

# TOOLS TO PREVENT DEFENSE DEPARTMENT COST OVERRUNS

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## HEARING

BEFORE THE

FEDERAL FINANCIAL MANAGEMENT, GOVERNMENT  
INFORMATION, FEDERAL SERVICES, AND  
INTERNATIONAL SECURITY SUBCOMMITTEE

OF THE

COMMITTEE ON  
HOMELAND SECURITY AND  
GOVERNMENTAL AFFAIRS  
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FIRST SESSION

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TUESDAY, MARCH 29, 2011

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## **TOOLS TO PREVENT DEFENSE DEPARTMENT COST OVERRUNS**

**TUESDAY, MARCH 29, 2011**

U.S. SENATE,  
SUBCOMMITTEE ON FEDERAL FINANCIAL MANAGEMENT,  
GOVERNMENT INFORMATION, FEDERAL SERVICES,  
AND INTERNATIONAL SECURITY,  
OF THE COMMITTEE ON HOMELAND SECURITY  
AND GOVERNMENTAL AFFAIRS,  
*Washington, DC.*

The Subcommittee met, pursuant to notice, at 2:34 p.m., in room SD-342, Dirksen Senate Office Building, Hon. Thomas R. Carper, Chairman of the Subcommittee, presiding.

Present: Senators Carper, Pryor, Brown, Coburn, and Portman.

### **OPENING STATEMENT OF SENATOR CARPER**

Senator CARPER. The hearing will come to order. We will be joined during the course of the afternoon by some of my colleagues, but I just want to go ahead and get started. Welcome to our witnesses and to our guests.

I have asked Harlan Geer, also known as “Cahoon,” just to start us off with a chart, and this is a brand-new chart. We are looking at major weapons system cost growth or major weapons system cost overruns going back to fiscal year (FY) 2000 when the number was about \$42 billion; and in 2005 the number had gone up to \$202 billion; in 2007 the number was up to \$295 billion; and the major weapons system cost growth or overrun today is about \$402 billion.

In fiscal year 2000, you may recall we actually had a balanced budget in this country. In fact, we had not been able to balance our budget since 1968, and we had a bipartisan group that worked—Erskine Bowles—on behalf of the President, President Clinton, and the Republicans, who were in the majority in the House and Senate, worked with Democrats, and we ended up with a balanced budget approach that worked on the defense side, defense spending, worked on domestic discretionary spending, worked on entitlements, and also revenues, and actually some reorganizing of government to try to be more efficient in the way we ran the government. We ended up with a balanced budget, but in that year when we had a balanced budget, the contribution to the unbalance, if you will, was \$42 billion because of major weapons system growth. So I just thought we would start off with that kind of—what is the old saying? As Senator Scott Brown likes to say, “A picture is worth a thousand words,” so we thought we would start off with one of yours, Scott. Welcome.

(1)

I just brought the hearing to order, and I am going to go ahead and give a statement, then yield to the Ranking Republican on the Subcommittee, Senator Brown.

But today's hearing will focus, as you can probably tell here, on how the Department of Defense (DOD) can more efficiently develop our Nation's largest and most costly weapons and weapons systems. This hearing comes amidst joint efforts by the United States and NATO allies to avoid a humanitarian catastrophe in Libya. The major weapons systems of the U.S. military and of our NATO allies have helped to level the playing field against a regime that has chosen to launch air strikes against protesters and deploy tanks to attack their own population.

As we applaud the efforts to stop this regression, though, we need to keep in mind that the cost of our involvement in three simultaneous wars—Iraq, Afghanistan, and now Libya—contributes to already unsustainable levels.

In addition to our costly national security challenges, our Nation still faces equally costly economic challenges that have led to record budget deficits in recent years. Between 2001 and 2008, we actually accumulated as much new debt as we had in the previous 208 years of our Nation's history. We are on track to double our Nation's debt again over the next decade if we do not do something about it. And our national debt now stands at more than \$14 trillion.

In an earlier hearing that Senator Brown and I had earlier this month, one of the things that we noted was debt, our Nation's debt, as a percentage of Gross Domestic Product (GDP) now stands at about 65 percent. As best we can tell, the last time we were at that level was at the end of World War II, and the folks in Greece and in Turkey, they have higher numbers than that. But we do not want to go there because we know where that road led them.

While most Americans want us to reduce the deficit, determining the best path forward will not always be easy. Many believe that those of us here in Washington are not capable of doing the hard work we were hired to do—that is, to effectively manage the tax dollars that we are entrusted with. A lot of folks look at the spending decisions we have made in recent years and question whether the culture here is broken. They question whether we are capable of making the kind of tough decisions that they and their families make with their own budgets. It is hard to blame them for being skeptical.

We need to establish a different kind of culture. We need to establish a different kind of culture here in our Nation's capital, in Washington, when it comes to spending. We need to establish what I call a culture of thrift to replace what some would call a culture of spendthrift. We need to look in every nook and cranny of Federal spending—domestic, defense, entitlements, along with tax expenditures—and ask this question: Is it possible to get better results for less money? Or is it at least possible to get better results for not a whole lot more money?

The hard truth is that many program funding levels will need to be reduced. Even some of the most popular programs, programs that most of us would support and do support will likely be asked

to do more with less, or at least to do more with the same level of funding.

Most of us, however, understand that we cannot simply cut our way out of the debt, cannot tax our way out of the debt, or save our way out of debt. We need also to grow our way out of the debt. And that is what happened in the late 1990's. It was not just cutting domestic spending or defense spending. It was not just working on the entitlement program. It was like we grew the economy rather robustly, and that helped get the job done. But we were able to spur the level of growth needed to repair our Nation's fiscal health, and we must invest in the kind of research and development that will enable us to out-innovate the rest of the world once again.

Given the limited resources available for this kind of investment, we can not afford to waste taxpayers' money on inefficient Federal programs that do not help us achieve our goals as a country. And today we are going to look at inefficient spending in the Department of Defense, specifically its acquisition system for major weapons programs.

Three years ago, the Government Accountability Office (GAO) testified before this Subcommittee that the cost growth in major weapons systems had increased significantly over the past decade, and we can see that from the chart<sup>1</sup> to my left from about \$44 billion—actually \$42 billion in 2000 to today something like \$402 billion.

These cost overruns were not only a waste of taxpayer money, they also prohibited us from investing in the highest needs of our military. Some of you will recall last year Secretary Bob Gates, our Secretary of Defense, said that every dollar wasted on weapons system cost overruns—and this is a quote—“is a dollar not available to take care of our military, reset the force, win the wars we are in, and improve capabilities in areas where we are underinvested and potentially vulnerable.”

Now, if we are going to have any hope of strengthening our military and achieving a balanced budget down the line, we have to reverse the trend of growing weapons system costs, and as with many of our Federal programs, we just get better results for less money in this area, too.

In today's hearing we will look at some of the root causes of mounting cost overruns that we have seen in recent years, and for the next hour or two, we will examine the effectiveness of the tools available to the Department of Defense and to Congress to guard against even greater cost escalation.

One of Congress' and the Department of Defense's tools for managing cost overruns is the Nunn-McCurdy law, which serves as a tripwire to alert Congress and the Department of Defense to weapons systems with costs that are spiraling out of control. This tool is simple. If a program's growth of costs grows by more than 15 percent, Congress must be notified. If its cost increases by 25 percent or more, then the program is terminated unless the Secretary of Defense certifies that it meets key requirements.

<sup>1</sup> The chart referenced by Senator Carper appears in the appendix on page 163.

We have asked GAO to look at trends in the past Nunn-McCurdy breaches that might be able to help us determine the effectiveness of this tool. Once again their findings reveal a serious problem. According to GAO, since 1997, one in three major weapons systems has experienced cost overruns big enough to trigger Nunn-McCurdy breaches. One in three. Thirty-six programs' costs grew by more than 25 percent, subjecting them to the possibility of termination. Yet only one program has ever actually been terminated.

GAO also identified Nunn-McCurdy trends in the military services that indicate mismanagement. For example, the Air Force has had nearly as many Nunn-McCurdy breaches—and that is 29—as they did major weapons systems in development, which was 36, between 1997 and 2009. And the contractors that build and develop these systems are not without fault either. For 1997 to 2009, 16 companies had more than one of their weapons systems trigger a Nunn-McCurdy breach. Moreover, two major contractors accounted for more than 50 percent of the weapons systems that breached Nunn-McCurdy over this 12-year period.

These trends in Nunn-McCurdy breaches tell us that too many of our weapons systems have costs that are spiraling out of control. This underscores a key fiscal reality that our Nation must face. We simply cannot balance our budget when we must consistently pay hundreds of billions of dollars more than expected for our major weapons systems.

Our witnesses here today will help us identify the causes of these cost overruns, the tools available to control them, and the tools we will need to prevent them in the future.

With that having been said, we welcome Senator Pryor to our midst, and I want to turn it over to Senator Brown for any comments he would like to make. Scott, thank you.

#### **OPENING STATEMENT OF SENATOR BROWN**

Senator BROWN. Thank you, Mr. Chairman. Good to see you again.

Senator CARPER. Nice to see you.

Senator BROWN. I will be bouncing back and forth. We are actually moving offices today, so I am going to certainly—

Senator CARPER. I would just mention—excuse me for a minute. I would just mention how pleased we were to see Senator Pryor. I did not say anything about the Senator from Cincinnati.

Senator BROWN. The Enforcer.

Senator CARPER. The Enforcer. It is great to see you, Rob. Welcome.

Senator BROWN. Thank you, Mr. Chairman, for holding this important hearing to protect our tax dollars from waste, fraud, and abuse. It is critical and I appreciate your partnership in this pursuit, and our Nation is in a perilous financial position with our national debt over \$14.2 trillion.

It is funny. When I got here, it was \$11.95 trillion. In a little over a year, we are at \$14.2 trillion.

Senator CARPER. What do they say? Cause and effect. You got here and it just shoots right up. [Laughter.]

Actually, it had not gone down all that well under my watch either.



Senator BROWN. Yes, thanks. Keep going. I am pretty quick on the retort as well. [Laughter.]

Now, more than ever we have to find the best value for our tax dollars, and I am amazed as I stay here longer as to how much we actually waste and how we do things and how we really should be doing it better. And with spending exceeding \$700 billion, the Defense Department budget consumes 18 percent of our total budget, and obviously with everything that is happening, we have a lot of challenges. And, unfortunately, we need to be mindful also that the DOD budget is not exempt from the necessity of ensuring that we protect the taxpayers' funds. So it is fairly simple, and especially when we deal with cost overruns and major defense system acquisitions.

It is no secret that the overruns in the DOD acquisitions consume billions of dollars every year, and I am still amazed. I have not quite gotten a good answer as to why we not only have the overruns, but if we have overruns, why there aren't penalties. And, in fact, if we try to stop a program, then not only do we have to pay a penalty, but if we do not we get sued. And I would rather spend the money, quite frankly, going after the people that have either breached the contract or not performed instead of just saying here is the check, we are going to close you down. What is happening here? It is just—I do not even want to talk about it. It is unbelievable the amount of money we are spending for a weapons system that is over budget and where they are apparently going to shut down, and we have nothing to show for it, and we may have to pay another \$804 million just to close it out. I do not get it. So I am going to be zeroing in on my inquiry on those types of things.

I understand that sometimes projects go over budget, and I understand that it is sometimes based on the changing need of the battle or the warfighting needs of our soldiers. I get that. But it seems to be the norm rather than the exception. We need to change the process that allows programs like MEADS to go on for almost 20 years without any acceptable results. Like I said, I am flabbergasted.

We need to change the thinking that if only we give a program a couple more years and a couple more billion dollars the program will ultimately be successful. And, listen, if a program has not worked in 20 years and we are giving it another few years, by then the technology is obsolete, and it makes no sense to me. So especially now under these tough fiscal circumstances, I would hope that if we are going to divert our precious tax dollars, we do it to programs that are working and that can be done quicker, more effectively, and timely.

Let me state that we must not be afraid of taking the risks necessary to develop the next generation of weapons systems that our Nation will depend on. Based on what we are seeing around the world, it is clear that we will continue to be the world leader when it comes to trying to solve the world's problems. And encumbered in that risk is failure and, unfortunately, sometimes cost overruns. Once again, I do understand that. But as we are here looking at the MEADS program, for example, it just does not make sense to me.

So I would like to thank the witnesses for being here today. I appreciate it and look forward to your testimony. I will try not to go on too long. I would rather hear from you so we can get right to the questions.

Thank you, Mr. Chairman.

Senator CARPER. Thank you, Senator Brown.

Senator Pryor, welcome. Thanks for joining us.

Senator PRYOR. Thank you. I do not have an opening statement, but thank you very much for doing this, both of you.

Senator CARPER. You are welcome. You are good to come. Thanks so much. I was looking forward to introducing you. For the first time I have ever been able to introduce you as the senior Senator from Arkansas, and I let it slip by. But we are delighted that you could join us.

Senator Portman.

Senator PORTMAN. I do not have an opening statement.

Senator CARPER. OK. Fair enough.

All right. A quick introduction for our witnesses, and we will get right into it.

Senator BROWN. Mr. Chairman, can I just make—I meant MEADS program. I apologize. I was reading versus talking.

Senator CARPER. That is OK. Thank you for that clarification.

Our first witness today is the Honorable Frank Kendall, who serves as the Principal Deputy Under Secretary of Defense for Acquisition, Technology, and Logistics at the Department of Defense. The Office of Acquisition, Technology, and Logistics oversees the development and purchase of all DOD weapons systems and works with each service's acquisition officials to ensure that our military requirements are met through the acquisition of appropriate military technologies. Mr. Kendall has more than 35 years of experience in engineering, defense acquisition, and national security affairs serving as the Deputy Under Secretary of Defense for Strategic Defense Systems. Mr. Kendall is here today to tell us how the Department of Defense intends to curb potential cost overruns in the future and what tools his office will need in order to achieve this goal and to save scarce taxpayer dollars. And we not only thank you for being here, we thank you for your service.

We were talking a little bit earlier, and I asked him where he went to school, and he said he went to a place called West Point and served some time in the Army.

How long did you serve?

Mr. KENDALL. I was on active duty for about 11 years and remained in the Reserves for about another 15 after that.

Senator CARPER. Good for you. And when you retired, did you retire as a Major General?

Mr. KENDALL. Lieutenant Colonel.

Senator CARPER. All right. Good for you.

Well, we have another colonel up here and a retired Navy Captain. We are happy to have you. Thank you very much for that service as well.

Our second witness today is Dr. Richard Burke. Dr. Burke is the current Deputy Director for Cost Assessment in the Cost Assessment and Program Evaluation Office at the Department of Defense. The Cost Assessment and Program Evaluation Office pro-

vides independent cost estimates of major weapons systems for the Department of Defense and is empowered to do so under the Weapon Systems Acquisition Reform Act passed into law in 2009. In addition to serving as the Deputy Director of the Cost Assessment and Program Evaluation Office, Dr. Burke serves as the Deputy Director for Resource Analysis in the Program Analysis and Evaluation Division of the Office of the Secretary of Defense and as the Chairman of the Cost Analysis Improvement Group in the Department of Defense. That is a mouthful. Dr. Burke will spend time with us today answering our questions about how we can achieve accurate cost estimates in the beginning of a weapons system's life so that we do not experience cost overruns in the later stages of the systems development.

Dr. Burke, we thank you for being here and for your testimony. As I understand, Mr. Kendall is going to be delivering the oral statements for both himself and for you, and both of you will be available for questions. We are going to be watching carefully to see, when Mr. Kendall speaks, if your lips move. We will see how good you are at this. All right? Thanks for joining us today. Please proceed. Your entire statement will be made part of the record, and you may proceed.

I would ask you to take around 5 minutes. If you go a little bit beyond that, that is OK. If you go a lot beyond that, it is probably not so good.

Thank you. Welcome.

**STATEMENT OF FRANK KENDALL,<sup>1</sup> PRINCIPAL UNDER SECRETARY OF DEFENSE FOR ACQUISITION, TECHNOLOGY, AND LOGISTICS, U.S. DEPARTMENT OF DEFENSE; AND RICHARD BURKE, PH.D., DEPUTY DIRECTOR, COST ASSESSMENT, OFFICE OF THE SECRETARY OF DEFENSE/COST ASSESSMENT AND PROGRAM EVALUATION, U.S. DEPARTMENT OF DEFENSE**

Mr. KENDALL. Thank you for the latitude, Mr. Chairman.

Chairman Carper, Senator Brown, distinguished Members of the Subcommittee on Federal Financial Management, Government Information, Federal Services, and International Security, I am Frank Kendall, the Principal Deputy Under Secretary of Defense for Acquisition, Technology, and Logistics. I am honored to be here today for the opportunity to discuss the DOD acquisition program and the tools to prevent cost overruns. Accompanying me is Mr. Richard Burke, Deputy Director, Cost Assessment, and the Senior Cost Analyst for the Department of Defense.

What I would like to do with my opening statement, instead of just summarizing my written submission, is to step back and address directly the reasons we have cost overruns in defense programs. I am going to address causes now, and I will be happy to take your questions about tools later.

My written statement discusses a number of measures the Department is taking to improve our controls over cost and cost growth. This includes our response to recent statutory direction, particularly of the Weapon Systems Acquisition Reform Act of

<sup>1</sup> The prepared statement of Mr. Kendall appears in the appendix on page 64.

2009, but also the measures included in the recent Defense Appropriation Act.

My written statement also highlights some of Under Secretary Carter's set of initiatives, which we refer to collectively as "Better Buying Power," as well as other internal measures we are taking. Rather than summarize all those measures now, I would like to discuss the deeper issue the Subcommittee has asked me here to address: Why is cost growth so endemic to the defense acquisition enterprise?

I have been involved with the Defense Department for over 45 years, 31 of which have been spent in acquisition-related work, either in government or in the defense industry. I was on the Secretary of Defense's acquisition staff when the first Under Secretary for Acquisition was appointed. I worked for the first several defense acquisition executives, and I know and I have great respect for all of those persons who have served in this position, including Mr. Young, who will testify later today. I have served in several Administrations, and I can tell you that this is not a partisan issue or problem.

In my written statement, I refer to the struggle to control acquisition costs. It is not just cost overruns. It is to control costs overall. Every defense acquisition executive, every principal deputy to the acquisition executive, every service or component acquisition executive has engaged in this struggle. Why has this been so difficult? Why do we still have cost overruns?

There are a number of reasons why this problem has been so intractable. Understanding these root causes has to be the first step in addressing cost control and cost overruns in DOD.

I would like to say, somewhat glibly perhaps, that the acquisition system only has two problems: Planning and execution. Let us start with planning.

Planning is largely a government responsibility. It includes: First, setting the requirements for a new product; second, setting key schedule dates; third, estimating total program costs; fourth, establishing budgets; and evaluating plans, finally, including the bids we receive from industry. In each and every case there are strong pressures on our institutions and the people in them to be optimistic.

The United States has been militarily dominant in the world for decades. That dominance rests in large part on the superior weapons systems we acquire for our fighting men and women. In order to acquire these weapons, we are always pushing the state-of-the-art in our requirements. And to give credit where credit is due, we have to a large part been successful in this endeavor. But we have had to take risks to achieve success.

