 2020 and beyond should be conducted in a spirit of common interest and mutual respect and with due consideration of the ROK's significant contributions.

The committee also encourages the ROK and Japan to renew their commitment to bilateral and multilateral security cooperation, which is beneficial for both nations and the security of the Indo-Pacific region.

Expansion of Indo-Pacific Maritime Security Initiative (sec. 1252)

The committee recommends a provision that would modify section 1263(b) of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114-92) to include as recipient countries for assistance and training under the Indo-Pacific Maritime Security Initiative the following: the Federated States of Micronesia, the

Kingdom of Tonga, Papua New Guinea, the Republic of Fiji, the Republic of the Marshall Islands, the Republic of Palau, the Republic of Vanuatu, and the Solomon Islands.

The committee notes the National Defense Strategy's (NDS) emphasis on strengthening alliances and attracting new partners. In particular, the NDS calls for expanding Indo-Pacific alliances and partnerships, including through regional security cooperation mechanisms, in order to develop a networked security architecture capable of deterring aggression, maintaining stability, and ensuring free access to common domains. The committee also notes the testimony of the Commander, U.S. Indo-Pacific Command, before the committee on February 12, 2019, concerning the importance of deepening engagement with countries in Oceania, in which he cited "opportunities to partner with our strong allies, Australia and France, and strong friend, New Zealand, to improve information-sharing and maritime cooperation as the Pacific Island Countries address the challenges associated with Illegal, Unreported, and Unregulated (IUU) fishing, natural disasters, narcotics trafficking, and economic coercion from Beijing." To seize these opportunities, in a March 22, 2019, letter to the congressional defense committees, the Commander recommended a maritime security program for countries in Oceania.

The committee recognizes that strengthening alliances and partnerships in Oceania is critical for supporting the implementation of the National Defense Strategy in the Indo-Pacific. The committee believes that the inclusion of the aforementioned eight countries in Oceania in the Indo-Pacific Maritime Security Initiative would support this effort.

Modification of annual report on military and security developments involving the People's Republic of China (sec. 1253)

The committee recommends a provision that would amend paragraph 26 of section 1202(b) of the National Defense Authorization Act for Fiscal Year 2000 (Public Law 106-65; 10 U.S.C. 113 note) by modifying reporting requirements concerning the relationship between Chinese overseas investment, including the Belt and Road Initiative and the Digital Silk Road, and Chinese security and military objectives.

Report on resourcing United States defense requirements for the Indo-Pacific region (sec. 1254)

The committee recommends a provision that would require the Commander, United States Indo-Pacific Command, to submit to the congressional defense committees a report containing the independent assessment of the Commander with respect to the activities and resources required for fiscal years 2022 through 2026 to achieve the following objectives: the implementation of the National Defense Strategy with respect to the Indo-Pacific region; the maintenance or restoration of the comparative military advantage of the United States with respect to the People's Republic of China; and the reduction of the risk of executing contingency plans of the Department of Defense. The report would include a plan to fully resource U.S. force posture and capabilities in the Indo-Pacific region,

including specific cost estimates for priority investments or projects. The provision would require, following the submission of the report, two joint briefings on assessments of the report with a focus on the feasibility and advisability of the resource plan provided by the Commander. The first briefing would be provided by the Secretary of Defense, the Director of Cost Assessment and Program Evaluation, and the Chairman of the Joint Chiefs of Staff. The second would be provided by the Secretary of the Air Force, the Secretary of the Army, and the Secretary of the Navy.

The committee believes that effective implementation of the National Defense Strategy and addressing the challenge of strategic competition with China require urgent change at significant scale. However, while the Department of Defense has made progress toward this goal, the pace and scale of change have been insufficient. The Department of Defense needs a unified, comprehensive, and long-term vision of its requirements in the Indo-Pacific region as well as the necessary resources and a feasible timeline to achieve them. The committee is committed to partnering with the Department of Defense to develop and implement such a vision. To that end, the required report and the subsequent briefings will inform the committee's review of the Department of Defense's development and submission of a fiscal year 2022 budget request and associated future years defense program with a focus on the National Defense Strategy and strategic competition with China.

Report on distributed lay-down of United States forces in the Indo-Pacific region (sec. 1255)

The committee recommends a provision that would require the Secretary of Defense, in consultation with the Government of Japan and other foreign governments as necessary, to conduct a review of the planned distribution of members of the United States Armed Forces in the Indo-Pacific region as contemplated by the United States and Japan in past agreements. The provision would also establish certain certification, notification, and reporting requirements related to the results of the review.

The committee acknowledges the pressing need to reduce the presence of United States Marine Corps on Okinawa, Japan, and to accelerate adjustments to United States force posture in the Indo-Pacific region. The committee believes that it is critical that the United States pursue these objectives in close consultation with the Government of Japan.

Sense of Senate on the United States-Japan alliance and defense cooperation (sec. 1256)

The committee recommends a provision that would express the sense of the Senate concerning the United States-Japan alliance and opportunities for enhancing defense cooperation.

Sense of Senate on enhancement of the United States-Taiwan defense relationship (sec. 1257)

The committee recommends a provision that would express the sense of the Senate concerning the enhancement of the United States-Taiwan defense relationship. The committee believes that the 40th anniversary of the Taiwan Relations Act (Public Law 96–

8) provides a fitting opportunity to evaluate the future of the United States-Taiwan defense relationship, particularly given the Department of Defense's focus on implementation of the National Defense Strategy and on strategic competition with China.

Therefore, the committee directs the Under Secretary of Defense for Policy, not later than December 31, 2019, to brief the Committees on Armed Services of the Senate and the House of Representatives in person and provide: an assessment of the role of relations with Taiwan in implementation of the National Defense Strategy; a description of Department of Defense policies related to defense cooperation, military exchanges, combined defense planning, and combined exercises and training with Taiwan; a description of how other executive branch policies related to relations with Taiwan affect the Department of Defense; and the objectives of the Department of Defense concerning the United States-Taiwan defense relationship.

Sense of Senate on United States-India defense relationship (sec. 1258)

The committee recommends a provision that would express the sense of the Senate that the United States should strengthen and enhance its major defense partnership with India and work toward mutual security objectives.

Sense of Senate on security commitments to the Governments of Japan and the Republic of Korea and trilateral cooperation among the United States, Japan, and the Republic of Korea (sec. 1259)

The committee recommends a provision that would express the sense of the Senate with respect to security commitments to the Governments of Japan and the Republic of Korea and trilateral cooperation between the United States, Japan, and the Republic of Korea.

Sense of Senate on enhanced cooperation with Pacific Island countries to establish open-source intelligence fusion centers in the Indo-Pacific region (sec. 1260)

The committee recommends a provision that would express the sense of the Senate that U.S. Indo-Pacific Command should pursue the establishment of one or more open-source intelligence fusion centers in the Indo-Pacific region to enhance cooperation with Pacific Island countries.

Sense of Senate on enhancing defense and security cooperation with the Republic of Singapore (sec. 1261)

The committee recommends a provision that would express the sense of the Senate that robust defense and security cooperation between the United States and the Republic of Singapore is crucial to promoting peace and stability in the Indo-Pacific region.

Subtitle F—Reports

Report on cost imposition strategy (sec. 1271)

The committee recommends a provision that would require, not later than 180 days after the date of the enactment of this Act, the Secretary of Defense to submit to the congressional defense committees a report describing the cost imposition strategies of the Department of Defense with respect to the People's Republic of China and the Russian Federation.

Subtitle G—Others Matters

NATO Special Operations Headquarters (sec. 1281)

The committee recommends a provision that would extend for 5 years the authority established in section 1244 of the National Defense Authorization Act for Fiscal Year 2010 (Public Law 111–84), as most recently amended by section 1280 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92).

Modifications of authorities relating to acquisition and cross-servicing agreements (sec. 1282)

The committee recommends a provision that would modify section 2342 of title 10, United States Code to improve management, transparency, and oversight of Department of Defense acquisition and cross-servicing agreements.

Modification of authority for United States-Israel anti-tunnel cooperation activities (sec. 1283)

The committee recommends a provision that would amend section 1279 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92) to modify the authority for United States-Israel anti-tunnel cooperation activities. The provision would remove countering unmanned aerial systems from the section 1279 authority. Elsewhere in this Act, the committee recommends a provision that would establish a separate authority for United States-Israel cooperation regarding countering unmanned aerial systems. The provision would also authorize the Secretary of Defense to use amounts available under the section 1279 authority, which are in excess of the amount contributed by the Government of Israel, for costs associated with unique national requirements identified by the United States with respect to anti-tunnel capabilities.

United States-Israel cooperation to counter unmanned aerial systems (sec. 1284)

The committee recommends a provision that would authorize the Secretary of Defense to carry out joint research, development, test, and evaluation to establish capabilities for countering unmanned aerial systems (C-UAS) that threaten the United States or Israel.

The John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) included a provision that modified the authority for United States-Israel anti-tunneling cooperation activities, provided by section 1279 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92),

to include C-UAS activities. Elsewhere in this Act, the committee recommends a provision that would strike that modification. This provision would establish a separate authority to conduct joint C-UAS efforts with Israel to ensure dedicated support for both anti-tunneling and C-UAS cooperation as well as to ensure proper oversight and transparency of C-UAS cooperation through reporting and certification requirements.

Modification of initiative to support protection of national security academic researchers from undue influence and other security threats (sec. 1285)

The committee recommends a provision that would amend section 1286 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232) to require the Secretary of Defense to develop a list of academic institutions of the People's Republic of China and the Russian Federation that are: (1) Associated with a defense program of the People's Republic of China or the Russian Federation, including any university heavily engaged in military research; (2) Are known to recruit individuals for the purpose of advancing the talent and capabilities of such a defense program or to provide misleading transcripts or otherwise attempt to conceal the connections of an individual or institution to such a defense program; or (3) Pose a serious risk of intangible transfers of defense or engineering technology and research. The provision would require that the list be developed in consultation with the Bureau of Industry and Security of the Department of Commerce, the Director of National Intelligence, and United States academic institutions that conduct significant Department of Defense research or engineering activities.

Independent assessment of human rights situation in Honduras (sec. 1286)

The committee recommends a provision that would require the Secretary of Defense to enter into an agreement with an independent think tank or a federally funded research and development center to conduct an analysis and assessment of the compliance of the military and security forces of Honduras with international human rights laws and standards.

United States Central Command posture review (sec. 1287)

The committee recommends a provision that would mandate a comprehensive United States Central Command posture review, which would assess the extent to which the United States possesses the force posture and capabilities for countering threats emanating from and affecting the United States Central Command's area of responsibility. While the committee views a continuous force presence in U.S. Central Command's area of responsibility as necessary for countering a wide range of threats, the committee supports the National Defense Strategy's (NDS) emphasis on the importance of alliances and partnerships. As stated in the NDS, "By working together with allies and partners we amass the greatest possible strength for the long-term advancement of our interests, maintaining favorable balances of power that deter aggression and support the stability that generates economic growth.

When we pool resources and share responsibility for our common defense, our security burden becomes lighter.” The committee urges the Secretary of Defense to work toward increased burden-sharing with our regional and European partners in countering threats emanating from and affecting U.S. Central Command’s area of responsibility and in pursuing shared security objectives.

Reports on expenses incurred for in-flight refueling of Saudi coalition aircraft conducting missions relating to civil war in Yemen (sec. 1288)

The committee recommends a provision that would mandate a report detailing the expenses incurred by the United States in providing in-flight refueling services for Saudi or Saudi-led coalition non-United States aircraft conducting missions as part of the civil war in Yemen from March 1, 2015, to November 11, 2018, and the extent to which such expenses have been reimbursed by members of the Saudi-led coalition.

Sense of Senate on security concerns with respect to leasing arrangements for the Port of Haifa in Israel (sec. 1289)

The committee recommends a provision that would express the sense of the Senate that the United States has an interest in the future forward presence of United States naval vessels at the Port of Haifa in Israel but has serious security concerns with respect to current the leasing arrangements of the Port of Haifa. Therefore, the provision would express the view that the United States should urge the Government of Israel to consider the security implications of foreign investment in Israel.

Items of Special Interest

Contributions of allies and partners to costs of U.S. forces stationed overseas

The committee recognizes that a credible forward force posture and assured access to critical military locations around the world are necessary elements of any effective strategy for defending the security and interests of the United States. Moreover, neither are possible without the willingness of allies and partners to host U.S. forces. Indeed, the National Defense Strategy underscores that allies and partners “provide access to critical regions, supporting a widespread basing and logistics system that underpins the [Department of Defense’s] global reach.” Posture and access are central issues of U.S. defense policy, essential for meaningful power projection, and serve as important reminders that the value of U.S. alliances and partnerships cannot be measured in dollars and cents alone.

The committee remains concerned about media reports and other statements regarding consideration of maximalist approaches to cost-sharing and host-nation support. While the committee believes that allies and partners should contribute an equitable share to mutually beneficial collective security, such approaches are likely to result in significant long-term damage to U.S. force posture, power projection capabilities, alliances and partnerships, and national security.

The committee notes the testimony of the Acting Secretary of Defense to the committee on March 14, 2019: “We won’t do cost-plus-50 percent. . . . We’re not going to run a business, and we’re not going to run a charity.” While the Acting Secretary told the committee that allies need to “pay their fair share,” he emphasized that “it is not about cost-plus-50 percent.”

Not later than October 1, 2019, the Secretary of Defense, in consultation with the Secretary of State, shall provide to the congressional defense committees a briefing on allied and partner contributions toward the cost of stationing U.S. forces overseas, including the U.S. approach to upcoming cost-sharing negotiations through the end of fiscal year 2020.

Cooperative research and development efforts of the United States and Israel

The committee recognizes the important contributions of cooperative research and development efforts to the national security of the United States and Israel, most notably with respect to missile defense and anti-tunneling capabilities. Given the National Defense Strategy’s emphasis on working together with allies and partners and on accelerating modernization to maintain or restore the competitive military advantage of the United States, the committee seeks to better understand the Department of Defense’s approach to future cooperative research and development efforts with Israel, including in emerging or advanced technology areas such as directed energy, hypersonic weapons, and space systems.

The committee directs the Department to provide a report to the congressional defense committees not later than March 1, 2020, on the feasibility and desirability of enhanced cooperative research and development efforts with Israel. The analysis should include but not necessarily be limited to the following: (1) An identification of shared capability gaps of the United States and Israel; (2) An assessment of the relative priority assigned to addressing such capability gaps by the United States and Israel; (3) An assessment of the extent to which cooperative projects would address such capability gaps in a timely and efficient manner, including in comparison with unilateral efforts; and (4) An identification of new authorities, regulatory or policy changes, or additional resources that would be required to undertake cooperative projects deemed to be feasible and desirable.

Forward-deployed naval forces in Europe

The committee supports the continued forward-basing of four United States Navy destroyers in Rota, Spain. These ships are among the most dynamically-employed naval forces-performing ballistic missile defense missions, carrying out strikes in Syria, boosting U.S. presence across the European theater in support of allies and partners, and monitoring increasing Russian naval activities. At the same time, these ships have maintained high readiness, in part due to rigorous maintenance practices.

In a January 14, 2019, interview, the Commander, U.S. Sixth Fleet, stated that the forward presence provided by the four destroyers at Rota “is the bedrock of our ability to reassure allies and respond to any threats that come up.” She added, “There is no sub-

stitute for having that kind of forward presence in Europe.” The Commander also observed that the “solid” operational model for these ships has enabled them to maintain “exceptional” readiness as well as their training and certifications. Furthermore, the four ships have been able to “conduct all the intermediate maintenance and the extended maintenance availabilities [needed] to stay ready and stay focused while on patrol.”

The committee is concerned about increasing Russian naval activity in the European theater, which is now at its highest level since the Cold War. The committee is also aware of the significant advances in Russian naval capability, especially as it relates to its attack submarines.

Due in part to these developments, the Commander, U.S. European Command, testified to the committee on March 5, 2019, that he has recommended adding two destroyers at Rota, Spain. The Commander stated that, in order “to remain dominant in the maritime domain and particularly under sea,” the United States “need[s] greater capability, particularly given the modernization and the growth of the Russian fleets in Europe.” Furthermore, the President’s nominee to be the next commander of U.S. European Command testified to the committee on April 2, 2019, that he agreed with the current commander’s recommendation.

Therefore, not later than October 1, 2019, the committee directs the Chief of Naval Operations and the Commander, U.S. European Command, to provide a joint briefing to the Committees on Armed Services of the Senate and House on the merit and feasibility of basing two additional destroyers at Rota, Spain, including an assessment of whether such an enhancement to U.S. force posture in Europe would enhance the ability of the United States to deter aggression, flexibly and proactively shape the strategic environment, improve readiness to respond to contingencies, and ensure long-term warfighting readiness.

Matters related to Bosnia and Herzegovina

The committee shares the longstanding commitment of the United States to Bosnia and Herzegovina’s sovereignty, territorial integrity, stability, and prosperity. The committee continues to support Bosnia and Herzegovina’s aspirations to join the European Union and the North Atlantic Treaty Organization (NATO) as well as efforts to achieve reforms necessary to realize those goals, including strengthening the rule of law, safeguarding an independent judiciary, tackling corruption, and improving financial accountability and transparency. Moreover, the committee welcomes the decision by NATO allies to accept the submission of Bosnia and Herzegovina’s first annual national program as part of the Membership Action Plan process. However, the committee remains concerned about the potential for renewed violent conflict, especially in light of Russia’s destabilizing activities in Bosnia and Herzegovina, as well as those of nationalist forces.

Therefore, not later than December 31, 2019, the committee directs the Secretary of Defense to provide to the Committees on Armed Services of the Senate and House a briefing on the contingency plans and readiness of U.S. and NATO forces to support and supplement EUFOR in the event of a violent conflict.

Matters related to Kosovo

The committee fully supports efforts to normalize relations between Kosovo and Serbia through the European Union-led, U.S.-supported dialogue process. Normalization of relations between Kosovo and Serbia is in the interest of Kosovars and Serbs alike. Furthermore, it is vital to Kosovo's and Serbia's shared European future and the stability of the Western Balkans. Therefore, the committee urges both Kosovo and Serbia to embrace the historic opportunity for an enduring peace and reconciliation and refrain from any actions that would make a comprehensive normalization agreement more difficult to achieve.

The committee continues to support U.S. assistance to the Kosovo Security Force as the latter makes the gradual transition to a transparent and multi-ethnic army for the Republic of Kosovo that is interoperable with North Atlantic Treaty Organization (NATO) members. The committee believes that it is critical that this transformation take place in close coordination with NATO allies and partners through an inclusive and transparent process, which respects the rights and concerns of all of Kosovo's citizens, promotes regional security and stability, and supports Kosovo's aspirations for eventual full membership in NATO.

The committee also fully supports the continued mission of NATO's Kosovo Force (KFOR), which plays an indispensable role in maintaining security and stability in Southeastern Europe. Together with our allies and partners, the United States should maintain its commitment to KFOR and take all appropriate steps to ensure that it has the necessary personnel, capabilities, and resources to perform its critical mission.

Protect Interests of Syrian Democratic Forces During U.S. Withdrawal

The committee believes that the security and stability of eastern Syria and continued engagement with the Syrian Democratic Forces (SDF) is in the national security interest of the United States and important to regional stability. The committee notes that the SDF, including both Kurdish and Arab components, have made significant sacrifices and contributions to the liberation of areas controlled by ISIS and the defeat of the so-called physical caliphate. The committee also notes that ISIS remains a considerable security threat and that continued counterterrorism operations in partnership with the SDF will be necessary to ensure the enduring defeat of the group.

The committee is concerned that a premature withdrawal of U.S. forces from Syria could negatively impact the security and stability of eastern Syria and put at risk the gains achieved by the Global Coalition to Defeat ISIS. Additionally, such a withdrawal would cede critical competitive geopolitical space to Russia and Iran that could significantly alter the regional balance of power in ways contrary to U.S. national security interests. Therefore, the committee urges the President to consider fully the direct and indirect effects of any decision related to a reduction of U.S. forces in Syria on security and stability in eastern Syria, including but not limited to:

- (1) The safety of Kurdish and Arab elements of the SDF and civilians in areas under their control;

- (2) Local governance efforts;
- (3) Protection of internally displaced people and other vulnerable populations;
- (4) Facilitation of international stabilization and reconstruction activities; and
- (5) Detention and repatriation of ISIS foreign terrorist fighters.

Support to the Kurdish Peshmerga

The committee notes that the United States-led coalition known as the Combined Joint Task Force-Operation Inherent Resolve (CJTF-OIR) in partnership with the Iraqi Security Forces (ISF), including the Kurdish Peshmerga, successfully liberated significant Iraqi territory from the control of the Islamic State of Iraq and Syria (ISIS). While the committee applauds this significant achievement, it also expresses concern that ISIS continues to pose a significant threat to Iraq, the region, and potentially the U.S. homeland.

According to the most recent Lead Inspector General report for OIR, CJTF-OIR has expressed concern that ISIS has transitioned to “operating as an insurgent organization,” including “operating primarily in rural parts of northern and western Iraq where security forces have little reach.” In its report, the Lead Inspector General also highlighted concerns that “ISIS has been able to exploit the physical security gaps between the ISF and the Peshmerga, and increased coordination between the two sides is necessary to counter-ISIS activities.”

The committee believes a lasting defeat of ISIS is critical to maintaining a stable and tolerant Iraq in which all faiths, sects, and ethnicities are afforded equal protection and full integration into the Government and society of Iraq and supports the provision of U.S. security and other assistance for such purposes. As part of those efforts, the committee supports continued assistance to Kurdish Peshmerga forces with the objective of enabling them to more effectively partner with the ISF, the United States, and other international partners. The committee strongly supports continuation of the partnership between the U.S. military and the Kurdish Peshmerga in furtherance of our shared interests, including through the signing of a new memorandum of understanding between the Department of Defense and the Ministry of Peshmerga. The committee also strongly supports actions by the Government of Iraq to assume responsibility for paying for the salaries and sustainment of Peshmerga forces. In the coming years, the committee encourages the Department to normalize its support to the Peshmerga by focusing assistance on reform and professionalization at the ministerial and unit level.

TITLE XIII—COOPERATIVE THREAT REDUCTION

Funding allocations for Department of Defense Cooperative Threat Reduction Program (sec. 1301)

The committee recommends a provision that would authorize \$338.7 million for the Cooperative Threat Reduction (CTR) program, define the funds as authorized to be appropriated in section 301 of this Act, and authorize CTR funds to be available for obligation for fiscal years 2020, 2021, and 2022.

Items of Special Interest

10-year risk planning for the Cooperative Threat Reduction Program

The committee directs the Secretary of Defense to submit a report to the congressional defense committees, not later than April 30, 2021, on the risks and vulnerabilities over the next 10 years associated with containing the proliferation of weapons of mass destruction and associated technologies to guide future programmatic efforts of the Cooperative Threat Reduction Program. The report shall be unclassified with a classified annex, if required.

TITLE XIV—OTHER AUTHORIZATIONS

Subtitle A—Military Programs

Working capital funds (sec. 1401)

The committee recommends a provision that would authorize the appropriations for the defense working capital funds at the levels identified in section 4501 of division D of this Act.

Chemical Agents and Munitions Destruction, Defense (sec. 1402)

The committee recommends a provision that would authorize the appropriations for Chemical Agents and Munitions Destruction, Defense, at the levels identified in section 4501 of division D of this Act.

Drug Interdiction and Counterdrug Activities, Defense-Wide (sec. 1403)

The committee recommends a provision that would authorize the appropriations for Drug Interdiction and Counterdrug Activities, Defense-wide, at the levels identified in section 4501 of division D of this Act.

Defense Inspector General (sec. 1404)

The committee recommends a provision that would authorize the appropriations for the Office of the Inspector General of the Department of Defense at the levels identified in section 4501 of division D of this Act.

Defense Health Program (sec. 1405)

The committee recommends a provision that would authorize appropriations for the Defense Health Program activities at the levels identified in section 4501 of division D of this Act.

Subtitle B—National Defense Stockpile

Modification of prohibition on acquisition of sensitive materials from non-allied foreign nations (sec. 1411)

The committee recommends a provision that would amend section 2533c of title 10, United States Code, to include tantalum in the definition of covered materials.

Subtitle C—Armed Forces Retirement Home

Authorization of appropriations for Armed Forces Retirement Home (sec. 1421)

The committee recommends a provision that would authorize an appropriation of \$64.3 million from the Armed Forces Retirement

Home Trust Fund for fiscal year 2020 for the operation of the Armed Forces Retirement Home.

Expansion of eligibility for residence at the Armed Forces Retirement Home (sec. 1422)

The committee recommends a provision that would amend section 1512(a) of the Armed Forces Retirement Home Act of 1991 (24 U.S.C. 412(a)) to: (1) Expand eligibility to retired veterans under age 60 and retired members of the National Guard and Reserves (NGR); and (2) Provide parity of fees for veterans eligible for active military service and those newly eligible through NGR service by requiring the income used for fee determination for an NGR-eligible resident to be not less than an Active-Duty resident's military retirement pay at the same grade and length of service. The provision would also amend section 1514(c) of the Armed Forces Retirement Home Act of 1991 (24 U.S.C. 414(c)) to provide parity for monthly withholding from pay of NGR members and Active-Duty members by applying the withholding across the total force, as well as requiring newly eligible NGR residents to pay a fee upon admission for years prior to the date of the enactment of this Act when the withholding was not taken from pay.

Subtitle D—Other Matters

Authority for transfer of funds to Joint Department of Defense-Department of Veterans Affairs Medical Facility Demonstration Fund for Captain James A. Lovell Health Care Center, Illinois (sec. 1431)

The committee recommends a provision that would authorize the Secretary of Defense to transfer \$127.0 million from the Defense Health Program to the Joint Department of Defense-Department of Veterans Affairs Medical Facility Demonstration Fund, established by section 1704 of the National Defense Authorization Act for Fiscal Year 2010 (Public Law 111–84), for the operation of the Captain James A. Lovell Federal Health Care Center.

Budget Items

Air Force cash corpus for energy optimization

The budget request included \$92.4 million in Working Capital Fund, Air Force.

The committee continues to recognize the urgent requirement to constantly innovate and improve combat capability and operational effectiveness for the warfighter via targeted and competitive operational energy science and technology investments.

Accordingly, the committee recommends an increase of \$10.0 million in Air Force Working Capital Fund 493003F to create a cash corpus for the purposes of energy optimization initiatives.

Contraceptive coverage parity under the TRICARE program

The budget request included \$31.8 billion in the Operation and Maintenance account for the Defense Health Program (DHP). The amount authorized to be appropriated for the DHP includes the following change from the budget request. The provision underlying

this change in funding level is discussed in greater detail in title VII of this committee report.

[Change in millions of dollars]

Contraception coverage parity under the TRICARE Program	+11.0
Total	+11.0

Items of Special Interest

Armed Forces Retirement Home

The committee recognizes the critical role of the Armed Forces Retirement Home (AFRH) in providing residences and related services for certain retired and former members of the Armed Forces. The committee notes that the AFRH plans to lease 80 acres of underutilized land for development on its Washington, D.C., campus.

As the AFRH's management, the General Services Administration, and the United States Army Corps of Engineers review development proposals, the committee encourages them to: (1) Conduct the review and selection process in a fair and open manner; (2) Give preference to shovel-ready proposals that conform to the "AFRH-W Master Plan"; (3) Give preference to proposals that include innovative measures that would enhance services for AFRH residents; (4) Give preference to proposals that maximize value to the AFRH through balancing financial priorities such as near-term cash flow and long-term appreciated value; and (5) Give preference to proposals that include certified audits of revenues and expenses by the developers.

TITLE XV—AUTHORIZATION OF ADDITIONAL APPROPRIATIONS FOR OVERSEAS CONTINGENCY OPERATIONS

Subtitle A—Authorization of Additional Appropriations

Purpose (sec. 1501)

The committee recommends a provision that would establish this title and make available authorized appropriations upon enactment of this Act for the Department of Defense, in addition to amounts otherwise authorized in this Act.

Overseas contingency operations (sec. 1502)

The committee recommends a provision that would designate authorization of appropriations in this title as overseas contingency operations.

Procurement (sec. 1503)

The committee recommends a provision that would authorize the additional appropriation for procurement activities at the levels identified in section 4102 of division D of this Act.

Research, development, test, and evaluation (sec. 1504)

The committee recommends a provision that would authorize the additional appropriation for research, development, test, and evaluation activities at the levels identified in section 4202 of division D of this Act.

Operation and maintenance (sec. 1505)

The committee recommends a provision that would authorize the additional appropriation for operation and maintenance activities at the levels identified in section 4302 of division D of this Act.

Military personnel (sec. 1506)

The committee recommends a provision that would authorize the additional appropriation for military personnel activities at the levels identified in section 4402 of division D of this Act.

Working capital funds (sec. 1507)

The committee recommends a provision that would authorize the additional appropriation for the Defense Working Capital Funds at the levels identified in section 4502 of division D of this Act.

Drug Interdiction and Counter-Drug Activities, Defense-wide (sec. 1508)

The committee recommends a provision that would authorize the additional appropriation for the Drug Interdiction and Counter-

Drug Activities, Defense-wide at the levels identified in section 4502 of division D of this Act.

Defense Inspector General (sec. 1509)

The committee recommends a provision that would authorize the additional appropriation for the Office of the Inspector General of the Department of Defense identified in section 4502 of division D of this Act.

Defense Health Program (sec. 1510)

The committee recommends a provision that would authorize the additional appropriation for the Defense Health Program activities identified in section 4502 of division D of this Act.

Subtitle B—Financial Matters

Treatment as additional authorizations (sec. 1521)

The committee recommends a provision that would state that the amounts authorized to be appropriated in this title are in addition to amounts otherwise authorized to be appropriated by this Act.

Special transfer authority (sec. 1522)

The committee recommends a provision that would allow the Secretary of Defense to transfer up to \$2.5 billion of overseas contingency operations funding authorized for fiscal year 2020 in this title to unforeseen higher priority needs in accordance with normal reprogramming procedures. This transfer authority would be in addition to the authority provided to the Secretary elsewhere in this Act.

Budget Items

Transfer from OCO to Base Procurement

The budget request included \$23.1 billion for Procurement in Overseas Contingency Operations (OCO) funding. The committee notes that the President's budget request included \$97.9 billion in the Overseas Contingency Operations (OCO) account for activities that are traditionally funded out of base accounts. The committee believes that OCO for Base funding should be transferred into the base accounts.

Accordingly, the committee recommends a decrease of \$13.5 billion to Procurement OCO.

Transfer OCO to Base RDT&E

The budget request included \$1.6 billion for Research, Development, Test, and Evaluation (RDT&E) in Overseas Contingency Operations (OCO) funding. The committee notes that the President's budget request included \$97.9 billion in the Overseas Contingency Operations (OCO) account for activities that are traditionally funded out of base accounts. The committee believes that OCO for Base funding should be transferred into the base accounts.

Accordingly, the committee recommends a decrease of \$748.0 million to RDT&E OCO.

Marine Corps facility sustainment increase for disaster recovery

The budget request included \$5.1 billion in Operation and Maintenance, Marine Corps Overseas Contingency Operations (OMMCOCO), of which \$443.3 million was requested for SAG BSM1 Sustainment, Restoration, & Modernization.

The committee notes the ongoing recovery efforts in the mid-Atlantic region at installations such as Camp Lejeune, Marine Corps Air Station Cherry Point, and Marine Corps Logistics Base Albany. The committee believes that additional funds are needed to assist in those efforts.

Accordingly, the committee recommends an increase in OMMCOCO of \$340.0 million for SAG BSM1 to specifically augment disaster recovery.

Air Force facility sustainment disaster recovery increase

The budget request included \$33.0 billion in Operation and Maintenance, Air Force Overseas Contingency Operations (OMAFOCO), of which \$4.3 billion was requested for SAG 011R Facilities, Sustainment, Restoration, & Modernization.

The committee notes the ongoing recovery efforts at Tyndall Air Force Base, Eglin Air Force Base, Warner Robins Air Logistics Center, and Offutt Air Force Base due to recent hurricanes and flooding. The committee believes that additional funds are needed to assist in those efforts.

Accordingly, the committee recommends an increase in OMAFOCO of \$340.0 million for SAG 011R to specifically augment disaster recovery.

Defense Security Cooperation Agency

The budget request included \$1.9 billion in Operation and Maintenance, Defense-wide (OMDW), Overseas Contingency Operations (OCO), for SAG 4GTD, the Defense Security Cooperation Agency, of which \$812.0 million is for the security cooperation account.

The committee notes that the reforms to the Department of Defense's (DOD) security cooperation enterprise required by the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) sought to rationalize and streamline the authorities and associated funding available for security cooperation and enhance the effectiveness of DOD planning, execution, and oversight. Additionally, that law emphasized the critical importance of non-materiel solutions to the effectiveness of DOD security cooperation efforts, namely through an increased emphasis on building the institutional capacity of foreign partners to more competently manage and sustain their own forces and the equipment and related assistance provided by the United States. The reforms also highlighted the need to mature the DOD security cooperation workforce and the development and implementation of a rigorous assessment, monitoring, and evaluation (AM&E) program to ensure that DOD programs are appropriately scoped and meeting clearly defined objectives.

However, while funding for DSCA's security cooperation account—which is primarily used to provide equipment and training to foreign partners to build capacity at the tactical and operational

levels—has grown from approximately \$895 million in fiscal year 2018 for base and OCO to the \$1.2 billion requested for fiscal year 2020 for base and OCO, the DOD continues to insufficiently prioritize and resource congressionally-mandated efforts relating to DOD security cooperation workforce development, AM&E, and institutional capacity building. The committee believes that this imbalance inhibits appropriate security cooperation program design, execution, and oversight, which could lead to suboptimal outcomes and wasted taxpayer dollars.

Accordingly, the committee recommends a decrease of \$100.0 million in OMDW, OCO, for SAG 4GTD, the Defense Security Cooperation Agency, for the security cooperation account, for a total of \$712.0 million.

Iraq Security Cooperation

The budget request included \$1.9 billion in Operation and Maintenance, Defense-wide (OMDW), Overseas Contingency Operations (OCO), for SAG 4GTD Defense Security Cooperation Agency.

The committee understands that a substantial portion of the funds requested for Iraq Train and Equip Requirements is for capacity building of the Iraqi Security Forces as opposed to operational support and immediate reconstitution of units degraded in the fight against the Islamic State of Iraq and Syria. The committee believes that, as the United States seeks to normalize its security assistance relationship with the Government of Iraq, traditional capacity building activities should be funded via standing authorities for such purposes, such as section 333 of title 10, United States Code.

Therefore, the committee recommends an increase of \$100.0 million in OMDW, OCO, for SAG 4GTD for capacity building of the Iraqi Security Forces. The committee notes that, elsewhere in this Act, there is a commensurate decrease in the Counter-ISIS Train and Equip Fund.

Ukraine Security Assistance Initiative

The budget request included \$1.9 billion in Operation and Maintenance, Defense-wide (OMDW), Overseas Contingency Operations, for SAG 4GTD, the Defense Security Cooperation Agency, of which \$250.0 million was for the Ukraine Security Assistance Initiative.

The committee recommends an increase of \$50.0 million to SAG4GTD Defense Security Cooperation Agency for the Ukraine Security Assistance Initiative.

Transfer OCO to Base O&M

The budget request included \$133.1 billion for Operation and Maintenance (O&M) in Overseas Contingency Operations (OCO) funding. The committee notes that the President's budget request included \$97.9 billion in the OCO account for activities that are traditionally funded out of base accounts. The committee believes that OCO for Base funding should be transferred into the base accounts.

Accordingly, the committee recommends a decrease of \$81.3 billion to O&M OCO.

Counter-Islamic State of Iraq and Syria Train and Equip Fund

The budget request included \$1.0 billion in Operation and Maintenance, Defense-wide (OMDW), Overseas Contingency Operations (OCO), for the Counter-Islamic State of Iraq and Syria Train and Equip Fund, of which \$745.0 million is for SAG 110 Iraq Train and Equip Requirements.

The committee understands that a substantial portion of the funds requested for Iraq Train and Equip Requirements is for capacity building of the Iraqi Security Forces as opposed to operational support and immediate reconstitution of units degraded in the fight against the Islamic State of Iraq and Syria. The committee believes that, as the United States seeks to normalize its security assistance relationship with the Government of Iraq, traditional capacity building activities should be funded via standing authorities for such purposes, such as section 333 of title 10, United States Code.

Therefore, the committee recommends a decrease of \$100.0 million in OMDW, OCO, for SAG 110 Iraq Train and Equip Requirements. The committee notes that, elsewhere in this Act, there is a commensurate increase for the Defense Security Cooperation Agency for Iraq Train and Equip Requirements.

TITLE XVI—STRATEGIC PROGRAMS, CYBER, AND INTELLIGENCE MATTERS

Subtitle A—Space Activities

Part I—United States Space Force

United States Space Force (secs. 1601–1608)

The committee recommends a series of provisions (sec. 1601–1608) that would establish the U.S. Space Force (USSF) and make changes to the organization of, authorities of, and acquisition associated with space forces assigned to the Department of Defense (DOD). The committee is concerned that the United States' assets and interests in space are increasingly at risk and that space has become a contested domain. In an era of great power competition, the DOD must appropriately organize itself to maintain, grow, and optimize U.S. competitive advantage in the space warfighting domain. The committee believes that these provisions would organize the Department to maximize warfighting capacity while minimizing the bureaucratic and taxpayer burden of an initial reorganization and providing a structured framework and roadmap to develop the USSF over the long-term.

The committee intends for these provisions to: (1) Retain space capabilities and efficiencies developed by current organizational constructs; (2) Consolidate and integrate space acquisition resources and intellectual capital to realize economies of scale, streamline procurement timelines, and accelerate the deployment of U.S. capabilities in the space warfighting domain; (3) Transition DOD space warfighting assets from a strictly supporting role to an active warfighting capability and develop unity of command in the space domain; and (4) Foster and further develop space warfighting culture.

These provisions would expand and change the role of the Principal Assistant to the Secretary of the Air Force for Space by renaming it the Principal Assistant to the Secretary of the Air Force for Space Acquisition and Integration (SAF/SP) and establishing the position as the senior space acquisition executive (SSAE) for all space acquisition across the Air Force, separate from the existing Air Force senior acquisition executive. The SAF/SP, as the SSAE, would report to the Secretary of the Air Force for all Air Force space acquisition programs and would have oversight and control over all Air Force space acquisition activities, including all major defense acquisition programs relating to warfighting in space. All space acquisition projects currently managed by the Assistant Secretary of the Air Force for Acquisition would be transitioned to the SAF/SP. These provisions would also elevate the SAF/SP to a civilian 4-star equivalent position. The committee believes that the ex-

pansion of the responsibilities and elevation of the position of the SAF/SP would help to minimize the statutory and bureaucratic seams that exist between space acquisition authorities and officials spread across the DOD.

These provisions would transition control of the manpower, agencies, and budgets within the Space and Missile Systems Center, the Space Rapid Capabilities Office, and the Space Development Agency to the SAF/SP, as the SSAE, upon the enactment of this Act. The committee believes that assigning to the SAF/SP this acquisition authority and organizational responsibility would reduce bureaucracy, improve oversight, and minimize interagency gaps. These provisions would require the Secretary of the Air Force to provide quarterly briefings to the congressional defense committees on this transition's progress and the need, if any, for further congressional action. The first briefing would be provided not later than March 31, 2020, and this requirement would expire on March 31, 2022.

These provisions would also establish a Space Force Acquisition Council (SAC) within the Department of the Air Force, which would oversee, direct, and manage Air Force acquisitions for space in order to ensure integration across the national security space enterprise. These provisions would establish the SAF/SP as the chair of Council, which would act as an approval and clearinghouse authority to move space operations projects to orbit faster and provide warfighter access and operational utility. The Under Secretary of the Air Force, the Commander, U.S. Space Command (SPACECOM), the Commander, United States Space Force (USSF), the Assistant Secretary of Defense for Space Policy, and the Director of the National Reconnaissance Office (NRO) would also be members of the Council. The committee believes that the inclusion of the Director of the NRO on the SAC would help to minimize the space acquisition seam that exists between the NRO and the Air Force. The SAC would meet not less frequently than monthly. These provisions would require the SAC to submit to the congressional defense committees, not later than 30 days after the end of each calendar year quarter through the first calendar year quarter of 2025, a report on the activities of the Council during the previous calendar year quarter.

As the Air Force implements these changes, the committee encourages the Secretary of the Air Force to examine and consider the model that the NRO uses for acquisition. The committee acknowledges that, by utilizing its small-sized staff and a streamlined acquisition process, the NRO is able to move with agility and acquire assets rapidly. The committee intends for these provisions to better position the Air Force to gain the same efficiencies in space acquisition as the NRO.

These provisions would also redesignate the Commander, Air Force Space Command, as the Commander, USSF. This 4-star commander would have a 4-year term of command and responsibility to organize, train, and equip space forces, serving as the primary force provider for SPACECOM. The Commander, USSF, would exercise authority for doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy responsibilities, utilizing the existing structure of the Air Force for adminis-

trative support as the new USSF structure is established and further defined. The Commander, USSF, would report through the Chief of Staff of the Air Force to the Secretary of the Air Force during the 1-year period beginning on the date of the enactment of this Act. After 1 year, the Commander, USSF, would report directly to the Secretary of the Air Force. The Commander, USSF, would participate in the Joint Chiefs of Staff at the discretion of the Chairman of the Joint Chiefs of Staff, as topics dictate and issues require, for the 1-year period beginning on the date of enactment of this Act. After 1 year, the Commander, USSF, would be a member of the Joint Chiefs of Staff. These provisions would also designate the Vice Commander, Air Force Space Command, as the Vice Commander, USSF. The Vice Commander would be elevated to a Senate-confirmed 4-star position and would support the Joint Chiefs of Staff at the request of the Commander, USSF. Finally, these provisions would require that, as the Secretary of the Air Force establishes the USSF, the Secretary use existing military and civilian personnel within the Air Force; these provisions do not authorize additional military billets or additional employment of civilian personnel.

These provisions would provide the Secretary of Defense with the authority to establish a dual-hatted arrangement wherein the Commander, USSF, would also serve as the Commander, SPACECOM, during the 1-year period beginning on the date of the enactment of this Act, an authority that the committee expects the Secretary to utilize. Should the Secretary elect to establish this dual-hat arrangement, the committee recommends that, after this 1-year authority expires, the Secretary appoint a new individual to serve as Commander, SPACECOM, and the previously dual-hatted Commander retain his position as Commander, USSF. These provisions would require the Secretary to evaluate not later than 1 year after the enactment of this Act, as both the USSF and SPACECOM mature, the advisability of permitting the Commander, USSF, to serve concurrently as the Commander, SPACECOM, and to submit a report to the congressional defense committees on the evaluation results. These provisions would also require the Comptroller General of the United States to review the Secretary of Defense's reports and to provide briefings to the congressional defense committees on those reviews not later than 30 days after the Secretary submits such report.

These provisions would require the Secretary of the Air Force to move existing space professionals within the Air Force to the USSF, thereby provisioning to the Commander, USSF, a space cadre in order to organize current Air Force space personnel under the entity responsible for their manning, training, and equipping and to further develop a service-like space warfighting ethos and culture. While this would include Air Force servicemembers on assignment in other components of the Department and the intelligence community, Space Force members would continue to rotate through assignment to the NRO. These provisions would require the Secretary of the Air Force to provide quarterly briefings to the congressional defense committees on this transition's progress and the need, if any, for further congressional action. The first briefing

would be provided not later than March 31, 2020, and this requirement would expire on March 31, 2022.

Further, the committee directs the Secretary of the Air Force and the Commander, USSF, to review the role of the reserve components within the USSF, consulting with the Chief, National Guard Bureau, on matters pertaining to the National Guard and the States, to ensure that reserve component personnel currently assigned to perform space duties continue to perform those duties in the USSF. The committee directs the Secretary of the Air Force to report the results of this review to the Committees on Armed Services of the Senate and the House of Representatives no later than March 1, 2020, including the employment of reserve component personnel performing space duties before and after the creation of the USSF.

These provisions would also require the Secretary of Defense, in coordination with the Director of National Intelligence, to review and establish processes to provide more effective integration of capabilities across the National Security Agency (NSA), National Geospatial Intelligence Agency (NGA), and SPACECOM in support of joint operations without impairing the authorities or responsibilities of the Director of National Intelligence. The Secretary would submit to the congressional defense committees a report on the findings of such review not later than 180 days after the enactment of this Act. The committee is sensitive to concerns that these provisions' reforms may disrupt command and control of both DOD and NRO space assets but notes that the tasking of NRO overhead assets today is not under the control of the Director of the NRO; instead, it is in the purview of tasking organizations subordinate to the Directors of the NSA and the NGA. Both of these agencies are already designated as combat support agencies under the Goldwater-Nichols Department of Defense Reorganization Act (Public Law 99-433).

The committee is also concerned with the lack of unity in space command and control operations. Currently, the Director of the NRO operates the NRO's assets and capabilities involved in space intelligence, surveillance, and reconnaissance (ISR) activities independently of the Commander, SPACECOM. This is a unity of command seam that must be addressed in the space warfighting domain. The committee notes that this issue is vital for the warfighter and therefore urges the Secretary of Defense, the Director of National Intelligence, and the Secretary of the Air Force to consider potential solutions, including the designation of the NRO as a combat support agency for space ISR command and control operations. Additionally, the committee expects the Commander, SPACECOM, to continue to maintain open lines of communication with the intelligence community.

These provisions would also establish the position of the Assistant Secretary of Defense for Space Policy within the Office of the Secretary of Defense. The Assistant Secretary would be responsible for managing, implementing, and advising the Secretary of Defense on all policy decisions germane to the space domain. The committee believes that establishing a civilian in the Office of the Secretary of Defense with the primary responsibility for the oversight of

space policy would help to better integrate and synchronize space warfighting doctrine and policy within the Department.

The committee is aware that the DOD originally proposed establishment and appointment of the Under Secretary of the Air Force for Space. To reduce bureaucracy and increase efficiencies as the U.S. Space Force is established, these provisions would instead require the Secretary of the Air Force to evaluate the tasks and operations of the staff in support of the space warfighting mission. These provisions would require the Secretary to provide an assessment to the congressional defense committees as to whether the establishment of the Under Secretary of the Air Force for Space is required, due not later than 180 days after the enactment of this Act.

The committee believes that these provisions embody the core intent of the Department of Defense's proposed reorganization of space forces while excluding additive bureaucracy and minimizing organizational seams. The committee acknowledges that this reorganization is a phased approach that emphasizes continued coordination with the Department by requiring the Department to provide assessments to the committee on future needs or changes required to ensure that this reorganization incorporates all assets necessary to conduct operations in the space warfighting domain. The committee notes that space dominance is undeniably a vital national interest and that space has become a contested domain. The committee believes that these provisions support the National Defense Strategy's priority of addressing the threats in the space domain posed by our great power competitors by quickly streamlining and minimizing gaps in the space enterprise.

Part II—Other Space Matters

Repeal of requirement to establish Space Command as a subordinate unified command of the United States Strategic Command (sec. 1611)

The committee recommends a provision that would repeal section 169 of title 10, United States Code, which established U.S. Space Command (SPACECOM) as a subordinate unified command of U.S. Strategic Command. The committee believes that the Commander of SPACECOM will be better able to integrate space operations with terrestrial operations of geographic combatant commands, improve the combatant command lexicon's incorporation of the space domain, and advance the goal of security cooperation in space.

Program to enhance and improve launch support and infrastructure (sec. 1612)

The committee recommends a provision that would authorize the Secretary of Defense to carry out a program to enhance infrastructure and improve support activities for the processing and launch of Department of Defense (DOD) small-class and medium-class payloads. The program would be used to:

- (1) Make investments in infrastructure to improve operations at ranges and Federal Aviation Administration (FAA)-licensed spaceports consistent with usage by the DOD;

(2) Take measures to normalize processes, systems, and products across ranges and spaceports to minimize burden on launch providers; and

(3) Improve transparency, flexibility, and responsiveness for launch scheduling, factoring in proximity to and quantity of existing commercial airline flight patterns.

The provision would require the Secretary to submit to the congressional defense committees, not later than 270 days after the enactment of this Act, a report on the plan for such program. The report would include:

(1) A description of plans and the resources needed to improve launch support infrastructure, utilities, support equipment, and range operations;

(2) A description of plans to streamline and normalize processes, systems, and products at ranges and FAA-licensed spaceports to ensure consistency for range users; and

(3) Recommendations for improving transparency, flexibility, and responsiveness.

The committee continues to recognize the unique importance of FAA-licensed spaceports and encourages the use of such spaceports and launch and range complexes, when appropriate, for mid-to-low inclination orbits or polar high-inclination orbits in support of national security space priorities. The committee recognizes that DOD and future national security space missions are focused on using smaller, less expensive satellites and launch vehicles for rapid reconstitution and resilience. Spaceports have proven small launch capability and offer the DOD less costly launch sites and services for these missions, an alternative to Vandenberg Air Force Base (AFB), and the use of commercial business practices to expedite DOD test and development programs across a variety of mission sets and a variety of launch and landing methods.

The committee believes that these federally-licensed, non-federally owned launch facilities, including the Spaceport America in New Mexico, Pacific Spaceport Complex-Alaska (PSCA), the Mid-Atlantic Regional Spaceport (MARS), Spaceport Camden in Georgia, and Oklahoma Air & Space Port, are available to help meet the requirements for the national security space program for Air Force Space Command, the Space Rapid Capabilities Office, the Missile Defense Agency, and Space Development Agency. The committee notes that such spaceports improve the resiliency of U.S. launch infrastructure and help ensure consistent access to space to support national security space priorities.

The committee recognizes the number of unique benefits that each FAA-licensed spaceport provides to the national security space program. The PSCA remains the only commercial polar launch range available in the United States, offering both orbital and sub-orbital capabilities. The committee applauds the use of the PSCA to conduct tests of both the Terminal High Altitude Area Defense system in 2017 as well as the Space and Missile Defense Command Advanced Hypersonic Weapon in 2014. PSCA has become a force multiplier in being the alternative West Coast range to Vandenberg AFB, providing additional capacity to test national security missions from an existing spaceport.

The MARS at Wallops Island, Virginia, provides medium-class and small-class launch capabilities for the DOD with its agency partners. The MARS provides assured and responsive access to mid-to-low inclination orbits for payloads up to 15,300 lbs. The committee supports the National Reconnaissance Office's planned launches of the L-111 and L-129 missions from MARS by the end of 2019.

The Oklahoma Air & Space Port, near Burns Flat, Oklahoma, is the only spaceport in the United States to have a civilian FAA-approved Space Flight Corridor in the National Airspace System. This Space Flight corridor is unique because it is not within Military Operating Areas or within restricted airspace, which provides an operational capability for space launch operations and associated industries specialized in space-related activities.

Spaceport America in New Mexico is a licensed inland spaceport that provides surface-to-space open sky launches landing in restricted flight zones. The New Mexico Spaceport is located next to White Sands Missile Range (WSMR) where the DOD controls the only restricted airspace in the country besides the White House. The committee notes that the DOD has studied hypervelocity testing at WSMR and its neighbor Spaceport America, which has horizontal and vertical launch and landing capabilities that hypervelocity vehicles require. The WSMR is preparing environmental impact statements for inland flight corridors that will be able to provide apogee-to-end-game suborbital instrumented flight solutions.

The committee believes that it is also important for the Department to diversify its launch options and capabilities to include inland sites, as secure multimodal spaceports are advantageous for future hypervelocity development. Significant investments have been made at inland spaceports, which already have the infrastructure in place to accommodate smaller space launches for the Department.

Modification of enhancement of positioning, navigation, and timing capacity (sec. 1613)

The committee recommends a provision that would direct the Secretary of the Air Force to ensure that military Global Positioning System (GPS) user equipment terminals can incorporate signals from the European Union's Galileo and Japan's QZSS satellites, beginning with the implementation of open system architecture solutions to provide for robust positioning, navigation, and timing (PNT). The provision would enable the Secretary to waive this requirement on a case-by-case basis if certain criteria are met.

The provision would also direct the Secretary to ensure that military GPS terminals can receive allied and non-allied PNT signals, provided that analysis indicates that the benefits outweigh the risks or that the risks can be appropriately mitigated. The committee encourages the Secretary, in carrying out this provision, to engage with relevant U.S. allies to ensure technical compatibility and ability to receive the signals.

Modification of term of Commander of Air Force Space Command (sec. 1614)

The committee recommends a provision that would amend section 2279c(a)(2) of title 10, United States Code, to change the term of the Commander, Air Force Space Command, from 6 years to 4 years. The committee is aware that the requirement for the Commander to serve at least 6 years was established to address fragmented and diffuse space leadership responsibilities. However, the committee believes that progress has been made in the renewed focus on space operations leadership and that stability has been restored, and thus the 6-year requirement is no longer needed.

Annual report on Space Command and Control program (sec. 1615)

The committee recommends a provision that would require the Secretary of the Air Force to provide annually a report on progress in executing the acquisition strategy and assessment of risk for the Space Command and Control program. The acquisition strategy, including schedule and other performance metrics, is that required by the Item of Special Interest on Space Command and Control specified elsewhere in the committee report. The report would be provided to the congressional defense committees with the annual submission of the budget request for fiscal year 2021 through fiscal year 2025.

The provision would also direct the Comptroller General of the United States to review the acquisition strategy and annual reports of the Secretary of the Air Force and provide a report on the review at a time mutually agreed upon between the congressional defense committees and the Comptroller General.

The committee notes that the Space Command and Control program is more ambitious than its predecessor, the failed Joint Space Operations Center Mission System program. Given the increased scope, complexity, and ambition of the program, as well as the checkered history of previous programs, the committee believes that heightened oversight is required during development.

Requirements for phase 2 of acquisition strategy for National Security Space Launch program (sec. 1616)

The committee recommends a provision that would prohibit changes to the National Security Space Launch Program (NSSL) Phase 2 procurement. This provision would ensure that the original mission performance requirements proposed by the acquisition authority remain as specified in support of agile and effective launch support to the warfighter. The provision would also limit awards for national security space launches under the Launch Services Procurement Other Transaction Authority agreement to a downselect of no more than two providers. Finally, the provision would require the Secretary of the Air Force to ensure that launch services are procured from industry providers that utilize launch vehicles or families of vehicles that meet all government requirements with respect to delivery of required payloads to reference orbits.

The committee commends the Secretary of the Air Force for demonstrated commitment to the policy of assured access to space and

for good stewardship of financial resources in the Launch Services Agreement program. Assured access to space and disciplined defense spending have increased importance in great power competition with China and Russia.

The committee recognizes that unreliable commercial launch market forecasts that do not adequately account for competition and industrial base concerns have contributed to suboptimal government decisions. Phase 2 must be conducted in a manner that ensures that launch providers remain viable competitors and strong contributors to the space industrial base.

Subtitle B—Defense Intelligence and Intelligence-Related Activities

Redesignation of Under Secretary of Defense for Intelligence as Under Secretary of Defense for Intelligence and Security (sec. 1621)

The committee recommends a provision that would redesignate the Under Secretary of Defense for Intelligence and the Deputy Under Secretary of Defense for Intelligence as the Under Secretary of Defense for Intelligence and Security and Deputy Under Secretary of Defense for Intelligence and Security respectively and make conforming changes to existing law.

The committee notes that the Office of the Under Secretary of Defense for Intelligence has assumed additional responsibilities, to include personnel security, physical security, industrial security, protection of classified information and controlled unclassified information, and security clearance investigations, and believes that the redesignation more appropriately reflects its current responsibilities. The committee does not intend for this provision to modify the authorities, responsibilities, roles, or missions of the aforementioned Under Secretary.

Repeal of certain requirements relating to integration of Department of Defense intelligence, surveillance, and reconnaissance capabilities (sec. 1622)

The committee recommends a provision that would repeal section 426 of title 10, United States Code, which requires the establishment of the Intelligence, Surveillance, and Reconnaissance (ISR) Integration Council. The committee notes that the Department of Defense established the Defense Intelligence and Security Integration Council (DISIC). The DISIC is chaired by the Under Secretary of Defense for Intelligence and its membership comprises officials from the defense intelligence enterprise; the DISIC is responsible for conducting recurring reviews to improve integration and coordination across the defense intelligence enterprise. In light of the establishment of the DISIC as a successor organization to the ISR Integration Council, the committee believes that the statutory requirement in section 426 of title 10, United States Code, is no longer necessary. The committee expects the Secretary of Defense to periodically update the committee on the activities of the DISIC.

Improving the onboarding methodology for certain intelligence personnel (sec. 1623)

The committee recommends a provision that would require the Secretary of Defense and the Director of National Intelligence, consistent with Department of Defense Instruction 1400.25, as in effect on the day before the date of the enactment of this Act, to provide several reports relating to the onboarding methodology for certain intelligence personnel.

Defense Counterintelligence and Security Agency activities on facilitating access to local criminal records historical data (sec. 1624)

The committee recommends a provision that would authorize the Director of the Defense Counterintelligence and Security Agency to carry out a set of activities relating to facilitating access by the Agency to local criminal records historical data in support of its personnel security mission. The committee notes that elsewhere in this Act is an increase of \$15.0 million in Research, Development, Test, and Evaluation, Defense-wide, to support the set of activities authorized in this section.

Subtitle C—Cyberspace-Related Matters

Reorientation of Big Data Platform program (sec. 1631)

The committee recommends a provision that would require the Secretary of Defense to reorient the Department of Defense's Big Data Platform program by establishing a common baseline and security classification scheme for the collection, querying, analysis, and accessibility of a common and comprehensive set of metadata from sensors, applications, and systems deployed across the Department of Defense Information Network.

The committee recognizes the potential of the Big Data Platform technology as a cyber situational awareness tool but is frustrated by the current status of its use across the Department of Defense. Big Data Platform instances are not fed key metadata for analysis and querying, are segregated from one another, and function, within the Department's cybersecurity architecture, largely as incident response tools at the component-level rather than real-time situational awareness tools at the enterprise-level.

Zero-based review of Department of Defense cyber and information technology personnel (sec. 1632)

The committee recommends a provision that would require the heads of Department of Defense departments, agencies, and components to complete zero-based reviews of the cyber and information technology personnel in those departments, agencies, and components. The reviews would: (1) Assess military, civilian, and contractor positions and personnel performing cyber and information technology missions in the Department for efficacy, efficiency, and relevance; (2) Analyze capability gaps; and (3) Recommend road maps for correcting these gaps. The committee is aware of the growth of cybersecurity personnel in the Department of Defense over the past few years but is concerned that some of these roles

may be duplicative or no longer necessary as cybersecurity approaches have evolved.

The provision would require that these reviews be completed and submitted to the Principal Cyber Adviser (PCA), Chief Information Officer (CIO), and Under Secretary of Defense for Personnel and Readiness (USD (P&R)) by January 1, 2021. After receiving the findings of these reviews, the PCA, CIO, and USD (P&R) would provide recommendations on the implementation of these road maps to the heads of the Department of Defense departments, agencies, and components and would oversee and assist in the implementation of these roadmaps and recommendations.

Study on improving cyber career paths in the Navy (sec. 1633)

The committee recommends a provision that would require the Secretary of the Navy to conduct a study on improving cyber career paths in the Navy. The provision would also require the Secretary to submit a report to the congressional defense committees, no later than October 1, 2020, on the findings of the study.

The committee is aware of the independent Cybersecurity Readiness Review that was commissioned by the Secretary of the Navy, and completed earlier this year, to examine cybersecurity readiness across the Navy in the areas of culture, people, structure, processes, and resources. The committee applauds the Navy for conducting this review to recommend areas where the Navy can improve its cybersecurity readiness. The committee believes that conducting this review is an important step in increasing the Navy's cybersecurity and encourages the Secretary to quickly develop an implementation plan to address the recommendations in the review. The committee is particularly concerned about the findings related to the cyber workforce. The committee is concerned that the Navy lags behind the Army and the Air Force in charting career paths for military and civilian personnel designed to generate expertise in offensive and defensive cyber warfare.

Framework to enhance cybersecurity of the United States defense industrial base (sec. 1634)

The committee recommends a provision that would require the Secretary of Defense to develop a consistent, comprehensive framework to enhance the cybersecurity of the U.S. defense industrial base and to provide the congressional defense committees a briefing on the framework not later than March 11, 2020. The provision would require the Secretary, in the development of this framework, to consult with industry groups and contractors in the defense industrial base as well as the Director of the National Institute of Standards and Technology (NIST). The framework would include: (1) Identification of cybersecurity standards and requirements imposed on the defense industrial base; (2) Responsibilities of the prime contractor and all subcontractors in the supply chain for implementing those standards and requirements; (3) A plan to provide cybersecurity guidance and assistance to contractors; and (4) Methods and programs for defining and managing controlled unclassified information.

The provision would also mandate that the Department of Defense (DOD): (1) Provide a plan that includes direct technical support or assistance to contractors in complying with the new framework; (2) Consider how to tailor cybersecurity requirements for small contractors based on risk; (3) Consider how to provide additional assistance to small companies in the form of training, mentoring, and other measures; and (4) Evaluate both incentives and penalties for prime contractors and subcontractors for cybersecurity performance. Finally, the provision requires that the Secretary of Defense provide quarterly updates on the status of development and implementation of the framework. The committee recognizes that small companies are in general challenged by a lack of resources, both monetary and technical, to meet cybersecurity requirements. The committee emphasizes that the DOD must exercise care to ensure that its policies and procedures preserve and protect its industrial base rather than diminish it.

The committee is concerned that contractors within the defense industrial base are an inviting target for our adversaries, who have been conducting cyberattacks to steal critical military technologies. Currently, the Department of Defense mandates that defense contractors meet the requirements of NIST Special Publication 800–171 but does not audit compliance to this standard. The committee is concerned that prime contractors are not overseeing their subcontractors’ compliance with these cybersecurity requirements through the entire supply chain and that the Department lacks access to information about its contractors’ subcontractors. The committee believes that prime contractors need to be held responsible and accountable for securing Department of Defense technology and sensitive information and for delivering products and capabilities that are uncompromised. Developing a framework to enhance the cybersecurity of the defense industrial base will serve as an important first step toward securing the supply chain.

Role of Chief Information Officer in improving enterprise-wide cybersecurity (sec. 1635)

The committee recommends a provision that would specify the responsibilities of the Chief Information Officer (CIO) as they relate to the Department of Defense’s (DOD) cybersecurity. Section 909 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) clarified that the CIO is responsible for the information technology, networking, information assurance, cybersecurity, and cyber capability architectures of the DOD and provided a budget review authority to the CIO to carry out these responsibilities. This provision would levy additional responsibilities on the CIO for these architectures, including the modernization of the Department’s cybersecurity architecture, the mandating of cybersecurity data sharing, and the acquisition of additional computing infrastructure to meet the Department’s cybersecurity needs.

The committee is encouraged by the current CIO’s commitment to moving the Department’s computing infrastructure to the cloud, to driving forward its artificial intelligence initiative, and to modernizing its cybersecurity. The committee believes that the latter in particular is of paramount importance and demands the CIO’s highest priority. The Department has for years struggled to achieve

private sector-standard cybersecurity of its unclassified networks despite considerable investment and efforts. Much of this is due to the sheer size and diversity of the Department's networks, which pose substantial challenges to cybersecurity architects and operators at the enterprise-level.

As a result, the Department maintains extensive and expensive cybersecurity capabilities on its perimeter; manages network operations through the Joint Regional Security Stacks, which the most recent Director of Operational Test and Evaluation report described as "unable to help network defenders protect the network against operationally realistic [cyberattacks]"; relies on cybersecurity service providers' security operations centers to monitor local network activity; deploys cyber protection teams to critical networks, often in response to suspected malicious activity; and relies on myriad endpoint defense products to defend against cyberattacks at the edge. These layers are typically disjointed and connected only through manual instructions from operator to operator. The Department's cybersecurity architecture is thus characterized by inconsistency, opacity, confusion, labor-intensity, and misalignment of resources.

The committee recognizes that management of this architecture necessarily requires coordination with the Principal Cyber Advisor and the Commander of U.S. Cyber Command but reiterates that the responsibility for the architecture lies, in statute, with the CIO. The committee thus urges the CIO to aggressively work to modernize the Department's cybersecurity architecture to improve enterprise-level visibility, command and control, and operations. This modernization will require substantial reconfiguration of component-level budgets and activities; the committee expects the CIO to use his budget authority widely and effectively to effect this necessary transformation. This modernization will also require reevaluation and rationalization of existing Department-wide cybersecurity programs, capabilities, and operations, including the Joint Regional Security Stacks, Host Based Security System, Joint Forces Headquarters-Department of Defense Information Network, the cyber protection teams, and the cybersecurity service providers.

Quarterly assessments of the readiness of cyber forces (sec. 1636)

The committee recommends a provision that would require the Secretary of Defense to develop metrics for the assessment of the readiness of the Cyber Mission Force and to brief the congressional defense committees on these metrics within 90 days of the enactment of this Act. The provision would also require the briefing of readiness of the Cyber Mission Force, informed by these metrics, as part of the quarterly cyber operations updates, effective 180 days after the enactment of this Act.

The committee applauds the Cyber Mission Force's recent achievement of full operational capability. As these teams continue to mature, the committee believes that it is important to develop and report a standard set of metrics to address the Department's ability to conduct cyberspace operations based on capability and capacity of personnel, equipment, training, and equipment condition. The committee believes that these readiness reporting metrics

should be standard across the Services and should be consistent with readiness reporting throughout the Department. The committee also believes that it is important for these metrics to be reported as part of the quarterly cyber operations briefings to provide context to current operations. The committee recognizes that the Cyber Mission Force's mission posture—including the accesses and tools developed by and available to the National Mission Teams and Combat Mission Teams, the responsiveness of the Cyber Protection Teams, and the operational effectiveness of these teams—is distinct from its readiness but also expects to be kept apprised of this mission posture through its cyber quarterly briefings.

Control and analysis of Department of Defense data stolen through cyberspace (sec. 1637)

The committee recommends a provision that would define requirements for the Department of Defense (DOD) in the event that DOD data have been stolen or are suspected to have been stolen via cyber means. The provision provides a series of requirements for the DOD when it directly controls the data or access to the data. The provision would further require that, when the DOD does not have unilateral control of the data and when law enforcement or intelligence community information controls have been imposed on the handling of and access to the data, the Secretary of Defense coordinate with the Director of the Federal Bureau of Investigation (FBI) or Director of National Intelligence (DNI), as appropriate, to carry out the same series of requirements.

The committee is aware of a number of incidents in which critical data were stolen from DOD contractors but the Department was very slow to: (1) Inform the appropriate leadership in the Department; (2) Inform the Congress; (3) Assess the damage resulting from the breach; and (4) Launch counterintelligence and other remediation efforts to correct the damage. In some cases, the Congress has learned of such breaches from media reports months after the events, only to find that DOD leaders remain in the dark. One reason for this unacceptable pattern of tardiness is that law enforcement and intelligence community controls are placed on access to the data and on knowledge of the breach. Access to the data may be limited to a small number of DOD subject matter experts who have to be cleared for access to the data and physically deployed to a hosted repository with limited query and analysis tools.

The committee believes that for all significant breaches involving the loss or potential loss of critical DOD information, the Department should gain control of the data that have been or potentially have been exfiltrated, place in a modern data center, apply modern information technology tools to analyze the data rapidly to determine the nature and severity of the incident, ensure that appropriate officials are fully informed, and devise and implement rapid countermeasures and remediation measures. These data transfers, analyses, and countermeasures can and must be conducted in a highly secure manner, with access limited to those with an appropriate need-to-know. These measures, and DOD's security controls, do not need to interfere with law enforcement investigations, and DOD's national security equities must be given just weight by DOD's partners in dealing with serious breaches.

The committee thus urges the Secretary of Defense to institutionalize the requirements of this provision through formal agreements with the Director of the FBI and the DNI that accommodate all parties' relevant counterintelligence and mission requirements.

Accreditation standards and processes for cybersecurity and information technology products and services (sec. 1638)

The committee recommends a provision that would require the Department of Defense (DOD) Chief Information Officer (CIO) to assess the accreditation standards and processes of the military departments and other components of the DOD for cybersecurity and information technology products and services. The provision would also require the CIO to submit a report to the congressional defense committees on the assessment by April 1, 2020.

The committee is aware that the DOD utilizes different accreditation standards (e.g., Risk Management Framework, Development Security Operations or DevSecOps) and processes (e.g., reciprocity) for cybersecurity and information technology products and services, depending on whether they are custom-built or commercial off-the-shelf products. Disparity in standards and duplication of testing often result in delays, complexity, and inefficiency. The committee believes that it is important to streamline the accreditation process to enable the DOD to more quickly adopt cutting-edge cybersecurity tools across the DOD enterprise.

Extension of authorities for Cyberspace Solarium Commission (sec. 1639)

The committee recommends a provision that would amend section 1652 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232) by making a technical correction and changing the final due date for the Cyberspace Solarium Commission's final report to February 1, 2020. The committee recognizes that the commission had its first meeting in early April and needs an extension in order to fully study the immensely complex issues that it has been tasked to contemplate. The committee hopes to receive the commission's final report and the Secretary of Defense's, the Director of National Intelligence's, and the Secretary of Homeland Security's assessments of the report's findings in time to inform the National Defense Authorization Act for Fiscal Year 2021.

Modification of elements of assessment required for termination of dual-hat arrangement for Commander of the United States Cyber Command (sec. 1640)

The committee recommends a provision that would amend section 1642 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114-328) by requiring the Secretary of Defense and Chairman of the Joint Chiefs of Staff, prior to the termination of the dual-hatted arrangement in which the Commander of United States Cyber Command serves as the Director of the National Security Agency (NSA), to certify that: (1) Processes to deconflict military cyber operations and national intelligence operations have been put in place; (2) Tools, weapons, and accesses used in and

available for military cyber operations are sufficient for achieving required effects and United States Cyber Command is capable of acquiring or developing these tools, weapons, and accesses; and (3) The Cyber Mission Force has demonstrated the capacity to execute the cyber missions of the Department, including the execution of national-level missions through cyberspace, defense of the Department of Defense Information Network, and support for other combatant commands, including targeting of adversary military assets.

The committee is encouraged by recent mission successes of Cyber Command, enabled by close cooperation with the NSA. The committee believes that Cyber Command is, however, still maturing as a combatant command and still relies on a strong partnership with NSA to execute the Department of Defense's cyber strategy. The committee therefore believes that eliminating the dual-hat arrangement would be premature at this time. As Cyber Command becomes increasingly active, it will continue to rely on the NSA's intelligence, tools, and weapons. The termination of the Cyber Command-NSA dual-hat could complicate this critical relationship. The committee therefore believes that the dual-hat should be preserved until Cyber Command demonstrates the ability to acquire its own capabilities and carry out its missions effectively.

Use of National Security Agency cybersecurity expertise to support acquisition of commercial cybersecurity products (sec. 1641)

The committee recommends a provision that would establish as a mission of the National Security Agency (NSA) the advising and assistance of the Department of Defense (DOD) in its acquisition and adaptation of cybersecurity products and services from industry, especially the commercial cybersecurity sector.

The committee believes that the entire DOD, and especially the NSA, should leverage the considerable investment, development, and talent in the commercial cybersecurity industry to satisfy the Department's cybersecurity requirements. The Congress has legislated the formal preference for the acquisition of commercial items in the past, most notably in section 8104 of the Federal Acquisition Streamlining Act of 1994 (Public Law 103-355), but the Department too often continues to develop its own hardware and software, including for cybersecurity capabilities. The Department still relies on internally engineered solutions and custom-developed products and services from traditional defense contractors, despite the fact that commercial cybersecurity products and services often outperform these capabilities, scale better, tend to be more supportable, and ultimately cost less. The committee believes that the Department must therefore become a more educated consumer of commercially available and deployed cybersecurity products and services. In order to do so effectively, the NSA must assist the Department. As the Department's largest center of technical cybersecurity expertise, the NSA is uniquely positioned to do so, as shown by their successful utilization of commercially-available cybersecurity products in SharkSeer.

Study on future cyber warfighting capabilities of Department of Defense (sec. 1642)

The committee recommends a provision that would require the Secretary of Defense to direct the Defense Science Board to carry out a study on the future cyber warfighting capabilities of the Department of Defense (DOD). The provision would also require the Secretary to provide the Board with timely access to appropriate resources to conduct the analysis. The provision would require the Board to submit a final report on the study to the Secretary no later than October 1, 2021, and would direct the Secretary to submit the report to the congressional defense committees, along with any comments he may have, no later than November 1, 2021. The Board's study would include: (1) A technical evaluation of the Joint Cyber Warfighting Architecture (JCWA) of the DOD; (2) A technical evaluation of the Department's tool development and acquisition programs; (3) An evaluation of the operational planning and targeting of U.S. Cyber Command; and (4) Recommendations for legislative and administrative action relating to the DOD's future cyber warfighting capabilities.

The committee supports the acquisition of cutting-edge cyberspace warfighting capabilities in the development of the JCWA but is concerned that the effort to develop this joint warfighting vision is disjointed. Specifically, the committee is concerned that aspects of the JCWA, including the Unified Platform, Joint Cyber Command and Control, and Persistent Cyber Training Environment, may lack cohesion with the Cyber Mission Force and that individual components controlled by the Services are not appropriately synchronized with the JCWA vision. Therefore, the committee expects that these and the Department's other future programs, capabilities, and operations support U.S. Cyber Command's joint warfighting strategy and the Department's larger cyber strategy.

Authority to use operation and maintenance funds for cyber operations-peculiar capability development projects (sec. 1643)

The committee recommends a provision that would allow the Secretaries of military departments to use money authorized for appropriation for Operation and Maintenance (O&M) to develop cyber operations-peculiar capabilities up to \$3.0 million annually. The provision would allow the Department of Defense (DOD) to use its O&M funds for the rapid creation, testing, fielding, and operation of cyber capabilities that would be developed and used within the 1-year appropriation period.

The committee believes that cyberspace threats are a continuing concern for the DOD, and, while the Services are working to develop agile teams to respond to cyberspace threats and opportunities, cyber capability development is hamstrung by an acquisition funding process that is often incompatible with real-time operations and innovation. The committee understands that current law often requires coordinated use of up to three different types of funding: Research, Development, Testing, and Evaluation, O&M, and Procurement. Coordinated use of multiple types of funds can lead to bureaucratic requirements and reviews that ultimately hamper cyber capability development within operationally relevant

timeframes. The committee believes that using O&M funds for these purposes can increase operational flexibility and reduce planning and budgeting overhead.