We almost always set out to build a product that is better than anything that has ever been built before. Our appetite for innovative and beyond-current-state-of-the-art systems is also influenced by industry's desire to sell us new products. As one would expect, industry is not shy about marketing attractive new capabilities to our operational communities. Marketing people do not emphasize the technological risk and the cost risk in their products.

Likewise, there is always pressure on our system from the user community and others to do things faster, independent of the scale,

complexity, and risk associated with the product. The acquisition system is frequently criticized for taking too long and being too risk averse. One has to ask: If we are so risk averse, why do we have so many overruns and schedule slips?

The competition for resources within the planning system provide more incentives toward optimism. Our budget formulation process is an ongoing effort to squeeze as much capability as possible into a zero-sum constraint. To some degree, it is a competitive process to secure funding. That money has to be divided among a number of interest groups who are all vying for a share of the pie. All of them would like to obtain new capabilities.

People in our system who are trying to get their programs into the budget have a strong incentive to be optimistic in their assumptions. Selling a given program in our system is also linked to the total cost of the program. Here again there are strong incentives to optimism by the proponents.

Finally, industry has a strong incentive to take risks and to be optimistic in its bids. A defense contractor cannot stay in business by bidding realistically or conservatively and never winning a contract. Here also government plays a key role, ideally by insisting that industry justify its projections and its cost elements. But, again, here there is tremendous pressure to accept the lowest offer price, independent of the risk that is being taken.

On the planning side, these are the forces that Dr. Carter and I and other acquisition executives have always had to struggle against, while at the same time doing everything we can to push the system to deliver more and better products sooner and at lower cost.

Execution, on the other hand, is largely an industry responsibility. Once we set the terms of an acquisition strategy, basically our contracting strategy, it is up to industry to design and deliver the products. Now, the government always has a responsibility to ensure that prices we pay are fair and reasonable, that the quality of the work we accept meets our standards, and that the costs we reimburse are justified. But the execution of design and production functions falls primarily on industry. If the plan is sound, then cost overruns and execution are a matter of management, engineering, and production capability—or, more harshly, competency in these disciplines.

At one time in my career, I would have said that our biggest problem by far leading to cost overruns was failures in planning. I am no longer as certain of that. I am seeing too many indicators that both government and industry need to improve their internal capacity to manage and to execute programs. To the extent that this observation is correct, we have a lot of work to do over time to build or rebuild the capacity in our workforces, both in industry and in government.

For government, we have some direct control over this outcome, and we are moving aggressively to reconstitute and strengthen our workforce. Industry must also be strengthened, but this will have to happen indirectly through the incentives that we provide, largely through the way we contract. Incentives, primarily business incentives, are the primary tool the Department has to influence indus-

try's performance, and we need to use them creatively and aggressively.

So what is the Department doing about all this? My written testimony summarizes about 20 of the actions that we are taking to address these problems. We are building on the work of all the professionals who came before us, such as Mr. Young, who will testify before the Committee later today. We are working closely with other elements of the Department, particularly the cost assessment and program evaluation organization, where Mr. Burke serves as the head of the cost estimating group, but also the Joint Staff, which approves requirements; the Comptroller, which sets budgets; and others. We are working hard to make the entire acquisition chain of command and all the people who serve in it more effective. To achieve better performance in cost control and execution in general, we are strengthening the incentives we provide to industry.

The Department has moved out smartly to implement the Weapon Systems Acquisition Reform Act and other legislation. Better Buying Power is a set of 23 initiatives designed to control and reduce costs across all of our contracted activities, not just major programs. With Secretary Gates' full support, we are increasing the size and, just as importantly, the capacity and capability of the government acquisition workforce. Despite the difficult financial climate, we fully recognize the force multiplier that a quality acquisition workforce has on the ultimate success of our programs.

For Dr. Carter and me, this is all a process of continuous improvement. This will characterize our entire tenure in office. The struggle I have described will never end. It is not a short-term battle or a simple policy change or two that will solve all of our problems. If that were the case, it would have been solved long ago. It takes professionalism, tenacity, and singleness of purpose at all levels of the acquisition enterprise to make progress. We are totally committed to bringing the cost of our products and services under control and reducing them wherever possible. As Secretary Gates has indicated, the alternative is simply not acceptable.

With that, we would be happy to answer your questions. Thank you, Mr. Chairman.

Senator CARPER. Thanks so much.

How did he do, Dr. Burke? What do you think? Pretty good?

Mr. BURKE. He did very well.

Senator CARPER. I thought he did well.

Let me start off with this: Tell us the name of the person who you succeeded, if you will, Mr. Kendall.

Mr. KENDALL. There was no one in my specific position. Jim Finley was in the closest position to mine. It was Deputy Under Secretary for Acquisition and Technology. For a few years, there was no Principal Deputy Under Secretary.

Senator CARPER. OK. So your position was vacant?

Mr. KENDALL. It did not exist.

Senator CARPER. It did not exist.

Mr. KENDALL. It essentially was retitled in the National Defense Authorization Act of fiscal year 2010.

Senator CARPER. OK. Jim Finley was a witness here about a year or so ago, and John Young was a witness here maybe 2 or 3 years

ago. And I think, as I understand it, John Young held the position that Ash Carter now holds. Is that correct?

Mr. KENDALL. That is correct.

Senator CARPER. OK. The year that Jim Finley came to testify, I asked him, "How long have you been in your position?" And he told me how many months he had been there. And I said, "What kind of turnover did you receive from your predecessor?" And he said, "Well my predecessor had left," I think he said, "18 months before I got there." I said, "No kidding." And I said, "Well, how many direct reports do you have in your position, Mr. Finley?" Or is it Dr. Finley? I am not sure. And he said, "I have six and," he said, "only two of them were filled when I arrived." Only two.

One of the questions I often ask of witnesses, particularly when we see a real problem, \$402 billion worth in cost overruns, what can we do to help? What can we do to help? And one of the things that occurs to me that we could to help, particularly in positions that require Senate confirmation, is we can either confirm people or turn them down and say to the Administration, "Send us another name. Send us a better name."

We are going through a process, as my colleagues know, we are going through a process led by Senator Chuck Schumer, Democrat from New York, and Lamar Alexander, Republican from Tennessee, where we would take—I think about out of roughly 1,200 confirmable position that require Senate confirmation in the Executive Branch, I think we are going to try to take about 400 or 450 out of that so that we reduce by about 30, 35 percent the number of positions that require confirmation. That might just help, and I have asked my staff to look at those positions that are involved and see, are there any of those that we would take out of those that need to be confirmed, are there any that are within the Department of Defense in the acquisition area, whether it is in the Secretary's office or in the Army, Navy, Air Force, Marines, to see what—maybe that is another area where we can help.

My recollection is that when it comes to confirming Secretaries of Departments, we do pretty well. When we get into the Deputy Secretaries, not bad. By the time we get to Assistant Secretaries, we do not do a good job at all. And sometimes my colleagues and I—hopefully not me—will put a hold on someone's name in order to get some kind of leverage for an entirely unrelated item. And the folks who suffer, and particularly in the acquisition area, are the taxpayers because we do not have the kind of horsepower we need in acquisition watching over the process and making sure that we are holding the feet of our contractors to the fire.

Does any of that make any sense to either of you?

Mr. KENDALL. I would echo that completely. I was thinking about the thing that I would give as the first thing that the Congress could do, and you hit it. I waited 15 months after the Administration started before I came in. I was on hold for several months during my confirmation process because of the tanker acquisition. It had nothing to do with my candidacy.

It is a very onerous and time-consuming process, and people are often held in limbo for a long period of time. It is very hard to recruit people who know they have to go through that process. We have a few more people coming up.

I do not know if there is any Department position on this, so this is a personal opinion, but I would do just as you suggest. I would have more people come in as non-career Senior Executive Services (SEs). At the Assistant Secretary level, we have four or five Assistant Secretaries that report to Dr. Carter and me. Each of the acquisition executives for the services is an Assistant Secretary. And I think those people could easily be brought in as non-career SEs, and we could have our team on board much more quickly, and we would probably have a very capable team in place much, much more quickly than we did.

Senator CARPER. Let me just say, too—and I am going to ask, Dr. Burke, for you to respond as well. I would just say to Senator Brown and Senator Portman, could we just—I just want to make sure we are following what they are saying. What they are saying is we have this huge problem with cost overruns. The folks that are supposed to be serving in these acquisition jobs, senior acquisition jobs, we leave these positions vacant for months, in some cases longer than months. And we are trying to figure out what we can do on our end to better ensure that this \$402 billion—that we start sending this curve the other way, not to continue to see it escalate. And we may have an opportunity in the Schumer-Alexander legislation to—we may have—there you go, that is right. We are on it. I suspect—my guess is that Senator Portman is or will be. But we may want to look at the jobs that we would remove the requirement for confirmation to see how many of those fall in this bailiwick and if there—I would ask you, if you will for the record, just to come back to us and recommend confirmable positions within the acquisition area at the Department of Defense that are confirmable that in your judgments should not be. And that does not mean we will sign off on all those, but at least we would be making a better, more informed decision.

Dr. Burke, your response to what I have been saying, if you will, and to what Mr. Kendall said.

#### INFORMATION FOR THE RECORD

I defer to the Senate on Senate-confirmed positions.

Mr. BURKE. Mr. Chairman, as a career member of the SES, I have had to deal with the situation that Mr. Kendall describes and which you describe, which is often there are vacancies at policy-making levels for extended periods of time, often early in an Administration, and it is not a helpful thing for anybody involved, essentially, in terms of efficient operation of the government.

Senator CARPER. All right. Thank you. I have some more questions, but let me just yield to Senator Brown. Thanks for those responses.

Senator BROWN. Thank you, Mr. Chairman.

So, Mr. Kendall, the Secretary of Defense has recently decided to continue the Medium Extended Air Defense System (MEADS) program, by requesting from Congress another \$800 million, as I referenced in my earlier testimony. This program has already cost the taxpayers almost \$1.9 billion, and we are over 14 years into the program.



Why should we continue with this failed program that the Department has characterized as, No. 1, subject to a high degree of risk; two, not needed because we can utilize existing assets to provide the capabilities; and, three, too costly?

Mr. KENDALL. Senator Brown, MEADS is a very unusual program in a number of respects. It is an international cooperative program, and our teammates have been to Germany and Italy. And the program, as you say, has been going on for quite a few years. It has gotten into developmental problems, cost overruns in the development phase, that have caused us to question whether or not it should continue.

We looked at the program carefully. We looked at other options that we have to meet the same mission requirements essentially, and decided that we should not continue it into production. It was largely an affordability decision, but it was also looking at the actual progress on the program.

The reason there is still money in the program for the next 2 years is that we have a very unusual arrangement with our partners. The memorandum of understanding (MOU)—the contract, effectively—that we have with Italy and Germany is that if anybody withdraws, any of the partners withdraws, that partner is liable for all the termination liability associated with that withdrawal up to their full obligation to the program. Now, our obligation to the program is the money that you see still in budget, that \$804 million.

So we are basically in a position where we would have to pay a termination liability and get nothing, or we can go ahead and spend the money on the program and try to get some technology and perhaps some components that will be of value to us.

So we looked at three options: We looked at just stopping, which would have led to a termination liability; we looked at continuing to the end of our agreement; and we looked at putting in an additional over \$1 billion to meet the requirements of the program to finish development—the overrun, effectively. And we decided the best business option for us at this point was the middle option, the one to let the program continue to the end of the MOU.

Senator BROWN. So who—sorry to interrupt, but who signed this contract? I mean, isn't there also a provision in the contract to allow for non-performance which would mitigate the ability or the responsibility to pay that type of—

Mr. KENDALL. There are two agreements. There is an agreement between the Nations which sets up the terms by which we will execute the—

Senator BROWN. And who signed—who got us into that deal?

Mr. KENDALL. It was about 8 or 9 years ago, and I am not actually sure who actually signed up to the deal.

Senator BROWN. Well, I mean, it just seems that—I mean, I am not—I do not know how we—how we managed to get the taxpayers in a situation where we have to waste another \$800 million to build an air defense system with the Italians and Germans when we do it very well ourselves here, and then we also—so we are going to spend \$800 million extra just to get a little bit of technology and knowledge. Are you kidding me?

Mr. KENDALL. Our problem is we do not have a better option right now because if we terminate, we will still be obligated to pay

termination liability, which could be—which is capped at that amount.

Senator BROWN. And there is nothing in the contract that allows you to mitigate because of failure to deliver?

Mr. KENDALL. I believe that this contract is essentially a cost-plus vehicle, so essentially—and the termination liability is the costs associated with stopping, the costs that basically have to be borne because of all the work that has been done so far and what it costs to wind down the program, if you will. So that is—and the agreement was set up—and I was not party to the agreement when it was initially set up between the Nations. But the agreement between the Nations was designed to make it hard for people to leave because there is a long history in cooperative programs of one or more partners bailing out of the program because of budget difficulties.

Senator BROWN. But if—

Mr. KENDALL. It was set up as a way to keep everybody in, and now, of course, we are the persons who would like to get out but—

Senator BROWN. Right, but if the cost is roughly the same and without having pushed the Germans and Italians to agree to a mutual termination, without having negotiated actual termination costs, how can we claim that the taxpayers are better off by going forward and moving forward through the remaining term of the program to 2014?

Mr. KENDALL. Senator Brown, we are taking this one step at a time. We are currently in negotiations or discussions with our partners about—

Senator BROWN. I hope you have good attorneys or something.

Mr. KENDALL. Well, we—

Senator BROWN. I hope you have somebody who—you ought to give it to them on a contingency fee and give them a third or something.

Mr. KENDALL. We have to separate the agreement between the countries and the contract. The contract is straightforward, relatively speaking. We have to deal with that. Once the Nations decide how they want to proceed—

Senator BROWN. Well, I cannot imagine the other countries are too happy and they would want to get out as well.

Mr. KENDALL. I do not believe they are very happy either.

Senator BROWN. So wouldn't there be the ability to work together and try to kind of find some type of common ground so everybody saves some money?

Mr. KENDALL. That is exactly what we are trying to do right now. But we have to stay in the MOU while we have those discussions. At the end of the day, we may come to an agreement together to terminate. We may decide to go forward. It depends to a large extent on what the other partners say at this point.

Senator BROWN. So just so I am clear, what do the taxpayers have to show for their \$1.8 billion of money so far? Anything?

Mr. KENDALL. What is being discussed now is what we can do to take the components that have been developed as far as they have: The two radars, the missile system, the—

Senator BROWN. But isn't it—really, it is nothing new, is it? There is no new technology that we already do not have in existence, right?

Mr. KENDALL. These are new systems. The missile will be an American missile. Basically it is being developed for Patriot, intended to be. The radars are new radars. The——

Senator BROWN. But don't we already have the technology in play now? The Colonel behind you is saying, "No, sir." Do you want to testify?

Mr. KENDALL. These are new design systems. They have been in design for quite some time, but they are new systems.

Senator BROWN. OK. So new better new or just new?

Mr. KENDALL. New better new. Patriot has been upgraded, which is our comparable system. It is a much older system. Patriot was in development in the 1970's, so it has been around for a long time. It has been upgraded a few times, and it can be upgraded more. But this is a much newer technology system than Patriot.

Senator BROWN. So if I could just add, maybe go to Dr. Burke, the Weapon Systems Acquisition Reform Act, which became law in 2009, included a provision which required contractors, where practical, to develop competitive prototypes in major defense acquisition programs. And if the Department implemented the competitive prototype in MDAPs prior to production and deployment, how much money could we have actually saved, do you think?

Mr. BURKE. On this program specifically, on the MEADS program? It would have been very difficult to implement that on this program because of what Mr. Kendall has described. This is an international program that has been structured——

Senator BROWN. Do we do that often, international type programs like this? Is this kind of a kiss to the Italians and Germans to say, "Hey, let us do this deal together," it is great?

Mr. KENDALL. This is a pretty unusual program. I do not recall one——

Senator BROWN. Do not do it again, all right?

Mr. KENDALL [continuing]. Quite like this.

Senator BROWN. We are way over, and we are getting nothing, so please, do me a favor, do not do it again. All right? And, obviously, I am a little bit—I do not want to be a wise guy, but it is just—it is crazy. And getting back to Mr. Kendall, in what programs has the Department implemented competitive prototyping? And where in the acquisition process has this taken place, pre-systems acquisition, systems acquisition, or sustainment?

Mr. KENDALL. Is your question where have we implemented competitive prototyping?

Senator BROWN. Yes, where has it been done successfully before, this prototyping?

Mr. KENDALL. It was done for Joint Strike Fighter, initially. That is one of the larger programs we have done it for. I am trying to think of a more recent program.

Senator BROWN. A littoral combat ship? Has it——

Mr. KENDALL. We have done it for some of the munitions programs. Two that come to mind right away are Small Diameter Bomb and the Joint Air-to-Ground Missile System. So we have done it for those. It is the preferred path.

Senator BROWN. It is the law now, isn't it, though, to include it, where practical, I guess?

Mr. KENDALL. Yes, where practical.

Senator BROWN. Do we ever say to whomever, hey, is it practical? Do we ask that next question?

Mr. KENDALL. Absolutely. Carrying competition as far as possible into development is a very good thing for the Department. It really does a lot to reduce the risk in the program and reduce costs overall. So——

Senator BROWN. And it is interesting you say that because we are canceling a second engine, and you are talking about competition, on the one hand, you just said it is great, and yet we are not doing it. In fact, if we continued on with that program, there is a potential savings of billions of dollars—what, hundreds of millions of dollars? What is the number? But it is substantial, and yet we are not doing it.

Mr. KENDALL. The Department has looked very hard at the engine situation.

Senator BROWN. Twenty billion.

Mr. KENDALL. And I think you are well aware of our conclusions there. We do not see the case for the engine development, second engine development. That has been——

Senator BROWN. I am going to come back, Mr. Chairman——

Mr. KENDALL [continuing]. In the Department's budget for a long time.

Senator BROWN [continuing]. Because I have a bunch more questions.

Senator CARPER. OK. Senator Pryor. Senator Portman, Senator Bob Portman, from Queen City.

Senator PORTMAN. Mr. Chairman, I appreciate it, and thank you for being here today and for your service. Let me just followup on some of the things that Senator Brown was talking about in terms of how we do save money. I look at the Quadrennial Defense Review (QDR) Independent Panel recently concluded: "History has shown that the only reliable source of price reduction to the life of a program is competition between dual sources." Do you agree with that? Do you disagree with the Quadrennial Review?

Mr. KENDALL. Competition is probably our most effective single tool to bring down costs. I would agree with that, absolutely.

Senator PORTMAN. The life of a program is competition between dual sources. You said in your testimony you are looking to create new systems constantly, to create incentives. You said we need to use incentives aggressively. You talked about accountability. You talked about competition. You just now confirmed that. I assume you think the competition is consistent with the 2009 legislation that actually was championed by Senators Levin and McCain, the Weapon Systems Acquisition Reform Act. Part of that bill is to require contractors, where practical, to develop these competitive prototypes of a major defense acquisition program. So would you say that competition is consistent with that 2009 legislation?

Mr. KENDALL. Yes, absolutely. We are doing competition wherever we can. Ground Combat Vehicle (GCV) is a new startup that Dr. Carter and I have had coming through, and we will be doing

competition there and carrying it well into development, perhaps all the way through.

There are other programs like SSBN-X, which is another new start that we are looking at, where for a new ballistic missile submarine we just simply cannot afford to carry two competitors through the full design phase or prototype. So it is a case-by-case judgment call based on what is affordable. But wherever we can, we absolutely do want to carry competitive prototypes.

One of the changes that Mr. Young made when he was in office was to move the start of engineering, manufacturing, development, our full-scale development phase, to after preliminary design review. So you have now in our system for normal programs, as many as we can, you do competitive risk reduction, you go to preliminary design, and then you down-select. If possible, we would like to go even further with competition, but we usually cannot afford to do that.

Senator PORTMAN. Let us talk about how it has worked because you have mentioned that you have used the prototype competition with the Joint Strike Fighter. You said that a moment ago. How is that going?

Mr. KENDALL. Well, the original competition——

Senator PORTMAN. Where is the Joint Strike Fighter program right now compared to its initial forecast?

Mr. KENDALL. It is not performing to its initial forecast. I think that——

Senator PORTMAN. How much over is it? How much over?

Mr. KENDALL. It is over by at least 100 percent, I think, from its original estimates, if I remember the numbers. Rick, do you have those——

Senator PORTMAN. Over 100 percent would be how many billions of dollars?

Mr. KENDALL. Let me get a number for you.

Fifty percent is the overrun from the original baseline—I am sorry. At the time of Nunn-McCurdy, it was a 57-percent overrun. Nunn-McCurdy we did last year. Joint Strike Fighter went through——

Senator PORTMAN. From the original program, how many billions of the over \$400 billion that the Chairman has on his chart there is the Joint Strike Fighter over?

Mr. KENDALL. I believe it is the biggest contributor.

Senator PORTMAN. How many billions?

Mr. KENDALL. I would have to check the report to see, but——

Senator PORTMAN. I would hope you all would know what the number is on your biggest cost overrun.

Mr. KENDALL. I will get you a number, Senator Portman. I do not have a number right now.

Senator PORTMAN. OK. I have a number. I may be wrong, but I would like to hear it from you all.

## INFORMATION FOR THE RECORD

Hearing Date: Mar 29, 2011  
Hearing: Tools to Prevent DoD Cost Overruns  
Member: Senator Portman  
Insert: (Page 40, Line 24)  
Witness: PDUUSD(AT&L) Kendall III

(The information follows):

F-35 Joint Strike Fighter cost growth is summarized in the table below.

TY \$M	Milestone B (2001)	December 2010 Selected Acquisition Report	Delta
F-35 System Development and Demonstration estimate	34,400	54,397	19,997
F-35 Total Acquisition cost	233,000	379,393	146,393

\*The December 2010 Selected Acquisition Report estimate is the Program Manager's estimate based on the results of the 2010 Technical Baseline Review and reflects the FY 2012 President's Budget. The Office of Cost Assessment and Program Evaluation is completing an Independent Cost Estimate (ICE) as part of the upcoming 10 U.S.C. § 2366b Milestone (MS) B certification. The ICE will be completed for the MS B Defense Acquisition Board review and will be used to re-baseline the program. The new Acquisition Program Baseline will reflect the ICE data.

Senator PORTMAN. How about the—so the program is, let us just stipulate, billions of dollars over, and——

Mr. KENDALL. Yes, it is.

Senator PORTMAN [continuing]. It is behind time, and——

Mr. KENDALL. Yes, it is.

Senator PORTMAN. And part of the program of creating this Joint Strike Fighter, which would be about 80 to 85 percent of our military warfighters at the point of its completion because it would be a Navy, Air Force, and Marine aircraft, part of this is the engine. And you said earlier that you had done your analysis and determined that competition is not appropriate with the engine. The GAO has done this study that Senator Brown indicated earlier, shows that through competition you save money, and they analyzed the F-16 program, for instance, and said it is roughly a 10-to 20-percent savings. I think 20 percent was their number. So it is about a \$100 billion program, although cost overruns are every day, so we will see. So that would be about \$20 billion. But you said earlier you think that there are not cost savings through competition on the engine side. What is going on with the engine? Where is the engine that—you have apparently chosen as of last week when you did a stop order on the alternative engine. How is that engine doing? Is it meeting the projections?

Mr. KENDALL. It is making progress. Its deliveries are currently scheduled to be consistent with the aircraft that it is going to go on. There are——

Senator PORTMAN. Are there any cost overruns in it?

Mr. KENDALL. There have been some overruns, and——

Senator PORTMAN. How much?

Mr. KENDALL. I would have to get that number for you, too.

Senator PORTMAN. OK. When you get the other number, I would love to hear that number.

## INFORMATION FOR THE RECORD

Hearing Date: Mar 29, 2011  
Hearing: Tools to Prevent DoD Cost Overruns  
Member: Senator Portman  
Insert: (Page 43, Line 9)  
Witness: PDUSD(AT&L) Kendall III

(The information follows):

The below information summarizes the cost increases for the F135 development contract from the contract award in 2001 to the estimate at the time of the FY 2012 President's Budget submission.

F135 System Development and Demonstration (SDD) contract costs at contract award 2001 – \$4.8 billion  
F135 SDD current estimate to complete – \$8.2 billion  
Delta – \$3.4 billion  
Costs associated with lift fan development – \$1.1 billion (of the \$3.4 billion)  
Costs increases, excluding lift fan development – \$2.3 billion

Breakdown of the \$2.3 billion

<b>F135 SDD Cost History</b>		<b>\$B</b>
<b><i>Contract Award 2001</i></b>		<b><i>4.8</i></b>
New scope adjustments		1.1
Cost growth		0.8
<b><i>PB 2010</i></b>		<b><i>6.7</i></b>
Estimated additional new scope from Nunn McCurdy review		0.3
Estimated additional cost growth from Nunn McCurdy review		0.3
<b><i>PB 2011</i></b>		<b><i>7.3</i></b>
Estimated additional new scope Technical Baseline Review (TBR)		0.4
Estimated additional cost growth TBR		0.5
<b><i>PB 2012</i></b>		<b><i>8.2</i></b>

Much of the cost growth on the F135 SDD (cost plus) contract is associated with cost growth experienced in the overall F-35 Joint Strike Fighter SDD program. For example, the \$1.1 billion new scope adjustment from contract award to the FY 2010 PB was for the additional 18 months added to the F-35 SDD program (total of \$7.5 billion) to address the weight-growth issue in 2004-2005. The F135 SDD program was not experiencing issues; however, the F135 development schedule was forced to adjust to match the delay in the overall F-35 schedule, incurring additional costs. Additionally, under the F135 SDD contract, the contractor is responsible for total integration of the F-35 propulsion system. Examples of items present in the F135 SDD contract above and beyond the development of the core engine include but are not limited to: development, integration, and testing of Short Take-Off and Vertical Landing (STOVL) and Conventional Take-Off and Landing (CTOL)-unique items including the STOVL



nozzle, CTOL nozzle, and STOVL flight controls hardware and software. Additionally, each restructure of the F-35 SDD program, including added schedule to complete, has resulted in corresponding additional costs to the F135 SDD to account for additional test flights, associated support, and, with the most recent restructure, additional engines and spares for added flight test aircraft.

Senator PORTMAN. The number I have is \$2.5 billion already in cost overruns—

Mr. KENDALL. That engine has thousands of hours of testing, and it is a much more mature design than the alternative. The alternative has had a relatively small number of hours of testing. There is still a good deal of risk in that program, and we do not see the benefit of diverting resources from other projects or from the F-35 airframes to that second engine. We just do not see the benefit of that at this point in time.

The engine that we are relying on—

Senator PORTMAN. You do not see the benefit in this fiscal year, or you do not see the benefit over the—

Mr. KENDALL. Over the—

Senator PORTMAN [continuing]. Life of the program?

Mr. KENDALL. At this point we cannot predict—

Senator PORTMAN. This is meant to be—Joint Strike Fighter is—

Mr. KENDALL [continuing]. Benefit over the life.

Senator PORTMAN [continuing]. Meant to be the program for our Armed Forces for a couple decades, right?

Mr. KENDALL. I understand.

Senator PORTMAN. And you do not see any benefit from competition?

Mr. KENDALL. We do not think that there is enough assurance of that benefit to justify the risk of diverting the resources over to the engine.

Senator PORTMAN. What is the risk of diverting resources—is the second engine over cost?

Mr. KENDALL. Yes, the second engine has had developmental problems also.

Senator PORTMAN. Is it over cost?

Mr. KENDALL. I do not have those numbers. I would have to check on that.

#### INFORMATION FOR THE RECORD

Yes. The F136 System Development and Demonstration contract was signed in 2005 for \$2.5 billion. At the time the contract was terminated, in April 2011, the JSF program office estimate to complete was approximately \$3.2 billion.

Senator PORTMAN. OK. My understanding is that the first engine is over cost by \$2.5 billion already. The overall program is tens of billions of dollars if not hundreds of billions of dollars over cost. I have heard different numbers—\$104 billion over cost. And you have testified before us today brilliantly about the need for competition and how you believe in competition, and certainly the 2009 legislation, the Quadrennial Review, and every other study that has been done, including GAO, says competition works. These numbers are unsustainable. I mean, if we did not have the largest deficit in the history of our country and the biggest debt obviously in the history of our country and as a percent of our economy, as the Chairman has said—it is numbers we have never had to deal with before. In fact, as a percent of our economy, our debt is actually bigger than it has ever been. Our deficit has only been bigger one time, and that was World War II, when it was the same, roughly 10 percent. So we are in a situation now where we have to do what

the Chairman said, which is thrift versus spendthrift, better results for less money, and using competition is certainly something that you have today talked about as a way to get at this cost overrun of \$400 billion.

So I would hope that the Department of Defense, instead of, as it did last week, putting a stop order in place while Congress is in the middle of its appropriations process and working with this exact program trying to find cost savings in it, that instead you would embrace the idea of competition in order to save money for the taxpayer over time.

My time is up. I hope to have a chance to come back. I look forward to your numbers on the Joint Strike Fighter program overall.

Thank you, Mr. Chairman.

Senator CARPER. Thank you, Senator Portman. Senator Pryor.

Senator PRYOR. Thank you, Mr. Chairman. We have already clarified what Mr. Kendall's rank was when he left the military. What was your rank?

Senator CARPER. I think it was Captain.

Senator PRYOR. Captain, all right.

Senator CARPER. But I could not get in the Army. I had to stay in the Navy.

Senator PRYOR. Well, thank you for your service there.

Let me followup, if I can, just on the Joint Strike Fighter, and I think you were about to offer an explanation, and my understanding is that one of the reasons it is so far off budget, and so late is because there have been redesigns?

Mr. KENDALL. There are a combination of factors that affect the Joint Strike Fighter's increase in cost. One of them was just poor estimating originally. There have been difficulties in the design phase and in production where things have not gone as well as the original estimates were made. We are working very, very hard now to get the production processes under control.

One of the aircraft, the STOVL aircraft in particular, has had problems with the design, is having to have some rework because of that. It is the reason we have put the STOVL aircraft essentially on a pause while we sort out those problems. And it is on—I think the Secretary has even used the words—probation for 2 years until we get some of the problems with it sorted out.

Senator PRYOR. Mr. Burke, did you have any comments on that? I saw you nodding your head over there.

Mr. BURKE. I agree with those comments.

Senator PRYOR. You understand Congress' frustration. All politicians are squeamish when it comes to cutting defense spending. That is politically a dangerous thing to do, but in this budget environment we are going to have to become more efficient and stretch our dollars and make sure that when we are spending dollars on defense they are actually going to productive pursuits, whatever those may be.

That leads me to my next question. I know we have Nunn-McCurdy on the books and I would like to get your read on how well it is working and if it goes far enough. Because even though it is on the books, it seems that we constantly are plagued with cost overruns, et cetera. So does Nunn-McCurdy need to be strengthened? Does it need to go further? Does it need to be

changed in any way to make sure we can get a handle on these cost overruns?

Mr. KENDALL. Nunn-McCurdy is a useful tool for us. The problem with Nunn-McCurdy is it comes after the cost overrun has already been realized. And then it asks the very reasonable questions you should ask in that situation. Do I still need the product? Are there other alternatives that would be less costly in giving you something with the same capability, et cetera. Those are reasonable questions to ask. And what we are doing now is actually we are asking them well before a formal Nunn-McCurdy breach has to be declared.

The problem is that they come after the cost overruns have already occurred. What we are much more interested in right now is prevention and making sure we start programs that are designed for success.

Senator PRYOR. And do you feel like you are being successful in that and catching these potential overruns earlier in the process?

Mr. KENDALL. That is our intent, and I think we now are having some success. A lot of that has to do with the planning function that I described and setting the requirements right early.

I wanted to mention that we are as interested in cost control as in preventing cost overruns. We have to get more product out the door for the money that we have. That is what we are fundamentally about right now. We are not delivering enough to the warfighters for the money that we have. So we are stressing affordability in our programs, which means that basically early on people have to set an affordability target, which we are calling a requirement, for what that program will cost, and then they have to design to that cost. That is a fundamental change. I think cultural change was mentioned earlier. This is a different mindset. We cannot allow our operational communities to just ask for anything and then go try to build it.

If you look at the programs we have canceled over the last few years, look at the program Secretary Gates canceled about 2 years ago, the ones we just canceled in this budget, what runs through them more than anything else is that they are unaffordable programs. EFV is a good example, the Expeditionary Fighting Vehicle. We spent years in development chasing a requirement and a project that turned out to be unaffordable. We were forced to confront eventually that it was unaffordable, kind of around the time Nunn-McCurdy breach would occur. That is way too late. We should not be starting unaffordable programs. So we are really stressing the beginning of the process.

We are also stressing something that we are calling in general to change the culture of our workforce, and maybe change the culture of industry, getting more cost control into everything we do. We are emphasizing something called "should cost," which is the idea that you do not just accept the independent estimate. One of the ways we can avoid having cost overruns is just put a lot of money into everything or to take no risk. What we want to do is get as inexpensive a product as we can and get superior products at the same time.

So what we are funding to now is the independent cost estimate that Mr. Burke's shop generally generates for us. We are

incentivizing our own managers and we are going to incentivize industry to deliver below that, to get the costs down.

Now, in the world that I have lived in all my life, we tend to overrun the independent cost estimate. But if I can just get to that level, then I will have prevented all these cost overruns that we are talking about. If we can get below that level, then we can deliver more products to the warfighter. That is our ultimate goal, and we want to define that as success.

For too many of our people, success is spending the money, and that is not what we want. We want people to get more value for that money.

Senator PRYOR. I do think that the Department of Defense is in sort of a different category than the other departments and agencies. Congress is afraid sometimes to push too hard on cost containment because it might be used in a 30-second ad that we are cutting spending on defense.

From time to time, it appears that the leadership over at the Pentagon will spend everything that we give them and try to find ways to spend it, and it almost sometimes appears they are not that interested in cost containment, although I would say that Secretary Gates has shown a lot of courage on that.

And then I think the contractors have a lot of incentive to keep going and keep building and keep producing and spending.

DOD is different than pretty much any other agency because of the political dynamic of trying to pressure you to cut your spending.

Mr. KENDALL. What I think Secretary Gates has caused the Department to confront is that it cannot continue that type of behavior. When he started his Abilene speech of about a year ago now, I think it was a revolutionary statement. People had to pay attention to that.

Senator PRYOR. It was impressive and it was appreciated.

Mr. KENDALL. We are implementing that across the board. In acquisition, where we spend \$400 billion of the \$700 billion that was in the budget today in 2010, we are going after everything that we are contracting out: Service contracts, which were about half of that \$400 billion that we spent, as well as all of our programs. The major programs are a substantial fraction of that, about 40 percent overall. So we are trying to do everything we can to change the way people think about the money that they are spending.

On the government side, that is a cultural change. That is an attitude change and the way people think about what success is in a way.

On the industry side, we have to have stronger incentives. We have to have consequences. I think Senator Brown mentioned this. When people do not deliver, there have to be consequences. Now, most of the time we like to do that in fees. We often do not want to kill a program. We want to get the program. But we do not want people to be rewarded for poor performance so we are strengthening our incentives in order to do that.

Senator PRYOR. That is a very valid point because the Department of Defense does so much contracting. It is an enormous number of contracts and amount of money involved. And there are companies out there that routinely breach the contracts, that do not

meet the expectations, that do not perform. There are these cost overruns. In some cases they are not paying their taxes. In some cases they have had problems in contracting either with this agency or other agencies for non-performance or whatever it may be. But, nonetheless, they still get the contract, and we really need to focus and clean that up.

Mr. Burke, did you have anything you wanted to add? You looked like you were going to chime in there a minute ago.

Mr. BURKE. I was. Thank you, Senator. I was going to say that my observation is that this is actually a very important law. The Nunn-McCurdy tool actually influences the Military Departments. And you have been in the Military Departments, and it influences their behavior. We are trying to move them so that when they make decisions about spending resources or making trades, delaying production to save money, that we actually have them calculate what the percentage increase of that cost metric. So Nunn-McCurdy gives you 15 percent. Well, if I delay a production a year, it might cost me six of that just off one small incremental decision. And we are really—they are beginning to take that seriously to try to avoid those limits. So I think it is an important statute.

Senator PRYOR. Thank you, and thank you, Captain.

Senator CARPER. You are welcome, Your Excellency. General. He was a General. He was an Attorney General, so we call him “General.” I was just a Captain.

I want to revisit a little bit of the territory that Senator Pryor just covered, and it is interesting. I think it was you, Mr. Kendall, who spoke about prevention, the power of prevention for cost overruns. Senator Brown and I have held I think at least one of those hearings in recent months. Senator Portman and maybe Senator Pryor were with us as well. We were focusing on how do we prevent fraud in Medicare, how do we prevent fraud in Medicaid. What we are trying to do is to improve our ability, when fraud occurs or when we just make overpayments, mistakes, to be able to go out and recover—after the fact, recover the money from those that have been overpaid or who have defrauded money from the Medicare trust fund.

One of our witnesses sitting right where you sit, Mr. Kendall, a couple of weeks ago said we want to move away from what he described as “pay and chase.” We actually pay the providers up front. Then we figure out it was wrong, and mistake, and then chase them down and try to get the money back. And he said what we have to do is do not pay them in the first place, make sure that we are not allowing unethical, really criminal providers to get involved in the payment system in the first place so that we do not pay people and then have to chase them down to get the taxpayers’ money back.

We try to work on prevention with respect to health care. In the health care legislation we actually provide—we call it the Safeway amendment. Senator Ensign and I offered legislation that allows employers to provide premium discounts to their employees of up to 30 percent if employees who are overweight lose weight, bring their weight down, keep it down; if they smoke, stop smoking; that kind of thing. But there is actually a big focus on prevention there.

Those of us who served in the military before, we got annual physicals, usually in our birthday month. The military does that in order to save money, to identify problems when they are small, fixable, rather than when they get really serious and expensive. And in Medicare, we never allowed folks to get a physical except one time in their life: When they became eligible for Medicare. It was the welcome-to-Medicare physical. We have changed that so folks can now get a physical every year. And, again, the reason why is prevention. An ounce of prevention, as my grandmother used to say, "Is worth a pound of cure."