Expansion of authority for access and information relating to cyberattacks on Department of Defense operationally critical contractors (sec. 1644)

The committee recommends a provision that would amend section 391 of title 10, United States Code, to extend the ability of the Department of Defense (DOD) to react immediately to reports of intrusions that may affect critical DOD data. The committee understands the importance of commercial service providers to the DOD and believes that the security and integrity of these providers is absolutely critical to the effective management of the worldwide logistics enterprise, especially during a contingency or wartime. Therefore, the committee believes that the same level of proactive DOD support in responding to cyber incidents should be authorized with respect to these providers as that authorized for cleared defense contractors.

Briefing on memorandum of understanding relating to joint operational planning and control of cyber attacks of national scale (sec. 1645)

The committee recommends a provision that would require the Secretary of Defense to provide a briefing, not later than March 1, 2020, to the congressional defense and homeland security committees on the Joint Department of Defense (DOD) and Department of Homeland Security (DHS) Memorandum of Understanding (MOU), signed by the Secretary of Defense on October 6, 2018.

The committee supports the DOD–DHS MOU but is concerned that it does not fully address the need for joint operational planning for major cyberattacks on the country or for unity of effort and rapid response to such attacks. The committee is also unclear as to whether the National Cyber Strategy, published in September 2018, provides for a standing joint multi-agency organization and staff to plan and direct operational responses to cyberattacks of national scale.

Study to determine the optimal strategy for structuring and manning elements of the Joint Force Headquarters-Cyber organizations, Joint Mission Operations Centers, and Cyber Operations-Integrated Planning Elements (sec. 1646)

The committee recommends a provision that would require the Department of Defense Principal Cyber Advisor (PCA) to conduct a study to determine the optimal strategy for structuring and manning elements of the following: (1) Joint Force Headquarters-Cyber organizations; (2) Joint Mission Operations Centers; and (3) Cyber Operations-Integrated Planning Elements. The provision would require the PCA to submit a report on the study to the Committees on Armed Services of the Senate and the House of Representatives no later than 180 days after the date of the enactment of this Act.

Cyber governance structures and Principal Cyber Advisors on military cyber force matters (sec. 1647)

The committee recommends a provision that would require each secretary of the military departments to designate a Principal Cyber Advisor to act as the principal advisor to the secretary on the cyber forces, cyber programs, and cybersecurity matters of the military department, including matters relating to weapons systems, enabling infrastructure, and the defense industrial base. The committee encourages the secretaries to consider designating an existing official, such as the deputy undersecretary of the military department or the chief information officer of the military department. The provision would require each secretary to review the military department's current governance model for cybersecurity with respect to current authorities and responsibilities. The provision would also require each secretary to brief the congressional defense committees on the findings of the review no later than February 1, 2021.

Designation of test networks for testing and accreditation of cybersecurity products and services (sec. 1648)

The committee recommends a provision that would require the Secretary of Defense to designate three test networks for the testing and accreditation of cybersecurity products and services. The committee understands the importance of test networks in facilitating the consistent and timely accreditation of cutting-edge cybersecurity tools for the defense of the Department of Defense networks.

Consortia of universities to advise Secretary of Defense on cybersecurity matters (sec. 1649)

The committee recommends a provision that would establish one or more consortia to advise and assist the Secretary of Defense on matters relating to cybersecurity. The consortium or consortia established under shall consist of universities that have been designated as centers of academic excellence by the Director of the National Security Agency or the Secretary of Homeland Security. The functions of the consortium are (1) to provide to the Secretary access to the expertise of the members of the consortium on matters relating to cybersecurity; (2) to align the efforts of consortia members in support of the Department of Defense; and (3) to act as a facilitator in responding to Department requests relating to advice and assistance on matters relating to cybersecurity and to provide feedback to the Secretary from members of the consortium.

Subtitle D—Nuclear Forces

Modification of authorities relating to nuclear command, control, and communications system (sec. 1661)

The committee recommends a provision that would transfer statutory responsibility for policy, oversight, and coordination for nuclear command, control, and communications (NC3) programs from the Chief Information Officer of the Department of Defense to the Under Secretary of Defense for Acquisition and Sustainment. This change would align the statute to reflect the Department's plan to

improve governance of the NC3 system and the re-assignment of the NC3 Principal Staff Assistant role to the Under Secretary of Acquisition and Sustainment.

Expansion of officials required to conduct biennial assessments of delivery platforms for nuclear weapons and nuclear command and control system (sec. 1662)

The committee recommends a provision that would add the Commander of the United States Air Forces in Europe to a list of officials required to report biennially on the safety, security, reliability, sustainability, performance, and military effectiveness of the delivery platforms for nuclear weapons and nuclear command and control systems for which each official has responsibility.

The committee does not intend to create a requirement for additional inspections. Instead, this provision is intended to require the aggregation and submittal to the Congress of data gathered on the current inspection schedule.

Conforming amendment to Council on Oversight of the National Leadership Command, Control, and Communications System (sec. 1663)

The committee recommends a provision that would make certain conforming changes to the governing statute of the Council on Oversight of the National Leadership Command, Control, and Communications System, section 171a of title 10, United States Code.

Prohibition on reduction of the intercontinental ballistic missiles of the United States (sec. 1664)

The committee recommends a provision that would prohibit the obligation or expenditure of fiscal year 2020 funds to reduce the responsiveness, alert level, or quantity of deployed U.S. intercontinental ballistic missiles to fewer than 400. The provision would provide an exception to this prohibition for activities related to maintenance and sustainment and activities to ensure safety, security, or reliability.

Briefing on long-range standoff weapon and sea-launched cruise missile (sec. 1665)

The committee recommends a provision that would require the Under Secretary of Defense for Acquisition and Sustainment, in consultation with the Administrator for Nuclear Security, to provide to the Committees on Armed Services of the Senate and the House of Representatives a briefing on opportunities to increase commonality between the long-range standoff weapon (LRSO) and the nuclear sea-launched cruise missile (SLCM-N) and to leverage technologies developed in the course of the LRSO program for the SLCM-N.

Sense of the Senate on industrial base for Ground-Based Strategic Deterrent program (sec. 1666)

The committee recommends a provision that would express the sense of the Senate that maintaining a viable domestic industrial base for large solid rocket motors is in the national security interest of the United States and that, in carrying out the Ground-

Based Strategic Deterrent program, the Secretary of Defense should strive to maintain competition and otherwise act to preserve the industrial base.

Sense of the Senate on nuclear deterrence commitments of the United States (sec. 1667)

The committee recommends a provision that would express the sense of the Senate that dual-capable aircraft (DCA) provide visible assurance to allies and serve as a tangible demonstration of U.S. extended deterrence guarantees.

As part of its commitment to the North Atlantic Treaty Organization (NATO), the United States currently maintains a small number of forward-deployed DCA and nonstrategic nuclear weapons in European countries. Though limited in size, the committee continues to believe the DCA mission is an essential component of U.S. and NATO defense postures. The Department plans to sustain this capability by replacing the current aging DCA with nuclear-capable F-35 aircraft, and the President's budget request for fiscal year 2020 included \$71.3 million as part of an ongoing effort to certify the F-35A for this mission.

The 2018 Nuclear Posture Review introduced two new supplemental nuclear capabilities in response to a deteriorating threat environment and perceived gaps in U.S. deterrence posture. The committee believes that the F-35A, particularly when armed with the life-extended B61-12 nuclear bomb, will significantly enhance regional deterrence posture and that accelerating the deployment of this capability could provide a treaty-compliant response to changing threat conditions that also assures NATO allies of U.S. commitment to their security.

Accordingly, not later than January 15, 2020, the committee directs the Under Secretary of Defense for Acquisition and Sustainment, in consultation with the Secretary of the Air Force, to provide a report assessing the feasibility and advisability of accelerating activities necessary to certify the F-35A to perform DCA operations.

Subtitle E—Missile Defense Programs

Iron Dome short-range rocket defense system and Israeli cooperative missile defense program co-development and co-production (sec. 1671)

The committee recommends a provision that would authorize not more than \$95.0 million for the Missile Defense Agency (MDA) to provide to the Government of Israel to procure components for the Iron Dome short-range rocket defense system through co-production of such components in the United States. The provision would also authorize \$50.0 million for the MDA to provide to the Government of Israel for the procurement of the David's Sling Weapon System and \$55.0 million for the Arrow 3 Upper Tier Interceptor Program, including for co-production of parts and components in the United States by U.S. industry. The provision would also provide a series of certification requirements relating to implementation of the below relevant bilateral agreements before disbursement of these funds. These funds are a subset of the \$500.0 million total

authorized to be appropriated for cooperative missile defense programs with Israel within this Act.

The committee acknowledges that the September 14, 2016, Memorandum of Understanding (MOU) between the United States and Israel commits \$500.0 million in U.S. funding for cooperative missile defense programs annually, beginning in fiscal year 2019 and ending in fiscal year 2028. According to the MOU, the United States and Israel jointly understand that any U.S. funds provided for such programs should be made available according to separate bilateral agreements for the Iron Dome, David's Sling, and Arrow 3 Upper Tier Interceptor Program and should maximize co-production of parts and components in the United States at a level equal to or greater than 50 percent of U.S.-appropriated funds for production. Additionally, Israel commits not to seek additional missile defense funding from the United States for the duration of the MOU, except in exceptional circumstances as may be jointly agreed by the United States and Israel. The committee expects to continue to receive annual updates on all cooperative defense programs, as delineated in the MOU, to include progress reports and spending plans as well as the top-line figures of the Israel Missile Defense Organization budget for these programs.

Expansion of national missile defense policy and program redesignation (sec. 1672)

The committee recommends a provision that would express the sense of the Senate regarding the threat to U.S. national security from ballistic, cruise, and hypersonic missiles. The provision would also modify the statement of policy contained in section 1681 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114-328) to include defense against cruise and hypersonic missiles and would require the Secretary of Defense to redesignate all strategies, policy, programs, and systems to reflect this policy.

Acceleration of the deployment of persistent space-based sensor architecture (sec. 1673)

The committee recommends a provision that would express the sense of the Senate that the Secretary of Defense should rapidly develop and deploy a persistent, space-based sensor architecture as soon as technically feasible. The provision would also require the Secretary of Defense to assign to the Director of the Missile Defense Agency (MDA) the primary responsibility for the development and deployment of a hypersonic and ballistic tracking space sensor (HBTSS). The provision would also require the Comptroller and the Director for Cost Assessment and Program Evaluation to certify to the congressional defense committees whether the HBTSS program is fully funded in the future years defense program submitted with the fiscal year 2021 budget request. The provision would also require the Director of the MDA to begin on-orbit testing of an HBTSS no later than December 31, 2021, with allowance for a waiver if the Secretary of Defense submits to the congressional defense committees a report including a number of elements. Finally, the provision would require the Secretary to submit a report on efforts relating to space-based sensing and tracking capabilities for

missile defense at the MDA, the Defense Advanced Research Projects Agency, the Air Force, and the Space Development Agency.

Nonstandard acquisition processes of Missile Defense Agency (sec. 1674)

The committee recommends a provision that would express the sense of the Senate in support of the nonstandard acquisition processes used by the Missile Defense Agency (MDA). The provision would also prohibit obligation or expenditure of funds authorized to be appropriated by this Act to change these processes until the Secretary of Defense has consulted with a number of senior defense officials with responsibility for aspects of missile defense, submitted a report to the congressional defense committees, and allowed 270 days to elapse after submittal of the report.

Plan for the Redesigned Kill Vehicle (sec. 1675)

The committee recommends a provision that would require the Director of the Missile Defense Agency (MDA) to submit to the congressional defense committees a report on the delay in the Redesigned Kill Vehicle (RKV) program, including: (1) A description of the reason for the delay; (2) An overview of the revised program schedule; (3) Any recommendations for accelerating the fielding schedule; (4) A timeline, any additional funding required, and a risk assessment for such recommendations; and (5) Any recommendations suggested by contractors to the Director that were not adopted and an explanation as to why.

The committee supports the MDA's efforts to continue to improve the reliability, producibility, and maintainability of a more effective kill vehicle for the ground-based midcourse defense system, including by leveraging mature technologies from fielded systems when appropriate, in order to better defend the homeland from long-range ballistic missile threats.

Report on improving ground-based midcourse defense element of ballistic missile defense system (sec. 1676)

The committee recommends a provision that would require the Director of the Missile Defense Agency to submit a report on options to increase the capability, capacity, and reliability of the ground-based midcourse defense element of the U.S. ballistic missile defense system.

Sense of the Senate on recent Missile Defense Agency tests (sec. 1677)

The committee recommends a provision that would express the sense of the Senate on a highly successful 2018 Missile Defense Agency flight test campaign.

Sense of the Senate on missile defense technology development priorities (sec. 1678)

The committee recommends a provision that would express the sense of the Senate on the importance of advanced missile defense technologies to preventing and defeating the rapidly expanding offensive missile threat.

Publication of environmental impact statement prepared for certain potential future missile defense sites (sec. 1679)

The committee recommends a provision that would require the Secretary of Defense to make available to the public the Environmental Impact Statement (EIS) prepared in accordance with section 227(b) of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239).

The committee notes that section 227 required the Missile Defense Agency (MDA) to evaluate candidate sites for a potential future deployment of additional ground-based interceptors for homeland missile defense, including preparation of the EIS for each potential Continental Interceptor Site. This provision would require the Secretary to publish the EIS in a publicly available format.

Subtitle F—Other Matters

Matters relating to military operations in the information environment (sec. 1681)

The committee recommends a provision that would affirm the authority of the Secretary of Defense to conduct military operations in the information environment, including clandestine operations, to defend the United States, its allies, and its interests, including in response to malicious activities carried out against the United States or a United States person by a foreign power. The provision would also clarify that military operations in the information environment are traditional military activities for the purposes of section 503(e)(2) of the National Security Act of 1947 (Public Law 80–253).

The committee believes that military operations in the information environment are traditional military activities and are essential contributors to military effectiveness in modern warfare. The committee thus sees military operations in the information environment as key to the National Defense Strategy and its implementation.

Extension of authorization for protection of certain facilities and assets from unmanned aircraft (sec. 1682)

The committee recommends a provision that would provide an extension of the authorization for protection of certain facilities and assets from unmanned aircraft.

Hard and deeply buried targets (sec. 1683)

The committee recommends a provision that would require the Chairman of the Joint Chiefs of Staff to submit to the congressional defense committees a classified report on hard and deeply buried targets, including an estimate of the total number of high-value targets and an assessment of the current ability to hold such targets at risk using existing and projected U.S. nuclear and conventional capabilities. The provision would also require the Secretary of Defense to develop a plan to ensure that the United States is able to hold such targets at risk by 2025 and to certify annually that such plan is being implemented.

Items of Special Interest

Acquisition plan for Space Command and Control program

The committee is concerned that the Space Command and Control program is more ambitious than its failed predecessor, the Joint Space Operations Center Mission System (JMS) program. The Space Command and Control program is software-intensive and intended to replace numerous legacy program requirements that the JMS failed to address. Due to the increased scope and ambition of the program, as well as the checkered history of previous program development, the committee believes that heightened oversight is required during the early phases of development.

Therefore, the committee directs the Secretary of the Air Force to develop an acquisition strategy for the Space Command and Control program and provide a report on this strategy to the congressional defense committees, the Under Secretary of Defense for Acquisition and Sustainment, and the Comptroller General of the United States no later than October 31, 2019.

The report on the acquisition strategy shall include: (1) An acquisition schedule over the next future years defense program; (2) The requirements for each phase of acquisition, including critical management events; (3) A description of the structure of the program, including development, testing, production, integration, and life-cycle support for the program; (4) The metrics to be tracked and evaluated and the means and manner in which such metrics shall be reported, including any necessary software to be developed or acquired; and (5) The assignment of management and oversight responsibilities and authorities to ensure coordination and synchronization of development efforts across Air Force components; and (6) The amount of funds necessary to carry out the program across the future years defense program and a description of the contracting and business strategies to be implemented, including the integration of commercially available products.

The committee notes the requirement for continued annual reports with reviews and reports by the Comptroller General of the United States is found elsewhere in this Act.

Addressing the Department of Defense's cyber red team vulnerabilities

The committee recognizes the importance of crowdsourced security testing programs, such as Hack the Pentagon, that utilize technology platforms and ethical security researchers to test for cyber vulnerabilities within the Department of Defense (DOD). Third party security researchers could offer the DOD supplemental manpower and expertise needed to find cyber vulnerabilities in weapon platforms, databases of personally identifiable information, health data repositories, and other critical DOD systems in order to fix these vulnerabilities. The committee is aware that the Department funded a multi-year effort to enhance the scope of third-party cyber testing but that resources given to the program are insufficient to address the sheer size and scope of potential vulnerabilities. Therefore, in order to better secure the Department from cyberattacks and vulnerabilities, the committee encourages the Department to broaden its use of third party crowdsourced security platforms

where necessary and appropriate to inform cybersecurity priorities, policy, and requirements.

Airborne Launch Control System sustainment

The Airborne Launch Control System (ALCS) and its trainer were built in the 1980s and still rely on 8-bit processors, which industry no longer supports. There is also a diminishing number of experts that can rebuild the existing units, which must last through the recapitalization of the E-6B aircraft. In addition, the single trainer for this system is housed at Offutt Air Force Base and was severely damaged during the recent flood. Therefore, the committee directs the Secretary of the Air Force to provide a briefing, not later than February 28, 2020, to the congressional defense committees on the supply chain to support continued use of the current ALCS and efforts to rebuild the trainer unit.

Assessment of replacement of E-4B and E-6 aircraft

The committee is aware that the Department of Defense is conducting an analysis of alternatives (AoA) to determine the path forward for replacing the E-4B and E-6 aircraft, which perform crucial missions for nuclear command, control, and communications and require timely recapitalization. The committee also understands that the Navy and Air Force are assessing options that include combining both missions onto a single aircraft or moving either or both to an executive airlift platform. Given the importance of the mission and the long duration, span of requirements, and cost of this effort, the committee directs the Comptroller General of the United States to undertake a multi-year effort to monitor this program, including mission, requirements, cost, scope, and schedule. The committee directs the Comptroller General to provide a briefing on the preliminary findings of this effort to the congressional defense committees no later than March 1, 2020, with a first year report to follow at a time agreed to at the briefing. Since the committee expects that this will be a long-term effort, an out-year reporting schedule will also be agreed upon at the time of the delivery of the preliminary findings.

Additionally, not later than 60 days after the completion of the ongoing AoA, the committee directs the Secretary of Defense to provide a briefing to the congressional defense committees on the study's results and associated next steps.

Assessment of the cybersecurity of Department of Defense classified networks

The committee notes that the Department of Defense (DOD) has deployed a substantial number and variety of cybersecurity sensors, systems, and applications on the unclassified networks of the Department of Defense Information Network (DODIN) and collects large volumes of data and metadata about activities on the unclassified DODIN that are analyzed to detect cyber intrusions. However, the Department has not similarly actively defended the Secret and Sensitive Compartmentalized Information (SCI) levels of the DODIN, relying instead on the separation of these levels from the public Internet for cybersecurity.

The committee directs the Chief Information Officer, in coordination with the Principal Cyber Advisor (PCA) and the Commander of U.S. Cyber Command, to conduct an analysis and provide the results to the congressional defense and intelligence committees no later than March 1, 2020, comparing and contrasting the levels of cybersecurity on the DODIN networks carrying unclassified, Secret, and SCI data. The analysis should assess: (1) Whether air-gapping or isolating classified networks is a sufficient cybersecurity measure; (2) Whether classified networks should have increased levels of protection in light of current and future threats; (3) Whether these enhancements, if necessary, should be the same as or similar to cybersecurity defenses deployed on DOD unclassified networks or whether classified networks demand unique or more sophisticated cybersecurity measures; (4) How DOD cybersecurity service providers and the Cyber Mission Force should posture themselves to defend classified networks; and (5) What the rough order of magnitude costs of any necessary enhancements would be. The PCA Cross-Functional Team shall coordinate the analysis and preparation of the report.

Briefing on integration of commercial satellite communications capabilities

The committee supports the Department of Defense's (DOD) continued efforts to integrate commercial satellite communications (COMSATCOM) capabilities into the DOD satellite communications (SATCOM) architecture and transition to a long-term, integrated partnership with commercial operators. This new approach is intended to ensure that the DOD receives the best SATCOM value on a more secure, cost-effective, and resilient basis. The committee commends the Air Force for its ongoing efforts, including the transfer of COMSATCOM procurement authority from the Defense Information Systems Agency to Air Force Space Command. As the Department recapitalizes its space architecture for wideband and protected communications and transitions to greater reliance on commercial capabilities, the committee encourages the Department to prioritize adequate and stable funding for related activities.

Therefore, the committee directs the Secretary of Defense to provide to the Committees on Armed Services of the Senate and the House of Representatives a briefing on efforts to integrate COMSATCOM capabilities into the DOD SATCOM architecture by March 15, 2020. The briefing shall include an assessment of: (1) Clear lines of authority for integration of COMSATCOM capabilities into a SATCOM architecture; (2) Tools and technologies necessary to improve efficiency, resiliency, usability, and functionality for the DOD COMSATCOM user community; (3) Funding and resourcing required to adequately prioritize and accelerate COMSATCOM integration; and (4) Innovative acquisition approaches that enable long-term arrangements for COMSATCOM services, consistent with existing contracting authorities and appropriations law.

Briefing on Joint Cyber Command and Control program

The committee understands the importance of the Joint Cyber Command and Control (JCC2) program for situational awareness

and battle management for cyberspace operations at the operational and strategic levels. The committee is aware of recent prototyping activities within U.S. Cyber Command to leverage previous Defense Advanced Research Projects Agency and Strategic Capabilities Office efforts to meet this critical need. The committee is encouraged by these efforts to use technologies from Plan X and Project IKE as a prototype to address these warfighting requirements. The committee believes that these prototyping efforts could be leveraged as a foundation for the JCC2 program. The committee therefore directs the Secretary of Defense to provide a briefing to the congressional defense committees no later than October 1, 2020, on the plans to leverage previous prototyping efforts in the JCC2 acquisition strategy.

Briefings on the status of replacement progress of the mobile ground systems supporting the Space Based Infrared Satellite system

The committee is concerned about challenges in fielding the mobile ground systems that support the Space Based Infrared Satellite System program as well as the Nuclear Detonation Detection System. These mobile ground systems are replacing mobile ground systems from the 1980s, which have become increasingly unsustainable and will soon be obsolete. Programmatic delays have undermined the ability of these mobile ground systems to meet requirements to deliver long-term, cost-effective, multi-role, and multi-mission space effects to the warfighter across the range of military operations.

Therefore, the committee directs the Secretary of the Air Force to brief the congressional defense committees on the fielding of these mobile ground systems by March 1, 2020, with a follow-up briefing to be delivered by September 1, 2020.

Comptroller General assessment of cyber infrastructure programs

Over the last few years, the Department of Defense (DOD) has begun to invest in numerous cyber capabilities that will be integrated into the Joint Cyber Warfighting Architecture (JCWA). Major components of the JCWA include cyber tools and the Unified Platform, Joint Cyber Command and Control, and Persistent Cyber Training Environment programs.

The committee supports the acquisition of cutting-edge cyberspace capabilities but is concerned that a systemic analytical approach is needed to ensure a sound and viable cyber infrastructure architecture. The DOD must be able to deliver new capabilities while meeting cost, schedule, and performance targets. Given the importance, long duration, cost, and span of requirements for the acquisition efforts pursuant to the JCWA, the committee directs the Comptroller General of the United States to undertake a multi-year effort to monitor these programs, including mission, requirements, cost, scope, and schedule.

The committee directs the Comptroller General to provide a briefing on the preliminary findings of this effort to the congressional defense committees no later than March 31, 2020, with a first year report to be submitted not later than December 31, 2020.

Since the committee expects that this will be a long-term effort, an out-year reporting schedule will also be agreed upon at the time of the delivery of the preliminary findings.

The Comptroller General's review should address: (1) The purpose, scope, and technical merits of the capabilities that fit within the JCWA construct; (2) Their integration with elements of the Cyber Mission Force, component-level cybersecurity capabilities, and the Department's operational and targeting concepts; (3) The extent to which these capabilities are developed in a coordinated manner and are compatible with new and existing systems, networks, and capabilities; (4) How the DOD and the Services formulate requirements for JCWA programs, including how they obtain warfighter and operator input; and (5) The DOD's acquisition strategies, including contracting and development approaches, for satisfying these requirements.

Comptroller General report on readiness of the nuclear command, control, and communications system

The committee understands that, while the Department of Defense is working to modernize the nuclear command, control, and communications (NC3) enterprise, the elements and systems that currently make up this enterprise must also be sustained and maintained. Examples of such elements and systems include the extremely high frequency MILSTAR and Advanced Extremely High Frequency satellite terminals, the Single Channel Anti-Jam Man-Portable Extremely High Frequency Terminal, the Navy's E-6B Mercury and Air Force's E-4B National Airborne Operations Center aircraft, and very low frequency transmitter and receiver systems. While the Department routinely evaluates the performance of the overall NC3 system, the committee is concerned that the Department does not have an integrated picture of the operational availability of the individual components that make up the system. The committee is also unaware of any readiness reporting procedure to assess and track the health of these individual systems across the Department.

Therefore, the committee directs the Comptroller General of the United States to review the readiness reporting procedures for the elements and systems that comprise the NC3 enterprise. The Comptroller General shall provide a briefing on the preliminary findings of this review to the congressional defense committees no later than March 1, 2020, with a final report to follow at a time agreed to at the briefing.

Comptroller General study on weapon system cybersecurity

The committee understands the importance of appropriate cybersecurity protections' incorporation in future Department of Defense (DOD) major defense acquisition programs. The Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113-291) directed the Department to evaluate the cyber vulnerabilities of major weapons systems of the Department of the Defense. The committee has previously asked the Comptroller General of the United States to conduct assessments on the cybersecurity of major weapons systems. The Comptroller General found that these programs and associated weapon

systems are increasingly networked and dependent on software, information technology, and automation to achieve their intended performance, making them vulnerable to a variety of cybersecurity threats. At the same time, federal and contractor systems face a growing number of cyber-based threats, including advanced persistent threats. The Comptroller General also found that the DOD has not yet determined how to address weapon systems cybersecurity and had only recently begun requiring acquisition programs to define and track the cybersecurity measures that they would employ to protect their systems.

The committee therefore directs the Comptroller General to continue its assessment of DOD efforts to improve the cybersecurity of its major defense acquisition programs and to brief the congressional defense committees annually on the results, with recurring reports whose scope and timing may be determined by the Comptroller General in consultation with the congressional defense committees. These briefings and reports may address a number of topics related to defense acquisitions and weapon system cybersecurity, including program security plans, requirements, weapon system design, DOD's use of intelligence assessments to inform acquisition programs, control system architectures, contractor protection of government data and associated networks, related contracting issues, and testing. The Comptroller General should consult with the congressional defense committees to determine the specific topics area or areas covered by each assessment.

Coordination of election cybersecurity efforts

The committee recognizes that foreign adversaries have sought to use cyber operations, information operations, and other espionage activities against the United States to influence American elections and the democratic political processes.

Section 1642 of the National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) provides the National Command Authority with the authority to disrupt, defeat, and deter cyber attacks against the United States, including attempts to influence American elections and democratic political processes. Further, section 1650 of the same law authorizes the Department of Defense to assign technical personnel to the Department of Homeland Security to enhance cybersecurity cooperation and unity of efforts with respect to protection of critical infrastructure, including election infrastructure.

The committee urges the Department of Defense to ensure that it coordinates, consistent with applicable authorities and policies, with the Department of Homeland Security, the Department of Justice, and the National Security Agency to safeguard the resilience and integrity of American election processes and infrastructure. The committee encourages the Department of Defense to make further use of its authorities to provide technical assistance and information to the Department of Homeland Security and other Federal entities to secure election infrastructure and to support operational responses to any malicious activities.

The committee directs the Secretary of Defense, in coordination with the appropriate Federal agencies, to brief the congressional defense committees on the coordination and the status of the De-

partment of Defense's efforts to support interagency efforts to defend American election processes and infrastructure no later than September 30, 2020. The briefing shall also inform the committee of the Department of Defense's assessment of scope and intensity of any foreign influence operations, cyber operations, and other malicious activities that pose a threat to the Federal elections to be held on November 3, 2020, and any recommendations on and plans for adjustments to authorities, legal frameworks, force posture, capabilities, and operational concepts necessary to defend against such operations and attacks.

Cybersecurity of commercial clouds used by Department of Defense

The committee encourages the Department of Defense's (DOD) adoption of commercial cloud-based products and services to store and process data. The committee understands the potential of commercial clouds to provide cost-effective, state-of-the-art capabilities but also understands the imperative to keep its high-impact, mission-critical data secure from our adversaries. To ensure the cybersecurity of commercial cloud products and services used by the Department, it is critical that the Department be able to conduct cybersecurity testing, including threat-realistic cyberattacks, to assess the cybersecurity of the Department's data and the cyber defense response to the attacks.

The committee directs the Secretary of Defense to provide a briefing, no later than February 1, 2020, to the Committees on Armed Services of the Senate and the House of Representatives on how the DOD is ensuring that independent cyber assessments, including threat-realistic attacks by independent DOD cyber red teams, are conducted for commercially-provided infrastructure (e.g., clouds) that involve storage of high-impact or classified data in order to assess the security of the data and defensive capabilities associated with the infrastructure. The briefing shall detail DOD's efforts with respect to every instance of a commercial cloud in which the Department is storing, or plans to store, high-impact or classified DOD data. The committee further recommends that information on this testing be included in the Director of Operational Test and Evaluation annual report.

Cybersecurity of industrial control systems

The committee commends the Department of Defense for its efforts to address the cybersecurity of installation industrial control systems (ICSs). The committee expects to be kept informed of the Department's ongoing efforts in this regard. The committee is aware of a Joint Capability Technology Demonstration (JCTD), called MOSAICS, involving Space and Naval Warfare Systems Command, the Office of the Under Secretary of Defense for Research and Engineering, a national laboratory, and a University Affiliated Research Center. The demonstration is based on commercial technology and standards developed by the National Security Agency with industry and the Department of Homeland Security under an umbrella initiative called Integrated Adaptive Cyber Defense (IACD). IACD technologies include sensing and automated orchestration and interoperability among cybersecurity tools and sys-

tems to defend both operational technology (such as ICSs) and information technology.

Therefore, the committee directs the Secretary of Defense to brief the congressional defense committees by February 1, 2020, on the status of these and related efforts to secure ICSs. This briefing shall include an assessment of the MOSAICS JCTD, the utility of additional pilot programs at one or more installations to test measures aimed at mitigating cybersecurity risk of installation ICSs, and plans for acquiring and operationally fielding advanced commercial cybersecurity solutions for ICS cybersecurity.

Declassification of near-peer adversaries' military capabilities

The committee recognizes that the United States' near-peer competitors—China and Russia—are rapidly advancing key military capabilities. Such capabilities include but are not limited to: (1) Advanced submarine technology; (2) Hypersonic missiles; (3) Fifth-generation fighter aircraft; (4) Cyber and information operations capabilities; (5) Space and counterspace capabilities; (6) Clandestine intelligence activities and human source development; and (7) Those that advance destabilization activities worldwide, including in Ukraine, Eastern Europe, Syria, the Horn of Africa, the South China Sea, Venezuela, and the Arctic, among other capabilities that threaten the United States' strategic edge. Additionally, the committee recognizes that much of the U.S. intelligence regarding these military capabilities and threats is classified. As a consequence, Department of Defense officials are frequently unable to provide detailed testimony during public committee hearings about the erosion of the comparative military advantage of the United States, which constrains congressional oversight of crucial national security issues and prevents the American people from understanding the intelligence assessments that inform national security policy.

The committee further recognizes that the Department of Defense is required to produce “military power” reports with respect to both China and Russia. Section 1260 of the National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) requires annual classified and declassified reports on China's military power, titled “Annual Report on Military and Security Developments Involving the People's Republic of China.” Section 1245 of the Carl Levin and Howard P. “Buck” McKeon National Defense Authorization Act for Fiscal Year 2015 (Public Law 113–291), as amended, requires an annual Russian military power report.

The committee stresses that it is critically important that the Department of Defense strive for increased transparency with the Congress and the American people on critical issues of national security. Accordingly, the committee urges the Department, in the course of producing the annual reports pertaining to both China and Russia, to declassify and make available to the public, to the maximum extent possible consistent with United States national security, information on the development of key military capabilities and activities of China and Russia.

Department of Defense endpoint management program

The committee understands the importance of robust endpoint cybersecurity, including the continuous monitoring of devices on the network. Section 1647 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) required the Director of Cost Assessment and Program Evaluation to submit to the congressional defense committees a report evaluating the Department of Defense’s (DOD) information security continuous monitoring programs. The committee is aware of the DOD Chief Information Officer’s (CIO) cybersecurity priorities, including a focus on network security and information-sharing. The committee is pleased with the aggressive implementation of the DOD CIO’s approach, including a robust endpoint management program that includes comply-to-connect and continuous monitoring. The committee urges the DOD to continue the rapid deployment of commercial technology capabilities within its endpoint management program to secure the DOD Information Network and that allows further standardization of capabilities across the Department.

Foreign online influence operations

Foreign influence operations on and across social media platforms pose a significant threat to the security and stability of the United States and its allies and partners. As Director of National Intelligence Dan Coats testified to the Senate Select Committee on Intelligence in January 2019, “U.S. adversaries and strategic competitors almost certainly will use online influence operations to try to weaken our democratic institutions, undermine U.S. alliances and partnerships, and shape policy outcomes in the United States and elsewhere.” He also warned that the intelligence community expects that “the threat landscape could look very different in 2020 and future elections.”

The Global Engagement Center (GEC), as established by section 1287 of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328), as amended by section 1284 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232), is authorized to direct, lead, synchronize, integrate, and coordinate efforts of the Federal Government to recognize, understand, expose, and counter foreign state and foreign non-state propaganda and disinformation efforts aimed at undermining or influencing the policies, security, or stability of the United States and U.S. allies and partner nations. In carrying out this mission, the GEC may provide grants to nongovernmental organizations, federally funded research and development centers, and academic institutions, including for purposes of analyzing and reporting on tactics, techniques, and procedures of foreign information warfare and other efforts with respect to disinformation and propaganda.

The committee continues to strongly support the mission of the GEC and reiterates the importance of integrating military and non-military tools of statecraft to address this challenge. The committee believes that the GEC is well positioned to counter foreign influence operations, including through the support of efforts by U.S. nongovernmental organizations and other appropriate entities to analyze and report on foreign influence operations on social media

platforms aimed at undermining or influencing the policies, security, or stability of the United States.

Ground-Based Midcourse Defense system enhancements

In 2017, the President sought additional funding to expand the capacity of the Ground-based Midcourse Defense (GMD) system and deploy an additional 20 ground-based interceptors (GBIs) equipped with redesigned kill vehicles (RKVs) by 2023. In his March 2018 prepared statement submitted to the Senate Armed Services Committee's Subcommittee on Strategic Forces, Lieutenant General Samuel A. Greaves, the director of the Missile Defense Agency (MDA), explained that "this increase to GBI capacity is a response by the National Command Authority to the rapidly advancing North Korean threat and has been designated as an 'emergency requirement' by the President in the FY18 President's Budget Amendment." However, in his 2019 statement, Lieutenant General Greaves stated, "I assessed the RKV program did not meet the entrance criteria for the Critical Design Review, resulting in a projected delay in the program of up to 2 years."

While the committee appreciates MDA's commitment to rigorous testing and a "fly before you buy" approach, the committee is concerned about the GMD system's ability to continue to pace growing ballistic missile threats to the United States without the 20 additional operational interceptors that would be available on the anticipated schedule. Accordingly, the committee directs the Missile Defense Agency to provide a briefing to the congressional defense committees on options to improve the reliability, performance, and overall effectiveness of the GMD system. The briefing shall include an assessment of the cost, expected reliability benefits, feasibility, and advisability of upgrading configuration 1 boosters to configuration 2 and accelerating planned upgrades of the fielded ground systems components ahead of projected GMD Development and Sustainment Contract dates.

Independent evaluation of Air Force space command and control enterprise program

The committee is aware that the Air Force is developing a Space Command and Control (Space C2) program, which is a software-intensive effort borne out of the failure of the Joint Space Operations Center Mission System program (JMS). The Director of Operational Test and Evaluation concluded in his fiscal year 2018 annual report that the JMS is not operationally effective for its Space Situational Awareness mission. The committee is concerned that the Air Force has now embarked on a larger effort to develop a space enterprise battle management communication and control platform, despite the failure of the JMS effort and potentially without incorporating the lessons learned.

The committee has prior experience with software-intensive development efforts, such as the Air Force's Global Positioning Systems Next Generation Operational Control program, which incurred a Nunn-McCurdy breach. Such experience indicates the need to critically examine the Space C2 program in its early stages to ensure that it proceeds on a sound programmatic footing.

Therefore, the committee directs the Under Secretary of Defense for Acquisition and Sustainment to enter into an agreement with a federally funded research and development center (FFRDC) to review the Air Force's Space C2 program and develop a final report based on such evaluation. The committee directs the Under Secretary to submit to the congressional defense committees, not later than February 1, 2020, the FFRDC's final report.

Integrated Tactical Warning and Attack Assessment system and multi-domain sensors

The committee continues to be concerned about the health of the Integrated Tactical Warning and Attack Assessment (ITW/AA) system, which enables precise decision-making by senior leaders when responding to strategic threats to North America. The committee commends the Secretary of the Air Force for a well-thought-out series of steps to implement a plan to better manage the program, which was submitted to the committee on February 28, 2019.

As the program is critical to the defense of North America, the committee directs the Secretary, in consultation with the commanders of U.S. Northern Command and U.S. Strategic Command, to brief the congressional defense committees on the progress of implementing this important plan by March 1, 2020, with a second briefing by September 1, 2020.

Light Detection and Ranging capabilities

The committee notes the importance of Light Detection and Ranging (LIDAR) capabilities in providing high-resolution digital mapping to support Department of Defense (DOD) planning and operations around the world. The committee is aware of commercial airborne mapping providers that collect and process unclassified aerial orthoimagery and LIDAR data in support of DOD and other federal departments and agencies of the U.S. government in permissive and non-conflict areas around the world and encourages the DOD to look for opportunities to utilize commercial solutions for its requirements, when appropriate.

Low Power Laser Demonstrator program

The committee continues to support the Missile Defense Agency's Low Power Laser Demonstrator (LPLD) program and the development of a boost phase intercept (BPI) capability. Further, beyond BPI, a high altitude laser weapon system, like those under development in the LPLD program, could have multiple applications and capabilities and could be adapted to be an effective countermeasure against other threats, including cruise, surface-to-air, air-to-air, and hypersonic missiles.

The committee believes that existing lasers under development could be scaled up further to the higher power and beam quality levels needed to prosecute targets yet continue to have the low size and weight requirements that are critical to fielded systems. The Congress has recognized the need for this technology and provided increased funding in fiscal year 2019 with the intent of continuing the development of three technologies with the potential for scaling such lasers to the high power levels required for BPI and defense against other advanced threats.

In carrying out the LPLD, the committee directs the Director of the Missile Defense Agency to continue to pursue the integration of such laser systems aboard airborne platforms, culminating in flight demonstrations as early as possible. Therefore, not later than December 1, 2019, the Secretary of Defense shall submit to the Committees on Armed Services of the Senate and the House of Representatives a report on the Department of Defense's plans for the flight test program for the LPLD project, including: (1) The expected date that operational airborne tests of the LPLD will begin; (2) The expected required number of flight tests and expected cadence of flight tests that the LPLD project will require; and (3) A comprehensive description of the Department's planned locations to conduct LPLD flights and tests, including a cost-benefit analysis for each location and an analysis of each location's suitability for the flight platforms anticipated to participate in the project.

National Security Agency Cyber Centers of Academic Excellence

The committee is aware of the National Security Agency (NSA) National Centers of Academic Excellence (CAE) in Cyber Defense and Cyber Operations, a joint NSA and Department of Homeland Security (DHS) program to promote higher education and research in cyber defense and produce professionals with cyber defense expertise. The committee is encouraged by the university participation in this program and believes that this program is critical to developing a cyber workforce for the Department of Defense (DOD).

The committee notes that these academic institutions have met designated criteria for selection and have constructed their programs around cyber technologies and techniques that are critical to intelligence, military, and law enforcement organizations. The committee believes that these NSA CAEs are a resource that should be more effectively engaged by the Department to provide mission-critical support to the DOD, including in cybersecurity research, cyber operational training, cyber strategies and best practices, supply chain and security economics, and cyber domain studies. The committee believes that the work of, as well as the workforce emerging from, these academic institutions should be more widely used to meet DOD needs. The committee believes that emphasis should be placed on institutions that have received all three NSA CAE designations: cyber defense education, cyber defense research, and cyber operations.

Therefore, the committee directs the Under Secretary of Defense for Research and Engineering and the Chief Information Officer to provide a briefing to the congressional defense committees by January 1, 2020, on the current and potential future utilization of the NSA CAE institutions as feeder schools, research partners, and key partners of the DOD cyber enterprise. The briefing shall include, at a minimum, an evaluation of additional ways that the DOD could employ the capabilities of NSA CAE institutions and recommendations for programs that could be established to further strengthen the partnership between the DOD and the NSA CAEs.

Nuclear Posture Review implementation

The 2018 Nuclear Posture Review (NPR) states that the B83–1 and B61–11 nuclear bombs will be retained in the stockpile, due to their ability to hold at risk a variety of protected targets, at least until suitable replacements are identified. The committee understands that, as part of its implementation of the NPR, the Department of Defense is conducting an assessment of hard and deeply buried targets and options to credibly hold those targets at risk consistent with deterrence requirements. The committee directs the Secretary of Defense to brief the Senate Armed Services Committee on the results of this review not later than 60 days after the date of the enactment of this Act.

Pilot program authority to enhance cybersecurity and resiliency of critical infrastructure

Section 1650 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) established a pilot authority for the Secretary of Defense, in coordination with the Secretary of Homeland Security, to provide technical cyber personnel to the Department of Homeland Security (DHS) to enhance cooperation, collaboration, and unity in government efforts to protect critical infrastructure. The committee believes that a robust partnership between the Department of Defense (DOD) and the DHS is critical to both organizations. The committee is pleased to learn of the use of this authority during the defense of the 2018 midterm elections and encourages the Departments to continue use of this authority. The committee also encourages the Departments to expand the use of this authority to include DOD support to DHS for red-teaming and tabletop exercises, cybersecurity assessments of commercial critical infrastructure relevant to DOD installations, and other mutually beneficial activities.

Reducing barriers to service in U.S. Space Force

The committee acknowledges the absolute necessity of recruiting the Nation’s best talent in science, technology, engineering, and math to serve in the U.S. Space Force in order to sustain a competitive advantage in the space domain. Therefore, the committee directs the Secretary of Defense to craft the personnel regulations of the U.S. Space Force with the intent to open accession into the U.S. Space Force to the widest possible pool of talent while meeting military standards by limiting, to the maximum extent possible, restrictions based on physiological conditions. The committee directs the Secretary of Defense to brief the congressional defense committees, not later than 180 days after the date of the enactment of this Act, on the medical and physical standards and requirements that will apply to members of the U.S. Space Force, the justification associated with each requirement, and a comparison to the current requirements that exist in the U.S. Air Force. This briefing should also include any recommended changes to statute that may inhibit efforts to make the broadest recruiting pool available to the U.S. Space Force.

Report on Mobile User Objective System

The Mobile User Objective System (MUOS) is the Department of Defense's (DOD) next-generation narrowband military satellite communications system designed to provide increased narrowband communications capacity and capability. The committee is concerned that synchronizing delivery of the MUOS space and ground segments with the Army's compatible Handheld, Manpack, and Small Form Fit Radios remains a challenge.

Consequently, the committee directs the Comptroller General of the United States to review: (1) The challenges to enabling effective use of MUOS satellites and what the Department is doing to address them; (2) Planning efforts underway to determine a MUOS follow-on capability; and (3) What the Department is doing to avoid disconnects in fielding satellite and ground segments going forward. The committee directs the Comptroller General to brief its preliminary observations to the congressional defense committees no later than March 1, 2020, with a final report to follow on a mutually agreed upon date.

Report on using existing intelligence sensors for ballistic missile defense

The committee notes that ballistic missile threats are evolving in complexity and that the U.S. Strategic Command Commander has stated that our ability to see and characterize a missile threat is the most important aspect of a successful missile defense system for the U.S. homeland. The committee recognizes that, while there are challenges associated with developing, procuring, and deploying new sensors capable of meeting enhanced and evolving threats, the U.S. intelligence community has numerous ground- and sea-based sensor platforms currently performing measurement and signature intelligence (MASINT) collection that provide missile tracking data. The recent Missile Defense Review describes such "existing intelligence-gathering sensors with a demonstrated capability to track offensive missiles that could be incorporated into U.S. homeland and regional missile defense architectures." It is the committee's understanding that these are very capable sensors, providing key intelligence regarding missile development that is used by the Missile Defense Agency (MDA) to design and acquire missile tracking and defense systems and performing multiple missions including MASINT, space surveillance, and missile defense. The committee encourages the Department of Defense and the intelligence community to collaborate and optimize existing U.S. MASINT sensors to improve our ability to see and characterize missile threats to enhance the defense of the U.S. homeland.

Therefore, the committee directs the Director of the MDA, in coordination with the intelligence community, to provide a report to the committee no later than December 1, 2019, detailing the ability to integrate current U.S. ground- and sea-based MASINT sensors into the U.S. homeland missile defense architecture. The report shall include the existing participation of U.S. intelligence sensor assets in the ballistic missile defense system, including intelligence support to defense system design and acquisition, as well as the operational impacts, costs, and timelines associated with activating a U.S. homeland missile defense mission for each sensor.

Security and resiliency of decision-making technologies

The committee remains concerned that America's adversaries continue to enhance their cyber capabilities with the intention of penetrating the Department of Defense's (DOD) secure communications infrastructure. To counter this challenge, the committee encourages the DOD to ensure that critical decision-making technologies remain secure and resilient in the face of current and future cyber threats.

When developing an acquisition strategy and analysis of alternatives for the construction of or upgrades to those command and control centers with combat, intelligence, surveillance, and reconnaissance responsibilities, the committee directs DOD procurement and acquisition officers to consider mission effectiveness and operational suitability, including factors such as: (1) The security risk of components and devices responsible for the routing and dissemination of information and mitigation measures like the isolation of network communications and integrity of firmware or software; (2) The security risk of components and devices that are not sourced and manufactured domestically; and (3) Physical, logistical, or operational measures to mitigate insider threats.

Social network analysis for counterterrorism

Extremists and terrorist organizations are using internet-based tools like social media and digital communication as a means to spread propaganda and to target U.S. security interests around the world. The committee notes that universities, colleges, and other academic institutions perform important research on the use of these online tools by extremists and terrorist organizations and that such research may be beneficial to the Department of Defense's (DOD) understanding of this rapidly evolving operating environment and DOD's development of related strategies. As such, the committee encourages the DOD to continue its collaboration with these universities, colleges, and academic institutions on these efforts, as appropriate.

Software defined networking and network and cybersecurity orchestration

The committee included a provision in the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115-232) that directed the Principal Cyber Adviser (PCA), the Chief Information Officer (CIO), and the Commander of U.S. Cyber Command (CYBERCOM) to designate a network on which to conduct a demonstration and evaluation of commercial technology to enable network nodes and security systems to communicate with one another and to be orchestrated to ingest, publish, subscribe, tip and cue, and request and direct information and actions from each other.

The committee has since learned that the National Security Agency (NSA) has conducted a multi-year effort to define and enable Integrated Adaptive Cyber Defense (IACD) in cooperation with commercial industry, the Johns Hopkins University Applied Physics Laboratory, and the Department of Homeland Security. The IACD effort has been working to mature the very technology that the committee intended the Department of Defense to demonstrate:

commercial companies are offering cybersecurity orchestration tools and services for connecting together all cybersecurity systems, agents, applications, and appliances deployed on a network and synchronizing their actions with a high degree of automation and agility. These orchestration platforms also provide capabilities to rapidly create new workflows and event sequences.

The committee is also aware of initiatives underway within the Defense Information Systems Agency (DISA) to adopt and adapt commercial and open source tools and services for software-defined networking (SDN) for provisioning, access, configuration, and agile control of networks, data centers, and clouds. DISA SDN architects believe that cybersecurity orchestration should nest under and ultimately be connected to and be controlled by a “global orchestration” engine at the enterprise network level.

The committee believes that these capabilities are critical and should be carefully evaluated for integration into command and control nodes like the Joint Cyber Command and Control platform, the cybersecurity service provider operations centers, and network operations centers. In addition, the Cyber Protection Teams should be able to connect into the orchestration control plane for orchestration of network sensors and agents.

The committee directs the PCA, in coordination with the CIO, the Joint Staff J6, and the Commander of CYBERCOM, to: review the capabilities and offerings of the companies that the NSA has nurtured around cybersecurity orchestration technology; review the DISA-led SDN and network orchestration initiatives; and develop a plan, an architecture, and requirements for integrating these technologies and capabilities into the Department of Defense Information Network, the cloud strategy, and the operational cyber defense systems of the Department. The committee directs the Secretary of Defense to brief the congressional defense committees on the status of this effort by February 15, 2020.

Space Fence Site 2

The committee recognizes the importance of delivering actionable battle management knowledge to warfighters as they defend space assets as well as the criticality of providing space situational awareness (SSA) data to enable safe space traffic management and to avoid future collisions that could render certain orbital regimes unusable. The importance of space assets to both national defense and the world economy, the development of multiple new mega-constellations, consisting of thousands of satellites, and the growing threats to space assets by China, Russia, and other nations demand more accurate and timelier battle management/SSA data. The Space Fence is the Department of Defense’s newest and most capable SSA system that can provide unparalleled capabilities, both in Low Earth Orbit where the new mega-constellations including the Space Sensor Layer are being built and satellites are most vulnerable, and in Geosynchronous Earth Orbit where satellites have persistent strategic advantages.

The committee is aware that the Department’s Space Fence contract includes an option for a second Space Fence site and directs the Secretary of the Air Force to consider funding the option and beginning construction of Space Fence Site 2 in fiscal year 2021.

The system has a stable design with high technology and manufacturing readiness levels, and the cost estimate is considerably less than Space Fence Site 1 due to knowledge gained during construction of the first site. Space Fence Site 2 would increase resiliency of the Space Surveillance Network, improve accuracy, timeliness, and custody of low altitude objects, increase southern hemisphere coverage, and significantly enhance deep space coverage. The committee directs the Secretary to provide a report to the congressional defense committees, not later than February 28, 2020, on the decision as to whether to fund a second Space Fence site and the reasons for such a decision.

Space industrial base of the People's Republic of China

The committee recognizes the critical importance of the emerging small satellite and small launch vehicle sectors to the future economic competitiveness and national security of the United States. However, the committee is concerned about the rapid growth of the Chinese commercial space sector that is supported by the Chinese government through technology assistance, state-backed venture investments (including investments in U.S. companies that ultimately lead to intellectual property leakage to the People's Republic of China), state-backed industrial espionage, and major national initiatives such as the Belt and Road Initiative.

The committee understands that in the last 4 years more than 60 small commercial space companies have emerged in China. These companies are focused on leveraging the technology advancements of low-cost small satellites and launch vehicles to lead and dominate global markets. As a result, these companies have been able to enter the international marketplace with costs that are 3 to 4 times less than comparable U.S. companies.

Accordingly, the committee directs the Secretary of Defense to provide, not later than March 15, 2020, a briefing on the current state of the small satellite and small launch industry in China, to include an assessment of the role of Chinese government support in the growth of these companies and a set of recommended steps and investments the Secretary should take to ensure that the Department of Defense has long-term access to world-leading small satellite and small launch technologies and capabilities from U.S. companies.

Status of Military Ground User Equipment receivers

The committee is concerned with the compatibility of Military Ground User Equipment (MGUE) with the Global Positioning System III enhanced Military Code (M-Code), including obsolescence issues in existing receivers and issues associated with a trusted microelectronics base.

Therefore, the committee directs the co-chairs of the Council on Oversight of the Department of Defense Positioning, Navigation, and Timing Enterprise to submit a report, no later than February 1, 2020, to the congressional defense committees, on the number and extent of the military systems that will require the MGUE receiver replacement compatible with the GPS III enhanced M-Code, the cost of replacement for these systems, and the timing of the replacement of these receivers with MGUE cards.

The committee directs the Comptroller General of the United States to review the report and provide an inventory and assessment of fielded systems that can either accept the new MGUE cards, allow reprogramming of the systems with new software to utilize GPS III M-Code, or require a full replacement with updated hardware. The evaluation must include a timeline of the expected usable lifespan of each system and a verdict as to whether the replacement has been assigned, programmed, and loaded in the procurement cycle for the affected equipment. The committee directs the Comptroller General to relay these findings in the form of a briefing to the congressional defense committees at a time mutually agreed upon by both parties.

Tactically responsive space launch operations

The committee recognizes the importance of integrating and synchronizing new commercial small launch services into the National Security Space Enterprise. The committee also supports the testing, training, and operationalization of these capabilities to provide options for on-orbit reconstitution within the space warfighting domain.

Therefore, the committee directs the Secretary of Defense, in consultation with the Director of National Intelligence, to develop a plan to leverage and analyze commercial space launch capabilities and to integrate these capabilities into Department of Defense (DOD) space operations. The Secretary shall provide a briefing to the congressional defense committees, not later than March 1, 2020, on such plan. The briefing shall address:

(1) The establishment of responsive launch operational tactics, techniques, and procedures to improve the Air Force's capability to rapidly reconstitute and improve resilience for defense satellite system launches;

(2) The operational benefits that this effort will provide to the military departments and combatant commanders, to include the strategic benefit of performing tactically responsive space launch demonstrations at military installations in strategic geographic locations such as the Indo-Pacific region;

(3) The amount of funding and other resources required by the DOD to employ a contingency capability for rapid reconstitution and tactically responsive space launch; and

(4) Such other matters as the Secretary considers appropriate.

Terminal High Altitude Area Defense transition and requirements

The committee recognizes that the Missile Defense Agency (MDA) develops, tests, and fields systems to defend the United States and its forces, allies, and partners against enemy missiles. While the track record of previous transitions of such systems to the Services is poor, the committee believes that transitioning acquisition and sustainment from the MDA to the military departments is essential for successful operations, effective alignment of assets with requirements, and financial transparency.

Section 1676 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 114-91), as amended, required the Secretary of Defense to submit a report on the plan to transition any

MDA missile defense system that has reached Milestone C approval or equivalent to the military departments. The committee notes that the Terminal High Altitude Area Defense (THAAD) program began the production and fielding phase in 2012 and, as such, is long overdue for transition to the Department of the Army. Per the requirements of section 1676, the Secretary's plan for transitioning eligible systems was due to the congressional defense committees no later than December 12, 2018, but that report has not yet been submitted.

The committee believes that the Army should be responsible for procuring and sustaining THAAD batteries and, as such, elsewhere in this Act all THAAD procurement and operation and maintenance funding is found in the budget of the Department of the Army. Research, development, test, and evaluation funds remain within the MDA's budget in order to facilitate the MDA's ongoing work on further system improvements and on the integration of THAAD into the rest of the missile defense architecture.

Further, the committee notes that the existing validated THAAD requirement is nine batteries but only seven have been procured by the MDA and manned by the Army. The committee understands that this requirement may change due to a study tasked by the 2019 Missile Defense Review. Because THAAD batteries are already some of the highest-demand, lowest-density assets in the Army and because the committee believes that these units are crucial for the defense of U.S. and allied forces, the committee believes that procurement should be promptly aligned to the requirement.

The committee understands that it may be possible to synchronize U.S. procurement with foreign military sales in order to achieve economies of scale in production. The committee therefore expects that the Army will request procurement funds for an eighth battery in fiscal year 2021 and a ninth in fiscal year 2022. The committee also expects the Army to make the necessary investments in order to facilitate interceptor production at the level needed to meet requirements. Finally, the committee expects the Army to devote sufficient end strength in its future planning to fully meet the battery requirement.

DIVISION B—MILITARY CONSTRUCTION AUTHORIZATIONS

Summary and explanation of funding tables

Division B of this Act authorizes funding for military construction projects of the Department of Defense (DOD). It includes funding authorizations for the construction and operation of military family housing as well as military construction for the reserve components, the Defense Agencies, and the North Atlantic Treaty Organization Security Investment Program. It also provides authorization for the base closure accounts that fund military construction, environmental cleanup, and other activities required to implement the decisions made in prior base closure rounds. It prohibits any future base realignment closure rounds.

The tables contained in this Act provide the project-level authorizations for the military construction funding authorized in division B of this Act and summarize that funding by account.

The fiscal year 2020 budget requested \$11.2 billion for military construction and housing programs. Of this amount, \$9.7 billion was requested for military construction, \$1.3 billion for the construction and operation of family housing, \$278.5 million for base closure activities, and \$144.0 million for the North Atlantic Treaty Organization Security Investment Program.

The committee recommends the authorization of appropriations for military construction, housing programs, and base closure activities totaling \$11.2 billion. The total amount authorized for appropriations reflects the committee's continued commitment to investing in the recapitalization of DOD facilities and infrastructure.

Short title (sec. 2001)

The committee recommends a provision that would designate division B of this Act as the "Military Construction Authorization Act for Fiscal Year 2020."

Expiration of authorizations and amounts required to be specified by law (sec. 2002)

The committee recommends a provision that would establish the expiration date for authorizations in this Act for military construction projects, land acquisition, family housing projects, and contributions to the North Atlantic Treaty Organization Security Investment Program as of October 1, 2024, or the date of the enactment of an act authorizing funds for military construction for fiscal year 2025, whichever is later.

Effective date (sec. 2003)

The committee recommends a provision that would provide an effective date for titles XXI through XXVII and title XXIX of October 1, 2019, or the date of the enactment of this Act, whichever is later.

TITLE XXI—ARMY MILITARY CONSTRUCTION

Summary

The budget request included authorization of appropriations of \$1.4 billion for military construction and \$499.3 million for family housing for the Army for fiscal year 2020.

The committee recommends authorization of appropriations of \$1.5 billion for military construction for the Army and \$353.3 million for family housing for the Army for fiscal year 2020. The committee notes that the reduction in authorization for family housing is intended to accurately reflect a transfer of funds to the other military departments for the funding of personnel at installation housing management offices.

Further details on projects authorized can be found in section 2101 and section 4601 of this Act.

Authorized Army construction and land acquisition projects (sec. 2101)

The committee recommends a provision that would authorize military construction projects for the active component of the Army for fiscal year 2020. The committee recognizes the significant unfunded military construction requirements and has included an additional \$88.5 million for many of these projects. The authorized amount is listed on an installation-by-installation basis.

Family housing (sec. 2102)

The committee recommends a provision that would authorize new construction, planning, and design of family housing units for the Army for fiscal year 2020. This provision would also authorize funds for facilities that support family housing, including housing management offices, housing maintenance, and storage facilities.

Authorization of appropriations, Army (sec. 2103)

The committee recommends a provision that would authorize appropriations for the active component military construction and family housing projects of the Army authorized for construction for fiscal year 2020. This provision would also provide an overall limit on the amount authorized for military construction and family housing projects for the active component of the Army. The state list contained in this report is the binding list of the specific projects authorized at each location.

Modification of authority to carry out certain fiscal year 2019 project (sec. 2104)

The committee recommends a provision that would modify the authorization contained in section 2101(a) of the Military Construction Authorization Act for Fiscal Year 2019 (division B of Public

Law 115–232) for the construction of a weapon maintenance shop at Anniston Army Depot, Alabama, to include a 21,000 square foot weapon maintenance shop.

TITLE XXII—NAVY MILITARY CONSTRUCTION

Summary

The budget request included authorization of appropriations of \$2.8 billion for military construction and \$365.5 million for family housing for the Department of the Navy for fiscal year 2020.

The committee recommends authorization of appropriations of \$2.9 billion for military construction for the Navy and \$446.5 million for family housing for the Navy for fiscal year 2020.

Further details on projects authorized can be found in section 2201 and section 4601 of this Act.

Authorized Navy construction and land acquisition projects (sec. 2201)

The committee recommends a provision that would authorize Navy and Marine Corps military construction projects for fiscal year 2020. The committee recognizes the significant unfunded military construction requirements and has included an additional \$607.1 million for many of these projects. The authorized amounts are listed on an installation-by-installation basis.

Family housing (sec. 2202)

The committee recommends a provision that would authorize new construction, planning, and design of family housing units for the Navy for fiscal year 2020. This provision would also authorize funds for facilities that support family housing, including housing management offices, housing maintenance, and storage facilities.

Improvements to military family housing units (sec. 2203)

The committee recommends a provision that would authorize the Secretary of the Navy to improve existing family housing units of the Department of the Navy in an amount not to exceed \$41.8 million.

Authorization of appropriations, Navy (sec. 2204)

The committee recommends a provision that would authorize appropriations for the active component military construction and family housing projects of the Department of the Navy authorized for construction for fiscal year 2020. This provision would also provide an overall limit on the amount authorized for military construction and family housing projects for the active components of the Navy and the Marine Corps. The state list contained in this report is the binding list of the specific projects authorized at each location.

TITLE XXIII—AIR FORCE MILITARY CONSTRUCTION

Summary

The budget request included authorization of appropriations of \$2.2 billion for military construction and \$398.6 million for family housing for the Air Force in fiscal year 2020.

The committee recommends authorization of appropriations of \$2.3 billion for military construction for the Air Force and \$463.6 million for family housing for the Air Force for fiscal year 2020.

Further details on projects authorized can be found in section 2301 and section 4601 of this Act.

Authorized Air Force construction and land acquisition projects (sec. 2301)

The committee recommends a provision that would authorize Air Force military construction projects for fiscal year 2020. The committee recognizes the significant unfunded military construction requirements and has included an additional \$391.5 million for many of these projects. The authorized amounts are listed on an installation-by-installation basis.

Family housing (sec. 2302)

The committee recommends a provision that would authorize new construction, planning, and design of family housing units for the Air Force for fiscal year 2020. This provision would also authorize funds for facilities that support family housing, including housing management offices, housing maintenance, and storage facilities.

Improvements to military family housing units (sec. 2303)

The committee recommends a provision that would authorize the Secretary of the Air Force to improve existing family housing units of the Department of the Air Force in an amount not to exceed \$53.6 million.

Authorization of appropriations, Air Force (sec. 2304)

The committee recommends a provision that would authorize appropriations for the active component military construction and family housing projects of the Air Force authorized for construction for fiscal year 2020. This provision would also provide an overall limit on the amount authorized for military construction and family housing projects for the active component of the Air Force. The state list contained in this report is the binding list of the specific projects authorized at each location.

Modification of authority to carry out certain fiscal year 2015 project (sec. 2305)

The committee recommends a provision that would modify the authorization contained in section 2301(b) of the Military Construction Authorization Act for Fiscal Year 2015 (division B of Public Law 113–291; 128 Stat. 3679) for Royal Air Force Croughton, for Joint Intelligence Analysis Complex Consolidation Phase 1, to change the location to Royal Air Force Molesworth, United Kingdom.

Modification of authority to carry out certain fiscal year 2016 project (sec. 2306)

The committee recommends a provision that would modify the authorization contained in section 2301(b) of the Military Construction Authorization Act for Fiscal Year 2016 (division B of Public Law 114–92; 129 Stat. 1153) for Joint Intelligence Analysis Complex Consolidation Phase 2 at an unspecified location in the United Kingdom, as modified by section 2305 of the Military Construction Authorization Act for Fiscal Year 2019 (division B of Public Law 115–232), to include for construction at Royal Air Force Molesworth, United Kingdom, a 5,152 square meter intelligence analytic center, a 5,234 square meter intelligence fusion center, and an 807 square meter battlefield information collection and exploitation system center.

Modification of authority to carry out certain fiscal year 2017 project (sec. 2307)

The committee recommends a provision that would modify the authorization contained in section 2301(b) of the Military Construction Authorization Act for Fiscal Year 2017 (division B of Public Law 114–328; 130 Stat. 2697) for Joint Intelligence Analysis Complex Consolidation Phase 3 at an unspecified location in the United Kingdom, as modified by section 2305 of the Military Construction Authorization Act for Fiscal Year 2019 (division B of Public Law 115–32), to include for construction at Royal Air Force Molesworth, United Kingdom, a 1,562 square meter regional joint intelligence training facility and a 4,495 square meter combatant command intelligence facility.

Additional authority to carry out certain fiscal year 2018 projects (sec. 2308)

The committee recommends a provision that would modify the authority contained in section 2301(a) of the Military Construction Authorization Act for Fiscal Year 2018 (division B of Public Law 115–91; 131 Stat. 1826) for the construction of a dining and classroom facility at Joint Base San Antonio, Texas, to include a 750 square meter equipment building, and for the construction of an air traffic control tower, to include a 636 square meter air traffic control tower.

Additionally this provision would modify the authorization contained in section 2903 of the Military Construction Authorization Act for Fiscal Year 2018 (division B of Public Law 115–91; 131 Stat. 1876) for repairing and expanding a quick reaction alert pad at Rygge, Norway, to include the construction of 1,327 square me-

ters of aircraft shelter and a 404 square meter fire protection building.

Modification of authority to carry out certain fiscal year 2019 projects (sec. 2309)

The committee recommends a provision that would modify the authorization contained in section 2301(a) of the Military Construction Authorization Act for Fiscal Year 2019 (division B of Public Law 115–232) for the construction of a semiconductor or microelectronics lab facility at Hanscom Air Force Base, Massachusetts, to include a 1,000 kilowatt stand-by generator.

This provision would also modify the authorization contained in section 2301(b) of the Military Construction Authorization Act for Fiscal Year 2019 (division B of Public Law 115–232) for the construction of an F–35 dormitory at Royal Air Force Lakenheath, United Kingdom, to include a 5,900 square meter dormitory.

TITLE XXIV—DEFENSE AGENCIES MILITARY CONSTRUCTION

Summary

The budget request included authorization of appropriations of \$2.5 billion for military construction for the Defense Agencies for fiscal year 2020.

The committee recommends authorization of appropriations of \$2.5 billion for military construction for the Defense Agencies for fiscal year 2020.

Authorized Defense Agencies construction and land acquisition projects (sec. 2401)

The committee recommends a provision that would authorize military construction projects for the Defense Agencies for fiscal year 2020. The authorized amounts are listed on an installation-by-installation basis.

Authorized Energy Resilience and Conservation Investment Program projects (sec. 2402)

The committee recommends a provision that would authorize the Secretary of Defense to carry out energy conservation projects. The authorized amounts are listed on an installation-by-installation basis.

Authorization of appropriations, Defense Agencies (sec. 2403)

The committee recommends a provision that would authorize appropriations for the military construction and family housing projects of the Defense Agencies authorized for construction for fiscal year 2020. This provision would also provide an overall limit on the amount authorized for military construction and family housing projects for the Defense Agencies. The state list contained in this report is the binding list of the specific projects authorized at each location.

TITLE XXV—INTERNATIONAL PROGRAMS

Summary

The Department of Defense requested authorization of appropriations of \$686.2 million for military construction in fiscal year 2020 for the North Atlantic Treaty Organization (NATO) Security Investment Program and in-kind contributions from the Republic of Korea. The committee recommends authorization of appropriations for the requested amount.

Subtitle A—North Atlantic Treaty Organization Security Investment Program

Authorized NATO construction and land acquisition projects (sec. 2501)

The committee recommends a provision that would authorize the Secretary of Defense to make contributions to the North Atlantic Treaty Organization Security Investment Program in an amount equal to the sum of the amount specifically authorized in section 2502 of this title and the amount of recoupment due to the United States for construction previously financed by the United States.

Authorization of appropriations, NATO (sec. 2502)

The committee recommends a provision that would authorize appropriations of \$144.0 million for the U.S. contribution to the North Atlantic Treaty Organization (NATO) Security Investment Program (NSIP) for fiscal year 2020.

This provision would also allow the Department of Defense construction agent to recognize the NATO project authorization amounts as budgetary resources to incur obligations when the United States is designated as the host nation for the purposes of executing a project under NSIP.

Subtitle B—Host Country In-Kind Contributions

Republic of Korea funded construction projects (sec. 2511)

The committee recommends a provision that would authorize the Secretary of Defense to accept four military construction projects totaling \$542.2 million from the Republic of Korea as in-kind contributions.

TITLE XXVI—GUARD AND RESERVE FORCES FACILITIES

Summary

The Department of Defense requested authorization of appropriations of \$552.4 million for military construction in fiscal year 2020 for facilities for the National Guard and reserve components.

The committee recommends authorization of appropriations of \$483.8 million for military construction in fiscal year 2020 for facilities for the National Guard and reserve components. The detailed funding recommendations are contained in the state list table included in this report.

Further details on projects authorized can be found in the tables in this title and section 4601 of this Act.

Authorized Army National Guard construction and land acquisition projects (sec. 2601)

The committee recommends a provision that would authorize military construction projects for the Army National Guard for fiscal year 2020. The committee recognizes the significant unfunded military construction requirements and has included an additional \$50.0 million for many of these projects. The authorized amounts are listed on an installation-by-installation basis.

Authorized Army Reserve construction and land acquisition projects (sec. 2602)

The committee recommends a provision that would authorize military construction projects for the Army Reserve for fiscal year 2020. The authorized amounts are listed on an installation-by-installation basis.

Authorized Navy Reserve and Marine Corps Reserve construction and land acquisition projects (sec. 2603)

The committee recommends a provision that would authorize military construction projects for the Navy Reserve and Marine Corps Reserve for fiscal year 2020. The authorized amounts are listed on an installation-by-installation basis.

Authorized Air National Guard construction and land acquisition projects (sec. 2604)

The committee recommends a provision that would authorize military construction projects for the Air National Guard for fiscal year 2020. The authorized amounts are listed on an installation-by-installation basis.

Authorized Air Force Reserve construction and land acquisition projects (sec. 2605)

The committee recommends a provision that would authorize military construction projects for the Air Force Reserve for fiscal year 2020. The authorized amounts are listed on an installation-by-installation basis.

Authorization of appropriations, National Guard and Reserve (sec. 2606)

The committee recommends a provision that would authorize appropriations for the reserve component military construction projects authorized for construction for fiscal year 2020 in this Act. This provision would also provide an overall limit on the amount authorized for military construction projects for each of the reserve components of the military departments. The state list contained in this report is the binding list of the specific projects authorized at each location.

TITLE XXVII—BASE REALIGNMENT AND CLOSURE ACTIVITIES

Summary and explanation of tables

The budget request included \$278.5 million for the ongoing cost of environmental remediation and other activities necessary to continue implementation of the 1988, 1991, 1993, 1995, and 2005 base realignment and closure rounds. The committee recommends \$278.5 million for these efforts. The detailed funding recommendations are contained in the state list table included in this report.

Authorization of appropriations for base realignment and closure activities funded through Department of Defense Base Closure Account (sec. 2701)

The committee recommends a provision that would authorize appropriations for fiscal year 2020 for ongoing activities that are required to implement the decisions of the 1988, 1991, 1993, 1995, and 2005 base realignment and closure rounds.

Prohibition on conducting additional base realignment and closure (BRAC) round (sec. 2702)

The committee recommends a provision that would prohibit the Department of Defense from conducting another base realignment and closure (BRAC) round.

The committee notes that, although the Department of Defense did not request authorization to conduct a BRAC round in the request for fiscal year 2020, the Department continues to focus its efforts on studying facility optimization. The committee is encouraged by these efforts and looks forward to reviewing these results prior to the request for any future BRAC round.

TITLE XXVIII—MILITARY CONSTRUCTION AND GENERAL PROVISIONS

Subtitle A—Military Construction Program

Military installation resilience plans and projects of Department of Defense (sec. 2801)

The committee recommends a provision that would amend subchapter I of chapter 169 of title 10, United States Code, to require the Secretaries of the military departments to develop and implement military installation resilience plans for installations in coastal areas.

Prohibition on use of funds to reduce air base resiliency or demolish protected aircraft shelters in the European theater without creating a similar protection from attack (sec. 2802)

The committee recommends a provision that would prohibit funds authorized to be appropriated by this Act or otherwise made available for the Department of Defense to be obligated or expended to implement any activity that reduces air base resiliency or demolishes protected aircraft shelters in the European theater without creating similar protection from attack until such time as the Secretary of Defense certifies that protected aircraft shelters are not required in the European theater.

Prohibition on use of funds to close or return to the host nation any existing air base (sec. 2803)

The committee recommends a provision that would prohibit funds authorized to be appropriated by this Act or otherwise made available for the Department of Defense to be obligated or expended to implement any activity that closes or returns to host nations any existing airbases until such time as the Secretary of Defense certifies that there is no longer a need for a rotational military presence in the European theater.

Increased authority for certain unspecified minor military construction projects (sec. 2804)

The committee recommends a provision that would allow the secretary of the military department concerned to carry out unspecified minor military construction projects, not to exceed \$12.0 million with an area cost factor of \$19.0 million, at the following installations: (1) Tyndall Air Force Base, Florida; (2) Camp Ashland, Nebraska; (3) Offutt Air Force Base, Nebraska; (4) Camp Lejeune, North Carolina; and (5) Marine Corps Air Station Cherry Point, North Carolina.

The committee notes that the provision includes a termination clause of 5 years after enactment of this Act.

Technical corrections and improvements to installation resilience (sec. 2805)

The committee recommends a provision that would amend section 210 of title 23, United States Code, to improve the construction and reconstruction of defense access roads subject to weather conditions. Additionally, this provision would update the United Facilities Criteria to ensure that the Department of Defense accounts for weather and population projections during the construction projects.

Subtitle B—Land Conveyances

Release of interests retained in Camp Joseph T. Robinson, Arkansas, for use of such land as a veterans cemetery (sec. 2811)

The committee recommends a provision that would allow the Secretary of the Army to release the terms and conditions and reversionary interests retained on approximately 141.5 acres previously owned by the United States government. The committee notes that the provision would require that the transferred land be used for the sole purpose of expanding the Arkansas State Veterans Cemetery.