So it is interesting that the theme has actually been part of several hearings that we have focused on. We are trying to rein in the growth of costs. I would almost call it cultural change. I keep coming back to the idea of a cultural change.

You spoke of a cultural change in the Department, in the acquisition area, in the different branches of the armed forces. Talk a little bit more about the cultural change that is needed there.

Mr. KENDALL. We have some incentives—I mentioned some of the incentives earlier in my opening remarks. We give incentives to people to spend the money, and we have to reverse that. An e-mail came across my desk last summer, last fall, where the Comptroller was looking at obligation rates, and he was saying to people, OK, if you are not spending your money fast enough, I am going to cut your budget in the current year because you have shown that you are not obligating quickly enough. And I sent him an e-mail back saying this was inappropriate, this was the wrong kind of behavior to encourage.

Senator CARPER. Good for you.

Mr. KENDALL. He and I and Dr. Carter and a couple of others met, and we had a meeting and we discussed the subject. We were talking about how pervasive this behavior was.

One of the people in the room was a fighter pilot, and he talked after the meeting about how at the end of every year the fighter pilots in his squadron would get out and fly their airplanes around, to burn holes in the sky—

Senator CARPER. Burn that gas.

Mr. KENDALL [continuing]. To burn their gas so they would not have cuts in their funding for operations for training in the next year. That is not the kind of behavior that taxpayers expect, and that is not what they should get. That is a cultural change. People have to stop sub-optimizing like that. Getting your money on contract, getting your money obligated is not the figure of merit we should be looking at. It should be getting the most value for the taxpayers. That is a huge cultural change for our institution.

Should costs—in trying to emphasize that to people, incentivizing people that if they do achieve savings, if they do save us money, they will get rewarded for that. They will be rewarded for that in their careers. We tend to be very focused on meeting the near-term milestone as an example of success.

As we go around and talk to our contracting people, one of the complaints I get—and we have been visiting the buying commands, Dr. Carter and I—is that contracting people feel they are under pressure to award contracts. You do not want to be on the side of a negotiation where time is not on your side. You want to give

those contracting people time to get the best deal they can for the government, which means you just take that time.

Now, your money may expire. You may get yelled at by your boss. We want to change that. But basically we want to get the best business deal we can. So success is coming back with a better price for the government and a better business deal, not getting things on contract fast. That is a big cultural change we are after.

Senator CARPER. All right. Thank you.

Do you want to add to that, Dr. Burke? No? OK.

Let me go back to what triggers a Nunn-McCurdy breach. My recollection is if we have a cost increase that is, I think, 15 percent more than the last time we measured the cost, then that triggers Nunn-McCurdy. And also if we get a price increase that is 25 percent above the original cost, that can trigger Nunn-McCurdy.

We have had some discussion with my staff and myself and others that we are trying to look for a way to forecast before that 15-percent trigger, the 25-percent trigger, a way to forecast that or anticipate it, kind of look over the horizon. Can you talk with us about that and maybe tie it in with an R&D budget to see, looking—maybe an R&D budget could help us identify early and forecast a potential Nunn-McCurdy breach?

Mr. KENDALL. Tools we use to forecast cost growth in development contracts, we used Earned Value Management, which is a system of tracking progress relative to plan, where you can get very good early warning indicators.

On production contracts it largely depends upon the nature of the contract. There, too, there are things that can tell us early when things are headed in the wrong direction, and we can try to step in and take action.

I would not encourage a Nunn-McCurdy-like process for development. Development is about 10 percent, maybe at the most 20 percent, of the total cost of a program. It is the place where you really want to spend money to save money later. So if we put constraints on—we have to be careful of unintended consequences. So if we put constraints on development where people trim and take risk in development to avoid a Nunn-McCurdy-like situation—and Rick was right. People try to avoid Nunn-McCurdys. It is not always the behavior we want that they use to try to avoid them, but they do try to avoid them.

So I would be a little careful about development. I want people to spend a little money in development; they can save a lot of money in production as a result of that. And, more importantly, even they can save money in sustainment. So development is where we need to make good business choices and not be penny-wise and pound-foolish. We tend to do the opposite, I am afraid.

Senator CARPER. All right. Do you want to add anything to that Dr. Burke?

Mr. BURKE. I would just say that one of the key tools to forecast overruns is Earned Value Management, and in Mr. Kendall's written remarks, he talks about the fact that in the Department we have not paid enough attention to the Earned Value Management tools. Industry also—



Senator CARPER. Just explain what you mean by that. We have talked about this at other hearings, but just for our purposes today, what do you mean by Earned Value Management?

Mr. KENDALL. The Earned Value system basically forces you to plan your work and break it up into small segments and attach costs to each of those segments. So essentially as you start to execute, you then report against that. So you can track whether your budgeted work and your budgeted costs are actually coming in according to plan. And it is a very good leading indicator of problems in a project.

It is also a very important planning tool. It has become—in my earlier years in the Department, it was used extensively and for those purposes. But I think in the last 10 or 15 years, it has atrophied. It has become much more of a bookkeeping kind of program as opposed to a management kind of tool. So we are trying to get our people to move back in that direction and use it more aggressively. We are reviewing in our monthly reviews now to see what kind of progress there is.

It does not apply to every type of contract. It is most useful in development contracts. It is less useful in production contracts. But it is a great leading indicator of problems if it is set up properly.

Senator CARPER. All right. Good. Thanks. Thanks very much.

Senator Brown, second round. And welcome, Senator Coburn. Nice to see you.

Senator BROWN. I will defer to Senator Coburn and give him a shot.

Senator COBURN. Well, I apologize for not being here first at the hearing, and you may have covered the questions I am going to ask—that I apologized or that you deferred? [Laughter.]

OK. I used to sit in that chair. I understand what it is like.

Senator CARPER. He used to sit in this chair, too.

Senator COBURN. Yes, I did.

I just want to have a general conversation with you, having the manufacturing background for 10 years and the business background, and what I want you to do is tell me where I am wrong in my thinking. What I see in the last 6 years and the 6 years I was in Congress is we do not have good control on requirement creep. And the way I understand it, we actually incentivize requirement creep to the tune that the fact that on our contracting there is more remuneration the more requirements that you have.

So my question is: How do you set it up where the decision-makers can actually control the requirement creep? Because if you come to me and I am a purchaser and I am not really concerned about my budget in the long run and I know I have a cost-plus-development contract or something like that, and I know, hey, this bell or whistle would really be good, this is cool, versus what is needed when we start out with what our needs are in defense, what do we actually need, and then have a parallel track of some sort on these extra things, so that when you go to a second iteration of it, you add in the new bells and whistles as you go. Because what I have seen too often is it is not that the guys that are trying to get this original piece of idea out the door for a major defense, it is that we get the requirement creep that markedly in-

creases both the developmental cost but ultimately the unit cost when we go into production. Am I wrong in that?

Mr. KENDALL. No, I think you are right, Senator Coburn. The things we are doing about that—there are several things. Let me start out with affordability constraints.

One of the things we are doing now in all our programs, all our new starts, is we are requiring that there be an analysis of the affordability of the program up front that dictates the cost you are capable of paying for it. A good example is our Ground Combat Vehicle, the Army's new program. Essentially my analogy I use for this all the time is if your teenage son comes to you and says, "Dad, I have a requirement for a Ferrari." You have to say, "Son, I have a budget for a Ford, and that is what you are going to get." So it is something like that, OK? Because the requirements community will tend, even at the beginning, to ask for everything it can conceive of that it would like to have, and I can understand that motivation. But we do not have budgets that can support that, and we have to make tradeoffs.

Ground Combat Vehicle, we actually—Dr. Carter and I and Dr. O'Neill, who is the Assistant Secretary of the Army, pulled back the RFP that was on the street and said we had an RFP that was basically all the requirements that the user could put down and no constraints on cost. So we said, OK, we are going to do two things. We are going to figure out what the cost cap is for this program. How much can the Army really afford in production? We ended up with a number of about \$10 million per platform, and we did that by looking out at the Army's Ground Combat Vehicle fleet and saying, OK, given the budgets you can expect to have, how much can you expect to be able to spend per new item that you are going to buy out there? That came out to be the number. And that left the Army with enough money to do some upgrades on it to other systems when that was pretty much all, at least for the next 20, 25 years. So we had a cost cap.

Then we made the Army sit down and look at its requirements and prioritize them, and the ones that it absolutely had to have were in the top end. Then others were tradeable and others were kind of in the nice-to-have category. And that is the way the RFP finally went out on the street. So that is the sort of thing we have to do to discipline the process.

Another thing we're doing that the Joint Staff is doing actually now—and it is in line with the idea of tripwires. The Joint Staff is now requiring that if the cost of a program goes up by 10 percent, just 10 percent, the program has to come back in and its requirements have to be reassessed to see if any requirements can be removed to get that cost back down. So that is another tool that we are using.

Senator COBURN. All right. Let me ask you one other question. You guys spend a lot of money purchasing weapons systems, right? And on the developmental side of that, what is wrong with having a requirement of some capital contribution by those that are going to be in the development potential get the product later on? In other words, one of the things that I think—and I learned this by talking to the CEO of Honeywell—is if, in fact, they have capital at risk, the efficiency with which the development is undertaken is

much greater because they have some of their money at risk, not our money at risk.

What are your thoughts about that?

Mr. KENDALL. You make a good point. I have not looked at that idea. Generally speaking, we pay people to do the R&D, and then we pay them to facilitate for production. So they are not taking the same kind of risks.

I would have to go back and take that on board and see how we could do that. The tool that we have that I think is probably most effective for us is their profitability. Because we tend to do things that are difficult to do, most of our development programs are cost-plus. We are not in a commercial market where there is any other customer. We are it. And basically if we are only going to buy one of something, you will gamble your entire company trying to build a product for us on the odds—in fact, Northrop Grumman did this once. They built a fighter plane on their own, and we never bought it. They lost a huge amount of money on that. So we are not going to get that kind of an investment. But we can get some investment perhaps.

Senator COBURN. Yes, that is what I am saying, some shared capital exposure so that you have the driver on their side saying, wait a minute, guys, we are going to be a lot more efficient in this development.

Mr. KENDALL. I could go back and take a look at that and see if we could structure things that way. I do not think we ever tried to do that per se. What we are doing is looking at is the profitability of the company, and one of the things that you mentioned was that requirements creep up, and in a cost-plus environment you just keep adding on, and the bigger it is, the bigger fee you get. We are trying to shift our profit more into the production side of the house.

The world I used to live in was the cold war when I got into this business initially. The metric was get out of development, you win the development contract, and you probably break even maybe in development, and then you get into production and you make your money in production. We have been in a world where people have been able to make money in development for a long time now, and we need to shift that. We need to shift the emphasis and the incentive system so people get into production sooner so they can start to make money. That is a fundamental change we need to engender.

Senator COBURN. One area that you all have had massive cost overruns on are IT systems and radios, and actually this country spends \$64 billion a year on IT systems and \$34 billion is at risk all the time. They are on the EAO's High-Risk List all the time. A lot of that is commercially available and the application. I am involved in all the auditing and the new systems and everything else that is going on over there. I just wonder if we could emphasize maybe a little more taking off-the-shelf products where we can because having a son-in-law that works for Oracle and who used to work for SAP, I get to see all this stuff from the inside, and the waste. I mean, they are not real efficient organizations either. And when they can see one of these contracts, I mean, it is big dough to them. Big dough.

Mr. KENDALL. That is an area where there is a lot of potential for improvement. Dr. Carter, when I came in a year ago, gave me the opportunity to look at our business systems and some of our radio systems and communications command-and-control systems, and I have been doing that. We have tried to do too much sometimes. We have had too large of programs which are too difficult.

To give you a sense, though, of the fact that you cannot always just bring in a commercial product, I talked to one of our integrators, and I said why did we get into so much trouble on a specific program. I think it was a human resources program. He said, well, there are 170,000 compliance requirements that were unique to the government that had to be put into the software, and that is where the cost is going. It is all that development cost up front, and that is where we tend to get into trouble.

What we are doing—

Senator COBURN. That is where you need to come to us and say, How do we get a waiver on some of these compliance costs?

Mr. KENDALL. Yes.

Senator COBURN. I mean, we are in a whole new day on budgets. You all know that.

Mr. KENDALL. We understand that fully.

Senator COBURN. And so that is the kind of creative thing. You need to come back to Congress and say, "Can we have some relief on this where we could save some money?"

Mr. KENDALL. We will do that where we can. What we are doing in addition is breaking up those jobs into increments that are reasonable, and we are insisting on delivered capability, testable capability at least, if not field-able, before we go on to the next phase.

Senator COBURN. Got you.

Mr. KENDALL. So that approach, it is a standard large, complex software program approach. But we are implementing it in our business systems, we are implementing it in our command-and-control systems where we tend to have the most difficulty.

We are also using more commercial hardware. The Navy had a great success in Virginia with its off-the-shelf hardware for the combat system, so we are emulating that in other places as well.

Senator COBURN. All right. I am way over my time.

Mr. KENDALL. There is a lot of room for improvement there.

Senator COBURN. Thank you, Mr. Chairman.

Senator CARPER. You bet. Thanks for your great work in this area with us.

Senator Brown, you are back.

Senator BROWN. Thank you, Mr. Chairman. I know you have to take a break, so if you want, I will just continue to march.

I just want to zip back just for a minute. I am going to get you some questions for the record because I want to make sure I understand everything that is going on with the two engines for the 135, 136, and—because, I mean, the numbers I have—you talk about competition, you talk about cost savings, you talk about everything. But then it just does not make sense when you have one engine that is a projected \$11.45 billion and another one is \$3.87 billion, give or take. So I am going to designate—I just want you to know what is coming, and I would like within a reasonable time—and it will be something like what is the cost, why is it over—why is the

engine that you picked so far over budget? When is it going to be done? What is the projected cost? And a detailed explanation, aside from a phone call on a Saturday morning, like, hey, by the way, we are canceling an engine. And I do not really know based on everything we are seeing here, like why? And if competition is good and we are going to save money. Sometimes you have to pay a little money to save a little money, and I think competition in any type of business breeds a better product and a more aggressive entity producing. But that being said, that will be forthcoming.

I just wanted to touch base on and just kind of shift gears a little bit, the acquisition program managers should have increased authority commensurate with the accountability to make responsible decisions about spending taxpayers' money, Mr. Kendall. Is that an accurate statement? They have increased authority to make responsible decisions about spending taxpayer money? Do they have a certain amount of authority to spend or not spend?

Mr. KENDALL. I am not sure of the context of the question.

Senator BROWN. The acquisition workforce. I am going to shift to acquisition workforce, and the acquisition program managers should have increased authority commensurate with their accountability.

Mr. KENDALL. Yes. Basically one of the things we are emphasizing is that the acquisition chain of command needs to be responsible and accountable for what it does, so people who are in our chain of command include the program executive officers and the program managers, service acquisition executives as well.

An observation I have made in coming back in to government is that authority and responsibility tended to have shifted away from them to the staff too much, and I want those people to be professionals, and I want them to be held accountable and responsible for the things that they are in charge.

Senator BROWN. And what incentives are in place to actually reward the efficient and effective program management and ensure that these critical positions are filled for the duration of the program life cycle?

Mr. KENDALL. Those are largely career-related incentives for government people: Promotions, obviously, great responsibility, recognition, those sorts of things.

Senator BROWN. And with responsibility should come accountability. I am presuming you would agree with that.

Mr. KENDALL. Absolutely.

Senator BROWN. And in the last 10 years, how many people have actually been fired for bad program management, if any?

Mr. KENDALL. I am aware of one individual.

Senator BROWN. One out of how many program—

Mr. KENDALL. We have 100 major programs, so roughly 100 major programs, 98.

Senator BROWN. So how many acquisition program managers are there total then? Are there 100?

Mr. KENDALL. At any given time there are about 100 major programs.

Senator BROWN. So in the last 10 years—

Mr. KENDALL. In the last 1 or 2 years, I only know of one that has been fired from his position.

Senator BROWN. So are all the programs running well?

Mr. KENDALL. I wish I could say so, Senator Brown.

Senator BROWN. So where is the accountability? I mean, what happens? Do they get bad reviews? Do they not get promotions? I mean, what—where is the accountability on the negative? I mean, if everyone is getting all these great promotions based on rewarding efficient and effective program management, on the other side I would think that if, in fact, the programs are not running well that somebody would basically be held accountable. And you are saying with the last 2 years there has only been one person, and I am assuming in the last 10 years there has only been one or two. So how do we—

Mr. KENDALL. There may be others. I only know of one personally.

Senator BROWN. OK, but I think you know what I am saying. Where is the accountability for the folks that are doing the bad program management? Because there seems to be a heck of a lot of it.

Mr. KENDALL. You raise a good point. I would have to go back and check to see if—

Senator BROWN. Well, what will you do about—

Mr. KENDALL [continuing]. There are others, but let me—

Senator BROWN. You are in charge—are you in charge on that?

Mr. KENDALL. Let me make a comment, though, about a situation we have in the government with program managers. Our program managers rotate. Nominally, they are supposed to stay in place for 4 years, but they actually rotate right now a little bit less than that. Part of that is because we are at war and people are cycling through different jobs faster.

Because people come and go throughout the life cycle of a program, often the problems that are basically built into a program happened in a previous tenure, so it is not always possible to hold the person who is there now responsible for the sins of someone who was before him. So that is one of the problems. Longer tenures can help to do that, but we do have that problem. It is kind of inherent in the fact that we rotate officers in particular through these jobs.

Senator BROWN. That is great, but you are in charge of all—are you in charge of all these people?

Mr. KENDALL. I am not in charge of the military personnel system now. We do have—

Senator BROWN. Right, but how about—

Mr. KENDALL [continuing]. Influence over the tenure of program managers—

Senator BROWN. How about the acquisition program managers? Are you in charge of those?

Mr. KENDALL. Through the acquisition executives and the services' components, yes.

Senator BROWN. So is there somebody who is going to actually look at these program managers and say, wow, this guy is—these people are not doing a good job, we are going to take some—

Mr. KENDALL. We do take corrective action. In fact, I will double my numbers. There are actually two people that have.

Senator BROWN. I would like for the record, Mr. Chairman, I would like to know in the last 10 years—how many program acquisition managers there are in the system, and also how many, in fact, have been disciplined or fired or reduced in pay grade or whatever based on their poor performance? Because there seems to be a ton of it going around and—I mean, at these hearings it is like over and over and over you just hear the same thing, well, we are going to do this, we are going to do that. I remember when we had the last hearing, the gentleman said we were going to fix it, and it is 20 years. He almost said the same thing as the other guy said 20 years earlier, and we are still in that cycle which is over and over and over.

Now, I got to be honest with you I expect more, I know the President expects more, and the taxpayers expect more. So, I mean, I would think with everything that is happening, we are in deep trouble right now. We need to find and squeeze out every last piece of savings so we can provide the tools and resources to our men and women that are fighting. And I am not feeling it right now, Mr. Chairman. I do not want to beat a dead horse, but I am going to submit a bunch of questions for the record because I do not want to embarrass anybody or prove a point. I just want it finally answered so we can collectively work in a bipartisan manner, like we always do, to solve some of these problems, because it is just broken. The way we award contracts is broken, the way we hold people to the letter of the contract is broken, the way we provide bonuses is broken, the way we hold people accountable in their job performance is broken. And it is just over and over and over again, and it is unacceptable.