Transfer of administrative jurisdiction over certain parcels of Federal land in Arlington, Virginia (sec. 2812)

The committee recommends a provision, as requested by the Department of Defense, that would require the Secretary of the Interior to transfer a specified 16.09 acres parcel to the Secretary of the Army and for the Secretary of the Army to transfer a specified 1.04 acre parcel to the Secretary of the Interior. The provision would not require any form of payment or consideration from either party. The provision would require that the 16.09 acre parcel transferred to the Army be managed as part of Arlington National Cemetery (ANC).

The committee notes that this provision would simplify Federal land jurisdictions, enabling more effective safety, force protection, and vehicular and pedestrian flow into and out of ANC by moving control of the primary entrance to ANC—known as Memorial Avenue—from the Department of the Interior to the Army.

Modification of requirements relating to land acquisition in Arlington County, Virginia (sec. 2813)

The committee recommends a provision that would amend section 2829A of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328) to require the Secretary of the Army to expend amounts up to fair market value for cemetery expansion and include an in-kind consideration clause.

White Sands Missile Range Land Enhancements (sec. 2814)

The committee recommends a provision that would establish White Sands National Park and abolish White Sands National

Monument. The establishment of a national park would increase the public recognition of the significant resources of White Sands. This provision would modify the boundary of White Sands National Park and convey 3,737 acres of land from the Secretary of the Interior to the Secretary of the Army. This provision would also convey 8,592 acres of land from the Secretary of the Army to the Secretary of the Interior.

Subtitle C—Other Matters

Equal treatment of insured depository institutions and credit unions operating on military installations (sec. 2821)

The committee recommends a provision that would amend section 2667 of title 10, United States Code, to require the Department of Defense (DOD) to ensure that policies governing depository institutions and credit unions operating on military installations are equally applied to all relevant institutions. Additionally, the provision would prohibit any requirement for Secretaries of the military departments to provide no-cost office space or no-cost land lease to any insured depository institution or insured credit union.

As servicemember financial practices evolve to reflect the growing prevalence of online banking, it makes little sense for the DOD to mandate that the Services provide a subsidy in the form of free rent, utilities, or other logistical support to any particular financial institution. Rather, the Department should ensure that any decision to provide rent concessions to on-base private businesses is justified on the basis of a coherent cost-benefit analysis.

The committee also believes that no particular group of financial institutions should be advantaged or disadvantaged by DOD policy on the basis of its business structure and tax status. Therefore, this provision would require the DOD to develop policy treating all financial institutions equally when determining whether to provide a subsidy in exchange for an on-base location.

Expansion of temporary authority for acceptance and use of contributions for certain construction, maintenance, and repair projects mutually beneficial to the Department of Defense and Kuwait military forces (sec. 2822)

The committee recommends a provision that would amend section 2804 of the Military Construction Authorization Act for Fiscal Year 2016, Division B of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92), to include the Government of the Republic of Korea.

Designation of Sumpter Smith Joint National Guard Base (sec. 2823)

The committee recommends a provision that would designate the Sumpter Smith Air National Guard Base in Birmingham, Alabama, as the “Sumpter Smith Joint National Guard Base.”

Prohibition on use of funds to privatize temporary lodging on installations of Department of Defense (sec. 2824)

The committee recommends a provision that would prohibit the authorization of funds to the Department of Defense for fiscal year 2020 to privatize temporary lodging on military installations.

Pilot program to extend service life of roads and runways under the jurisdiction of the Secretaries of the military departments (sec. 2825)

The committee recommends a provision that would authorize the Secretaries of the military departments to carry out a pilot program to design, build, and test technologies in order to extend the service life of roads and runways under their jurisdiction. Further, this provision would require that, not later than 2 years after the commencement of the pilot program, the Secretaries of the military departments submit a report on the program to the congressional defense committees.

Items of Special Interest

Briefing on laboratory military construction

The committee understands the importance of cutting-edge infrastructure for the Department of Defense (DOD) research and development facilities. The committee notes that section 2806 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) directed the Under Secretary of Defense for Research and Engineering, in coordination with the Assistant Secretary of Defense for Sustainment, to submit a report listing unfunded requirements on major and minor military construction projects for the DOD science and technology laboratories and test and evaluation facilities. The committee also authorized the laboratories to use research and development funds for large laboratory facility construction projects in section 2803 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92). The committee remains concerned that laboratory infrastructure continues to be underfunded and fails to match investments being made in similar facilities by near peer adversaries.

Accordingly, the committee directs the Under Secretary of Defense for Research and Engineering, in coordination with the Assistant Secretary of Defense for Sustainment, to provide a briefing to the congressional defense committees on the unfunded requirements for laboratory military construction projects by February 1, 2020. The briefing should include: (1) The impacts of the unfunded laboratory military construction projects on the research activities of the laboratories; (2) An analysis of laboratory-unique military construction costs in comparison to traditional military construction costs; and (3) Recommendations for addressing the impacts of these unfunded requirements.

Comptroller General review of privatized lodging program

The committee notes the importance of ensuring that the Department of Defense's financial resources are being efficiently spent on all facets of housing and lodging. The committee notes that, in 2009, the Army began the Privatized Army Lodging (PAL) program

to save on revitalization costs, shorten lengthy lead times, and provide rooms at potentially 75 percent of lodging per diem, which was estimated to save over \$80.0 million annually. However, the committee notes that, according to recent reports, including one by the Government Accountability Office, there are concerns that PAL facilities may have higher lodging costs. The committee believes the Services should always be looking to provide better services at a reduced cost, while also reducing their non-core functions, but that the provision of better service should not be undertaken without proper analysis.

Accordingly, the committee directs the Comptroller General of the United States to provide a briefing on preliminary findings to the congressional defense committees no later than February 15, 2020, with a report to follow, on the following: (1) How have the costs of staying in Army lodging been affected by privatization, and how do these costs compare with those at non-privatized Navy, Marine Corps, and Air Force lodging?; (2) What costs or savings has the Army realized since privatizing its lodging, and how do the costs compare with the costs to the Navy, Marine Corps, and Air Force for operating lodging, to include per diem expenses?; (3) What improvements have been made to the Army's lodging facilities since privatization; (4) Have the Navy, Marine Corps, and Air Force assessed privatizing their lodging and what have the relevant cost benefit analyses, if any, shown?; (5) What lessons learned from the Army's PAL program have been shared with the other services?; and (6) Any other matters the Comptroller General determines relevant.

Defense Access Roads

The committee is supportive of Defense Access Roads (DAR) as a vital mechanism in providing transportation infrastructure to domestic installations and is supportive of additional funding from the Department of Defense (DOD) for mission-critical, off-base transportation improvements. The committee notes, for the first time in fiscal year 2019, the expansion of DAR, available to pay the cost of repairing and mitigating damage to infrastructure and highways by recurrent flooding if the Secretary determines that continued access to military installations is impacted by both storm and non-storm surge flooding.

With this in mind, the February 2019 "Report to Congress on Defense Access Roads" stated that, of the 10 projects the DOD manages, there "are not any flood-prone locations creating a national security risk to transportation access for military installations." Additionally, the report stated that the DOD "has the necessary means to address any flooding issues or risks (storm or non-storm surge) that may impact DOD missions if the roads meet the criteria to be certified as DAR but at this point no specific problems are known to exist." As DAR certification only extends to public roads that meet certain criteria and State and local highway authorities are responsible for the connecting roads and highways, the committee encourages the Department to work with both local communities and State governments to determine if any existing public roads are hampering military readiness.

Department of Defense disaster recovery

The committee is concerned about the impact of recent natural disasters on several of the Nation's key military installations. Flooding damage at Offutt Air Force Base and the Nebraska National Guard's Camp Ashland has put at risk essential missions, training, and tasking for highly valuable elements of Air Force's intelligence, surveillance, and reconnaissance enterprise as well as highly critical components of the Army National Guard's training regimen. Hurricane impacts to Tyndall Air Force Base, Marine Corps Base Camp Lejeune, and Marine Corps Air Station Cherry Point have threatened air dominance and amphibious assault training, affecting operational readiness at a time when the Services can little afford to lose this capability. Significant portions of Offutt Air Force Base, Camp Ashland, Camp Lejeune, and Marine Corps Air Station Cherry Point were impacted, while 95 percent of the buildings at Tyndall Air Force Base were damaged or destroyed.

The devastation at these facilities presents a serious challenge to the Department of Defense's installation management enterprise, and the committee believes that rebuilding these locations must be a priority for the Department and for the Congress.

The committee is committed to ensuring that the United States Strategic Command, the 55th Wing, and the Nebraska National Guard receive the necessary funding to return Offutt Air Force Base and Camp Ashland to full mission capability. Further, the committee remains unified in its belief that Tyndall Air Force Base, Camp Lejeune, and Marine Corps Air Station Cherry Point are vital to the Department's efforts to protect the Nation and realize the goals of the National Defense Strategy. Taken as a whole, the facilities, assets, and personnel at these bases are an essential element of the Department of Defense's ability to provide mission essential forces in support of national security objectives and remain critical to supporting the operational needs of combatant commanders.

As such, the committee believes that full restoration of Offutt Air Force Base, Camp Ashland, Tyndall Air Force Base, Camp Lejeune, and Marine Corps Air Station Cherry Point are in the vital national security interest of the United States and supports efforts by the Air Force, Marine Corps, and Army National Guard to limit operational impact and restore those installations to meet and exceed their prior operational capacity.

Excess storage capacity at Army National Guard installations

The committee is aware that Department of Defense (DOD) facilities are able to maintain unique secure storage capabilities as well as have excess storage capacity that could also be used for public-private partnership opportunities. For example, the committee understands that Camp Navajo, Arizona, has significant excess capacity that could enable public-private partnerships to offer additional revenue to Camp Navajo, the Arizona National Guard, and the surrounding community. The committee recognizes the value that public-private partnerships between the DOD and appropriate non-profit or commercial entities would bring to the in-

stallation and encourages the Army to consider expanding these partnerships.

Accordingly, the committee directs the Secretary of the Army to provide a briefing to the congressional defense committees, no later than November 1, 2019, outlining specific National Guard installations that have requested to use excess storage capacity for public-private partnerships. The briefing should include general considerations that could impact any public-private storage agreements with non-DOD entities. Additionally, the briefing should include any land conveyances that may be required for any installations on a case-by-case basis.

Firearms training infrastructure

The committee remains concerned that a lack of emphasis on firearms training infrastructure in planning of military construction initiatives is placing an undue burden on military units and that the resulting time and resource inefficiency is detrimental to mission readiness. The committee urges the Department of Defense (DOD) to consider the total time and resource expenditures incurred and impact to mission readiness caused by inadequate training infrastructure when prioritizing military construction projects. Where appropriate, the committee encourages the DOD to seek out additional opportunities to partner with state and local entities.

Long-term modernization of Lincoln Laboratory

The committee recognizes the critical role that Lincoln Laboratory plays in conducting research and developing technologies that address critical national security challenges. In an effort to address the aging infrastructure that supports Lincoln Laboratory, the Air Force has two military construction projects to support the Lincoln Laboratory West Laboratory. The first military construction project was authorized by the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) and the second project is currently programmed for fiscal year 2022. In addition, the committee is aware of a long-term modernization plan under development for Lincoln Laboratory that could amount to more than \$1.5 billion in infrastructure investments over a 30-year period.

However, the committee is aware that the military construction program may not be able to support such a large investment due to competing Air Force infrastructure priorities. The committee is also aware that many other federal agencies, inside and outside the Department of Defense, make use of the Air Force contract with Lincoln Laboratory. In addition, other statutory authorities, such as section 2353 of title 10, United States Code, may not currently allow for infrastructure investments due to circumstances specific to Lincoln Laboratory.

Accordingly, the committee directs the Secretary of the Air Force, not later than November 1, 2019, to provide a briefing to the committee on funding and authorities under consideration to support the long-term modernization plan for Lincoln Laboratory. The briefing should include a discussion on legislative proposals under consideration that could provide a viable path to support the long-

term modernization plan, including the benefits of and equities related to all Lincoln Laboratory contract users paying a fair share of facility sustainment, recapitalization, and construction costs.

Report on Base Realignment Closure costs

The committee notes that the Department of Defense's budget request for fiscal year 2020 included \$278.5 million for the ongoing cost of environmental remediation and other activities related to implementation of the 1988, 1991, 1993, 1995, and 2005 Base Realignment Closure (BRAC) rounds. The committee is concerned that, while BRAC is requested and presented by the Department as a consolidation that creates efficiency and savings, the Department is still facing annual BRAC costs for the 5 previous closure rounds, dating back almost 30 years. The committee is interested in understanding the fully burdened costs, to include the annual continuing costs associated with each BRAC round, the actual savings realized, and how the initial cost estimates align with actual costs incurred.

Accordingly, the committee directs the Secretary of Defense to deliver a report to the congressional defense committees, no later than November 1, 2019, on the estimates for both savings and costs as compared with the actual costs incurred and savings realized for each BRAC round since 1988. The report should include but not be limited to: (1) A timeline for each BRAC round, from approval through final spending for each round; (2) The estimated costs, in current-year dollars, reported to the Congress when each specific BRAC round was requested and approved; (3) The actual total costs, to date, for each BRAC round, separating out military construction and environmental remediation costs; (4) The actual savings, to date, realized for each BRAC round; (5) The current estimated final costs for each BRAC round, including environmental remediation costs, and identifying differences, if any, from the original estimate at time of approval; (6) The annual remaining recurring costs associated with each BRAC round, including, but not limited to, environmental remediation costs, broken down by location; (7) An estimate of when the Department will have fully completed the environmental remediation for each BRAC round and no longer requires continued funding; and (8) An assessment, with recommendations as warranted, of whether savings could be realized by paying down continuing BRAC costs at a faster pace than currently planned.

Additionally, the committee directs the Comptroller General of the United States to conduct a review of the Department's study to assess the report's methodologies and findings. The Comptroller General of the United States shall also review the Department's previous reports on BRAC costs and estimated cost savings versus realized cost savings and assess the validity of the Department's cost estimating process for BRAC-associated activities.

Report on condition of facilities at Senior Reserve Officers' Training Corps units at minority-serving institutions

The committee recognizes the importance of Senior Reserve Officer Training Corps (ROTC) programs to developing our military's future leaders. Given the challenge that many colleges face in pro-

viding and maintaining facilities for ROTC programs in the current environment of state budget cuts to higher education, the committee directs the Secretary of Defense to submit to the congressional defense committees a report on the current condition of facilities used by units of the Senior Reserve Officers' Training Corps at minority-serving institutions. The report shall include the following: (1) A comprehensive description of the current condition of facilities used by such units; and (2) An assessment as to whether the condition of such facilities has an adverse impact on the recruitment and retention of participants in such units. The term "minority-serving institution" means a minority-serving institution for purposes of section 371 of the Higher Education Act of 1965 (Public Law 89-329; 20 U.S.C. 1067q).

TITLE XXIX—OVERSEAS CONTINGENCY OPERATIONS MILITARY CONSTRUCTION

Summary

The budget request included \$303.4 million for military construction in fiscal year 2020 for overseas contingency operations.

The committee recommends \$2.9 billion for military construction in fiscal year 2020 for overseas contingency operations. The committee notes this includes \$2.6 billion in disaster recovery funding.

Authorized Army construction and land acquisition projects (sec. 2901)

The committee recommends a provision that would authorize Army military construction projects for fiscal year 2020 for overseas contingency operations. The authorized amounts are listed on an installation-by-installation basis.

Authorized Navy construction and land acquisition projects (sec. 2902)

The committee recommends a provision that would authorize Navy military construction projects for fiscal year 2020 for overseas contingency operations. The authorized amounts are listed on an installation-by-installation basis.

Authorized Air Force construction and land acquisition projects (sec. 2903)

The committee recommends a provision that would authorize Air Force military construction projects for fiscal year 2020 for overseas contingency operations. The authorized amounts are listed on an installation-by-installation basis.

Authorized Defense Agencies construction and land acquisition projects (sec. 2904)

The committee recommends a provision that would authorize Defense Agencies military construction projects for fiscal year 2020 for overseas contingency operations. The authorized amounts are listed on an installation-by-installation basis.

Disaster recovery projects (sec. 2905)

The committee recommends a provision that would authorize specific amounts of disaster recovery funding for specific Marine Corps, Air Force, Army National Guard, and Defense-wide construction projects. The provision would direct specific amounts for Camp Lejeune, Marine Corps Air Station Cherry Point, and MTA Fort Fisher in North Carolina as well as Tyndall Air Force Base and Panama City National Guard in Florida.

The committee notes that additional funds for planning and design are allocated for disaster relief in Florida, Nebraska, and North Carolina.

Replenishment of certain military construction funds (sec. 2906)

The committee recommends a provision that would authorize \$3.6 billion in military construction, overseas contingency operations, for the purposes of replenishing funds for previously authorized military construction projects that were repurposed under section 2808 of title 10, United States Code, from the national emergency declared on the southern border under the National Emergencies Act (Public Law 94-412). Under this provision: these transfers are exempt from General Transfer Authority; the transfer amounts may not exceed what was originally expended under section 2808 authority for each project; the aggregate amount after the transfer for any given project cannot exceed the original authorization for appropriation amount; and funds can only be transferred until September 31, 2020.

Authorization of appropriations (sec. 2907)

The committee recommends a provision that would authorize appropriations for military construction in the overseas contingency operations account for fiscal year 2020.

TITLE XXX—MILITARY HOUSING PRIVATIZATION REFORM

Definitions (sec. 3001)

The committee recommends a provision that would provide definitions for specific terms for this title.

Subtitle A—Accountability and Oversight

Tenant bill of rights for privatized military housing (sec. 3011)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, by requiring the Secretary of Defense, in coordination with the Secretaries of the military departments, to develop a document to be known as the “Tenant Bill of Rights,” which would include but not be limited to minimum rights, such as homes that meet minimum health and environmental standards, the ability to report inadequate living standards to the military chain of command without fear of reprisal, and the ability to enter into a dispute resolution process for purposes of recouping basic allowance for housing. The provision would also require the Secretary of Defense to submit the current Tenant Bill of Rights on a biennial basis in conjunction with the annual budget submission. Finally, the provision would require the secretary of each military department to deliver an implementation plan for this provision to the congressional defense committees not later than February 1, 2020.

The committee believes that this “Tenant Bill of Rights” should act as a framework for both the rights and responsibilities of any tenant living in housing managed by a Military Housing Privatization Initiative contractor. While certain rights included may require difficult contract renegotiation, the committee notes the willingness of many of the private contractors to ensure that tenants are better taken care of. The committee encourages the Department of Defense to work with military family advocacy groups in developing this document to ensure that it captures the overarching concerns of thousands of military families who have lived in substandard living conditions for years. Finally, the committee notes that this document may not be all-inclusive and that it is the responsibility of the military chain of command to ensure the health, safety, and welfare of its servicemembers.

Designation of Chief Housing Officer for privatized military housing (sec. 3012)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, requiring the Secretary of Defense to designate a Chief Housing Officer, who

shall be a presidentially appointed and Senate-confirmed Department of Defense official. The provision would require the Chief Housing Officer to establish and maintain the Office of the Chief Housing Officer, whose purpose would be to conduct oversight of the Military Housing Privatization Initiative (MHPI) by standardizing policies and conducting audits of contracts, agreements, and work order incentive fees. The committee notes that this provision would require the Secretary of Defense to submit an implementation report to the congressional defense committees not later than 60 days after enactment of this Act.

The committee is concerned that the confirmed MHPI crisis has created immediate needs for military families but also requires long-term and consistent oversight for the viability of the program. The committee believes that the military departments must work together to address family concerns but that, moving forward, there must be a Department-wide effort to find the best solutions in order to improve the quality of life for military families who utilize on-base housing. The committee notes that, as the Department focuses on improving servicemember lethality, military family readiness must remain a priority so that servicemembers can remain mission-focused.

Command oversight of military privatized housing as element of performance evaluations (sec. 3013)

The committee recommends a provision that would require each secretary of a military department to ensure that performance evaluations indicate the extent to which the following individuals have or have not exercised effective oversight and leadership of military privatized housing: (1) Commanders of military installations with privatized military housing; (2) Each officer or senior enlisted member whose duties include facilities or housing management at such installations; and (3) Any other officer or enlisted member as specified by the secretary concerned.

Consideration of history of landlord in contract renewal process for privatized military housing (sec. 3014)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, by requiring the Secretary of Defense to consider a private contractor's past performance when deciding whether or not to enter into a new contract or renew an existing contract with that contractor.

Treatment of breach of contract for privatized military housing (sec. 3015)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, by requiring the Secretary of Defense to withhold any amount owed under the contract as well as to rescind the contract if a material breach is found and not remedied within 90 days.

Uniform code of basic standards for privatized military housing and plan to conduct inspections and assessments (sec. 3016)

The committee recommends a provision that would require the Secretary of Defense to establish a uniform code of basic housing standards for safety, comfort, and habitability for privatized military housing. The provision would also require the Secretary to submit to the congressional defense committees, not later than February 1, 2020, this uniform code and a plan for the Department of Defense (DOD) to contract with home inspectors to conduct inspections and assessments of habitability and structural integrity of each housing unit as specified under subchapter IV of chapter 169 of title 10, United States Code. Finally, the provision would require that said inspections be completed no later than February 1, 2021.

The committee notes that, at the end of the 50-year agreements, housing units currently managed by military housing privatization contractors will be returned to the DOD. The committee believes that the totality of the condition of housing under the Military Housing Privatization Initiative (MHPI) is unknown. The committee notes that, during its investigation of the MHPI program, both individual homes and entire neighborhoods were neglected as it relates to required preventative and curative maintenance. The committee is concerned that, if measures are not taken to ensure the long-term viability of the current inventory, the DOD may receive its housing inventory back in less than ideal conditions, leading to higher maintenance costs in the future.

Repeal of supplemental payments to lessors and requirement for use of funds in connection with the Military Housing Privatization Initiative (sec. 3017)

The committee recommends a provision that would amend section 606 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232), by repealing the requirement that the Secretary of Defense pay an additional 5 percent of the calculated Basic Allowance for Housing (BAH) for residents of Military Housing Privatization Initiative (MHPI) projects to MHPI projects. The provision would require the Secretaries of the military departments to provide additional payments to MHPI projects equivalent to 2 percent of the calculated BAH for residents of MHPI projects. The Secretaries of the military departments would be required to use 3 percent of the calculated BAH for MHPI residents to make improvements to the oversight and management of MHPI projects.

Under this provision, funding allocated to MHPI oversight could be used for additional civilian personnel, technological systems, or other items that would improve the military's ability to manage and effectively supervise the various MHPI developments. The provision would allow the Secretaries of the military departments to provide additional funding the MHPI projects following notification to the Committees on Armed Services of the Senate and House of Representatives.

Standard for common credentials for health and environmental inspectors of privatized military housing (sec. 3018)

The committee recommends a provision that would require the Secretary of Defense to submit a report to the congressional defense committees on a standard for common credentials to be used throughout the Department of Defense for purposes of health and environmental hazard inspection to include, at a minimum, categories for lead, mold, and radon.

Improvement of privatized military housing (sec. 3019)

The committee recommends a provision that would amend chapter 169 of title 10, United States Code, to require the Secretary of Defense to establish a database that makes available to the public complaints from tenants related to privatized military housing units, together with the landlord's response to each such complaint.

The provision also would require that, on no less than an annual basis, the Secretary of Defense publish in the Federal Register the financial details of each contract for the management of military privatized housing units.

Further, the provision would require each relevant landlord to submit to the Secretary of Defense, on no less than an annual basis, a financial statement equivalent to the Form 10-K for the landlord and for each contract between the landlord and the DOD.

Finally, the provision would require the Secretary of Defense to submit to the congressional defense committees, and to publish on a publicly available website of the DOD, not less than annually, a report on privatized military housing units, disaggregated by military installation. In addition, the commander of each military installation would be required to submit to the congressional defense committees, not less than annually, a report on all requests made by members of the Armed Forces, who are tenants of privatized military housing units, to withhold from their landlords any basic allowance for housing payable to the member that were denied during the period covered by the report.

Access to maintenance work order system of landlords of privatized military housing (sec. 3020)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, by requiring each private contractor that provides housing under this subchapter to provide the housing management office at each installation access to their maintenance work order system.

The committee notes that, during its investigation of the Military Housing Privatization Initiative (MHPI), it found that different services and installations had different levels of access to the maintenance work order system maintained by private contractors. The committee believes that, to conduct adequate oversight of the MHPI program, the housing management office, and thereby the military chain of command, must have an accurate assessment of outstanding work orders for its installation.

Access by tenants of privatized military housing to work order system of landlord (sec. 3021)

The committee recommends a provision that would require that each landlord for a privatized military housing unit have an electronic work order system and provide tenants with access to such system.

Subtitle B—Prioritizing Families

Dispute resolution process for landlord-tenant disputes regarding privatized military housing and requests to withhold payments (sec. 3031)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, to require the Secretary of Defense to implement a formal dispute resolution process on each military installation with privatized military housing units. This process would ensure prompt and fair resolution of landlord-tenant disputes concerning maintenance and repairs, damage claims, rental payments, move-out charges, and any other housing unit issues that the Secretary deems appropriate. This provision would require landlords to establish a process whereby tenants could submit a dispute electronically or in another form. Additionally, the provision would establish the commander of a military installation with privatized military housing as the designee who makes the final decision on any appeal with a requirement that he or she seek recommendations, at a minimum, from the: (1) Servicemember or family member filing the dispute; (2) Landlord named in the dispute; (3) Chief of the installation housing management office; (4) Judge advocate of the military department concerned; and (5) Base civil engineer. The provision would require decisions to be rendered at least on a monthly basis and decisions of the installation commander would be final.

Moreover, this provision would authorize a member of the Armed Forces or a family member who is a tenant of a privatized military housing unit to submit a claim, to the commander, requesting the withholding of any basic allowance for housing payable to the member for the lease of a unit during a period in which: (1) The landlord has not met maintenance guidelines and procedures established by the landlord or the Department of Defense; or (2) The housing unit is uninhabitable according to State and local law for the jurisdiction in which the unit is located.

Additionally, the committee directs the Secretary of Defense to develop and brief the congressional defense committees no later than February 1, 2020, on a department-wide policy for any funds withheld under section 2891a of this provision.

Suspension of Resident Energy Conservation Program (sec. 3032)

The committee recommends a provision that would suspend the Department of Defense's Resident Energy Conservation Program (RECP) until the Secretary of Defense can certify that 100 percent of military housing on installations is individually metered and certified by an independent entity through an energy audit. Furthermore, the provision would terminate the RECP if the Secretary of

Defense is unable to certify the individual usage 2 years after enactment of this Act.

The committee notes that, while the RECP initiative was established with good intentions, servicemembers are, in some cases, paying higher energy costs than their actual usage merits. The committee understands that many installations were never designed or wired for individual usage and believes that these excessive charges, in many places, are erroneous.

Access by tenants to historical maintenance information for privatized military housing (sec. 3033)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, by requiring each private contractor that provides housing under this subchapter to provide prospective tenants with information regarding maintenance conducted at prospective housing units for the previous 10 years.

Prohibition on use of call centers outside the United States for maintenance calls by tenants of privatized military housing (sec. 3034)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, by adding a section prohibiting any private contractor who is responsible for military housing from using a maintenance work order call center outside the United States. The provision would be effective 1 year after the date of the enactment of this Act.

Radon testing for privatized military housing (sec. 3035)

The committee recommends a provision that would require the Secretary of Defense to submit a report not later than March 1, 2020, to the congressional defense committees that identifies all Department of Defense installations that should be monitored for levels of radon in excess to that in the Environmental Protection Agency's recommendations. The provision would also require the Secretary of Defense to establish testing procedures for all privatized military housing at installations that have been identified as requiring radon monitoring and would include a requirement to complete initial testing for all privatized military housing by June 1, 2020. The provision would also require the Secretary of Defense to certify on an annual basis that radon testing is being conducted for privatized military housing.

Expansion of windows covered by requirement to use window fall prevention devices in privatized military housing (sec. 3036)

The committee recommends a provision that would amend section 2879(c) of title 10, United States Code, by striking "24 inches" and inserting "42 inches".

Requirements relating to move out and maintenance with respect to privatized military housing (sec. 3037)

The committee recommends a provision that would require the Secretary of Defense, in consultation with the Secretaries of the

military departments, to develop a uniform move-out checklist for tenants of privatized military housing. This provision would also require that all maintenance issues and work orders related to health and safety issues at privatized military housing be reported to the commander of the installation at which the housing is located.

Subtitle C—Long-Term Quality Assurance

Development of standardized documentation, templates, and forms for privatized military housing (sec. 3041)

The committee recommends a provision that would require the Secretary of Defense, in coordination with the secretary of each military department, to develop standard documentation, templates, and forms for privatized military housing. The provision would also require the Secretary of Defense to issue guidance within 30 days of the enactment of this Act and to deliver an implementation plan to the congressional defense committees not later than February 1, 2020.

The committee notes that a growing concern among family members is differing leases, processes, and protocols across installations. The committee believes that streamlining and consolidating, where possible, will allow the Department of Defense to have a better understanding of the privatized housing program. The committee also believes that this will assist the military departments', specifically the chain of command's, oversight of the program.

Council on privatized military housing (sec. 3042)

The committee recommends a provision that would require the assistant secretary for energy, installations, and environment of each military department to establish a military housing council to identify and resolve problems with military housing managed by private contractors. The provision would require each council to comprise not fewer than 2 civil engineers, 2 chiefs of a housing management office, and 2 installation commanders, who would each serve 2-year terms. Finally, the provision would require the councils to submit to the Secretary of Defense reports on their findings for the previous term, not later than October 1 of each year, with the first reports due no later than 60 days after the councils' first meetings.

The committee notes that, until the recent hearings of the Senate Armed Services Committee, the military departments were unaware of the abhorrent conditions that many of its servicemembers were living in with little to no support from the military chain of command. The committee believes that councils, such as the one that this provision would require, would help leaders at the highest levels stay in touch with the ground truth of military housing conditions and better support servicemembers and their families.

Requirements relating to management of privatized military housing (sec. 3043)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, by requiring the Secretary of Defense to ensure that operating agreements

for any Department of Defense installation where on-base housing is managed by a private contractor include certain requirements.

The provision would require the installation commander to conduct an annual review of the mold mitigation and pest control plan for the on-base contractor and allow the use of assigned bio-environmental or contractor equivalent personnel to test for mold, unsafe water, and other health and safety conditions if requested by the head of the base housing management office.

The provision would include the requirements for the head of each housing management office to: conduct a physical inspection before and after tenants occupy a residence; establish contact with the tenants at the 15- and 60-day marks after move-in; and maintain all test results relating to the health and safety condition of a housing unit for the life of the contract.

Finally, the provision would include requirements for the private contractor to: disclose bonus structures for community managers and regional executives relating to maintenance budgets to the Secretary of Defense; share test results with tenants and housing management offices no later than 3 days after receipt; not conduct any promotion events or incentivize tenants to fill out comment cards or satisfaction surveys without approval from the chief of the installation housing management office; and notify a tenant of his or her right to assistance from the installation legal assistance office and provide a copy to the Assistant Secretary of Defense for Sustainment prior to a tenant's agreeing to any form of settlement, nondisclosure, or release of liability.

Requirements relating to contracts for privatized military housing (sec. 3044)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, by requiring the Secretary of Defense to include certain requirements for any contract with a term of more than 10 years for the purpose of privatized military housing. The provision would require that contracts: allow the Department of Defense to renegotiate the contract at minimum every 5 years, prohibit the continued working under the contract of any employee who has committed work order fraud under the contract, and require the private contractor to pay a tenant's relocation fees and living expenses if a tenant is required to move due to health or environmental hazards.

Withholding of incentive fees for landlords of privatized military housing for failure to remedy a health or environmental hazard (sec. 3045)

The committee recommends a provision that would amend subchapter IV of chapter 169 of title 10, United States Code, to require the Secretary of Defense to withhold incentive fees, which would otherwise be paid to a private contractor under this subchapter, for failure to remedy a health or environmental hazard.

Expansion of direct hire authority for Department of Defense for childcare services providers for Department child development centers to include direct hire authority for installation military housing office personnel (sec. 3046)

The committee recommends a provision that would amend section 559 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91) to extend direct hire authority to fill civil service position vacancies at installation military housing offices.

Plan on establishment of Department of Defense jurisdiction over off-base privatized military housing (sec. 3047)

The committee recommends a provision that would require the Secretary of Defense, in consultation with the Secretaries of the military departments, to submit a plan to establish jurisdiction at locations with privatized military housing not located on a military installation to the congressional defense committees not later than 30 days after the enactment of this Act.

Subtitle D—Other Housing Matters

Lead-based paint testing and reporting (sec. 3051)

The committee recommends a provision that would require the Secretary of Defense to establish a policy under which a qualified individual may access a military installation to conduct lead testing, with all results to be shared with the installation civil engineer, housing management office, and major subordinate command with jurisdiction over the installation. Additionally, the provision would require the Secretary of Defense to annually submit a report, not later than February 1st of each year, to the congressional defense committees that includes: (1) A certification indicating whether the Department of Defense's military housing is in compliance with the lead-based paint requirements of the Toxic Substances Control Act (Public Law 94–469); (2) A detailed summary of the certification requirements and compliance broken out by military service; (3) The total number of military housing units that were inspected; (4) The number of military housing units that were not inspected; (5) The number of housing units that tested positive for lead; and (6) What abatement procedures were taken.

Satisfaction survey for tenants of military housing (sec. 3052)

The committee recommends a provision that would require the Secretary of Defense to ensure that each military department utilizes the same electronic satisfaction survey for all surveys relating to the customer service experience of all military housing residents, those living in both government and privately managed housing units. The committee believes that one standard survey will allow for improved data collection to pinpoint problems and best practices with ease and assist in regaining the trust of military families and servicemembers.

Information on legal services provided to members of the Armed Forces harmed by health or environmental hazards at military housing (sec. 3053)

The committee recommends a provision that would require the Secretary of Defense to submit a report not later than 90 days after the enactment of this Act to the congressional defense committees on the legal services available to members of the armed services who have been harmed by health and environmental hazards while living in military housing.

Mitigation of risks posed by certain items in military family housing units (sec. 3054)

The committee recommends a provision that would require the Secretary of Defense to allow a resident of a military family housing unit to anchor any furniture, television, or large appliance to the wall of the unit for purposes of preventing such item from tipping over without incurring a penalty or obligation to repair the wall upon vacating the unit. Further, the provision would require the Secretary to ensure that certain freestanding furniture taller than 27 inches be securely anchored in furnished military family housing units under the jurisdiction of the Department of Defense.

Technical correction to certain payments for lessors of privatized military housing (sec. 3055)

The committee recommends a provision that would amend section 606(d) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232) by authorizing additional payments to privatized housing projects for which any phase or portion of the project agreement was first finalized and signed on or before September 30, 2014.

Pilot program to build and monitor use of single family homes (sec. 3056)

The committee recommends a provision that would require the Secretary of the Army to carry out a pilot program to build and monitor the use of not fewer than five single family homes for members of the Army and their families.

Items of Special Interest

Compliance with housing laws

The committee is concerned that military family housing units under the Military Housing Privatization Initiative often do not meet the minimum requirements of Federal, State, and local codes. The committee notes that servicemembers and their families continuously make sacrifices to serve their country and should not be living in substandard or unsafe housing. The committee is concerned that future construction of family housing units may fall prey to similar second-rate construction practices if the Department of Defense does not implement more stringent requirements. The committee understands that Federal, State, and local governments often have different housing codes with varying standards.

Accordingly, the committee directs the Secretary of Defense to provide a report to the Committees of Armed Services of the Senate

and the House of Representatives, no later than February 1, 2020, on a plan to develop a Department of Defense standard to ensure that all future construction for family housing, as defined under chapter 169 of title 10, United States Code, meets a high-quality standard, as designated by the Secretary. The Secretary shall include in this report a plan for establishing a standard code for future housing construction, including standard inspection and permitting processes and the resources needed to implement and conduct oversight for compliance to such a standard.

Comptroller General review of Basic Allowance for Housing rate determination process

According to the Department of Defense (DOD), the goal of the Basic Allowance for Housing (BAH) program is to “help members cover the costs of housing in the private sector.” To determine the cost of private sector housing and set local BAH rates, the DOD employs a contractor to collect rent and utility data from approximately 300 Military Housing Areas in the United States. The DOD states that the current BAH method “ensures a more accurate correlation between allowance payments and rental prices.”

The National Defense Authorization Act for Fiscal Year 1998 (Public Law 105–85) created the BAH program out of dissatisfaction with the legacy Basic Allowance for Quarters and Variable Housing Allowance system. Initially, the BAH program was designed to pay for approximately 85 percent of servicemember housing costs. Over time, BAH rates increased to cover 100 percent of a servicemember’s estimated housing costs.

Concerned with the growth in military personnel costs, in 2015 the DOD requested, and the Congress authorized, a gradual reduction in BAH. From 2015 to 2019, BAH was to be reduced by 1 percent per year to eventually cover 95 percent of a servicemember’s estimated housing costs. However, despite this mandated reduction in BAH, recent studies suggest that BAH has remained artificially high when compared to local housing costs in many Military Housing Areas.

In 2018, the Center for Naval Analyses released a report titled “The Effect of the BAH Changes on Privatized Family Housing, Volume 1: Theory and Overall Results.” The report compared BAH to local housing costs and found that “in most Navy [public-private venture housing] locations, the BAH rates actually increased compared to the local housing costs.” Based on these findings, the committee is concerned that the underlying BAH rate determination process is ineffective in achieving an “accurate correlation” of allowance payments and local housing market costs.

Therefore, the committee directs the Comptroller General of the United States to conduct a review of DOD’s policies and processes for determining BAH. Preliminary observations shall be provided to the Committees on Armed Services of the Senate and the House of Representatives by the end of February 2020. At that time, a final product due date will be determined. The review shall include: (1) An explanation of DOD’s current process for setting BAH; (2) A quantitative assessment of whether the DOD implemented recent reductions in BAH in accordance with the law; (3) A discussion of alternative methods for calculating BAH that may be more

objective in capturing military housing area rental costs; and (4) An assessment of the feasibility of requiring BAH to align with other housing cost data captured by the Federal government.

Consideration of privatized housing conditions in evaluation of commanders and senior enlisted personnel

The committee is aware that the Services are taking steps to address the shortcomings of the chain of command in oversight of privatized military housing. The committee is concerned, however, that lasting institutional changes need to be made in order to ensure that effective oversight over privatized housing occurs. As such, the committee strongly believes that the Services should review how commanders and senior enlisted personnel are evaluated related to the oversight of privatized housing. The committee notes two types of metrics that could be considered, when appropriate: the facility condition index and the results of installation-specific resident satisfaction surveys. The committee strongly encourages the Department to examine which other areas related to privatized housing would spark a lasting response from commanders and the senior enlisted personnel responsible for privatized housing.

Accordingly, the committee directs the Secretary of Defense, in coordination with the Secretaries of the military departments, to brief the congressional defense committees not later than October 1, 2019, on the criteria currently being used and any metrics that could be used regarding privatized military housing, including those relevant to the evaluation of commanders and other servicemembers. The briefing shall include a service by service comparison and an implementation timeline for the institution of chosen metrics.

Plan for management of privatized military housing units if a contract relating to those housing units is rescinded

The committee is concerned that the Department of Defense does not have a plan in place to move forward in the event that an installation housing contract is rescinded by the Secretary of Defense. The committee notes that, when asked, the Department has not had a unified answer about the liabilities, both financial and organizational, that the Services would face in this contingency. Whether it is re-competition of the agreement or the service's taking responsibility for housing, the committee needs to understand what the ramifications of such decisions would be.

Accordingly, the committee directs the Secretary of Defense, in coordination with the Secretaries of the military departments, to submit a report to the Committees on Armed Services of the Senate and the House of Representatives, no later than February 1, 2020, on a formal written contingency plan for the management of housing units for each military installation under subchapter IV of chapter 169 of title 10, United States Code. The report shall include the financial liability for each installation as well as alternative courses of actions should the current contract be terminated.

Referral to Department of Justice of allegations of military housing fraud

The committee notes with grave concern that testimony provided by military families before the committee described allegations of potentially fraudulent activity by private housing companies engaged in real estate agreements with the Department of Defense. These allegations include but are not limited to: (1) Tampering with housing satisfaction surveys submitted by military families; (2) Unwarranted charges to outgoing military tenants to replace carpets or to pay for other maintenance problems without remedying these issues before the arrival of the next military family; (3) Maintenance offices “closing out” work order requests without adequately resolving the underlying problem; (4) Disregarding fixed-rate leases and increasing rent prices despite guarantees to renew leases at market rate; (5) Tampering with the results of air quality inspections, including opening windows during air quality checks to disguise low air quality; and (6) Hiring unqualified, inexperienced employees to address maintenance problems and concerns.

Therefore, the committee urges each secretary of the military departments to conduct an in-depth review and assessment of each such real estate agreement under the jurisdiction of that secretary. Review of each agreement is necessary, given the scope of issues associated with the privatized military housing program and the lack of standardization in real estate agreements between the DOD and private housing companies. Further, the committee urges each military department, following its review and assessment, to request that the Department of Justice conduct criminal or civil investigations into whether any private housing company has engaged in conspiracy to defraud the United States (18 U.S.C. 371) or any other conduct in contravention of any law prohibiting fraud, waste, abuse, or any other criminal or civil violation.

Report on service training for installation commanders

The committee is concerned that the current unsatisfactory state of the Military Housing Privatization Initiative is, in part, due to a lack of oversight by the military chain of command. The committee notes that the Services have admitted that the chain of command must have a larger role in ensuring the safety and welfare of its servicemembers and that many of the available education opportunities in pre-command courses, public enumeration of resident responsibilities, and on-base legal resources have either been discontinued or need robust enhancement.

Accordingly, not later than September 1, 2019, the committee directs the Secretary of Defense, in coordination with the Secretaries of the military departments, to deliver a report to the Committees on Armed Services of the Senate and the House of Representatives on Department-wide standards and education requirements to address the concern that the chain of command feels that it does not have the necessary training or authority to serve as an advocate for servicemembers. The report shall include a plan for pre-command courses with an emphasis on privatized housing oversight, to include instruction that unit commanders and installation commanders are ultimately responsible for ensuring safe, clean, ade-

quate housing that meets all Federal, State, and local codes and standards for habitability. Additionally, this report shall include a plan for how new military family tenants will be educated on what responsibilities they have to maintain their homes and how to report health, safety, and welfare concerns.

Review of Air Force Civil Engineer Center organizational structure

The committee notes that during its investigation of the Military Housing Privatization Initiative (MHPI), a common theme throughout the Department of Defense was the chain of commands either not being aware, or not feeling empowered to protect the health, safety, and welfare of its servicemembers. The committee believes that, while the chain of command must be engaged at the installation level, senior civilian and military leadership in the Department must be aware of and able to conduct oversight germane to the privatized military housing issues.

The committee is aware that the Department of the Air Force is the only service that has a civilian responsible for the service's installation engineering command, the U.S. Air Force Civil Engineer Center (AFCEC). The committee notes that this position reports directly to the Assistant Secretary of the Air Force for Energy, Installations, and Environment without any flow of information to uniformed Air Force officers in the major subordinate command. The committee believes that the military chain of command must be reinserted at the installation level and that the health, safety, and welfare of on-base servicemembers and their families is the responsibility of the entire chain of command. The committee also notes the importance of civilian counterparts from the Senior Executive Service in maintaining the institutional knowledge of the command.

Accordingly, the committee directs the Secretary of the Air Force to review the organizational structure of AFCEC, including information flow through both military and civilian channels. During the review, the Secretary of the Air Force should consider the structure of the other services' engineering commands and analyze which structure is most beneficial for the flow of information and for conducting appropriate oversight of the MHPI program. The committee directs the Secretary of the Air Force to deliver a briefing to the congressional defense committees no later than November 1, 2019.

DIVISION C—DEPARTMENT OF ENERGY NATIONAL SECURITY AUTHORIZATIONS AND OTHER AUTHORIZATIONS

TITLE XXXI—DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS

Subtitle A—National Security Programs and Authorizations

National Nuclear Security Administration (sec. 3101)

The committee recommends a provision that would authorize the appropriation of funds for the activities of the Department of Energy's National Nuclear Security Administration.

Defense environmental cleanup (sec. 3102)

The committee recommends a provision that would authorize the appropriation of funds for the Department of Energy's defense environmental cleanup activities.

Other defense activities (sec. 3103)

The committee recommends a provision that would authorize the appropriation of funds for the Department of Energy's other defense activities.

Nuclear energy (sec. 3104)

The committee recommends a provision that would authorize the appropriation of funds for the Department of Energy's nuclear energy activities.

Subtitle B—Program Authorizations, Restrictions, and Limitations

Technical corrections to National Nuclear Security Administration Act and Atomic Energy Defense Act (sec. 3111)

The committee recommends a provision that would make certain technical corrections and conforming amendments to the National Nuclear Security Administration Act (Public Law 106–65) and the Atomic Energy Defense Act (Public Law 107–314).

National Nuclear Security Administration Personnel System (sec. 3112)

The committee recommends a provision that would adapt the personnel system demonstration project carried out by the National Nuclear Security Administration since 2008 into a permanent alternative personnel system.

Contracting, program management, scientific, engineering, and technical positions at National Nuclear Security Administration (sec. 3113)

The committee recommends a provision that would remove the statutory cap on the use of excepted service hiring authority pursuant to section 3241 of the National Nuclear Security Administration Act (Public Law 106–65) at the National Nuclear Security Administration (NNSA). This provision would not modify the statutory cap on the number of federal employees at the NNSA.

The committee continues to encourage the NNSA to prioritize use of this hiring authority, as well as its federal billets, to support priority programs in the Office of Defense Programs and supporting functions. The committee also expects that the NNSA will support full staffing of the Office of Cost Estimating and Program Evaluation, which contributes value to the organization well above its small size.

Prohibition on use of laboratory-directed research and development funds for general and administrative overhead costs (sec. 3114)

The committee recommends a provision that would prohibit the use of laboratory-directed research and development funds for general and administrative overhead costs at the National Nuclear Security Administration’s laboratories, sites, and plants.

Prohibition on use of funds for advanced naval nuclear fuel system based on low-enriched uranium (sec. 3115)

The committee recommends a provision that would prohibit the obligation or expenditure of any funds at the National Nuclear Security Administration to conduct research and development of an advanced naval nuclear fuel system based on low-enriched uranium unless the Secretary of Defense, the Secretary of Energy, and the Secretary of the Navy submit certain certifications to the congressional defense committees.

The committee notes that section 3118(c) of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92) required the Secretary of Energy and the Secretary of the Navy to submit a determination as to whether the United States should continue to pursue such research and development. Pursuant to this section, in a letter to the congressional defense committees dated March 25, 2018, the Secretaries of Energy and the Navy stated that such a research and development effort would cost about \$1 billion over a 10-to-15 year period, “with success not assured.” It would also result in a reactor design that would be “less capable, more expensive, and unlikely to support current life-of-ship submarine reactors,” which would reduce operational availability due to mid-life refueling requirements. As a result, the Secretaries of Energy and the Navy determined that the United States should not pursue such research and development.

Subtitle C—Plans and Reports**Estimation of costs of meeting defense environmental clean-up milestones required by consent orders (sec. 3121)**

The committee recommends a provision that would require the Secretary of Energy to submit, along with the budget justification materials, a report on the cost of meeting milestones required by a consent order at each defense nuclear facility at which environmental cleanup activities are taking place.

Extension of suspension of certain assessments relating to nuclear weapons stockpile (sec. 3122)

The committee recommends a provision that would extend the suspension through fiscal year 2023 of a requirement for the Comptroller General of the United States to review the budget submission of the National Nuclear Security Administration. The committee notes that the Comptroller General will conduct a similar review through this time period, as required by section 1043 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81), as amended.

Repeal of requirement for review relating to enhanced procurement authority (sec. 3123)

The committee recommends a provision that would terminate the requirement for the Comptroller General of the United States to review the Secretary of Energy's enhanced procurement authority after fiscal year 2019.

Determination of effect of treaty obligations with respect to producing tritium (sec. 3124)

The committee recommends a provision that would require the Secretary of Energy to determine whether the Agreement for Cooperation on the Uses of Atomic Energy for Mutual Defense Purposes, signed at Washington on July 3, 1958, permits obtaining uranium from the United Kingdom to produce tritium for defense purposes using reactor irradiation. The committee supports a broad interpretation of the Agreement, which currently allows the United States and the United Kingdom to share resources and information related to atomic energy defense activities. The provision would require the Secretary to submit the determination to the congressional defense committees no later than 180 days after the date of the enactment of this Act.

Assessment of high energy density physics (sec. 3125)

The committee recommends a provision that would require the Administrator of the National Nuclear Security Administration (NNSA) to enter into an arrangement with the National Academies of Science to conduct an assessment of the current status of the field of high energy density physics. The committee notes that scientific study in this subject has relevant applications in the NNSA's defense programs and also in civilian fields. The assessment would be due to the congressional defense committees no later than 18 months after the Administrator of the NNSA enters into the arrangement.

Budget Items

Federal salaries

The budget request included \$434.7 million for Federal Salaries and Expenses at the National Nuclear Security Administration (NNSA), of which \$326.8 million was identified for salaries and benefits.

The committee notes that, according to the NNSA's budget documentation, this salary amount would support 1,753 federal employees, while the statutory cap remains 1,690.

Accordingly, the committee recommends a decrease of \$11.7 million in Federal Salaries and Expenses, for a total of \$423.0 million.

Technology maturation initiatives

The budget request included \$39.3 million for research and development (R&D) support; \$236.2 million for R&D certification and safety; \$46.5 million for enhanced surety; and \$48.4 million for component manufacturing development.

The committee notes that the early development work for the W87-1 program, formerly known as Interoperable Warhead-1, was suspended for 5 years. In order to recover lost schedule produced by that delay, as well as enable other future modernization programs, the committee encourages the National Nuclear Security Administration's technology maturation initiatives. The committee believes that these investments, highlighted in the Administrator's unfunded priorities list, will help modernize obsolete materials and processes, increase production capacity and efficiency, and buy down risk.

Accordingly, the committee recommends increases as follows: \$1.0 million for R&D support, for a total of \$40.3 million; \$10.0 million for R&D certification and safety, for a total of \$246.2 million; \$8.0 million for enhanced surety, for a total of \$54.4 million; and \$10.0 million for component manufacturing development, for a total of \$58.4 million.

Stockpile Responsiveness Program

The budget request included \$39.8 million for the Stockpile Responsiveness Program at the National Nuclear Security Administration.

The committee strongly supports this program as an effective tool to assist with recruitment, retention, and training of a highly-skilled workforce as well as a means of improving resilience of the nuclear enterprise more broadly. The committee also understands that the program may be expanded to include the production sites to appreciate the same benefits outside of the design and engineering laboratories.

Accordingly, the committee recommends an increase of \$40.8 million, for a total of \$80.6 million, for the Stockpile Responsiveness Program.

Nonproliferation Stewardship Program

The budget request included \$304.0 million in Proliferation Detection, of which \$22.5 million was for the Nonproliferation Stewardship Program.

The committee notes that this program intends to initiate a strategic review of mission needs across the U.S. government in fiscal year 2020 while simultaneously beginning testbed development. The committee encourages the program to formulate a multi-year plan to address gaps in the proliferation detection architecture and then request funds for technological approaches to closing those gaps in future fiscal years.

Accordingly, the committee recommends a decrease of \$19.5 million for the Nonproliferation Stewardship Program, for a total of \$284.5 in Proliferation Detection.

Emergency Operations

The budget request included \$35.5 million in the National Nuclear Security Administration's Emergency Operations (EO) program within Nuclear Counterterrorism Incident Response.

The committee notes that the EO program has taken on additional Department of Energy-wide roles in recent years, including development and implementation of several presidential orders relating to homeland security and Department-wide continuity of government and operations. While the committee commends the EO program for its high-quality work, the committee believes that the NNSA's budget (and the 050 budget account writ large) should not pay for Department-wide functions above its proportional share.

Accordingly, the committee recommends a decrease of \$9.6 million for Emergency Operations within Nuclear Counterterrorism Incident Response, for a total of \$25.9 million. The committee encourages the Department to provide sufficient funding for the EO program using other appropriate accounts.

Enterprise Assessments

The budget request included \$81.3 million for the Office of Enterprise Assessments (EA) at the Department of Energy (DOE).

The committee notes that \$3.0 million of the EA budget request was identified to hire employees to support the new Performance Improvement Office within the Office of the DOE Chief Financial Officer. The committee notes that these employees would support non-defense, DOE-wide performance improvement efforts. As such, the committee believes that they would be more appropriately funded using non-053 budget accounts.

Accordingly, the committee recommends a decrease of \$3.0 million for the Office of Enterprise Assessment, for a total of \$78.3 million.

Defense Nuclear Waste Disposal

The budget request for the Department of Energy included \$116.0 million for the Yucca Mountain and Interim Storage programs, of which \$26.0 million was for the Defense Nuclear Waste Disposal Fund. The committee recommends a decrease of \$26.0 million for the Defense Nuclear Waste Disposal Fund.

Items of Special Interest

Assessment of lithium sustainment program and production project

The committee is aware that there is an increased demand for lithium as the National Nuclear Security Administration (NNSA) conducts multiple life extension programs (LEPs). In 2015, the Government Accountability Office published a report (“NNSA Should Ensure Equal Consideration of Alternatives for Lithium Production,” GAO–15–525) that found that the NNSA has been unable to produce lithium because of deteriorating conditions in Manhattan Project-era infrastructure at the Y–12 National Security Complex in Tennessee. Instead, the NNSA relies on a less efficient process that removes impurities from existing lithium supplies. The NNSA intends to use this process as part of a bridging strategy until it develops a new production capability. Design of this project at Y–12 has just begun and is expected to become operational in fiscal year 2027. The committee is concerned that the NNSA intends to rely on the current aging facilities through the next decade for ongoing LEPs and modernization programs.

Therefore, the committee directs the Comptroller General of the United States to conduct a comprehensive review of the NNSA’s planning and assumptions for the lithium sustainment program and the production capability project. The review shall include: (1) The status of the sustainment program, including the supply of lithium, projected ability to complete activities through 2030, and management of the program; and (2) The status of design activities and current cost and schedule estimates for the lithium production capability project and how these schedules align with the LEPs and other modernization projects.

The Comptroller General shall provide a briefing on initial findings no later than July 1, 2020, with a report submitted by a date to be agreed upon at the time of the briefing.

Briefing on ability to meet requirements for plutonium pit production

In April 2018, the National Nuclear Security Administration (NNSA) completed an engineering assessment of four options to produce plutonium pits to meet the requirement of the Department of Defense (DOD) for 80 pits per year by 2030. The report provided the basis for the Administrator of the NNSA’s recommended alternative for NNSA’s plutonium capabilities. On May 4, 2018, the Chair of the Nuclear Weapons Council provided to the committee written certification that the NNSA’s proposed strategy was acceptable to the Secretary of Defense and “represent[ed] a resilient and responsive option” for production of 80 plutonium pits per year by 2030. The proposed strategy would produce 30 pits per year at Los Alamos National Laboratory by 2026 and the additional 50 pits per year by repurposing the cancelled Mixed-Oxide Fuel Fabrication Facility at the Savannah River Site by 2030.

As required by section 3120 of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Public Law 115–232), the DOD submitted an independent assessment of NNSA’s strategy in April 2019. The assessment concluded that a key milestone will

be achieving the goal of 30 pits per year at the Los Alamos National Laboratory. The assessment further concluded, “[n]o available option can be expected to provide 80 pits per year by 2030.” The assessment also called on the DOD to “evaluate how best to respond to this requirement shortfall.”

In light of the specific concerns raised in the independent assessment of NNSA’s plutonium strategy, not later than December 1, 2019, the Chair of the Nuclear Weapons Council shall provide to the congressional defense committees a briefing on the impacts to military requirements and other nuclear programs and possible options to mitigate these risks in the event that the DOD’s requirement for 80 pits per year is not met by 2030.

Comptroller General review of applicability of Section 809 Panel recommendations to the Department of Energy

Section 809 of the National Defense Authorization Act for Fiscal Year 2016 (Public Law 114–92) tasked the Secretary of Defense to establish an advisory panel on streamlining and codifying acquisition regulations for the Department of Defense (DOD). Between January 2018 and January 2019, the Section 809 Panel issued several reports containing recommendations related to improving the defense acquisition process. While these recommendations were not aimed at the Department of Energy (DOE), the committee believes that the DOE and its National Nuclear Security Administration (NNSA) face a number of the same acquisition challenges as the DOD. Therefore, the committee directs the Comptroller General of the United States to assess the application of a subset of these recommendations to the DOE and NNSA.

First, the committee directs the Comptroller General to review issues affecting DOE’s acquisition workforce. Specifically, the committee is interested in DOE’s workforce planning efforts, particularly related to: (1) How the DOE determines the number of acquisition professionals needed and the skills and training required for those positions; (2) Whether DOE’s acquisition professionals attain the needed training and skills; (3) Any challenges in recruitment and retention of DOE’s acquisition workforce; and (4) Any systemic challenges for those professionals in performing their acquisition oversight responsibilities.

Second, the committee finds the portfolio management framework recommended by the Section 809 Panel compelling and therefore directs the Comptroller General to review NNSA’s efforts to identify its base capabilities and the applicability of a portfolio-based approach to managing its Defense Programs, consistent with the recommendations made to the DOD by the Section 809 Panel.

Finally, Volume 1 of the Section 809 Panel report provides examples of essential audit and nonaudit services provided by DOD agencies across the contract lifecycle. Most of these services are performed pursuant to requirements in the Federal Acquisition Regulation, which are generally applicable to all agencies, including the DOE. The committee directs the Comptroller General to review how the DOE obtains the required audit and nonaudit services and whether there are opportunities for improvement or efficiency in how the DOE obtains these services.

The Comptroller General should provide preliminary briefings on these three topics by March 1, 2020, June 1, 2020, and September 30, 2020, respectively, with reports to follow on a timeline agreed to at the times of the briefings.

Comptroller General review of DOE Order 140.1

In May 2018, the Department of Energy (DOE) issued a new order, Order 140.1, that governs the interface of the DOE with the Defense Nuclear Facilities Safety Board (DNFSB). The committee notes that the DNFSB has raised concerns that the new order could limit the DNFSB's oversight of many defense nuclear facilities. The committee also notes that the DOE issued Order 140.1 without consultation with the DNFSB or with the local communities most impacted by the Department's nuclear facilities.

The Board has communicated its concerns regarding DOE Order 140.1 in letters to the Secretary of Energy and has held public hearings to gather information on its implementation by the DOE. Specific concerns include possible new restrictions and protocols regarding the Board's access to information, facilities, and personnel that could diminish the Board's ability to perform its statutory mandate. The Board also conveyed a commitment to collaborate with the DOE to resolve these concerns. The committee notes that the legislation establishing the Board, section 314 of the Atomic Energy Act of 1954 (Public Law 83-73; 42 U.S.C. 2286c(a)), provides that "[t]he Secretary of Energy shall fully cooperate with the Board and provide the Board with ready access to such facilities, personnel, and information as the Board considers necessary to carry out its responsibilities."

Therefore, the committee directs the Comptroller General of the United States to review DOE Order 140.1 and report on how DOE's implementation of the order has affected the Board's ability to meet its statutory responsibilities.

The Comptroller General shall provide a briefing to the congressional defense committee no later than March 15, 2020, with a report to follow at a date agreed to at the time of the briefing.

Comptroller General study of radioactive waste at West Valley, New York

The committee recognizes that a disposal pathway is needed for radioactive waste at the West Valley New York Service Center and, in order for an informed decision to be made on the appropriate option for future disposal, a report is necessary. The committee directs the Comptroller General of the United States to submit to the congressional defense committees by November 1, 2020, a report describing the following: (1) The volumes, origins, and types of radioactive waste at the Western New York Service Center in West Valley, New York; (2) What options have been identified for disposal of each such type of radioactive waste; (3) What is known about the costs of, and time frames for, each such option; (4) The benefits and challenges of each such option, according to the State of New York and the Department of Energy; and (5) As of the date of the enactment of this Act, how much has been spent on the disposal of radioactive waste associated with the demonstration project prescribed by section 2(a) of the West Valley Demonstration

Project Act (Public Law 96–368) and what volumes and types of radioactive waste have been disposed of from the Western New York Service Center.

Comptroller General to continue ongoing evaluation of the Hanford Waste Treatment Plant

The committee notes that the Department of Energy's Office of Environmental Management (EM) continues to appear on the Government Accountability Office's High Risk List report, which cites programs vulnerable to waste, fraud, abuse, and mismanagement. EM's largest project resides in Hanford, Washington. This site, whose mission is nuclear waste cleanup and environmental restoration, has faced numerous technical challenges, cost overruns, and schedule delays.

Therefore, the committee directs the Comptroller General of the United States to continue its ongoing evaluation of the Hanford Waste Treatment Plant in the areas of cost-schedule performance, technology readiness levels, contractor assurance, and project management, with a briefing and time for this briefing to be mutually agreed upon.

Plutonium science and metallurgy

The committee is aware that numerous entities at the Department of Energy (DOE), the National Nuclear Security Administration (NNSA), and laboratories of both entities are engaged in efforts to better understand plutonium science and metallurgy. The committee is concerned, however, that these efforts are not fully coordinated and integrated.

Therefore, the committee directs the Administrator of the NNSA, in consultation with the Director of the Office of Science at the DOE, to provide a report to the congressional defense committees, no later than March 31, 2020, on research in plutonium science and metallurgy at the NNSA. The report should list key fundamental questions that will be addressed within the next 5 to 10 years with descriptions of programs that are either ongoing or planned to address them. The report shall also include a 5-year funding profile for plutonium science and metallurgy, including applicable facilities and capital equipment.

Report on the Department of Energy's Office of Legacy Management

Created in 2003, the Department of Energy's (DOE) Office of Legacy Management (LM) serves as the long-term steward for sites formerly used in nuclear weapons development and production. After the DOE has finished remediation and cleanup of contamination, LM assumes responsibility for site monitoring and maintenance and performs other long-term duties such as treating soil and groundwater to remedy any continuing hazards. LM currently is responsible for about \$78 billion, or 16 percent, of DOE's overall \$494 billion in environmental liabilities. Despite LM's already managing 100 sites around the country with an annual budget of \$150 million, LM-managed environmental liabilities are expected to grow as more sites are transferred from DOE's Office of Environmental Management. The committee is concerned that LM is al-

ready struggling to manage the current level of environmental liabilities, which are expected to grow significantly.

Therefore, the committee directs the Comptroller General of the United States to, no later than March 1, 2020, submit a report to the committee on LM operations, including the nature of its environmental liabilities, the steps LM is taking to address the liabilities, the extent that LM's liabilities are expected to grow over the next 10 years, and LM plans to address growth in liabilities.

Report on the Department of Energy's tank closures

The Department of Energy (DOE) is responsible for storing and treating about 90 million gallons of radioactive and hazardous waste, located in nearly 240 large underground tanks at 3 sites across the country—the Hanford Site, the Savannah River Site, and Idaho National Laboratory. As of 2019, the DOE has treated about 7 million gallons of waste at the Savannah River Site and has closed 9 of its 51 tanks in place by removing the waste and then filling the empty tanks with grout. At the Idaho site, the DOE has treated about 8 million gallons of waste and closed 8 of its 11 tanks in place, also by removing the waste and filling the tanks with grout. Conversely, the DOE has not closed any of the 177 tanks at its Hanford Site. In January 2019, the Government Accountability Office (GAO) reported that a final decision has not yet been made on how to clean up and close Hanford's tanks. The GAO noted that closing the tanks in place could cost about \$18 billion less than removing the waste and then exhuming and disposing of the tanks elsewhere.

Not later than January 1, 2020, the Secretary of Energy shall provide to the congressional defense committees a report that discusses tank closures at the Savannah River Site and Idaho National Laboratory. The report shall include details on: the status of tank closures at these two sites, including any lessons learned; the extent to which the tank closures have met environmental performance requirements; costs associated with tank closure; and steps taken to ensure that closed tanks continue to meet environmental performance requirements in the future. The report shall also include the DOE's plans for future tank closures at the Savannah River Site and Idaho National Laboratory and the status of its plans for closing tanks at the Hanford site. No later than January 1, 2021, the Comptroller General of the United States shall report to the congressional defense committees on the status of tank closures at the Hanford Site, including the costs and risks associated with closing Hanford's tanks and any additional information that may be useful related to tank closures at the Hanford Site.

TITLE XXXII—DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Authorization (sec. 3201)

The committee recommends a provision that would authorize funding for the Defense Nuclear Facilities Safety Board at \$29.5 million, consistent with the budget request, but notes extensive reservations with this authorization and Board operations.

In 2018, the Board acknowledged that it was no longer operating as effectively as it has at times in the past and commissioned the National Academy of Public Administration (NAPA) to perform an organizational assessment. While the committee commends the Board for taking that step, the results of the NAPA study, compiled in “Defense Nuclear Facilities Safety Board Organizational Assessment” (November 2018), paint a disturbing picture.

Consistent with several other independent assessments over the last 5 years, the NAPA study characterizes the Board’s recent contribution to the Department of Energy as “negligible” and describes its “current subpar level and quality of output.” The report describes the relationship between sitting Board members as “often uncivil and unhealthy,” and the environment as characterized by a “lack of collegiality” and “mutual suspicion and distrust.” In the same time period, employee satisfaction and morale has declined precipitously. These issues, in addition to insufficient attention to professional development and career stewardship, have contributed to high levels of personnel turnover and difficulties in recruiting and retention of talented staff. Additionally, the report notes, and the committee corroborates, decreased levels of engagement with key stakeholders outside the Board, including the Congress.

While the provisions recommended in Title 32 of this Act would address some of the concerns raised by the NAPA report, the committee believes that the sitting Board members must take responsibility for changing the culture and improving the work product of the Board to rectify current and persistent deficiencies and to better execute its critical function.

Improvement of management and organization of Defense Nuclear Facilities Safety Board (sec. 3202)

The committee recommends a provision that would authorize the hiring of an executive director for operations as a senior employee at the Defense Nuclear Facilities Safety Board. The provision would also authorize the Chairman of the Board, subject to the approval of the other Board members, to organize the staff of the Board as the Chairman considers appropriate to accomplish the mission of the Board.

The committee notes that this provision is consistent with the recommendations of the National Academy of Public Administra-

tion's report titled "Defense Nuclear Facilities Safety Board Organizational Assessment" (November 2018). Also in keeping with that report's recommendations, the committee encourages the Chairman to consult and communicate with the staff and other Board members while considering organizational changes.

Membership of Defense Nuclear Facilities Safety Board (sec. 3203)

The committee recommends a provision that would, beginning April 1, 2020, prohibit members of the Defense Nuclear Facilities Safety Board from serving on expired terms and from serving two consecutive terms. The provision would also require the President to enter into an arrangement with the National Academy of Sciences (NAS) to maintain a list of qualified individuals who might be considered for nomination in case of a vacancy. Finally, if the President is unable to submit a nomination to fill a vacancy on the Board within 180 days, the provision would require him to submit to the committee an explanation of the reasons for that inability and a plan to submit such a nomination within the following 90 days; this required process would be repeated until the nomination had been submitted.

The committee notes that several elements of this provision are consistent with the National Academy of Public Administration (NAPA) November 2018 study titled "Defense Nuclear Facilities Safety Board Organizational Assessment." The committee also notes that the subsection of the provision related to Presidential reporting in case of inability to fill a vacancy on the Board within 180 days is similar to a provision originally in the Board's enabling statute at the time of the Board's creation.

The committee understands that elements of this provision would increase the risk of the Board's falling below a quorum for a period of time but anticipates that other elements would encourage the President to fill newly-created vacancies promptly. The committee believes that the appalling conditions described in the NAPA report merit consideration of more rapid turnover of the Board's membership.

TITLE XXXV—MARITIME ADMINISTRATION

Maritime Administration (sec. 3501)

The committee recommends a provision that would re-authorize certain aspects of the Maritime Administration.

DIVISION D—FUNDING TABLES

Authorization of amounts in funding tables (sec. 4001)

The committee recommends a provision that would provide for the allocation of funds among programs, projects, and activities in accordance with the tables in division D of this Act, subject to re-programming in accordance with established procedures.

Consistent with the previously expressed views of the committee, the provision would also require that decisions by an agency head to commit, obligate, or expend funds to a specific entity on the basis of such funding tables be based on authorized, transparent, statutory criteria, or merit-based selection procedures in accordance with the requirements of sections 2304(k) and 2374 of title 10, United States Code, and other applicable provisions of law.

**SUMMARY OF NATIONAL DEFENSE
AUTHORIZATIONS FOR FISCAL YEAR 2020**

SUMMARY OF NATIONAL DEFENSE AUTHORIZATIONS FOR FISCAL YEAR 2020

(In Thousands of Dollars)

	FY 2020 Request	Senate Change	Senate Authorized
DISCRETIONARY AUTHORIZATIONS WITHIN THE JURISDICTION OF THE ARMED SERVICES COMMITTEE			
NATIONAL DEFENSE BASE BUDGET			
DEPARTMENT OF DEFENSE-MILITARY (BUDGET SUB-FUNCTION 051)			
DIVISION A: DEPARTMENT OF DEFENSE AUTHORIZATIONS			
TITLE I—PROCUREMENT			
AIRCRAFT PROCUREMENT, ARMY	3,696,429	–16,000	3,680,429
MISSILE PROCUREMENT, ARMY	0	3,863,497	3,863,497
PROCUREMENT OF W&TCV, ARMY	4,715,566	174,200	4,889,766
PROCUREMENT OF AMMUNITION, ARMY	0	2,694,548	2,694,548
OTHER PROCUREMENT, ARMY	7,443,101	18,326	7,461,427
AIRCRAFT PROCUREMENT, NAVY	18,522,204	492,724	19,014,928
WEAPONS PROCUREMENT, NAVY	0	4,174,944	4,174,944
PROCUREMENT OF AMMO, NAVY & MC	0	981,314	981,314
SHIPBUILDING AND CONVERSION, NAVY	23,783,710	360,700	24,144,410
OTHER PROCUREMENT, NAVY	9,652,956	–163,823	9,489,133
PROCUREMENT, MARINE CORPS	3,090,449		3,090,449
AIRCRAFT PROCUREMENT, AIR FORCE	16,784,279	1,701,800	18,486,079
MISSILE PROCUREMENT, AIR FORCE	2,889,187		2,889,187
SPACE PROCUREMENT, AIR FORCE	2,414,383		2,414,383
PROCUREMENT OF AMMUNITION, AIR FORCE	0	1,667,961	1,667,961
OTHER PROCUREMENT, AIR FORCE	20,687,857	662,100	21,349,957
PROCUREMENT, DEFENSE-WIDE	5,109,416	–429,663	4,679,753
JOINT URGENT OPERATIONAL NEEDS FUND	99,200		99,200
SUBTOTAL, TITLE I—PROCUREMENT	118,888,737	16,182,628	135,071,365
TITLE II—RESEARCH, DEVELOPMENT, TEST AND EVALUATION			
RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	12,192,771	151,355	12,344,126
RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	20,270,499	–208,740	20,061,759
RESEARCH, DEVELOPMENT, TEST & EVAL, AF	45,616,122	719,653	46,335,775
RESEARCH, DEVELOPMENT, TEST & EVAL, DW	24,346,953	713,300	25,060,253
OPERATIONAL TEST & EVAL, DEFENSE	221,200		221,200
SUBTOTAL, TITLE II—RESEARCH, DEVELOPMENT, TEST AND EVALUATION	102,647,545	1,375,568	104,023,113
TITLE III—OPERATION AND MAINTENANCE			
OPERATION & MAINTENANCE, ARMY	22,797,873	19,135,951	41,933,824
OPERATION & MAINTENANCE, ARMY RES	1,080,103	1,949,007	3,029,110
OPERATION & MAINTENANCE, ARNG	3,335,755	4,297,848	7,633,603
OPERATION & MAINTENANCE, NAVY	25,952,718	23,516,564	49,469,282
OPERATION & MAINTENANCE, MARINE CORPS	3,928,045	4,001,679	7,929,724
OPERATION & MAINTENANCE, NAVY RES	261,284	863,832	1,125,116
OPERATION & MAINTENANCE, MC RESERVE	61,090	230,986	292,076
OPERATION & MAINTENANCE, AIR FORCE	21,278,499	23,621,733	44,900,232
OPERATION & MAINTENANCE, SPACE FORCE	72,436		72,436
OPERATION & MAINTENANCE, AF RESERVE	2,231,445	1,165,373	3,396,818

SUMMARY OF NATIONAL DEFENSE AUTHORIZATIONS FOR FISCAL YEAR 2020—Continued

(In Thousands of Dollars)

	FY 2020 Request	Senate Change	Senate Authorized
OPERATION & MAINTENANCE, ANG	3,612,156	3,115,073	6,727,229
OPERATION AND MAINTENANCE, DEFENSE-WIDE	37,399,341	144,000	37,543,341
MISCELLANEOUS APPROPRIATIONS	1,933,869		1,933,869
UNDISTRIBUTED	0	-590,000	-590,000
SUBTOTAL, TITLE III—OPERATION AND MAINTENANCE	123,944,614	81,452,046	205,396,660
TITLE IV—MILITARY PERSONNEL			
MILITARY PERSONNEL	143,476,503	-918,980	142,557,523
MEDICARE-ELIGIBLE RETIREE HEALTH FUND CONTRIBUTIONS	7,816,815		7,816,815
SUBTOTAL, TITLE IV—MILITARY PERSONNEL	151,293,318	-918,980	150,374,338
TITLE XIV—OTHER AUTHORIZATIONS			
WORKING CAPITAL FUND	1,426,211	10,000	1,436,211
CHEM AGENTS & MUNITIONS DESTRUCTION	985,499		985,499
DRUG INTERDICTION & CTR-DRUG ACTIVITIES, DEF ...	799,402		799,402
OFFICE OF THE INSPECTOR GENERAL	363,499		363,499
DEFENSE HEALTH PROGRAM	32,998,687	11,000	33,009,687
SUBTOTAL, TITLE XIV—OTHER AUTHORIZATIONS	36,573,298	21,000	36,594,298
TOTAL, DIVISION A: DEPARTMENT OF DEFENSE AUTHORIZATIONS	533,347,512	98,112,262	631,459,774
DIVISION B: MILITARY CONSTRUCTION AUTHORIZATIONS			
MILITARY CONSTRUCTION			
Army	1,453,499	-196,500	1,256,999
Navy	2,805,743	79,039	2,884,782
Air Force	2,179,230	-460,400	1,718,830
Defense-Wide	2,504,190	23,645	2,527,835
Army National Guard	210,819	84,000	294,819
Air National Guard	165,971	57,000	222,971
Army Reserve	60,928		60,928
Navy Reserve	54,955		54,955
Air Force Reserve	59,750	9,800	69,550
NATO Security Investment Program	144,040		144,040
SUBTOTAL, MILITARY CONSTRUCTION	9,639,125	-403,416	9,235,709
FAMILY HOUSING			
Construction, Army	141,372		141,372
O&M, Army	357,907	65,000	422,907
Construction, Navy and Marine Corps	47,661		47,661
O&M, Navy and Marine Corps	317,870	81,000	398,870
Construction, Air Force	103,631		103,631
O&M, Air Force	295,016	65,000	360,016
O&M, Defense-Wide	57,000		57,000
Improvement Fund	3,045		3,045
Unaccmp HSG Improvement Fund	500		500

SUMMARY OF NATIONAL DEFENSE AUTHORIZATIONS FOR FISCAL YEAR 2020—Continued

(In Thousands of Dollars)

	FY 2020 Request	Senate Change	Senate Authorized
SUBTOTAL, FAMILY HOUSING	1,324,002	211,000	1,535,002
BASE REALIGNMENT AND CLOSURE			
Army BRAC	66,111		66,111
Navy BRAC	158,349		158,349
Air Force BRAC	54,066		54,066
SUBTOTAL, BASE REALIGNMENT AND CLOSURE	278,526	0	278,526
TOTAL, DIVISION B: MILITARY CONSTRUCTION AUTHORIZATIONS	11,241,653	-192,416	11,049,237
TOTAL, DEPARTMENT OF DEFENSE-MILITARY (BUDGET SUB-FUNCTION 051)	544,589,165	97,919,846	642,509,011
ATOMIC ENERGY DEFENSE ACTIVITIES (BUDGET SUB-FUNCTION 053)			
DIVISION C: DEPARTMENT OF ENERGY NATIONAL SECURITY AND INDEPENDENT FEDERAL AGENCY AUTHORIZATIONS			
DEPARTMENT OF ENERGY AUTHORIZATIONS			
ENERGY PROGRAMS			
NUCLEAR ENERGY	137,808		137,808
SUBTOTAL, ENERGY PROGRAMS	137,808	0	137,808
NATIONAL NUCLEAR SECURITY ADMINISTRATION			
FEDERAL SALARIES AND EXPENSES	434,699	-11,700	422,999
WEAPONS ACTIVITIES	12,408,603	69,800	12,478,403
DEFENSE NUCLEAR NONPROLIFERATION	1,993,302	-29,100	1,964,202
NAVAL REACTORS	1,648,396	0	1,648,396
SUBTOTAL, NATIONAL NUCLEAR SECURITY ADMINISTRATION	16,485,000	29,000	16,514,000
ENVIRONMENTAL AND OTHER DEFENSE ACTIVITIES			
DEFENSE ENVIRONMENTAL CLEANUP	5,506,501	0	5,506,501
OTHER DEFENSE ACTIVITIES	1,035,339	-3,000	1,032,339
DEFENSE NUCLEAR WASTE DISPOSAL	26,000	-26,000	0
SUBTOTAL, ENVIRONMENTAL & OTHER DEFENSE ACTIVITIES	6,567,840	-29,000	6,538,840
SUBTOTAL, DEPARTMENT OF ENERGY AUTHORIZATIONS	23,190,648	0	23,190,648
INDEPENDENT FEDERAL AGENCY AUTHORIZATION			
DEFENSE NUCLEAR FACILITIES SAFETY BOARD	29,450		29,450
SUBTOTAL, INDEPENDENT FEDERAL AGENCY AUTHORIZATION	29,450	0	29,450

SUMMARY OF NATIONAL DEFENSE AUTHORIZATIONS FOR FISCAL YEAR 2020—Continued

(In Thousands of Dollars)

	FY 2020 Request	Senate Change	Senate Authorized
TOTAL, DIVISION C: DEPARTMENT OF ENERGY NATIONAL SECURITY AND INDEPENDENT FEDERAL AGENCY AUTHORIZATIONS	23,220,098	0	23,220,098
ATOMIC ENERGY DEFENSE ACTIVITIES (BUDGET SUB-FUNCTION 053)	23,220,098	0	23,220,098
TOTAL, NATIONAL DEFENSE FUNDING, BASE BUDGET REQUEST	567,809,263	97,919,846	665,729,109
NATIONAL DEFENSE OCO BUDGET REQUEST			
DEPARTMENT OF DEFENSE-MILITARY (BUDGET SUB-FUNCTION 051)			
PROCUREMENT			
AIRCRAFT PROCUREMENT, ARMY	381,541		381,541
MISSILE PROCUREMENT, ARMY	4,645,755	-3,207,697	1,438,058
PROCUREMENT OF W&TCV, ARMY	353,454		353,454
PROCUREMENT OF AMMUNITION, ARMY	2,843,230	-2,694,548	148,682
OTHER PROCUREMENT, ARMY	1,139,650	-8,200	1,131,450
AIRCRAFT PROCUREMENT, NAVY	119,045		119,045
WEAPONS PROCUREMENT, NAVY	4,332,710	-4,235,244	97,466
PROCUREMENT OF AMMO, NAVY & MC	1,186,128	-981,314	204,814
OTHER PROCUREMENT, NAVY	357,600		357,600
PROCUREMENT, MARINE CORPS	20,589		20,589
AIRCRAFT PROCUREMENT, AIR FORCE	309,110		309,110
MISSILE PROCUREMENT, AIR FORCE	201,671		201,671
PROCUREMENT OF AMMUNITION, AIR FORCE	2,607,394	-1,667,961	939,433
OTHER PROCUREMENT, AIR FORCE	4,193,098	-655,000	3,538,098
PROCUREMENT, DEFENSE-WIDE	452,047	-5,000	447,047
SUBTOTAL, PROCUREMENT	23,143,022	-13,454,964	9,688,058
RESEARCH, DEVELOPMENT, TEST AND EVALUATION			
RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	204,124		204,124
RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	164,410		164,410
RESEARCH, DEVELOPMENT, TEST & EVAL, AF	450,248	-322,000	128,248
RESEARCH, DEVELOPMENT, TEST & EVAL, DW	827,950	-426,000	401,950
SUBTOTAL, RESEARCH, DEVELOPMENT, TEST AND EVALUATION	1,646,732	-748,000	898,732
OPERATION AND MAINTENANCE			
OPERATION & MAINTENANCE, ARMY	37,987,549	-19,214,611	18,772,938
OPERATION & MAINTENANCE, ARMY RES	1,986,599	-1,949,007	37,592
OPERATION & MAINTENANCE, ARNG	4,376,939	-4,293,648	83,291
AFGHANISTAN SECURITY FORCES FUND	4,075,530		4,075,530
AFGHANISTAN SECURITY FORCES FUND	728,448		728,448
OPERATION & MAINTENANCE, NAVY	31,734,683	-22,741,724	8,992,959
OPERATION & MAINTENANCE, MARINE CORPS	5,123,470	-3,658,679	1,464,791

SUMMARY OF NATIONAL DEFENSE AUTHORIZATIONS FOR FISCAL YEAR 2020—Continued

(In Thousands of Dollars)

	FY 2020 Request	Senate Change	Senate Authorized
OPERATION & MAINTENANCE, NAVY RES	886,868	-863,832	23,036
OPERATION & MAINTENANCE, MC RESERVE	239,693	-230,986	8,707
OPERATION & MAINTENANCE, AIR FORCE	33,028,712	-23,292,333	9,736,379
OPERATION & MAINTENANCE, AF RESERVE	1,195,131	-1,165,373	29,758
OPERATION & MAINTENANCE, ANG	3,291,982	-3,115,073	176,909
OPERATION AND MAINTENANCE, DEFENSE-WIDE	8,448,612	-30,500	8,418,112
SUBTOTAL, OPERATION AND MAINTENANCE	133,104,216	-80,555,766	52,548,450
MILITARY PERSONNEL			
MILITARY PERSONNEL	4,485,808		4,485,808
SUBTOTAL, MILITARY PERSONNEL	4,485,808	0	4,485,808
OTHER AUTHORIZATIONS			
WORKING CAPITAL FUND	20,100		20,100
DRUG INTERDICTION & CTR-DRUG ACTIVITIES, DEF ...	163,596		163,596
OFFICE OF THE INSPECTOR GENERAL	24,254		24,254
DEFENSE HEALTH PROGRAM	347,746		347,746
COUNTER ISIS TRAIN AND EQUIP FUND (CTEF)	1,045,000	-100,000	945,000
SUBTOTAL, OTHER AUTHORIZATIONS	1,600,696	-100,000	1,500,696
MILITARY CONSTRUCTION			
Army	9,389,218	-9,288,500	100,718
Navy	94,570	976,148	1,070,718
Air Force	314,738	1,525,700	1,840,438
Defense-Wide	46,000	3,675,313	3,721,313
Army National Guard		50,000	50,000
SUBTOTAL, MILITARY CONSTRUCTION	9,844,526	-3,061,339	6,783,187
TOTAL, NATIONAL DEFENSE (BUDGET FUNCTION 050)			
OCO BUDGET REQUEST	173,825,000	-97,920,069	75,904,931
TOTAL, NATIONAL DEFENSE (BUDGET FUNCTION 050)	741,634,263	-223	741,634,040
MEMORANDUM: NON-DEFENSE AUTHORIZATIONS			
TITLE XIV—ARMED FORCES RETIREMENT HOME (FUNCTION 600)	64,300		64,300
MEMORANDUM: TRANSFER AUTHORITIES (NON-ADDS)			
TITLE X—GENERAL TRANSFER AUTHORITY	[5,000,000]		[4,000,000]
TITLE XV—SPECIAL TRANSFER AUTHORITY	[4,500,000]		[2,500,000]

**NATIONAL DEFENSE BUDGET AUTHORITY
IMPLICATION**

NATIONAL DEFENSE BUDGET AUTHORITY IMPLICATION

(In Thousands of Dollars)

	FY 2020 Request	Senate Change	Senate Authorized
SUMMARY DISCRETIONARY AUTHORIZATIONS WITHIN THE JURISDICTION OF THE ARMED SERVICES COMMITTEE			
NATIONAL DEFENSE (050)			
DEPARTMENT OF DEFENSE-MILITARY, BASE BUDGET			
(051)	544,589,165	97,919,846	642,509,011
ATOMIC ENERGY DEFENSE ACTIVITIES (053)	23,220,098		23,220,098
OVERSEAS CONTINGENCY OPERATIONS	173,825,000	-97,920,069	75,904,931
TOTAL, NATIONAL DEFENSE (050)	741,634,263	-223	741,634,040
TRANSFER OF AUTHORIZED AMOUNTS TO NON-DEFENSE FUNCTIONS			
TRANSFER FROM DEPARTMENT OF DEFENSE-MILITARY (051)			
CAPTAIN JAMES A. LOVELL FEDERAL HEALTH CARE CENTER	-127,000		-127,000
DOD-VA HEALTH CARE SHARING INCENTIVE FUND	-15,000		-15,000
SUBTOTAL, TRANSFER FROM DEPARTMENT OF DEFENSE-MILITARY (051)	-142,000		-142,000
OTHER DEFENSE DISCRETIONARY AUTHORIZATIONS PROGRAMS OUTSIDE THE JURISDICTION OF THE ARMED SERVICES COMMITTEE OR ALREADY AUTHORIZED			
DEPARTMENT OF DEFENSE-MILITARY (051)			
DEFENSE PRODUCTION ACT PURCHASES	34,000		34,000
INDEFINITE ACCOUNT: DISPOSAL OF DOD REAL PROPERTY	8,000		8,000
INDEFINITE ACCOUNT: LEASE OF DOD REAL PROPERTY ...	34,000		34,000
SUBTOTAL, DEPARTMENT OF DEFENSE-MILITARY (051) ...	76,000	0	76,000
DEFENSE-RELATED ACTIVITIES (054)			
OTHER DISCRETIONARY PROGRAMS	8,421,000		8,421,000
SUBTOTAL, DEFENSE-RELATED ACTIVITIES (054)	8,421,000	0	8,421,000
TOTAL, OTHER DEFENSE DISCRETIONARY AUTHORIZATIONS (050)	8,497,000	0	8,497,000
DISCRETIONARY BUDGET AUTHORITY IMPLICATION (050)			
NATIONAL DEFENSE DISCRETIONARY AUTHORIZATIONS (050)			
DEPARTMENT OF DEFENSE--MILITARY (051)	718,348,165	-223	718,347,942
ATOMIC ENERGY DEFENSE ACTIVITIES (053)	23,220,098		23,220,098
DEFENSE-RELATED ACTIVITIES (054)	8,421,000		8,421,000
TOTAL, DISCRETIONARY BUDGET AUTHORITY IMPLICATION, 050	749,989,263	-223	749,989,040
NATIONAL DEFENSE MANDATORY PROGRAMS, CURRENT LAW (CBO BASELINE)			
DEPARTMENT OF DEFENSE-MILITARY (051)			
CONCURRENT RECEIPT ACCRUAL PAYMENTS TO THE MILITARY RETIREMENT FUND	8,577,000		8,577,000

NATIONAL DEFENSE BUDGET AUTHORITY IMPLICATION—Continued

(In Thousands of Dollars)

	FY 2020 Request	Senate Change	Senate Authorized
REVOLVING, TRUST AND OTHER DOD MANDATORY	1,818,000		1,818,000
OFFSETTING RECEIPTS	-1,869,000		-1,869,000
SUBTOTAL, DEPARTMENT OF DEFENSE-MILITARY (051) ...	8,526,000	0	8,526,000
ATOMIC ENERGY DEFENSE ACTIVITIES (053)			
ENERGY EMPLOYEES OCCUPATIONAL ILLNESS COM- PENSATION PROGRAMS AND OTHER	1,495,000		1,495,000
SUBTOTAL, ATOMIC ENERGY DEFENSE ACTIVITIES (053)	1,495,000	0	1,495,000
DEFENSE-RELATED ACTIVITIES (054)			
RADIATION EXPOSURE COMPENSATION TRUST FUND	54,000		54,000
PAYMENT TO CIA RETIREMENT FUND AND OTHER	514,000		514,000
SUBTOTAL, DEFENSE-RELATED ACTIVITIES (054)	568,000	0	568,000
TOTAL, NATIONAL DEFENSE MANDATORY PROGRAMS (050)	10,578,000	0	10,578,000
DISCRETIONARY AND MANDATORY BUDGET AUTHORITY IMPLICATION (050)			
DISCRETIONARY AND MANDATORY BUDGET AUTHORITY IMPLICATION (050)			
DEPARTMENT OF DEFENSE--MILITARY (051)	726,874,165	-223	726,873,942
ATOMIC ENERGY DEFENSE ACTIVITIES (053)	24,715,098		24,715,098
DEFENSE-RELATED ACTIVITIES (054)	8,989,000		8,989,000
TOTAL, BUDGET AUTHORITY IMPLICATION (050)	760,578,263	-223	760,578,040

TITLE XLI—PROCUREMENT

TITLE XLI—PROCUREMENT

SEC. 4101. PROCUREMENT.

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
AIRCRAFT PROCUREMENT, ARMY							
FIXED WING							
2	UTILITY F/W AIRCRAFT	1	16,000	—1	—16,000	0	0
	Program zeroed out in FYDP			[—1]	[—16,000]		
4	RQ—11 (RAVEN)	0	23,510			0	23,510
ROTARY							
5	TACTICAL UNMANNED AIRCRAFT SYSTEM (TUAS)	0	12,100			0	12,100
8	AH—64 APACHE BLOCK IIIA REMAN	48	806,849			48	806,849
9	AH—64 APACHE BLOCK IIIA REMAN AP	0	190,870			0	190,870
10	AH—64 APACHE BLOCK IIIB NEW BUILD	0	0	3	105,000	3	105,000
	Increase fielding for Active and ARNG units			[3]	[105,000]		
12	UH—60 BLACKHAWK M MODEL (MYP)	73	1,411,540	—7	—140,000	66	1,271,540
	Funding ahead of acquisition strategy			[—7]	[—140,000]		
13	UH—60 BLACKHAWK M MODEL (MYP) AP	0	79,572			0	79,572
14	UH—60 BLACK HAWK L AND V MODELS	25	169,290	8	35,000	33	204,290
	Increase fielding for ARNG units			[8]	[35,000]		
15	CH—47 HELICOPTER	8	140,290			8	140,290
16	CH—47 HELICOPTER AP	0	18,186			0	18,186
MODIFICATION OF AIRCRAFT							
19	UNIVERSAL GROUND CONTROL EQUIPMENT (UAS)	0	2,090			0	2,090

20	GRAY EAGLE MODS2	0	14,699	0	14,699	
21	MULTI SENSOR ABN RECON (MIP)	0	35,189	0	35,189	
22	AH-64 MODS	0	58,172	0	58,172	
23	CH-47 CARGO HELICOPTER MODS (MYP)	0	11,785	0	11,785	
24	GRCS SEMA MODS (MIP)	0	5,677	0	5,677	
25	ARL SEMA MODS (MIP)	0	6,566	0	6,566	
26	EMARSS SEMA MODS (MIP)	0	3,859	0	3,859	
27	UTILITY/CARGO AIRPLANE MODS	0	15,476	0	15,476	
28	UTILITY HELICOPTER MODS	0	6,744	0	6,744	
29	NETWORK AND MISSION PLAN	0	105,442	0	105,442	
30	COMMS, NAV SURVEILLANCE	0	164,315	0	164,315	
32	GATM ROLLUP	0	30,966	0	30,966	
33	RQ-7 UAV MODS	0	8,983	0	8,983	
34	UAS MODS	0	10,205	0	10,205	
	GROUND SUPPORT AVIONICS					
35	AIRCRAFT SURVIVABILITY EQUIPMENT	0	52,297	0	52,297	
36	SURVIVABILITY CM	0	8,388	0	8,388	
37	CMWS	0	13,999	0	13,999	
38	COMMON INFRARED COUNTERMEASURES (CIRCUM)	0	168,784	0	168,784	
	OTHER SUPPORT					
39	AVIONICS SUPPORT EQUIPMENT	0	1,777	0	1,777	
40	COMMON GROUND EQUIPMENT	0	18,624	0	18,624	
41	AIRCREW INTEGRATED SYSTEMS	0	48,255	0	48,255	
42	AIR TRAFFIC CONTROL	0	32,738	0	32,738	
44	LAUNCHER, 2.75 ROCKET	0	2,201	0	2,201	
45	LAUNCHER GUIDED MISSILE: LONGBOW HELLFIRE XM2	9	991	9	991	
	TOTAL AIRCRAFT PROCUREMENT, ARMY	164	3,696,429	4	-16,000	3,680,429
	MISSILE PROCUREMENT, ARMY					
	SURFACE-TO-AIR MISSILE SYSTEM					
1	SYSTEM INTEGRATION AND TEST PROCUREMENT	0	0	0	113,857	113,857
	Transfer back to base funding			[0]	[113,857]	

SEC. 4101. PROCUREMENT
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
2	M-SHORAD—PROCUREMENT	0	0	17	103,800	17	103,800
	Transfer back to base funding			[17]	[103,800]		
3	MSE MISSILE	0	0	138	698,603	138	698,603
	Transfer back to base funding			[138]	[698,603]		
4	INDIRECT FIRE PROTECTION CAPABILITY INC 2-I	0	0	0	239,237	0	239,237
	Full funding of Iron Dome battery			[0]	[229,900]		
	Transfer back to base funding			[0]	[9,337]		
5	THAAD	0	0	37	425,900	37	425,900
	THAAD program transfer from MDA			[37]	[425,900]		
	AIR-TO-SURFACE MISSILE SYSTEM						
6	HELLFIRE SYS SUMMARY	0	0	1,870	193,284	1,870	193,284
	Transfer back to base funding			[1,870]	[193,284]		
7	JOINT AIR-TO-GROUND MSLS (JAGM)	0	0	609	233,353	609	233,353
	Transfer back to base funding			[609]	[233,353]		
	ANTI-TANK/ASSAULT MISSILE SYS						
8	JAVELIN (AAWS-M) SYSTEM SUMMARY	0	0	672	138,405	672	138,405
	Transfer back to base funding			[672]	[138,405]		
9	TOW 2 SYSTEM SUMMARY	0	0	1,460	114,340	1,460	114,340
	Transfer back to base funding			[1,460]	[114,340]		
10	TOW 2 SYSTEM SUMMARY AP	0	0	0	10,500	0	10,500
	Transfer back to base funding			[0]	[10,500]		
11	GUIDED MLRS ROCKET (GMLRS)	0	0	6,489	797,213	6,489	797,213
	Transfer back to base funding			[6,489]	[797,213]		
12	MLRS REDUCED RANGE PRACTICE ROCKETS (RRPR)	0	0	2,982	27,555	2,982	27,555
	Transfer back to base funding			[2,982]	[27,555]		
14	ARMY TACTICAL MSL SYS (ATACMS)—SYS SUM	0	0	146	209,842	146	209,842

SEC. 4101. PROCUREMENT
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
4	STRYKER UPGRADE	152	550,000			152	550,000
5	BRADLEY PROGRAM (MOD)	0	638,781	0	-40,000	0	598,781
	Excess to need due to termination of subprogram			[0]	[-40,000]		
6	M109 FOV MODIFICATIONS	0	25,756			0	25,756
7	PALADIN INTEGRATED MANAGEMENT (PIM)	53	553,425			53	553,425
9	ASSAULT BRIDGE (MOD)	0	2,821			0	2,821
10	ASSAULT BREACHER VEHICLE	6	31,697			6	31,697
11	M88 FOV MODS	0	4,500			0	4,500
12	JOINT ASSAULT BRIDGE	44	205,517			44	205,517
13	M1 ABRAMS TANK (MOD)	0	348,800			0	348,800
14	ABRAMS UPGRADE PROGRAM	165	1,752,784	0	-35,000	165	1,717,784
	Early to need			[0]	[-35,000]		
	WEAPONS & OTHER COMBAT VEHICLES						
16	MULTI-ROLE ANTI-ARMOR ANTI-PERSONNEL WEAPON S	0	19,420			0	19,420
17	GUN AUTOMATIC 30MM M230	0	20,000			0	20,000
19	MORTAR SYSTEMS	0	14,907			0	14,907
20	XM320 GRENADE LAUNCHER MODULE (GLM)	0	191			0	191
21	PRECISION SNIPER RIFLE	0	7,977			0	7,977
22	COMPACT SEMI-AUTOMATIC SNIPER SYSTEM	0	9,860			0	9,860
23	CARBINE	0	30,331			0	30,331
24	SMALL ARMS—FIRE CONTROL	0	8,060			0	8,060
25	COMMON REMOTELY OPERATED WEAPONS STATION	0	24,007			0	24,007
26	HANDGUN	0	6,174			0	6,174
	MOD OF WEAPONS AND OTHER COMBAT VEH						
28	MK-19 GRENADE MACHINE GUN MODS	0	3,737			0	3,737
29	M777 MODS	0	2,367			0	2,367

30	M4 CARBINE MODS	0	17,595	0	17,595
33	M240 MEDIUM MACHINE GUN MODS	0	8,000	0	8,000
34	SNIPER RIFLES MODIFICATIONS	0	2,426	0	2,426
35	M119 MODIFICATIONS	0	6,269	0	6,269
36	MORTAR MODIFICATION	0	1,693	0	1,693
37	MODIFICATIONS LESS THAN \$5.0M (WOCV-WTCV)	0	4,327	0	4,327
	SUPPORT EQUIPMENT & FACILITIES				
38	ITEMS LESS THAN \$5.0M (WOCV-WTCV)	0	3,066	0	3,066
39	PRODUCTION BASE SUPPORT (WOCV-WTCV)	0	2,651	0	2,651
	TOTAL PROCUREMENT OF W&TCV, ARMY	485	4,715,566	0	174,200
				485	4,889,766
PROCUREMENT OF AMMUNITION, ARMY					
SMALL/MEDIUM CAL AMMUNITION					
1	CTG, 5.56MM, ALL TYPES	0	0	0	68,949
	Transfer back to base funding			[0]	[68,949]
2	CTG, 7.62MM, ALL TYPES	0	0	0	114,228
	Transfer back to base funding			[0]	[114,228]
3	CTG, HANDGUN, ALL TYPES	0	0	0	17,807
	Transfer back to base funding			[0]	[17,807]
4	CTG, .50 CAL, ALL TYPES	0	0	0	63,966
	Transfer back to base funding			[0]	[63,966]
5	CTG, 20MM, ALL TYPES	0	0	0	35,920
	Transfer back to base funding			[0]	[35,920]
6	CTG, 25MM, ALL TYPES	0	0	0	8,990
	Transfer back to base funding			[0]	[8,990]
7	CTG, 30MM, ALL TYPES	0	0	0	68,813
	Transfer back to base funding			[0]	[68,813]
8	CTG, 40MM, ALL TYPES	0	0	0	103,952
	Transfer back to base funding			[0]	[103,952]
	MORTAR AMMUNITION				
9	60MM MORTAR, ALL TYPES	0	0	0	50,580
	Transfer back to base funding			[0]	[50,580]

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
10	81MM MORTAR, ALL TYPES	0	0	0	59,373	0	59,373
	Transfer back to base funding			[0]	[59,373]		
11	120MM MORTAR, ALL TYPES	0	0	0	125,452	0	125,452
	Transfer back to base funding			[0]	[125,452]		
	TANK AMMUNITION						
12	CARTRIDGES, TANK, 105MM AND 120MM, ALL TYPES	0	0	0	171,284	0	171,284
	Transfer back to base funding			[0]	[171,284]		
	ARTILLERY AMMUNITION						
13	ARTILLERY CARTRIDGES, 75MM & 105MM, ALL TYPES	0	0	0	44,675	0	44,675
	Transfer back to base funding			[0]	[44,675]		
14	ARTILLERY PROJECTILE, 155MM, ALL TYPES	0	0	0	266,037	0	266,037
	Transfer back to base funding			[0]	[266,037]		
15	PROJ 155MM EXTENDED RANGE M982	0	0	441	57,434	441	57,434
	Transfer back to base funding			[441]	[57,434]		
16	ARTILLERY PROPELLANTS, FUZES AND PRIMERS, ALL	0	0	0	271,602	0	271,602
	Transfer back to base funding			[0]	[271,602]		
	MINES						
17	MINES & CLEARING CHARGES, ALL TYPES	0	0	0	55,433	0	55,433
	Transfer back to base funding			[0]	[55,433]		
	ROCKETS						
18	SHOULDER LAUNCHED MUNITIONS, ALL TYPES	0	0	0	74,878	0	74,878
	Transfer back to base funding			[0]	[74,878]		
19	ROCKET, HYDRA 70, ALL TYPES	0	0	0	175,994	0	175,994
	Transfer back to base funding			[0]	[175,994]		
	OTHER AMMUNITION						
20	CAD/PAD, ALL TYPES	0	0	0	7,595	0	7,595

21	Transfer back to base funding	[0]	[7,595]	0	51,651
	DEMOLITION MUNITIONS, ALL TYPES	0	51,651		
	Transfer back to base funding	[0]	[51,651]		
22	GRENADES, ALL TYPES	0	40,592	0	40,592
	Transfer back to base funding	[0]	[40,592]		
23	SIGNALS, ALL TYPES	0	18,609	0	18,609
	Transfer back to base funding	[0]	[18,609]		
24	SIMULATORS, ALL TYPES	0	16,054	0	16,054
	Transfer back to base funding	[0]	[16,054]		
	MISCELLANEOUS				
25	AMMO COMPONENTS, ALL TYPES	0	5,261	0	5,261
	Transfer back to base funding	[0]	[5,261]		
26	NON-LETHAL AMMUNITION, ALL TYPES	0	715	0	715
	Transfer back to base funding	[0]	[715]		
27	ITEMS LESS THAN \$5 MILLION (AMMO)	0	9,213	0	9,213
	Transfer back to base funding	[0]	[9,213]		
28	AMMUNITION PECULIAR EQUIPMENT	0	10,044	0	10,044
	Transfer back to base funding	[0]	[10,044]		
29	FIRST DESTINATION TRANSPORTATION (AMMO)	0	18,492	0	18,492
	Transfer back to base funding	[0]	[18,492]		
30	CLOSEOUT LIABILITIES	0	99	0	99
	Transfer back to base funding	[0]	[99]		
	PRODUCTION BASE SUPPORT				
31	INDUSTRIAL FACILITIES	0	474,511	0	474,511
	Transfer back to base funding	[0]	[474,511]		
32	CONVENTIONAL MUNITIONS DEMILITARIZATION	0	202,512	0	202,512
	Transfer back to base funding	[0]	[202,512]		
33	ARMS INITIATIVE	0	3,833	0	3,833
	Transfer back to base funding	[0]	[3,833]		
	TOTAL PROCUREMENT OF AMMUNITION, ARMY	0	2,694,548	441	2,694,548
	OTHER PROCUREMENT, ARMY				

SEC. 4101. PROCUREMENT
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
TACTICAL VEHICLES							
1	TACTICAL TRAILERS/DOLLY SETS	0	12,993			0	12,993
2	SEMITRAILERS, FLATBED:	0	102,386			0	102,386
3	AMBULANCE, 4 LITTER, 5/4 TON, 4X4	0	127,271			0	127,271
4	GROUND MOBILITY VEHICLES (GMV)	0	37,038			0	37,038
6	JOINT LIGHT TACTICAL VEHICLE	2,530	996,007	0	−39,500	2,530	956,507
	Army requested realignment			[0]	[−4,500]		
	Early to need			[0]	[−35,000]		
7	TRUCK, DUMP, 20T (GCE)	0	10,838			0	10,838
8	FAMILY OF MEDIUM TACTICAL VEH (FMTV)	0	72,057			0	72,057
9	FIRETRUCKS & ASSOCIATED FIREFIGHTING EQUIP	0	28,048			0	28,048
10	FAMILY OF HEAVY TACTICAL VEHICLES (FHTV)	0	9,969			0	9,969
11	PLS ESP	0	6,280			0	6,280
12	HVY EXPANDED MOBILE TACTICAL TRUCK EXT SERV	0	30,841			0	30,841
13	HMMWV RECAPITALIZATION PROGRAM	0	5,734			0	5,734
14	TACTICAL WHEELED VEHICLE PROTECTION KITS	0	45,113			0	45,113
15	MODIFICATION OF IN SVC EQUIP	0	58,946			0	58,946
NON-TACTICAL VEHICLES							
17	HEAVY ARMORED VEHICLE	0	791			0	791
18	PASSENGER CARRYING VEHICLES	0	1,416			0	1,416
19	NONTACTICAL VEHICLES, OTHER	0	29,891			0	29,891
COMM—JOINT COMMUNICATIONS							
21	SIGNAL MODERNIZATION PROGRAM	0	153,933			0	153,933
22	TACTICAL NETWORK TECHNOLOGY MOD IN SVC	0	387,439			0	387,439
23	SITUATION INFORMATION TRANSPORT	0	46,693			0	46,693
25	JCSE EQUIPMENT (USRDECOM)	0	5,075			0	5,075

28	COMM—SATELLITE COMMUNICATIONS				
	DEFENSE ENTERPRISE WIDEBAND SATCOM SYSTEMS	0	101,189	0	101,189
29	TRANSPORTABLE TACTICAL COMMAND COMMUNICATIONS	0	77,141	0	77,141
30	SHF TERM	0	16,054	0	16,054
31	ASSURED POSITIONING, NAVIGATION AND TIMING	0	41,074	0	41,074
32	SMART-T (SPACE)	0	10,515	0	10,515
33	GLOBAL BROADCAST SVC—GBS	0	11,800	0	11,800
34	ENROUTE MISSION COMMAND (EMC)	0	8,609	0	8,609
	COMM—C3 SYSTEM				
38	COE TACTICAL SERVER INFRASTRUCTURE (TSI)	0	77,533	0	77,533
	COMM—COMBAT COMMUNICATIONS				
39	HANDHELD MANPACK SMALL FORM FIT (HMS)	0	468,026	0	468,026
40	RADIO TERMINAL SET, MIDS LVT(2)	0	23,778	0	23,778
44	SPIRER FAMILY OF NETWORKED MUNITIONS INCR	0	10,930	0	10,930
46	UNIFIED COMMAND SUITE	0	9,291	0	9,291
47	COTS COMMUNICATIONS EQUIPMENT	0	55,630	0	55,630
48	FAMILY OF MED COMM FOR COMBAT CASUALTY CARE	0	16,590	0	16,590
49	ARMY COMMUNICATIONS & ELECTRONICS	0	43,457	0	43,457
	COMM—INTELLIGENCE COMM				
51	CI AUTOMATION ARCHITECTURE (MIP)	0	10,470	0	10,470
52	DEFENSE MILITARY DECEPTION INITIATIVE	0	3,704	0	3,704
	INFORMATION SECURITY				
53	FAMILY OF BIOMETRICS	0	1,000	0	1,000
54	INFORMATION SYSTEM SECURITY PROGRAM-ISSP	0	3,600	0	3,600
55	COMMUNICATIONS SECURITY (COMSEC)	0	160,899	0	160,899
56	DEFENSIVE CYBER OPERATIONS	0	61,962	0	61,962
57	INSIDER THREAT PROGRAM—UNIT ACTIVITY MONITO	0	756	0	756
58	PERSISTENT CYBER TRAINING ENVIRONMENT	0	3,000	0	3,000
	COMM—LONG HAUL COMMUNICATIONS				
59	BASE SUPPORT COMMUNICATIONS	0	31,770	0	31,770
	COMM—BASE COMMUNICATIONS				
60	INFORMATION SYSTEMS	0	159,009	0	159,009

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
61	EMERGENCY MANAGEMENT MODERNIZATION PROGRAM	0	4,854			0	4,854
62	HOME STATION MISSION COMMAND CENTERS (HSMCC)	0	47,174			0	47,174
63	INSTALLATION INFO INFRASTRUCTURE MOD PROGRAM	0	297,994			0	297,994
	ELECT EQUIP—TACT INT REL ACT (TIARA)						
66	JTT/CIBS-M (MIP)	0	7,686			0	7,686
68	DCGS-A (MIP)	0	180,350			0	180,350
70	TROJAN (MIP)	0	17,368			0	17,368
71	MOD OF IN-SVC EQUIP (INTEL SPT) (MIP)	0	59,052			0	59,052
	ELECT EQUIP—ELECTRONIC WARFARE (EW)						
77	LIGHTWEIGHT COUNTER MORTAR RADAR	0	5,400			0	5,400
78	EW PLANNING & MANAGEMENT TOOLS (EWPMT)	0	7,568			0	7,568
79	AIR VIGILANCE (AV) (MIP)	0	8,953			0	8,953
81	MULTI-FUNCTION ELECTRONIC WARFARE (MFEW) SYST	0	6,420			0	6,420
83	COUNTERINTELLIGENCE/SECURITY COUNTERMEASURES	0	501			0	501
84	CI MODERNIZATION (MIP)	0	121			0	121
	ELECT EQUIP—TACTICAL SURV. (TAC SURV)						
85	SENTINEL MODS	0	115,210			0	115,210
86	NIGHT VISION DEVICES	0	236,604			0	236,604
88	SMALL TACTICAL OPTICAL RIFLE MOUNTED MLRF	0	22,623			0	22,623
90	INDIRECT FIRE PROTECTION FAMILY OF SYSTEMS	0	29,127			0	29,127
91	FAMILY OF WEAPON SIGHTS (FWS)	0	120,883			0	120,883
94	JOINT BATTLE COMMAND—PLATFORM (JBC-P)	0	265,667			0	265,667
95	JOINT EFFECTS TARGETING SYSTEM (JETS)	0	69,720			0	69,720
96	MOD OF IN-SVC EQUIP (LLDR)	0	6,044			0	6,044
97	COMPUTER BALLISTICS: LHMBC XM32	0	3,268			0	3,268
98	MORTAR FIRE CONTROL SYSTEM	0	13,199			0	13,199

99	MORTAR FIRE CONTROL SYSTEMS MODIFICATIONS	0	10,000		0	10,000
100	COUNTERFIRE RADARS	0	16,416	13	62,500	78,916
	UPL Retrofits systems with GaN tech for ER			[13]	[62,500]	
	ELECT EQUIP—TACTICAL C2 SYSTEMS					
102	FIRE SUPPORT C2 FAMILY	0	13,197	0		13,197
103	AIR & MSL DEFENSE PLANNING & CONTROL SYS	0	24,730	0		24,730
104	IAMD BATTLE COMMAND SYSTEM	0	29,629	0		29,629
105	LIFE CYCLE SOFTWARE SUPPORT (LCSS)	0	6,774	0		6,774
106	NETWORK MANAGEMENT INITIALIZATION AND SERVICE	0	24,448	0		24,448
107	MANEUVER CONTROL SYSTEM (MCS)	0	260	0		260
108	GLOBAL COMBAT SUPPORT SYSTEM-ARMY (GCSS-A)	0	17,962	0		17,962
109	INTEGRATED PERSONNEL AND PAY SYSTEM-ARMY (IPP)	0	18,674	0	-18,674	0
	Poor business process reengineering			[0]	[-18,674]	
110	RECONNAISSANCE AND SURVEYING INSTRUMENT SET	0	11,000	0		11,000
111	MOD OF IN-SVC EQUIPMENT (ENFIRE)	0	7,317	0		7,317
	ELECT EQUIP—AUTOMATION					
112	ARMY TRAINING MODERNIZATION	0	14,578	0		14,578
113	AUTOMATED DATA PROCESSING EQUIP	0	139,342	0	8,000	147,342
	JIOCEUR at RAF Molesworth			[0]	[8,000]	
114	GENERAL FUND ENTERPRISE BUSINESS SYSTEMS FAM	0	15,802	0		15,802
115	HIGH PERF COMPUTING MOD PGM (HPCMP)	0	67,610	0		67,610
116	CONTRACT WRITING SYSTEM	0	15,000	0	-15,000	0
	Program duplication			[0]	[-15,000]	
117	CSS COMMUNICATIONS	0	24,700	0		24,700
118	RESERVE COMPONENT AUTOMATION SYS (RCAS)	0	27,879	0		27,879
	ELECT EQUIP—AUDIO VISUAL SYS (A/V)					
120	ITEMS LESS THAN \$5M (SURVEYING EQUIPMENT)	0	5,000	0		5,000
	ELECT EQUIP—SUPPORT					
122	BCT EMERGING TECHNOLOGIES	0	22,302	0		22,302
	CLASSIFIED PROGRAMS					
999	CLASSIFIED PROGRAMS	0	3,710	0	8,200	11,910
	Transfer back to base funding			[0]	[8,200]	

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
CHEMICAL DEFENSIVE EQUIPMENT							
126	CBRN DEFENSE	0	25,828			0	25,828
127	SMOKE & OBSCURANT FAMILY: SOF (NON AAO ITEM)	0	5,050			0	5,050
BRIDGING EQUIPMENT							
128	TACTICAL BRIDGING	0	59,821			0	59,821
129	TACTICAL BRIDGE, FLOAT-RIBBON	0	57,661			0	57,661
130	BRIDGE SUPPLEMENTAL SET	0	17,966			0	17,966
131	COMMON BRIDGE TRANSPORTER (GBT) RECAP	0	43,155			0	43,155
ENGINEER (NON-CONSTRUCTION) EQUIPMENT							
132	HANDHELD STANDOFF MINEFIELD DETECTION SYS-HST	0	7,570			0	7,570
133	GRND STANDOFF MINE DETECTN SYSM (GSTAMIDS)	0	37,025			0	37,025
135	HUSKY MOUNTED DETECTION SYSTEM (HMDS)	0	83,082			0	83,082
136	ROBOTIC COMBAT SUPPORT SYSTEM (RCSS)	0	2,000			0	2,000
137	EOD ROBOTICS SYSTEMS RECAPITALIZATION	0	23,115			0	23,115
138	ROBOTICS AND APPLIQUE SYSTEMS	0	101,056	0	12,800	0	113,856
	Army requested realignment			[0]	[12,800]		
140	RENDER SAFE SETS KITS OUTFITS	0	18,684			0	18,684
142	FAMILY OF BOATS AND MOTORS	0	8,245			0	8,245
COMBAT SERVICE SUPPORT EQUIPMENT							
143	HEATERS AND ECUS	0	7,336			0	7,336
145	PERSONNEL RECOVERY SUPPORT SYSTEM (PRSS)	0	4,281			0	4,281
146	GROUND SOLDIER SYSTEM	0	111,955			0	111,955
147	MOBILE SOLDIER POWER	0	31,364			0	31,364
149	FIELD FEEDING EQUIPMENT	0	1,673			0	1,673
150	CARGO AERIAL DEL & PERSONNEL PARACHUTE SYSTEM	0	43,622			0	43,622
151	FAMILY OF ENGR COMBAT AND CONSTRUCTION SETS	0	11,451			0	11,451

152	ITEMS LESS THAN \$5M (ENG SPT)	0	5,167	0	5,167
	PETROLEUM EQUIPMENT				
154	DISTRIBUTION SYSTEMS, PETROLEUM & WATER	0	74,867	0	74,867
	MEDICAL EQUIPMENT				
155	COMBAT SUPPORT MEDICAL	0	68,225	0	68,225
	MAINTENANCE EQUIPMENT				
156	MOBILE MAINTENANCE EQUIPMENT SYSTEMS	0	55,053	0	55,053
157	ITEMS LESS THAN \$5.0M (MAINT EQ)	0	5,608	0	5,608
	CONSTRUCTION EQUIPMENT				
161	HYDRAULIC EXCAVATOR	0	500	0	500
162	TRACTOR, FULL TRACKED	0	4,835	0	4,835
163	ALL TERRAIN CRANES	0	23,936	0	23,936
164	HIGH MOBILITY ENGINEER EXCAVATOR (HMEI)	0	27,188	0	27,188
166	CONST EQUIP ESP	0	34,790	0	34,790
167	ITEMS LESS THAN \$5.0M (CONST EQUIP)	0	4,381	0	4,381
	RAIL FLOAT CONTAINERIZATION EQUIPMENT				
168	ARMY WATERCRAFT ESP	0	35,194	0	35,194
169	MANEUVER SUPPORT VESSEL (MSV)	0	14,185	0	14,185
170	ITEMS LESS THAN \$5.0M (FLOAT/RAIL)	0	6,920	0	6,920
	GENERATORS				
171	GENERATORS AND ASSOCIATED EQUIP	0	58,566	0	58,566
172	TACTICAL ELECTRIC POWER RECAPITALIZATION	0	14,814	0	14,814
	MATERIAL HANDLING EQUIPMENT				
173	FAMILY OF FORKLIFTS	0	14,864	0	14,864
	TRAINING EQUIPMENT				
174	COMBAT TRAINING CENTERS SUPPORT	0	123,411	0	123,411
175	TRAINING DEVICES, NONSYSTEM	0	220,707	0	220,707
176	SYNTHETIC TRAINING ENVIRONMENT (STE)	0	20,749	0	20,749
178	AVIATION COMBINED ARMS TACTICAL TRAINER	0	4,840	0	4,840
179	GAMING TECHNOLOGY IN SUPPORT OF ARMY TRAINING	0	15,463	0	15,463
	TEST MEASURE AND DIG EQUIPMENT (TMD)				
180	CALIBRATION SETS EQUIPMENT	0	3,030	0	3,030

SEC. 4101. PROCUREMENT (In Thousands of Dollars)									
Line	Item	FY 2020 Request		Senate Change		Senate Authorized		Qty	Cost
		Qty	Cost	Qty	Cost	Qty	Cost		
181	INTEGRATED FAMILY OF TEST EQUIPMENT (ITE)	0	76,980			0	76,980		
182	TEST EQUIPMENT MODERNIZATION (TEMOD)	0	16,415			0	16,415		
	OTHER SUPPORT EQUIPMENT								
184	RAPID EQUIPPING SOLDIER SUPPORT EQUIPMENT	0	9,877			0	9,877		
185	PHYSICAL SECURITY SYSTEMS (OPA3)	0	82,158			0	82,158		
186	BASE LEVEL COMMON EQUIPMENT	0	15,340			0	15,340		
187	MODIFICATION OF IN-SVC EQUIPMENT (OPA-3)	0	50,458			0	50,458		
189	BUILDING, PRE-FAB, RELOCATABLE	0	14,400			0	14,400		
190	SPECIAL EQUIPMENT FOR USER TESTING	0	9,821			0	9,821		
	OPA2								
192	INITIAL SPARES—C&E	0	9,757			0	9,757		
	TOTAL OTHER PROCUREMENT, ARMY	2,530	7,443,101	13	18,326	2,543	7,461,427		
	AIRCRAFT PROCUREMENT, NAVY								
	COMBAT AIRCRAFT								
1	F/A-18E/F (FIGHTER) HORNET	24	1,748,934			24	1,748,934		
2	F/A-18E/F (FIGHTER) HORNET AP	0	55,128			0	55,128		
3	JOINT STRIKE FIGHTER CV	20	2,272,301	2	215,000	22	2,487,301		
	UPL USMC additional quantities			[2]	[215,000]				
4	JOINT STRIKE FIGHTER CV AP	0	339,053			0	339,053		
5	JSF STOVL	10	1,342,035	2	249,100	12	1,591,135		
	UPL USMC additional quantities			[2]	[249,100]				
6	JSF STOVL AP	0	291,804			0	291,804		
7	CH-53K (HEAVY LIFT)	6	807,876			6	807,876		
8	CH-53K (HEAVY LIFT) AP	0	215,014			0	215,014		
9	V-22 (MEDIUM LIFT)	10	966,666			10	966,666		

10	V-22 (MEDIUM LIFT) AP	0	27,104		0	27,104
11	H-1 UPGRADES (UH-1Y/AH-1Z)	0	62,003		0	62,003
13	MH-60R (MYP)	0	894		0	894
14	P-8A POSEIDON	6	1,206,701		6	1,206,701
16	E-2D ADV HAWKEYE	4	744,484		4	744,484
17	E-2D ADV HAWKEYE AP	0	190,204		0	190,204
	TRAINER AIRCRAFT					
19	ADVANCED HELICOPTER TRAINING SYSTEM	32	261,160		32	261,160
	OTHER AIRCRAFT					
20	KC-130J	3	240,840		3	240,840
21	KC-130J AP	0	66,061		0	66,061
22	F-5	22	39,676	-22	0	0
	Program cancellation			[-22]		[-39,676]
23	MQ-4 TRITON	2	473,134		2	473,134
24	MQ-4 TRITON AP	0	20,139		0	20,139
25	MQ-8 UAV	0	44,957		0	44,957
26	STUASLO UAV	0	43,819		0	43,819
28	VH-92A EXECUTIVE HELO	6	658,067		6	658,067
	MODIFICATION OF AIRCRAFT					
29	AEA SYSTEMS	0	44,470		0	44,470
30	AV-8 SERIES	0	39,472		0	39,472
31	ADVERSARY	0	3,415		0	3,415
32	F-18 SERIES	0	1,207,089		0	1,207,089
33	H-53 SERIES	0	68,385		0	68,385
34	MH-60 SERIES	0	149,797		0	149,797
35	H-1 SERIES	0	114,059		0	114,059
36	EP-3 SERIES	0	8,655		0	8,655
38	E-2 SERIES	0	117,059		0	117,059
39	TRAINER A/C SERIES	0	5,616		0	5,616
40	C-2A	0	15,747		0	15,747
41	C-130 SERIES	0	122,671		0	122,671
42	FEWSG	0	509		0	509

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
43	CARGO/TRANSPORT A/C SERIES	0	8,767			0	8,767
44	E-6 SERIES	0	169,827			0	169,827
45	EXECUTIVE HELICOPTERS SERIES	0	8,933			0	8,933
47	T-45 SERIES	0	186,022			0	186,022
48	POWER PLANT CHANGES	0	16,136			0	16,136
49	JPTS SERIES	0	21,824			0	21,824
50	AVIATION LIFE SUPPORT MODS	0	39,762			0	39,762
51	COMMON ECM EQUIPMENT	0	162,839			0	162,839
52	COMMON AVIONICS CHANGES	0	102,107			0	102,107
53	COMMON DEFENSIVE WEAPON SYSTEM	0	2,100			0	2,100
54	ID SYSTEMS	0	41,437			0	41,437
55	P-8 SERIES	0	107,539			0	107,539
56	MAGTF EW FOR AVIATION	0	26,536			0	26,536
57	MQ-8 SERIES	0	34,686			0	34,686
58	V-22 (TILT/ROTOR ACFT) OSPREY	0	325,367			0	325,367
59	NEXT GENERATION JAMMER (NGJ)	0	6,223			0	6,223
60	F-35 STOVL SERIES	0	65,585			0	65,585
61	F-35 CV SERIES	0	15,358			0	15,358
62	QRC	0	165,016			0	165,016
63	MQ-4 SERIES	0	27,994			0	27,994
64	RQ-21 SERIES	0	66,282			0	66,282
	AIRCRAFT SPARES AND REPAIR PARTS						
67	SPARES AND REPAIR PARTS	0	2,166,788	1	68,300	1	2,235,088
	F-35B spares			[0]	[14,900]		
	F-35C spares			[0]	[24,600]		
	UPL F-35B engine			[1]	[28,800]		

AIRCRAFT SUPPORT EQUIP & FACILITIES									
68	COMMON GROUND EQUIPMENT	0	491,025			0	491,025		
69	AIRCRAFT INDUSTRIAL FACILITIES	0	71,335			0	71,335		
70	WAR CONSUMABLES	0	41,086			0	41,086		
72	SPECIAL SUPPORT EQUIPMENT	0	135,740			0	135,740		
73	FIRST DESTINATION TRANSPORTATION	0	892			0	892		
	TOTAL AIRCRAFT PROCUREMENT, NAVY	145	18,522,204	-17		128	19,014,928		
WEAPONS PROCUREMENT, NAVY									
MODIFICATION OF MISSILES									
1	TRIDENT II MODS	0	0	0		0	1,177,251		
	Transfer back to base funding			[0]			[1,177,251]		
SUPPORT EQUIPMENT & FACILITIES									
2	MISSILE INDUSTRIAL FACILITIES	0	0	0		0	7,142		
	Transfer back to base funding			[0]			[7,142]		
STRATEGIC MISSILES									
3	TOMAHAWK	0	0	90		90	330,430		
	Transfer back to base funding			[90]			[386,730]		
	Unjustified tooling and facilitization costs			[0]			[-56,300]		
TACTICAL MISSILES									
4	AMRAAM	0	0	169		169	224,502		
	Transfer back to base funding			[169]			[224,502]		
5	SIDEWINDER	0	0	292		292	119,456		
	Transfer back to base funding			[292]			[119,456]		
7	STANDARD MISSILE	0	0	125		125	404,523		
	Transfer back to base funding			[125]			[404,523]		
8	STANDARD MISSILE AP	0	0	0		0	96,085		
	Transfer back to base funding			[0]			[96,085]		
9	SMALL DIAMETER BOMB II	0	0	750		750	118,466		
	Transfer back to base funding			[750]			[118,466]		
10	RAM	0	0	120		120	106,765		
	Transfer back to base funding			[120]			[106,765]		

SEC. 4101. PROCUREMENT
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
12	HELLFIRE	0	0	29	1,525	29	1,525
	Transfer back to base funding			[29]	[1,525]		
15	AERIAL TARGETS	0	0	0	145,880	0	145,880
	Transfer back to base funding			[0]	[145,880]		
16	DRONES AND DECOYS	0	0	30	20,000	30	20,000
	Transfer back to base funding			[30]	[20,000]		
17	OTHER MISSILE SUPPORT	0	0	0	3,388	0	3,388
	Transfer back to base funding			[0]	[3,388]		
18	LRASM	0	0	48	143,200	48	143,200
	Transfer back to base funding			[48]	[143,200]		
19	LCS OTH MISSILE	0	0	8	18,137	8	18,137
	Transfer back to base funding			[8]	[18,137]		
	Unjustified accelerated acquisition strategy			[-10]	[-20,000]		
	MODIFICATION OF MISSILES						
20	ESSM	0	0	60	128,059	60	128,059
	Transfer back to base funding			[60]	[128,059]		
21	HARPOON MODS	0	0	0	25,447	0	25,447
	Transfer back to base funding			[0]	[25,447]		
22	HARM MODS	0	0	0	183,740	0	183,740
	Transfer back to base funding			[0]	[183,740]		
23	STANDARD MISSILES MODS	0	0	0	22,500	0	22,500
	Transfer back to base funding			[0]	[22,500]		
	SUPPORT EQUIPMENT & FACILITIES						
24	WEAPONS INDUSTRIAL FACILITIES	0	0	0	1,958	0	1,958
	Transfer back to base funding			[0]	[1,958]		
25	FLEET SATELLITE COMM FOLLOW-ON	0	0	0	67,380	0	67,380

	Transfer back to base funding					[67,380]			
	ORDNANCE SUPPORT EQUIPMENT								
27	ORDNANCE SUPPORT EQUIPMENT	0	0	0	0	109,427	0	109,427	
	Transfer back to base funding					[109,427]			
	TORPEDOES AND RELATED EQUIP								
28	SSTD	0	0	0	0	5,561	0	5,561	
	Transfer back to base funding					[5,561]			
29	MK-48 TORPEDO	0	0	0	71	130,000	71	130,000	
	Transfer back to base funding					[114,000]			
	UPL additional quantites					[16,000]			
30	ASW TARGETS	0	0	0	0	15,095	0	15,095	
	Transfer back to base funding					[15,095]			
	MOD OF TORPEDOES AND RELATED EQUIP								
31	MK-54 TORPEDO MODS	0	0	0	0	119,453	0	119,453	
	Transfer back to base funding					[119,453]			
32	MK-48 TORPEDO ADCAP MODS	0	0	0	0	39,508	0	39,508	
	Transfer back to base funding					[39,508]			
33	QUICKSTRIKE MINE	0	0	0	0	5,183	0	5,183	
	Transfer back to base funding					[5,183]			
	SUPPORT EQUIPMENT								
34	TORPEDO SUPPORT EQUIPMENT	0	0	0	0	79,028	0	79,028	
	Transfer back to base funding					[79,028]			
35	ASW RANGE SUPPORT	0	0	0	0	3,890	0	3,890	
	Transfer back to base funding					[3,890]			
	DESTINATION TRANSPORTATION								
36	FIRST DESTINATION TRANSPORTATION	0	0	0	0	3,803	0	3,803	
	Transfer back to base funding					[3,803]			
	GUNS AND GUN MOUNTS								
37	SMALL ARMS AND WEAPONS	0	0	0	0	14,797	0	14,797	
	Transfer back to base funding					[14,797]			
	MODIFICATION OF GUNS AND GUN MOUNTS								
38	CWS MODS	0	0	0	0	44,126	0	44,126	

SEC. 4101. PROCUREMENT
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
39	Transfer back to base funding			[0]	[44,126]		
	COAST GUARD WEAPONS	0	0	0	44,980	0	44,980
40	Transfer back to base funding			[0]	[44,980]		
	GUN MOUNT MODS	0	0	0	66,376	0	66,376
41	Transfer back to base funding			[0]	[66,376]		
	LCS MODULE WEAPONS	0	0	120	14,585	120	14,585
43	Transfer back to base funding			[120]	[14,585]		
	AIRBORNE MINE NEUTRALIZATION SYSTEMS	0	0	0	7,160	0	7,160
	Transfer back to base funding			[0]	[7,160]		
	SPARES AND REPAIR PARTS						
45	Transfer back to base funding	0	0	0	126,138	0	126,138
	Transfer back to base funding			[0]	[126,138]		
	TOTAL WEAPONS PROCUREMENT, NAVY	0	0	1,912	4,174,944	1,912	4,174,944
PROCUREMENT OF AMMO, NAVY & MC							
NAVY AMMUNITION							
1	GENERAL PURPOSE BOMBS	0	0	0	36,028	0	36,028
	Transfer back to base funding			[0]	[36,028]		
2	JDAM	0	0	2,844	70,413	2,844	70,413
	Transfer back to base funding			[2,844]	[70,413]		
3	AIRBORNE ROCKETS, ALL TYPES	0	0	0	31,756	0	31,756
	Transfer back to base funding			[0]	[31,756]		
4	MACHINE GUN AMMUNITION	0	0	0	4,793	0	4,793
	Transfer back to base funding			[0]	[4,793]		
5	PRACTICE BOMBS	0	0	0	34,708	0	34,708
	Transfer back to base funding			[0]	[34,708]		

6	CARTRIDGES & CART ACTUATED DEVICES	0	0	0	45,738	0	45,738
	Transfer back to base funding			[0]	[45,738]		
7	AIR EXPENDABLE COUNTERMEASURES	0	0	0	77,301	0	77,301
	Transfer back to base funding			[0]	[77,301]		
8	JATOS	0	0	0	7,262	0	7,262
	Transfer back to base funding			[0]	[7,262]		
9	5 INCH/54 GUN AMMUNITION	0	0	0	22,594	0	22,594
	Transfer back to base funding			[0]	[22,594]		
10	INTERMEDIATE CALIBER GUN AMMUNITION	0	0	0	37,193	0	37,193
	Transfer back to base funding			[0]	[37,193]		
11	OTHER SHIP GUN AMMUNITION	0	0	0	39,491	0	39,491
	Transfer back to base funding			[0]	[39,491]		
12	SMALL ARMS & LANDING PARTY AMMO	0	0	0	47,896	0	47,896
	Transfer back to base funding			[0]	[47,896]		
13	PYROTECHNIC AND DEMOLITION	0	0	0	10,621	0	10,621
	Transfer back to base funding			[0]	[10,621]		
15	AMMUNITION LESS THAN \$5 MILLION	0	0	0	2,386	0	2,386
	Transfer back to base funding			[0]	[2,386]		
	MARINE CORPS AMMUNITION						
16	MORTARS	0	0	0	55,543	0	55,543
	Transfer back to base funding			[0]	[55,543]		
17	DIRECT SUPPORT MUNITIONS	0	0	0	131,765	0	131,765
	Transfer back to base funding			[0]	[131,765]		
18	INFANTRY WEAPONS AMMUNITION	0	0	0	78,056	0	78,056
	Transfer back to base funding			[0]	[78,056]		
19	COMBAT SUPPORT MUNITIONS	0	0	0	40,048	0	40,048
	Transfer back to base funding			[0]	[40,048]		
20	AMMO MODERNIZATION	0	0	0	14,325	0	14,325
	Transfer back to base funding			[0]	[14,325]		
21	ARTILLERY MUNITIONS	0	0	0	188,876	0	188,876
	Transfer back to base funding			[0]	[188,876]		
22	ITEMS LESS THAN \$5 MILLION	0	0	0	4,521	0	4,521

SEC. 4101. PROCUREMENT
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
	Transfer back to base funding			[0]	[4,521]		
	TOTAL PROCUREMENT OF AMMO, NAVY & MC	0	0	2,844	981,314	2,844	981,314
	SHIPBUILDING AND CONVERSION, NAVY						
	FLEET BALLISTIC MISSILE SHIPS						
1	OHIO REPLACEMENT SUBMARINE AP	0	1,698,907	0	125,000	0	1,823,907
	Submarine industrial base expansion			[0]	[125,000]		
	OTHER WARSHIPS						
2	CARRIER REPLACEMENT PROGRAM	1	2,347,000	-1		0	2,347,000
	CVN-81 authorized in NDAA 2019			[-1]			
3	VIRGINIA CLASS SUBMARINE	3	7,155,946	-1	-2,464,000	2	4,691,946
	Restore VPM on SSN-804			[0]	[522,100]		
	SSN-812 full funding early to need			[-1]	[-2,986,100]		
4	VIRGINIA CLASS SUBMARINE AP	0	2,769,552	0	1,500,000	0	4,269,552
	Future Virginia-class submarine(s) with VPM			[0]	[1,500,000]		
5	CVN REFUELING OVERHAULS	1	647,926	0	-50,000	1	597,926
	CVN-74 RCOH unjustified cost growth			[0]	[-50,000]		
6	CVN REFUELING OVERHAULS AP	0	0	0	16,900	0	16,900
	Restore CVN-75 RCOH			[0]	[16,900]		
7	DDG 1000	0	155,944			0	155,944
8	DDG-51	3	5,099,295	0	-20,000	3	5,079,295
	Available prior year funds			[0]	[-20,000]		
9	DDG-51 AP	0	224,028	0	260,000	0	484,028
	Accelerate LLTM for FY21 Flight III destroyers			[0]	[260,000]		
11	FFG-FRIGATE	1	1,281,177			1	1,281,177
	AMPHIBIOUS SHIPS						

12	LPD FLIGHT II	0	0	1	525,000	1	525,000
	LPD-31 program increase			[1]	[277,900]		
	Transfer from SCN line 13			[0]	[247,100]		
13	LPD FLIGHT II AP	0	247,100	0	-247,100	0	0
	Transfer to SCN line 12			[0]	[-247,100]		
15	LHA REPLACEMENT	0	0	1	650,000	1	650,000
	LHA-9 program increase			[1]	[650,000]		
	AUXILIARIES, CRAFT AND PRIOR YR PROGRAM COST						
18	TAO FLEET OILER	2	981,215	2	981,215	2	981,215
19	TAO FLEET OILER AP	0	73,000	0	73,000	0	73,000
20	TOWING, SALVAGE, AND RESCUE SHIP (ATS)	2	150,282	2	150,282	2	150,282
22	LCU 1700	4	85,670	4	85,670	4	85,670
23	OUTFITTING	0	754,679	0	-50,000	0	704,679
	Early to need and unjustified cost growth			[0]	[-50,000]		
25	SERVICE CRAFT	0	56,289	0	25,500	0	81,789
	Accelerate YP-703 Flight II			[0]	[25,500]		
28	COMPLETION OF PY SHIPBUILDING PROGRAMS	0	55,700	0	49,000	0	104,700
	UPL EPF-14 conversion			[0]	[49,000]		
29	SHIP TO SHORE CONNECTOR AP	0	0	0	40,400	0	40,400
	Program increase			[0]	[40,400]		
	TOTAL SHIPBUILDING AND CONVERSION, NAVY	17	23,783,710	0	360,700	17	24,144,410
	OTHER PROCUREMENT, NAVY						
	SHIP PROPULSION EQUIPMENT						
1	SURFACE POWER EQUIPMENT	0	14,490	0		0	14,490
	GENERATORS						
2	SURFACE COMBATANT HM&E	0	31,583	0	19,000	0	50,583
	UPL DDG-51 class HM&E upgrades			[0]	[19,000]		
	NAVIGATION EQUIPMENT						
3	OTHER NAVIGATION EQUIPMENT	0	77,404	0		0	77,404
	OTHER SHIPBOARD EQUIPMENT						
4	SUB PERISCOPE, IMAGING AND SUPT EQUIP PROG	0	160,803	0		0	160,803

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
5	DDG MOD	0	566,140			0	566,140
6	FIREFIGHTING EQUIPMENT	0	18,223			0	18,223
7	COMMAND AND CONTROL SWITCHBOARD	0	2,086			0	2,086
8	LHA/LHD MIDLIFE	0	95,651			0	95,651
9	POLLUTION CONTROL EQUIPMENT	0	23,910			0	23,910
10	SUBMARINE SUPPORT EQUIPMENT	0	44,895			0	44,895
11	VIRGINIA CLASS SUPPORT EQUIPMENT	0	28,465			0	28,465
12	LCS CLASS SUPPORT EQUIPMENT	0	19,426			0	19,426
13	SUBMARINE BATTERIES	0	26,290			0	26,290
14	LPD CLASS SUPPORT EQUIPMENT	0	46,945			0	46,945
15	DDG 1000 CLASS SUPPORT EQUIPMENT	0	9,930			0	9,930
16	STRATEGIC PLATFORM SUPPORT EQUIP	0	14,331			0	14,331
17	DSSP EQUIPMENT	0	2,909			0	2,909
18	CG MODERNIZATION	0	193,990			0	193,990
19	LCAC	0	3,392			0	3,392
20	UNDERWATER EOD PROGRAMS	0	71,240	0	11,000	0	82,240
	Program increase for four EXMCM companies			[0]	[11,000]		
21	ITEMS LESS THAN \$5 MILLION	0	102,543			0	102,543
22	CHEMICAL WARFARE DETECTORS	0	2,961			0	2,961
23	SUBMARINE LIFE SUPPORT SYSTEM	0	6,635			0	6,635
	REACTOR PLANT EQUIPMENT						
24	REACTOR POWER UNITS	0	5,340			0	5,340
25	REACTOR COMPONENTS	0	465,726			0	465,726
	OCEAN ENGINEERING						
26	DIVING AND SALVAGE EQUIPMENT	0	11,854			0	11,854
	SMALL BOATS						

27	STANDARD BOATS	0	79,102	0	79,102
	PRODUCTION FACILITIES EQUIPMENT				
28	OPERATING FORCES IPE	0	202,238	0	202,238
	OTHER SHIP SUPPORT				
29	LCS COMMON MISSION MODULES EQUIPMENT	0	51,553	0	51,553
30	LCS MCM MISSION MODULES	0	197,129	0	67,329
	Procurement ahead of satisfactory testing			0	-129,800
				[0]	[-129,800]
31	LCS ASW MISSION MODULES	0	27,754	0	27,754
32	LCS SUW MISSION MODULES	0	26,566	0	26,566
33	LCS IN-SERVICE MODERNIZATION	0	84,972	0	84,972
34	SMALL & MEDIUM UUV	0	40,547	0	10,647
	Knife fish procurement ahead of satisfactory testing			0	-29,900
				[0]	[-29,900]
	LOGISTIC SUPPORT				
35	LSD MIDLIFE & MODERNIZATION	0	40,269	0	40,269
	SHIP SONARS				
36	SPQ-9B RADAR	0	26,195	0	26,195
37	AN/SQQ-89 SURF ASW COMBAT SYSTEM	0	125,237	0	125,237
38	SSN ACOUSTIC EQUIPMENT	0	366,968	0	366,968
39	UNDERSEA WARFARE SUPPORT EQUIPMENT	0	8,967	0	8,967
	ASW ELECTRONIC EQUIPMENT				
40	SURMARINE ACOUSTIC WARFARE SYSTEM	0	23,545	0	23,545
41	SSTD	0	12,439	0	12,439
42	FIXED SURVEILLANCE SYSTEM	0	128,441	0	128,441
43	SURTASS	0	21,923	0	21,923
	ELECTRONIC WARFARE EQUIPMENT				
44	AN/SIQ-32	0	420,154	0	358,154
	Early to need			0	-62,000
				[0]	[-62,000]
	RECONNAISSANCE EQUIPMENT				
45	SHIPBOARD IW EXPLOIT	0	194,758	0	202,758
	UPL SSEE expansion on Flight I DDGs			0	8,000
				[0]	[8,000]
46	AUTOMATED IDENTIFICATION SYSTEM (AIS)	0	5,368	0	5,368
	OTHER SHIP ELECTRONIC EQUIPMENT				

SEC. 4101. PROCUREMENT (In Thousands of Dollars)									
Line	Item	FY 2020 Request		Senate Change		Senate Authorized			
		Qty	Cost	Qty	Cost	Qty	Cost		
47	COOPERATIVE ENGAGEMENT CAPABILITY	0	35,128			0	35,128		
48	NAVAL TACTICAL COMMAND SUPPORT SYSTEM (NTCSS)	0	15,154			0	15,154		
49	ATDLS	0	52,753			0	52,753		
50	NAVY COMMAND AND CONTROL SYSTEM (NCCS)	0	3,390			0	3,390		
51	MINESWEEPING SYSTEM REPLACEMENT	0	19,448			0	19,448		
52	SHALLOW WATER MCM	0	8,730			0	8,730		
53	NAVSTAR GPS RECEIVERS (SPACE)	0	32,674			0	32,674		
54	AMERICAN FORCES RADIO AND TV SERVICE	0	2,617			0	2,617		
55	STRATEGIC PLATFORM SUPPORT EQUIP	0	7,973			0	7,973		
	AVIATION ELECTRONIC EQUIPMENT								
56	ASHORE ATC EQUIPMENT	0	72,406			0	72,406		
57	AFLOAT ATC EQUIPMENT	0	67,410			0	67,410		
58	ID SYSTEMS	0	26,059			0	26,059		
59	JOINT PRECISION APPROACH AND LANDING SYSTEM (.....	0	92,695			0	92,695		
60	NAVAL MISSION PLANNING SYSTEMS	0	15,296			0	15,296		
	OTHER SHORE ELECTRONIC EQUIPMENT								
61	TACTICAL/MOBILE C4I SYSTEMS	0	36,226			0	36,226		
62	DCGS-N	0	21,788			0	21,788		
63	CANES	0	426,654			0	426,654		
64	RADIAC	0	6,450			0	6,450		
65	CANES-INTELL	0	52,713			0	52,713		
66	GPETE	0	13,028			0	13,028		
67	MAF	0	5,193			0	5,193		
68	INTEG COMBAT SYSTEM TEST FACILITY	0	6,028			0	6,028		
69	EMI CONTROL INSTRUMENTATION	0	4,209			0	4,209		
70	ITEMS LESS THAN \$5 MILLION	0	168,436	0	-23,800	0	144,636		

	NGSSR early to need		[0]	[-23,800]	
	SHIPBOARD COMMUNICATIONS				
71	SHIPBOARD TACTICAL COMMUNICATIONS	0	55,853	0	55,853
72	SHIP COMMUNICATIONS AUTOMATION	0	137,861	0	137,861
73	COMMUNICATIONS ITEMS UNDER \$5M	0	35,093	0	35,093
	SUBMARINE COMMUNICATIONS				
74	SUBMARINE BROADCAST SUPPORT	0	50,833	0	50,833
75	SUBMARINE COMMUNICATION EQUIPMENT	0	69,643	0	69,643
	SATELLITE COMMUNICATIONS				
76	SATELLITE COMMUNICATIONS SYSTEMS	0	45,841	0	45,841
77	NAVY MULTIBAND TERMINAL (NMT)	0	88,021	0	88,021
	SHORE COMMUNICATIONS				
78	JOINT COMMUNICATIONS SUPPORT ELEMENT (JCSE)	0	4,293	0	4,293
	CRYPTOGRAPHIC EQUIPMENT				
79	INFO SYSTEMS SECURITY PROGRAM (ISSP)	0	166,540	0	166,540
80	MIO INTEL EXPLOITATION TEAM	0	968	0	968
	CRYPTOLOGIC EQUIPMENT				
81	CRYPTOLOGIC COMMUNICATIONS EQUIP	0	13,090	0	13,090
	OTHER ELECTRONIC SUPPORT				
83	COAST GUARD EQUIPMENT	0	61,370	0	61,370
	SONOBUOYS				
85	SONOBUOYS—ALL TYPES	0	260,644	0	310,644
	UPL Sonobuoy increase			50,000	
	AIRCRAFT SUPPORT EQUIPMENT			[0]	[50,000]
86	MINOTAUR	0	5,000	0	5,000
87	WEAPONS RANGE SUPPORT EQUIPMENT	0	101,843	0	101,843
88	AIRCRAFT SUPPORT EQUIPMENT	0	145,601	0	145,601
89	ADVANCED ARRESTING GEAR (AAG)	0	4,725	0	4,725
90	METEOROLOGICAL EQUIPMENT	0	14,687	0	14,687
92	LEGACY AIRBORNE MCM	0	19,250	0	19,250
93	LAMPS EQUIPMENT	0	792	0	792
94	AVIATION SUPPORT EQUIPMENT	0	55,415	0	55,415

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
95	UMCS-UNMAN CARRIER AVIATION(UCA)MISSION CNTRL	0	32,668			0	32,668
	SHIP GUN SYSTEM EQUIPMENT						
96	SHIP GUN SYSTEMS EQUIPMENT	0	5,451			0	5,451
	SHIP MISSILE SYSTEMS EQUIPMENT						
97	HARPOON SUPPORT EQUIPMENT	0	1,100			0	1,100
98	SHIP MISSILE SUPPORT EQUIPMENT	0	228,104			0	228,104
99	TOMAHAWK SUPPORT EQUIPMENT	0	78,593			0	78,593
	FBM SUPPORT EQUIPMENT						
100	STRATEGIC MISSILE SYSTEMS EQUIP	0	280,510			0	280,510
	ASW SUPPORT EQUIPMENT						
101	SSN COMBAT CONTROL SYSTEMS	0	148,547			0	148,547
102	ASW SUPPORT EQUIPMENT	0	21,130			0	21,130
	OTHER ORDNANCE SUPPORT EQUIPMENT						
103	EXPLOSIVE ORDNANCE DISPOSAL EQUIP	0	15,244			0	15,244
104	ITEMS LESS THAN \$5 MILLION	0	5,071			0	5,071
	OTHER EXPENDABLE ORDNANCE						
105	ANTI-SHIP MISSILE DECOY SYSTEM	0	41,962			0	41,962
106	SUBMARINE TRAINING DEVICE MODS	0	75,057			0	75,057
107	SURFACE TRAINING EQUIPMENT	0	233,175			0	233,175
	CIVIL ENGINEERING SUPPORT EQUIPMENT						
108	PASSENGER CARRYING VEHICLES	0	4,562			0	4,562
109	GENERAL PURPOSE TRUCKS	0	10,974			0	10,974
110	CONSTRUCTION & MAINTENANCE EQUIP	0	43,191			0	43,191
111	FIRE FIGHTING EQUIPMENT	0	21,142			0	21,142
112	TACTICAL VEHICLES	0	33,432			0	33,432
114	POLLUTION CONTROL EQUIPMENT	0	2,633			0	2,633