So I am going to just terminate my questioning because I am getting a little frustrated, and I am going to submit them for the record, OK?

Senator CARPER. Fair enough.

Thank you for all those questions.

One of the things I said at the beginning, I think before Senator Brown arrived, was we need a change of culture around here. We need to change the culture throughout the Federal Government, including the Department of Defense. And we need to change the culture from one of what I describe as spendthrift to a culture of thrift. And I know my colleagues think I sound a lot like Johnny One Note, but that is an important note to sound, and we are going to continue to sound that note.

Senator Coburn is going to try to come back, and if he comes back in the next minute or so, then I would be happy to recognize him for an additional round of questions. But I just want to kind of reflect, if I could, on a conversation here this afternoon. I am interested, Senator Brown is interested, Senator Coburn, Senator Portman, and Senator Pryor, we are interested in solving problems. And, obviously, we have a problem here. When we have seen major weapon systems cost overruns rise from \$42 billion in fiscal year 2000 to \$402 billion in fiscal year 2010, we have a problem.

I think we also have discussed and identified a number of solutions. No silver bullets but a lot of them—maybe a little of silver BBs, and a bunch of them pretty big, pretty good size. One of them is the culture. We talked about that. Another is the confirmation

process, and the idea is we are going to look hard and we will be asking you for the record to help us to identify positions in the acquisition system of the Department of Defense and each of our service branches, help us to identify positions where we require the President to nominate and the Senate to confirm where maybe we should not be doing that. And what we will do is consider that, discuss it with the relevant committees of jurisdiction—the Armed Services Committee—and see if we cannot find some agreement to maybe amend, if needed, the legislation that Senator Schumer and Senator Alexander are introducing with the sponsorship of Senator Brown and myself and others.

The other thing is in terms of culture, we need to change our culture here. The idea of putting holds on these positions, confirmable positions for reasons that have nothing to do—nothing to do with the quality of the nomination. It is hard enough to get people to be willing to serve in these positions and work hard in these positions and go through the nominating process. And to know you have to put up with holds that might last for a year for no good reason, it is very, very frustrating. So that is part of our culture.

We have talked about requirement creeps in the agencies. It is a problem in the IT systems, too. Senator Coburn referred to that. One of the reasons why we have all these cost overruns in our IT system development is because we continue to change the requirements of the program, and it is not uncommon here in the Department of Defense. That, again, sort of falls maybe in the area of culture change.

Dr. Burke raised the issue of earned value and said it is something we maybe used to focus on a good deal more than we do now, and I think he suggested that we began to get back to that.

Competition, I think we had a good discussion here on competition, whether or not we actually are using it enough. There are some times when obviously it does not work, but to the extent that we can make it work and harness it, it can be hugely effective. A friend of mine used to say, “Competition is like cod liver oil. First it makes you sick, then it makes you better.” And I think there is a lot of truth to that. Ernie Ganman would appreciate—he is now deceased, but he would appreciate me saying that.

The other thing that we talked about was whether or not there is an early indicator, some kind of early indicator of a problem later on that could trigger a Nunn-McCurdy breach, either the 15 percent or is it a 25-percent trigger? And I just want us to work with you on helping to identify those.

Let me just close this down, this part of our hearing down, but I want each of you, if you will, just to make a closing statement. We always ask you to make opening statements. Dr. Burke, you were not called on to do an opening statement. I will ask you to do a closing statement. This is sort of like the benediction before the second panel. But I would just like for you to reflect on the conversation that we have had here, what you have had to say, sort of what we have had to say, and then our questions, I would like to hear you make some reflections on what we have been talking about here, and with the idea that we want to solve this problem. We have to do better than this. Otherwise, we will end up having



\$1.5 trillion deficits for as far as the eye can see. We cannot afford that.

Dr. Burke, a closing thought or two, please.

Mr. BURKE. Well, we have covered a lot of territory today, but I would make a few observations.

One is that one of the most important things that the Congress did for us in WSARA was actually made the Department conduct Milestone A reviews early on in programs. I think it is very, very important because that is where as many of the questions have come up, and trades between requirements and costs come together. That is going to be a change of culture in the Department of Defense. You are trying to change a culture where requirements have been thrown over the transom to the acquisition community, go buy something that meets these requirements, and now what you are trying to do is really engender a conversation, enable that conversation between the people that set requirements and what systems are going to cost.

On the cost community particularly it is challenge because we need tools and we are developing tools to inform that trade space. Early on can we trade requirements and come up with less costly systems that meet the needs in the national security environment for the Department of Defense? We have done it a few times. We are at the start. Mr. Kendall mentioned GCV. Another good one is the——

Senator CARPER. What did he mention?

Mr. BURKE. The Ground Combat Vehicle in his testimony.

Senator CARPER. Thank you.

Mr. BURKE. I would also refer the Committee to the discussions that happened on the Ohio Class replacement program where some very interesting conversations happened that have not happened in the Department of Defense in the past.

Senator CARPER. Just briefly characterize those conversations. Just briefly.

Mr. BURKE. Well, the conversations were about essentially we know we will need a replacement submarine for the Ohio Class at some point in the future. What can the country afford? And what will the characteristics of that submarine look like? Those are very, very useful conversations and will affect these charts like the one you are showing 10 to 20 years from now. But my point is really it is a culture change, and the conversations we had are not perfect yet. But I think we are actually beginning to make some progress, and I would encourage the Committee to continue to support us in having us, forcing us essentially to have those conversations and in a transparent environment where we can see requirements and costs traded together. Thank you.

Senator CARPER. Mr. Kendal.

Mr. KENDALL. I agree with your comments in your summary, Mr. Chairman, and I agree with Mr. Burke's comments also. I just want to emphasize people. John Young is going to give an opening statement shortly, I think, and he is going to talk about people quite extensively. It is the people in the acquisition workforce, it is the people in industry. It is their capability to do the work, it is the incentive systems that are in place that motivate them.

At the end of the day, this is about professionals who really understand how to do very difficult jobs being given the tools and the opportunity and held responsible for executing those jobs.

We are working very hard to strengthen the acquisition workforce. We have a lot of support from the Secretary of Defense on this. We are increasing the size. We are also working very hard to increase the capability of that workforce.

We need to provide incentives to industry so that it brings back the kind of engineering strength that it once had. We do that through the motivation of profit, primarily, and we reward better behavior and do not reward poor behavior.

It is a long, long journey to do that. Improving the culture of our workforce, improving the inherent capacity of our workforce takes a long time. Dr. Carter and I both refer to it as our No. 1 program, is to do that. So that is central.

To come back to your original point about confirmations, the Senate has an oversight responsibility here obviously. It is the time of the process that is the problem. Whether they are confirmed or not, if we can get people into office quickly, that is what really makes the difference. And make sure that they are professionals, that they do know what they are doing. These are not the type of jobs that people can do who do not have a background that is relevant, some typical background and a fair amount of experience with the defense system.

I think that summarizes it for me.

Senator CARPER. One last quick question. Each of you ought to take a shot. Just for takeaways, again, just—and I may be asking you to repeat yourself. Give me like one or two things—again, one or two things that we ought to be doing on the legislative side to make sure that these numbers do not keep going that way and come down, and one or two things that may be the most important things for the Executive Branch, particularly in the Department of Defense, to do. You talked around this, maybe to it, but just say one or two things for us on this side of the dais and one or two things for those of you who sit on the other side. Go ahead.

Mr. KENDALL. Helping us get good people in sooner. Helping us reward people better. The government system, as I think kind of was mentioned, does not have a good system to reward people for the kind of performance that we need. We do not have the kind of bonuses industry has. We do not have the kind of salary incentives that people have. It is very hard to promote people in government outside the system. It is very cumbersome and tedious. It took me forever to bring one senior executive into my staff when I was trying to hire somebody with technical capability. It took almost a year. So giving us more flexibility in terms of our own people, to identify the best people and to bring them in, would be extremely helpful.

Senator CARPER. Good. Thanks. Thanks for that.

Mr. BURKE. I think one of the most important things you can do is actually—and actually the Senate has been very helpful in terms of adjusting some of the changes that were made in the Weapon Systems Acquisition Reform Act. There have been some changes. We have actually been trying to implement the act as it was passed. We had some suggestions on how to improve things and

make it actually work, and I hope we can continue that dialog over the course of the next few years because there were some important changes enacted in legislation even this year that help us quite a bit.

Senator CARPER. OK. Mr. Kendall.

Mr. KENDALL. If I can piggyback on that, I think we have the tools we need. We have to sharpen those tools, and we have to use them. But that is our responsibility. I think the things you have done have really given us the things that we need, and now it is up to us.

Senator CARPER. All right. Well, this is a two-way street in terms of who is to blame for this, and that is sort of the question that Senator Brown asked. I think none of us escape blame. None of us escape blame. And if we are going to turn this around, all of us have a role to play. And one of our roles is to do consistent, extensive oversight. And we do that religiously on this Subcommittee and on our Committee, and we will continue to do that. But we will do it in a way that is constructive and not just what we call "gotcha." We have never been into that. But what we really want to get are better results for less money.

All right, gentlemen. Thanks so much again for joining us today, and there will be some followup questions. Within the next 2 weeks, people can still submit questions. You will probably get some. We just ask that you respond to them promptly. Again, thank you so much for joining us today and for joining us in this dialog. Thanks.

Mr. KENDALL. Thank you, Mr. Chairman.

Mr. BURKE. Thank you.

Senator CARPER. Thank you very much.

And with that, we welcome our second panel. Gentlemen, welcome. John Young, nice to see you. Welcome. Michael Sullivan, the real Michael Sullivan. And Moshe Schwartz, thank you. Let me just provide a brief introduction. Were you all here for the entire first panel? OK, good. How did they do? All right. We will see. I think they did pretty well.

Our lead-off hitter today on the second panel is John Young, no stranger here. It is very nice to see you, all of you again, but especially John. Mr. Young served as the Under Secretary of Defense for Acquisition, Technology, and Logistics until April 2009. Now I understand he is hanging his hat over at the Board of Regents of the Potomac Institute for Policy and Studies, where I think he is a Senior Fellow and Member of the Board of Regents there. During his career Mr. Young has held numerous positions in the Department of Defense acquisition community, including Director of Defense Research and Engineering in the Office of the Secretary and Assistant Secretary of the Navy for Research and Development and Acquisition. Mr. Young, again, no stranger to Capitol Hill, having served for 10 years as a staff member of the Defense Subcommittee of the Senate Appropriations Committee.

Who were the Chairs that you worked for there? OK. Your microphone is not on. Say that again. Who did you—

Mr. YOUNG. I worked for Senator Stevens and Senator Inouye at different times as Chairman.

Senator CARPER. And Senator Inouye is still with us. He is still going strong. He is amazing.

During his tenure at the Department of Defense, Mr. Young oversaw, among other things, the Mine Resistant Ambush Protected (MRAP), vehicle program and secured the Virginia Class submarine multi-year contract. Mr. Young will also show us his experience as managing weapons systems because when he was a chief acquisition officer for the U.S. Navy and for all of the Department of Defense, and he is remembered fondly in our Subcommittee for the great work that he did on C-5 modernization to make sure that we got the kind of value out of those old C-5s to turn them into like-new C-5s, one of which set, I think, 41 world records in a flight from Dover Air Force Base to Turkey last year. We have just gotten our fourth one in. We are about to get our fifth C-5 into Dover, and the reviews we are getting are actually quite good. So thanks for that as well.

The next witness is Michael Sullivan from the Government Accountability Office. Who is your Comptroller General? What is his name?

Mr. SULLIVAN. Gene Dodaro.

Senator CARPER. Gene Dodaro. I have heard of him. Actually, he has been here many times.

Mr. SULLIVAN. Yes.

Senator CARPER. When he comes and testifies, he does not use any notes. He is just talks right off the top of the head, all of his testimony, all of his answers. Is that part of the new policy at GAO?

Mr. SULLIVAN. I do not have quite those talents. That is why he is where he is.

Senator CARPER. I have to say, there are two people I have seen do that. One was John Roberts, Chief Justice of the Supreme Court, who testified for days before the Judiciary Committee and never used a note. He answered all the questions and never used a note. And then you have Gene Dodaro. Maybe in his next job he could be Chief Justice. Who knows? We will see.

Mr. Sullivan, I do not know what your next job will be, but you are currently the Director for Acquisition Sourcing Management at GAO. You have worked there for—this says 25 years. Is that possible?

Mr. SULLIVAN. Yes, it is.

Senator CARPER. All right. Mr. Sullivan's team at GAO is responsible—anybody here from your team?

Mr. SULLIVAN. Yes.

Senator CARPER. Would you all raise your hand, please, team members? OK. Thank you.

Mr. Sullivan's team is responsible for examining the effectiveness of the Department of Defense's acquisition and procurement practices in meeting its mission performance objectives and requirements. This is, I think, Mr. Sullivan's second time testifying before this Subcommittee on cost overruns. In 2008, he testified about GAO's annual weapons system audit that showed that major weapons system cost overruns amounted to \$295 billion, and I think Mr. Young was here at that same hearing. As I mentioned before, my office enlisted Mr. Sullivan and his team to analyze trends of those weapons systems that have reached Nunn-McCurdy because their costs have spiraled out of control, and Mr. Sullivan's testimony will

shed some light on these trends. And, again, we thank you and your team for being here today and for your preparation for this hearing.

Last, but not least, Moshe Schwartz. Has anybody ever called you “Moshie”?

Mr. SCHWARTZ. Among other things.

Senator CARPER. Well, Mr. Schwartz is a Specialist in Defense Acquisition at the Congressional Research Service. He has written numerous reports for Congress on various issues relating to defense acquisitions and contracting during contingency operations. Before joining CRS, Mr. Schwartz served as senior analyst at GAO where he worked on a variety of DOD acquisition issues.

Did you all ever work together? OK.

Mr. SCHWARTZ. Sorry. Excellent training.

Senator CARPER. All right. Well, good. Today Mr. Schwartz will outline efforts to accurately estimate weapons system costs, the characteristics of the acquisition programs that can lead to cost growth and potential opportunities to strengthen the Nunn-McCurdy law to more effectively prevent against future cost overruns, and we appreciate what you did then and we appreciate what you are doing now.

One of the things that I am going to be looking for at the end of this hearing—and I am going to telegraph this pitch right now. One of the things I am going to be looking for is for you to think back to the first panel, what our first witnesses had to say, and what each of you are about to say in responses to the questions. Then I want to ask you to say where you think there is a confluence of agreement. One of the things, in order to get anything done down here, you have to get people to agree, and so I am always looking for ways to build consensus. So just be thinking about that, if you would. All right?

Mr. Young, you are up first, and your clock will run for 5 minutes. You can take a little bit beyond that but hopefully not a whole lot beyond that. So please proceed.

**STATEMENT OF JOHN J. YOUNG,<sup>1</sup> JR., SENIOR FELLOW, THE  
POTOMAC INSTITUTE FOR POLICY STUDIES**

Mr. YOUNG. Thank you very much, Mr. Chairman. I will try well to finish in the time.

It is a privilege to get to testify to you. I appreciate your help during my past tenure as Under Secretary. You were a knowledgeable and interested member, and that is, I think, worthwhile on both sides of the river, if you will.

I want to highlight a few brief principles and then note several tools that are fundamental, I think, to the defense acquisition enterprise.

First, as you have already heard today, people run programs. In the Goldwater-Nichols legislation, I believe the Congress was amazingly prescient in assigning acquisition responsibility to the civilian chain of command working for the President. The defense and service acquisition executives are critical positions, and these individuals are the key to successfully executing and improving de-

<sup>1</sup>The prepared statement of Mr. Young appears in the appendix on page 74.

defense acquisition. As the Under Secretary, I wrote a memo to Secretary Gates emphasizing this point. The acquisition executive must serve as the first line of defense against overstated requirements, understated budgets, unrealistic schedules, immature technology, and service-unique programs. Every unaffordable program a service wants cannot be adjudicated by the Secretary of Defense or the President, and it is harmful for the defense acquisition enterprise to delay filling these positions with qualified people.

Second, the President's acquisition team must enable the defense acquisition team working for them to make the thousands of necessary, timely, and required hard decisions every day. Military requirements officers and industry are constantly seeking to change and improve ongoing programs, for legitimate reasons. But the tough job is locking the design and executing the program. The acquisition executives must support the managers who say no. The military promotions system will reward the requirements officer who pushes for more requirements and punish a military acquisition program manager who resists making costly changes to a program. Similarly, civil servants in acquisition who want successful careers are cautious about taking on hard issues. The President's acquisition team must support and empower these program managers when they try to make responsible decisions about spending taxpayer money.

Third, people execute programs, again, but not paper. It is not possible to write a universally applicable procedure that will deliver successful results. No amount of process or procedure and certification will make the hard decisions that trained people make. The growing volume of legislation and certification requirements do pose a risk of adding months and higher costs at a time when our adversaries are doing things faster and cheaper. We should resist the urge to add to the acquisition laws and certifications and regulations which already resemble the Tax Code and consume a program manager's time and energy for limited results.

As a student of defense acquisition, I can tell you there are many valid examples of people delivering great results when freed from the constraints of the normal process. Frequently, this is in the classified programs arena.

Fourth, we need to increase the authority of acquisition program managers commensurate with the public accountability being levied on the team. People without accountability chop documents, cut budgets, increase requirements, impose new certification standards, and then everyone wants to know why a program manager is late and over budget.

Finally, I think there are several tools that can be used to help. The Department must use competitive prototyping to evaluate the validity of requirements, to mature technologies with smaller teams at lower cost, to inform our estimates of final development and procurement costs, and to assist in the refinement of concepts of operations, how we are going to use the things, and to access new companies. I used to tell program managers that the cost of a program is known the day the contract is signed. The only question is whether they know the cost. It is very difficult to estimate that cost and the schedule based solely on paper. Appropriate prototyping is important.

At a more general level, DOD needs to pursue the development of prototypes to train our people in program management and systems engineering, to attract talented scientists and engineers to work on defense programs, and even to inspire a new generation of young people to pursue technical educations.

DOD must use collaborative processes to make timely program development decisions and to appropriately include all stakeholders to achieve alignment—acquisition, budget, and requirements. The Configuration Steering Board process was used in the past on programs like the F-16, the low-cost fighters, and I reinstituted this practice in DOD. I used this similar collaborative process on the MRAP program that you mentioned, Mr. Chairman, the DOD Biometrics Program, the Virginia Class submarine, the DDG 1000 destroyer, the P-8 maritime aircraft, and other programs.

We instituted Joint Analysis Teams to review portfolios of programs which cut across services. These are difficult decisions, and you need to achieve consensus with multiple stakeholders.

The Department often used blue ribbon panels or independent teams to assess problems. I sought to make this a regular process through creating defense support teams which seek to harness experienced outside experts to review program development plans and review program progress before we have problems. Defense Supports Teams (DSTs), can partially offset the Department's inability to hire government personnel to manage our programs.

Further, the Congress has instituted technology readiness assessments which are of great value, but it is of no value to spend tax dollars and reached Milestone B to determine that the technology is immature. Quick-look assessments are necessary to drive investment in the timely maturation of those technologies.