115	ITEMS UNDER \$5 MILLION	0	53,467	0	53,467
116	PHYSICAL SECURITY VEHICLES	0	1,173	0	1,173
	SUPPLY SUPPORT EQUIPMENT				
117	SUPPLY EQUIPMENT	0	16,730	0	16,730
118	FIRST DESTINATION TRANSPORTATION	0	5,389	0	5,389
119	SPECIAL PURPOSE SUPPLY SYSTEMS	0	654,674	0	654,674
	TRAINING DEVICES				
120	TRAINING SUPPORT EQUIPMENT	0	3,633	0	3,633
121	TRAINING AND EDUCATION EQUIPMENT	0	97,636	0	97,636
	COMMAND SUPPORT EQUIPMENT				
122	COMMAND SUPPORT EQUIPMENT	0	66,102	0	66,102
	Program duplication			[0]	
					[-6,323]
123	MEDICAL SUPPORT EQUIPMENT	0	3,633	0	3,633
125	NAVAL MIP SUPPORT EQUIPMENT	0	6,097	0	6,097
126	OPERATING FORCES SUPPORT EQUIPMENT	0	16,905	0	16,905
127	C4ISR EQUIPMENT	0	30,146	0	30,146
128	ENVIRONMENTAL SUPPORT EQUIPMENT	0	21,986	0	21,986
129	PHYSICAL SECURITY EQUIPMENT	0	160,046	0	160,046
130	ENTERPRISE INFORMATION TECHNOLOGY	0	56,899	0	56,899
	OTHER				
133	NEXT GENERATION ENTERPRISE SERVICE	0	122,832	0	122,832
	CLASSIFIED PROGRAMS				
999	CLASSIFIED PROGRAMS	0	16,346	0	16,346
	SPARES AND REPAIR PARTS				
134	SPARES AND REPAIR PARTS	0	375,608	0	375,608
	TOTAL OTHER PROCUREMENT, NAVY	0	9,652,956	0	9,489,133
					-163,823
	PROCUREMENT, MARINE CORPS				
	TRACKED COMBAT VEHICLES				
1	AAV7A1 PIP	0	39,495	0	39,495
2	AMPHIBIOUS COMBAT VEHICLE 1.1	56	317,935	56	317,935
3	LAV PIP	0	60,734	0	60,734

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
ARTILLERY AND OTHER WEAPONS							
4	155MM LIGHTWEIGHT TOWED HOWITZER	0	25,065			0	25,065
5	ARTILLERY WEAPONS SYSTEM	0	100,002			0	100,002
6	WEAPONS AND COMBAT VEHICLES UNDER \$5 MILLION	0	31,945			0	31,945
OTHER SUPPORT							
7	MODIFICATION KITS	0	22,760			0	22,760
GUIDED MISSILES							
8	GROUND BASED AIR DEFENSE	0	175,998			0	175,998
9	ANTI-ARMOR MISSILE-JAVELIN	97	20,207			97	20,207
10	FAMILY ANTI-ARMOR WEAPON SYSTEMS (FOAAWS)	0	21,913			0	21,913
11	ANTI-ARMOR MISSILE-TOW	0	60,501			0	60,501
12	GUIDED MLRS ROCKET (GMLRS)	210	29,062			210	29,062
COMMAND AND CONTROL SYSTEMS							
13	COMMON AVIATION COMMAND AND CONTROL SYSTEM (C	0	37,203			0	37,203
REPAIR AND TEST EQUIPMENT							
14	REPAIR AND TEST EQUIPMENT	0	55,156			0	55,156
OTHER SUPPORT (TEL)							
15	MODIFICATION KITS	0	4,945			0	4,945
COMMAND AND CONTROL SYSTEM (NON-TEL)							
16	ITEMS UNDER \$5 MILLION (COMM & ELEC)	0	112,124			0	112,124
17	AIR OPERATIONS C2 SYSTEMS	0	17,408			0	17,408
RADAR + EQUIPMENT (NON-TEL)							
18	RADAR SYSTEMS	0	329			0	329
19	GROUND/AIR TASK ORIENTED RADAR (G/ATOR)	8	273,022			8	273,022
INTEL/COMM EQUIPMENT (NON-TEL)							
21	GCSS-MC	0	4,484			0	4,484

22	FIRE SUPPORT SYSTEM	0	35,488	0	35,488
23	INTELLIGENCE SUPPORT EQUIPMENT	0	56,896	0	56,896
25	UNMANNED AIR SYSTEMS (INTEL)	0	34,711	0	34,711
26	DCGS-MC	0	32,562	0	32,562
	OTHER SUPPORT (NON-TEL)				
30	NEXT GENERATION ENTERPRISE NETWORK (NGEN)	0	114,901	0	114,901
31	COMMON COMPUTER RESOURCES	0	51,094	0	51,094
32	COMMAND POST SYSTEMS	0	108,897	0	108,897
33	RADIO SYSTEMS	0	227,320	0	227,320
34	COMM SWITCHING & CONTROL SYSTEMS	0	31,685	0	31,685
35	COMM & ELEC INFRASTRUCTURE SUPPORT	0	21,140	0	21,140
36	CYBERSPACE ACTIVITIES	0	27,632	0	27,632
	CLASSIFIED PROGRAMS				
999	CLASSIFIED PROGRAMS	0	5,535	0	5,535
	ADMINISTRATIVE VEHICLES				
37	COMMERCIAL CARGO VEHICLES	0	28,913	0	28,913
	TACTICAL VEHICLES				
38	MOTOR TRANSPORT MODIFICATIONS	0	19,234	0	19,234
39	JOINT LIGHT TACTICAL VEHICLE	1,398	558,107	1,398	558,107
40	FAMILY OF TACTICAL TRAILERS	0	2,693	0	2,693
	ENGINEER AND OTHER EQUIPMENT				
41	ENVIRONMENTAL CONTROL EQUIP ASSORT	0	495	0	495
42	TACTICAL FUEL SYSTEMS	0	52	0	52
43	POWER EQUIPMENT ASSORTED	0	22,441	0	22,441
44	AMPHIBIOUS SUPPORT EQUIPMENT	0	7,101	0	7,101
45	EOD SYSTEMS	0	44,700	0	44,700
	MATERIALS HANDLING EQUIPMENT				
46	PHYSICAL SECURITY EQUIPMENT	0	15,404	0	15,404
	GENERAL PROPERTY				
47	FIELD MEDICAL EQUIPMENT	0	2,898	0	2,898
48	TRAINING DEVICES	0	149,567	0	149,567
49	FAMILY OF CONSTRUCTION EQUIPMENT	0	35,622	0	35,622

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
50	ULTRA-LIGHT TACTICAL VEHICLE (ULTV)	0	647			0	647
	OTHER SUPPORT						
51	ITEMS LESS THAN \$5 MILLION	0	10,956			0	10,956
	SPARES AND REPAIR PARTS						
52	SPARES AND REPAIR PARTS	0	33,470			0	33,470
	TOTAL PROCUREMENT, MARINE CORPS	1,769	3,090,449	0	0	1,769	3,090,449
	AIRCRAFT PROCUREMENT, AIR FORCE						
	TACTICAL FORCES						
1	F-35	48	4,274,359	12	1,090,000	60	5,364,359
	UPL additional quantities			[12]	[1,090,000]		
2	F-35 AP	0	655,500	0	156,000	0	811,500
	UPL increase			[0]	[156,000]		
3	F-15E	8	1,050,000	0	-162,000	8	888,000
	NRE cost on a non-developmental A/C			[0]	[-162,000]		
	TACTICAL AIRLIFT						
5	KC-46A MDAP	12	2,234,529	3	471,000	15	2,705,529
	UPL additional quantities			[3]	[471,000]		
	OTHER AIRLIFT						
6	C-130J	0	12,156			0	12,156
8	MC-130J	8	871,207			8	871,207
9	MC-130J AP	0	40,000			0	40,000
	HELICOPTERS						
10	COMBAT RESCUE HELICOPTER	12	884,235			12	884,235
	MISSION SUPPORT AIRCRAFT						
11	C-37A	2	161,000			2	161,000

12	CIVIL AIR PATROL A/C	4	2,767	4	2,767
	OTHER AIRCRAFT				
14	TARGET DRONES	37	130,837	37	130,837
15	COMPASS CALL	1	114,095	1	114,095
17	MQ-9	3	189,205	3	189,205
	STRATEGIC AIRCRAFT				
19	B-2A	0	9,582	0	9,582
20	B-1B	0	22,111	0	22,111
21	B-52	0	69,648	0	69,648
22	LARGE AIRCRAFT INFRARED COUNTERMEASURES	0	43,758	0	43,758
	TACTICAL AIRCRAFT				
23	A-10	0	132,069	0	132,069
24	E-11 BACN/HAG	0	70,027	0	70,027
25	F-15	0	481,073	0	328,073
	ADCP unnecessary due to F-15X			0	-153,000
	IFF unnecessary due to F-15X			[0]	[-75,100]
	Longerons unnecessary due to F-15X			[0]	[-29,600]
	Radar unnecessary due to F-15X			[0]	[-24,600]
				[0]	[-23,700]
26	F-16	0	234,782	30	309,782
	Additional radars			[30]	[75,000]
28	F-22A	0	323,597	0	323,597
30	F-35 MODIFICATIONS	0	343,590	0	343,590
31	F-15 EPAW	0	149,047	0	81,847
	Not required because of F-15X			0	-67,200
32	INCREMENT 3.2B	0	20,213	0	20,213
33	KC-46A MDAP	0	10,213	0	10,213
	AIRLIFT AIRCRAFT				
34	C-5	0	73,550	0	73,550
36	C-17A	0	60,244	0	60,244
37	C-21	0	216	0	216
38	C-32A	0	11,511	0	11,511
39	C-37A	0	435	0	435

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
TRAINER AIRCRAFT							
40	GLIDER MODS	0	138			0	138
41	T-6	0	11,826			0	11,826
42	T-1	0	26,787			0	26,787
43	T-38	0	37,341			0	37,341
OTHER AIRCRAFT							
44	U-2 MODS	0	86,896			0	86,896
45	KC-10A (ATCA)	0	2,108			0	2,108
46	C-12	0	3,021			0	3,021
47	VC-25A MOD	0	48,624			0	48,624
48	C-40	0	256			0	256
49	C-130	0	52,066			0	52,066
50	C-130J MODS	0	141,686			0	141,686
51	C-135	0	124,491			0	124,491
53	COMPASS CALL	0	110,754			0	110,754
54	COMBAT FLIGHT INSPECTION—CFIN	0	508			0	508
55	RC-135	0	227,673			0	227,673
56	E-3	0	216,299			0	216,299
57	E-4	0	58,477			0	58,477
58	E-8	0	28,778	0	30,000	0	58,778
	SATCOM radios			[0]	[30,000]		
59	AIRBORNE WARNING AND CNTRL SYS (AWACS) 40/45	0	36,000			0	36,000
60	FAMILY OF BEYOND LINE-OF-SIGHT TERMINALS	0	7,910			0	7,910
61	H-1	0	3,817			0	3,817
62	H-60	0	20,879			0	20,879
63	RQ-4 MODS	0	1,704			0	1,704

64	HC/MC-130 MODIFICATIONS	0	51,482		0	51,482
65	OTHER AIRCRAFT	0	50,098		0	50,098
66	MQ-9 MODS	0	383,594		0	383,594
68	CV-22 MODS	0	65,348		0	65,348
	AIRCRAFT SPARES AND REPAIR PARTS					
69	INITIAL SPARES/REPAIR PARTS	0	708,230	0	0	970,230
	F-35 spares			[0]	262,000	
	KC-46 spares			[0]	[96,000]	
	RQ-4			[0]	[141,000]	
	COMMON SUPPORT EQUIPMENT				[25,000]	
72	AIRCRAFT REPLACEMENT SUPPORT EQUIP	0	84,938		0	84,938
	POST PRODUCTION SUPPORT					
73	B-2A	0	1,403		0	1,403
74	B-2B	0	42,234		0	42,234
75	B-52	0	4,641		0	4,641
76	C-17A	0	124,805		0	124,805
79	F-15	0	2,589		0	2,589
81	F-16	0	15,348		0	15,348
84	RQ-4 POST PRODUCTION CHARGES	0	47,246		0	47,246
	INDUSTRIAL PREPAREDNESS					
86	INDUSTRIAL RESPONSIVENESS	0	17,705		0	17,705
	WAR CONSUMABLES					
87	WAR CONSUMABLES	0	32,102		0	32,102
	OTHER PRODUCTION CHARGES					
88	OTHER PRODUCTION CHARGES	0	1,194,728		0	1,194,728
	CLASSIFIED PROGRAMS					
999	CLASSIFIED PROGRAMS	0	34,193		0	34,193
	TOTAL AIRCRAFT PROCUREMENT, AIR FORCE	135	16,784,279	45	1,701,800	18,486,079
	MISSILE PROCUREMENT, AIR FORCE					
	MISSILE REPLACEMENT EQUIPMENT—BALLISTIC					
1	MISSILE REPLACEMENT EQ-BALLISTIC	0	55,888		0	55,888

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
TACTICAL							
2	REPLAC EQUIP & WAR CONSUMABLES	0	9,100			0	9,100
3	JOINT AIR-TO-GROUND MUNITION	60	15,000			60	15,000
4	JOINT AIR-SURFACE STANDOFF MISSILE	411	482,525			411	482,525
6	SIDEWINDER (AIM-9X)	355	160,408			355	160,408
7	AMRAAM	220	332,250			220	332,250
8	PREDATOR HELLFIRE MISSILE	1,531	118,860			1,531	118,860
9	SMALL DIAMETER BOMB	7,078	275,438			7,078	275,438
10	SMALL DIAMETER BOMB II	1,175	212,434			1,175	212,434
INDUSTRIAL FACILITIES							
11	INDUSTR'L PREPAREDNS/POL PREVENTION	0	801			0	801
CLASS IV							
12	ICBM FUZE MOD	6	5,000			6	5,000
13	ICBM FUZE MOD AP	0	14,497			0	14,497
14	MM III MODIFICATIONS	0	50,831	0	8,900	0	59,731
	Air Force requested transfer			[0]	[8,900]		
15	AGM-65D MAVERICK	0	294			0	294
16	AIR LAUNCH CRUISE MISSILE (ALCM)	0	77,387	0	-8,900	0	68,487
	Air Force requested transfer			[0]	[-8,900]		
MISSILE SPARES AND REPAIR PARTS							
18	MSL SPRS/REPAIR PARTS (INITIAL)	0	1,910			0	1,910
19	REPLEN SPARES/REPAIR PARTS	0	82,490			0	82,490
SPECIAL PROGRAMS							
23	SPECIAL UPDATE PROGRAMS	0	144,553			0	144,553
CLASSIFIED PROGRAMS							
999	CLASSIFIED PROGRAMS	0	849,521			0	849,521

SEC. 4101. PROCUREMENT
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
3	PRACTICE BOMBS	0	0	0	29,313	0	29,313
	Transfer back to base funding			[0]	[29,313]		
4	GENERAL PURPOSE BOMBS	0	0	0	85,885	0	85,885
	Transfer back to base funding			[0]	[85,885]		
6	JOINT DIRECT ATTACK MUNITION	0	0	37,000	1,066,224	37,000	1,066,224
	Transfer back to base funding			[37,000]	[1,066,224]		
7	B61	0	0	533	80,773	533	80,773
	Transfer back to base funding			[533]	[80,773]		
	OTHER ITEMS						
9	CAD/PAD	0	0	0	47,069	0	47,069
	Transfer back to base funding			[0]	[47,069]		
10	EXPLOSIVE ORDNANCE DISPOSAL (EOD)	0	0	0	6,133	0	6,133
	Transfer back to base funding			[0]	[6,133]		
11	SPARES AND REPAIR PARTS	0	0	0	533	0	533
	Transfer back to base funding			[0]	[533]		
12	MODIFICATIONS	0	0	0	1,291	0	1,291
	Transfer back to base funding			[0]	[1,291]		
13	ITEMS LESS THAN \$5,000,000	0	0	0	1,677	0	1,677
	Transfer back to base funding			[0]	[1,677]		
	FLARES						
15	FLARES	0	0	0	36,116	0	36,116
	Transfer back to base funding			[0]	[36,116]		
	FUZES						
16	FUZES	0	0	0	1,734	0	1,734
	Transfer back to base funding			[0]	[1,734]		
	SMALL ARMS						

17	SMALL ARMS	0	0	0	37,496	0	37,496
	Transfer back to base funding			[0]	[37,496]		
	TOTAL PROCUREMENT OF AMMUNITION, AIR FORCE	0	0	37,533	1,667,961	37,533	1,667,961
	OTHER PROCUREMENT, AIR FORCE						
	PASSENGER CARRYING VEHICLES						
1	PASSENGER CARRYING VEHICLES	0	15,238			0	15,238
	CARGO AND UTILITY VEHICLES						
2	MEDIUM TACTICAL VEHICLE	0	34,616			0	34,616
3	CAP VEHICLES	0	1,040			0	1,040
4	CARGO AND UTILITY VEHICLES	0	23,133			0	23,133
	SPECIAL PURPOSE VEHICLES						
5	JOINT LIGHT TACTICAL VEHICLE	0	32,027			0	32,027
6	SECURITY AND TACTICAL VEHICLES	0	1,315			0	1,315
7	SPECIAL PURPOSE VEHICLES	0	14,593			0	14,593
	FIRE FIGHTING EQUIPMENT						
8	FIRE FIGHTING/CRASH RESCUE VEHICLES	0	28,604			0	28,604
	MATERIALS HANDLING EQUIPMENT						
9	MATERIALS HANDLING VEHICLES	0	21,848			0	21,848
	BASE MAINTENANCE SUPPORT						
10	RUNWAY SNOW REMOV AND CLEANING EQU	0	2,925			0	2,925
11	BASE MAINTENANCE SUPPORT VEHICLES	0	55,776			0	55,776
	COMM SECURITY EQUIPMENT(COMSEC)						
13	COMSEC EQUIPMENT	0	91,461			0	91,461
	INTELLIGENCE PROGRAMS						
14	INTERNATIONAL INTEL TECH & ARCHITECTURES	0	11,386			0	11,386
15	INTELLIGENCE TRAINING EQUIPMENT	0	7,619			0	7,619
16	INTELLIGENCE COMM EQUIPMENT	0	35,558			0	35,558
	ELECTRONICS PROGRAMS						
17	AIR TRAFFIC CONTROL & LANDING SYS	0	17,939			0	17,939
19	BATTLE CONTROL SYSTEM—FIXED	0	3,063			0	3,063
21	WEATHER OBSERVATION FORECAST	0	31,447			0	31,447

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
22	STRATEGIC COMMAND AND CONTROL	0	5,090			0	5,090
23	CHEYENNE MOUNTAIN COMPLEX	0	10,145			0	10,145
24	MISSION PLANNING SYSTEMS	0	14,508			0	14,508
26	INTEGRATED STRAT PLAN & ANALY NETWORK (ISPAN)	0	9,901			0	9,901
	SPCL COMM-ELECTRONICS PROJECTS						
27	GENERAL INFORMATION TECHNOLOGY	0	26,933			0	26,933
28	AF GLOBAL COMMAND & CONTROL SYS	0	2,756			0	2,756
29	BATTLEFIELD AIRBORNE CONTROL NODE (BACN)	0	48,478			0	48,478
30	MOBILITY COMMAND AND CONTROL	0	21,186			0	21,186
31	AIR FORCE PHYSICAL SECURITY SYSTEM	0	178,361			0	178,361
32	COMBAT TRAINING RANGES	0	233,993	4	28,000	4	261,993
	Joint threat emitters			[4]	[28,000]		
33	MINIMUM ESSENTIAL EMERGENCY COMM N	0	132,648			0	132,648
34	WIDE AREA SURVEILLANCE (WAS)	0	80,818			0	80,818
35	C3 COUNTERMEASURES	0	25,036			0	25,036
36	INTEGRATED PERSONNEL AND PAY SYSTEM	0	20,900	0	-20,900	0	0
	Poor agile implementation			[0]	[-20,900]		
37	GCSS-AF FOS	0	11,226			0	11,226
38	DEFENSE ENTERPRISE ACCOUNTING & MGT SYS	0	1,905			0	1,905
39	MAINTENANCE REPAIR & OVERHAUL INITIATIVE	0	1,912			0	1,912
40	THEATER BATTLE MGT C2 SYSTEM	0	6,337			0	6,337
41	AIR & SPACE OPERATIONS CENTER (AOC)	0	33,243			0	33,243
	AIR FORCE COMMUNICATIONS						
43	BASE INFORMATION TRANSPORT INFRAST (BITI) WIRED	0	69,530			0	69,530
44	AFNET	0	147,063			0	147,063
45	JOINT COMMUNICATIONS SUPPORT ELEMENT (JCSE)	0	6,505			0	6,505

46	USCENTCOM	0	20,190	0	20,190
47	USSTRATCOM	0	11,244	0	11,244
	ORGANIZATION AND BASE				
48	TACTICAL C-E EQUIPMENT	0	143,757	0	143,757
50	RADIO EQUIPMENT	0	15,402	0	15,402
51	CCTV/AUDIOVISUAL EQUIPMENT	0	3,211	0	3,211
52	BASE COMM INFRASTRUCTURE	0	43,123	0	43,123
	MODIFICATIONS				
53	COMM ELECT MODS	0	14,500	0	14,500
	PERSONAL SAFETY & RESCUE EQUIP				
54	PERSONAL SAFETY AND RESCUE EQUIPMENT	0	50,634	0	50,634
	DEPOT PLANT+MTRLS HANDLING EQ				
55	POWER CONDITIONING EQUIPMENT	0	11,000	0	11,000
56	MECHANIZED MATERIAL HANDLING EQUIP	0	11,901	0	11,901
	BASE SUPPORT EQUIPMENT				
57	BASE PROCURED EQUIPMENT	0	23,963	0	23,963
58	ENGINEERING AND EOD EQUIPMENT	0	34,124	0	34,124
59	MOBILITY EQUIPMENT	0	26,439	0	26,439
60	FUELS SUPPORT EQUIPMENT (FSE)	0	24,255	0	24,255
61	BASE MAINTENANCE AND SUPPORT EQUIPMENT	0	38,986	0	38,986
	SPECIAL SUPPORT PROJECTS				
63	DARP RC135	0	26,716	0	26,716
64	DCGS-AF	0	116,055	0	116,055
66	SPECIAL UPDATE PROGRAM	0	835,148	0	835,148
	CLASSIFIED PROGRAMS				
999	CLASSIFIED PROGRAMS	0	17,637,807	0	18,292,807
	Transfer back to base funding			[0]	655,000
					[655,000]
	SPARES AND REPAIR PARTS				
67	SPARES AND REPAIR PARTS	0	81,340	0	81,340
	TOTAL OTHER PROCUREMENT, AIR FORCE	0	20,687,857	4	662,100
				4	21,349,957
	PROCUREMENT, DEFENSE-WIDE				

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
	MAJOR EQUIPMENT, DCMA						
2	MAJOR EQUIPMENT	0	2,432			0	2,432
	MAJOR EQUIPMENT, DHRA						
3	PERSONNEL ADMINISTRATION	0	5,030			0	5,030
	MAJOR EQUIPMENT, DISA						
8	INFORMATION SYSTEMS SECURITY	0	3,318	0	1,400	0	4,718
	Sharkseer transfer			[0]	[1,400]		
9	TELEPORT PROGRAM	0	25,103			0	25,103
10	ITEMS LESS THAN \$5 MILLION	0	26,416			0	26,416
12	DEFENSE INFORMATION SYSTEM NETWORK	0	17,574			0	17,574
14	WHITE HOUSE COMMUNICATION AGENCY	0	45,079			0	45,079
15	SENIOR LEADERSHIP ENTERPRISE	0	78,669			0	78,669
16	JOINT REGIONAL SECURITY STACKS (JRSS)	0	88,000			0	88,000
17	JOINT SERVICE PROVIDER	0	107,907			0	107,907
	MAJOR EQUIPMENT, DLA						
19	MAJOR EQUIPMENT	0	8,122			0	8,122
	MAJOR EQUIPMENT, DMACT						
20	MAJOR EQUIPMENT	0	10,961			0	10,961
	MAJOR EQUIPMENT, DODEA						
21	AUTOMATION/EDUCATIONAL SUPPORT & LOGISTICS	0	1,320			0	1,320
	MAJOR EQUIPMENT, DPAA						
22	MAJOR EQUIPMENT, DPAA	32	1,504			32	1,504
	MAJOR EQUIPMENT, DSS						
23	MAJOR EQUIPMENT	0	496			0	496
	MAJOR EQUIPMENT, DEFENSE THREAT REDUCTION AGENCY						
25	VEHICLES	0	211			0	211

26	OTHER MAJOR EQUIPMENT	0	11,521		0	11,521
	MAJOR EQUIPMENT, MISSILE DEFENSE AGENCY					
28	THAAD	37	425,863	-37	-425,863	0
	THAAD program transfer to Army			[-37]	[-425,863]	
29	GROUND BASED MIDCOURSE	0	9,471			9,471
31	AEGIS BMD	37	600,773			600,773
32	AEGIS BMD AP	0	96,995			96,995
33	BMDs AN/TPY-2 RADARS	0	10,046			10,046
34	ARROW 3 UPPER TIER SYSTEMS	1	55,000			55,000
35	SHORT RANGE BALLISTIC MISSILE DEFENSE (SRBMD)	1	50,000			50,000
36	AEGIS ASHORE PHASE III	1	25,659			25,659
37	IRON DOME	1	95,000			95,000
38	AEGIS BMD HARDWARE AND SOFTWARE	36	124,986			124,986
	MAJOR EQUIPMENT, NSA					
44	INFORMATION SYSTEMS SECURITY PROGRAM (ISSP)	0	1,533	0	-1,400	133
	Sharkseer transfer			[0]	[-1,400]	
	MAJOR EQUIPMENT, OSD					
45	MAJOR EQUIPMENT, OSD	0	43,705			43,705
	MAJOR EQUIPMENT, TJS					
46	MAJOR EQUIPMENT, TJS	0	6,905			6,905
47	MAJOR EQUIPMENT—TJS CYBER	0	1,458			1,458
	MAJOR EQUIPMENT, WHS					
49	MAJOR EQUIPMENT, WHS	0	507			507
	CLASSIFIED PROGRAMS					
999	CLASSIFIED PROGRAMS	0	584,366	0	5,000	589,366
	Transfer back to base funding			[0]	[5,000]	
	AVIATION PROGRAMS					
53	ROTARY WING UPGRADES AND SUSTAINMENT	0	172,020			172,020
54	UNMANNED ISR	0	15,208			15,208
55	NON-STANDARD AVIATION	0	32,310			32,310
56	U-28	0	10,898			10,898
57	MH-47 CHINOOK	0	173,812			173,812

SEC. 4101. PROCUREMENT (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
58	CV-22 MODIFICATION	0	17,256			0	17,256
59	MQ-9 UNMANNED AERIAL VEHICLE	0	5,338			0	5,338
60	PRECISION STRIKE PACKAGE	0	232,930			0	232,930
61	AC/MC-130J	0	173,419	0	-8,800	0	164,619
	RFCEM schedule delay			[0]	[-8,800]		
62	C-130 MODIFICATIONS	0	15,582			0	15,582
	SHIPBUILDING						
63	UNDERWATER SYSTEMS	0	58,991			0	58,991
	AMMUNITION PROGRAMS						
64	ORDNANCE ITEMS <\$5M	0	279,992			0	279,992
	OTHER PROCUREMENT PROGRAMS						
65	INTELLIGENCE SYSTEMS	0	100,641			0	100,641
66	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	0	12,522			0	12,522
67	OTHER ITEMS <\$5M	0	103,910			0	103,910
68	COMBATANT CRAFT SYSTEMS	0	33,088			0	33,088
69	SPECIAL PROGRAMS	0	63,467			0	63,467
70	TACTICAL VEHICLES	0	77,832			0	77,832
71	WARRIOR SYSTEMS <\$5M	0	298,480			0	298,480
72	COMBAT MISSION REQUIREMENTS	0	19,702			0	19,702
73	GLOBAL VIDEO SURVEILLANCE ACTIVITIES	0	4,787			0	4,787
74	OPERATIONAL ENHANCEMENTS INTELLIGENCE	0	8,175			0	8,175
75	OPERATIONAL ENHANCEMENTS	0	282,532			0	282,532
	CBDP						
76	CHEMICAL BIOLOGICAL SITUATIONAL AWARENESS	0	162,406			0	162,406
77	CB PROTECTION & HAZARD MITIGATION	0	188,188			0	188,188
	TOTAL PROCUREMENT, DEFENSE-WIDE	146	5,109,416	-37	-429,663	109	4,679,753

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS.

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
AIRCRAFT PROCUREMENT, ARMY							
3	FIXED WING						
	MQ-1 UAV	6	54,000	0		6	54,000
ROTARY							
15	CH-47 HELICOPTER	1	25,000	0		1	25,000
MODIFICATION OF AIRCRAFT							
21	MULTI SENSOR ABN RECON (MIP)	0	80,260	0		0	80,260
24	GRCS SEMA MODS (MIP)	0	750	0		0	750
26	EMARSS SEMA MODS (MIP)	0	22,180	0		0	22,180
27	UTILITY/CARGO AIRPLANE MODS	0	8,362	0		0	8,362
29	NETWORK AND MISSION PLAN	0	10	0		0	10
31	DEGRADED VISUAL ENVIRONMENT	0	49,450	0		0	49,450
GROUND SUPPORT AVIONICS							
37	CMWS	0	130,219	0		0	130,219
38	COMMON INFRARED COUNTERMEASURES (CIRCUM)	0	9,310	0		0	9,310
OTHER SUPPORT							
45	LAUNCHER GUIDED MISSILE: LONGBOW HELFIRE XM2	12	2,000	0		12	2,000
	TOTAL AIRCRAFT PROCUREMENT, ARMY	18	381,541	0	0	18	381,541
MISSILE PROCUREMENT, ARMY							
SURFACE-TO-AIR MISSILE SYSTEM							
1	SYSTEM INTEGRATION AND TEST PROCUREMENT	0	113,857	0	-113,857	0	0
	Transfer back to base funding			[0]	[-113,857]		
2	M-SHORAD—PROCUREMENT	44	262,100	-17	-103,800	27	158,300

3	MSE MISSILE	147	736,541	[-17]	[-103,800]	9	37,938
	Transfer back to base funding			-138	-698,603		
4	INDIRECT FIRE PROTECTION CAPABILITY INC 2-I	0	9,337	[-138]	[-698,603]	0	0
	Transfer back to base funding			0	-9,337		
	Transfer back to base funding			[0]	[-9,337]		
	AIR-TO-SURFACE MISSILE SYSTEM						
6	HELLFIRE SYS SUMMARY	5,112	429,549	-1870	-193,284	3,242	236,265
	Transfer back to base funding			[-1,870]	[-193,284]		
7	JOINT AIR-TO-GROUND MSLS (JAGM)	609	233,353	-609	-233,353	0	0
	Transfer back to base funding			[-609]	[-233,353]		
	ANTI-TANK/ASSAULT MISSILE SYS						
8	JAVELIN (AAWS-M) SYSTEM SUMMARY	697	142,794	-672	-138,405	25	4,389
	Transfer back to base funding			[-672]	[-138,405]		
9	TOW 2 SYSTEM SUMMARY	1,460	114,340	-1460	-114,340	0	0
	Transfer back to base funding			[-1,460]	[-114,340]		
10	TOW 2 SYSTEM SUMMARY AP	0	10,500	0	-10,500	0	0
	Transfer back to base funding			[0]	[-10,500]		
11	GUIDED MLRS ROCKET (GMLRS)	9,853	1,228,809	-6489	-797,213	3,364	431,596
	Transfer back to base funding			[-6,489]	[-797,213]		
12	MLRS REDUCED RANGE PRACTICE ROCKETS (RRPR)	2,982	27,555	-2982	-27,555	0	0
	Transfer back to base funding			[-2,982]	[-27,555]		
14	ARMY TACTICAL MSL SYS (ATACMS)—SYS SUM	240	340,612	-146	-209,842	94	130,770
	Transfer back to base funding			[-146]	[-209,842]		
15	LETHAL MINIATURE AERIAL MISSILE SYSTEM (LMAMS)	1,835	83,300	0		1,835	83,300
	MODIFICATIONS						
16	PATRIOT MODS	0	279,464	0	-279,464	0	0
	Transfer back to base funding			[0]	[-279,464]		
17	ATACMS MODS	0	85,320	0	-85,320	0	0
	Transfer back to base funding			[0]	[-85,320]		
18	GMLRS MOD	0	5,094	0	-5,094	0	0
	Transfer back to base funding			[0]	[-5,094]		
19	STINGER MODS	0	89,115	0	-81,615	0	7,500

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
20	Transfer back to base funding			[0]	[-81,615]		
	AVENGER MODS	0	14,107	0	-14,107	0	0
21	Transfer back to base funding			[0]	[-14,107]		
	ITAS/TOW MODS	0	3,469	0	-3,469	0	0
22	Transfer back to base funding			[0]	[-3,469]		
	MLRS MODS	0	387,019	0	-39,019	0	348,000
23	Transfer back to base funding			[0]	[-39,019]		
	HIMARS MODIFICATIONS	0	12,483	0	-12,483	0	0
	Transfer back to base funding			[0]	[-12,483]		
24	SPARES AND REPAIR PARTS						
	Transfer back to base funding	0	26,444	0	-26,444	0	0
	Transfer back to base funding			[0]	[-26,444]		
25	SUPPORT EQUIPMENT & FACILITIES						
	AIR DEFENSE TARGETS	0	10,593	0	-10,593	0	0
	Transfer back to base funding			[0]	[-10,593]		
	TOTAL MISSILE PROCUREMENT, ARMY	22,979	4,645,755	-14,383	-3,207,697	8,596	1,438,058
PROCUREMENT OF W&TCV, ARMY							
TRACKED COMBAT VEHICLES							
2	ARMORED MULTI PURPOSE VEHICLE (AMPV)	66	221,638	0		66	221,638
MODIFICATION OF TRACKED COMBAT VEHICLES							
3	STRYKER (MOD)	0	4,100	0		0	4,100
8	IMPROVED RECOVERY VEHICLE (M88A2 HERCULES)	16	80,146	0		16	80,146
13	M1 ABRAMS TANK (MOD)	0	13,100	0		0	13,100
WEAPONS & OTHER COMBAT VEHICLES							
15	M240 MEDIUM MACHINE GUN (7.62MM)	0	900	0		0	900

16	MULTI-ROLE ANTI-ARMOR ANTI-PERSONNEL WEAPON S	0	2,400	0	0	2,400
19	MORTAR SYSTEMS	0	18,941	0	0	18,941
20	XM320 GRENADE LAUNCHER MODULE (GLM)	0	526	0	0	526
23	CARBINE	0	1,183	0	0	1,183
25	COMMON REMOTELY OPERATED WEAPONS STATION	0	4,182	0	0	4,182
26	HANDGUN	0	248	0	0	248
	MOD OF WEAPONS AND OTHER COMBAT VEH					
31	M2 50 CAL MACHINE GUN MODS	0	6,090	0	0	6,090
	TOTAL PROCUREMENT OF W&TCV, ARMY	82	353,454	0	82	353,454
PROCUREMENT OF AMMUNITION, ARMY						
SMALL/MEDIUM CAL AMMUNITION						
1	CTG, 5.56MM, ALL TYPES	0	69,516	0	-68,949	567
	Transfer back to base funding			[0]	[-68,949]	
2	CTG, 7.62MM, ALL TYPES	0	114,268	0	-114,228	40
	Transfer back to base funding			[0]	[-114,228]	
3	CTG, HANDGUN, ALL TYPES	0	17,824	0	-17,807	17
	Transfer back to base funding			[0]	[-17,807]	
4	CTG, .50 CAL, ALL TYPES	0	64,155	0	-63,966	189
	Transfer back to base funding			[0]	[-63,966]	
5	CTG, 20MM, ALL TYPES	0	35,920	0	-35,920	0
	Transfer back to base funding			[0]	[-35,920]	
6	CTG, 25MM, ALL TYPES	0	8,990	0	-8,990	0
	Transfer back to base funding			[0]	[-8,990]	
7	CTG, 30MM, ALL TYPES	0	93,713	0	-68,813	24,900
	Transfer back to base funding			[0]	[-68,813]	
8	CTG, 40MM, ALL TYPES	0	103,952	0	-103,952	0
	Transfer back to base funding			[0]	[-103,952]	
	MORTAR AMMUNITION					
9	60MM MORTAR, ALL TYPES	0	50,580	0	-50,580	0
	Transfer back to base funding			[0]	[-50,580]	
10	81MM MORTAR, ALL TYPES	0	59,373	0	-59,373	0

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
11	Transfer back to base funding			[0]	[-59,373]		
	120MM MORTAR, ALL TYPES	0	125,452	0	-125,452	0	0
	Transfer back to base funding			[0]	[-125,452]		
	TANK AMMUNITION						
12	CARTRIDGES, TANK, 105MM AND 120MM, ALL TYPES	0	171,284	0	-171,284	0	0
	Transfer back to base funding			[0]	[-171,284]		
	ARTILLERY AMMUNITION						
13	ARTILLERY CARTRIDGES, 75MM & 105MM, ALL TYPES	0	44,675	0	-44,675	0	0
	Transfer back to base funding			[0]	[-44,675]		
14	ARTILLERY PROJECTILE, 155MM, ALL TYPES	0	266,037	0	-266,037	0	0
	Transfer back to base funding			[0]	[-266,037]		
15	PROJ 155MM EXTENDED RANGE M982	745	93,486	-441	-57,434	304	36,052
	Transfer back to base funding			[-441]	[-57,434]		
16	ARTILLERY PROPELLANTS, FUZES AND PRIMERS, ALL	0	278,873	0	-271,602	0	7,271
	Transfer back to base funding			[0]	[-271,602]		
	MINES						
17	MINES & CLEARING CHARGES, ALL TYPES	0	55,433	0	-55,433	0	0
	Transfer back to base funding			[0]	[-55,433]		
	ROCKETS						
18	SHOULDER LAUNCHED MUNITIONS, ALL TYPES	0	75,054	0	-74,878	0	176
	Transfer back to base funding			[0]	[-74,878]		
19	ROCKET, HYDRA 70, ALL TYPES	0	255,453	0	-175,994	0	79,459
	Transfer back to base funding			[0]	[-175,994]		
	OTHER AMMUNITION						
20	CAD/PAD, ALL TYPES	0	7,595	0	-7,595	0	0
	Transfer back to base funding			[0]	[-7,595]		

21	DEMOLITION MUNITIONS, ALL TYPES	0	51,651	0	-51,651	0	0	0
	Transfer back to base funding			[0]	[-51,651]			
22	GRENADES, ALL TYPES	0	40,592	0	-40,592	0	0	0
	Transfer back to base funding			[0]	[-40,592]			
23	SIGNALS, ALL TYPES	0	18,609	0	-18,609	0	0	0
	Transfer back to base funding			[0]	[-18,609]			
24	SIMULATORS, ALL TYPES	0	16,054	0	-16,054	0	0	0
	Transfer back to base funding			[0]	[-16,054]			
	MISCELLANEOUS							
25	AMMO COMPONENTS, ALL TYPES	0	5,261	0	-5,261	0	0	0
	Transfer back to base funding			[0]	[-5,261]			
26	NON-LETHAL AMMUNITION, ALL TYPES	0	715	0	-715	0	0	0
	Transfer back to base funding			[0]	[-715]			
27	ITEMS LESS THAN \$5 MILLION (AMMO)	0	9,224	0	-9,213	0	11	11
	Transfer back to base funding			[0]	[-9,213]			
28	AMMUNITION PECULIAR EQUIPMENT	0	10,044	0	-10,044	0	0	0
	Transfer back to base funding			[0]	[-10,044]			
29	FIRST DESTINATION TRANSPORTATION (AMMO)	0	18,492	0	-18,492	0	0	0
	Transfer back to base funding			[0]	[-18,492]			
30	CLOSEOUT LIABILITIES	0	99	0	-99	0	0	0
	Transfer back to base funding			[0]	[-99]			
	PRODUCTION BASE SUPPORT							
31	INDUSTRIAL FACILITIES	0	474,511	0	-474,511	0	0	0
	Transfer back to base funding			[0]	[-474,511]			
32	CONVENTIONAL MUNITIONS DEMILITARIZATION	0	202,512	0	-202,512	0	0	0
	Transfer back to base funding			[0]	[-202,512]			
33	ARMS INITIATIVE	0	3,833	0	-3,833	0	0	0
	Transfer back to base funding			[0]	[-3,833]			
	TOTAL PROCUREMENT OF AMMUNITION, ARMY	745	2,843,230	-441	-2,694,548	304	148,682	
	OTHER PROCUREMENT, ARMY							
	TACTICAL VEHICLES							

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
10	FAMILY OF HEAVY TACTICAL VEHICLES (FHTV)	0	26,917	0		0	26,917
11	PLS ESP	0	16,941	0		0	16,941
12	HVY EXPANDED MOBILE TACTICAL TRUCK EXT SERV	0	62,734	0		0	62,734
14	TACTICAL WHEELED VEHICLE PROTECTION KITS	0	50,000	0		0	50,000
15	MODIFICATION OF IN SVC EQUIP	0	28,000	0		0	28,000
	COMM—JOINT COMMUNICATIONS						
22	TACTICAL NETWORK TECHNOLOGY MOD IN SVC	0	40,000	0		0	40,000
	COMM—SATELLITE COMMUNICATIONS						
29	TRANSPORTABLE TACTICAL COMMAND COMMUNICATIONS	0	6,930	0		0	6,930
31	ASSURED POSITIONING, NAVIGATION AND TIMING	0	11,778	0		0	11,778
32	SMART-T (SPACE)	0	825	0		0	825
	COMM—COMBAT COMMUNICATIONS						
40	RADIO TERMINAL SET, MIDS LVT(2)	0	350	0		0	350
47	COTS COMMUNICATIONS EQUIPMENT	0	20,400	0		0	20,400
48	FAMILY OF MED COMM FOR COMBAT CASUALTY CARE	0	1,231	0		0	1,231
	COMM—INTELLIGENCE COMM						
51	CI AUTOMATION ARCHITECTURE (MIP)	0	6,200	0		0	6,200
	COMM—LONG HAUL COMMUNICATIONS						
59	BASE SUPPORT COMMUNICATIONS	0	20,482	0		0	20,482
	COMM—BASE COMMUNICATIONS						
60	INFORMATION SYSTEMS	0	55,800	0		0	55,800
63	INSTALLATION INFO INFRASTRUCTURE MOD PROGRAM	0	75,820	0		0	75,820
	ELECT EQUIP—TACT INT REL ACT (TIARA)						
68	DCGS-A (MIP)	0	38,613	0		0	38,613
70	TROJAN (MIP)	0	1,337	0		0	1,337
71	MOD OF IN-SVC EQUIP (INTEL SPT) (MIP)	0	2,051	0		0	2,051

75	BIOMETRIC TACTICAL COLLECTION DEVICES (MIP)	0	1,800	0	0	1,800
	ELECT EQUIP—ELECTRONIC WARFARE (EW)					
82	FAMILY OF PERSISTENT SURVEILLANCE CAP. (MIP)	0	71,493	0	0	71,493
83	COUNTERINTELLIGENCE/SECURITY COUNTERMEASURES	0	6,917	0	0	6,917
	ELECT EQUIP—TACTICAL SURV. (TAC SURV)					
85	SENTINEL MODS	0	20,000	0	0	20,000
86	NIGHT VISION DEVICES	0	3,676	0	0	3,676
94	JOINT BATTLE COMMAND—PLATFORM (JBC-P)	0	25,568	0	0	25,568
97	COMPUTER BALLISTICS: LHMCB XM32	0	570	0	0	570
98	MORTAR FIRE CONTROL SYSTEM	0	15,975	0	0	15,975
	ELECT EQUIP—TACTICAL C2 SYSTEMS					
103	AIR & MSL DEFENSE PLANNING & CONTROL SYS	0	14,331	0	0	14,331
	ELECT EQUIP—AUTOMATION					
112	ARMY TRAINING MODERNIZATION	0	6,014	0	0	6,014
113	AUTOMATED DATA PROCESSING EQUIP	0	32,700	0	0	32,700
	CLASSIFIED PROGRAMS					
	CLASSIFIED PROGRAMS	0	8,200	0	0	8,200
	Transfer back to base funding			[0]	[-8,200]	0
	CHEMICAL DEFENSIVE EQUIPMENT					
124	FAMILY OF NON-LETHAL EQUIPMENT (FNLE)	0	25,480	0	0	25,480
125	BASE DEFENSE SYSTEMS (BDS)	0	47,110	0	0	47,110
126	CBRN DEFENSE	0	18,711	0	0	18,711
	BRIDGING EQUIPMENT					
128	TACTICAL BRIDGING	0	4,884	0	0	4,884
	ENGINEER (NON-CONSTRUCTION) EQUIPMENT					
133	GRND STANDOFF MINE DETECTN SYSM (GSTAMIDS)	0	4,500	0	0	4,500
135	HUSKY MOUNTED DETECTION SYSTEM (HMDS)	0	34,253	0	0	34,253
136	ROBOTIC COMBAT SUPPORT SYSTEM (RCSS)	0	3,300	0	0	3,300
140	RENDER SAFE SETS KITS OUTFITS	0	84,000	0	0	84,000
	COMBAT SERVICE SUPPORT EQUIPMENT					
143	HEATERS AND ECU'S	0	8	0	0	8
145	PERSONNEL RECOVERY SUPPORT SYSTEM (PRSS)	0	5,101	0	0	5,101

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)							
Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
146	GROUND SOLDIER SYSTEM	0	1,760	0		0	1,760
148	FORCE PROVIDER	0	56,400	0		0	56,400
150	CARGO AERIAL DEL & PERSONNEL PARACHUTE SYSTEM	0	2,040	0		0	2,040
	PETROLEUM EQUIPMENT						
154	DISTRIBUTION SYSTEMS, PETROLEUM & WATER	0	13,986	0		0	13,986
	MEDICAL EQUIPMENT						
155	COMBAT SUPPORT MEDICAL	0	2,735	0		0	2,735
	CONSTRUCTION EQUIPMENT						
159	SCRAPERS, EARTHMOVING	0	4,669	0		0	4,669
160	LOADERS	0	380	0		0	380
162	TRACTOR, FULL TRACKED	0	8,225	0		0	8,225
164	HIGH MOBILITY ENGINEER EXCAVATOR (HME)	0	3,000	0		0	3,000
166	CONST EQUIP ESP	0	3,870	0		0	3,870
167	ITEMS LESS THAN \$5.0M (CONST EQUIP)	0	350	0		0	350
	GENERATORS						
171	GENERATORS AND ASSOCIATED EQUIP	0	2,436	0		0	2,436
	MATERIAL HANDLING EQUIPMENT						
173	FAMILY OF FORKLIFTS	0	5,152	0		0	5,152
	TRAINING EQUIPMENT						
175	TRAINING DEVICES, NONSYSTEM	0	2,106	0		0	2,106
	TEST MEASURE AND DIG EQUIPMENT (TMD)						
181	INTEGRATED FAMILY OF TEST EQUIPMENT (IFTE)	0	1,395	0		0	1,395
	OTHER SUPPORT EQUIPMENT						
184	RAPID EQUIPPING SOLDIER SUPPORT EQUIPMENT	0	24,122	0		0	24,122
185	PHYSICAL SECURITY SYSTEMS (OPA3)	0	10,016	0		0	10,016
187	MODIFICATION OF IN-SVC EQUIPMENT (OPA-3)	0	33,354	0		0	33,354

189	BUILDING, PRE-FAB, RELOCATABLE	0	62,654	0	0	62,654
	TOTAL OTHER PROCUREMENT, ARMY	0	1,139,650	0	-8,200	1,131,450
	AIRCRAFT PROCUREMENT, NAVY					
	OTHER AIRCRAFT					
26	STUASLO UAV	0	7,921	0	0	7,921
27	MQ-9A REAPER	3	77,000	0	3	77,000
	MODIFICATION OF AIRCRAFT					
36	EP-3 SERIES	0	5,488	0	0	5,488
46	SPECIAL PROJECT AIRCRAFT	0	3,498	0	0	3,498
51	COMMON ECM EQUIPMENT	0	3,406	0	0	3,406
53	COMMON DEFENSIVE WEAPON SYSTEM	0	3,274	0	0	3,274
62	QRC	0	18,458	0	0	18,458
	TOTAL AIRCRAFT PROCUREMENT, NAVY	3	119,045	0	0	119,045
	WEAPONS PROCUREMENT, NAVY					
	MODIFICATION OF MISSILES					
1	TRIDENT II MODS	0	1,177,251	0	-1,177,251	0
	Transfer back to base funding			[0]	[-1,177,251]	
	SUPPORT EQUIPMENT & FACILITIES					
2	MISSILE INDUSTRIAL FACILITIES	0	7,142	0	-7,142	0
	Transfer back to base funding			[0]	[-7,142]	
	STRATEGIC MISSILES					
3	TOMAHAWK	90	386,730	-90	-386,730	0
	Transfer back to base funding			[-90]	[-386,730]	
	TACTICAL MISSILES					
4	AMRAAM	169	224,502	-169	-224,502	0
	Transfer back to base funding			[-169]	[-224,502]	
5	SEDEWINDER	292	119,456	-292	-119,456	0
	Transfer back to base funding			[-292]	[-119,456]	
7	STANDARD MISSILE	125	404,523	-125	-404,523	0
	Transfer back to base funding			[-125]	[-404,523]	

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
8	STANDARD MISSILE AP	0	96,085	0	-96,085	0	0
	Transfer back to base funding			[0]	[-96,085]		
9	SMALL DIAMETER BOMB II	750	118,466	-750	-118,466	0	0
	Transfer back to base funding			[-750]	[-118,466]		
10	RAM	120	106,765	-120	-106,765	0	0
	Transfer back to base funding			[-120]	[-106,765]		
11	JOINT AIR GROUND MISSILE (JAGM)	382	90,966	0		382	90,966
12	HELLFIRE	29	1,525	-29	-1,525	0	0
	Transfer back to base funding			[-29]	[-1,525]		
15	AERIAL TARGETS	0	152,380	0	-145,880	0	6,500
	Transfer back to base funding			[0]	[-145,880]		
16	DRONES AND DECOYS	30	20,000	-30	-20,000	0	0
	Transfer back to base funding			[-30]	[-20,000]		
17	OTHER MISSILE SUPPORT	0	3,388	0	-3,388	0	0
	Transfer back to base funding			[0]	[-3,388]		
18	LRASM	48	143,200	-48	-143,200	0	0
	Transfer back to base funding			[-48]	[-143,200]		
19	LCS OTH MISSILE	18	38,137	-18	-38,137	0	0
	Transfer back to base funding			[-18]	[-38,137]		
MODIFICATION OF MISSILES							
20	ESSM	60	128,059	-60	-128,059	0	0
	Transfer back to base funding			[-60]	[-128,059]		
21	HARPOON MODS	0	25,447	0	-25,447	0	0
	Transfer back to base funding			[0]	[-25,447]		
22	HARM MODS	0	183,740	0	-183,740	0	0
	Transfer back to base funding			[0]	[-183,740]		

23	STANDARD MISSILES MODS	0	22,500	0	-22,500	0	0
	Transfer back to base funding			[0]	[-22,500]		
	SUPPORT EQUIPMENT & FACILITIES						
24	WEAPONS INDUSTRIAL FACILITIES	0	1,958	0	-1,958	0	0
	Transfer back to base funding			[0]	[-1,958]		
25	FLEET SATELLITE COMM FOLLOW-ON	0	67,380	0	-67,380	0	0
	Transfer back to base funding			[0]	[-67,380]		
	ORDNANCE SUPPORT EQUIPMENT						
27	ORDNANCE SUPPORT EQUIPMENT	0	109,427	0	-109,427	0	0
	Transfer back to base funding			[0]	[-109,427]		
	TORPEDOES AND RELATED EQUIP						
28	SSTD	0	5,561	0	-5,561	0	0
	Transfer back to base funding			[0]	[-5,561]		
29	MK-48 TORPEDO	58	114,000	-58	-114,000	0	0
	Transfer back to base funding			[-58]	[-114,000]		
30	ASW TARGETS	0	15,095	0	-15,095	0	0
	Transfer back to base funding			[0]	[-15,095]		
	MOD OF TORPEDOES AND RELATED EQUIP						
31	MK-54 TORPEDO MODS	0	119,453	0	-119,453	0	0
	Transfer back to base funding			[0]	[-119,453]		
32	MK-48 TORPEDO ADCAP MODS	0	39,508	0	-39,508	0	0
	Transfer back to base funding			[0]	[-39,508]		
33	QUICKSTRIKE MINE	0	5,183	0	-5,183	0	0
	Transfer back to base funding			[0]	[-5,183]		
	SUPPORT EQUIPMENT						
34	TORPEDO SUPPORT EQUIPMENT	0	79,028	0	-79,028	0	0
	Transfer back to base funding			[0]	[-79,028]		
35	ASW RANGE SUPPORT	0	3,890	0	-3,890	0	0
	Transfer back to base funding			[0]	[-3,890]		
	DESTINATION TRANSPORTATION						
36	FIRST DESTINATION TRANSPORTATION	0	3,803	0	-3,803	0	0
	Transfer back to base funding			[0]	[-3,803]		

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(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
GUNS AND GUN MOUNTS							
37	SMALL ARMS AND WEAPONS	0	14,797	0	-14,797	0	0
	Transfer back to base funding			[0]	[-14,797]		
MODIFICATION OF GUNS AND GUN MOUNTS							
38	CIWS MODS	0	44,126	0	-44,126	0	0
	Transfer back to base funding			[0]	[-44,126]		
39	COAST GUARD WEAPONS	0	44,980	0	-44,980	0	0
	Transfer back to base funding			[0]	[-44,980]		
40	GUN MOUNT MODS	0	66,376	0	-66,376	0	0
	Transfer back to base funding			[0]	[-66,376]		
41	LCS MODULE WEAPONS	120	14,585	-120	-14,585	0	0
	Transfer back to base funding			[-120]	[-14,585]		
43	AIRBORNE MINE NEUTRALIZATION SYSTEMS	0	7,160	0	-7,160	0	0
	Transfer back to base funding			[0]	[-7,160]		
SPARES AND REPAIR PARTS							
45	SPARES AND REPAIR PARTS	0	126,138	0	-126,138	0	0
	Transfer back to base funding			[0]	[-126,138]		
	TOTAL WEAPONS PROCUREMENT, NAVY	2,291	4,332,710	-1,909	-4,235,244	382	97,466
PROCUREMENT OF AMMO, NAVY & MC							
NAVY AMMUNITION							
1	GENERAL PURPOSE BOMBS	0	63,006	0	-36,028	0	26,978
	Transfer back to base funding			[0]	[-36,028]		
2	JDAM	3,388	82,676	-2844	-70,413	544	12,263
	Transfer back to base funding			[-2,844]	[-70,413]		
3	AIRBORNE ROCKETS, ALL TYPES	0	76,776	0	-31,756	0	45,020

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Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
20	AMMO MODERNIZATION	0	14,325	0	-14,325	0	0
	Transfer back to base funding			[0]	[-14,325]		
21	ARTILLERY MUNITIONS	0	220,923	0	-188,876	0	32,047
	Transfer back to base funding			[0]	[-188,876]		
22	ITEMS LESS THAN \$5 MILLION	0	4,521	0	-4,521	0	0
	Transfer back to base funding			[0]	[-4,521]		
	TOTAL PROCUREMENT OF AMMO, NAVY & MC	3,388	1,186,128	-2,844	-981,314	544	204,814
	OTHER PROCUREMENT, NAVY						
	OTHER SHIPBOARD EQUIPMENT						
20	UNDERWATER EOD PROGRAMS	0	5,800	0		0	5,800
	ASW ELECTRONIC EQUIPMENT						
42	FIXED SURVEILLANCE SYSTEM	0	310,503	0		0	310,503
	SONOBUOYS						
85	SONOBUOYS—ALL TYPES	0	2,910	0		0	2,910
	AIRCRAFT SUPPORT EQUIPMENT						
88	AIRCRAFT SUPPORT EQUIPMENT	0	13,420	0		0	13,420
94	AVIATION SUPPORT EQUIPMENT	0	500	0		0	500
	OTHER ORDNANCE SUPPORT EQUIPMENT						
103	EXPLOSIVE ORDNANCE DISPOSAL EQUIP	0	15,307	0		0	15,307
	CIVIL ENGINEERING SUPPORT EQUIPMENT						
108	PASSENGER CARRYING VEHICLES	0	173	0		0	173
109	GENERAL PURPOSE TRUCKS	0	408	0		0	408
111	FIRE FIGHTING EQUIPMENT	0	785	0		0	785
	SUPPLY SUPPORT EQUIPMENT						
117	SUPPLY EQUIPMENT	0	100	0		0	100

118	FIRST DESTINATION TRANSPORTATION	0	510	0	0	510
	COMMAND SUPPORT EQUIPMENT					
122	COMMAND SUPPORT EQUIPMENT	0	2,800	0	0	2,800
123	MEDICAL SUPPORT EQUIPMENT	0	1,794	0	0	1,794
126	OPERATING FORCES SUPPORT EQUIPMENT	0	1,090	0	0	1,090
128	ENVIRONMENTAL SUPPORT EQUIPMENT	0	200	0	0	200
129	PHYSICAL SECURITY EQUIPMENT	0	1,300	0	0	1,300
	TOTAL OTHER PROCUREMENT, NAVY	0	357,600	0	0	357,600
	PROCUREMENT, MARINE CORPS					
	GUIDED MISSILES					
12	GUIDED MLRS ROCKET (GMLRS)	130	16,919	0	130	16,919
	ENGINEER AND OTHER EQUIPMENT					
45	EOD SYSTEMS	0	3,670	0	0	3,670
	TOTAL PROCUREMENT, MARINE CORPS	130	20,589	0	0	20,589
	AIRCRAFT PROCUREMENT, AIR FORCE					
	OTHER AIRCRAFT					
17	MQ-9	9	172,240	0	9	172,240
18	RQ-208 PUMA	18	12,150	0	18	12,150
	STRATEGIC AIRCRAFT					
22	LARGE AIRCRAFT INFRARED COUNTERMEASURES	0	53,335	0	0	53,335
	OTHER AIRCRAFT					
67	MQ-9 UAS PAYLOADS	0	19,800	0	0	19,800
	AIRCRAFT SPARES AND REPAIR PARTS					
69	INITIAL SPARES/REPAIR PARTS	0	44,560	0	0	44,560
	COMMON SUPPORT EQUIPMENT					
72	AIRCRAFT REPLACEMENT SUPPORT EQUIP	0	7,025	0	0	7,025
	TOTAL AIRCRAFT PROCUREMENT, AIR FORCE	27	309,110	0	0	309,110
	MISSILE PROCUREMENT, AIR FORCE TACTICAL					

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
4	JOINT AIR-SURFACE STANDOFF MISSILE	19	20,900	0		19	20,900
8	PREDATOR HELLFIRE MISSILE	2,328	180,771	0		2,328	180,771
	TOTAL MISSILE PROCUREMENT, AIR FORCE	2,347	201,671	0	0	2,347	201,671
	PROCUREMENT OF AMMUNITION, AIR FORCE						
	ROCKETS						
1	ROCKETS	0	218,228	0	-133,268	0	84,960
	Transfer back to base funding			[0]	[-133,268]		
	CARTRIDGES						
2	CARTRIDGES	0	193,091	0	-140,449	0	52,642
	Transfer back to base funding			[0]	[-140,449]		
	BOMBS						
3	PRACTICE BOMBS	0	29,313	0	-29,313	0	0
	Transfer back to base funding			[0]	[-29,313]		
4	GENERAL PURPOSE BOMBS	0	631,194	0	-85,885	0	545,309
	Transfer back to base funding			[0]	[-85,885]		
6	JOINT DIRECT ATTACK MUNITION	37,000	1,066,224	-37,000	-1,066,224	0	0
	Transfer back to base funding			[-37,000]	[-1,066,224]		
7	B61	533	80,773	-533	-80,773	0	0
	Transfer back to base funding			[-533]	[-80,773]		
	OTHER ITEMS						
9	CAD/PAD	0	47,069	0	-47,069	0	0
	Transfer back to base funding			[0]	[-47,069]		
10	EXPLOSIVE ORDNANCE DISPOSAL (EOD)	0	6,133	0	-6,133	0	0
	Transfer back to base funding			[0]	[-6,133]		
11	SPARES AND REPAIR PARTS	0	533	0	-533	0	0

12	MODIFICATIONS	0	1,291	[0]	[-533]	0	0
	Transfer back to base funding				-1,291		
13	ITEMS LESS THAN \$5,000,000	0	1,677	[0]	[-1,291]	0	0
	Transfer back to base funding				-1,677		
	FLARES			[0]	[-1,677]		
15	FLARES	0	129,388	0	-36,116	0	93,272
	Transfer back to base funding			[0]	[-36,116]		
	FUZES						
16	FUZES	0	158,889	0	-1,734	0	157,155
	Transfer back to base funding			[0]	[-1,734]		
	SMALL ARMS						
17	SMALL ARMS	0	43,591	0	-37,496	0	6,095
	Transfer back to base funding			[0]	[-37,496]		
	TOTAL PROCUREMENT OF AMMUNITION, AIR FORCE	37,533	2,607,394	-37,533	-1,667,961	0	939,433
	OTHER PROCUREMENT, AIR FORCE						
	PASSENGER CARRYING VEHICLES						
1	PASSENGER CARRYING VEHICLES	0	1,276	0		0	1,276
	CARGO AND UTILITY VEHICLES						
4	CARGO AND UTILITY VEHICLES	0	9,702	0		0	9,702
	SPECIAL PURPOSE VEHICLES						
5	JOINT LIGHT TACTICAL VEHICLE	0	40,999	0		0	40,999
7	SPECIAL PURPOSE VEHICLES	0	52,502	0		0	52,502
	FIRE FIGHTING EQUIPMENT						
8	FIRE FIGHTING/CRASH RESCUE VEHICLES	0	16,652	0		0	16,652
	MATERIALS HANDLING EQUIPMENT						
9	MATERIALS HANDLING VEHICLES	0	2,944	0		0	2,944
	BASE MAINTENANCE SUPPORT						
10	RUNWAY SNOW REMOV AND CLEANING EQU	0	3,753	0		0	3,753
11	BASE MAINTENANCE SUPPORT VEHICLES	0	11,837	0		0	11,837
	SPCL COMM-ELECTRONICS PROJECTS						

SEC. 4102. PROCUREMENT FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request		Senate Change		Senate Authorized	
		Qty	Cost	Qty	Cost	Qty	Cost
27	GENERAL INFORMATION TECHNOLOGY	0	5,000	0		0	5,000
31	AIR FORCE PHYSICAL SECURITY SYSTEM	0	106,919	0		0	106,919
	ORGANIZATION AND BASE						
48	TACTICAL C-E EQUIPMENT	0	306	0		0	306
52	BASE COMM INFRASTRUCTURE	0	4,300	0		0	4,300
	PERSONAL SAFETY & RESCUE EQUIP						
54	PERSONAL SAFETY AND RESCUE EQUIPMENT	0	22,200	0		0	22,200
	BASE SUPPORT EQUIPMENT						
59	MOBILITY EQUIPMENT	0	26,535	0		0	26,535
60	FUELS SUPPORT EQUIPMENT (FSE)	0	4,040	0		0	4,040
61	BASE MAINTENANCE AND SUPPORT EQUIPMENT	0	20,067	0		0	20,067
	CLASSIFIED PROGRAMS						
	CLASSIFIED PROGRAMS	0	3,864,066	0	-655,000	0	3,209,066
	Transfer back to base funding			[0]	[-655,000]		
	TOTAL OTHER PROCUREMENT, AIR FORCE	0	4,193,098	0	-655,000	0	3,538,098
	PROCUREMENT, DEFENSE-WIDE						
	MAJOR EQUIPMENT, DISA						
9	TELEPORT PROGRAM	0	3,800	0		0	3,800
12	DEFENSE INFORMATION SYSTEM NETWORK	0	12,000	0		0	12,000
	MAJOR EQUIPMENT, DEFENSE THREAT REDUCTION AGENCY						
27	COUNTER IED & IMPROVISED THREAT TECHNOLOGIES	0	4,590	0		0	4,590
	CLASSIFIED PROGRAMS						
	CLASSIFIED PROGRAMS	0	56,380	0	-5,000	0	51,380
	Transfer back to base funding			[0]	[-5,000]		
	AVIATION PROGRAMS						

50	MANNED ISR	0	5,000	0	0	0	5,000
51	MC-12	0	5,000	0	0	0	5,000
52	MH-60 BLACKHAWK	0	28,100	0	0	0	28,100
54	UNMANNED ISR	0	8,207	0	0	0	8,207
56	U-28	0	31,500	0	0	0	31,500
57	MH-47 CHINOOK	0	37,500	0	0	0	37,500
59	MQ-9 UNMANNED AERIAL VEHICLE	0	1,900	0	0	0	1,900
	AMMUNITION PROGRAMS						
64	ORDNANCE ITEMS <\$5M	0	138,252	0	0	0	138,252
	OTHER PROCUREMENT PROGRAMS						
65	INTELLIGENCE SYSTEMS	0	16,500	0	0	0	16,500
67	OTHER ITEMS <\$5M	0	28	0	0	0	28
70	TACTICAL VEHICLES	0	2,990	0	0	0	2,990
71	WARRIOR SYSTEMS <\$5M	0	37,512	0	0	0	37,512
72	COMBAT MISSION REQUIREMENTS	0	10,000	0	0	0	10,000
74	OPERATIONAL ENHANCEMENTS INTELLIGENCE	0	7,594	0	0	0	7,594
75	OPERATIONAL ENHANCEMENTS	0	45,194	0	0	0	45,194
	TOTAL PROCUREMENT, DEFENSE-WIDE	0	452,047	0	-5,000	0	447,047
	TOTAL PROCUREMENT	69,543	23,143,022	-57,110	-13,454,964	12,433	9,688,058

**TITLE XLII—RESEARCH, DEVELOPMENT, TEST,
AND EVALUATION**

TITLE XLII—RESEARCH, DEVELOPMENT, TEST, AND
EVALUATION

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION.