These are just a few of the tools which I believe are fundamental to the proper creation and management of complex programs. The tools must be employed by capable people with adequate authority. The press stories will always report the programs which go badly. There are programs which successfully deliver capacity to the warfighter. The real key, again, is trained and experienced acquisition team members with management support, decisionmaking authority, realistic requirements, adequate budgets. Under these conditions, program managers will carefully spend tax dollars and deliver capability to the men and women that serve this Nation.

I appreciate the chance to testify, and I look forward to your questions.

Senator CARPER. Great. Thanks for that excellent testimony. Mr. Sullivan.

**STATEMENT OF MICHAEL J. SULLIVAN,<sup>1</sup> DIRECTOR, ACQUISITION SOURCING MANAGEMENT, U.S. GOVERNMENT ACCOUNTABILITY OFFICE**

Mr. SULLIVAN. Thank you, Mr. Chairman. It is a pleasure to be here today to discuss our work on the Nunn-McCurdy process and other tools to improve acquisition outcomes. I will make a brief oral statement. I have submitted a written statement for the record.

<sup>1</sup> The prepared statement of Mr. Sullivan appears in the appendix on page 78.

Let me begin by just summarizing our findings on Nunn-McCurdy very quickly. Since 1997, there have been 74 breaches from 47 major acquisitions. Eighteen of those programs have had multiple breaches—more than one: Seven have had three, and one, the space-based infrared satellite, has had four. The Department points to engineering, schedule, and quantity changes and revised cost estimates as factors most frequently responsible for these breaches in the programs.

We have questions about the meaning and the validity of some of these factors and have our own ideas about potentially better tools which we can perhaps get into during Q&A.

The Department has also established a tripwire process that it believes will provide early warning for potential breaches, and I believe you heard a little bit about that from the first panel. We believe that what they are doing with that process has merit, and they should think about institutionalizing that. The Department also plans to propose new legislation that would reduce some statutory requirements that were added in 2009 for cases where there is evidence that a Nunn-McCurdy breach was caused by quantity changes and not necessarily by poor performance, and we believe this proposal deserves further study as well.

Senator CARPER. When you say poor performance, by the contractor?

Mr. SULLIVAN. By the government and the contractor, yes.

Senator CARPER. OK. Thank you.

Mr. SULLIVAN. Cost, schedule performance.

Senator CARPER. All right.

Mr. SULLIVAN. Mr. Chairman, let me conclude with a few words about the current process, what we believe the key tools for improving acquisitions are, and how we think the Department is doing with its implementation of reform up until now.

The current Nunn-McCurdy process is an oversight tool and not particularly designed for cost management because it is a report on what has already gone wrong, and I believe you got a little bit of that from the first panel as well. The Department currently uses its annual selected acquisition reports to track program cost, schedule, and performance. It is these reports that attempt to trace root causes of the breaches, as I stated above. Most of the causes we believe are poorly analyzed or miscategorized. For example, the selected acquisition report typically recites nine factors that are responsible for breaches. At least two of those—schedule issues and revised estimates—are not casual in nature. They usually depend on some other root cause taking place before they get out of whack. They reflect the impact of other factors.

In addition, when it is generally recognized that requirement changes happen frequently during a program and are anathema to healthy cost control—I am talking about requirements creep there—the Department chose this factor as sixth out of the nine factors in terms of frequency of problems. We believe there are other key tools for improving outcomes, and they continue to be things that we have heard a lot about from the first panel. I think Mr. Young referred to some. We look at them as robust systems engineering analysis early in a program and often, clear and well-defined requirements, cost estimates that are based on systems engi-



neering knowledge, a robust science and technology base to mature technologies before they get to an acquisition program, and an incremental knowledge-based approach to delivering weapons more quickly—in other words, perhaps a shorter development time period or time cycle that program managers could shoot for.

Our written statement has a picture of the current process in it and where we think those tools would fit into it well, and I would be happy to walk you through that during Q and A's.

The Department has been working to implement many of the tools we mentioned above as it implements its own revised policies and the statutory criteria that was mandated under the Weapon Systems Acquisition Reform Act and some other legislation that has been passed in the last couple of years, and it has made some progress.

Our annual assessment of major weapons systems was issued today, and I believe the \$402 billion number there was reported in that. In that report we do make quite a few observations about the progress the Department has made in moving toward a more knowledge-based process and trying to get more efficiencies into the programs. However, it remains clear that a lot more must be done to achieve a reasonable level of cost efficiency.

For example, due to budgetary constraints, the Department is currently struggling to build a robust systems engineering and developmental test workforce. Because pressure will remain on budgets for the foreseeable future, the Department must remain diligent in trying to establish that workforce. I think Mr. Young spoke eloquently about that. And the Congress must remain vigilant in trying to control these costs.

Mr. Chairman, that completes my statement. I would be happy to answer questions.

Senator CARPER. Great. Thanks for the statement. Thanks very much for the work that preceded that statement, too. Mr. Schwartz, please.

**STATEMENT OF MOSHE SCHWARTZ,<sup>1</sup> SPECIALIST IN DEFENSE ACQUISITION POLICY, CONGRESSIONAL RESEARCH SERVICE, THE LIBRARY OF CONGRESS**

Mr. SCHWARTZ. Thank you, Mr. Chairman. Thank you for the opportunity to discuss cost overruns in weapons systems acquisitions.

Over the years major defense acquisition programs have been plagued by substantial cost growth, as has been pointed out by a number of people here already. Cost growth has been so systemic and widespread that time and again the Department of Defense has resorted to terminating or substantially curtailing many programs in which billions of dollars had already been invested. In the 1980's a number of weapons systems experienced dramatic cost overruns, increasing the defense budget by billions of dollars. The last 3 months of 1980 alone saw a \$47 billion increase for 47 major weapons systems. It is against this backdrop that the Nunn-McCurdy Act was enacted as a way to notify Congress of cost overruns in major weapon systems.

<sup>1</sup> The prepared statement of Mr. Schwartz appears in the appendix on page 89.

Under Nunn-McCurdy, as has been discussed, DOD must notify Congress if a program's cost growth exceeds certain thresholds. The act was intended to inform Congress as to whether or not the acquisition process was working effectively. It was also intended to publicly expose cost overruns in the belief that such exposure would compel DOD to rein in cost growth.

Despite Nunn-McCurdy and other reform efforts, cost growth continues to plague many programs, as some of the GAO's work has excellently reflected. In response, Congress has amended Nunn-McCurdy numerous times, transforming it from primarily a reporting system into more of a robust information-gathering and management tool. These changes were fueled in part by concerns that programs with chronic cost growth and schedule delays were not being terminated and that Congress was not receiving useful information on the causes of cost overruns.

Many experts have pointed to poor cost estimating as a primary cause of cost growth, and that has come up a number of times already at these hearings. Program advocates have strong incentives to underestimate what a program will cost. Contractors often use low estimates to win contracts. Program representatives often use low estimates to argue for their system over competing systems. Once established, unrealistically low estimates make future cost growth almost inevitable.

Since the early 1970's, Congress and DOD tried a number of initiatives to improve cost growth and over optimistic cost estimates. Most recently in 2009, the Office of the Director of Cost Assessment and Program Evaluation was established in the Weapon Systems Acquisition Reform Act to help develop more accurate and realistic cost estimates. Given how recently the new Office of Cost Assessment was established, only time will tell whether the Director of Cost Assessment and Program Evaluation will be more effective than past efforts to make DOD cost estimates more realistic.

Other factors in cost growth that have been alluded to include unstable funding, insufficient testing early in the acquisition process, requirements creep, and poor contract management. Analysts have also argued that it simply takes too long to develop and field major weapons systems. Ten-to 20-year development programs often indicate that a program is seeking ill-defined capabilities or pursuing technologies that are not yet achievable. As a result, some have suggested that limits be set on the time it takes to develop and field new systems.

Nunn-McCurdy does not apply to operation and support costs, which often account for two-thirds or more of a system's total life-cycle cost. Because many of the decisions that determine operation and support costs are made early in the development process before these costs are actually incurred, operation and support costs do not always receive the same attention as acquisition costs. Requiring DOD to report on cost growth in operation and support might give Congress a better understanding of the long-term cost of weapons systems.

Another option for Congress could be to consider shortening the time DOD has to notify Congress of cost growth and certify a program. Condensing the reporting requirements could give Congress more of an opportunity to weigh in earlier on the future of troubled

programs. When Nunn-McCurdy was first enacted, no more than 97 days passed from the end of the quarter in which a critical breach occurred to when a program was certified to Congress. Today it could take more than 195 days.

Congress took an approach similar to this in the Intelligence Authorization Act for fiscal year 2010, which applied a Nunn-McCurdy-like requirement to intelligence acquisition programs but, in fact, shortened the time that is required to certify a program to Congress.

Mr. Chairman, when weapons systems end up costing far more than originally anticipated, the scramble to plug budget shortfalls undermines long-term strategic planning. Systemic cost growth jeopardizes the ability of the United States to execute a long-term, coherent, and stable strategy that will give U.S. Armed Forces the weapons they need to meet future threats.

This concludes my testimony. Thank you for the opportunity to appear before you to discuss these issues, and I will be pleased to respond to any questions you might have.

Senator CARPER. All right. Good. Thank you.

I think I want to return to a theme that we have touched upon in a number of previous hearings involving different government programs, and the theme is that of realigning our incentives. I will use an example. We held hearings here, oh, gosh, within the last month or so, on something called the Tuition Assistance Program for active-duty military personnel where they can be reimbursed for a portion of their postsecondary education costs while they are on active duty. And we have a situation where active-duty personnel can—like at Dover Air Force Base, they can go to Delaware State University or Wesley College or other schools in the area—Wilmington University—and take postsecondary courses. They can actually take courses on the base. Some of these universities and colleges come to the base. Or they can use distance learning and remotely take courses.

Some of the for-profits, some of the private, and some of the non-profit colleges and universities do a great job. They do a great job actually with the taxpayers' money. In many cases, whether it is Pell grants, whether it is the GI bill, whether it is tuition assistance payment, some colleges and universities do a terrific job. Some of them do not.

One of the things that has become apparent to us is that at least in that program, we need to realign the incentives so that we are rewarding or incentivizing the college or university, whether it is for-profit, whether it is nonprofit, whether it is private, we need to realign them so that we are rewarding quality, not quantity, and so they actually reward students who complete their course work, reward colleges and universities that help students complete their course work, provide tutoring or whatever assistance is needed. We reward colleges and universities for actually making sure that not only do students complete their course work but they actually graduate or complete their certification requirements and that they actually get placement or help get placement in jobs where they can pay off their loans or go on to live productive lives. We are focused there on how do we change and realign those incentives.

Talk with us here today about how we have been trying to better align the incentives in the acquisition field, maybe some changes that we have made that you are aware of, and particularly changes, additional changes that we might need to make in order to derive the kind of behavior that the taxpayers need and, frankly, deserve.

Do you want to go first, Mr. Young?

Mr. YOUNG. I would welcome the chance to comment on that. During my tenure, I talked a lot about changing the profit that you heard about in the earlier panel, the award fees, to be objective instead of subjective, and I will tie that to something I said. Program managers need time to focus on their programs, and I think we would all like to see, as Secretary Kendall noted, a nice program plan laid out that could be—earned value management could be applied to because the work is focused, and within that system, I want that program manager responsible and accountable to the taxpayer to decide which pieces of work are on the critical path and when a company succeeds and executes that piece of work and meets that interim milestone, you pay them profit, a million dollars or whatever. These are bigger pieces of money, so they are big decisions.

Instead, in a lot of cases, we have beauty contests with a lot of viewgraphs and companies tell very good stories, and they have done good work. But that is not a good basis for deciding whether to give somebody an 80-or 85-or 90-percent award fee. Results that is on the critical path to success is what is needed.

Back-end-loading the fees so that you have a lot of work accomplished—and we did this on Joint Strike Fighter. This was a tough discussion with industry. Industry in the end accepted it, and that is why Secretary Gates has a pool of fee now on the back end of that program to use to incentivize success in that program.

I feel strongly we should move away from subjective fees and more to objective fees. Designating fee against events will force better program planning and lend itself to better earned value management.

Senator CARPER. Mr. Sullivan.

Mr. SULLIVAN. Yes, I would first comment that right now the incentives, as we have kind of discussed here today, are almost backward. When you think about a vibrant, competitive market outside of the defense industrial base, where you have world-class firms that are in some ways outpacing the defense industry in terms of innovation and bringing things to market very quickly, they are very, very incentivized, and what incentivizes them, obviously, is that they do not make their money until they get into production.

So the one thing, one set of incentives would have to do with how can you establish—it has to do with defining requirements so that they are doable and they can kind of encourage competition. So how can you establish development programs where—I do not think fixed-price development contracts are necessarily a good idea. They have been tried in the past. But how do you incentivize a contractor to be able to develop a high-quality product as quickly as possible so that they can get to production to make their money. And competition has a lot to do with that, so I think that would be—how can you compete development more, how can you do com-

petitive prototyping, a lot of the discussion we had around the Joint Strike Fighter engine, I believe the LCS Navy ship is another one where they are trying to induce competition.

I know that on the—I believe it is the joint light tactical vehicle, which I think Mr. Young had a lot to do with, infusing a lot more competition into that program, they are going to try to be kind of your class program, I think. And, the AT&L stopped them and said, no, no, go back out and do some prototyping and let us get some competition going. So the competition is very important.

Just quickly, I would say shorter programs, really shorter development programs, when you start a program with ill-defined requirements and say let us take 15 years to develop the F-22 or the Joint Strike Fighter or the next-generation bomber or whatever is coming down the pike, I think you set up a program manager for—that is a recipe for cost and schedule growth. So shorter programs, really, and the way you do that is you get more incremental, much as the private sector does, the private sector will—they might put a clean sheet of paper new product out there you can take a lot of things—the iPad, for example, and put out a product that the requirements are established and doable with an understanding that you are going to continue to improve that, but you deliver quickly that basic product.

And, finally, I think a more vibrant tech base for the government, and we have argued in the past that the S&T budget could probably be increased. If you looked at—

Senator CARPER. I am sorry. The S and what?

Mr. SULLIVAN. The science and technology budget.

Senator CARPER. Thank you.

Mr. SULLIVAN. For the Department of Defense. I am sorry. We have tried to analyze that a little bit, and it seems to us that for every dollar you would put into developing more technology, which right now I think is probably maybe 3 percent of the defense budget, you would probably save a lot more money in product development because you would have new technologies that were more mature as they hit product development.

So a vibrant tech base I think is something that would incentivize a lot of the contractors in the defense industry. Those are some ideas.

Senator CARPER. Good. All right. Thanks.

Mr. Schwartz, realigning incentives.

Mr. SCHWARTZ. Sorry?

Senator CARPER. Realigning incentives.

Mr. SCHWARTZ. Yes, and my colleague spoke a lot about incentivizing the—

Senator CARPER. It is fine to repeat what they have said. Sometimes repetition is a good thing.

Mr. SCHWARTZ. Well, then, I would definitely echo some of the sentiments as far as, for example, time-certain development or how long it takes to field. In fact, that is a flag that was raised also by the Quadrennial Defense Review independent panel, which recommended 5 to 7 years time-certain development to include development and initial deployment for that reason. But I also perhaps want to talk a little bit about incentivizing the acquisition workforce within the government as well, if I can.

Mr. Young testified before and he mentioned Goldwater-Nichols. I think Goldwater-Nichols perhaps is an excellent example of how Congress helped incentivize the Department of Defense by incentivizing joint assignments as a useful tool for promotion within the Department of Defense, and that was one example.

When you have a program like the V-22, which had approximately a 20-year development cycle, you have had five, possibly even ten program managers on that. You had different people who set the requirements and perhaps different people that did the cost estimating. Well, who is responsible? Is it the people that did the requirements? Is it the people that did the initial cost estimate? Or is it the five to ten different program managers that you have? It is hard to incentivize when you do not really know who to incentivize or how long they are there.

I will just give one other example. The Joint Strike Fighter is a joint program, and as a result, it bounces back between services every 2 years, which can result in a different program manager every 2 years, and possibly different acquisition rules, depending on the service. So there, too, the question is: Who are you incentivizing and how do you do that? And that might be another issue to look at as far as incentivization.

Senator CARPER. All right. Good.

I am going to ask a question for the panel. I think I know the answers here. Be very brief in responding. OK? But a point-blank question. Are weapons system cost overruns growing? As a followup, is the Department of Defense acquisition system becoming more or less efficient? And, third, are we committing more to acquisition costs than we were, say, 5 years ago?

Those three questions: Are weapons systems cost overruns growing? Is DOD's acquisition system becoming more or less efficient? And are we committing more to acquisition costs than we were 5 years ago?

Mr. Schwartz, do you want to lead us off?

Mr. SCHWARTZ. Sure, and I left the talk button on, so that is perfect.

Senator CARPER. Perfect.

Mr. SCHWARTZ. RAND did a study a couple years ago that, adjusting for the change in the mix of what weapons we are buying, whether cost growth has increased or not, and what they determined looking back to the 1970's was that cost growth basically as a percentage of initial cost estimates has stayed somewhat stable. The absolute dollars, of course, as we see, have increased because weapons systems have gotten more expensive. But, generally, the performance has pretty much been from a cost growth perspective roughly the same, and you can even hark back to the 1980's when Carlucci testified before the McCurdy hearings, which started Nunn-McCurdy. He pegged initial cost estimates at approximately 10 percent of the cost of the source of cost growth, which is roughly the same number that, adjusted for inflation, the RAND report came out with.

So from that perspective, one could say that it has not necessarily gotten much worse, but it has not necessarily gotten much better. We are roughly in the same situation that we have been in before.

Senator CARPER. Mr. Sullivan, would you take a shot at those three questions, please?

Mr. SULLIVAN. Yes. The first one on cost growth, I think I would probably tend to agree with Mr. Schwartz that it is probably about the same. It has been the same for a long time. If you look at the \$402 billion number up there the Department takes issue with this. I know when Mr. Young was there he did, too. It was a fair argument that, in fact, we have been trying to straighten out over the 3 years. There is a lot of cost increase in that number that is the result of quantities, additional quantities. MRAP is a good example.

Senator CARPER. Buying additional quantities.

Mr. SULLIVAN. Yes.

Senator CARPER. As opposed to fewer?

Mr. SULLIVAN. Fewer, yes.

Now, there is also, however, cost growth when they reduce quantities because cost has gotten so out of control. The F-22, of course, is a good example of that. The F-22 spent about the same amount that they originally estimated, and they got a third of the aircraft. But if look at programs like the MRAP, I think F-18E/F is probably an example. There were quantity increases that drove some of that cost, which is not necessarily a bad cost increase. But I do not think it represents—probably the cost increases on programs where they have reduced quantities easily offsets that. So you have a number of \$402 billion there. Probably 25 percent of that number is one program, and that is the Joint Strike Fighter. They were talking earlier about cost growth. Cost growth on the Joint Strike Fighter from its original estimate of Milestone B is probably \$125 billion, or thereabouts. That program was an ill-defined program at the outset, and it has been very difficult. It has played out that way.