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION (In Thousands of Dollars)					
Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY					
BASIC RESEARCH					
2	0601102A	DEFENSE RESEARCH SCIENCES	297,976	5,000	302,976
		Counter UAS University Research		[5,000]	
3	0601103A	UNIVERSITY RESEARCH INITIATIVES	65,858		65,858
4	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	86,164	2,000	88,164
		3D printing		[2,000]	
5	0601121A	CYBER COLLABORATIVE RESEARCH ALLIANCE	4,982	5,000	9,982
		Cyber basic research		[5,000]	
		SUBTOTAL BASIC RESEARCH	454,980	12,000	466,980
APPLIED RESEARCH					
10	0602141A	LETHALITY TECHNOLOGY	26,961		26,961
11	0602142A	ARMY APPLIED RESEARCH	25,319		25,319
12	0602143A	SOLDIER LETHALITY TECHNOLOGY	115,274	3,000	118,274
		UPL MDTF for INDOPACOM		[3,000]	
13	0602144A	GROUND TECHNOLOGY	35,199	6,500	41,699
		Advanced materials manufacturing process		[2,000]	
		Biopolymer structural materials		[2,000]	

14	0602145A	Cellulose structural materials	219,047	[2,500]	234,047
		NEXT GENERATION COMBAT VEHICLE TECHNOLOGY		15,000	
		Support operational energy development and testing		[15,000]	
15	0602146A	NETWORK C3I TECHNOLOGY	114,516		114,516
16	0602147A	LONG RANGE PRECISION FIRES TECHNOLOGY	74,327	12,000	86,327
		Composite tube and propulsion technology		[10,000]	
		Novel printed armament components		[2,000]	
17	0602148A	FUTURE VEHICLE LIFT TECHNOLOGY	93,601		93,601
18	0602150A	AIR AND MISSILE DEFENSE TECHNOLOGY	50,771		50,771
20	0602213A	C3I APPLIED CYBER	18,947	5,000	23,947
		Cyber research		[5,000]	
38	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	20,873		20,873
40	0602787A	MEDICAL TECHNOLOGY	99,155	3,000	102,155
		Female warfighter performance research		[3,000]	
		SUBTOTAL APPLIED RESEARCH	893,990	44,500	938,490
ADVANCED TECHNOLOGY DEVELOPMENT					
42	0603002A	MEDICAL ADVANCED TECHNOLOGY	42,030		42,030
47	0603007A	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOLOGY	11,038		11,038
50	0603117A	ARMY ADVANCED TECHNOLOGY DEVELOPMENT	63,338		63,338
51	0603118A	SOLDIER LETHALITY ADVANCED TECHNOLOGY	118,468		118,468
52	0603119A	GROUND ADVANCED TECHNOLOGY	12,593	20,000	32,593
		100 hour battery		[10,000]	
		Computational manufacturing engineering		[2,000]	
		Lightweight protective and hardening materials		[3,000]	
		Robotic construction research		[5,000]	
59	0603457A	C3I CYBER ADVANCED DEVELOPMENT	13,769		13,769
60	0603461A	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM	184,755		184,755
61	0603462A	NEXT GENERATION COMBAT VEHICLE ADVANCED TECHNOLOGY	160,035	25,000	185,035
		Ground vehicle sustainment research		[5,000]	
		Hydrogen fuel cell propulsion & autonomous driving controls		[20,000]	
62	0603463A	NETWORK C3I ADVANCED TECHNOLOGY	106,899		106,899

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
(In Thousands of Dollars)

Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
63	0603464A	LONG RANGE PRECISION FIRES ADVANCED TECHNOLOGY	174,386	4,000	178,386
		Hypersonics research		[4,000]	
64	0603465A	FUTURE VERTICAL LIFT ADVANCED TECHNOLOGY	151,640		151,640
65	0603466A	AIR AND MISSILE DEFENSE ADVANCED TECHNOLOGY	60,613		60,613
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	1,099,564	49,000	1,148,564
ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES					
73	0603305A	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	10,987		10,987
74	0603327A	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING	15,148		15,148
75	0603619A	LANDMINE WARFARE AND BARRIER—ADV DEV	92,915		92,915
77	0603639A	TANK AND MEDIUM CALIBER AMMUNITION	82,146		82,146
78	0603645A	ARMORED SYSTEM MODERNIZATION—ADV DEV	157,656		157,656
79	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	6,514		6,514
80	0603766A	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM—ADV DEV	34,890		34,890
81	0603774A	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	251,011		251,011
82	0603779A	ENVIRONMENTAL QUALITY TECHNOLOGY—DE/MVAL	15,132		15,132
83	0603790A	NATO RESEARCH AND DEVELOPMENT	5,406		5,406
84	0603801A	AVIATION—ADV DEV	459,290	75,600	534,890
		UPL FVL CS3 program increase		[75,600]	
85	0603804A	LOGISTICS AND ENGINEER EQUIPMENT—ADV DEV	6,254		6,254
86	0603807A	MEDICAL SYSTEMS—ADV DEV	31,175		31,175
87	0603827A	SOLDIER SYSTEMS—ADVANCED DEVELOPMENT	22,113		22,113
88	0604017A	ROBOTICS DEVELOPMENT	115,222		115,222
90	0604021A	ELECTRONIC WARFARE TECHNOLOGY MATURATION (MIP)	18,043		18,043
91	0604100A	ANALYSIS OF ALTERNATIVES	10,023		10,023
92	0604113A	FUTURE TACTICAL UNMANNED AIRCRAFT SYSTEM (FTUAS)	40,745		40,745
93	0604114A	LOWER TIER AIR MISSILE DEFENSE (LTAMD) SENSOR	427,772		427,772

94	0604115A	TECHNOLOGY MATURATION INITIATIVES	196,676	196,676
95	0604117A	MANEUVER—SHORT RANGE AIR DEFENSE (M-SHORAD)	33,100	33,100
97	0604119A	ARMY ADVANCED COMPONENT DEVELOPMENT & PROTOTYPING	115,116	115,116
99	0604121A	SYNTHETIC TRAINING ENVIRONMENT REFINEMENT & PROTOTYPING	136,761	136,761
100	0604182A	HYPERSONICS	130,610	358,610
		UPL accelerate Hypersonic Weapons System	[130,610]	
102	0604403A	FUTURE INTERCEPTOR	8,000	8,000
103	0604541A	UNIFIED NETWORK TRANSPORT	39,600	39,600
104	0604644A	MOBILE MEDIUM RANGE MISSILE	20,000	20,000
106	0305251A	CYBERSPACE OPERATIONS FORCES AND FORCE SUPPORT	52,102	52,102
107	1206120A	ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	192,562	192,562
108	1206308A	ARMY SPACE SYSTEMS INTEGRATION	104,996	104,996
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	206,210	3,135,565
SYSTEM DEVELOPMENT & DEMONSTRATION				
109	0604201A	AIRCRAFT AVIONICS	29,164	29,164
110	0604270A	ELECTRONIC WARFARE DEVELOPMENT	70,539	70,539
113	0604601A	INFANTRY SUPPORT WEAPONS	106,121	126,021
		UPL Next Generation Squad Weapon—Automatic Rifle	19,900	
		MEDIUM TACTICAL VEHICLES	[19,900]	
114	0604604A	JAVELIN	2,152	2,152
115	0604611A	FAMILY OF HEAVY TACTICAL VEHICLES	17,897	17,897
116	0604622A	AIR TRAFFIC CONTROL	16,745	16,745
117	0604633A	LIGHT TACTICAL WHEELED VEHICLES	6,989	6,989
118	0604642A	ARMORED SYSTEMS MODERNIZATION (ASM)—ENG DEV	10,465	10,465
119	0604645A	NIGHT VISION SYSTEMS—ENG DEV	310,152	310,152
120	0604710A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	181,732	181,732
121	0604713A	NON-SYSTEM TRAINING DEVICES—ENG DEV	2,393	2,393
122	0604715A	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE—ENG DEV	27,412	27,412
123	0604741A	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT	43,502	43,502
124	0604742A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	11,636	11,636
125	0604746A	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS)—ENG DEV	10,915	10,915
126	0604760A		7,801	7,801

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
(In Thousands of Dollars)

Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
127	0604768A	BRILLIANT ANTI-ARMOR SUBMUNITION (BAT)	25,000		25,000
128	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT) CORE	9,241		9,241
129	0604798A	BRIGADE ANALYSIS, INTEGRATION AND EVALUATION	42,634		42,634
130	0604802A	WEAPONS AND MUNITIONS—ENG DEV	181,023		181,023
131	0604804A	LOGISTICS AND ENGINEER EQUIPMENT—ENG DEV	103,226		103,226
132	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS—ENG DEV	12,595		12,595
133	0604807A	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIPMENT—ENG DEV	48,264		48,264
134	0604808A	LANDMINE WARFARE/BARRIER—ENG DEV	39,208		39,208
135	0604818A	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFTWARE	140,637		140,637
136	0604820A	RADAR DEVELOPMENT	105,243		105,243
137	0604822A	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEBS)	46,683		46,683
138	0604823A	FIREFINDER	17,294		17,294
139	0604827A	SOLDIER SYSTEMS—WARRIOR DEM/VAL	5,803		5,803
140	0604852A	SUITE OF SURVIVABILITY ENHANCEMENT SYSTEMS—EMD	98,698		98,698
141	0604854A	ARTILLERY SYSTEMS—EMD	15,832		15,832
142	0605013A	INFORMATION TECHNOLOGY DEVELOPMENT	126,537		126,537
143	0605018A	INTEGRATED PERSONNEL AND PAY SYSTEM-ARMY (PPS-A)	142,773	-142,773	
		Poor business process reengineering		[-142,773]	
144	0605028A	ARMORED MULTI-PURPOSE VEHICLE (AMPV)	96,730		96,730
145	0605029A	INTEGRATED GROUND SECURITY SURVEILLANCE RESPONSE CAPABILITY (IGSSR-C)	6,699		6,699
146	0605030A	JOINT TACTICAL NETWORK CENTER (JTNC)	15,882		15,882
147	0605031A	JOINT TACTICAL NETWORK (JTN)	40,808		40,808
149	0605033A	GROUND-BASED OPERATIONAL SURVEILLANCE SYSTEM—EXPEDITIONARY (GBOSS-E)	3,847		3,847
150	0605034A	TACTICAL SECURITY SYSTEM (TSS)	6,928		6,928
151	0605035A	COMMON INFRARED COUNTERMEASURES (CIRCM)	34,488		34,488
152	0605036A	COMBATING WEAPONS OF MASS DESTRUCTION (CWMD)	10,000		10,000
154	0605038A	NUCLEAR BIOLOGICAL CHEMICAL RECONNAISSANCE VEHICLE (NBCRV) SENSOR SUITE	6,054		6,054

155	0605041A	DEFENSIVE CYBER TOOL DEVELOPMENT	62,262		62,262
156	0605042A	TACTICAL NETWORK RADIO SYSTEMS (LOW-TIER)	35,654		35,654
157	0605047A	CONTRACT WRITING SYSTEM	19,682	-19,682	
		Program duplication		[-19,682]	
158	0605049A	MISSILE WARNING SYSTEM MODERNIZATION (MWSM)	1,539		1,539
159	0605051A	AIRCRAFT SURVIVABILITY DEVELOPMENT	64,557		64,557
160	0605052A	INDIRECT FIRE PROTECTION CAPABILITY INC 2—BLOCK 1	243,228	-93,600	149,628
		EMAM development ahead of need		[-124,200]	
		Iron Dome testing and delivery		[20,600]	
		UPL Multi-Domain Artillery		[10,000]	
161	0605053A	GROUND ROBOTICS	41,308	-12,800	28,508
		Army requested realignment		[-12,800]	
162	0605054A	EMERGING TECHNOLOGY INITIATIVES	45,896		45,896
163	0605203A	ARMY SYSTEM DEVELOPMENT & DEMONSTRATION	164,883		164,883
165	0605450A	JOINT AIR-TO-GROUND MISSILE (JAGM)	9,500		9,500
166	0605457A	ARMY INTEGRATED AIR AND MISSILE DEFENSE (AIAMD)	208,938		208,938
167	0605625A	MANNED GROUND VEHICLE	378,400	40,000	418,400
		UPL NGCV 50mm gun		[40,000]	
168	0605766A	NATIONAL CAPABILITIES INTEGRATION (MIP)	7,835		7,835
169	0605812A	JOINT LIGHT TACTICAL VEHICLE (JLV) ENGINEERING AND MANUFACTURING DEVELOPMENT PH ..	2,732	4,500	7,232
		Army requested realignment		[4,500]	
170	0605830A	AVIATION GROUND SUPPORT EQUIPMENT	1,664		1,664
172	0303032A	TROJAN—RH12	3,936		3,936
174	0304270A	ELECTRONIC WARFARE DEVELOPMENT	19,675		19,675
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	3,549,431	-204,455	3,344,976
		RD&E MANAGEMENT SUPPORT			
176	0604256A	THREAT SIMULATOR DEVELOPMENT	14,117	2,000	16,117
		Cybersecurity threat simulation		[2,000]	
177	0604258A	TARGET SYSTEMS DEVELOPMENT	8,327		8,327
178	0604759A	MAJOR T&E INVESTMENT	136,565		136,565
179	0605103A	RAND ARROYO CENTER	13,113		13,113

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(In Thousands of Dollars)

Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
180	0605301A	ARMY KWAJALEIN ATOLL	238,691		238,691
181	0605326A	CONCEPTS EXPERIMENTATION PROGRAM	42,922		42,922
183	0605601A	ARMY TEST RANGES AND FACILITIES	334,468	15,000	349,468
		Directed energy test capabilities		[15,000]	
184	0605602A	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	46,974		46,974
185	0605604A	SURVIVABILITY/LETHALITY ANALYSIS	35,075		35,075
186	0605606A	AIRCRAFT CERTIFICATION	3,461		3,461
187	0605702A	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	6,233		6,233
188	0605706A	MATERIEL SYSTEMS ANALYSIS	21,342		21,342
189	0605709A	EXPLOITATION OF FOREIGN ITEMS	11,168		11,168
190	0605712A	SUPPORT OF OPERATIONAL TESTING	52,723		52,723
191	0605716A	ARMY EVALUATION CENTER	60,815		60,815
192	0605718A	ARMY MODELING & SIM X-CMD COLLABORATION & INTEG	2,527		2,527
193	0605801A	PROGRAMWIDE ACTIVITIES	58,175		58,175
194	0605803A	TECHNICAL INFORMATION ACTIVITIES	25,060		25,060
195	0605805A	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFETY	44,458		44,458
196	0605857A	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	4,681		4,681
197	0605898A	ARMY DIRECT REPORT HEADQUARTERS—R&D - MHA	53,820		53,820
198	0606001A	MILITARY GROUND-BASED CREW TECHNOLOGY	4,291		4,291
199	0606002A	RONALD REAGAN BALLISTIC MISSILE DEFENSE TEST SITE	62,069		62,069
200	0606003A	COUNTERINTEL AND HUMAN INTEL MODERNIZATION	1,050		1,050
201	0606942A	ASSESSMENTS AND EVALUATIONS CYBER VULNERABILITIES	4,500		4,500
		SUBTOTAL RDT&E MANAGEMENT SUPPORT	1,286,625	17,000	1,303,625
		OPERATIONAL SYSTEMS DEVELOPMENT			
204	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	22,877		22,877
206	0605024A	ANTI-TAMPER TECHNOLOGY SUPPORT	8,491		8,491

207	0607131A	WEAPONS AND MUNITIONS PRODUCT IMPROVEMENT PROGRAMS	15,645
209	0607134A	LONG RANGE PRECISION FIRES (LRPF)	164,182
211	0607136A	BLACKHAWK PRODUCT IMPROVEMENT PROGRAM	13,039
212	0607137A	CHINOOK PRODUCT IMPROVEMENT PROGRAM	174,371
213	0607138A	FIXED WING PRODUCT IMPROVEMENT PROGRAM	4,545
214	0607139A	IMPROVED TURBINE ENGINE PROGRAM	206,434
216	0607142A	AVIATION ROCKET SYSTEM PRODUCT IMPROVEMENT AND DEVELOPMENT	24,221
217	0607143A	UNMANNED AIRCRAFT SYSTEM UNIVERSAL PRODUCTS	32,016
218	0607145A	APACHE FUTURE DEVELOPMENT	5,448
219	0607142A	ARMY OPERATIONAL SYSTEMS DEVELOPMENT	49,526
220	0607665A	FAMILY OF BIOMETRICS	1,702
221	0607865A	PATRIOT PRODUCT IMPROVEMENT	96,430
222	0203728A	JOINT AUTOMATED DEEP OPERATION COORDINATION SYSTEM (JADOCs)	47,398
223	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	334,463
225	0203743A	155MM SELF-PROPELLED HOWITZER IMPROVEMENTS	214,246
226	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROGRAMS	16,486
227	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	144
228	0203758A	DIGITIZATION	5,270
229	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	1,287
230	0203802A	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	0
		UPL CD ATACMS	24,100
			[24,100]
234	0205412A	ENVIRONMENTAL QUALITY TECHNOLOGY—OPERATIONAL SYSTEM DEV	732
235	0205456A	LOWER TIER AIR AND MISSILE DEFENSE (AMD) SYSTEM	107,746
236	0205778A	GUIDED MULTIPLE-LAUNCH ROCKET SYSTEM (GMLRS)	138,594
238	0303028A	SECURITY AND INTELLIGENCE ACTIVITIES	13,845
239	0303140A	INFORMATION SYSTEMS SECURITY PROGRAM	29,185
240	0303141A	GLOBAL COMBAT SUPPORT SYSTEM	68,976
241	0303150A	WMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	2,073
245	0305179A	INTEGRATED BROADCAST SERVICE (IBS)	459
246	0305204A	TACTICAL UNMANNED AERIAL VEHICLES	5,097
247	0305206A	AIRBORNE RECONNAISSANCE SYSTEMS	11,177
248	0305208A	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	38,121

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
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Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
250	0305232A	RQ-11 UAV	3,218		3,218
251	0305233A	RQ-7 UAV	7,817		7,817
252	0307665A	BIOMETRICS ENABLED INTELLIGENCE	2,000		2,000
253	0708045A	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	59,848	3,000	62,848
		Nanoscale materials manufacturing		[3,000]	
254	1203142A	SATCOM GROUND ENVIRONMENT (SPACE)	34,169		34,169
255	1208053A	JOINT TACTICAL GROUND SYSTEM	10,275		10,275
999	9999999999	CLASSIFIED PROGRAMS	7,273		7,273
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	1,978,826	27,100	2,005,926
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	12,192,771	151,355	12,344,126
		RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY			
		BASIC RESEARCH			
1	0601103N	UNIVERSITY RESEARCH INITIATIVES	116,850	10,000	126,850
		Cyber basic research		[10,000]	
2	0601152N	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	19,121		19,121
3	0601153N	DEFENSE RESEARCH SCIENCES	470,007		470,007
		SUBTOTAL BASIC RESEARCH	605,978	10,000	615,978
		APPLIED RESEARCH			
4	0602114N	POWER PROJECTION APPLIED RESEARCH	18,546		18,546
5	0602123N	FORCE PROTECTION APPLIED RESEARCH	119,517	16,500	136,017
		Carbon capture		[8,000]	
		Electric propulsion research		[2,500]	
		Energy resilience research		[3,000]	
		Program reduction		[-5,000]	

6	0602131M	Test bed for autonomous ship systems		[8,000]	
		MARINE CORPS LANDING FORCE TECHNOLOGY	56,604	3,000	59,604
		Interdisciplinary cybersecurity		[3,000]	
7	0602235N	COMMON PICTURE APPLIED RESEARCH	49,297	–5,000	44,297
		Coordinate space activities		[–5,000]	
8	0602236N	WARFIGHTER SUSTAINMENT APPLIED RESEARCH	63,825	2,000	65,825
		Warfighter safety and performance research		[2,000]	
9	0602271N	ELECTROMAGNETIC SYSTEMS APPLIED RESEARCH	83,497	–5,000	78,497
		Coordinate EW activities		[–5,000]	
10	0602435N	OCEAN WARFIGHTING ENVIRONMENT APPLIED RESEARCH	63,894		63,894
11	0602651M	JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	6,346		6,346
12	0602747N	UNDERSEA WARFARE APPLIED RESEARCH	57,075	7,500	64,575
		Undersea vehicle technology research		[7,500]	
13	0602750N	FUTURE NAVAL CAPABILITIES APPLIED RESEARCH	154,755		154,755
14	0602782N	MINE AND EXPEDITIONARY WARFARE APPLIED RESEARCH	36,074		36,074
15	0602792N	INNOVATIVE NAVAL PROTOTYPES (INP) APPLIED RESEARCH	153,062		153,062
16	0602861N	SCIENCE AND TECHNOLOGY MANAGEMENT—ONR FIELD ACTIVITIES	73,961		73,961
		SUBTOTAL APPLIED RESEARCH	936,453	19,000	955,453
ADVANCED TECHNOLOGY DEVELOPMENT					
17	0603123N	FORCE PROTECTION ADVANCED TECHNOLOGY	35,286		35,286
18	0603271N	ELECTROMAGNETIC SYSTEMS ADVANCED TECHNOLOGY	9,499		9,499
19	0603640M	USMC ADVANCED TECHNOLOGY DEMONSTRATION (ATD)	172,847	4,000	176,847
		Consolidate efforts in A/ML with Joint Force		[–5,000]	
		UPL MUDLAN program increase		[9,000]	
20	0603651M	JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	13,307		13,307
21	0603673N	FUTURE NAVAL CAPABILITIES ADVANCED TECHNOLOGY DEVELOPMENT	231,907		231,907
22	0603680N	MANUFACTURING TECHNOLOGY PROGRAM	60,138		60,138
23	0603729N	WARFIGHTER PROTECTION ADVANCED TECHNOLOGY	4,849		4,849
25	0603758N	NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS	67,739		67,739
26	0603782N	MINE AND EXPEDITIONARY WARFARE ADVANCED TECHNOLOGY	13,335		13,335
27	0603801N	INNOVATIVE NAVAL PROTOTYPES (INP) ADVANCED TECHNOLOGY DEVELOPMENT	133,303	–5,000	128,303

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Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
		Reduce electronic maneuver		[-5,000]	
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	742,210	-1,000	741,210
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES			
28	0603207N	AIR/OCEAN TACTICAL APPLICATIONS	32,643	6,000	38,643
		Program increase for 1 REMUS 600 vehicle		[6,000]	
29	0603216N	AVIATION SURVIVABILITY	11,919		11,919
30	0603251N	AIRCRAFT SYSTEMS	1,473		1,473
31	0603254N	ASW SYSTEMS DEVELOPMENT	7,172		7,172
32	0603261N	TACTICAL AIRBORNE RECONNAISSANCE	3,419		3,419
33	0603382N	ADVANCED COMBAT SYSTEMS TECHNOLOGY	64,694		64,694
34	0603502N	SURFACE AND SHALLOW WATER MINE COUNTERMEASURES	507,000	-372,500	134,500
		Excess procurement ahead of satisfactory testing		[-372,500]	
35	0603506N	SURFACE SHIP TORPEDO DEFENSE	15,800		15,800
36	0603512N	CARRIER SYSTEMS DEVELOPMENT	4,997		4,997
37	0603525N	PILOT FISH	291,148		291,148
38	0603527N	RETRACT LARCH	11,980		11,980
39	0603536N	RETRACT JUNIPER	129,163		129,163
40	0603542N	RADIOLOGICAL CONTROL	689		689
41	0603553N	SURFACE ASW	1,137		1,137
42	0603561N	ADVANCED SUBMARINE SYSTEM DEVELOPMENT	148,756	5,000	153,756
		Project 2033: Test site emergent repairs		[5,000]	
43	0603562N	SUBMARINE TACTICAL WARFARE SYSTEMS	11,192		11,192
44	0603563N	SHIP CONCEPT ADVANCED DESIGN	81,846	-24,000	57,846
		Early to need		[-24,000]	
45	0603564N	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDIES	69,084	-46,600	22,484
		Early to need		[-46,600]	

46	0603570N	ADVANCED NUCLEAR POWER SYSTEMS	181,652		181,652
47	0603573N	ADVANCED SURFACE MACHINERY SYSTEMS	25,408	125,000	150,408
		Surface combatant component-level prototyping		[125,000]	
48	0603576N	CHALK EAGLE	64,877		64,877
49	0603581N	LITTORAL COMBAT SHIP (LCS)	9,934		9,934
50	0603582N	COMBAT SYSTEM INTEGRATION	17,251		17,251
51	0603595N	OHIO REPLACEMENT	419,051	15,000	434,051
		Accelerate advanced propulsor development		[15,000]	
52	0603596N	LCS MISSION MODULES	108,505	-5,000	103,505
		Availabe prior year funds due to SUW MP testing delay		[-5,000]	
53	0603597N	AUTOMATED TEST AND ANALYSIS	7,653		7,653
54	0603599N	FRIGATE DEVELOPMENT	59,007		59,007
55	0603609N	CONVENTIONAL MUNITIONS	9,988		9,988
56	0603635M	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM	86,464		86,464
57	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	33,478		33,478
58	0603713N	OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT	5,619		5,619
59	0603721N	ENVIRONMENTAL PROTECTION	20,564		20,564
60	0603724N	NAVY ENERGY PROGRAM	26,514		26,514
61	0603725N	FACILITIES IMPROVEMENT	3,440		3,440
62	0603734N	CHALK CORAL	346,800		346,800
63	0603739N	NAVY LOGISTIC PRODUCTIVITY	3,857		3,857
64	0603746N	RETRACT MAPLE	258,519		258,519
65	0603748N	LINK PLUMERIA	403,909		403,909
66	0603751N	RETRACT ELM	63,434		63,434
67	0603764N	LINK EVERGREEN	184,110		184,110
68	0603790N	NATO RESEARCH AND DEVELOPMENT	7,697		7,697
69	0603795N	LAND ATTACK TECHNOLOGY	9,086		9,086
70	0603851M	JOINT NON-LETHAL WEAPONS TESTING	28,466		28,466
71	0603860N	JOINT PRECISION APPROACH AND LANDING SYSTEMS—DEM/VAL	51,341		51,341
72	0603925N	DIRECTED ENERGY AND ELECTRIC WEAPON SYSTEMS	118,169		118,169
73	0604014N	F/A -18 INFRARED SEARCH AND TRACK (IRST)	113,456		113,456
74	0604027N	DIGITAL WARFARE OFFICE	50,120		50,120

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Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
75	0604028N	SMALL AND MEDIUM UNMANNED UNDERSEA VEHICLES	32,527		32,527
76	0604029N	UNMANNED UNDERSEA VEHICLE CORE TECHNOLOGIES	54,376		54,376
77	0604030N	RAPID PROTOTYPING, EXPERIMENTATION AND DEMONSTRATION.	36,197		36,197
78	0604031N	LARGE UNMANNED UNDERSEA VEHICLES	68,310		68,310
79	0604112N	GERALD R. FORD CLASS NUCLEAR AIRCRAFT CARRIER (CVN 78—80)	121,310		121,310
80	0604126N	LITTORAL AIRBORNE MCM	17,248		17,248
81	0604127N	SURFACE MINE COUNTERMEASURES	18,735		18,735
82	0604272N	TACTICAL AIR DIRECTIONAL INFRARED COUNTERMEASURES (TADIRCM)	68,346		68,346
84	0604289M	NEXT GENERATION LOGISTICS	4,420	9,000	13,420
		Additive manufacturing logistics software pilot		[9,000]	
85	0604320M	RAPID TECHNOLOGY CAPABILITY PROTOTYPE	4,558		4,558
86	0604454N	LX (R)	12,500		12,500
87	0604536N	ADVANCED UNDERSEA PROTOTYPING	181,967		181,967
88	0604636N	COUNTER UNMANNED AIRCRAFT SYSTEMS (C-UAS)	5,500		5,500
89	0604659N	PRECISION STRIKE WEAPONS DEVELOPMENT PROGRAM	718,148	5,000	723,148
		Increase for SLCM-N AOA		[5,000]	
90	0604707N	SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT	5,263		5,263
91	0604786N	OFFENSIVE ANTI-SURFACE WARFARE WEAPON DEVELOPMENT	65,419		65,419
92	0303354N	ASW SYSTEMS DEVELOPMENT—MIP	9,991		9,991
93	0304240M	ADVANCED TACTICAL UNMANNED AIRCRAFT SYSTEM	21,157		21,157
95	0304270N	ELECTRONIC WARFARE DEVELOPMENT—MIP	609		609
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	5,559,062	−283,100	5,275,962
SYSTEM DEVELOPMENT & DEMONSTRATION					
96	0603208N	TRAINING SYSTEM AIRCRAFT	15,514		15,514
97	0604212N	OTHER HELO DEVELOPMENT	28,835		28,835
98	0604214M	AV-8B AIRCRAFT—ENG DEV	27,441		27,441

100	0604215N	STANDARDS DEVELOPMENT	3,642	3,642
101	0604216N	MULTI-MISSION HELICOPTER UPGRADE DEVELOPMENT	19,196	19,196
104	0604230N	WARFARE SUPPORT SYSTEM	8,601	8,601
105	0604231N	TACTICAL COMMAND SYSTEM	77,232	77,232
106	0604234N	ADVANCED HAWKEYE	232,752	232,752
107	0604245M	H-1 UPGRADES	65,359	65,359
109	0604261N	ACOUSTIC SEARCH SENSORS	47,013	47,013
110	0604262N	V-22A	5,500	190,605
		Increase reliability and reduce vibrations of V-22 Nacelles	[5,500]	
111	0604264N	AIR CREW SYSTEMS DEVELOPMENT	21,172	21,172
112	0604269N	EA-18	143,585	143,585
113	0604270N	ELECTRONIC WARFARE DEVELOPMENT	116,811	116,811
114	0604273M	EXECUTIVE HELO DEVELOPMENT	187,436	187,436
116	0604274N	NEXT GENERATION JAMMER (NGJ)	524,261	524,261
117	0604280N	JOINT TACTICAL RADIO SYSTEM—NAVY (JTRS-NAVY)	192,345	192,345
118	0604282N	NEXT GENERATION JAMMER (NGJ) INCREMENT II	111,068	111,068
119	0604307N	SURFACE COMBATANT COMBAT SYSTEM ENGINEERING	415,625	415,625
120	0604311N	LPD-17 CLASS SYSTEMS INTEGRATION	640	640
121	0604329N	SMALL DIAMETER BOMB (SDB)	50,096	50,096
122	0604366N	STANDARD MISSILE IMPROVEMENTS	232,391	232,391
123	0604373N	AIRBORNE MCM	10,916	10,916
124	0604378N	NAVAL INTEGRATED FIRE CONTROL—COUNTER AIR SYSTEMS ENGINEERING	33,379	33,379
125	0604501N	ADVANCED ABOVE WATER SENSORS	34,554	34,554
126	0604503N	SSN-688 AND TRIDENT MODERNIZATION	84,663	84,663
127	0604504N	AIR CONTROL	44,923	44,923
128	0604512N	SHIPBOARD AVIATION SYSTEMS	10,632	10,632
129	0604518N	COMBAT INFORMATION CENTER CONVERSION	16,094	16,094
130	0604522N	AIR AND MISSILE DEFENSE RADAR (AMDR) SYSTEM	55,349	55,349
131	0604530N	ADVANCED ARRESTING GEAR (AAG)	123,490	123,490
132	0604558N	NEW DESIGN SSN	121,010	121,010
133	0604562N	SUBMARINE TACTICAL WARFARE SYSTEM	62,426	62,426
134	0604567N	SHIP CONTRACT DESIGN/ LIVE FIRE T&E	46,809	46,809

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Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
135	0604574N	NAVY TACTICAL COMPUTER RESOURCES	3,692		3,692
137	0604601N	MINE DEVELOPMENT	28,964	71,300	100,264
		UPL Quickstrike JDAM ER		[71,300]	
138	0604610N	LIGHTWEIGHT TORPEDO DEVELOPMENT	148,349		148,349
139	0604654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	8,237		8,237
140	0604657M	USMC GROUND COMBAT/SUPPORTING ARMS SYSTEMS—ENG DEV	22,000		22,000
141	0604703N	PERSONNEL, TRAINING, SIMULATION, AND HUMAN FACTORS	5,500		5,500
142	0604727N	JOINT STANDOFF WEAPON SYSTEMS	18,725		18,725
143	0604755N	SHIP SELF DEFENSE (DETECT & CONTROL)	192,603		192,603
144	0604756N	SHIP SELF DEFENSE (ENGAGE: HARD KILL)	137,268		137,268
145	0604757N	SHIP SELF DEFENSE (ENGAGE: SOFT KILL/EW)	97,363		97,363
146	0604761N	INTELLIGENCE ENGINEERING	26,710		26,710
147	0604771N	MEDICAL DEVELOPMENT	8,181		8,181
148	0604777N	NAVIGATION/ID SYSTEM	40,755		40,755
149	0604800M	JOINT STRIKE FIGHTER (JSF)—EMD	1,710		1,710
150	0604800N	JOINT STRIKE FIGHTER (JSF)—EMD	1,490		1,490
153	0605013M	INFORMATION TECHNOLOGY DEVELOPMENT	1,494		1,494
154	0605013N	INFORMATION TECHNOLOGY DEVELOPMENT	384,162	–55,440	328,722
		eProcurement program duplication		[–55,440]	
155	0605024N	ANTI-TAMPER TECHNOLOGY SUPPORT	4,882		4,882
156	0605212M	CH–53K RDTE	516,955	–10,000	506,955
		Early to need		[–10,000]	
158	0605215N	MISSION PLANNING	75,886		75,886
159	0605217N	COMMON AVIONICS	43,187		43,187
160	0605220N	SHIP TO SHORE CONNECTOR (SSC)	4,909	15,000	19,909
		Expand development and use of composite materials		[15,000]	
161	0605327N	T-AO 205 CLASS	1,682		1,682

162	0605414N	UNMANNED CARRIER AVIATION (UCA)	671,258	671,258
163	0605450M	JOINT AIR-TO-GROUND MISSILE (JAGM)	18,393	18,393
165	0605500N	MULTI-MISSION MARITIME AIRCRAFT (MMA)	21,472	21,472
166	0605504N	MULTI-MISSION MARITIME (MMA) INCREMENT III	177,234	177,234
167	0605611M	MARINE CORPS ASSAULT VEHICLES SYSTEM DEVELOPMENT & DEMONSTRATION	77,322	77,322
168	0605813M	JOINT LIGHT TACTICAL VEHICLE (JLTV) SYSTEM DEVELOPMENT & DEMONSTRATION	2,105	2,105
169	0204202N	DDG-1000	111,435	111,435
172	0304785N	TACTICAL CRYPTOLOGIC SYSTEMS	101,339	101,339
173	0306250M	CYBER OPERATIONS TECHNOLOGY DEVELOPMENT	26,406	26,406
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	26,360	6,358,393
MANAGEMENT SUPPORT				
174	0604256N	THREAT SIMULATOR DEVELOPMENT	66,678	66,678
175	0604258N	TARGET SYSTEMS DEVELOPMENT	12,027	12,027
176	0604759N	MAJOR T&E INVESTMENT	85,348	85,348
178	0605152N	STUDIES AND ANALYSIS SUPPORT—NAVY	3,908	3,908
179	0605154N	CENTER FOR NAVAL ANALYSES	47,669	47,669
180	0605285N	NEXT GENERATION FIGHTER	20,698	20,698
182	0605804N	TECHNICAL INFORMATION SERVICES	988	988
183	0605853N	MANAGEMENT, TECHNICAL & INTERNATIONAL SUPPORT	102,401	102,401
184	0605856N	STRATEGIC TECHNICAL SUPPORT	3,742	3,742
186	0605863N	RD&E SHIP AND AIRCRAFT SUPPORT	93,872	93,872
187	0605864N	TEST AND EVALUATION SUPPORT	394,020	394,020
188	0605865N	OPERATIONAL TEST AND EVALUATION CAPABILITY	25,145	25,145
189	0605866N	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	15,773	15,773
190	0605867N	SEW SURVEILLANCE/RECONNAISSANCE SUPPORT	8,402	8,402
191	0605873M	MARINE CORPS PROGRAM WIDE SUPPORT	37,265	37,265
192	0605898N	MANAGEMENT HQ—R&D	39,673	39,673
193	0606355N	WARFARE INNOVATION MANAGEMENT	28,750	28,750
196	0305327N	INSIDER THREAT	2,645	2,645
197	0902498N	MANAGEMENT HEADQUARTERS (DEPARTMENTAL SUPPORT ACTIVITIES)	1,460	1,460
		SUBTOTAL MANAGEMENT SUPPORT	0	990,464

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OPERATIONAL SYSTEMS DEVELOPMENT					
202	0604227N	HARPOON MODIFICATIONS	2,302		2,302
203	0604840M	F-35 C2D2	422,881		422,881
204	0604840N	F-35 C2D2	383,741		383,741
205	0607658N	COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	127,924		127,924
207	0101221N	STRATEGIC SUB & WEAPONS SYSTEM SUPPORT	157,676		157,676
208	0101224N	SSBN SECURITY TECHNOLOGY PROGRAM	43,354		43,354
209	0101226N	SUBMARINE ACOUSTIC WARFARE DEVELOPMENT	6,815		6,815
210	0101402N	NAVY STRATEGIC COMMUNICATIONS	31,174		31,174
211	0204136N	F/A-18 SQUADRONS	213,715		213,715
213	0204228N	SURFACE SUPPORT	36,389		36,389
214	0204229N	TOMAHAWK AND TOMAHAWK MISSION PLANNING CENTER (TMPC)	320,134		320,134
215	0204311N	INTEGRATED SURVEILLANCE SYSTEM	88,382	15,000	103,382
		Additional TRAPS units		[15,000]	
216	0204313N	SHIP-TOWED ARRAY SURVEILLANCE SYSTEMS	14,449		14,449
217	0204413N	AMPHIBIOUS TACTICAL SUPPORT UNITS (DISPLACEMENT CRAFT)	6,931		6,931
218	0204460M	GROUND/AIR TASK ORIENTED RADAR (GATOR)	23,891		23,891
219	0204571N	CONSOLIDATED TRAINING SYSTEMS DEVELOPMENT	129,873		129,873
221	0204575N	ELECTRONIC WARFARE (EW) READINESS SUPPORT	82,325		82,325
222	0205601N	HARM IMPROVEMENT	138,431		138,431
224	0205620N	SURFACE ASW COMBAT SYSTEM INTEGRATION	29,572		29,572
225	0205632N	MK-48 ADCAP	85,973		85,973
226	0205633N	AVIATION IMPROVEMENTS	125,461		125,461
227	0205675N	OPERATIONAL NUCLEAR POWER SYSTEMS	106,192		106,192
228	0206313M	MARINE CORPS COMMUNICATIONS SYSTEMS	143,317		143,317
229	0206335M	COMMON AVIATION COMMAND AND CONTROL SYSTEM (CAC2S)	4,489		4,489

230	0206623M	MARINE CORPS GROUND COMBAT/SUPPORTING ARMS SYSTEMS	51,788		51,788
231	0206624M	MARINE CORPS COMBAT SERVICES SUPPORT	37,761	5,000	42,761
		Airborne Power Generation Tech Development		[5,000]	
232	0206625M	USMC INTELLIGENCE/ELECTRONIC WARFARE SYSTEMS (MIP)	21,458		21,458
233	0206629M	AMPHIBIOUS ASSAULT VEHICLE	5,476		5,476
234	0207161N	TACTICAL AIM MISSILES	19,488		19,488
235	0207163N	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	39,029		39,029
239	0303109N	SATELLITE COMMUNICATIONS (SPACE)	34,344		34,344
240	0303138N	CONSOLIDATED AFLOAT NETWORK ENTERPRISE SERVICES (CANES)	22,873		22,873
241	0303140N	INFORMATION SYSTEMS SECURITY PROGRAM	41,853		41,853
243	0305192N	MILITARY INTELLIGENCE PROGRAM (MIP) ACTIVITIES	8,913		8,913
244	0305204N	TACTICAL UNMANNED AERIAL VEHICLES	9,451		9,451
245	0305205N	UAS INTEGRATION AND INTEROPERABILITY	42,315		42,315
246	0305208M	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	22,042		22,042
248	0305220N	MQ-4C TRITON	11,784		11,784
249	0305231N	MQ-8 UAV	29,618		29,618
250	0305232M	RQ-11 UAV	509		509
251	0305234N	SMALL (LEVEL 0) TACTICAL UAS (STUASLO)	11,545		11,545
252	0305239M	RQ-21A	10,914		10,914
253	0305241N	MULTI-INTELLIGENCE SENSOR DEVELOPMENT	70,612		70,612
254	0305242M	UNMANNED AERIAL SYSTEMS (UAS) PAYLOADS (MIP)	3,704		3,704
255	0305421N	RQ-4 MODERNIZATION	202,346		202,346
256	0308601N	MODELING AND SIMULATION SUPPORT	7,119		7,119
257	0702207N	DEPOT MAINTENANCE (NON-IF)	38,182		38,182
258	0708730N	MARITIME TECHNOLOGY (MARITECH)	6,779		6,779
259	1203109N	SATELLITE COMMUNICATIONS (SPACE)	15,868		15,868
999	9999999999	CLASSIFIED PROGRAMS	1,613,137		1,613,137
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	5,104,299	20,000	5,124,299
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	20,270,499	-208,740	20,061,759
		RESEARCH, DEVELOPMENT, TEST & EVAL, AF			

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Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
BASIC RESEARCH					
1	0601102F	DEFENSE RESEARCH SCIENCES	356,107		356,107
2	0601103F	UNIVERSITY RESEARCH INITIATIVES	158,859		158,859
3	0601108F	HIGH ENERGY LASER RESEARCH INITIATIVES	14,795		14,795
		SUBTOTAL BASIC RESEARCH	529,761	0	529,761
APPLIED RESEARCH					
4	0602102F	MATERIALS	128,851	-6,000	122,851
		Advanced materials high energy x-ray		[4,000]	
		Duplicative material research		[-10,000]	
5	0602201F	AEROSPACE VEHICLE TECHNOLOGIES	147,724	-10,000	137,724
		Reduce program growth		[-10,000]	
6	0602202F	HUMAN EFFECTIVENESS APPLIED RESEARCH	131,795		131,795
7	0602203F	AEROSPACE PROPULSION	198,775		198,775
8	0602204F	AEROSPACE SENSORS	202,912		202,912
10	0602298F	SCIENCE AND TECHNOLOGY MANAGEMENT— MAJOR HEADQUARTERS ACTIVITIES	7,968		7,968
12	0602602F	CONVENTIONAL MUNITIONS	142,772		142,772
13	0602605F	DIRECTED ENERGY TECHNOLOGY	124,379		124,379
14	0602788F	DOMINANT INFORMATION SCIENCES AND METHODS	181,562	17,500	199,062
		Counter UAS cyber		[2,500]	
		Cyberspace dominance technology research		[10,000]	
		Quantum science		[5,000]	
15	0602890F	HIGH ENERGY LASER RESEARCH	44,221		49,221
		High power microwave research		5,000	
16	1206601F	SPACE TECHNOLOGY	124,667	[5,000]	124,667
		SUBTOTAL APPLIED RESEARCH	1,435,626	6,500	1,442,126

17	0603112F	ADVANCED TECHNOLOGY DEVELOPMENT			
		ADVANCED MATERIALS FOR WEAPON SYSTEMS	36,586	2,000	38,586
		Metals affordability research		[2,000]	
18	0603199F	SUSTAINMENT SCIENCE AND TECHNOLOGY (S&T)	16,249		16,249
19	0603203F	ADVANCED AEROSPACE SENSORS	38,292		38,292
20	0603211F	AEROSPACE TECHNOLOGY DEV/DEMO	102,949	205,000	307,949
		Accelerate air breathing hypersonic program		[75,000]	
		Active winglets development		[5,000]	
		Advanced Personnel Recovery		[25,000]	
		LCAAT		[100,000]	
21	0603216F	AEROSPACE PROPULSION AND POWER TECHNOLOGY	113,973	10,000	123,973
		Advanced turbine engine gas generator		[10,000]	
22	0603270F	ELECTRONIC COMBAT TECHNOLOGY	48,408	-10,000	38,408
		Duplicative EW & PNT research		[-10,000]	
23	0603401F	ADVANCED SPACECRAFT TECHNOLOGY	70,525	3,000	73,525
		Strategic radiation hardened microelectronic processors		[3,000]	
24	0603444F	MAUI SPACE SURVEILLANCE SYSTEM (MSSS)	11,878		11,878
25	0603456F	HUMAN EFFECTIVENESS ADVANCED TECHNOLOGY DEVELOPMENT	37,542		37,542
26	0603601F	CONVENTIONAL WEAPONS TECHNOLOGY	225,817		225,817
27	0603605F	ADVANCED WEAPONS TECHNOLOGY	37,404		37,404
28	0603680F	MANUFACTURING TECHNOLOGY PROGRAM	43,116	7,000	50,116
		Advanced materials and materials manufacturing		[7,000]	
29	0603788F	BATTLESPACE KNOWLEDGE DEVELOPMENT AND DEMONSTRATION	56,414	10,000	66,414
		Cyber applied research		[10,000]	
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	839,153	227,000	1,066,153
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES			
31	0603260F	INTELLIGENCE ADVANCED DEVELOPMENT	5,672		5,672
32	0603742F	COMBAT IDENTIFICATION TECHNOLOGY	27,085		27,085
33	0603790F	NATO RESEARCH AND DEVELOPMENT	4,955		4,955
34	0603851F	INTERCONTINENTAL BALLISTIC MISSILE—DEM/VAL	44,109		44,109
36	0604002F	AIR FORCE WEATHER SERVICES RESEARCH	772		772

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Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
37	0604004F	ADVANCED ENGINE DEVELOPMENT	878,442		878,442
38	0604015F	LONG RANGE STRIKE—BOMBER			3,003,899
39	0604032F	DIRECTED ENERGY PROTOTYPING	3,003,899		10,000
40	0604033F	HYPERSONICS PROTOTYPING	576,000		576,000
41	0604201F	PNT RESILIENCY, MODS, AND IMPROVEMENTS	92,600	32,000	124,600
		UPL M-CODE acceleration		[32,000]	
42	0604257F	ADVANCED TECHNOLOGY AND SENSORS	23,145		23,145
43	0604288F	NATIONAL AIRBORNE OPS CENTER (NAOC) RECAP	16,669		16,669
44	0604317F	TECHNOLOGY TRANSFER	23,614		23,614
45	0604327F	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDBTDS) PROGRAM	113,121		113,121
46	0604414F	CYBER RESILIENCY OF WEAPON SYSTEMS-ACS	56,325		56,325
47	0604776F	DEPLOYMENT & DISTRIBUTION ENTERPRISE R&D	28,034		28,034
48	0604858F	TECH TRANSITION PROGRAM	128,476	6,000	134,476
		Rapid repair		[6,000]	
49	0605230F	GROUND BASED STRATEGIC DETERRENT	570,373	22,000	592,373
		Program consolidation		[22,000]	
50	0207100F	LIGHT ATTACK ARMED RECONNAISSANCE (LAAR) SQUADRONS	35,000	50,000	85,000
		Light attack experiment		[50,000]	
51	0207110F	NEXT GENERATION AIR DOMINANCE	1,000,000		1,000,000
52	0207455F	THREE DIMENSIONAL LONG-RANGE RADAR (3DELRR)	37,290		37,290
53	0208099F	UNIFIED PLATFORM (UP)	10,000		10,000
54	0305236F	COMMON DATA LINK EXECUTIVE AGENT (CDL EA)	36,910		36,910
55	0305251F	CYBERSPACE OPERATIONS FORCES AND FORCE SUPPORT	35,000		35,000
56	0305601F	MISSION PARTNER ENVIRONMENTS	8,550		8,550
57	0306250F	CYBER OPERATIONS TECHNOLOGY DEVELOPMENT	198,864	41,200	240,064
		Accelerate development of Cyber National Mission Force capabilities		[13,600]	
		ETERNALDARKNESS		[7,100]	

58	0306415F	Joint Common Access Platform			
60	0901410F	ENABLED CYBER ACTIVITIES	16,632	[20,500]	16,632
61	1203164F	CONTRACTING INFORMATION TECHNOLOGY SYSTEM	20,830		20,830
62	1203710F	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPMENT) (SPACE)	329,948		329,948
63	1206422F	EO/IR WEATHER SYSTEMS	101,222		101,222
64	1206425F	WEATHER SYSTEM FOLLOW-ON	225,660		225,660
65	1206427F	SPACE SITUATION AWARENESS SYSTEMS	29,776		29,776
67	1206438F	SPACE SYSTEMS PROTOTYPE TRANSITIONS (SSPT)	142,045		142,045
68	1206730F	SPACE CONTROL TECHNOLOGY	64,231		64,231
69	1206760F	SPACE SECURITY AND DEFENSE PROGRAM	56,385		56,385
		PROTECTED TACTICAL ENTERPRISE SERVICE (PTES)	105,003		95,003
		Unjustified growth		—10,000	
70	1206761F	PROTECTED TACTICAL SERVICE (PTS)	173,694	[—10,000]	163,694
		Unjustified growth		[—10,000]	
71	1206855F	EVOLVED STRATEGIC SATCOM (ESS)	172,206		172,206
72	1206857F	SPACE RAPID CAPABILITIES OFFICE	33,742		33,742
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	8,436,279	131,200	8,567,479
73	0604200F	SYSTEM DEVELOPMENT & DEMONSTRATION			
		FUTURE ADVANCED WEAPON ANALYSIS & PROGRAMS	246,200	—149,080	97,120
		ERWn contract delay		[—149,080]	
74	0604201F	PNT RESILIENCY, MODS, AND IMPROVEMENTS	67,782	81,000	148,782
		UPL M-Code Acceleration		[81,000]	
75	0604222F	NUCLEAR WEAPONS SUPPORT	4,406		4,406
76	0604270F	ELECTRONIC WARFARE DEVELOPMENT	2,066		2,066
77	0604281F	TACTICAL DATA NETWORKS ENTERPRISE	229,631		229,631
78	0604287F	PHYSICAL SECURITY EQUIPMENT	9,700		9,700
79	0604329F	SMALL DIAMETER BOMB (SDB)—EMD	31,241		31,241
80	0604429F	AIRBORNE ELECTRONIC ATTACK	2		2
81	0604602F	ARMAMENT/ORDNANCE DEVELOPMENT	28,043		28,043
82	0604604F	SUBMUNITIONS	3,045		3,045
83	0604617F	AGILE COMBAT SUPPORT	19,944		19,944

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Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
84	0604706F	LIFE SUPPORT SYSTEMS	8,624		8,624
85	0604735F	COMBAT TRAINING RANGES	37,365		37,365
86	0604800F	F-35—EMD	7,628		7,628
87	0604932F	LONG RANGE STANDOFF WEAPON	712,539		712,539
88	0604933F	ICBM FUZE MODERNIZATION	161,199		161,199
89	0605030F	JOINT TACTICAL NETWORK CENTER (JINC)	2,414		2,414
91	0605056F	OPEN ARCHITECTURE MANAGEMENT	30,000		30,000
93	0605221F	KC-46	59,561		59,561
94	0605223F	ADVANCED PILOT TRAINING	348,473		348,473
95	0605229F	COMBAT RESCUE HELICOPTER	247,047		247,047
98	0605931F	B-2 DEFENSIVE MANAGEMENT SYSTEM	294,400		294,400
99	0101125F	NUCLEAR WEAPONS MODERNIZATION	27,564		27,564
100	0101213F	MINUTEMAN SQUADRONS	1		1
101	0207171F	F-15 EPAWSS	47,322		47,322
102	0207328F	STAND IN ATTACK WEAPON	162,840		162,840
103	0207701F	FULL COMBAT MISSION TRAINING	9,797		9,797
106	0401310F	C-32 EXECUTIVE TRANSPORT RECAPITALIZATION	9,930		9,930
107	0401319F	VC-25B	757,923		757,923
108	0701212F	AUTOMATED TEST SYSTEMS	2,787		2,787
109	1203176F	COMBAT SURVIVOR EVADER LOCATOR	2,000		2,000
110	1203269F	GPS III FOLLOW-ON (GPS IIIF)	462,875		462,875
111	1203940F	SPACE SITUATION AWARENESS OPERATIONS	76,829		76,829
112	1206421F	COUNTERSPACE SYSTEMS	29,037		29,037
113	1206422F	WEATHER SYSTEM FOLLOW-ON	2,237		2,237
114	1206425F	SPACE SITUATION AWARENESS SYSTEMS	412,894		412,894
115	1206426F	SPACE FENCE	0	20,000	20,000
		Space Fence		[20,000]	

116	1206431F	ADVANCED EHF MILSATCOM (SPACE)	117,290	117,290
117	1206432F	POLAR MILSATCOM (SPACE)	427,400	427,400
118	1206433F	WIDEBAND GLOBAL SATCOM (SPACE)	1,920	1,920
119	1206441F	SPACE BASED INFRARED SYSTEM (SBIRS) HIGH EMD	1	1
120	1206442F	NEXT GENERATION OPIR	1,395,278	1,395,278
122	1206853F	NATIONAL SECURITY SPACE LAUNCH PROGRAM (SPACE)—EMD	432,009	432,009
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	6,929,244	6,881,164
			-48,080	
MANAGEMENT SUPPORT				
123	0604256F	THREAT SIMULATOR DEVELOPMENT	59,693	59,693
124	0604759F	MAJOR T&E INVESTMENT	181,663	232,663
		UPL M-Code Acceleration		51,000
		Utah training range instrumentation		[36,000]
				[15,000]
125	0605101F	RAND PROJECT AIR FORCE	35,258	35,258
127	0605712F	INITIAL OPERATIONAL TEST & EVALUATION	13,793	13,793
128	0605807F	TEST AND EVALUATION SUPPORT	717,895	771,895
		Accelerate prototype program		54,000
		Facilitates 5G test and evaluation		[5,000]
				[49,000]
129	0605826F	ACQ WORKFORCE- GLOBAL POWER	258,667	258,667
130	0605827F	ACQ WORKFORCE- GLOBAL VIG & COMBAT SYS	251,992	251,992
131	0605828F	ACQ WORKFORCE- GLOBAL REACH	149,191	149,191
132	0605829F	ACQ WORKFORCE- CYBER, NETWORK, & BUS SYS	235,360	235,360
133	0605830F	ACQ WORKFORCE- GLOBAL BATTLE MGMT	160,196	160,196
134	0605831F	ACQ WORKFORCE- CAPABILITY INTEGRATION	220,255	220,255
135	0605832F	ACQ WORKFORCE- ADVANCED PRGM TECHNOLOGY	42,392	42,392
136	0605833F	ACQ WORKFORCE- NUCLEAR SYSTEMS	133,231	133,231
137	0605898F	MANAGEMENT HQ—R&D	5,590	5,590
138	0605976F	FACILITIES RESTORATION AND MODERNIZATION—TEST AND EVALUATION SUPPORT	88,445	88,445
139	0605978F	FACILITIES SUSTAINMENT—TEST AND EVALUATION SUPPORT	29,424	29,424
140	0606017F	REQUIREMENTS ANALYSIS AND MATURATION	62,715	62,715
141	0606398F	MANAGEMENT HQ—T&E	5,013	5,013
142	0308602F	ENTERPRISE INFORMATION SERVICES (EIS)	17,128	17,128

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143	0702806F	ACQUISITION AND MANAGEMENT SUPPORT	5,913		5,913
144	0804731F	GENERAL SKILL TRAINING	1,475		1,475
146	1001004F	INTERNATIONAL ACTIVITIES	4,071		4,071
147	1206116F	SPACE TEST AND TRAINING RANGE DEVELOPMENT	19,942		19,942
148	1206392F	SPACE AND MISSILE CENTER (SMC) CIVILIAN WORKFORCE	167,810		167,810
149	1206398F	SPACE & MISSILE SYSTEMS CENTER—MHA	10,170		10,170
150	1206860F	ROCKET SYSTEMS LAUNCH PROGRAM (SPACE)	13,192		13,192
151	1206864F	SPACE TEST PROGRAM (STP)	26,097		26,097
		SUBTOTAL MANAGEMENT SUPPORT	2,916,571	105,000	3,021,571
OPERATIONAL SYSTEMS DEVELOPMENT					
152	0604003F	ADVANCED BATTLE MANAGEMENT SYSTEM (ABMS)	35,611	49,000	84,611
		Accelerates 5G military use		[49,000]	
154	0604233F	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	2,584		2,584
156	0604776F	DEPLOYMENT & DISTRIBUTION ENTERPRISE R&D	903		903
157	0604840F	F-35 C2D2	694,455		694,455
158	0605018F	AF INTEGRATED PERSONNEL AND PAY SYSTEM (AF-IPPS)	40,567	-40,567	
		Poor agile development		[-40,567]	
159	0605024F	ANTI-TAMPER TECHNOLOGY EXECUTIVE AGENCY	47,193		47,193
160	0605117F	FOREIGN MATERIEL ACQUISITION AND EXPLOITATION	70,083		70,083
161	0605278F	HC/MC-130 RECAP RDT&E	17,218	-12,400	4,818
		program delay		[-12,400]	
162	0606018F	NC3 INTEGRATION	25,917		25,917
164	0101113F	B-52 SQUADRONS	325,974		325,974
165	0101122F	AIR-LAUNCHED CRUISE MISSILE (ALCM)	10,217		10,217
166	0101126F	B-1B SQUADRONS	1,000		1,000
167	0101127F	B-2 SQUADRONS	97,276		97,276

168	0101213F	MINUTEMAN SQUADRONS	128,961	-22,000	106,961
		Program consolidation		[-22,000]	
170	0101316F	WORLDWIDE JOINT STRATEGIC COMMUNICATIONS	18,177		18,177
171	0101324F	INTEGRATED STRATEGIC PLANNING & ANALYSIS NETWORK	24,261		24,261
172	0101328F	ICBM REENTRY VEHICLES	75,571		75,571
174	0102110F	UH-1N REPLACEMENT PROGRAM	170,975		170,975
176	0205219F	MQ-9 UAV	154,996		154,996
178	0207131F	A-10 SQUADRONS	36,816		36,816
179	0207133F	F-16 SQUADRONS	193,013		193,013
180	0207134F	F-15E SQUADRONS	336,079		336,079
181	0207136F	MANNED DESTRUCTIVE SUPPRESSION	15,521		15,521
182	0207138F	F-22A SQUADRONS	496,298		496,298
183	0207142F	F-35 SQUADRONS	99,943		99,943
184	0207161F	TACTICAL AIM MISSILES	10,314		10,314
185	0207163F	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	55,384		55,384
186	0207227F	COMBAT RESCUE—PARARESCUE	281		281
187	0207247F	AF TENCAP	21,365		21,365
188	0207249F	PRECISION ATTACK SYSTEMS PROCUREMENT	10,696		10,696
189	0207253F	COMPASS CALL	15,888		15,888
190	0207268F	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	112,505		112,505
191	0207325F	JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)	78,498		78,498
192	0207410F	AIR & SPACE OPERATIONS CENTER (AOC)	114,864		114,864
193	0207412F	CONTROL AND REPORTING CENTER (CRC)	8,109		8,109
194	0207417F	AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)	67,996		67,996
195	0207418F	TACTICAL AIRBORNE CONTROL SYSTEMS	2,462		2,462
197	0207431F	COMBAT AIR INTELLIGENCE SYSTEM ACTIVITIES	13,668		13,668
198	0207444F	TACTICAL AIR CONTROL PARTY-MOD	6,217		6,217
200	0207452F	DCAPES	19,910		19,910
201	0207573F	NATIONAL TECHNICAL NUCLEAR FORENSICS	1,788		1,788
202	0207590F	SEEK EAGLE	28,237		28,237
203	0207601F	USAF MODELING AND SIMULATION	15,725		15,725
204	0207605F	WARGAMING AND SIMULATION CENTERS	4,316		4,316

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205	0207610F	BATTLEFIELD ABN COMM NODE (BACN)	26,946		26,946
206	0207697F	DISTRIBUTED TRAINING AND EXERCISES	4,303		4,303
207	0208006F	MISSION PLANNING SYSTEMS	71,465		71,465
208	0208007F	TACTICAL DECEPTION	7,446		7,446
209	0208064F	OPERATIONAL HQ—CYBER	7,602		7,602
210	0208087F	DISTRIBUTED CYBER WARFARE OPERATIONS	35,178		35,178
211	0208088F	AF DEFENSIVE CYBERSPACE OPERATIONS	16,609		16,609
212	0208097F	JOINT CYBER COMMAND AND CONTROL (JCC2)	11,603		11,603
213	0208099F	UNIFIED PLATFORM (UP)	84,702		84,702
218	0301004F	ADVANCED DATA TRANSPORT FLIGHT TEST	0	21,000	21,000
		Accelerate prototype test of 5G		[21,000]	
219	0301025F	GEObASE	2,723		2,723
220	0301112F	NUCLEAR PLANNING AND EXECUTION SYSTEM (NPES)	44,190		44,190
226	0301401F	AIR FORCE SPACE AND CYBER NON-TRADITIONAL ISR FOR BATTLESACE AWARENESS	3,575		3,575
227	0302015F	E-4B NATIONAL AIRBORNE OPERATIONS CENTER (NAOC)	70,173		70,173
228	0303131F	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK (MEECN)	13,543		13,543
229	0303133F	HIGH FREQUENCY RADIO SYSTEMS	15,881		15,881
230	0303140F	INFORMATION SYSTEMS SECURITY PROGRAM	27,726		27,726
232	0303142F	GLOBAL FORCE MANAGEMENT—DATA INITIATIVE	2,210		2,210
234	0304115F	MULTI DOMAIN COMMAND AND CONTROL (MDC2)	150,880		150,880
235	0304260F	AIRBORNE SIGINT ENTERPRISE	102,667		102,667
236	0304310F	COMMERCIAL ECONOMIC ANALYSIS	3,431		3,431
239	0305015F	C2 AIR OPERATIONS SUITE—C2 INFO SERVICES	9,313		9,313
240	0305020F	CCMD INTELLIGENCE INFORMATION TECHNOLOGY	1,121		1,121
241	0305022F	ISR MODERNIZATION & AUTOMATION DVMT (IMAD)	19,000	-19,000	
		Not mature plan		[-19,000]	
242	0305099F	GLOBAL AIR TRAFFIC MANAGEMENT (GATM)	4,544		4,544

243	0305111F	WEATHER SERVICE	25,461	25,461
244	0305114F	AIR TRAFFIC CONTROL, APPROACH, AND LANDING SYSTEM (ATCALS)	5,651	5,651
245	0305116F	AERIAL TARGETS	7,448	7,448
248	0305128F	SECURITY AND INVESTIGATIVE ACTIVITIES	425	425
249	0305145F	ARMS CONTROL IMPLEMENTATION	54,546	54,546
250	0305146F	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	6,858	6,858
252	0305179F	INTEGRATED BROADCAST SERVICE (IBS)	8,728	8,728
253	0305202F	DRAGON U-2	38,939	38,939
255	0305206F	AIRBORNE RECONNAISSANCE SYSTEMS	122,909	122,909
256	0305207F	MANNED RECONNAISSANCE SYSTEMS	11,787	11,787
257	0305208F	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	25,009	25,009
258	0305220F	RQ-4 UAV	191,733	191,733
259	0305221F	NETWORK-CENTRIC COLLABORATIVE TARGETING	10,757	10,757
260	0305238F	NATO AGS	32,567	32,567
261	0305240F	SUPPORT TO DCGS ENTERPRISE	37,774	37,774
262	0305600F	INTERNATIONAL INTELLIGENCE TECHNOLOGY AND ARCHITECTURES	13,515	13,515
263	0305881F	RAPID CYBER ACQUISITION	4,383	4,383
264	0305984F	PERSONNEL RECOVERY COMMAND & CTRL (PRC2)	2,133	2,133
265	0307577F	INTELLIGENCE MISSION DATA (IMD)	8,614	8,614
266	0401115F	C-130 AIRLIFT SQUADRON	140,425	140,425
267	0401119F	C-5 AIRLIFT SQUADRONS (IF)	10,223	10,223
268	0401130F	C-17 AIRCRAFT (IF)	25,101	25,101
269	0401132F	C-130J PROGRAM	8,640	8,640
270	0401134F	LARGE AIRCRAFT IR COUNTERMEASURES (LAIRCW)	5,424	5,424
272	0401219F	KC-10S	20	20
274	0401318F	CV-22	17,906	17,906
276	0408011F	SPECIAL TACTICS / COMBAT CONTROL	3,629	3,629
277	0702207F	DEPOT MAINTENANCE (NON-IF)	1,890	1,890
278	0708055F	MAINTENANCE, REPAIR & OVERHAUL SYSTEM	10,311	10,311
279	0708610F	LOGISTICS INFORMATION TECHNOLOGY (LOGIT)	16,065	16,065
280	0708611F	SUPPORT SYSTEMS DEVELOPMENT	539	539
281	0804743F	OTHER FLIGHT TRAINING	2,057	2,057

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282	0808716F	OTHER PERSONNEL ACTIVITIES	10		10
283	0901202F	JOINT PERSONNEL RECOVERY AGENCY	2,060		2,060
284	0901218F	CIVILIAN COMPENSATION PROGRAM	3,809		3,809
285	0901220F	PERSONNEL ADMINISTRATION	6,476		6,476
286	0901226F	AIR FORCE STUDIES AND ANALYSIS AGENCY	1,443		1,443
287	0901538F	FINANCIAL MANAGEMENT INFORMATION SYSTEMS DEVELOPMENT	9,323		9,323
288	0901554F	DEFENSE ENTERPRISE ACTING AND MGT SYS (DEAMS)	46,789		46,789
289	1201017F	GLOBAL SENSOR INTEGRATED ON NETWORK (GSIN)	3,647		3,647
290	1201921F	SERVICE SUPPORT TO STRATCOM—SPACE ACTIVITIES	988		988
291	1202140F	SERVICE SUPPORT TO SPACECOM ACTIVITIES	11,863		11,863
293	1203001F	FAMILY OF ADVANCED BLOS TERMINALS (FAB-T)	197,388		197,388
294	1203110F	SATELLITE CONTROL NETWORK (SPACE)	61,891		61,891
297	1203173F	SPACE AND MISSILE TEST AND EVALUATION CENTER	4,566		4,566
298	1203174F	SPACE INNOVATION, INTEGRATION AND RAPID TECHNOLOGY DEVELOPMENT	43,292		43,292
300	1203182F	SPACELIFT RANGE SYSTEM (SPACE)	10,837		10,837
301	1203265F	GPS III SPACE SEGMENT	42,440		42,440
302	1203400F	SPACE SUPERIORITY INTELLIGENCE	14,428		14,428
303	1203614F	JSPOC MISSION SYSTEM	72,762		72,762
304	1203620F	NATIONAL SPACE DEFENSE CENTER	2,653		2,653
306	1203873F	BALLISTIC MISSILE DEFENSE RADARS	15,881		15,881
308	1203913F	NUDET DETECTION SYSTEM (SPACE)	49,300		49,300
309	1203940F	SPACE SITUATION AWARENESS OPERATIONS	17,834		17,834
310	1206423F	GLOBAL POSITIONING SYSTEM III—OPERATIONAL CONTROL SEGMENT	445,302		445,302
311	1206770F	ENTERPRISE GROUND SERVICES	138,870		138,870
999	9999999999	CLASSIFIED PROGRAMS	18,029,506	322,000	18,351,506
		Transfer back to base funding		[322,000]	
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	24,529,488	298,033	24,827,521

					TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, AF	45,616,122	719,653	46,335,775
					RESEARCH, DEVELOPMENT, TEST & EVAL, DW			
					BASIC RESEARCH			
1	0601000BR				DTRA BASIC RESEARCH	26,000		26,000
2	0601101E				DEFENSE RESEARCH SCIENCES	432,284		432,284
3	0601110D8Z				BASIC RESEARCH INITIATIVES	48,874	10,000	58,874
					DEPSCOR		[10,000]	
4	0601117E				BASIC OPERATIONAL MEDICAL RESEARCH SCIENCE	54,122		54,122
5	0601120D8Z				NATIONAL DEFENSE EDUCATION PROGRAM	92,074	10,000	102,074
					Submarine industrial base workforce training and education		[10,000]	
6	0601228D8Z				HISTORICALLY BLACK COLLEGES AND UNIVERSITIES/MINORITY INSTITUTIONS	30,708	2,000	32,708
					Aerospace research and education		[2,000]	
7	0601384BP				CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	45,238		45,238
					SUBTOTAL BASIC RESEARCH	729,300	22,000	751,300
					APPLIED RESEARCH			
8	0602000D8Z				JOINT MUNITIONS TECHNOLOGY	19,306		19,306
9	0602115E				BIOMEDICAL TECHNOLOGY	97,771		97,771
11	0602234D8Z				LINCOLN LABORATORY RESEARCH PROGRAM	52,317		52,317
12	0602251D8Z				APPLIED RESEARCH FOR THE ADVANCEMENT OF S&T PRIORITIES	62,200	2,000	64,200
					Computer modeling of PFAS		[2,000]	
13	0602303E				INFORMATION & COMMUNICATIONS TECHNOLOGY	442,556		442,556
14	0602383E				BIOLOGICAL WARFARE DEFENSE	34,588		34,588
15	0602384BP				CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	202,587		202,587
16	0602668D8Z				CYBER SECURITY RESEARCH	15,118	10,000	25,118
					Academic cyber institutes		[10,000]	
17	0602702E				TACTICAL TECHNOLOGY	337,602		337,602
18	0602715E				MATERIALS AND BIOLOGICAL TECHNOLOGY	223,976		223,976
19	0602716E				ELECTRONICS TECHNOLOGY	332,192		332,192
20	0602718BR				COUNTER WEAPONS OF MASS DESTRUCTION APPLIED RESEARCH	179,096		179,096

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21	0602751D8Z	SOFTWARE ENGINEERING INSTITUTE (SEI) APPLIED RESEARCH	9,580		9,580
22	1160401BB	SOF TECHNOLOGY DEVELOPMENT	40,569		40,569
		SUBTOTAL APPLIED RESEARCH	2,049,458	12,000	2,061,458
		ADVANCED TECHNOLOGY DEVELOPMENT			
23	0603000D8Z	JOINT MUNITIONS ADVANCED TECHNOLOGY	25,779		25,779
24	0603121D8Z	SO/LIC ADVANCED DEVELOPMENT	5,000		5,000
25	0603122D8Z	COMBATING TERRORISM TECHNOLOGY SUPPORT	70,517		70,517
26	0603133D8Z	FOREIGN COMPARATIVE TESTING	24,970		24,970
28	0603160BR	COUNTER WEAPONS OF MASS DESTRUCTION ADVANCED TECHNOLOGY DEVELOPMENT	340,065		340,065
29	0603176C	ADVANCED CONCEPTS AND PERFORMANCE ASSESSMENT	14,208		14,208
30	0603178C	WEAPONS TECHNOLOGY	10,000		10,000
31	0603180C	ADVANCED RESEARCH	20,674		20,674
32	0603225D8Z	JOINT DOD-DOE MUNITIONS TECHNOLOGY DEVELOPMENT	18,773		18,773
33	0603286E	ADVANCED AEROSPACE SYSTEMS	279,741		279,741
34	0603287E	SPACE PROGRAMS AND TECHNOLOGY	202,606		202,606
35	0603288D8Z	ANALYTIC ASSESSMENTS	19,429		19,429
36	0603289D8Z	ADVANCED INNOVATIVE ANALYSIS AND CONCEPTS	37,645		37,645
37	0603291D8Z	ADVANCED INNOVATIVE ANALYSIS AND CONCEPTS—MHA	14,668		14,668
38	0603294C	COMMON KILL VEHICLE TECHNOLOGY	13,600		13,600
40	0603342D8Z	DEFENSE INNOVATION UNIT (DIU)	29,398	7,500 [7,500]	36,898
		Accelerate Artificial Intelligence solutions			
41	0603375D8Z	TECHNOLOGY INNOVATION	60,000		60,000
42	0603384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—ADVANCED DEVELOPMENT	172,486		172,486
43	0603527D8Z	RETRACT LARCH	159,688		159,688
44	0603618D8Z	JOINT ELECTRONIC ADVANCED TECHNOLOGY	12,063		12,063
45	0603648D8Z	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS	107,359	—17,500	89,859

46	0603662D8Z	Program reduction			
47	0603680D8Z	NETWORKED COMMUNICATIONS CAPABILITIES	2,858		2,858
48	0603680S	DEFENSE-WIDE MANUFACTURING SCIENCE AND TECHNOLOGY PROGRAM	96,397		96,397
49	0603699D8Z	MANUFACTURING TECHNOLOGY PROGRAM	42,834		42,834
		EMERGING CAPABILITIES TECHNOLOGY DEVELOPMENT	80,911		70,911
		Program reduction		-10,000	
50	0603712S	GENERIC LOGISTICS R&D TECHNOLOGY DEMONSTRATIONS	10,817		10,817
51	0603716D8Z	STRATEGIC ENVIRONMENTAL RESEARCH PROGRAM	66,157	10,000	76,157
		SERP		[10,000]	
52	0603720S	MICROELECTRONICS TECHNOLOGY DEVELOPMENT AND SUPPORT	171,771		171,771
53	0603727D8Z	JOINT WARFIGHTING PROGRAM	4,846		4,846
54	0603739E	ADVANCED ELECTRONICS TECHNOLOGIES	128,616		128,616
55	0603760E	COMMAND, CONTROL AND COMMUNICATIONS SYSTEMS	232,134		232,134
56	0603766E	NETWORK-CENTRIC WARFARE TECHNOLOGY	512,424		512,424
57	0603767E	SENSOR TECHNOLOGY	163,903		163,903
58	0603769D8Z	DISTRIBUTED LEARNING ADVANCED TECHNOLOGY DEVELOPMENT	13,723		13,723
59	0603781D8Z	SOFTWARE ENGINEERING INSTITUTE	15,111		15,111
60	0603826D8Z	QUICK REACTION SPECIAL PROJECTS	47,147		47,147
61	0603833D8Z	ENGINEERING SCIENCE & TECHNOLOGY	19,376		19,376
62	0603924D8Z	HIGH ENERGY LASER ADVANCED TECHNOLOGY PROGRAM	85,223		85,223
63	0603941D8Z	TEST & EVALUATION SCIENCE & TECHNOLOGY	175,574	10,000	185,574
		Program increase to support NDS technologies		[10,000]	
64	0603950D8Z	NATIONAL SECURITY INNOVATION NETWORK	25,000		25,000
65	0604055D8Z	OPERATIONAL ENERGY CAPABILITY IMPROVEMENT	70,536		70,536
66	0303310D8Z	CWMD SYSTEMS	28,907		28,907
68	1160402BB	SOF ADVANCED TECHNOLOGY DEVELOPMENT	89,154		89,154
69	1206310SDA	SPACE SCIENCE AND TECHNOLOGY RESEARCH AND DEVELOPMENT	20,000		20,000
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	3,742,088	0	3,742,088
		ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES			
70	0603161D8Z	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT RDT&E ADC&P	42,695		42,695
71	0603600D8Z	WALKOFF	92,791		92,791

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72	0603821D8Z	ACQUISITION ENTERPRISE DATA & INFORMATION SERVICES	5,659		5,659
73	0603851D8Z	ENVIRONMENTAL SECURITY TECHNICAL CERTIFICATION PROGRAM	66,572	10,000	76,572
		ESTCP		[10,000]	
74	0603881C	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT	302,761		302,761
75	0603882C	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGMENT	1,156,506		1,156,506
76	0603884BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—DEM/VAL	83,662		83,662
77	0603884C	BALLISTIC MISSILE DEFENSE SENSORS	283,487		283,487
78	0603890C	BMD ENABLING PROGRAMS	571,507		571,507
79	0603891C	SPECIAL PROGRAMS—MDA	377,098	125,000	502,098
		Classified		[125,000]	
80	0603892C	AEGIS BMD	727,479		727,479
81	0603896C	BALLISTIC MISSILE DEFENSE COMMAND AND CONTROL, BATTLE MANAGEMENT AND COMMUNICATI.	564,206		564,206
82	0603898C	BALLISTIC MISSILE DEFENSE JOINT WARFIGHTER SUPPORT	51,532		51,532
83	0603904C	MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)	56,161		56,161
84	0603906C	REGARDING TRENCH	22,424		22,424
85	0603907C	SEA BASED X-BAND RADAR (SBX)	128,156		128,156
86	0603913C	ISRAELI COOPERATIVE PROGRAMS	300,000		300,000
87	0603914C	BALLISTIC MISSILE DEFENSE TEST	395,924		395,924
88	0603915C	BALLISTIC MISSILE DEFENSE TARGETS	554,171		554,171
89	0603920D8Z	HUMANITARIAN DEMINING	10,820		10,820
90	0603923D8Z	COALITION WARFARE	11,316		11,316
91	0604016D8Z	DEPARTMENT OF DEFENSE CORROSION PROGRAM	3,365		3,365
92	0604115C	TECHNOLOGY MATURATION INITIATIVES	303,458	–34,000	269,458
		Neutral particle beam		[–34,000]	
93	0604132D8Z	MISSILE DEFEAT PROJECT	17,816		17,816
95	0604181C	HYPERSONIC DEFENSE	157,425		157,425

96	0604250D8Z	ADVANCED INNOVATIVE TECHNOLOGIES	1,312,735	31,000	1,343,735
		Hypervelocity Gun Weapon System		[81,000]	
		Unjustified growth to SCO		[−50,000]	
97	0604294D8Z	TRUSTED & ASSURED MICROELECTRONICS	542,421	5,000	547,421
		Trusted and assured microelectronics research		[5,000]	
98	0604331D8Z	RAPID PROTOTYPING PROGRAM	100,957	−50,000	50,957
		Uncoordinated prototyping efforts		[−50,000]	
99	0604341D8Z	DEFENSE INNOVATION UNIT (DIU) PROTOTYPING	92,000		92,000
100	0604400D8Z	DEPARTMENT OF DEFENSE (DOD) UNMANNED SYSTEM COMMON DEVELOPMENT	3,021		3,021
102	0604672C	HOMELAND DEFENSE RADAR—HAWAII (HDR-H)	274,714		274,714
103	0604673C	PACIFIC DISCRIMINATING RADAR	6,711		6,711
104	0604682D8Z	WARGAMING AND SUPPORT FOR STRATEGIC ANALYSIS (SSA)	3,751		3,751
105	0604775BR	DEFENSE RAPID INNOVATION PROGRAM	14,021		14,021
107	0604826J	JOINT C5 CAPABILITY DEVELOPMENT, INTEGRATION AND INTEROPERABILITY ASSESSMENTS	20,062		20,062
108	0604873C	LONG RANGE DISCRIMINATION RADAR (LRDR)	136,423		136,423
109	0604874C	IMPROVED HOMELAND DEFENSE INTERCEPTORS	412,363		412,363
110	0604876C	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT TEST	25,137		25,137
111	0604878C	AEGIS BMD TEST	169,822		169,822
112	0604879C	BALLISTIC MISSILE DEFENSE SENSOR TEST	105,530		105,530
113	0604880C	LAND-BASED SM-3 (LBSM3)	38,352		38,352
115	0604887C	BALLISTIC MISSILE DEFENSE MIDCOURSE SEGMENT TEST	98,139		98,139
117	0300206R	ENTERPRISE INFORMATION TECHNOLOGY SYSTEMS	1,600		1,600
118	0303191D8Z	JOINT ELECTROMAGNETIC TECHNOLOGY (JET) PROGRAM	3,191		3,191
119	0305103C	CYBER SECURITY INITIATIVE	1,138		1,138
120	1206410SDA	SPACE TECHNOLOGY DEVELOPMENT AND PROTOTYPING	85,000	−30,000	55,000
		Missile defense studies realignment		[−30,000]	
121	1206893C	SPACE TRACKING & SURVEILLANCE SYSTEM	35,849		35,849
122	1206895C	BALLISTIC MISSILE DEFENSE SYSTEM SPACE PROGRAMS	27,565	108,000	135,565
		HBTSS unfunded requirement		[108,000]	
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES	9,797,493	165,000	9,962,493
		SYSTEM DEVELOPMENT AND DEMONSTRATION			

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123	0604161D8Z	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT RDT&E SDD	11,276		11,276
124	0604165D8Z	PROMPT GLOBAL STRIKE CAPABILITY DEVELOPMENT	107,000		107,000
125	0604384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—EMD	384,047		384,047
126	0604771D8Z	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)	40,102		40,102
127	0605000BR	COUNTER WEAPONS OF MASS DESTRUCTION SYSTEMS DEVELOPMENT	13,100		13,100
128	0605013BL	INFORMATION TECHNOLOGY DEVELOPMENT	3,070		3,070
129	0605021SE	HOMELAND PERSONNEL SECURITY INITIATIVE	7,295		7,295
130	0605022D8Z	DEFENSE EXPORTABILITY PROGRAM	17,615		17,615
131	0605027D8Z	OUS(D) IT DEVELOPMENT INITIATIVES	15,653		15,653
132	0605070S	DOD ENTERPRISE SYSTEMS DEVELOPMENT AND DEMONSTRATION	2,378		2,378
133	0605075D8Z	CMO POLICY AND INTEGRATION	1,618		1,618
134	0605080S	DEFENSE AGENCY INITIATIVES (DAI)—FINANCIAL SYSTEM	27,944		27,944
135	0605090S	DEFENSE RETIRED AND ANNUITANT PAY SYSTEM (DRAS)	6,609		6,609
136	0605210D8Z	DEFENSE-WIDE ELECTRONIC PROCUREMENT CAPABILITIES	9,619		9,619
137	0605294D8Z	TRUSTED & ASSURED MICROELECTRONICS	175,032		175,032
138	0303140BL	INFORMATION SYSTEMS SECURITY PROGRAM	425		425
139	0303141K	GLOBAL COMBAT SUPPORT SYSTEM	1,578		1,578
140	0305304D8Z	DOD ENTERPRISE ENERGY INFORMATION MANAGEMENT (EIM)	4,373		4,373
141	0305310D8Z	CWMD SYSTEMS: SYSTEM DEVELOPMENT AND DEMONSTRATION	12,854		12,854
		SUBTOTAL SYSTEM DEVELOPMENT AND DEMONSTRATION	841,588	0	841,588
MANAGEMENT SUPPORT					
142	0603829J	JOINT CAPABILITY EXPERIMENTATION	13,000		13,000
143	0604774D8Z	DEFENSE READINESS REPORTING SYSTEM (DRRS)	9,724		9,724
144	0604875D8Z	JOINT SYSTEMS ARCHITECTURE DEVELOPMENT	9,593		9,593
145	0604940D8Z	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT (CTEIP)	260,267		260,267
146	0604942D8Z	ASSESSMENTS AND EVALUATIONS	30,834		30,834

147	0605001E	MISSION SUPPORT	68,498		68,498
148	0605100D8Z	JOINT MISSION ENVIRONMENT TEST CAPABILITY (JMTC)	83,091	6,000	89,091
		Cyber range development		[6,000]	
149	0605104D8Z	TECHNICAL STUDIES, SUPPORT AND ANALYSIS	18,079	-5,000	13,079
		Program reduction		[-5,000]	
150	0605126J	JOINT INTEGRATED AIR AND MISSILE DEFENSE ORGANIZATION (JAMDO)	70,038		70,038
152	0605142D8Z	SYSTEMS ENGINEERING	37,140	-5,000	32,140
		Program reduction		[-5,000]	
153	0605151D8Z	STUDIES AND ANALYSIS SUPPORT—OSD	4,759		4,759
154	0605161D8Z	NUCLEAR MATTERS-PHYSICAL SECURITY	8,307		8,307
155	0605170D8Z	SUPPORT TO NETWORKS AND INFORMATION INTEGRATION	9,441		9,441
156	0605200D8Z	GENERAL SUPPORT TO USD (INTELLIGENCE)	1,700		1,700
157	0605384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	110,363		110,363
166	0605790D8Z	SMALL BUSINESS INNOVATION RESEARCH (SBIR)/ SMALL BUSINESS TECHNOLOGY TRANSFER	3,568		3,568
167	0605797D8Z	MAINTAINING TECHNOLOGY ADVANTAGE	19,936		19,936
168	0605798D8Z	DEFENSE TECHNOLOGY ANALYSIS	16,875		16,875
169	0605801KA	DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	57,716		57,716
170	0605803SE	R&D IN SUPPORT OF DOD ENLISTMENT, TESTING AND EVALUATION	34,448		34,448
171	0605804D8Z	DEVELOPMENT TEST AND EVALUATION	22,203		22,203
172	0605898E	MANAGEMENT HQ—R&D	13,208		13,208
173	0605998KA	MANAGEMENT HQ—DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	3,027		3,027
174	0606100D8Z	BUDGET AND PROGRAM ASSESSMENTS	8,017		8,017
175	060625D8Z	ODNA TECHNOLOGY AND RESOURCE ANALYSIS	3,194		3,194
176	0606589D8W	DEFENSE DIGITAL SERVICE (DDS) DEVELOPMENT SUPPORT	1,000	5,000	6,000
		Increase		[5,000]	
179	0203345D8Z	DEFENSE OPERATIONS SECURITY INITIATIVE (DOSI)	3,037		3,037
180	0204571J	JOINT STAFF ANALYTICAL SUPPORT	9,216		9,216
183	0303166J	SUPPORT TO INFORMATION OPERATIONS (IO) CAPABILITIES	553		553
184	0303260D8Z	DEFENSE MILITARY DECEPTION PROGRAM OFFICE (DMDPO)	1,014		1,014
185	0305172K	COMBINED ADVANCED APPLICATIONS	58,667		58,667
187	0305245D8Z	INTELLIGENCE CAPABILITIES AND INNOVATION INVESTMENTS	21,081		21,081
189	0307588D8Z	ALGORITHMIC WARFARE CROSS FUNCTIONAL TEAMS	221,235		221,235

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
(In Thousands of Dollars)

Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
191	0804768J	COCOM EXERCISE ENGAGEMENT AND TRAINING TRANSFORMATION (CE2T2)—NON-MHA	40,073		40,073
192	0808709SE	DEFENSE EQUAL OPPORTUNITY MANAGEMENT INSTITUTE (DEOMI)	100		100
193	0901598C	MANAGEMENT HQ—MDA	27,065		27,065
194	0902235K	JOINT SERVICE PROVIDER (JSP)	3,090		3,090
999	99999999999	CLASSIFIED PROGRAMS	51,471		51,471
		SUBTOTAL MANAGEMENT SUPPORT	1,354,628	1,000	1,355,628
OPERATIONAL SYSTEM DEVELOPMENT					
195	0604130V	ENTERPRISE SECURITY SYSTEM (ESS)	7,945		7,945
196	0604532K	JOINT ARTIFICIAL INTELLIGENCE	208,834		208,834
197	0605127T	REGIONAL INTERNATIONAL OUTREACH (RIO) AND PARTNERSHIP FOR PEACE INFORMATION MANA	1,947		1,947
198	0605147T	OVERSEAS HUMANITARIAN ASSISTANCE SHARED INFORMATION SYSTEM (OHAIS)	310		310
199	0607210D8Z	INDUSTRIAL BASE ANALYSIS AND SUSTAINMENT SUPPORT	10,051	38,500	48,551
		Advanced systems manufacturing		[5,000]	
		Composite manufacturing technologies		[15,000]	
		Printed circuit boards		[15,000]	
		Rare earth element production		[3,500]	
200	0607310D8Z	CWMD SYSTEMS: OPERATIONAL SYSTEMS DEVELOPMENT	12,734		12,734
201	0607327T	GLOBAL THEATER SECURITY COOPERATION MANAGEMENT INFORMATION SYSTEMS (G-TSCMIS) ..	14,800		14,800
202	0607384BP	CHEMICAL AND BIOLOGICAL DEFENSE (OPERATIONAL SYSTEMS DEVELOPMENT)	54,023		54,023
203	0208043J	PLANNING AND DECISION AID SYSTEM (PDAS)	4,537		4,537
204	0208045K	C4I INTEROPERABILITY	64,122		64,122
210	0302019K	DEFENSE INFO INFRASTRUCTURE ENGINEERING AND INTEGRATION	15,798		15,798
211	0303126K	LONG-HAUL COMMUNICATIONS—DCS	11,166		11,166
212	0303131K	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK (MEECN)	17,383		17,383
214	0303136G	KEY MANAGEMENT INFRASTRUCTURE (KMI)	54,516		54,516
215	0303140D8Z	INFORMATION SYSTEMS SECURITY PROGRAM	67,631		67,631

216	0303140G	INFORMATION SYSTEMS SECURITY PROGRAM	289,080	-1,882	287,198
		Sharkseer transfer		[-1,882]	
217	0303140K	INFORMATION SYSTEMS SECURITY PROGRAM	42,796	1,882	44,678
		Sharkseer transfer		[1,882]	
218	0303150K	GLOBAL COMMAND AND CONTROL SYSTEM	25,218		25,218
219	0303153K	DEFENSE SPECTRUM ORGANIZATION	21,698		21,698
220	0303228K	JOINT REGIONAL SECURITY STACKS (JRSS)	18,077		18,077
222	0303430K	FEDERAL INVESTIGATIVE SERVICES INFORMATION TECHNOLOGY	44,001		44,001
228	0305128V	SECURITY AND INVESTIGATIVE ACTIVITIES	2,400	15,000	17,400
		Local criminal records access		[15,000]	
232	0305186D8Z	POLICY R&D PROGRAMS	6,301		6,301
233	0305199D8Z	NET CENTRICITY	21,384		21,384
235	0305208BB	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	6,359		6,359
238	0305208K	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	2,981		2,981
241	0305327V	INSIDER THREAT	1,964		1,964
242	0305387D8Z	HOMELAND DEFENSE TECHNOLOGY TRANSFER PROGRAM	2,221		2,221
250	0708012K	LOGISTICS SUPPORT ACTIVITIES	1,361		1,361
251	0708012S	PACIFIC DISASTER CENTERS	1,770		1,770
252	0708047S	DEFENSE PROPERTY ACCOUNTABILITY SYSTEM	3,679		3,679
254	1105219BB	MQ-9 UAV	20,697		20,697
256	1160403BB	AVIATION SYSTEMS	245,795	8,800	254,595
		UPL Future vertical lift		[8,800]	
257	1160405BB	INTELLIGENCE SYSTEMS DEVELOPMENT	15,484		15,484
258	1160408BB	OPERATIONAL ENHANCEMENTS	166,922		166,922
259	1160431BB	WARRIOR SYSTEMS	62,332		62,332
260	1160432BB	SPECIAL PROGRAMS	21,805		21,805
261	1160434BB	UNMANNED ISR	37,377		37,377
262	1160480BB	SOF TACTICAL VEHICLES	11,150		11,150
263	1160483BB	MARITIME SYSTEMS	72,626		72,626
264	1160489BB	GLOBAL VIDEO SURVEILLANCE ACTIVITIES	5,363		5,363
265	1160490BB	OPERATIONAL ENHANCEMENTS INTELLIGENCE	12,962		12,962
266	1203610K	TELEPORT PROGRAM	6,158		6,158

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION (In Thousands of Dollars)					
Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
300	0604011D8Z	NEXT GENERATION INFORMATION COMMUNICATIONS TECHNOLOGY (5G)	0	25,000	25,000
		DOD Spectrum Sharing program		[25,000]	
999	99999999999	CLASSIFIED PROGRAMS	4,116,640	426,000	4,542,640
		Transfer back to base funding		[426,000]	
		SUBTOTAL OPERATIONAL SYSTEM DEVELOPMENT	5,832,398	513,300	6,345,698
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, DW	24,346,953	713,300	25,060,253
		OPERATIONAL TEST & EVAL, DEFENSE			
		MANAGEMENT SUPPORT			
1	06051180TE	OPERATIONAL TEST AND EVALUATION	93,291		93,291
2	06051310TE	LIVE FIRE TEST AND EVALUATION	69,172		69,172
3	06058140TE	OPERATIONAL TEST ACTIVITIES AND ANALYSES	58,737		58,737
		SUBTOTAL MANAGEMENT SUPPORT	221,200	0	221,200
		TOTAL OPERATIONAL TEST & EVAL, DEFENSE	221,200		221,200
		TOTAL RDT&E	102,647,545	1,375,568	104,023,113

SEC. 4202. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR OVERSEAS CONTINGENCY OPERATIONS.

SEC. 4202. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)					
Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY					
ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES					
74	0603327A	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING	500		500
79	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	3,000		3,000
85	0603804A	LOGISTICS AND ENGINEER EQUIPMENT—ADV DEV	1,085		1,085
95	0604117A	MANEUVER—SHORT RANGE AIR DEFENSE (M-SHORAD)	6,000		6,000
97	0604119A	ARMY ADVANCED COMPONENT DEVELOPMENT & PROTOTYPING	4,529		4,529
105	0604785A	INTEGRATED BASE DEFENSE (BUDGET ACTIVITY 4)	2,000		2,000
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	17,114	0	17,114
SYSTEM DEVELOPMENT & DEMONSTRATION					
151	0605035A	COMMON INFRARED COUNTERMEASURES (CIRCW)	11,770		11,770
159	0605051A	AIRCRAFT SURVIVABILITY DEVELOPMENT	77,420		77,420
163	0605203A	ARMY SYSTEM DEVELOPMENT & DEMONSTRATION	19,527		19,527
174	0304270A	ELECTRONIC WARFARE DEVELOPMENT	3,200		3,200
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	111,917	0	111,917
ROT&E MANAGEMENT SUPPORT					
200	0606003A	COUNTERINTEL AND HUMAN INTEL MODERNIZATION	1,875		1,875
		SUBTOTAL ROT&E MANAGEMENT SUPPORT	1,875	0	1,875
OPERATIONAL SYSTEMS DEVELOPMENT					
238	0303028A	SECURITY AND INTELLIGENCE ACTIVITIES	22,904		22,904
246	0305204A	TACTICAL UNMANNED AERIAL VEHICLES	34,100		34,100

SEC. 4202. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
247	0305206A	AIRBORNE RECONNAISSANCE SYSTEMS	14,000		14,000
252	0307665A	BIOMETRICS ENABLED INTELLIGENCE	2,214		2,214
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	73,218	0	73,218
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	204,124	0	204,124
		RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY			
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES			
28	0603207N	AIR/OCEAN TACTICAL APPLICATIONS	2,400		2,400
38	0603527N	RETRACT LARCH	22,000		22,000
57	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	14,178		14,178
69	0603795N	LAND ATTACK TECHNOLOGY	1,428		1,428
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	40,006	0	40,006
		SYSTEM DEVELOPMENT & DEMONSTRATION			
143	0604755N	SHIP SELF DEFENSE (DETECT & CONTROL)	1,122		1,122
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	1,122	0	1,122
		OPERATIONAL SYSTEMS DEVELOPMENT			
228	0206313M	MARINE CORPS COMMUNICATIONS SYSTEMS	15,000		15,000
999	99999999999	CLASSIFIED PROGRAMS	108,282		108,282
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	123,282	0	123,282
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	164,410	0	164,410
		RESEARCH, DEVELOPMENT, TEST & EVAL, AF			
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES			

48	0604858F	TECH TRANSITION PROGRAM	26,450		26,450
72	1208857F	SPACE RAPID CAPABILITIES OFFICE	17,885		17,885
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	44,335	0	44,335
		OPERATIONAL SYSTEMS DEVELOPMENT			
177	0205671F	JOINT COUNTER RCIED ELECTRONIC WARFARE	4,000		4,000
217	0208288F	INTEL DATA APPLICATIONS	1,200		1,200
999	9999999999	CLASSIFIED PROGRAMS	400,713		78,713
		Transfer back to base funding			-322,000
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	405,913		83,913
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, AF	450,248		128,248
		RESEARCH, DEVELOPMENT, TEST & EVAL, DW			
		APPLIED RESEARCH			
10	0602134BR	COUNTER IMPROVISED-THREAT ADVANCED STUDIES	1,677		1,677
		SUBTOTAL APPLIED RESEARCH	1,677	0	1,677
		ADVANCED TECHNOLOGY DEVELOPMENT			
25	0603122D&Z	COMBATING TERRORISM TECHNOLOGY SUPPORT	25,230		25,230
27	0603134BR	COUNTER IMPROVISED-THREAT SIMULATION	49,528		49,528
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	74,758	0	74,758
		ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES			
94	0604134BR	COUNTER IMPROVISED-THREAT DEMONSTRATION, PROTOTYPE DEVELOPMENT, AND TESTING	113,590		113,590
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES	113,590	0	113,590
		OPERATIONAL SYSTEM DEVELOPMENT			
258	1160408BB	OPERATIONAL ENHANCEMENTS	726		726
259	1160431BB	WARRIOR SYSTEMS	6,000		6,000
261	1160434BB	UNMANNED ISR	5,000		5,000
999	9999999999	CLASSIFIED PROGRAMS	626,199		200,199
				-426,000	

SEC. 4202. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)					
Line	Program Element	Item	FY 2020 Request	Senate Change	Senate Authorized
		Transfer back to base funding		[-426,000]	
		SUBTOTAL OPERATIONAL SYSTEM DEVELOPMENT	637,925	-426,000	211,925
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, DW	827,950	-426,000	401,950
		TOTAL RDT&E	1,646,732	-748,000	898,732

TITLE XLIII—OPERATION AND MAINTENANCE

TITLE XLIII—OPERATION AND MAINTENANCE

SEC. 4301. OPERATION AND MAINTENANCE.

SEC. 4301. OPERATION AND MAINTENANCE (In Thousands of Dollars)					
Line	Item	FY 2020 Request	Senate Change	Senate Authorized	
OPERATION & MAINTENANCE, ARMY					
OPERATING FORCES					
010	MANEUVER UNITS	0	1,735,922	1,735,922	
	Transfer back to base funding		[1,735,922]		
020	MODULAR SUPPORT BRIGADES	0	127,815	127,815	
	Transfer back to base funding		[127,815]		
030	ECHELONS ABOVE BRIGADE	0	716,356	716,356	
	Transfer back to base funding		[716,356]		
040	THEATER LEVEL ASSETS	0	890,891	890,891	
	Transfer back to base funding		[890,891]		
050	LAND FORCES OPERATIONS SUPPORT	0	1,232,477	1,232,477	
	Transfer back to base funding		[1,232,477]		
060	AVIATION ASSETS	0	1,355,606	1,355,606	
	Transfer back to base funding		[1,355,606]		
070	FORCE READINESS OPERATIONS SUPPORT	408,031	3,474,284	3,882,315	
	Transfer back to base funding		[3,474,284]		
080	LAND FORCES SYSTEMS READINESS	417,069	29,200	446,269	
	UPL MDTF INDOPACOM		[29,200]		
090	LAND FORCES DEPOT MAINTENANCE	0	1,633,327	1,633,327	
	Transfer back to base funding		[1,633,327]		
100	BASE OPERATIONS SUPPORT	0	7,951,473	7,951,473	

110	Historical underexecution				
120	Revised MHPI cost share				[−46,000]
160	Transfer back to base funding				[−50,460]
170	FACILITIES SUSTAINMENT, RESTORATION & MODERNIZATION	4,326,840			[8,047,933]
180	MANAGEMENT AND OPERATIONAL HEADQUARTERS	405,612			
190	US AFRICA COMMAND	251,511			
200	US EUROPEAN COMMAND	146,358		7,800	
210	JIOCEUR JAC Molesworth			[7,800]	
	US SOUTHERN COMMAND	191,840			
	US FORCES KOREA	57,603			
	CYBERSPACE ACTIVITIES—CYBERSPACE OPERATIONS	423,156			
	CYBERSPACE ACTIVITIES—CYBERSECURITY	551,185			
	SUBTOTAL OPERATING FORCES	7,179,205		19,155,151	
					26,334,356
MOBILIZATION					
220	STRATEGIC MOBILITY	380,577			
230	ARMY PREPOSITIONED STOCKS	362,942			
240	INDUSTRIAL PREPAREDNESS	4,637			
	SUBTOTAL MOBILIZATION	748,156		0	
TRAINING AND RECRUITING					
250	OFFICER ACQUISITION	157,175			
260	RECRUIT TRAINING	55,739			
270	ONE STATION UNIT TRAINING	62,300			
280	SENIOR RESERVE OFFICERS TRAINING CORPS	538,357			
290	SPECIALIZED SKILL TRAINING	969,813			
300	FLIGHT TRAINING	1,234,049			
310	PROFESSIONAL DEVELOPMENT EDUCATION	218,338			
320	TRAINING SUPPORT	554,659			
330	RECRUITING AND ADVERTISING	716,056		−80,000	

SEC. 4301. OPERATION AND MAINTENANCE
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
	Unjustified growth for advertising		[-70,000]	
	Unjustified growth for recruiting		[-10,000]	
340	EXAMINING	185,034		185,034
350	OFF-DUTY AND VOLUNTARY EDUCATION	214,275		214,275
360	CIVILIAN EDUCATION AND TRAINING	147,647		147,647
370	JUNIOR RESERVE OFFICER TRAINING CORPS	173,812		173,812
	SUBTOTAL TRAINING AND RECRUITING	5,227,254	-80,000	5,147,254
ADMIN & SRVWIDE ACTIVITIES				
390	SERVICEWIDE TRANSPORTATION	559,229		559,229
400	CENTRAL SUPPLY ACTIVITIES	929,944		929,944
410	LOGISTIC SUPPORT ACTIVITIES	629,981		629,981
420	AMMUNITION MANAGEMENT	458,771		458,771
430	ADMINISTRATION	428,768		428,768
440	SERVICEWIDE COMMUNICATIONS	1,512,736		1,512,736
450	MANPOWER MANAGEMENT	272,738		272,738
460	OTHER PERSONNEL SUPPORT	391,869	-28,000	363,869
	Historical underexecution		[-28,000]	
470	OTHER SERVICE SUPPORT	1,901,165		1,901,165
480	ARMY CLAIMS ACTIVITIES	198,765	-15,000	183,765
	Historical underexecution		[-15,000]	
490	REAL ESTATE MANAGEMENT	226,248		226,248
500	FINANCIAL MANAGEMENT AND AUDIT READINESS	315,489		315,489
510	INTERNATIONAL MILITARY HEADQUARTERS	427,254		427,254
520	MISC. SUPPORT OF OTHER NATIONS	43,248		43,248
9999	CLASSIFIED PROGRAMS	1,347,053		1,347,053

	SUBTOTAL ADMIN & SRWIDE ACTIVITIES	9,643,258	—43,000	9,600,258	
	UNDISTRIBUTED				
999	UNDISTRIBUTED	0	103,800	103,800	
	Cyber operations-peculiar capability development projects		[3,000]		
	Single family home pilot program		[1,000]		
	THAAD sustainment program transfer from MDA		[99,800]		
	SUBTOTAL UNDISTRIBUTED	0	103,800	103,800	
	TOTAL OPERATION & MAINTENANCE, ARMY	22,797,873	19,135,951	41,933,824	
	OPERATION & MAINTENANCE, ARMY RES				
	OPERATING FORCES				
010	MODULAR SUPPORT BRIGADES	0	11,927	11,927	525
	Transfer back to base funding		[11,927]		
020	ECHELONS ABOVE BRIGADE	0	533,015	533,015	
	Transfer back to base funding		[533,015]		
030	THEATER LEVEL ASSETS	0	119,517	119,517	
	Transfer back to base funding		[119,517]		
040	LAND FORCES OPERATIONS SUPPORT	0	550,468	550,468	
	Transfer back to base funding		[550,468]		
050	AVIATION ASSETS	0	86,670	86,670	
	Transfer back to base funding		[86,670]		
060	FORCE READINESS OPERATIONS SUPPORT	390,061		390,061	
070	LAND FORCES SYSTEMS READINESS	101,890		101,890	
080	LAND FORCES DEPOT MAINTENANCE	0	48,503	48,503	
	Transfer back to base funding		[48,503]		
090	BASE OPERATIONS SUPPORT	0	598,907	598,907	
	Transfer back to base funding		[598,907]		
100	FACILITIES SUSTAINMENT, RESTORATION & MODERNIZATION	444,376		444,376	

SEC. 4301. OPERATION AND MAINTENANCE (In Thousands of Dollars)				
Line	Item	FY 2020 Request	Senate Change	Senate Authorized
110	MANAGEMENT AND OPERATIONAL HEADQUARTERS	22,095		22,095
120	CYBERSPACE ACTIVITIES—CYBERSPACE OPERATIONS	3,288		3,288
130	CYBERSPACE ACTIVITIES—CYBERSECURITY	7,655		7,655
	SUBTOTAL OPERATING FORCES	969,365	1,949,007	2,918,372
ADMIN & SRWD ACTIVITIES				
140	SERVICEWIDE TRANSPORTATION	14,533		14,533
150	ADMINISTRATION	17,231		17,231
160	SERVICEWIDE COMMUNICATIONS	14,304		14,304
170	MANPOWER MANAGEMENT	6,129		6,129
180	RECRUITING AND ADVERTISING	58,541		58,541
	SUBTOTAL ADMIN & SRWD ACTIVITIES	110,738	0	110,738
	TOTAL OPERATION & MAINTENANCE, ARMY RES	1,080,103	1,949,007	3,029,110
OPERATION & MAINTENANCE, ARNG				
OPERATING FORCES				
010	MANEUVER UNITS	0	805,671	805,671
	Transfer back to base funding		[805,671]	
020	MODULAR SUPPORT BRIGADES	0	195,334	195,334
	Transfer back to base funding		[195,334]	
030	ECHELONS ABOVE BRIGADE	0	771,048	771,048
	Transfer back to base funding		[771,048]	
040	THEATER LEVEL ASSETS	0	94,726	94,726
	Transfer back to base funding		[94,726]	

050	LAND FORCES OPERATIONS SUPPORT			
	Transfer back to base funding	0	33,696	33,696
060	AVIATION ASSETS	0	[33,696]	
	Transfer back to base funding		981,819	981,819
	Transfer back to base funding		[981,819]	
070	FORCE READINESS OPERATIONS SUPPORT	743,206		743,206
080	LAND FORCES SYSTEMS READINESS	50,963		50,963
090	LAND FORCES DEPOT MAINTENANCE	0	258,278	258,278
	Transfer back to base funding		[258,278]	
100	BASE OPERATIONS SUPPORT	0	1,153,076	1,153,076
	Transfer back to base funding		[1,153,076]	
110	FACILITIES SUSTAINMENT, RESTORATION & MODERNIZATION	1,113,475	7,200	1,120,675
	Damage assessment		[7,200]	
120	MANAGEMENT AND OPERATIONAL HEADQUARTERS	1,001,042		1,001,042
130	CYBERSPACE ACTIVITIES—CYBERSPACE OPERATIONS	8,448		8,448
140	CYBERSPACE ACTIVITIES—CYBERSECURITY	7,768		7,768
	SUBTOTAL OPERATING FORCES	2,924,902	4,300,848	7,225,750
ADMIN & SRWD ACTIVITIES				
150	SERVICEWIDE TRANSPORTATION	9,890		9,890
160	ADMINISTRATION	71,070		71,070
170	SERVICEWIDE COMMUNICATIONS	68,213		68,213
180	MANPOWER MANAGEMENT	8,628		8,628
190	OTHER PERSONNEL SUPPORT	250,376	-3,000	247,376
	Unjustified growth for marketing		[-1,500]	
	Unjustified growth for recruiting		[-1,500]	
200	REAL ESTATE MANAGEMENT	2,676		2,676
	SUBTOTAL ADMIN & SRWD ACTIVITIES	410,853	-3,000	407,853
	TOTAL OPERATION & MAINTENANCE, ARNG	3,335,755	4,297,848	7,633,603

SEC. 4301. OPERATION AND MAINTENANCE
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
OPERATION & MAINTENANCE, NAVY				
OPERATING FORCES				
010	MISSION AND OTHER FLIGHT OPERATIONS	0	2,877,800	2,877,800
	Transfer back to base funding		[2,877,800]	
020	FLEET AIR TRAINING	2,284,828		2,284,828
030	AVIATION TECHNICAL DATA & ENGINEERING SERVICES	0	59,299	59,299
	Transfer back to base funding		[59,299]	
040	AIR OPERATIONS AND SAFETY SUPPORT	155,896		155,896
050	AIR SYSTEMS SUPPORT	719,107		719,107
060	AIRCRAFT DEPOT MAINTENANCE	0	1,154,181	1,154,181
	Transfer back to base funding		[1,154,181]	
070	AIRCRAFT DEPOT OPERATIONS SUPPORT	60,402		60,402
080	AVIATION LOGISTICS	1,241,421		1,241,421
090	MISSION AND OTHER SHIP OPERATIONS	0	4,097,262	4,097,262
	Transfer back to base funding		[4,097,262]	
100	SHIP OPERATIONS SUPPORT & TRAINING	1,031,792		1,031,792
110	SHIP DEPOT MAINTENANCE	0	8,875,298	8,875,298
	Transfer back to base funding		[8,875,298]	
	UPL SSN and Ship maintenance increase		[814,000]	
120	SHIP DEPOT OPERATIONS SUPPORT	0	2,073,641	2,073,641
	Transfer back to base funding		[2,073,641]	
130	COMBAT COMMUNICATIONS AND ELECTRONIC WARFARE	1,378,856		1,378,856
140	SPACE SYSTEMS AND SURVEILLANCE	276,245		276,245
150	WARFARE TACTICS	675,209		675,209
160	OPERATIONAL METEOROLOGY AND OCEANOGRAPHY	389,516		389,516
170	COMBAT SUPPORT FORCES	1,536,310		1,536,310
180	EQUIPMENT MAINTENANCE AND DEPOT OPERATIONS SUPPORT	161,579		161,579

190	COMBATANT COMMANDERS CORE OPERATIONS	59,521		59,521
200	COMBATANT COMMANDERS DIRECT MISSION SUPPORT	93,978	5,000	98,978
	Posture site assessments INDOPACOM		[5,000]	
210	MILITARY INFORMATION SUPPORT OPERATIONS	8,641		8,641
220	CYBERSPACE ACTIVITIES	496,385		496,385
230	FLEET BALLISTIC MISSILE	1,423,339		1,423,339
240	WEAPONS MAINTENANCE	924,069		924,069
250	OTHER WEAPON SYSTEMS SUPPORT	540,210		540,210
260	ENTERPRISE INFORMATION	1,131,627		1,131,627
270	SUSTAINMENT, RESTORATION AND MODERNIZATION	3,029,634		3,029,634
280	BASE OPERATING SUPPORT	0		0
	Revised MHPI cost share		4,433,783	4,433,783
	Transfer back to base funding		[18,840]	
	Transfer back to base funding		[4,414,943]	
	SUBTOTAL OPERATING FORCES	17,618,565	23,576,264	41,194,829
MOBILIZATION				
290	SHIP PREPOSITIONING AND SURGE	942,902		942,902
300	READY RESERVE FORCE	352,044		352,044
310	SHIP ACTIVATIONS/INACTIVATIONS	427,555		427,555
320	EXPEDITIONARY HEALTH SERVICES SYSTEMS	137,597		137,597
330	COAST GUARD SUPPORT	24,604		24,604
	SUBTOTAL MOBILIZATION	1,884,702	0	1,884,702
TRAINING AND RECRUITING				
340	OFFICER ACQUISITION	150,765		150,765
350	RECRUIT TRAINING	11,584		11,584
360	RESERVE OFFICERS TRAINING CORPS	159,133		159,133
370	SPECIALIZED SKILL TRAINING	911,316		911,316
380	PROFESSIONAL DEVELOPMENT EDUCATION	185,211		185,211
390	TRAINING SUPPORT	267,224		267,224

SEC. 4301. OPERATION AND MAINTENANCE
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
400	RECRUITING AND ADVERTISING	209,252	-20,000	189,252
	Unjustified growth		[-20,000]	
410	OFF-DUTY AND VOLUNTARY EDUCATION	88,902		88,902
420	CIVILIAN EDUCATION AND TRAINING	67,492		67,492
430	JUNIOR ROTC	55,164		55,164
	SUBTOTAL TRAINING AND RECRUITING	2,106,043	-20,000	2,086,043
	ADMIN & SRWD ACTIVITIES			
440	ADMINISTRATION	1,143,358	-51,000	1,092,358
	Decrease		[-1,000]	
	Unjustified audit growth		[-50,000]	
450	CIVILIAN MANPOWER AND PERSONNEL MANAGEMENT	178,342		178,342
460	MILITARY MANPOWER AND PERSONNEL MANAGEMENT	418,413		418,413
490	SERVICEWIDE TRANSPORTATION	157,465		157,465
510	PLANNING, ENGINEERING, AND PROGRAM SUPPORT	485,397	5,000	490,397
	REPO		[5,000]	
520	ACQUISITION, LOGISTICS, AND OVERSIGHT	654,137		654,137
530	INVESTIGATIVE AND SECURITY SERVICES	718,061		718,061
9999	CLASSIFIED PROGRAMS	588,235	3,300	591,535
	Transfer back to base funding		[3,300]	
	SUBTOTAL ADMIN & SRWD ACTIVITIES	4,343,408	-42,700	4,300,708
	UNDISTRIBUTED			
999	UNDISTRIBUTED	0	3,000	3,000
	Cyber operations-peculiar capability development projects		[3,000]	

	SUBTOTAL UNDISTRIBUTED	0	3,000	3,000	
	TOTAL OPERATION & MAINTENANCE, NAVY	25,952,718	23,516,564	49,469,282	
	OPERATION & MAINTENANCE, MARINE CORPS				
	OPERATING FORCES				
010	OPERATIONAL FORCES	0	968,224	968,224	
	Transfer back to base funding		[968,224]		
020	FIELD LOGISTICS	1,278,533		1,278,533	
030	DEPOT MAINTENANCE	0	232,991	232,991	
	Transfer back to base funding		[232,991]		
040	MARITIME PREPOSITIONING	0	100,396	100,396	
	Transfer back to base funding		[100,396]		
050	CYBERSPACE ACTIVITIES	203,580		203,580	
060	SUSTAINMENT, RESTORATION & MODERNIZATION	1,115,742	443,292	1,559,034	
	Transfer back to base funding		[443,292]		
070	BASE OPERATING SUPPORT	0	2,253,776	2,253,776	
	Transfer back to base funding		[2,253,776]		
	SUBTOTAL OPERATING FORCES	2,597,855	3,998,679	6,596,534	
	TRAINING AND RECRUITING				
080	RECRUIT TRAINING	21,240		21,240	
090	OFFICER ACQUISITION	1,168		1,168	
100	SPECIALIZED SKILL TRAINING	106,601		106,601	
110	PROFESSIONAL DEVELOPMENT EDUCATION	49,095		49,095	
120	TRAINING SUPPORT	407,315		407,315	
130	RECRUITING AND ADVERTISING	210,475		210,475	
140	OFF-DUTY AND VOLUNTARY EDUCATION	42,810		42,810	
150	JUNIOR ROTC	25,183		25,183	
	SUBTOTAL TRAINING AND RECRUITING	863,887	0	863,887	

SEC. 4301. OPERATION AND MAINTENANCE (In Thousands of Dollars)					
Line	Item	FY 2020 Request	Senate Change	Senate Authorized	
	ADMIN & SRWD ACTIVITIES				
160	SERVICEWIDE TRANSPORTATION	29,894		29,894	
170	ADMINISTRATION	384,352		384,352	
9999	CLASSIFIED PROGRAMS	52,057		52,057	
	SUBTOTAL ADMIN & SRWD ACTIVITIES	466,303	0	466,303	
	UNDISTRIBUTED				
999	UNDISTRIBUTED	0	3,000	3,000	532
	Cyber operations-peculiar capability development		[3,000]		
	SUBTOTAL UNDISTRIBUTED	0	3,000	3,000	
	TOTAL OPERATION & MAINTENANCE, MARINE CORPS	3,928,045	4,001,679	7,929,724	
	OPERATION & MAINTENANCE, NAVY RES				
	OPERATING FORCES				
010	MISSION AND OTHER FLIGHT OPERATIONS	0	654,220	654,220	
	Transfer back to base funding		[654,220]		
020	INTERMEDIATE MAINTENANCE	8,767		8,767	
030	AIRCRAFT DEPOT MAINTENANCE	0	108,236	108,236	
	Transfer back to base funding		[108,236]		
040	AIRCRAFT DEPOT OPERATIONS SUPPORT	463		463	
050	AVIATION LOGISTICS	26,014		26,014	
060	SHIP OPERATIONS SUPPORT & TRAINING	583		583	

070	COMBAT COMMUNICATIONS	17,883		17,883	
080	COMBAT SUPPORT FORCES	128,079		128,079	
090	CYBERSPACE ACTIVITIES	356		356	
100	ENTERPRISE INFORMATION	26,133		26,133	
110	SUSTAINMENT, RESTORATION AND MODERNIZATION	35,397		35,397	
120	BASE OPERATING SUPPORT	0	101,376	101,376	
	Transfer back to base funding		[101,376]		
	SUBTOTAL OPERATING FORCES	243,675	863,832	1,107,507	
	ADMIN & SRWD ACTIVITIES				
130	ADMINISTRATION	1,888		1,888	
140	MILITARY MANPOWER AND PERSONNEL MANAGEMENT	12,778		12,778	
150	ACQUISITION AND PROGRAM MANAGEMENT	2,943		2,943	
	SUBTOTAL ADMIN & SRWD ACTIVITIES	17,609	0	17,609	
	TOTAL OPERATION & MAINTENANCE, NAVY RES	261,284	863,832	1,125,116	
	OPERATION & MAINTENANCE, MC RESERVE				
010	OPERATING FORCES	0	106,484	106,484	
	Transfer back to base funding		[106,484]		
020	DEPOT MAINTENANCE	0	18,429	18,429	
	Transfer back to base funding		[18,429]		
030	SUSTAINMENT, RESTORATION AND MODERNIZATION	47,516		47,516	
040	BASE OPERATING SUPPORT	0	106,073	106,073	
	Transfer back to base funding		[106,073]		
	SUBTOTAL OPERATING FORCES	47,516	230,986	278,502	
	ADMIN & SRWD ACTIVITIES				

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SEC. 4301. OPERATION AND MAINTENANCE
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
050	ADMINISTRATION	13,574		13,574
	SUBTOTAL ADMIN & SRWD ACTIVITIES	13,574	0	13,574
	TOTAL OPERATION & MAINTENANCE, MC RESERVE	61,090	230,986	292,076
OPERATION & MAINTENANCE, AIR FORCE				
OPERATING FORCES				
010	PRIMARY COMBAT FORCES	729,127		729,127
020	COMBAT ENHANCEMENT FORCES	1,318,770		1,318,770
030	AIR OPERATIONS TRAINING (OJT, MAINTAIN SKILLS)	1,486,790		1,486,790
040	DEPOT PURCHASE EQUIPMENT MAINTENANCE	0	3,334,792	3,334,792
	Transfer back to base funding		[3,334,792]	
050	FACILITIES SUSTAINMENT, RESTORATION & MODERNIZATION	3,675,824	466,611	4,142,435
	Transfer back to base funding		[466,611]	
060	CYBERSPACE SUSTAINMENT	0	228,811	228,811
	Transfer back to base funding		[228,811]	
070	CONTRACTOR LOGISTICS SUPPORT AND SYSTEM SUPPORT	0	8,329,364	8,329,364
	Transfer back to base funding		[8,329,364]	
080	FLYING HOUR PROGRAM	0	4,048,773	4,048,773
	Transfer back to base funding		[4,048,773]	
090	BASE SUPPORT	0	7,191,582	7,191,582
	Revised MHPi cost share		[−32,400]	
	Transfer back to base funding		[7,223,982]	
100	GLOBAL C3I AND EARLY WARNING	964,553		964,553
110	OTHER COMBAT OPS SPT PROGRAMS	1,032,307		1,032,307
120	CYBERSPACE ACTIVITIES	670,076		670,076

140	LAUNCH FACILITIES	179,980	179,980
150	SPACE CONTROL SYSTEMS	467,990	467,990
160	US NORTHCOM/NORAD	184,655	184,655
170	US STRATCOM	478,357	478,357
180	US CYBERCOM	323,121	347,921
	Accelerate development Cyber National Mission Force capabilities		24,800
	Cyber National Mission Force Mobile & Modular Hunt Forward Kit		[1,500]
	ETERNALDARKNESS		[5,300]
190	US CENTCOM	160,989	[18,000]
200	US SOCOM	6,225	
210	US TRANSCOM	544	
220	CENTCOM CYBERSPACE SUSTAINMENT	2,073	
230	USSPACECOM	70,588	
9999	CLASSIFIED PROGRAMS	1,322,944	
	SUBTOTAL OPERATING FORCES	13,074,913	23,624,733
			36,699,646
	MOBILIZATION		
240	AIRLIFT OPERATIONS	1,158,142	1,158,142
250	MOBILIZATION PREPAREDNESS	138,672	138,672
	SUBTOTAL MOBILIZATION	1,296,814	1,296,814
			0
	TRAINING AND RECRUITING		
260	OFFICER ACQUISITION	130,835	130,835
270	RECRUIT TRAINING	26,021	26,021
280	RESERVE OFFICERS TRAINING CORPS (ROTC)	121,391	121,391
290	SPECIALIZED SKILL TRAINING	454,539	454,539
300	FLIGHT TRAINING	600,565	600,565
310	PROFESSIONAL DEVELOPMENT EDUCATION	282,788	282,788
320	TRAINING SUPPORT	123,988	123,988
330	RECRUITING AND ADVERTISING	167,731	161,731
			-6,000

SEC. 4301. OPERATION AND MAINTENANCE
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
	Unjustified growth		[-6,000]	
340	EXAMINING	4,576		4,576
350	OFF-DUTY AND VOLUNTARY EDUCATION	211,911		211,911
360	CIVILIAN EDUCATION AND TRAINING	219,021		219,021
370	JUNIOR ROTC	62,092		62,092
	SUBTOTAL TRAINING AND RECRUITING	2,405,458	-6,000	2,399,458
	ADMIN & SRVWD ACTIVITIES			
380	LOGISTICS OPERATIONS	664,926		664,926
390	TECHNICAL SUPPORT ACTIVITIES	101,483		101,483
400	ADMINISTRATION	892,480		892,480
410	SERVICEWIDE COMMUNICATIONS	152,532		152,532
420	OTHER SERVICEWIDE ACTIVITIES	1,254,089		1,254,089
430	CIVIL AIR PATROL	30,070		30,070
460	INTERNATIONAL SUPPORT	136,110		136,110
9999	CLASSIFIED PROGRAMS	1,269,624		1,269,624
	SUBTOTAL ADMIN & SRVWD ACTIVITIES	4,501,314	0	4,501,314
	OPERATION & MAINTENANCE, SPACE FORCE			
	OPERATING FORCES			
010	BASE SUPPORT	72,436		72,436
	SUBTOTAL OPERATING FORCES	72,436	0	72,436
	TOTAL OPERATION & MAINTENANCE, SPACE FORCE	72,436	0	72,436

999	UNDISTRIBUTED				
	UNDISTRIBUTED	0	3,000	3,000	
	Cyber operations-peculiar capability development projects		[3,000]		
	SUBTOTAL UNDISTRIBUTED	0	3,000	3,000	
	TOTAL OPERATION & MAINTENANCE, AIR FORCE	21,278,499	23,621,733	44,900,232	
	OPERATION & MAINTENANCE, AF RESERVE				
	OPERATING FORCES				
010	PRIMARY COMBAT FORCES	1,781,413		1,781,413	
020	MISSION SUPPORT OPERATIONS	209,650		209,650	
030	DEPOT PURCHASE EQUIPMENT MAINTENANCE	0	494,235	494,235	
	Transfer back to base funding		[494,235]		
040	FACILITIES SUSTAINMENT, RESTORATION & MODERNIZATION	128,746		128,746	
050	CONTRACTOR LOGISTICS SUPPORT AND SYSTEM SUPPORT	0	256,512	256,512	
	Transfer back to base funding		[256,512]		
060	BASE SUPPORT	0	414,626	414,626	
	Transfer back to base funding		[414,626]		
070	CYBERSPACE ACTIVITIES	1,673		1,673	
	SUBTOTAL OPERATING FORCES	2,121,482	1,165,373	3,286,855	
	ADMINISTRATION AND SERVICEWIDE ACTIVITIES				
080	ADMINISTRATION	69,436		69,436	
090	RECRUITING AND ADVERTISING	22,124		22,124	
100	MILITARY MANPOWER AND PERS MGMT (ARPC)	10,946		10,946	
110	OTHER PERS SUPPORT (DISABILITY COMP)	7,009		7,009	
120	AUDIOVISUAL	448		448	
	SUBTOTAL ADMINISTRATION AND SERVICEWIDE ACTIVITIES	109,963	0	109,963	

SEC. 4301. OPERATION AND MAINTENANCE
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
	TOTAL OPERATION & MAINTENANCE, AF RESERVE	2,231,445	1,165,373	3,396,818
	OPERATION & MAINTENANCE, ANG			
	OPERATING FORCES			
010	AIRCRAFT OPERATIONS	2,497,967		2,497,967
020	MISSION SUPPORT OPERATIONS	600,377		600,377
030	DEPOT PURCHASE EQUIPMENT MAINTENANCE	0	879,467	879,467
	Transfer back to base funding		[879,467]	
040	FACILITIES SUSTAINMENT, RESTORATION & MODERNIZATION	400,734		400,734
050	CONTRACTOR LOGISTICS SUPPORT AND SYSTEM SUPPORT	0	1,299,089	1,299,089
	Transfer back to base funding		[1,299,089]	
060	BASE SUPPORT	0	911,775	911,775
	Transfer back to base funding		[911,775]	
070	CYBERSPACE SUSTAINMENT	0	24,742	24,742
	Transfer back to base funding		[24,742]	
080	CYBERSPACE ACTIVITIES	25,507		25,507
	SUBTOTAL OPERATING FORCES	3,524,585	3,115,073	6,639,658
	ADMINISTRATION AND SERVICE-WIDE ACTIVITIES			
090	ADMINISTRATION	47,215		47,215
100	RECRUITING AND ADVERTISING	40,356		40,356
	SUBTOTAL ADMINISTRATION AND SERVICE-WIDE ACTIVITIES	87,571	0	87,571
	TOTAL OPERATION & MAINTENANCE, ANG	3,612,156	3,115,073	6,727,229

OPERATION AND MAINTENANCE, DEFENSE-WIDE			
OPERATING FORCES			
010	JOINT CHIEFS OF STAFF	409,542	409,542
020	JOINT CHIEFS OF STAFF—CE2T2	579,179	579,179
030	JOINT CHIEFS OF STAFF—CYBER	24,598	24,598
040	SPECIAL OPERATIONS COMMAND COMBAT DEVELOPMENT ACTIVITIES	1,075,762	1,075,762
050	SPECIAL OPERATIONS COMMAND CYBERSPACE ACTIVITIES	14,409	14,409
060	SPECIAL OPERATIONS COMMAND INTELLIGENCE	501,747	501,747
070	SPECIAL OPERATIONS COMMAND MAINTENANCE	559,300	559,300
080	SPECIAL OPERATIONS COMMAND MANAGEMENT/OPERATIONAL HEADQUARTERS	177,928	177,928
090	SPECIAL OPERATIONS COMMAND OPERATIONAL SUPPORT	925,262	925,262
100	SPECIAL OPERATIONS COMMAND THEATER FORCES	2,764,738	2,764,738
	SUBTOTAL OPERATING FORCES	7,032,465	7,032,465
		0	0
TRAINING AND RECRUITING			
120	DEFENSE ACQUISITION UNIVERSITY	180,250	180,250
130	JOINT CHIEFS OF STAFF	100,610	100,610
140	PROFESSIONAL DEVELOPMENT EDUCATION	33,967	33,967
	SUBTOTAL TRAINING AND RECRUITING	314,827	314,827
		0	0
ADMIN & SRWIDE ACTIVITIES			
160	CIVIL MILITARY PROGRAMS	165,707	195,007
	IRT Increase		29,300
	Starbase		[14,300]
			[15,000]
180	DEFENSE CONTRACT AUDIT AGENCY	627,467	627,467
190	DEFENSE CONTRACT AUDIT AGENCY—CYBER	3,362	3,362
200	DEFENSE CONTRACT MANAGEMENT AGENCY	1,438,068	1,438,068
210	DEFENSE CONTRACT MANAGEMENT AGENCY—CYBER	24,391	24,391
220	DEFENSE HUMAN RESOURCES ACTIVITY	892,438	892,438

SEC. 4301. OPERATION AND MAINTENANCE
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
230	DEFENSE INFORMATION SYSTEMS AGENCY	2,012,885	-5,000	2,007,885
	MilCloud		[-5,000]	
240	DEFENSE INFORMATION SYSTEMS AGENCY—CYBER	601,223	35,137	636,360
	Sharkseer transfer		[35,137]	
270	DEFENSE LEGAL SERVICES AGENCY	34,632		34,632
280	DEFENSE LOGISTICS AGENCY	415,699		415,699
290	DEFENSE MEDIA ACTIVITY	202,792		202,792
300	DEFENSE PERSONNEL ACCOUNTING AGENCY	144,881		144,881
310	DEFENSE SECURITY COOPERATION AGENCY	696,884		696,884
	Assessment, monitoring, and evaluation		[11,000]	
	Security cooperation account		[-11,000]	
320	DEFENSE SECURITY SERVICE	889,664	10,000	899,664
	Consolidated Adjudication Facility		[10,000]	
340	DEFENSE SECURITY SERVICE—CYBER	9,220		9,220
360	DEFENSE TECHNICAL INFORMATION CENTER	3,000		3,000
370	DEFENSE TECHNOLOGY SECURITY ADMINISTRATION	35,626		35,626
380	DEFENSE THREAT REDUCTION AGENCY	568,133		568,133
400	DEFENSE THREAT REDUCTION AGENCY—CYBER	13,339		13,339
410	DEPARTMENT OF DEFENSE EDUCATION ACTIVITY	2,932,226	50,000	2,982,226
	Impact aid for children with severe disabilities		[10,000]	
	Impact aid for schools with military dependent students		[40,000]	
420	MISSILE DEFENSE AGENCY	522,529	-99,800	422,729
	THAAD program transfer to Army		[-99,800]	
450	OFFICE OF ECONOMIC ADJUSTMENT	59,513		59,513
460	OFFICE OF THE SECRETARY OF DEFENSE	1,604,738	74,000	1,678,738
	Bien Hoa dioxin cleanup		[15,000]	
	CDC study		[10,000]	

	Emerging contaminants			[1,000]	
	Industrial policy implementation of EO13806			[15,000]	
	Interstate compacts for licensure and credentialing			[4,000]	
	National Commission on Military Aviation Safety			[3,000]	
	National Commission on Military, National, and Public Service			[1,000]	
	Readiness and Environmental Protection Integration			[25,000]	
470	OFFICE OF THE SECRETARY OF DEFENSE—CYBER	48,783			48,783
480	SPACE DEVELOPMENT AGENCY	44,750			44,750
500	WASHINGTON HEADQUARTERS SERVICES	324,001		5,000	329,001
	Defense Digital Service Hires			[5,000]	
	CLASSIFIED PROGRAMS	15,736,098		45,363	15,781,461
9999	Sharkseer transfer			[−35,137]	
	Transfer back to base funding			[80,500]	
	SUBTOTAL ADMIN & SRVWIDE ACTIVITIES	30,052,049		144,000	30,196,049
	TOTAL OPERATION AND MAINTENANCE, DEFENSE-WIDE	37,399,341		144,000	37,543,341
					541
	MISCELLANEOUS APPROPRIATIONS				
	US COURT OF APPEALS FOR THE ARMED FORCES, DEFENSE				
010	US COURT OF APPEALS FOR THE ARMED FORCES, DEFENSE	14,771			14,771
	SUBTOTAL US COURT OF APPEALS FOR THE ARMED FORCES, DEFENSE	14,771		0	14,771
	OVERSEAS HUMANITARIAN, DISASTER AND CIVIC AID				
010	OVERSEAS HUMANITARIAN, DISASTER AND CIVIC AID	108,600			108,600
	SUBTOTAL OVERSEAS HUMANITARIAN, DISASTER AND CIVIC AID	108,600		0	108,600
	COOPERATIVE THREAT REDUCTION				
010	COOPERATIVE THREAT REDUCTION	338,700			338,700
	SUBTOTAL COOPERATIVE THREAT REDUCTION	338,700		0	338,700

SEC. 4301. OPERATION AND MAINTENANCE (In Thousands of Dollars)					
Line	Item	FY 2020 Request	Senate Change	Senate Authorized	
010	ACQ WORKFORCE DEV FD				
	ACQ WORKFORCE DEV FD	400,000		400,000	
	SUBTOTAL ACQ WORKFORCE DEV FD	400,000	0	400,000	
050	ENVIRONMENTAL RESTORATION, ARMY				
	ENVIRONMENTAL RESTORATION, ARMY	207,518		207,518	
	SUBTOTAL ENVIRONMENTAL RESTORATION, ARMY	207,518	0	207,518	
060	ENVIRONMENTAL RESTORATION, NAVY				
	ENVIRONMENTAL RESTORATION, NAVY	335,932		335,932	
	SUBTOTAL ENVIRONMENTAL RESTORATION, NAVY	335,932	0	335,932	
070	ENVIRONMENTAL RESTORATION, AIR FORCE				
	ENVIRONMENTAL RESTORATION, AIR FORCE	302,744		302,744	
	SUBTOTAL ENVIRONMENTAL RESTORATION, AIR FORCE	302,744	0	302,744	
080	ENVIRONMENTAL RESTORATION, DEFENSE				
	ENVIRONMENTAL RESTORATION, DEFENSE	9,105		9,105	
	SUBTOTAL ENVIRONMENTAL RESTORATION, DEFENSE	9,105	0	9,105	

090	ENVIRONMENTAL RESTORATION FORMERLY USED SITES				
	ENVIRONMENTAL RESTORATION FORMERLY USED SITES	216,499			216,499
	SUBTOTAL ENVIRONMENTAL RESTORATION FORMERLY USED SITES	216,499	0		216,499
	TOTAL MISCELLANEOUS APPROPRIATIONS	1,933,869	0		1,933,869
999	UNDISTRIBUTED				
	UNDISTRIBUTED				
	UNDISTRIBUTED	0		-590,000	-590,000
	Foreign currency fluctuation fund reduction			[-607,000]	
	JROTC			[25,000]	
	Printing inefficiencies			[-8,000]	
	SUBTOTAL UNDISTRIBUTED	0		-590,000	-590,000
	TOTAL UNDISTRIBUTED	0		-590,000	-590,000
	TOTAL OPERATION & MAINTENANCE	123,944,614	81,452,046		205,396,660

SEC. 4302. OPERATION AND MAINTENANCE FOR OVERSEAS CONTINGENCY OPERATIONS.

SEC. 4302. OPERATION AND MAINTENANCE FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)				
Line	Item	FY 2020 Request	Senate Change	Senate Authorized
OPERATION & MAINTENANCE, ARMY				
OPERATING FORCES				
010	MANEUVER UNITS	3,146,796	-1,735,922	1,410,874
	Transfer back to base funding		[-1,735,922]	
020	MODULAR SUPPORT BRIGADES	127,815	-127,815	0
	Transfer back to base funding		[-127,815]	
030	ECHELONS ABOVE BRIGADE	742,858	-716,356	26,502
	Transfer back to base funding		[-716,356]	
040	THEATER LEVEL ASSETS	3,165,381	-890,891	2,274,490
	Transfer back to base funding		[-890,891]	
050	LAND FORCES OPERATIONS SUPPORT	1,368,765	-1,232,477	136,288
	Transfer back to base funding		[-1,232,477]	
060	AVIATION ASSETS	1,655,846	-1,355,606	300,240
	Transfer back to base funding		[-1,355,606]	
070	FORCE READINESS OPERATIONS SUPPORT	6,889,293	-3,474,284	3,415,009
	Transfer back to base funding		[-3,474,284]	
080	LAND FORCES SYSTEMS READINESS	29,985		29,985
090	LAND FORCES DEPOT MAINTENANCE	1,720,258	-1,633,327	86,931
	Transfer back to base funding		[-1,633,327]	
100	BASE OPERATIONS SUPPORT	8,163,639	-8,047,933	115,706
	Transfer back to base funding		[-8,047,933]	
110	FACILITIES SUSTAINMENT, RESTORATION & MODERNIZATION	72,657		72,657
130	ADDITIONAL ACTIVITIES	6,397,586		6,397,586
140	COMMANDER'S EMERGENCY RESPONSE PROGRAM	5,000		5,000

150	RESET	1,048,896	1,048,896
160	US AFRICA COMMAND	203,174	203,174
170	US EUROPEAN COMMAND	173,676	173,676
200	CYBERSPACE ACTIVITIES—CYBERSPACE OPERATIONS	188,529	188,529
210	CYBERSPACE ACTIVITIES—CYBERSECURITY	5,682	5,682
	SUBTOTAL OPERATING FORCES	35,105,836	15,891,225
			−19,214,611
	MOBILIZATION		
230	ARMY PREPOSITIONED STOCKS	131,954	131,954
	SUBTOTAL MOBILIZATION	131,954	0
	ADMIN & SRWIDE ACTIVITIES		
390	SERVICEWIDE TRANSPORTATION	721,014	721,014
400	CENTRAL SUPPLY ACTIVITIES	66,845	66,845
410	LOGISTIC SUPPORT ACTIVITIES	9,309	9,309
420	AMMUNITION MANAGEMENT	23,653	23,653
460	OTHER PERSONNEL SUPPORT	109,019	109,019
490	REAL ESTATE MANAGEMENT	251,355	251,355
9999	CLASSIFIED PROGRAMS	1,568,564	1,568,564
	SUBTOTAL ADMIN & SRWIDE ACTIVITIES	2,749,759	2,749,759
			0
	TOTAL OPERATION & MAINTENANCE, ARMY	37,987,549	18,772,938
			−19,214,611
	OPERATION & MAINTENANCE, ARMY RES		
	OPERATING FORCES		
010	MODULAR SUPPORT BRIGADES	11,927	0
	Transfer back to base funding		−11,927
			[−11,927]
020	ECHELONS ABOVE BRIGADE	553,455	20,440
	Transfer back to base funding		−533,015
			[−533,015]

SEC. 4302. OPERATION AND MAINTENANCE FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
030	THEATER LEVEL ASSETS	119,517	-119,517	0
	Transfer back to base funding		[-119,517]	
040	LAND FORCES OPERATIONS SUPPORT	550,468	-550,468	0
	Transfer back to base funding		[-550,468]	
050	AVIATION ASSETS	86,670	-86,670	0
	Transfer back to base funding		[-86,670]	
060	FORCE READINESS OPERATIONS SUPPORT	689		689
080	LAND FORCES DEPOT MAINTENANCE	48,503	-48,503	0
	Transfer back to base funding		[-48,503]	
090	BASE OPERATIONS SUPPORT	615,370	-598,907	16,463
	Transfer back to base funding		[-598,907]	
	SUBTOTAL OPERATING FORCES	1,986,599	-1,949,007	37,592
	TOTAL OPERATION & MAINTENANCE, ARMY RES	1,986,599	-1,949,007	37,592
OPERATION & MAINTENANCE, ARNG				
OPERATING FORCES				
010	MANEUVER UNITS	851,567	-805,671	45,896
	Transfer back to base funding		[-805,671]	
020	MODULAR SUPPORT BRIGADES	195,514	-195,334	180
	Transfer back to base funding		[-195,334]	
030	ECHELONS ABOVE BRIGADE	774,030	-771,048	2,982
	Transfer back to base funding		[-771,048]	
040	THEATER LEVEL ASSETS	95,274	-94,726	548
	Transfer back to base funding		[-94,726]	
050	LAND FORCES OPERATIONS SUPPORT	33,696	-33,696	0

060	Transfer back to base funding				
	AVIATION ASSETS	991,048	[-33,696]	9,229	
	Transfer back to base funding		-981,819		
	Force Readiness Operations Support	1,584	[-981,819]	1,584	
070	Force Readiness Operations Support	258,278	-258,278	0	
090	Land Forces Depot Maintenance		[-258,278]		
	Transfer back to base funding		-1,153,076	22,063	
100	Base Operations Support	1,175,139	[-1,153,076]		
	Transfer back to base funding				
120	Management and Operational Headquarters	606		606	
	SUBTOTAL OPERATING FORCES	4,376,736	-4,293,648	83,088	
	ADMIN & SRWD ACTIVITIES				
170	Servicewide Communications	203		203	
	SUBTOTAL ADMIN & SRWD ACTIVITIES	203	0	203	
	TOTAL OPERATION & MAINTENANCE, ARNG	4,376,939	-4,293,648	83,291	547
	AFGHANISTAN SECURITY FORCES FUND				
	AFGHAN NATIONAL ARMY				
090	Sustainment	1,313,047		1,313,047	
100	Infrastructure	37,152		37,152	
110	Equipment and Transportation	120,868		120,868	
120	Training and Operations	118,591		118,591	
	SUBTOTAL AFGHAN NATIONAL ARMY	1,589,658	0	1,589,658	
	AFGHAN NATIONAL POLICE				
130	Sustainment	422,806		422,806	
140	Infrastructure	2,358		2,358	
150	Equipment and Transportation	127,081		127,081	

SEC. 4302. OPERATION AND MAINTENANCE FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)				
Line	Item	FY 2020 Request	Senate Change	Senate Authorized
160	TRAINING AND OPERATIONS	108,112		108,112
	SUBTOTAL AFGHAN NATIONAL POLICE	660,357	0	660,357
	AFGHAN AIR FORCE			
170	SUSTAINMENT	893,829		893,829
180	INFRASTRUCTURE	8,611		8,611
190	EQUIPMENT AND TRANSPORTATION	566,967		566,967
200	TRAINING AND OPERATIONS	356,108		356,108
	SUBTOTAL AFGHAN AIR FORCE	1,825,515	0	1,825,515
	AFGHAN SPECIAL SECURITY FORCES			
210	SUSTAINMENT	437,909		437,909
220	INFRASTRUCTURE	21,131		21,131
230	EQUIPMENT AND TRANSPORTATION	153,806		153,806
240	TRAINING AND OPERATIONS	115,602		115,602
	SUBTOTAL AFGHAN SPECIAL SECURITY FORCES	728,448	0	728,448
	TOTAL AFGHANISTAN SECURITY FORCES FUND	4,803,978	0	4,803,978
	OPERATION & MAINTENANCE, NAVY			
	OPERATING FORCES			
010	MISSION AND OTHER FLIGHT OPERATIONS	5,682,156	-2,877,800	2,804,356
	Transfer back to base funding		[-2,877,800]	
030	AVIATION TECHNICAL DATA & ENGINEERING SERVICES	60,115	-59,299	816

	Transfer back to base funding				
040	AIR OPERATIONS AND SAFETY SUPPORT	9,582			9,582
050	AIR SYSTEMS SUPPORT	197,262			197,262
060	AIRCRAFT DEPOT MAINTENANCE	1,322,427		-1,154,181	168,246
	Transfer back to base funding			[-1,154,181]	
070	AIRCRAFT DEPOT OPERATIONS SUPPORT	3,594			3,594
080	AVIATION LOGISTICS	10,618			10,618
090	MISSION AND OTHER SHIP OPERATIONS	5,582,370		-4,097,262	1,485,108
	Transfer back to base funding			[-4,097,262]	
100	SHIP OPERATIONS SUPPORT & TRAINING	20,334			20,334
110	SHIP DEPOT MAINTENANCE	10,426,913		-8,061,298	2,365,615
	Transfer back to base funding			[-8,061,298]	
120	SHIP DEPOT OPERATIONS SUPPORT	2,073,641		-2,073,641	0
	Transfer back to base funding			[-2,073,641]	
130	COMBAT COMMUNICATIONS AND ELECTRONIC WARFARE	58,092			58,092
140	SPACE SYSTEMS AND SURVEILLANCE	18,000			18,000
150	WARFARE TACTICS	16,984			16,984
160	OPERATIONAL METEOROLOGY AND OCEANOGRAPHY	29,382			29,382
170	COMBAT SUPPORT FORCES	608,870			608,870
180	EQUIPMENT MAINTENANCE AND DEPOT OPERATIONS SUPPORT	7,799			7,799
200	COMBATANT COMMANDERS DIRECT MISSION SUPPORT	24,800			24,800
220	CYBERSPACE ACTIVITIES	363			363
240	WEAPONS MAINTENANCE	486,188			486,188
250	OTHER WEAPON SYSTEMS SUPPORT	12,189			12,189
270	SUSTAINMENT, RESTORATION AND MODERNIZATION	68,667			68,667
280	BASE OPERATING SUPPORT	4,634,042		-4,414,943	219,099
	Transfer back to base funding			[-4,414,943]	
	SUBTOTAL OPERATING FORCES	31,354,388		-22,738,424	8,615,964
MOBILIZATION					
320	EXPEDITIONARY HEALTH SERVICES SYSTEMS	17,580			17,580

SEC. 4302. OPERATION AND MAINTENANCE FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
330	COAST GUARD SUPPORT	190,000		190,000
	SUBTOTAL MOBILIZATION	207,580	0	207,580
	TRAINING AND RECRUITING			
370	SPECIALIZED SKILL TRAINING	52,161		52,161
	SUBTOTAL TRAINING AND RECRUITING	52,161	0	52,161
	ADMIN & SRVWD ACTIVITIES			
440	ADMINISTRATION	8,475		8,475
460	MILITARY MANPOWER AND PERSONNEL MANAGEMENT	7,653		7,653
490	SERVICEWIDE TRANSPORTATION	70,683		70,683
520	ACQUISITION, LOGISTICS, AND OVERSIGHT	11,130		11,130
530	INVESTIGATIVE AND SECURITY SERVICES	1,559		1,559
9999	CLASSIFIED PROGRAMS	21,054	-3,300	17,754
	Transfer back to base funding		[-3,300]	
	SUBTOTAL ADMIN & SRVWD ACTIVITIES	120,554	-3,300	117,254
	TOTAL OPERATION & MAINTENANCE, NAVY	31,734,683	-22,741,724	8,992,959
	OPERATION & MAINTENANCE, MARINE CORPS			
	OPERATING FORCES			
010	OPERATIONAL FORCES	1,682,877	-968,224	714,653
	Transfer back to base funding		[-968,224]	
020	FIELD LOGISTICS	232,508		232,508

030	DEPOT MAINTENANCE	287,092	-232,991	54,101
	Transfer back to base funding		[-232,991]	
040	MARITIME PREPOSITIONING	100,396	-100,396	0
	Transfer back to base funding		[-100,396]	
050	CYBERSPACE ACTIVITIES	2,000		2,000
060	SUSTAINMENT, RESTORATION & MODERNIZATION	443,292	-103,292	340,000
	Disaster recovery increase		[340,000]	
	Transfer back to base funding		[-443,292]	
070	BASE OPERATING SUPPORT	2,278,346	-2,253,776	24,570
	Transfer back to base funding		[-2,253,776]	
	SUBTOTAL OPERATING FORCES	5,026,511	-3,658,679	1,367,832
	TRAINING AND RECRUITING			
120	TRAINING SUPPORT	30,459		30,459
	SUBTOTAL TRAINING AND RECRUITING	30,459	0	30,459
	ADMIN & SRVWD ACTIVITIES			
160	SERVICEWIDE TRANSPORTATION	61,400		61,400
9999	CLASSIFIED PROGRAMS	5,100		5,100
	SUBTOTAL ADMIN & SRVWD ACTIVITIES	66,500	0	66,500
	TOTAL OPERATION & MAINTENANCE, MARINE CORPS	5,123,470	-3,658,679	1,464,791
	OPERATION & MAINTENANCE, NAVY RES			
	OPERATING FORCES			
010	MISSION AND OTHER FLIGHT OPERATIONS	654,220	-654,220	0
	Transfer back to base funding		[-654,220]	
020	INTERMEDIATE MAINTENANCE	510		510
030	AIRCRAFT DEPOT MAINTENANCE	119,864	-108,236	11,628

SEC. 4302. OPERATION AND MAINTENANCE FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
	Transfer back to base funding		[-108,236]	
080	COMBAT SUPPORT FORCES	10,898		10,898
120	BASE OPERATING SUPPORT	101,376	-101,376	0
	Transfer back to base funding		[-101,376]	
	SUBTOTAL OPERATING FORCES	886,868	-863,832	23,036
	TOTAL OPERATION & MAINTENANCE, NAVY RES	886,868	-863,832	23,036
	OPERATION & MAINTENANCE, MC RESERVE			
	OPERATING FORCES			
010	OPERATING FORCES	114,111	-106,484	7,627
	Transfer back to base funding		[-106,484]	
020	DEPOT MAINTENANCE	18,429	-18,429	0
	Transfer back to base funding		[-18,429]	
040	BASE OPERATING SUPPORT	107,153	-106,073	1,080
	Transfer back to base funding		[-106,073]	
	SUBTOTAL OPERATING FORCES	239,693	-230,986	8,707
	TOTAL OPERATION & MAINTENANCE, MC RESERVE	239,693	-230,986	8,707
	OPERATION & MAINTENANCE, AIR FORCE			
	OPERATING FORCES			
010	PRIMARY COMBAT FORCES	163,632		163,632
020	COMBAT ENHANCEMENT FORCES	1,049,170		1,049,170
030	AIR OPERATIONS TRAINING (OJT, MAINTAIN SKILLS)	111,808		111,808

040	DEPOT PURCHASE EQUIPMENT MAINTENANCE				
	Transfer back to base funding	3,743,491	-3,334,792		408,699
050	FACILITIES SUSTAINMENT, RESTORATION & MODERNIZATION		[-3,334,792]		
	Disaster recovery increase	613,875	-126,611		487,264
	Transfer back to base funding		[340,000]		
060	CYBERSPACE SUSTAINMENT		[-466,611]		
	Transfer back to base funding	238,872	-228,811		10,061
070	CONTRACTOR LOGISTICS SUPPORT AND SYSTEM SUPPORT		[-228,811]		
	Transfer back to base funding	9,282,958	-8,329,364		953,594
080	FLYING HOUR PROGRAM		[-8,329,364]		
	Transfer back to base funding	6,544,039	-4,048,773		2,495,266
090	BASE SUPPORT		[-4,048,773]		
	Transfer back to base funding	8,762,102	-7,223,982		1,538,120
	Transfer back to base funding		[-7,223,982]		
100	GLOBAL C3I AND EARLY WARNING	13,863			13,863
110	OTHER COMBAT OPS SPT PROGRAMS	272,020			272,020
120	CYBERSPACE ACTIVITIES	17,657			17,657
130	TACTICAL INTEL AND OTHER SPECIAL ACTIVITIES	36,098			36,098
140	LAUNCH FACILITIES	391			391
150	SPACE CONTROL SYSTEMS	39,990			39,990
160	US NORTHCOM/NORAD	725			725
170	US STRATCOM	926			926
180	US CYBERCOM	35,189			35,189
190	US CENTCOM	163,015			163,015
200	US SOCOM	19,000			19,000
	SUBTOTAL OPERATING FORCES	31,108,821	-23,292,333		7,816,488
MOBILIZATION					
240	AIRLIFT OPERATIONS	1,271,439			1,271,439
250	MOBILIZATION PREPAREDNESS	109,682			109,682
	SUBTOTAL MOBILIZATION	1,381,121	0		1,381,121

SEC. 4302. OPERATION AND MAINTENANCE FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
TRAINING AND RECRUITING				
260	OFFICER ACQUISITION	200		200
270	RECRUIT TRAINING	352		352
290	SPECIALIZED SKILL TRAINING	26,802		26,802
300	FLIGHT TRAINING	844		844
310	PROFESSIONAL DEVELOPMENT EDUCATION	1,199		1,199
320	TRAINING SUPPORT	1,320		1,320
	SUBTOTAL TRAINING AND RECRUITING	30,717	0	30,717
ADMIN & SRWVD ACTIVITIES				
380	LOGISTICS OPERATIONS	164,701		164,701
390	TECHNICAL SUPPORT ACTIVITIES	11,608		11,608
400	ADMINISTRATION	4,814		4,814
410	SERVICEWIDE COMMUNICATIONS	145,204		145,204
420	OTHER SERVICEWIDE ACTIVITIES	98,841		98,841
460	INTERNATIONAL SUPPORT	29,890		29,890
9999	CLASSIFIED PROGRAMS	52,995		52,995
	SUBTOTAL ADMIN & SRWVD ACTIVITIES	508,053	0	508,053
	TOTAL OPERATION & MAINTENANCE, AIR FORCE	33,028,712	-23,292,333	9,736,379
OPERATION & MAINTENANCE, AF RESERVE				
OPERATING FORCES				
030	DEPOT PURCHASE EQUIPMENT MAINTENANCE	518,423	-494,235	24,188

050	Transfer back to base funding		[-494,235]	
	CONTRACTOR LOGISTICS SUPPORT AND SYSTEM SUPPORT	256,512	-256,512	0
	Transfer back to base funding		[-256,512]	
060	BASE SUPPORT	420,196	-414,626	5,570
	Transfer back to base funding		[-414,626]	
	SUBTOTAL OPERATING FORCES	1,195,131	-1,165,373	29,758
	TOTAL OPERATION & MAINTENANCE, AF RESERVE	1,195,131	-1,165,373	29,758
OPERATION & MAINTENANCE, ANG				
OPERATING FORCES				
020	MISSION SUPPORT OPERATIONS	3,666		3,666
030	DEPOT PURCHASE EQUIPMENT MAINTENANCE	946,411	-879,467	66,944
	Transfer back to base funding		[-879,467]	
050	CONTRACTOR LOGISTICS SUPPORT AND SYSTEM SUPPORT	1,392,709	-1,299,089	93,620
	Transfer back to base funding		[-1,299,089]	
060	BASE SUPPORT	924,454	-911,775	12,679
	Transfer back to base funding		[-911,775]	
070	CYBERSPACE SUSTAINMENT	24,742	-24,742	0
	Transfer back to base funding		[-24,742]	
	SUBTOTAL OPERATING FORCES	3,291,982	-3,115,073	176,909
	TOTAL OPERATION & MAINTENANCE, ANG	3,291,982	-3,115,073	176,909
OPERATION AND MAINTENANCE, DEFENSE-WIDE				
OPERATING FORCES				
010	JOINT CHIEFS OF STAFF	21,866		21,866
020	JOINT CHIEFS OF STAFF—CE2T2	6,634		6,634
040	SPECIAL OPERATIONS COMMAND COMBAT DEVELOPMENT ACTIVITIES	1,121,580		1,121,580
060	SPECIAL OPERATIONS COMMAND INTELLIGENCE	1,328,201		1,328,201

SEC. 4302. OPERATION AND MAINTENANCE FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Item	FY 2020 Request	Senate Change	Senate Authorized
070	SPECIAL OPERATIONS COMMAND MAINTENANCE	399,845		399,845
090	SPECIAL OPERATIONS COMMAND OPERATIONAL SUPPORT	138,458		138,458
100	SPECIAL OPERATIONS COMMAND THEATER FORCES	808,729		808,729
	SUBTOTAL OPERATING FORCES	3,825,313	0	3,825,313
	ADMIN & SRVWIDE ACTIVITIES			
180	DEFENSE CONTRACT AUDIT AGENCY	1,810		1,810
200	DEFENSE CONTRACT MANAGEMENT AGENCY	21,723		21,723
230	DEFENSE INFORMATION SYSTEMS AGENCY	81,133		81,133
240	DEFENSE INFORMATION SYSTEMS AGENCY—CYBER	3,455		3,455
270	DEFENSE LEGAL SERVICES AGENCY	196,124		196,124
290	DEFENSE MEDIA ACTIVITY	14,377		14,377
310	DEFENSE SECURITY COOPERATION AGENCY	1,927,217	50,000	1,977,217
	Security cooperation account, unjustified growth		[–100,000]	
	Transfer from CTEF Iraq		[100,000]	
	Ukraine Security Assistance Initiative		[50,000]	
380	DEFENSE THREAT REDUCTION AGENCY	317,558		317,558
410	DEPARTMENT OF DEFENSE EDUCATION ACTIVITY	31,620		31,620
460	OFFICE OF THE SECRETARY OF DEFENSE	16,666		16,666
500	WASHINGTON HEADQUARTERS SERVICES	6,331		6,331
9999	CLASSIFIED PROGRAMS	2,005,285	–80,500	1,924,785
	Transfer back to base funding		[–80,500]	
	SUBTOTAL ADMIN & SRVWIDE ACTIVITIES	4,623,299	–30,500	4,592,799
	TOTAL OPERATION AND MAINTENANCE, DEFENSE-WIDE	8,448,612	–30,500	8,418,112
	TOTAL OPERATION & MAINTENANCE	133,104,216	–80,555,766	52,548,450

TITLE XLIV—MILITARY PERSONNEL

TITLE XLIV—MILITARY PERSONNEL

SEC. 4401. MILITARY PERSONNEL.