If you look at the top ten programs, the big giant programs, they are driving more than half of that cost. So I think cost growth is probably the same, and it usually is the big monoliths. The Future Combat System for years was doing it to the Army. F-22 was doing it to the Air Force for years. Joint Strike Fighter is a joint program that is driving costs.

And then you had two other points. One was—

Senator CARPER. The first one, again, was: Are weapons systems cost overruns growing? And you suggest, well, maybe a big piece of this, maybe as much as a quarter of it is the—

Mr. SULLIVAN. Is one program.

Senator CARPER. Is the Joint Strike Fighter. Second—hold on.

Pardon me. The second was: Is DOD's acquisition system becoming more or less efficient? And, last, are we committing more to acquisition costs than we were 5 years ago? They are all sort of intertwined.

Mr. SULLIVAN. I think the answer to the third one probably is that we are committing more to acquisition costs than we were 5 years ago. I could get those numbers for you. I think that is probably a safe bet.

Senator CARPER. All right.

Mr. SULLIVAN. And then the middle one is—it is hard to tell, but I would argue after the last reforms, a lot of what Under Secretary

Young did when he was there, he started the Configuration Steering Boards. Those are there in order to keep requirements from creeping out of control. Good idea. The Department is beginning to implement them. We have looked at how well they are doing that, and I think—I could be mistaken, but less than half of all of the major programs have held Configuration Steering Board reviews to date, but they are beginning to do that. So I think a lot of the WSARA reforms, the Department is trying to implement them, but this becomes a workforce issue as well. If you want them to maintain efficient oversight, they probably do need more professional staff.

Senator CARPER. All right. Thanks.

Mr. Young, do you want to take a shot at these questions? Just briefly.

Mr. YOUNG. I will try to be brief. Obviously, I think we are spending more and the costs are growing unacceptably. I have never felt that was acceptable. I think the acquisition team is actually becoming gradually and steadily more efficient. Why is that not producing the results would probably be your question, and my answer to that is—we had a lot of discussions about this in the past. If you look, the acquisition workforce through the 1990's came down dramatically. So you come to the 2000 timeframe, and the budget starts going up significantly, and I built a couple charts for Secretary England to show how many programs we were running through NAVAIR and through NAVSEA, essentially concurrently. And I said if you let me stagger these programs, I can take this team and do a better job. But if we are going to concurrently push programs through a small team, it is a struggle. And I think not only have you seen that struggle happen, but then we found ourselves in two major engagements with significant supplemental dollars, and a lot of those supplemental dollars had to be spent on urgent wartime capability.

So you have seen a stretch team gradually be more efficient, but I think the undercapacity for what they were asked to do in the aftermath of how much that workforce was reduced through the 1990's.

Senator CARPER. Sometimes when we hold these oversight hearings, we focus on disappointing performance, bad actors, that sort of thing. But I also like to focus on exemplary work and be able to put a spotlight not just on disappointing behavior or results, but actually quite good ones. And I am going to ask if you all could provide us—and one or two of you have touched on this during the course of your testimony, as did our first panel, but just provide us with examples of a couple weapons systems where they are getting it right, and maybe you can name some weapons systems that are being delivered on time, even under budget. And where I really want to go with this is: What do you think the keys are for that better performance?

Do you want to lead us off, John?

Mr. YOUNG. I would love to talk to you for like an hour about this.

Senator CARPER. We do not have quite that long.

Mr. YOUNG. I understand, so I will try to be brief and clear because I want to use it to illuminate some other issues.



One of the things I fought through in the Navy was SSGN, the conversion of Trident submarines to carry Tomahawks—a very efficient program, well done. If I had the chart, I could show you a graphic where I sketched out the way to do that program just the way I told you. We are going to do one—there was an insistence that we do it on both coasts and do it as fast as possible. Part of that came from even the White House level because they said the President mentioned this so we must do this program.

The submarine community, very happy to do that program as fast as possible. John Young saying, no, we are not going to concurrently do this; we are going to do one submarine, and then take some of those people to the other coast if you make me do them on both coasts and exchange learning. And it was a public-private partnership, a difficult program, and——

Senator CARPER. So John Young trumped the President.

Mr. YOUNG. Well, I will not say the President——

Senator CARPER. OK. You do not have to say it.

Mr. YOUNG. But I certainly had to have a discussion with the National Security Council members and say, we have——

Senator CARPER. Which President was this? Which President was this?

Mr. YOUNG. President Bush.

Senator CARPER. George W. Bush, right? I remember meeting with him once, and he said to me, “Who is John Young?” [Laughter.]

I am kidding. Go ahead.

Mr. YOUNG. I would highlight another set of factors. So I have talked to you about the fact that lots of different forces can get engaged in trying to do the program the right way. DDG 1000, today that debate is diminished. When I was there, there were a lot of different debates about it, but a lot of things were done right. Essentially, prototyping is very important at multiple levels. There were, I think, 13 engineering development models of the power plant, the gun, the peripheral VLS, all the systems on the DDG 1000 that were proven so that we could then take that ship into design and then build that ship. And it was designed in a CATIA system. There were claims of that ship being \$5 or \$6 billion. Today the first ship is 40 percent complete, and it is on budget, and the lead ship is going to be about \$3.5 billion and the follow ships will be cheaper. The programs performed pretty well because a lot of the right things were done along the way.

The program has been somewhat killed, if you will, because of the debate and the projections of overages that have not happened. So you have to work your way through those things.

I would highlight the C-5 program that you mentioned. It came off the rails, but with a lot of discipline, the program was put back on the rails. And I think it is performing going forward. Its continued success is critical to the budget being stable going forward, treating it almost like a multi-year, which is what I tried to insist from the Air Force.

Virginia class, the Congress extended an unprecedented authority to us in the Department before we had the first submarine because we were being asked, largely by the Congress, to build the submarines at one a year in two different yards. That is a horrible

strategy to build one submarine a year between two yards. But Congress at least gave us the authority to put those submarines until a multi-year, and that brought enormous stability of that program and let you in a very lean production environment deliver effectively along with other tools, good management and other things.

I could give you a lot of good examples. I really appreciate the chance to give you some of those examples.

Senator CARPER. Good. And, again, a special appreciation for your great work on C-5 modernization.

Mr. Sullivan, any good examples you want to cite just very briefly?

Mr. SULLIVAN. Small Diameter Bomb, the first increment of that was a really well done program. P-8A, which is in development now, appears to have a very—

Senator CARPER. What is P-8A?

Mr. SULLIVAN. P-8A is—

Mr. YOUNG. A multi-mission—

Senator CARPER. P-8, oh—

Mr. YOUNG. Replacement for the P-3s.

Senator CARPER. The mighty P-3, of which I was a mission commander. My sons, when they were little, used to call it “the mighty P-3.”

Mr. SULLIVAN. That has been an excellent program. F-18/E/F actually, a lot of the F-18—because they basically are mods in many ways, big mods, but nonetheless they were allowed to come in with a realistic cost estimate and have all done well. The Growler is the same way, the EA-18G.

There have been a lot of programs—the Joint Direct Attack Munition (JDAM) was kind of a favorite. It was a very small, unsexy—

Senator CARPER. The what?

Mr. SULLIVAN. I am sorry. The Joint Direct Attack Munition.

Senator CARPER. Thank you.

Mr. SULLIVAN. Which really kind of explored precision strike a long time ago, and it was basically a program where they took a dumb bomb and strapped software, a kit on it to make it be able to go where they wanted it to go. That was a very successful program.

There have been a lot, and I think—

Senator CARPER. Did you say they took a dumb bomb and strapped a kid?

Mr. SULLIVAN. Kit.

Senator CARPER. Thank you.

Mr. SULLIVAN. A dumb bomb, a gravity bomb, I guess. I think what all of those programs share—by the way, the F-15 and the F-16 were very successful programs, and we have argued a lot that they should go back and look at how they did that upgrade approach and try to do that again. But they all share common themes, and I think it is—the No. 1 thing is they all have an awful lot of support from very senior leadership. Senior leadership is on board, and they are going to get that job done. They all seem to have a real need out there that they are going to fulfill. So there is an extra added incentive, patriotic, if you will. The P-8A is very

much like that. I think the P-3 has about had it. And so they need—

Senator CARPER. How about their old mission commanders from the P-3?

Mr. SULLIVAN. They are still doing really good. They are doing fine. In fact, some may run for President. Who knows?

Senator CARPER. Not in this hearing. [Laughter.]

Mr. SULLIVAN. But they share those things in common. There is a real need, and senior leadership has gotten onboard, and someone has allowed that core team that is going to sell that program to do a realistic cost estimate and to keep requirements reasonable.

Senator CARPER. All right. Thanks.

Mr. Schwartz, the last word on this question, and then I am going to kick it back to you, and you are going to help us develop consensus before we close. Thanks. Mr. Schwartz.

Mr. SCHWARTZ. Thank you. I will give two examples of programs for considering and then perhaps add one other point.

One is, to go back to what Mr. Young said, the Virginia class submarine. While it is true that it had some cost estimating problems early on, the actual execution of the program is one that many people have pointed to as an example of excellent program management, and now the results will still take some time to come in. But some of the reasons that have been pointed to are that particularly a submarine program has put a lot of effort into hiring talented and capable program managers and acquisition personnel as well as limiting the management spend. For the last decade or so, the program manager has had one program, the submarine program, to focus on. That is distinct from other situations. For example, the Joint High-Speed Vessel and the TAKE—and I believe another program that I do not recall at the moment—were all under one program manager, so that is also another contributing factor.

Another one is one of the approaches that the Virginia class submarine has used is block buys and technology insertion programs, and what I mean by that is they buy some submarines and they are developing technology at the same time. And as those technologies are becoming more ripe, they are inserting them into the next block buy to try to avoid some of the concerns that have been raised as far as immature technology. That has been another approach.

And third is they have had a very carefully planned, disciplined approach to cost reduction that they have spelled out and sought to stick to.

The other program that I would mention is, I believe, the Super Hornet, which is the upgrade of the Hornet. It has been a program that generally has been viewed by a number of people that I have heard from as a good example, and it was more than just an upgrade. It had a little bit more challenges than just upgrading the Hornet, including, I believe, a larger airframe. So I would mention that one.

But the other point I would like to add perhaps is—and I will quote John Young. He wrote a memo recently that said half of—and Mr. Sullivan, who said that half of the cost growth is five or ten programs. So one way to look at it is which programs are doing well, how can we emulate that. Another potential approach that

can be thought of is which programs caused the high cost growth risk and how can we take a different approach with those.

Some people will say heightened scrutiny of everybody is heightened scrutiny of nobody. But what are the driving forces of high risk? And perhaps we should look at those differently or require them to be budgeted at a higher confidence level, and I will just give one example.

In 2001, there were five helicopter programs. Four of them had Nunn-McCurdy breaches, and they represented four of the complete number of nine Nunn-McCurdy breaches in the entire Department. Now, RAND work and GAO work has indicated that helicopter programs, as an example, have a higher risk of cost growth than most other major defense acquisition programs. If that is the case, one way to approach this is, well, how do we think of these programs differently than the other 70 or 80 programs that might not have generally as high a history of cost growth risk? Thank you.

Senator CARPER. Thank you.

That brings us almost to our conclusion here. You may recall, before we started asking questions of this panel, I said that I wanted you to help us really focus on consensus because that is what we really need in order to get much if anything done around here. And you have had the benefit of hearing from the first panel. You have had the benefit of hearing one another and some of the questions that I have entered into. And you have the benefit of all your years of experience.

So just some closing thoughts here, things you want to just emphasize, re-emphasize, underline that you think might be especially helpful for us as we try to develop consensus, not just at the legislative side but executive as well.

Please, Mr. Young, do you want to go first?

Mr. YOUNG. Well, I would like to go backward, but go forward with it. I would be remiss if I did not emphasize that I believe the MRAP program would be on the list of good-performing programs. It was a program where we had money—that was not even a question—we had requirement, but we had the—the requirement was really to do the best we could as fast as we could. It was not an unobtainable requirement, and we were not even—if something was unobtainable, we were asked to step back and deliver faster rather than slower. We had leadership support, and all of that could have gone south if you did not have the teamwork and collaboration. Secretary Gates' big fear that I feared, therefore, and worked hard on was to make sure once we built 10,000 vehicles, they could be deployed; the people could be trained; spare parts could arrive for those vehicles so the soldiers could actually use them. So the program was executed by very capable people comprehensively.

And so that is how I go forward, with that example, and tell you we have to have leadership, and I think some of that leadership is from people that are accountable to the President so they can try to do the right thing. They are accountable to the Congress, too, in general because they are confirmed. They are spending taxpayer money. They need to have trained people working for them that are empowered to make hard decisions, and they need to be supported.

They cannot not be promoted because they said no to some new requirement that was going to disrupt the program.

You have to have realistic and honest budgets. You have heard all of us say that. And I think you do need to change some of the incentive structures in the contracts.

The Department as a whole needs to build a meaningful 5-year budget. I said this all the time I was in the Pentagon. The building right now is actively and busily building the 2013 budget. The truth is they just built the 2012 budget. That ought to be quality. But the truth is it is a 1-year budget with 4 out-years that are not as meaningful as they should be. And so if we had a meaningful 5-year budget, we would then have a meaningful and stable outlook for acquisition programs to execute to. And I believe that is an important thing that has not been said today.

So I really appreciate your pursuit of this knowledge and consensus, and I thank you for the chance to testify.

Senator CARPER. It is great of you to come, and we applaud your continued efforts here. Thanks so much for helping us. Mr. Sullivan.

Mr. SULLIVAN. So much has been said today that I agree with, including the first panel. I mean, I think that the Department at this point understands what it has to do. It is beginning to understand the budget constraints. But I would focus on—I think the 5-year budget is a good idea. I would not start a program unless the requirements were very well defined with preliminary design review, a lot of this engineering knowledge to prove that everything is there. I would not let them exceed 5 years, and I think it is good to use an incremental approach.

I think the F-16 program is a potential model. Some of the ones we named earlier, Small Diameter Bomb, those are good examples of how to do a program.

Competition. We talked a lot about—the Department, it does not seem to me, has come out with a clear policy or message or plan on how or when it is going to compete things, and there are different levels of times when you can compete. You can compete technologies, which the Ground Combat Vehicle is doing now. You can compete during product development, and each step gets more expensive. You could even compete into production. And I think if you are talking about missiles or munitions, you can do that sort of thing. If you are talking about a bomber, it gets a little more difficult.

But competition, I think that the Department could focus on how it can use competition at varying times during an acquisition and then stick to that, I guess. Have a clearer policy about how it is going to use that.

Senator CARPER. OK. Thanks.

Mr. Schwartz, do you want to close this out?

Mr. SCHWARTZ. Sure. Thank you. With the goal of consensus, I think there are three themes that I have heard recurring that I believe everyone agreed on. One is the need to try to improve cost estimating early on because without good cost estimates you sort of start behind the eight ball, as it were.

The second one is requirements creep, and I would add change orders. For example, the LCS, Littoral Combat, had millions of dol-

lars in change orders, which is something that requires you to renegotiate the contract sometimes and is going to raise costs, and the more that those orders and requirements, as was stated, could be stable earlier in the process, that should help.

And the third was workforce incentivization, and I mean from the Department of Defense side as well as the contractor side, which is a role that Congress was very helpful with, as we mentioned, in Goldwater-Nichols and could also play a very key role here.

The only thing I would like to add, though, is, as great as a lot of these ideas are and as optimistic as many people are, it all comes down to execution, and actually making sure that the initiatives are being adhered to, because you could have a policy that is not necessarily being followed. And the example I would give, for example, is in 1972 the Cost Analysis and Improvement Group was established with the sole purpose of improving DOD cost estimates.

In 1987, the Defense Acquisition Board was established, and one of their goals was to improve cost estimates and require further reliance on the Cost Analysis and Improvement Group.

In 2009, the Cost Analysis and Program Evaluation Group was established with the primary purpose of improving cost estimates.

So the initiatives have been there, but very often it comes down to execution and, as was stated before—and that is the point I want to end with—changing the culture to truly embrace the goals of these policies. Thank you.

Senator CARPER. All right. Well, that is a good note to close on. Again, we are in debt to each of you. We appreciate very much your preparation for today and your participation here today and in previous years.

As you probably heard me say earlier, some of the folks on our Subcommittee are probably going to have some extra questions, and we may have some extra questions as well. And if you receive those, we would just ask that you respond to them promptly. Other Members have 2 weeks to submit those questions.

With that having been said, I just want to thank our staffs, both Democrat and Republican staffs, for their work in helping us to prepare for today. It has been, I think, a very constructive hearing and one that gives us a lot to chew on. And my hope is that we continue to do our oversight in the years to come, and if we extend that bar graph or bar chart a couple years forward into the future that we will see not only a plateauing, but we will see those numbers coming back down, a little bit less red ink. Maybe a lot less. All right. Maybe today's hearing will help get us on the right track.

Thank you all very, very much, and with that, this hearing is adjourned.

[Whereupon, at 5:13 p.m., the Subcommittee was adjourned.]

## APPENDIX



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### U.S. SENATE COMMITTEE ON HOMELAND SECURITY AND GOVERNMENTAL AFFAIRS

### SUBCOMMITTEE ON FEDERAL FINANCIAL MANAGEMENT, GOVERNMENT INFORMATION, FEDERAL SERVICES, AND INTERNATIONAL SECURITY

#### HEARING: "Tools to Prevent Defense Department Cost Overruns"

WASHINGTON – Today, Sen. Tom Carper (D-Del.), Chairman of the Senate Subcommittee on Federal Financial Management, convened the hearing, "Tools to Prevent Defense Department Cost Overruns." The hearing examined the efficiency of the Department of Defense's (DOD) system for developing the nation's largest and most costly weapons. Today, the Government Accountability Office (GAO) announced that DOD's major weapon systems have experienced more than \$400 billion in cost growth, including \$70 billion in new cost overruns. The hearing included testimony on the analysis of the reasons for these cost overruns and recommendations on corrective measures.

For more information on the hearing or to watch a webcast of the hearing, please click [HERE](#).

*A copy of Sen. Carper's remarks, as prepared for delivery, follows:*

"Today's hearing will focus on how the Department of Defense can more efficiently develop our nation's largest and most costly weapons. This hearing comes amidst joint efforts by U.S. and NATO forces to avert a humanitarian catastrophe in Libya. The major weapon systems of the U.S. military and of our NATO allies have helped to level the playing field against a regime that has chosen to launch airstrikes against protestors and deploy tanks to attack its own population. As we applaud the effort to stop this aggression, though, we need to keep in mind that the cost of our involvement in three simultaneous wars contributes to already unsustainable spending levels.

"In addition to our costly national security challenges, our nation still faces equally costly

economic challenges that have led to record budget deficits in recent years. Our national debt now stands at more than \$14 trillion, well over double what it was just ten years ago. While most Americans want us to reduce the deficit, determining the best path forward will not be easy. Many believe that those of us here in Washington aren't capable of doing the hard work we were hired to do – that is to effectively manage the tax dollars they entrust us with. They look at the spending decisions we've made in recent years and question whether the culture here is broken. They question whether we're capable of making the kind of tough decisions they and their families make with their own budgets. I don't blame them for being skeptical.