SEC. 4401. MILITARY PERSONNEL (In Thousands of Dollars)				
	Item	FY 2020 Request	Senate Change	Senate Authorized
MILITARY PERSONNEL				
MILITARY PERSONNEL APPROPRIATIONS				
MILITARY PERSONNEL APPROPRIATIONS	143,476,503	-918,980	142,557,523
	Historical under execution		[-918,980]	
SUBTOTAL MILITARY PERSONNEL APPROPRIATIONS	143,476,503	-918,980	142,557,523
MEDICARE-ELIGIBLE RETIREE HEALTH FUND CONTRIBUTIONS				
MEDICARE-ELIGIBLE RETIREE HEALTH FUND CONTRIBUTIONS	7,816,815		7,816,815
SUBTOTAL MEDICARE-ELIGIBLE RETIREE HEALTH FUND CONTRIBUTIONS	7,816,815	0	7,816,815
TOTAL MILITARY PERSONNEL	151,293,318	-918,980	150,374,338

SEC. 4402. MILITARY PERSONNEL FOR OVERSEAS CONTINGENCY OPERATIONS.

SEC. 4402. MILITARY PERSONNEL FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)				
Item	FY 2020 Request	Senate Change	Senate Authorized	
MILITARY PERSONNEL				
MILITARY PERSONNEL APPROPRIATIONS				
MILITARY PERSONNEL APPROPRIATIONS	4,485,808		4,485,808	
SUBTOTAL MILITARY PERSONNEL APPROPRIATIONS	4,485,808	0	4,485,808	
TOTAL MILITARY PERSONNEL	4,485,808	0	4,485,808	

TITLE XLV—OTHER AUTHORIZATIONS

TITLE XLV—OTHER AUTHORIZATIONS

SEC. 4501. OTHER AUTHORIZATIONS.

SEC. 4501. OTHER AUTHORIZATIONS (In Thousands of Dollars)				
Line	Item	FY 2020 Request	Senate Change	Senate Authorized
	WORKING CAPITAL FUND			
	WORKING CAPITAL FUND, ARMY			
010	INDUSTRIAL OPERATIONS	57,467		57,467
020	SUPPLY MANAGEMENT—ARMY	32,130		32,130
	SUBTOTAL WORKING CAPITAL FUND, ARMY	89,597	0	89,597
	WORKING CAPITAL FUND, AIR FORCE			
020	SUPPLIES AND MATERIALS	92,499	10,000	102,499
	Energy optimization initiatives		[10,000]	
	SUBTOTAL WORKING CAPITAL FUND, AIR FORCE	92,499	10,000	102,499
	WORKING CAPITAL FUND, DEFENSE-WIDE			
010	SUPPLY CHAIN MANAGEMENT—DEF	49,085		49,085
	SUBTOTAL WORKING CAPITAL FUND, DEFENSE-WIDE	49,085	0	49,085
	WORKING CAPITAL FUND, DECA			
010	WORKING CAPITAL FUND, DECA	995,030		995,030
	SUBTOTAL WORKING CAPITAL FUND, DECA	995,030	0	995,030
010	WCF, DEF COUNTERINTELLIGENCE & SECURITY AGENCY			
	DEFENSE COUNTERINTELLIGENCE AND SECURITY AGENCY	200,000		200,000

	SUBTOTAL WCF, DEF COUNTERINTELLIGENCE & SECURITY AGENCY	200,000	0	200,000
	TOTAL WORKING CAPITAL FUND	1,426,211	10,000	1,436,211
	CHEM AGENTS & MUNITIONS DESTRUCTION			
	CHEM AGENTS & MUNITIONS DESTRUCTION			
1	OPERATION AND MAINTENANCE	107,351		107,351
2	RESEARCH, DEVELOPMENT, TEST, AND EVALUATION	875,930		875,930
3	PROCUREMENT	2,218		2,218
	SUBTOTAL CHEM AGENTS & MUNITIONS DESTRUCTION	985,499	0	985,499
	TOTAL CHEM AGENTS & MUNITIONS DESTRUCTION	985,499	0	985,499
	DRUG INTERDICTION & CTR-DRUG ACTIVITIES, DEF			
	DRUG INTERDICTION AND COUNTER DRUG ACTIVITIES			
	COUNTER-NARCOTICS SUPPORT	581,739		581,739
010	SUBTOTAL DRUG INTERDICTION AND COUNTER DRUG ACTIVITIES	581,739	0	581,739
	DRUG DEMAND REDUCTION PROGRAM			
	DRUG DEMAND REDUCTION PROGRAM	120,922		120,922
020	SUBTOTAL DRUG DEMAND REDUCTION PROGRAM	120,922	0	120,922
	NATIONAL GUARD COUNTER-DRUG PROGRAM			
	NATIONAL GUARD COUNTER-DRUG PROGRAM	91,370		91,370
030	SUBTOTAL NATIONAL GUARD COUNTER-DRUG PROGRAM	91,370	0	91,370
	NATIONAL GUARD COUNTER-DRUG SCHOOLS			
	NATIONAL GUARD COUNTER-DRUG SCHOOLS	5,371		5,371
040	SUBTOTAL NATIONAL GUARD COUNTER-DRUG SCHOOLS	5,371	0	5,371
	TOTAL DRUG INTERDICTION & CTR-DRUG ACTIVITIES, DEF	799,402	0	799,402

SEC. 4501. OTHER AUTHORIZATIONS (In Thousands of Dollars)					
Line	Item	FY 2020 Request	Senate Change	Senate Authorized	
	OFFICE OF THE INSPECTOR GENERAL				
	OFFICE OF THE INSPECTOR GENERAL				
010	OPERATION AND MAINTENANCE	359,022		359,022	
020	OPERATION AND MAINTENANCE—CYBER	1,179		1,179	
030	RD&E	2,965		2,965	
040	PROCUREMENT	333		333	
	SUBTOTAL OFFICE OF THE INSPECTOR GENERAL	363,499	0	363,499	
	TOTAL OFFICE OF THE INSPECTOR GENERAL	363,499	0	363,499	
	DEFENSE HEALTH PROGRAM				
	OPERATION & MAINTENANCE				
010	IN-HOUSE CARE	9,570,615		9,570,615	
020	PRIVATE SECTOR CARE	15,041,006	11,000 [11,000]	15,052,006	
	Contraceptive cost-sharing				
030	CONSOLIDATED HEALTH SUPPORT	1,975,536		1,975,536	
040	INFORMATION MANAGEMENT	2,004,588		2,004,588	
050	MANAGEMENT ACTIVITIES	333,246		333,246	
060	EDUCATION AND TRAINING	793,810		793,810	
070	BASE OPERATIONS/COMMUNICATIONS	2,093,289		2,093,289	
	SUBTOTAL OPERATION & MAINTENANCE	31,812,090	11,000	31,823,090	
	RD&E				
080	R&D RESEARCH	12,621		12,621	
090	R&D EXPLORATORY DEVELOPMENT	84,266		84,266	
100	R&D ADVANCED DEVELOPMENT	279,766		279,766	
110	R&D DEMONSTRATION/VALIDATION	128,055		128,055	

120	R&D ENGINEERING DEVELOPMENT	143,527	143,527
130	R&D MANAGEMENT AND SUPPORT	67,219	67,219
140	R&D CAPABILITIES ENHANCEMENT	16,819	16,819
	SUBTOTAL RDT&E	732,273	0
	PROCUREMENT		
150	PROC INITIAL OUTFITTING	26,135	26,135
160	PROC REPLACEMENT & MODERNIZATION	225,774	225,774
170	PROC JOINT OPERATIONAL MEDICINE INFORMATION SYSTEM	314	314
180	PROC MILITARY HEALTH SYSTEM—DESKTOP TO DATACENTER	73,010	73,010
190	PROC DOD HEALTHCARE MANAGEMENT SYSTEM MODERNIZATION	129,091	129,091
	SUBTOTAL PROCUREMENT	454,324	0
	TOTAL DEFENSE HEALTH PROGRAM	32,998,687	11,000
	TOTAL OTHER AUTHORIZATIONS	36,573,298	21,000

SEC. 4502. OTHER AUTHORIZATIONS FOR OVERSEAS CONTINGENCY OPERATIONS.

SEC. 4502. OTHER AUTHORIZATIONS FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)					
Line	Item	FY 2020 Request	Senate Change	Senate Authorized	
	WORKING CAPITAL FUND				
	WORKING CAPITAL FUND, ARMY				
020	SUPPLY MANAGEMENT—ARMY	20,100		20,100	
	SUBTOTAL WORKING CAPITAL FUND, ARMY	20,100	0	20,100	
	TOTAL WORKING CAPITAL FUND	20,100	0	20,100	
	DRUG INTERDICTION & CTR-DRUG ACTIVITIES, DEF				566
	DRUG INTERDICTION AND COUNTER DRUG ACTIVITIES				
010	COUNTER-NARCOTICS SUPPORT	163,596		163,596	
	SUBTOTAL DRUG INTERDICTION AND COUNTER DRUG ACTIVITIES	163,596	0	163,596	
	TOTAL DRUG INTERDICTION & CTR-DRUG ACTIVITIES, DEF	163,596	0	163,596	
	OFFICE OF THE INSPECTOR GENERAL				
	OFFICE OF THE INSPECTOR GENERAL				
010	OPERATION & MAINTENANCE	24,254		24,254	
	SUBTOTAL OFFICE OF THE INSPECTOR GENERAL	24,254	0	24,254	
	TOTAL OFFICE OF THE INSPECTOR GENERAL	24,254	0	24,254	
	DEFENSE HEALTH PROGRAM				
	OPERATION & MAINTENANCE				
010	IN-HOUSE CARE	57,459		57,459	

020	PRIVATE SECTOR CARE	287,487		287,487
030	CONSOLIDATED HEALTH SUPPORT	2,800		2,800
	SUBTOTAL OPERATION & MAINTENANCE	347,746	0	347,746
	TOTAL DEFENSE HEALTH PROGRAM	347,746	0	347,746
	COUNTER ISIS TRAIN AND EQUIP FUND (CTEF)			
	COUNTER ISIS TRAIN AND EQUIP FUND (CTEF)			
010	IRAQ	745,000	-100,000	645,000
	Transfer to DSCA Security Cooperation		[-100,000]	
020	SYRIA	300,000		300,000
	SUBTOTAL COUNTER ISIS TRAIN AND EQUIP FUND (CTEF)	1,045,000	-100,000	945,000
	TOTAL COUNTER ISIS TRAIN AND EQUIP FUND (CTEF)	1,045,000	-100,000	945,000
	TOTAL OTHER AUTHORIZATIONS	1,600,696	-100,000	1,500,696

TITLE XLVI—MILITARY CONSTRUCTION

TITLE XLVI—MILITARY CONSTRUCTION

SEC. 4601. MILITARY CONSTRUCTION.

SEC. 4601. MILITARY CONSTRUCTION (In Thousands of Dollars)						
Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
MILITARY CONSTRUCTION						
ARMY						
Army	Alabama	Redstone Arsenal	Aircraft and Flight Equipment Building	38,000		38,000
Army	Colorado	Fort Carson	Company Operations Facility	71,000		71,000
Army	Georgia	Fort Gordon	Cyber Instructional Fac (Admin/Command)	107,000	−40,000	67,000
Army	Georgia	Hunter Army Airfield	Aircraft Maintenance Hangar	62,000		62,000
Army	Hawaii	Fort Shafter	Command and Control Facility, Incr 5	60,000		60,000
Army	Honduras	Soto Cano AB	Aircraft Maintenance Hangar	34,000		34,000
Army	Japan	Kadena Air Base	Vehicle Maintenance Shop	0	15,000	15,000
Army	Kentucky	Fort Campbell	General Purpose Maintenance Shop	51,000		51,000
Army	Kentucky	Fort Campbell	Automated Infantry Platoon Battle Course	7,100		7,100
Army	Kentucky	Fort Campbell	Easements	3,200		3,200
Army	Massachusetts	Soldier Systems Center Natick	Human Engineering Lab	50,000		50,000
Army	Michigan	Detroit Arsenal	Substation	24,000		24,000
Army	New York	Fort Drum	Railhead	0	21,000	21,000
Army	New York	Fort Drum	Unmanned Aerial Vehicle Hangar	23,000		23,000
Army	North Carolina	Fort Bragg	Dining Facility	12,500		12,500
Army	Oklahoma	Fort Sill	Adv Individual Training Barracks Cplx, Ph2	73,000		73,000
Army	Pennsylvania	Carlisle Barracks	General Instruction Building	98,000		98,000
Army	South Carolina	Fort Jackson	Reception Complex, Ph2	54,000		54,000

Army	Texas	Corpus Christi Army Depot	Powertrain Facility (Machine Shop)	86,000		86,000
Army	Texas	Fort Hood	Vehicle Bridge	0	18,500	18,500
Army	Texas	Fort Hood	Barracks	32,000		32,000
Army	Virginia	Fort Belvoir	Secure Operations and Admin Facility	60,000		60,000
Army	Virginia	Joint Base Langley-Eustis	Adv Individual Training Barracks Cplx, Ph4	55,000		55,000
Army	Washington	Joint Base Lewis-McChord	Information Systems Facility	46,000		46,000
Army	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	70,600		70,600
Army	Worldwide Unspecified	Unspecified Worldwide Locations	Host Nation Support	31,000		31,000
Army	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	94,099		94,099
Army	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Worldwide Construction	211,000	-211,000	0
SUBTOTAL ARMY				1,453,499	-196,500	1,256,999
NAVY	Arizona	MCAS Yuma	Bachelor Enlisted Quarters—2+2 Replacement	0	99,600	99,600
Navy	Arizona	Yuma	Hangar 95 Renovation & Addition	90,160		90,160
Navy	Australia	Darwin	Aircraft Parking Apron	0	50,000	50,000
Navy	Bahrain Island	SW Asia	Electrical System Upgrade	53,360		53,360
Navy	California	Camp Pendleton	I MEF Consolidated Information Center	113,869	-90,869	23,000
Navy	California	Camp Pendleton	62 Area Mess Hall and Consolidated Warehouse	71,700		71,700
Navy	California	China Lake	Runway & Taxiway Extension	64,500		64,500
Navy	California	Coronado	Aircraft Paint Complex	0	79,000	79,000
Navy	California	Coronado	Aircraft Paint Complex	79,100		79,100
Navy	California	Coronado	Navy V-22 Hangar	86,830		86,830
Navy	California	MCAS Miramar	Child Development Center	0	37,400	37,400
Navy	California	MCRD San Diego	PMO Facility Replacement	0	9,900	9,900
Navy	California	San Diego	Pier 8 Replacement (INC)	59,353		59,353
Navy	California	Seal Beach	Missile Magazines	0	28,000	28,000

SEC. 4601. MILITARY CONSTRUCTION
(In Thousands of Dollars)

Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
Navy	California	Seal Beach	Ammunition Pier	95,310		95,310
Navy	California	Travis AFB	Alert Force Complex	64,000		64,000
Navy	Connecticut	New London	SSN Berthing Pier 32	72,260		72,260
Navy	District of Columbia	Naval Observatory	Master Time Clocks & Operations Fac (INC)	75,600		75,600
Navy	Florida	Jacksonville	Targeting & Surveillance Syst Prod Supp Fac	32,420		32,420
Navy	Florida	MCSF Blount Island	Police Station and EOC Facility Replacement	0	18,700	18,700
Navy	Guam	Joint Region Marianas	Machine Gun Range (INC)	91,287		91,287
Navy	Guam	Joint Region Marianas	Bachelor Enlisted Quarters H	164,100	-144,100	20,000
Navy	Guam	Joint Region Marianas	EOD Compound Facilities	61,900		61,900
Navy	Hawaii	Kaneohe Bay	Bachelor Enlisted Quarters	134,050	-95,050	39,000
Navy	Hawaii	West Loch	Magazine Consolidation, Phase 1	53,790		53,790
Navy	Italy	Sigonella	Communications Station	77,400		77,400
Navy	Japan	Iwakuni	VTOL Pad—South	15,870		15,870
Navy	Japan	Yokosuka	Pier 5 (Berths 2 and 3)	174,692	-64,692	110,000
Navy	North Carolina	Camp Lejeune	2nd Radio BN Complex, Phase 2 (INC)	25,650		25,650
Navy	North Carolina	Camp Lejeune	ACV-AAV Maintenance Facility Upgrades	11,570		11,570
Navy	North Carolina	Camp Lejeune	10th Marines HIMARS Complex	35,110		35,110
Navy	North Carolina	Camp Lejeune	II MEF Operations Center Replacement	122,200		122,200
Navy	North Carolina	Camp Lejeune	2nd MARDIV/2nd MLG Ops Center Replacement	60,130		60,130
Navy	North Carolina	MCAS Cherry Point	Slocum Road Physical Security Compliance	0	52,300	52,300
Navy	North Carolina	MCAS Cherry Point	Aircraft Maintenance Hangar (INC)	73,970		73,970
Navy	North Carolina	MCAS Cherry Point	F-35 Training and Simulator Facility	53,230		53,230
Navy	North Carolina	MCAS Cherry Point	ATC Tower & Airfield Operations	61,340		61,340
Navy	North Carolina	MCAS Cherry Point	Flightline Utility Modernization (INC)	51,860		51,860
Navy	North Carolina	New River	CH-53K Cargo Loading Trainer	11,320		11,320
Navy	South Carolina	MCRD Parris Island	Range Safety Improvements and Modernization Phase III, Chosin Range.	0	37,200	37,200

Navy	Utah	Hill AFB	D5 Missile Motor Receipt/Storage Fac (INC)	50,520	50,520	
Navy	Virginia	Portsmouth	Dry Dock Flood Protection Improvements	48,930	48,930	
Navy	Virginia	Quantico	Wargaming Center	143,350	-133,350	10,000
Navy	Virginia	Yorktown	NMC Ordnance Facilities Recapitalization, Phase 1	0	59,000	59,000
Navy	Washington	Bremerton	Dry Dock 4 & Pier 3 Modernization	51,010		51,010
Navy	Washington	Keyport	Undersea Vehicle Maintenance Facility	25,050		25,050
Navy	Washington	Kitsap	Seawolf Service Pier Cost-to-Complete	0	48,000	48,000
Navy	Worldwide Unspecified	Unspecified	Family Housing Mitigation and Oversight	0	59,600	59,600
Navy	Worldwide Unspecified	Unspecified	Planning and Design	0	20,400	20,400
Navy	Worldwide Unspecified	Unspecified	Planning and Design	0	8,000	8,000
Navy	Worldwide Unspecified	Unspecified Worldwide	Unspecified Minor Construction	81,237		81,237
		Locations				
Navy	Worldwide Unspecified	Unspecified Worldwide	Planning and Design	167,715		167,715
		Locations				
SUBTOTAL NAVY				2,805,743	79,039	2,884,782
AIR FORCE						
Air Force	Alaska	Eielson AFB	F-35 AME Storage Facility	8,600		8,600
Air Force	Arkansas	Little Rock AFB	C-130H/J Fuselage Trainer Facility	47,000		47,000
Air Force	Australia	Tindal	APR-RAAF Tindal/Bulk Storage Tanks	59,000		59,000
Air Force	Australia	Tindal	APR-RAAF Tindal/Earth Covered Magazine	11,600		11,600
Air Force	California	Travis AFB	MMHS Allied Support	0	17,000	17,000
Air Force	California	Travis AFB	KC-46A Alter B181/B185/B187 Squad Ops/AMU	6,600		6,600
Air Force	California	Travis AFB	KC-46A Regional Maintenance Training Facility	19,500		19,500
Air Force	Colorado	Peterson AFB	SOCNORTH Theater Operational Support Facility	0	54,000	54,000
Air Force	Colorado	Schriever AFB	Consolidated Space Operations Facility	148,000	-125,000	23,000
Air Force	Cyprus	RAF Akrotiri	New Dormitory for 1 ERS	27,000		27,000
Air Force	Guam	Joint Region Marianas	Munitions Storage Igloos III	65,000		65,000
Air Force	Illinois	Scott AFB	Joint Operations & Mission Planning Center	100,000	-10,000	90,000
Air Force	Japan	Kadena Air Base	Munitions Storage	0	7,000	7,000
Air Force	Japan	Misawa Air Base	Fuel Infrastructure Resiliency	0	5,300	5,300
Air Force	Japan	Yokota AB	Fuel Receipt & Distribution Upgrade	12,400		12,400

SEC. 4601. MILITARY CONSTRUCTION
(In Thousands of Dollars)

Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
Air Force	Jordan	Azraq	Air Traffic Control Tower	24,000		24,000
Air Force	Jordan	Azraq	Munitions Storage Area	42,000		42,000
Air Force	Mariana Islands	Tinian	Fuel Tanks w/ Pipeline/Hydrant System	109,000	-99,000	10,000
Air Force	Mariana Islands	Tinian	Airfield Development Phase 1	109,000	-99,000	10,000
Air Force	Mariana Islands	Tinian	Parking Apron	98,000		98,000
Air Force	Maryland	Joint Base Andrews	Presidential Aircraft Recap Complex Inc 3	86,000		86,000
Air Force	Massachusetts	Hanscom AFB	MIT-Lincoln Lab (West Lab CSL/MIF) Inc 2	135,000	-70,000	65,000
Air Force	Missouri	Whiteman AFB	Consolidated Vehicle Ops and MX Facility	0	27,000	27,000
Air Force	Montana	Malmstrom AFB	Weapons Storage and Maintenance Facility	235,000	-219,000	16,000
Air Force	Nevada	Nellis AFB	365th ISR Group Facility	57,000		57,000
Air Force	Nevada	Nellis AFB	F-35A Munitions Assembly Conveyor Facility	8,200		8,200
Air Force	New Mexico	Holloman AFB	NC3 Support WRM Storage/Shipping Facility	0	20,000	20,000
Air Force	New Mexico	Kirtland AFB	Combat Rescue Helicopter Simulator (CRH) ADAL ...	15,500		15,500
Air Force	New Mexico	Kirtland AFB	UH-1 Replacement Facility	22,400		22,400
Air Force	North Dakota	Minot AFB	Helo/TRFops/AMU Facility	5,500		5,500
Air Force	Ohio	Wright-Patterson AFB	ADAL Intelligence Prod. Complex (NASIC) Inc 2	120,900	-46,900	74,000
Air Force	Texas	Joint Base San Antonio	BMT Recruit Dormitory 8	110,000	-93,000	17,000
Air Force	Texas	Joint Base San Antonio	Aquatics Tank	69,000		69,000
Air Force	Texas	Joint Base San Antonio	T-XA DAL Ground Based Trng Sys (GBTS) Sim	9,300		9,300
Air Force	Texas	Joint Base San Antonio	T-XXM Trng Sys Centralized Trng Fac	19,000		19,000
Air Force	United Kingdom	Royal Air Force Lakenheath	F-35A PGM Facility	14,300		14,300
Air Force	Utah	Hill AFB	GBSD Mission Integration Facility	108,000	-90,000	18,000
Air Force	Utah	Hill AFB	Joint Advanced Tactical Missile Storage Fac	6,500		6,500
Air Force	Washington	Fairchild AFB	Consolidated TFI Base Operations	31,000		31,000
Air Force	Worldwide Unspecified	Unspecified CONUS	Military Family Housing Civilian Personnel	0	31,200	31,200
Air Force	Worldwide Unspecified	Unspecified Worldwide	Cost to Complete	0	190,000	190,000

Air Force	Worldwide Unspecified	Unspecified Worldwide	Planning and Design	0	40,000	40,000
Air Force	Worldwide Unspecified	Various Worldwide Locations	Planning and Design	142,148		142,148
Air Force	Worldwide Unspecified	Various Worldwide Locations	Unspecified Minor Construction	79,682		79,682
Air Force	Wyoming	F. E. Warren AFB	Consolidated Helo/TRF Ops/AMU and Alert Fac	18,100		18,100
SUBTOTAL AIR FORCE				2,179,230	-460,400	1,718,830
DEFENSE-WIDE						
Defense-Wide	California	Beale AFB	Hydrant Fuel System Replacement	33,700		33,700
Defense-Wide	California	Camp Pendleton	Ambul Care Center/Dental Clinic Replacement	17,700		17,700
Defense-Wide	California	Mountain View—63 RSC	Install Microgrid Controller, 750 kW PV, and 750 kWh Battery Storage.	0	9,700	9,700
Defense-Wide	California	NAWS China Lake	Energy Storage System	0	8,950	8,950
Defense-Wide	California	NSA Monterey	COGENERATION PLANT AT B236	0	10,540	10,540
Defense-Wide	Conus Classified	Classified Location	Battalion Complex, Ph 3	82,200		82,200
Defense-Wide	Florida	Eglin AFB	SOF Combined Squadron Ops Facility	16,500		16,500
Defense-Wide	Florida	Hurlburt Field	SOF Maintenance Training Facility	18,950		18,950
Defense-Wide	Florida	Hurlburt Field	SOF AMU & Weapons Hangar	72,923		72,923
Defense-Wide	Florida	Hurlburt Field	SOF Combined Squadron Operations Facility	16,513		16,513
Defense-Wide	Florida	Key West	SOF Watercraft Maintenance Facility	16,000		16,000
Defense-Wide	Germany	Gellenkirchen AB	Ambulatory Care Center/Dental Clinic	30,479		30,479
Defense-Wide	Germany	Ramstein	Landstuhl Elementary School	0	66,800	66,800
Defense-Wide	Guam	Joint Region Marianas	Xray Wharf Refueling Facility	19,200		19,200
Defense-Wide	Guam	NB Guam	NSA Andersen Smart Grid and ICS Infrastructure	0	16,970	16,970
Defense-Wide	Hawaii	Joint Base Pearl Harbor-Hickam (JBPHH)	Install 500KW Covered Parking PV System & Electric Vehicle Charging Stations B479	0	4,000	4,000
Defense-Wide	Hawaii	Joint Base Pearl Harbor-Hickam	SOF Undersea Operational Training Facility	67,700		67,700
Defense-Wide	Japan	Yokosuka	Kinnick High School Inc 2	130,386	-120,386	10,000
Defense-Wide	Japan	Yokota AB	Pacific East District Superintendent's Office	20,106		20,106
Defense-Wide	Japan	Yokota AB	Bulk Storage Tanks PH1	116,305	-95,305	21,000

SEC. 4601. MILITARY CONSTRUCTION
(In Thousands of Dollars)

Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
Defense-Wide	Louisiana	JRB NAS New Orleans	Distribution Switchgear	0	5,340	5,340
Defense-Wide	Maryland	Bethesda Naval Hospital	MEDCEN Addition/Alteration Incr 3	96,900		96,900
Defense-Wide	Maryland	Fort Detrick	Medical Research Acquisition Building	27,846		27,846
Defense-Wide	Maryland	Fort Meade	NSAW Recapitalize Building #3 Inc 2	426,000		426,000
Defense-Wide	Maryland	NSA Bethesda	Chiller 3-9 Replacement	0	13,840	13,840
Defense-Wide	Maryland	South Potomac	IH Water Project—CBIRF/IHEODTD/Housing	0	18,460	18,460
Defense-Wide	Mississippi	Columbus AFB	Fuel Facilities Replacement	16,800		16,800
Defense-Wide	Missouri	Fort Leonard Wood	Hospital Replacement Incr 2	50,000		50,000
Defense-Wide	Missouri	St Louis	Next NGA West (N2W) Complex Phase 2 Inc. 2	218,800	-65,800	153,000
Defense-Wide	New Mexico	White Sands Missile Range	Install Microgrid, 700KW PV, 150 KW Generator, and Batteries.	0	5,800	5,800
Defense-Wide	North Carolina	Camp Lejeune	SOF Marine Raider Regiment HQ	13,400		13,400
Defense-Wide	North Carolina	Fort Bragg	SOF Human Platform-Force Generation Facility	43,000		43,000
Defense-Wide	North Carolina	Fort Bragg	SOF Assessment and Selection Training Complex ...	12,103		12,103
Defense-Wide	North Carolina	Fort Bragg	SOF Operations Support Bldg	29,000		29,000
Defense-Wide	Oklahoma	Tulsa IAP	Fuels Storage Complex	18,900		18,900
Defense-Wide	Rhode Island	Quonset State Airport	Fuels Storage Complex Replacement	11,600		11,600
Defense-Wide	South Carolina	Joint Base Charleston	Medical Consolidated Storage & Distrib Center	33,300		33,300
Defense-Wide	South Dakota	Ellsworth AFB	Hydrant Fuel System Replacement	24,800		24,800
Defense-Wide	Texas	Camp Swift	Install Microgrid: 650 KW PV, & 500 KW Generator	0	4,500	4,500
Defense-Wide	Texas	Fort Hood	Install a Central Energy Plant	0	16,500	16,500
Defense-Wide	Virginia	Dam Neck	SOF Demolition Training Compound Expansion	12,770		12,770
Defense-Wide	Virginia	Def Distribution Depot Richmond	Operations Center Phase 2	98,800		98,800
Defense-Wide	Virginia	Joint Expeditionary Base Little Creek—Story	SOF NSWG—10 Operations Support Facility	32,600		32,600

Defense-Wide	Virginia	Joint Expeditionary Base Little Creek—Story	SOF NSWG2 JSOTF Ops Training Facility	13,004	13,004
Defense-Wide	Virginia	NRO Headquarters	Irrigation System Upgrade	0	66
Defense-Wide	Virginia	Pentagon	Backup Generator	8,670	8,670
Defense-Wide	Virginia	Pentagon	Control Tower & Fire Day Station	20,132	20,132
Defense-Wide	Washington	Joint Base Lewis-McChord	SOF 22 STS Operations Facility	47,700	47,700
Defense-Wide	Washington	Naval Base Kitsap	Keyport Main Substation Replacement	0	23,670
Defense-Wide	Wisconsin	Gen Mitchell IAP	POL Facilities Replacement	25,900	25,900
Defense-Wide	Worldwide Classified	Classified Location	Mission Support Compound	52,000	52,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide	Defense Community Infrastructure Program	0	100,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	4,950	4,950
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	8,000	8,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	29,679	29,679
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	10,000	10,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	35,472	35,472
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	31,464	31,464
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Energy Resilience and Conserv. Invest. Prog.	150,000	150,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Contingency Construction	10,000	10,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	3,000	3,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	14,400	14,400
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	ERCIP Design	10,000	10,000

SEC. 4601. MILITARY CONSTRUCTION
(In Thousands of Dollars)

Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	3,228		3,228
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	15,000		15,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Exercise Related Minor Construction	11,770		11,770
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	4,890		4,890
Defense-Wide	Worldwide Unspecified	Various Worldwide Locations	Planning and Design	52,532		52,532
Defense-Wide	Worldwide Unspecified	Various Worldwide Locations	Planning and Design	27,000		27,000
Defense-Wide	Worldwide Unspecified	Various Worldwide Locations	Unspecified Minor Construction	16,736		16,736
Defense-Wide	Worldwide Unspecified	Various Worldwide Locations	Unspecified Minor Construction	10,000		10,000
Defense-Wide	Worldwide Unspecified	Various Worldwide Locations	Planning and Design	63,382		63,382
SUBTOTAL DEFENSE-WIDE				2,504,190	23,645	2,527,835
ARMY NATIONAL GUARD						
Army National Guard	Alabama	Anniston	Enlisted Transient Training Barracks	0	34,000	34,000
Army National Guard	Alabama	Foley	National Guard Readiness Center	12,000		12,000
Army National Guard	California	Camp Roberts	Automated Multipurpose Machine Gun Range	12,000		12,000
Army National Guard	Idaho	Orchard Training Area	Railroad Tracks	29,000		29,000
Army National Guard	Maryland	Havre De Grace	Combined Support Maintenance Shop	12,000		12,000
Army National Guard	Massachusetts	Camp Edwards	Automated Multipurpose Machine Gun Range	9,700		9,700

Army National Guard	Minnesota	New Ulm	National Guard Vehicle Maintenance Shop	11,200	11,200
Army National Guard	Mississippi	Camp Shelby	Automated Multipurpose Machine Gun Range	8,100	8,100
Army National Guard	Missouri	Springfield	National Guard Readiness Center	12,000	12,000
Army National Guard	Nebraska	Bellevue	National Guard Readiness Center	29,000	29,000
Army National Guard	New Hampshire	Concord	National Guard Readiness Center	5,950	5,950
Army National Guard	New York	Jamaica Army	National Guard Readiness Center	0	20,000
Army National Guard	Pennsylvania	Moon Township	Combined Support Maintenance Shop	23,000	23,000
Army National Guard	Vermont	Camp Ethan Allen	General Instruction Building (Mountain Warfare School)	0	30,000
Army National Guard	Washington	Richland	National Guard Readiness Center	11,400	11,400
Army National Guard	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	15,000	15,000
Army National Guard	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	20,469	20,469
SUBTOTAL ARMY NATIONAL GUARD				210,819	294,819
AIR NATIONAL GUARD					
Air National Guard	California	Moffett Air National Guard Base (NASA)	Fuels/Corrosion Control Hangar and Shops	0	57,000
Air National Guard	Georgia	Savannah/Hilton Head IAP	Consolidated Joint Air Dominance Hangar/Shops	24,000	24,000
Air National Guard	Missouri	Rosecrans Memorial Air-port	C-130 Flight Simulator Facility	9,500	9,500
Air National Guard	Puerto Rico	Luis Munoz-Marin IAP	Communications Facility	12,500	12,500
Air National Guard	Puerto Rico	Luis Munoz-Marin IAP	Maintenance Hangar	37,500	37,500
Air National Guard	Wisconsin	Truax Field	F-35 Simulator Facility	14,000	14,000
Air National Guard	Wisconsin	Truax Field	Fighter Alert Shelters	20,000	20,000
Air National Guard	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	31,471	31,471
Air National Guard	Worldwide Unspecified	Various Worldwide Locations	Planning and Design	17,000	17,000
SUBTOTAL AIR NATIONAL GUARD				165,971	222,971

SEC. 4601. MILITARY CONSTRUCTION (In Thousands of Dollars)						
Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
ARMY RESERVE						
Army Reserve	Delaware	Dover AFB	Army Reserve Center/BMA	21,000		21,000
Army Reserve	Wisconsin	Fort McCoy	Transient Training Barracks	25,000		25,000
Army Reserve	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	8,928		8,928
Army Reserve	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	6,000		6,000
SUBTOTAL ARMY RESERVE				60,928	0	60,928
NAVY RESERVE						
Navy Reserve	Louisiana	New Orleans	Entry Control Facility Upgrades	25,260		25,260
Navy Reserve	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	24,915		24,915
Navy Reserve	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	4,780		4,780
SUBTOTAL NAVY RESERVE				54,955	0	54,955
AIR FORCE RESERVE						
Air Force Reserve	Georgia	Robins AFB	Consolidated Mission Complex Phase 3	43,000		43,000
Air Force Reserve	Minnesota	Minneapolis-St Paul IAP	Aerial Port Facility	0	9,800	9,800
Air Force Reserve	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	4,604		4,604
Air Force Reserve	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Minor Construction	12,146		12,146
SUBTOTAL AIR FORCE RESERVE				59,750	9,800	69,550
NATO SECURITY INVESTMENT PROGRAM						

NATO Security In-vestment Program	Worldwide Unspecified	NATO Security Investment Program	NATO Security Investment Program	144,040	144,040
SUBTOTAL NATO SECURITY INVESTMENT PROGRAM				144,040	0
TOTAL MILITARY CONSTRUCTION				9,639,125	-403,416
FAMILY HOUSING					
CONSTRUCTION, ARMY					
Construction, Army	Germany	Baumholder	Family Housing Improvements	29,983	29,983
Construction, Army	Korea	Camp Humphreys	Family Housing New Construction Incr 4	83,167	83,167
Construction, Army	Pennsylvania	Tobyhanna Army Depot	Family Housing Replacement Construction	19,000	19,000
Construction, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Family Housing P & D	9,222	9,222
SUBTOTAL CONSTRUCTION, ARMY				141,372	0
O&M, ARMY					
O&M, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Management	38,898	38,898
O&M, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Services	10,156	10,156
O&M, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Furnishings	24,027	24,027
O&M, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Miscellaneous	484	484
O&M, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Maintenance	81,065	81,065
O&M, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Utilities	55,712	55,712
O&M, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Leasing	128,938	128,938
O&M, Army	Worldwide Unspecified	Unspecified Worldwide Locations	Housing Privatization Support	18,627	83,627
SUBTOTAL O&M, ARMY				581	581

SEC. 4601. MILITARY CONSTRUCTION (In Thousands of Dollars)						
Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
SUBTOTAL O&M, ARMY				357,907	65,000	422,907
CONSTRUCTION, NAVY AND MARINE CORPS						
Construction, Navy and Marine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	USMC DPR/GUAM PLANNING AND DESIGN	2,000		2,000
Construction, Navy and Marine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Construction Improvements	41,798		41,798
Construction, Navy and Marine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Planning & Design	3,863		3,863
SUBTOTAL CONSTRUCTION, NAVY AND MARINE CORPS				47,661	0	47,661
O&M, NAVY AND MARINE CORPS						
O&M, Navy and Ma- rine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Utilities	63,229		63,229
O&M, Navy and Ma- rine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Furnishings	19,009		19,009
O&M, Navy and Ma- rine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Management	50,122		50,122
O&M, Navy and Ma- rine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Miscellaneous	151		151
O&M, Navy and Ma- rine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Services	16,647		16,647
O&M, Navy and Ma- rine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Leasing	64,126		64,126
O&M, Navy and Ma- rine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Maintenance	82,611		82,611

O&M, Navy and Marine Corps	Worldwide Unspecified	Unspecified Worldwide Locations	Housing Privatization Support	21,975	81,000	102,975	
SUBTOTAL O&M, NAVY AND MARINE CORPS							
				317,870	81,000	398,870	
CONSTRUCTION, AIR FORCE							
Construction, Air Force	Germany	Spangdahlem AB	Construct Deficit Military Family Housing	53,584		53,584	
Construction, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Construction Improvements	46,638		46,638	
Construction, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Planning & Design	3,409		3,409	
SUBTOTAL CONSTRUCTION, AIR FORCE							
				103,631	0	103,631	
O&M, AIR FORCE							
O&M, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Housing Privatization	22,593	65,000	87,593	583
O&M, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Utilities	42,732		42,732	
O&M, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Management	56,022		56,022	
O&M, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Services	7,770		7,770	
O&M, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Furnishings	30,283		30,283	
O&M, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Miscellaneous	2,144		2,144	
O&M, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Leasing	15,768		15,768	
O&M, Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	Maintenance	117,704		117,704	
SUBTOTAL O&M, AIR FORCE							
				295,016	65,000	360,016	

SEC. 4601, MILITARY CONSTRUCTION (In Thousands of Dollars)						
Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
O&M, DEFENSE-WIDE						
O&M, Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Utilities	4,100		4,100
O&M, Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Furnishings	82		82
O&M, Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Utilities	13		13
O&M, Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Leasing	12,906		12,906
O&M, Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Maintenance	32		32
O&M, Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Furnishings	645		645
O&M, Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	Leasing	39,222		39,222
SUBTOTAL O&M, DEFENSE-WIDE				57,000	0	57,000
IMPROVEMENT FUND						
Improvement Fund	Worldwide Unspecified	Unspecified Worldwide Locations	Administrative Expenses—FHIF	3,045		3,045
SUBTOTAL IMPROVEMENT FUND				3,045	0	3,045
UNACCOMP HSG IMPROVEMENT FUND						
Unaccomp HSG Im- provement Fund	Worldwide Unspecified	Unspecified Worldwide Locations	Administrative Expenses—UHIF	500		500
SUBTOTAL UNACCOMP HSG IMPROVEMENT FUND				500	0	500

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TOTAL FAMILY HOUSING		1,324,002	211,000	1,535,002
DEFENSE BASE REALIGNMENT AND CLOSURE				
ARMY BRAC				
Army BRAC	Worldwide Unspecified	Base Realignment & Closure	Base Realignment and Closure	66,111
SUBTOTAL ARMY BRAC		66,111	0	66,111
NAVY BRAC				
Navy BRAC	Worldwide Unspecified	Unspecified Worldwide	Base Realignment & Closure	158,349
SUBTOTAL NAVY BRAC		158,349	0	158,349
AIR FORCE BRAC				
Air Force BRAC	Worldwide Unspecified	Unspecified Worldwide	DoD BRAC Activities—Air Force	54,066
SUBTOTAL AIR FORCE BRAC		54,066	0	54,066
TOTAL DEFENSE BASE REALIGNMENT AND CLOSURE		278,526		278,526
TOTAL MILITARY CONSTRUCTION, FAMILY HOUSING, AND BRAC		11,241,653	-192,416	11,049,237

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SEC. 4602. MILITARY CONSTRUCTION FOR OVERSEAS CONTINGENCY OPERATIONS.

SEC. 4602. MILITARY CONSTRUCTION FOR OVERSEAS CONTINGENCY OPERATIONS (In Thousands of Dollars)						
Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
MILITARY CONSTRUCTION						
ARMY						
Army	Guantanamo Bay, Cuba	Guantanamo Bay Naval Station	OCO: Communications Facility	22,000		22,000
Army	Guantanamo Bay, Cuba	Guantanamo Bay Naval Station	OCO: High Value Detention Facility	88,500	-88,500	0
Army	Guantanamo Bay, Cuba	Guantanamo Bay Naval Station	OCO: Detention Legal Office and Comms Ctr	11,800		11,800
Army	Worldwide Unspecified	Unspecified Worldwide Locations	EDI: Bulk Fuel Storage	36,000		36,000
Army	Worldwide Unspecified	Unspecified Worldwide Locations	EDI: Information Systems Facility	6,200		6,200
Army	Worldwide Unspecified	Unspecified Worldwide Locations	EDI/OCO Planning and Design	19,498		19,498
Army	Worldwide Unspecified	Unspecified Worldwide Locations	EDI: Minor Construction	5,220		5,220
Army	Worldwide Unspecified	Unspecified Worldwide Locations	Unspecified Worldwide Construction	9,200,000	-9,200,000	0
SUBTOTAL ARMY				9,389,218	-9,288,500	100,718
NAVY						
Navy	North Carolina	Camp Lejeune	1/8 BN HQ Replacement	0	20,635	20,635
Navy	North Carolina	Camp Lejeune	22nd, 24th and 26th MEU Headquarters Replacement	0	31,110	31,110
Navy	North Carolina	Camp Lejeune	2D Tank BN/CO HQ and Armory Replacement	0	30,154	30,154

Navy	North Carolina	Camp Lejeune	2D TSB HQ Replacement	0	17,413	17,413
Navy	North Carolina	Camp Lejeune	Bachelor Enlisted Quarters Replacement	0	62,104	62,104
Navy	North Carolina	Camp Lejeune	C-12W Aircraft Maintenance Hangar Replacement	0	36,295	36,295
Navy	North Carolina	Camp Lejeune	CLB Headquarters Facilities Replacement	0	24,788	24,788
Navy	North Carolina	Camp Lejeune	Courthouse Bay Fire Station Replacement	0	21,336	21,336
Navy	North Carolina	Camp Lejeune	Environmental Management Division Replacement ..	0	11,658	11,658
Navy	North Carolina	Camp Lejeune	Fire Station Replacement, Hadnot Point	0	21,931	21,931
Navy	North Carolina	Camp Lejeune	Hadnot Point Mess Hall Replacement	0	66,023	66,023
Navy	North Carolina	Camp Lejeune	II MEF Simulation/Training Center Replacement	0	74,487	74,487
Navy	North Carolina	Camp Lejeune	LOGCOM CSP Warehouse Replacement	0	35,874	35,874
Navy	North Carolina	Camp Lejeune	LSSS Facility Replacement	0	26,815	26,815
Navy	North Carolina	Camp Lejeune	MCAB HQ Replacement	0	30,109	30,109
Navy	North Carolina	Camp Lejeune	MCCSSS Log Ops School	0	179,617	179,617
Navy	North Carolina	Camp Lejeune	PMO/H&HS & MWHS-2 Headquarters Replacement	0	65,845	65,845
Navy	North Carolina	Camp Lejeune	Replace NCIS Facilities	0	22,594	22,594
Navy	North Carolina	Camp Lejeune	Replace Regimental Headquarters 20MARDIV	0	64,155	64,155
Navy	North Carolina	Camp Lejeune	Replace WTBN Headquarters	0	18,644	18,644
Navy	North Carolina	MCAS Cherry Point	BT-11 Range Operations Center Replacement	0	14,251	14,251
Navy	North Carolina	MCAS Cherry Point	Motor Transportation/Communication Shop Replacement.	0	32,785	32,785
Navy	North Carolina	MCAS Cherry Point	Station Academic Facility/Auditorium Replacement	0	17,525	17,525
Navy	Spain	Rota	EDI: Joint Mobility Center	46,840	46,840	46,840
Navy	Spain	Rota	EDI: In-Transit Munitions Facility	9,960	9,960	9,960
Navy	Spain	Rota	EDI: Small Craft Berthing Facility	12,770	12,770	12,770
Navy	Worldwide Unspecified	Unspecified	Planning & Design	0	50,000	50,000
Navy	Worldwide Unspecified	Unspecified Worldwide Locations	Planning and Design	25,000	25,000	25,000
SUBTOTAL NAVY				94,570	976,148	1,070,718
AIR FORCE						
Air Force	Florida	Tyndall AFB	53 WEG Hangar	0	96,000	96,000
Air Force	Florida	Tyndall AFB	53 WEG HQ Facility	0	47,000	47,000

SEC. 4602. MILITARY CONSTRUCTION FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Account	State/ Country	Installation	Project Title	FY 2020 Request	Senate Change	Senate Authorized
Air Force	Florida	Tyndall AFB	53 WEG Subscale Drone Facility	0	53,000	53,000
Air Force	Florida	Tyndall AFB	ABM SIM	0	12,900	12,900
Air Force	Florida	Tyndall AFB	Aerospace & Operational Physiology Facility	0	10,400	10,400
Air Force	Florida	Tyndall AFB	AFCEC RDT&E Facilities and Gate	0	195,000	195,000
Air Force	Florida	Tyndall AFB	Aircraft Washrack	0	10,600	10,600
Air Force	Florida	Tyndall AFB	Civil Engineer Contracting USACE Complex	0	130,000	130,000
Air Force	Florida	Tyndall AFB	Crash Fire Rescue	0	17,200	17,200
Air Force	Florida	Tyndall AFB	Deployment Center / Flight Line Dining / AAFES	0	31,000	31,000
Air Force	Florida	Tyndall AFB	Emergency Management, EOC, Alt CP	0	14,400	14,400
Air Force	Florida	Tyndall AFB	Fire Station #2	0	11,000	11,000
Air Force	Florida	Tyndall AFB	Fire Station Silver Flag #4	0	5,900	5,900
Air Force	Florida	Tyndall AFB	FW AC Maintenance Fuel Cell (Barn)	0	28,000	28,000
Air Force	Florida	Tyndall AFB	Logistics Readiness Squadron Complex	0	102,000	102,000
Air Force	Florida	Tyndall AFB	LRS Aircraft Parts & Deployable Spares Storage Facilities.	0	29,000	29,000
Air Force	Florida	Tyndall AFB	New Lodge Facilities	0	176,000	176,000
Air Force	Florida	Tyndall AFB	Operations Group/Maintenance Group HQ	0	18,500	18,500
Air Force	Florida	Tyndall AFB	OSS / RAPCON Facility	0	51,000	51,000
Air Force	Florida	Tyndall AFB	Relocate F-22 Formal Training Unit	0	150,000	150,000
Air Force	Florida	Tyndall AFB	SFS Mobility Storage Facility	0	2,800	2,800
Air Force	Florida	Tyndall AFB	Silver Flag Facilities	0	35,000	35,000
Air Force	Florida	Tyndall AFB	Special Purpose Vehicle Maintenance	0	14,000	14,000
Air Force	Florida	Tyndall AFB	Tyndall AFB Gate Complexes	0	38,000	38,000
Air Force	Iceland	Keflavik	EDI-Expand Parking Apron	32,000		32,000
Air Force	Iceland	Keflavik	EDI-Beddown Site Prep	7,000		7,000
Air Force	Iceland	Keflavik	EDI-Airfield Upgrades—Dangerous Cargo PAD	18,000		18,000
Air Force	Spain	Moron	EDI-Hot Cargo Pad	8,500		8,500

Air Force	Worldwide Unspecified	Unspecified	Planning & Design	0	247,000	247,000
Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	EDI-Hot Cargo Pad	29,000		29,000
Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	EDI-MUNITIONS STORAGE AREA	39,000		39,000
Air Force	Worldwide Unspecified	Unspecified Worldwide Locations	EDI-ECAOS DABS/FEV EMEDS Storage	107,000		107,000
Air Force	Worldwide Unspecified	Various Worldwide Locations	EDI-P&D	61,438		61,438
Air Force	Worldwide Unspecified	Various Worldwide Locations	EDI-UMMC	12,800		12,800
SUBTOTAL AIR FORCE				314,738	1,525,700	1,840,438
DEFENSE-WIDE						
Defense-Wide	Germany	Gemersheim	EDI: Logistics Distribution Center Annex	46,000		46,000
Defense-Wide	North Carolina	Camp Lejeune	Ambulatory Care Center (Camp Geiger)	0	17,821	17,821
Defense-Wide	North Carolina	Camp Lejeune	Ambulatory Care Center (Camp Johnson)	0	27,492	27,492
Defense-Wide	North Carolina	Camp Lejeune	Replace MARSOC ITC Team Facility	0	30,000	30,000
Defense-Wide	Worldwide Unspecified	Unspecified Worldwide Locations	2808 Replenishment Fund	0	3,600,000	3,600,000
SUBTOTAL DEFENSE-WIDE				46,000	3,675,313	3,721,313
ARMY NATIONAL GUARD						
Army National Guard	Florida	Panama City	National Guard Readiness Center	0	25,000	25,000
Army National Guard	North Carolina	MTA Fort Fisher	Administrative Building, General Purpose	0	25,000	25,000
SUBTOTAL ARMY NATIONAL GUARD					50,000	50,000
TOTAL MILITARY CONSTRUCTION				9,844,526	-3,061,339	6,783,187
TOTAL MILITARY CONSTRUCTION, FAMILY HOUSING, AND BRAC				9,844,526	-3,061,339	6,783,187

**TITLE XLVII—DEPARTMENT OF ENERGY
NATIONAL SECURITY PROGRAMS**

TITLE XLVII—DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS

SEC. 4701. DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS.

SEC. 4701. DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS (In Thousands of Dollars)				
Program	FY 2020 Request	Senate Change	Senate Authorized	
Discretionary Summary by Appropriation				
Energy and Water Development and Related Agencies				
Appropriation Summary:				
Energy Programs				
Nuclear energy	137,808	0	137,808	
Atomic Energy Defense Activities				
National nuclear security administration:				
Federal Salaries and Expenses	434,699	-11,700	422,999	
Weapons activities	12,408,603	69,800	12,478,403	
Defense nuclear nonproliferation	1,993,302	-29,100	1,964,202	
Naval reactors	1,648,396	0	1,648,396	
Total, National nuclear security administration	16,485,000	29,000	16,514,000	
Environmental and other defense activities:				
Defense environmental cleanup	5,506,501	0	5,506,501	
Other defense activities	1,035,339	-3,000	1,032,339	
Defense nuclear waste disposal (90M in 270 Energy)	26,000	-26,000	0	
Total, Environmental & other defense activities	6,567,840	-29,000	6,538,840	

Total, Atomic Energy Defense Activities				0	23,052,840	0	23,052,840
Total, Discretionary Funding				0	23,190,648	0	23,190,648
Nuclear Energy							
Idaho sitewide safeguards and security					137,808		137,808
Total, Nuclear Energy				0	137,808	0	137,808
Federal Salaries and Expenses							
Program direction					434,699	-11,700	422,999
Alignment with FTEs authorized						[-11,700]	
Weapons Activities							
Directed stockpile work							
Life extension programs and major alterations							
B61 Life extension program					792,611		792,611
W76 Life extension program					0		0
W76-2 Modification program					10,000		10,000
W88 Alteration program					304,186		304,186
W80-4 Life extension program					898,551		898,551
IW1					0		0
W87-1 Modification Program (formerly IW1)					112,011		112,011
Total, Life extension programs and major alterations				0	2,117,359	0	2,117,359
Stockpile systems							
B61 Stockpile systems					71,232		71,232
W76 Stockpile systems					89,804		89,804
W78 Stockpile systems					81,299		81,299
W80 Stockpile systems					85,811		85,811
B83 Stockpile systems					51,543		51,543

SEC. 4701. DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS (In Thousands of Dollars)				
Program	FY 2020 Request	Senate Change	Senate Authorized	
W87 Stockpile systems	98,262		98,262	
W88 Stockpile systems	157,815		157,815	
Total, Stockpile systems	635,766	0	635,766	
Weapons dismantlement and disposition				
Operations and maintenance	47,500		47,500	
Stockpile services				
Production support	543,964		543,964	
Research and development support	39,339	1,000	40,339	
UFR list—technology maturation		[1,000]		
R&D certification and safety	236,235	10,000	246,235	
UFR list—technology maturation		[10,000]		
Management, technology, and production	305,000		305,000	
Total, Stockpile services	1,124,538	11,000	1,135,538	
Strategic materials				
Uranium sustainment	94,146		94,146	
Plutonium sustainment	0		0	
Plutonium sustainment:				
Plutonium sustainment	691,284		691,284	
Plutonium pit production project	21,156		21,156	
Total, Plutonium sustainment:	712,440	0	712,440	
Tritium sustainment	269,000		269,000	
Domestic uranium enrichment	140,000		140,000	

Lithium sustainment	28,800	28,800	
Strategic materials sustainment	256,808	256,808	
Total, Strategic materials	1,501,194	1,501,194	0
Total, Directed stockpile work	5,426,357	5,426,357	11,000
Research, development, test, and evaluation (RDT&E)			
Science			
Advanced certification	57,710	57,710	
Primary assessment technologies	95,169	95,169	
Dynamic materials properties	133,800	133,800	
Advanced radiography	32,544	32,544	
Secondary assessment technologies	77,553	77,553	
Academic alliances and partnerships	44,625	44,625	
Enhanced Capabilities for Subcritical Experiments	145,160	145,160	
Total, Science	586,561	586,561	0
Engineering			
Enhanced surety	46,500	46,500	8,000
UFR list—technology maturation			[8,000]
Weapon systems engineering assessment technology	0	0	
Delivery environments (formerly Weapon systems engineering assessment technology)	35,945	35,945	
Nuclear survivability	53,932	53,932	
Enhanced surveillance	57,747	57,747	
Stockpile Responsiveness	39,830	39,830	40,800
Program expansion			[40,800]
Total, Engineering	233,954	233,954	48,800
Inertial confinement fusion ignition and high yield			
Ignition and other stockpile programs	55,649	55,649	
Ignition	0	0	
Support of other stockpile programs	0	0	

SEC. 4701. DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS
(In Thousands of Dollars)

Program	FY 2020 Request	Senate Change	Senate Authorized
Diagnosics, cryogenics and experimental support	66,128		66,128
Pulsed power inertial confinement fusion	8,571		8,571
Joint program in high energy density laboratory plasmas	12,000		12,000
Facility operations and target production	338,247		338,247
Total, Inertial confinement fusion and high yield	480,595	0	480,595
Advanced simulation and computing			
Advanced simulation and computing	789,849		789,849
Construction:			
18-D-670, Exascale Class Computer Cooling Equipment, LANL	0		0
18-D-620, Exascale Computing Facility Modernization Project, LLNL	50,000		50,000
Total, Construction	50,000	0	50,000
Total, Advanced simulation and computing	839,849	0	839,849
Advanced manufacturing development			
Additive manufacturing	18,500		18,500
Component manufacturing development	48,410	10,000	58,410
UFR list—technology maturation		[10,000]	
Process technology development	69,998		69,998
Total, Advanced manufacturing development	136,908	10,000	146,908
Total, RDT&E	2,277,867	58,800	2,336,667
Infrastructure and operations			
Operating			
Operations of facilities			
Operations of facilities	905,000		905,000

Safety and environmental operations	119,000	119,000
Maintenance and repair of facilities	456,000	456,000
Recapitalization		
Infrastructure and safety	447,657	447,657
Capability based investments	135,341	135,341
Total, Recapitalization	582,998	0
Total, Operating	2,062,998	0

Construction:

19-D-670, 138kV Power Transmission System Replacement, NNS	6,000	6,000
18-D-660, Fire Station, Y-12	0	0
18-D-650, Tritium Production Capability, SRS	27,000	27,000
18-D-680, Materials staging facility, PX	0	0
18-D-690, Lithium production capability, Y-12	0	0
18-D-690, Lithium processing facility, Y-12 (formerly Lithium production capability)	32,000	32,000
17-D-640, U1a Complex Enhancements Project, NNS	35,000	35,000
17-D-630, Expand Electrical Distribution System, LLNL	0	0
16-D-515, Albuquerque complex project	0	0
15-D-613, Emergency Operations Center, Y-12	0	0
15-D-612, Emergency Operations Center, LLNL	5,000	5,000
15-D-611, Emergency Operations Center, SNL	4,000	4,000
15-D-301 HE Science & Engineering Facility, PX	123,000	123,000
07-D-220, Radioactive liquid waste treatment facility upgrade project, LANL	0	0
07-D-220-04, Transuranic liquid waste facility, LANL	0	0
06-D-141, Uranium processing facility Y-12, Oak Ridge, TN	745,000	745,000

Chemistry and metallurgy research replacement (CMRR)

04-D-125, Chemistry and metallurgy research replacement project, LANL	168,444	168,444
04-D-125-04, RLUOB equipment installation	0	0
04-D-125-05, PF -4 equipment installation	0	0
Total, Chemistry and metallurgy research replacement (CMRR)	168,444	0

SEC. 4701. DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS
(In Thousands of Dollars)

Program	FY 2020 Request	Senate Change	Senate Authorized
Total, Construction	1,145,444	0	1,145,444
Total, Infrastructure and operations	3,208,442	0	3,208,442
Secure transportation asset			
Operations and equipment	209,502		209,502
Program direction	107,660		107,660
Total, Secure transportation asset	317,162	0	317,162
Defense nuclear security			0
Operations and maintenance	778,213		778,213
Security improvements program	0		0
Construction:			0
17-D-710, West end protected area reduction project, Y-12	0		0
Total, Defense nuclear security	778,213	0	778,213
Information technology and cybersecurity	309,362		309,362
Legacy contractor pensions	91,200		91,200
Subtotal, Weapons activities	12,408,603	69,800	12,478,403
Adjustments			
Use of prior year balances	0		0
Total, Adjustments	0	0	0
Total, Weapons Activities	12,408,603	69,800	12,478,403
Defense Nuclear Nonproliferation			
Defense Nuclear Nonproliferation Programs			

Material management and minimization			
HEU reactor conversion	114,000		114,000
Nuclear material removal	32,925		32,925
Material disposition	186,608		186,608
Laboratory and partnership support	0		0
Total, Material management & minimization	333,533	0	333,533
Global material security			
International nuclear security	48,839		48,839
Domestic radiological security	90,513		90,513
International radiological security	60,827		60,827
Nuclear smuggling detection and deterrence	142,171		142,171
Total, Global material security	342,350	0	342,350
Nonproliferation and arms control	137,267		137,267
Defense nuclear nonproliferation R&D			
Proliferation detection			
Nonproliferation Stewardship program strategic plan		-19,500	
Nuclear detonation detection	191,317	[-19,500]	284,540
Nonproliferation fuels development	0		191,317
Total, Defense Nuclear Nonproliferation R&D	495,357	-19,500	475,857
Nonproliferation construction			
U. S. Construction:			
18-D-150 Surplus Plutonium Disposition Project	79,000		79,000
99-D-143, Mixed Oxide (MOX) Fuel Fabrication Facility, SRS	220,000		220,000
Total, U. S. Construction:	299,000	0	299,000
Total, Nonproliferation construction	299,000	0	299,000
Total, Defense Nuclear Nonproliferation Programs	1,607,507	-19,500	1,588,007
Legacy contractor pensions	13,700		13,700
Nuclear counterterrorism and incident response program			

SEC. 4701. DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS
(In Thousands of Dollars)

Program	FY 2020 Request	Senate Change	Senate Authorized
Nuclear counterterrorism and incident response	0		0
Emergency Operations	35,545	-9,600	25,945
Non-defense function realignment		[-9,600]	
Counterterrorism and Counterproliferation	336,550		336,550
Total, Nuclear counterterrorism and incident response			
program	372,095	-9,600	362,495
Subtotal, Defense Nuclear Nonproliferation	1,993,302	-29,100	1,964,202
Adjustments			
Use of prior year balances	0		0
Total, Adjustments	0	0	0
Subtotal, Defense Nuclear Nonproliferation	1,993,302	-29,100	1,964,202
Rescission			
Rescission of prior year balances	0		0
Rescission of prior year balances (Gen. Prov.)	0		0
Total, Defense Nuclear Nonproliferation	1,993,302	-29,100	1,964,202
Naval Reactors			
Naval reactors development	531,205		531,205
Columbia-Class reactor systems development	75,500		75,500
S8G Prototype refueling	155,000		155,000
Naval reactors operations and infrastructure	553,591		553,591
Program direction	50,500		50,500
Construction:			
20-D-931, KL Fuel development laboratory	23,700		23,700
19-D-930, KS Overhead Piping	20,900		20,900

17-D-911, BL Fire System Upgrade	0	0	
15-D-904, NRF Overpack Storage Expansion 3	0	0	
15-D-903, KL Fire System Upgrade	0	0	
14-D-901, Spent fuel handling recapitalization project, NRF	238,000	238,000	
Total, Construction	282,600	0	282,600
Transfer to NE—Advanced Test Reactor (non-add)	(0)	(0)	(0)
Total, Naval Reactors	1,648,396	0	1,648,396
Defense Environmental Cleanup			
Closure sites:			
Closure sites administration	4,987		4,987
Richland:			
River corridor and other cleanup operations:			
River corridor and other cleanup operations	139,750		139,750
Central plateau remediation:			
Central plateau remediation	472,949		472,949
Total, Central plateau remediation	472,949	0	472,949
Richland community and regulatory support	5,121		5,121
Construction:			
18-D-404 WESF Modifications and Capsule Storage	11,000		11,000
Total, Construction	11,000	0	11,000
Total, Richland	628,820	0	628,820
Office of River Protection:			
Waste Treatment Immobilization Plant Commissioning	15,000		15,000
Rad liquid tank waste stabilization and disposition	677,460		677,460
Construction:			
18-D-16 Waste treatment and immobilization plant -LBU/Direct feed LAW	640,000		640,000
15-D-409 Low activity waste pretreatment system, ORP	0		0
01-D-16 D, High-level waste facility	30,000		30,000

SEC. 4701. DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS (In Thousands of Dollars)				
Program	FY 2020 Request	Senate Change	Senate Authorized	
01—D—16 E, Pretreatment Facility	20,000		20,000	
Total, Construction	690,000	0	690,000	
ORP Low-level waste offsite disposal	10,000		10,000	
Total, Office of River protection	1,392,460	0	1,392,460	
Idaho National Laboratory:				
Idaho cleanup and waste disposition	331,354		331,354	
ID Excess facilities R&D	0		0	
Idaho community and regulatory support	3,500		3,500	
Total, Idaho National Laboratory	334,854	0	334,854	
NNSA sites and Nevada off-sites				
Lawrence Livermore National Laboratory	1,727		1,727	
LLNL Excess facilities R&D	128,000		128,000	
Nuclear facility D & D Separations Process Research Unit	15,300		15,300	
Nevada	60,737		60,737	
Sandia National Laboratories	2,652		2,652	
Los Alamos National Laboratory	195,462		195,462	
Total, NNSA sites and Nevada off-sites	403,878	0	403,878	
Oak Ridge Reservation:				
OR Nuclear facility D & D	93,693		93,693	
OR Excess facilities R&D	0		0	
U233 Disposition Program	45,000		45,000	
OR cleanup and waste disposition				
OR cleanup and waste disposition	82,000		82,000	

Subtotal, OR cleanup and waste disposition	82,000	0	82,000
Construction:			
17-D-401 On-site waste disposal facility	15,269		15,269
14-D-403 Outfall 200 Mercury Treatment Facility	49,000		49,000
Total, Construction	64,269	0	64,269
Total, OR cleanup and waste disposition	146,269	0	146,269
OR community & regulatory support	4,819		4,819
OR technology development and deployment	3,000		3,000
Total, Oak Ridge Reservation	292,781	0	292,781
Savannah River Sites:			
Savannah River risk management operations:			
Savannah River risk management operations	490,613		490,613
Construction:			
18-D-402, Emergency Operations Center Replacement, SR	6,792		6,792
Total, Savannah River risk management operations	497,405	0	497,405
SR community and regulatory support	4,749		4,749
Radioactive liquid tank waste:			
Radioactive liquid tank waste stabilization and disposition	797,706		797,706
Construction:			
20-D-402 Advanced Manufacturing Collaborative Facility (AMC)	50,000		50,000
20-D-401 Saltstone Disposal Unit #10, 11, 12	500		500
19-D-701 SR Security system replacement	0		0
18-D-402, Saltstone disposal unit #8/9	51,750		51,750
17-D-402—Saltstone Disposal Unit #7	40,034		40,034
05-D-405 Salt waste processing facility, SRS	20,988		20,988
Total, Construction	163,272	0	163,272
Total, Radioactive liquid tank waste	960,978	0	960,978
Total, Savannah River Site	1,463,132	0	1,463,132

SEC. 4701. DEPARTMENT OF ENERGY NATIONAL SECURITY PROGRAMS
(In Thousands of Dollars)

Program	FY 2020 Request	Senate Change	Senate Authorized
Waste Isolation Pilot Plant			
Waste Isolation Pilot Plant	299,088		299,088
Construction:			
15-D-411 Safety significant confinement ventilation system, WIPP	58,054		58,054
15-D-412 Exhaust shaft, WIPP	34,500		34,500
Total, Construction	92,554	0	92,554
Total, Waste Isolation Pilot Plant	391,642	0	391,642
Program direction	278,908		278,908
Program support	12,979		12,979
Safeguards and Security	317,622		317,622
Technology development	0		0
Use of prior year balances	0		0
Subtotal, Defense environmental cleanup	5,522,063	0	5,522,063
Rescission:			
Rescission of prior year balances	-15,562		-15,562
Rescission of prior year balances (Gen. Prov.)	0		0
Total, Defense Environmental Cleanup	5,506,501	0	5,506,501
Other Defense Activities			
Environment, health, safety and security			
Environment, health, safety and security	139,628		139,628
Program direction	72,881		72,881
Total, Environment, Health, safety and security	212,509	0	212,509

Independent enterprise assessments				
Independent enterprise assessments	24,068		24,068	
Program direction	57,211	-3,000	54,211	
Non-defense function realignment		[-3,000]		
Total, Independent enterprise assessments	81,279	-3,000	78,279	
Specialized security activities			254,578	
Office of Legacy Management				
Legacy management	283,767		283,767	
Program direction	19,262		19,262	
Total, Office of Legacy Management	303,029	0	303,029	
Defense related administrative support				
Chief financial officer	54,538		54,538	
Chief information officer	124,554		124,554	
Total, Defense related administrative support	179,092	0	179,092	
Office of hearings and appeals			4,852	
Subtotal, Other defense activities	1,035,339	-3,000	1,032,339	
Use of prior year balances (HA)	0		0	
Total, Other Defense Activities	1,035,339	-3,000	1,032,339	
Defense Nuclear Waste Disposal				
Yucca mountain and interim storage	26,000	-26,000	0	
Total, Defense Nuclear Waste	26,000	-26,000	0	

LEGISLATIVE REQUIREMENTS

Departmental Recommendations

Seven legislative proposals on the National Defense Authorization Act for Fiscal Year 2020 were submitted as executive communications to the President of the Senate by the Assistant Secretary of Defense for Legislative Affairs of the Department of Defense and subsequently referred to the committee. Information on these executive communications appears below. These executive communications are available for review at the committee.

Executive Communication No. EC-795

Dated March 28, 2019

Received in the Committee on Armed Services on March 28, 2019

Executive Communication No. EC-924

Dated April 10, 2019

Received in the Committee on Armed Services on April 10, 2019

Executive Communication No. EC-925

Dated April 10, 2019

Received in the Committee on Armed Services on April 10, 2019

Executive Communication No. EC-992

Dated April 29, 2019

Received in the Committee on Armed Services on April 29, 2019

Executive Communication No. EC-993

Dated April 29, 2019

Received in the Committee on Armed Services on April 29, 2019

Executive Communication No. EC-1117

Dated May 6, 2019

Received in the Committee on Armed Services on May 6, 2019

Executive Communication No. EC-1254

Dated May 9, 2019

Received in the Committee on Armed Services on May 9, 2019

Committee Action

The committee vote to report the National Defense Authorization Act for Fiscal Year 2020 passed by roll call vote, 25-2, as follows: In favor: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, Hawley, Reed, Shaheen, Blumenthal, Hirono, Kaine, King, Heinrich, Peters, Manchin, Duckworth, and Jones. Opposed: Senators Gillibrand and Warren.

The other 11 roll call votes on motions and amendments to the bill which were considered during the course of the full committee markup are as follows:

1. MOTION: To include a provision that would require sentencing in all non-capital general and special courts-martial under the Uniform Code of Military Justice to be conducted by a military judge, who would be mandated to consider a presentencing investigation report before imposing sentence.

VOTE: Failed by roll call vote 8-19

In favor: Senators Perdue, Gillibrand, Blumenthal, Hirono, Kaine, Heinrich, Warren, and Peters

Opposed: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Cramer, McSally, Scott, Blackburn, Hawley, Reed, Shaheen, King, Manchin, Duckworth, and Jones

2. MOTION: To include a provision that would allow the Department of Defense to transfer individuals detained at United States Naval Station Guantanamo Bay, Cuba, to the United States temporarily for emergency or critical medical treatment not available at Guantanamo.

VOTE: Passed by roll call vote 15–12

In favor: Senators Sullivan, Perdue, Cramer, Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Manchin, and Jones

Opposed: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, McSally, Scott, Blackburn, Hawley, and Duckworth

3. MOTION: To include a provision that would prohibit the Department of Defense from procuring firefighting foam that contains perfluoroalkyl and polyfluoroalkyl substances after October 1, 2022.

VOTE: Passed by roll call vote 14–13

In favor: Senators Ernst, Perdue, Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Duckworth, and Jones

Opposed: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Tillis, Sullivan, Cramer, McSally, Scott, Blackburn, Hawley, and Manchin

4. MOTION: To include a provision that would increase the amount of funding available for the Navy's analysis of alternatives for a nuclear sea-launched cruise missile and require the Secretary of Defense to create a program of record for that program.

VOTE: Passed by roll call vote 16–11

In favor: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, Hawley, Manchin, and Jones

Opposed: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, and Duckworth

5. MOTION: To include a provision authorizing the Secretary of Defense to use up to \$10 million of Department of Defense funds to facilitate the establishment of a Social Media Data Analysis center at an independent nonprofit organization.

VOTE: Failed by roll call vote 10–17

In favor: Senators Reed, Shaheen, Blumenthal, Hirono, Kaine, King, Heinrich, Peters, Manchin, and Jones

Opposed: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, Hawley, Gillibrand, Warren, and Duckworth

6. MOTION: To include a provision that would prohibit the use of any FY15–FY21 authorized or appropriated military construction funds for any “covered project”, defined as wall, barrier, fence, or a road associated with construction with 100 miles of southern border.

VOTE: Failed by roll call vote 12–15

In favor: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Duckworth, and Jones

Opposed: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, Hawley, and Manchin

7. MOTION: To include a provision requiring the Department of Defense to request reimbursement from outside agencies or departments for any assistance to civilian law enforcement.

VOTE: Failed by roll call vote 13–14

In favor: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Manchin, Duckworth, and Jones

Opposed: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, and Hawley

8. MOTION: To include a provision prohibiting the President of the United States from using authorities under the Insurrection Act to deploy members of the Armed Forces for the purposes of enforcing immigration laws.

VOTE: Failed by roll call vote 13–14

In favor: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Manchin, Duckworth, and Jones

Opposed: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, and Hawley

9. MOTION: To amend portions of a provision in order to direct that the Commander, United States Space Force, report directly to the Secretary of the Air Force versus reporting through the Chief of Staff of the Air Force and then to the Secretary of the Air Force. Additionally, to delay implementation by one year after the date of the enactment of this Act and place limits on additional manpower billets (military and civilian) for that same year for the purpose of, or in connection with, the establishment of the United States Space Force.

VOTE: Passed by roll call vote 14–13

In favor: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, and Hawley

Opposed: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Manchin, Duckworth, and Jones

10. MOTION: To amend portions of a provision in order to place the Commander, United States Space Force, as a member of the Joint Chiefs of Staff. Additionally, to delay implementation by one year after the date of the enactment of this Act.

VOTE: Passed by roll call vote 14–13

In favor: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, and Hawley

Opposed: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Manchin, Duckworth, and Jones

11. MOTION: To agree with the ruling of the Chair that an amendment proposed by Senator Kaine will not be considered because it addresses a matter of shared jurisdiction.

VOTE: Passed by roll call vote 14–13

In favor: Senators Inhofe, Wicker, Fischer, Cotton, Rounds, Ernst, Tillis, Sullivan, Perdue, Cramer, McSally, Scott, Blackburn, and Hawley

Opposed: Senators Reed, Shaheen, Gillibrand, Blumenthal, Hirono, Kaine, King, Heinrich, Warren, Peters, Manchin, Duckworth, and Jones

Congressional Budget Office Cost Estimate

It was not possible to include the Congressional Budget Office cost estimate on this legislation because it was not available at the time the report was filed. It will be included in material presented during Senate floor debate on the legislation.

Regulatory Impact

Paragraph 11(b) of rule XXVI of the Standing Rules of the Senate requires that a report on the regulatory impact of the bill be included in the report on the bill. The committee finds that there is no regulatory impact in the case of the National Defense Authorization Bill for Fiscal Year 2020.

Changes in Existing Law

Pursuant to the provisions of paragraph 12 of rule XXVI of the Standing Rules of the Senate, the changes in existing law made by certain portions of the bill have not been shown in this section of the report because, in the opinion of the committee, it is necessary to dispense with showing such changes in order to expedite the business of the Senate and reduce the expenditure of funds.