"We need to establish a different kind of culture in Washington when it comes to spending. We need to establish a culture of thrift to replace what some would call a culture of spendthrift. We need to look in every nook and cranny of federal spending – domestic, defense and entitlements, along with tax expenditures – and ask this question, "Is it possible to get better results for less money?" The hard truth is that many programs' funding levels will need to be reduced. Even some of the most popular programs out there will likely be asked to do more with less or at least do more with the same level of funding.

"Most of us, however, understand that we can't simply cut our way out of debt, tax our way out of debt or save our way out of debt. We need to grow our way out of debt. If we are to spur the level of growth needed to repair our nation's fiscal health, then we must invest in the kinds of research and development that will enable us to out innovate the rest of the world once again. Given the limited resources available for this kind of investment, we can ill afford to waste taxpayer money on inefficient federal programs that don't help us achieve our goals as a country.

"Today, we will look at inefficient spending in the Department of Defense, specifically its acquisition system for major weapon programs. Three years ago, GAO testified before this subcommittee that cost growth in major weapon systems had increased significantly over the past decade – from \$44 billion in fiscal year 2000 to \$202 billion in fiscal year 2005 to \$295 billion in fiscal year 2007. And GAO announced today that this cost growth has now risen to \$402 billion through fiscal year 2010, which includes \$70 billion in new weapon system cost overruns in just two years.

"These cost overruns not only waste taxpayer money, they also prohibit us from investing in the highest needs of our military. Last year, Secretary Gates said that every dollar wasted on weapon system cost overruns "is a dollar not available to take care of our military, reset the force, win the wars we are in and improve capabilities in areas where we are underinvested and potentially vulnerable." If we are going to have any hope of strengthening our military and achieving a balanced budget down the line, we've got to reverse the trend of growing weapon system costs. As with many of our federal programs, we must get better results for less money in this area, too.

"Today's hearing will look at some of the root causes of the mounting cost overruns we've seen in recent years. For the next hour or two, we'll examine the effectiveness of the tools



available to DOD and Congress to guard against even greater cost escalation. One of Congress and DOD's tools for managing cost overruns is the Nunn-McCurdy law, which serves as a tripwire to alert Congress and DOD to weapon systems with costs that are spiraling out of control. This tool is simple: if a program's cost grows by 15 percent, Congress must be notified. If its cost increases by 25 percent or more, the program is terminated unless the Secretary of Defense certifies that it meets key requirements.

"We have asked GAO to look at trends in past Nunn-McCurdy breaches that might be able to help us determine the effectiveness of this tool. Once again, their findings reveal a serious problem. According to GAO, since 1997 one in three major weapon systems have experienced cost overruns big enough to trigger Nunn-McCurdy breaches. 36 programs' cost grew by more than 25 percent, subjecting them to the possibility of termination, yet only one program has ever actually been terminated. GAO also identified Nunn-McCurdy trends in the military services that indicate mismanagement. For example, the Air Force has had nearly as many Nunn-McCurdy breaches – 29 – as they did major weapon systems in development between 1997 and 2009 – 36. And the contractors that build and develop these systems are not without fault either. From 1997 to 2009, 16 companies had more than one of their weapon systems trigger a Nunn-McCurdy breach. Moreover, two major contractors accounted for more than 50 percent of the weapon systems that breached Nunn-McCurdy over this 12 year period.

"These trends in Nunn-McCurdy breaches tell us that too many of our weapon systems have costs that are spiraling out of control. This underscores a key fiscal reality that our nation must face. We simply cannot balance our budget when we must consistently pay hundreds of billions of dollars more than expected for our major weapon systems. Our witnesses here today will help us to identify the causes of these cost overruns, the tools available to control them now and the tools we will need to prevent them in the future."

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Opening Statement by Senator Scott P. Brown

March 29, 2011

Subcommittee on Federal Financial Management, Government Information, Federal  
Services, and International Security

U.S. Senate Homeland Security & Governmental Affairs Committee

**"Tools to Prevent Weapons Systems Cost Overruns"**

Thank you, Chairman Carper, for holding this important hearing. The role of this Subcommittee in protecting our tax dollars from waste, fraud, and abuse is critical, and I appreciate your partnership in this pursuit.

Our nation is in a perilous financial position with our national debt over \$14.2 Trillion dollars and an expected Fiscal Year 2011 deficit of \$1.3 Trillion. Now, more than ever, we must ensure that our scarce tax dollars are well spent. With spending exceeding \$700 billion, the Defense Department budget consumes 18% of our total budget. While there cannot be a more important mission for our government than protecting its citizens, we still must be mindful that Defense spending is not exempt from the necessity of ensuring that taxpayer dollars are being spent efficiently and effectively.

A major problem that this committee has focused on in the past is cost overruns in major defense system acquisitions. It's no secret that cost overruns in Defense Department acquisitions consume billions of dollars every year. Despite the many attempts by the Congress and the Defense Department to reform the acquisition process, these cost overruns are still occurring. I understand that sometimes programs run over budget, but it seems that a mindset exists that these cost overruns are a part of doing business. We need to change that.

We need to change a process that allows a program like MEADS to go on for almost 20 years without acceptable results. We need to change the thinking that if only we give a program a couple more years and a couple more billion dollars, the program will be successful. Look, if a program hasn't worked in almost 20 years, giving it another couple years and \$800 million isn't going to help. It's just going to divert our precious tax dollars from other critical programs.

Let me also state that we must not be afraid to take the risks necessary to develop the next generation of weapon systems that our nation depends on for its future defense. Incumbent in that risk is failure and unfortunately sometimes cost overruns. However, the Defense Department must do a better job of managing that risk and enforcing more realistic cost estimates before a major weapon system acquisition is initiated and we are on the cycle of cost overruns.

I would like to thank the witnesses for being here today and I look forward to a productive discussion on how the Defense Department and Congress can instill accountability into the system while not creating needless reporting requirements. I would also like to walk away from this hearing with some positive ideas that will help foster an environment at the Defense Department where good acquisition management is rewarded. Where someone isn't afraid to say you know what, this program isn't a good use of taxpayer dollars.

**HOLD UNTIL RELEASED BY THE  
SENATE COMMITTEE ON  
HOMELAND SECURITY  
AND GOVERNMENTAL AFFAIRS**

**TESTIMONY OF**

**FRANK KENDALL**

**PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE  
(ACQUISITION, TECHNOLOGY & LOGISTICS)**

**BEFORE THE SENATE  
SUBCOMMITTEE ON FEDERAL FINANCIAL MANAGEMENT,  
GOVERNMENT INFORMATION, FEDERAL SERVICES, AND  
INTERNATIONAL SECURITY**

**March 29, 2011**

**HOLD UNTIL RELEASED BY THE  
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### **Introduction**

Senator Carper, Senator Brown, and distinguished members of the sub-committee, thank you for the opportunity to submit this written testimony on the U.S. Department of Defense's (DoD) commitment to combating cost overruns in our major weapon systems.

This is a joint testimony prepared by the Office of the Under Secretary for Acquisition, Technology, and Logistics, OUSD(AT&L), and the Director for Cost Assessment and Program Evaluation, D,CAPE. I am joined today by Dr. Richard Burke of that office. He is the Deputy Director, Cost Assessment for the Department of Defense.

The Office of the Under Secretary for Acquisition, Technology, and Logistics is the principal staff element of the Secretary of Defense for all matters relating to DoD acquisition; research and development; advanced technology; developmental test and evaluation; production; logistics; equipment sustainment; installation management; military construction; procurement; environmental security; and nuclear, chemical, and biological matters.

The Cost Assessment and Program Evaluation office provides independent analytic advice to the Secretary of Defense on all aspects of the Defense program, including alternative weapon systems and force structures, the development and evaluation of defense program alternatives, and the cost-effectiveness of defense systems. The office also conducts independent cost estimates, cost-effectiveness analyses and offers advice in a number of related areas.

The Department is waging a continuous struggle to prevent, reduce and eliminate cost overruns, not just in major programs but throughout the defense enterprise. Next to supporting our forces at war, President Obama's and Secretary Gates' highest priority for the Department's acquisition professionals, is improving the way the Department does business. We are committed to diligently managing taxpayer dollars in everything we do. We have a continuing responsibility to procure all the goods and services needed to sustain and modernize our forces without the luxury of ever-increasing budgets. We are striving to achieve productivity growth instead of cost growth: as the Under Secretary for Acquisition Technology and Logistics, Dr. Carter, has stated we must "Do More Without More."

We are fighting this battle on many fronts. Today I will outline a number of tools and policies DoD is using to manage costs in our programs, to include those associated with recently enacted in legislation, and I will outline our overarching DoD strategy to increase acquisition efficiency and lower costs through a broad range of "Better Buying Power" initiatives begun last fall by Under Secretary Carter. I will emphasize the efforts we are making to control costs and eliminate cost growth in major programs, but I will also touch on efforts we are making to control costs throughout the defense acquisition system.

Firstly, however, I would be negligent in my own duty to control costs if I did not point out to the subcommittee the extremely negative impact on our acquisition costs that the lack of a 2011 Appropriations Bill is having at this very moment. The Continuing Resolution situation is forcing program managers throughout the department, as well as our suppliers in industry, to restructure plans that were designed to efficiently procure the tools our war-fighters need. The

Services are already being negatively impacted. The Navy cannot enter a new contract for the second Virginia-class submarine, as they planned on January 31. This will cause delay and may lead to unnecessary cost increases in one of our largest acquisition programs. Even now, they are struggling to avoid work stoppages. The Air Force has reduced procurement of MQ-9 UAS Reapers by 24. The Army has reduced procurement of the CH-47F helicopter by 4 and reduced the Ground Mobile Radio (GMR) procurement by 100. The GMR reduction is precluding the Early Infantry Brigade Combat Team #2, a deployable unit of about 5,000 soldiers, from being fully outfitted in a time when our forces are engaged in combat. We are being prevented from starting any new military construction, and will have to curtail facility sustainment, repair, and maintenance. Furthermore, since military personnel bills are must pay, Services will likely have to reprogram money from acquisition programs to cover those bills, leading to more cost overruns and schedule delays. Conducting defense acquisition in this manner undercuts much of what I will discuss today, and adds unnecessary costs to everything we do. As Secretary Gates told the Congress recently, this is "the crisis on our doorstep."

The Department has moved aggressively to combat cost overruns in the past two years. I'd like to first discuss some of the actions we are taking as a result of recent legislation and then I'd like to discuss the efficiency and cost control initiatives we introduced in September 2010. I'll conclude with some examples of where we are applying these initiatives today.

#### IMPLEMENTING LEGISLATIVE POLICY

##### Weapon Systems Acquisition Reform Act

The Weapon Systems Acquisition Reform Act of 2009 (WSARA) amended the Nunn-McCurdy unit cost reporting process, raised the importance of weapon system cost estimation, and mandated proven acquisition strategies, such as the requirement of competitive prototyping prior to Milestone B. WSARA codified many practices and policies the Department had already put in place and added others that should have a beneficial effect over time.

Consistent with the key tenets of WSARA, the Department has strengthened the front end of the acquisition process by establishing requirements that are affordable, achievable with mature technologies, and appropriately balance technical risk between the government and contractor. The Department's objective is to achieve predictable cost, schedule and performance outcomes based on mature, demonstrated technologies that provide our war-fighters with the capabilities they need, while avoiding exquisite solutions we may never be able to afford. Poor planning, as opposed to poor execution, has been the single biggest cause of cost growth in our programs.

We have also established and staffed all of the organizations called for in WSARA, expanding our Developmental Test and Systems Engineering oversight organizations, and creating an office for Performance Assessment and Root Cause Analysis (PARCA). Strengthened Systems Engineering and Developmental Test organizations in OSD are helping us to plan more executable programs and to address sources of cost growth during program execution. PARCA's Performance Assessment office has played a critical role in my reshaping of USD(AT&L)'s on-going execution reviews of its portfolio of major programs. PARCA actively monitors our programs and identifies and selects those that require attention. PARCA has now completed 13

root cause analyses, a mix of Nunn McCurdy related analyses and assessments that have been directed by my office. The data we are obtaining from PARCA's work is helping us to craft better acquisition strategies and to address shortfalls in the Department's and industry's capabilities. The lessons learned from the activities of these three offices are used in several ways: they serve to provide the roadmap for the problems that the programs in question must overcome; they feed back into our processes as a framework for detecting other incipient problems; and they provide the basis for Defense Acquisition University to pass lessons-learned on to future acquisition professionals. I'm happy to report that, while we are still building these capabilities, all three organizations are making excellent progress and doing exactly what the Congress intended.

WSARA has also changed the cost estimation process in DoD. It established the position of Director, CAPE, and increased by fivefold the number of cost estimates required by that office. The CAPE Independent Cost Estimates (ICE) have been given increased importance, and concurrence of the D,CAPE on the reasonableness of cost estimates is now required in many statutory certifications associated with key junctures in the acquisition process. As a general practice the Department is budgeting to the CAPE independent estimate. Unrealistic cost estimates in the planning and budgeting process are a de facto cause of cost overruns. Providing more realistic levels of funding up front allows the Department to avoid the disruptions associated with frequent rebaselining and acquisition plan adjustments, but this alone, however, will not help the Department directly reduce the actual costs of our weapons systems.

The strengthened Nunn McCurdy process in WSARA directs the Department to ask very logical questions about programs that have exceeded original or rebaselined unit cost estimates by large amounts. In the case of unit cost increases beyond certain thresholds, the Nunn McCurdy process provides what is effectively a presumption that the program should be terminated unless the Department makes a number of certifications to the Congress. During the spring of 2010, following our budget submission, the Department declared six Nunn McCurdy critical breaches. After a thorough review, however, the necessary certifications were made to the Congress and each of these programs was continued. Since that time the Department has declared or initiated two additional critical Nunn McCurdy reviews and we expect to declare a third one shortly. An important change the Department has made this past year is to initiate Nunn McCurdy-like reviews as soon as large overruns are predictable, or even probable, rather than waiting until budget deliberations had completed and the cost increase was certain. In some cases we are also conducting these reviews when costs have increased even if the specific Nunn McCurdy thresholds are not expected to be breached. These changes have made Nunn McCurdy type reviews a more proactive tool for controlling cost growth and an important input to the planning and budgeting process as opposed to a reaction to that process. As an aside, however, because of the method used to calculate cost breaches (unit costs regardless of inventory objectives) the process often captures cost growth that is not associated with mistakes in program planning or execution and it can be misleading with regard to the scope of actual cost overruns caused by poor estimating or execution. Nevertheless Nunn McCurdy is a powerful tool for addressing cost overruns, but only after they occur. The Nunn McCurdy process is intended to serve as a strong disincentive to major cost overruns, but because it responds to rather than directly prevents cost overruns, its utility at reducing cost growth is hard to estimate.

### **FY 2011 National Defense Authorization Act**

The Department is implementing new provisions in the FY11 Authorization Act associated with major acquisition programs. These include an assessment of critical manufacturing knowledge and skills in the acquisition workforce, as well as implementing guidance on the application of Manufacturing Risk and Readiness assessments to our major programs. Consistent with the statute, we are also reviewing our policies and procedures associated with technical data rights. Additionally, we are moving forward with direction in the legislation to move beyond assessment of individual programs, to periodic reviews of organizations within the Department that perform acquisition functions. These more holistic looks at institutions are expected to provide us different perspectives and performance metrics to shape future policy choices, to help us identify best practices and to provide for what will effectively amount to competition among Department organizations to manage more efficiently. We are in the early stages of implementing these changes, but we are confident that they will have a positive effect.

### **IMPLEMENTING "BETTER BUYING POWER"**

In September 2010 Secretary Gates and Under Secretary Carter announced the Department's initiative to improve efficiency, boost productivity and reduce costs in the defense contracting arena for goods and services, which make up roughly \$400 billion out of the \$700 billion the Department spends every year. At that time, Under Secretary Carter issued "Better Buying Power: Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending" to the acquisition workforce. As the Secretary stated then, "Implementing this guidance will enable this department to make programs more affordable without sacrificing important capabilities and prevent us from embarking on programs that have to be cancelled when they prove unaffordable." The guidance contains a number of initiatives to improve the way we contract for goods and services, but it is important to note that this is one step, albeit a very major step, in a continuing effort to reduce the costs of all the products and services the Department buys. Major programs make up 30% of our research and development investments and 50% of our production investments and they only account for a fraction of the Department's services contracting, which exceeds the amount we spend on product development and production. As a result, many of these measures do not apply directly to major programs, but all are designed to reduce the costs and the cost growth incurred by the Department in the goods and services that we receive from our contractors.

"Better Buying Power" provides for five major areas to target affordability and control cost growth as follows:

- (1) Target Affordability and Control Cost Growth;
- (2) Incentivize Productivity and Innovation in Industry;
- (3) Promote Real Competition;
- (4) Improve Tradecraft in Services Acquisition; and
- (5) Reduce Non-Productive Processes and Bureaucracy.

(1) Target Affordability and Control Cost Growth: Secretary Gates set the expectations very clearly in September by saying "The department is now going to require that program managers



set a new affordability target that cannot subsequently be altered without specific authority from Under Secretary Carter. Managers will ensure that a program's initial design is constrained by its ultimate schedule and cost." Our guidance now mandates specific affordability targets for unit production and sustainment costs as a requirement at all major investment decision points in the acquisition process starting with technology demonstration and preliminary design. In the past we have embarked on far too many unaffordable programs based on unconstrained requirements, spent several billion dollars on development, and even entered low rate production before confronting the fact that the program was unaffordable. A substantial fraction of the Department's research and development resources has been spent on programs that never went to full rate production. The EFV is the most recent example of this. From now on the Department will be forcing the communities that set requirements to confront the fact that the Department's resources are not unlimited. As Secretary Gates has indicated there are many cases where the 80% or the "good enough" solution is the only one we can afford to pursue and that exquisite capabilities are not going to be sought in every product that we buy.

As the Congress expects, the Department will continue to use Independent Cost Estimates based on reasonable extrapolations from historical experience, to support budgeting and programming. While this "Will Cost" analysis is valuable and credible and can reduce overruns relative to budgeted funding, it does not help the program manager drive leanness into the program or provide an incentive to increase productivity and reduce program costs. We can't be satisfied with ever increasing costs for the products we buy based on historical experience; we have to set more aggressive targets if we are to control cost growth. To give program managers and contracting officers a tool to drive productivity improvement into programs through contract negotiations, we now require establishment of a "Should Cost" estimate that will be used as a basis for setting incentives, negotiating prices and evaluating the performance of our own managers. This is a fundamental change in our expectations for our program managers and the acquisition chain of command and workforce. Meanwhile, the Department will continue to set the program budget baseline using an Independent Cost Estimate. As an incentive to improve cost performance management we have committed to the Military Departments and Agencies that any savings will be retained and may be applied within the organization that achieved the savings.

(2) Incentivize Productivity and Innovation in Industry: In general we are moving toward stronger incentives to motivate industry to reduce program costs. The Department needs a healthy industrial base. This means that we expect to have an industrial base that makes reasonable profits, but it also means a lean industrial base that is not bloated by excessive cost structures and one that works constantly to reduce its costs. Achieving this requires that we reward good performance with higher profits and that poor performance result in lower profits. As terms of this equation, contractors should be rewarded for efficient supply chain management, reducing indirect costs and improving productivity. Within development programs we also want to tie profitability more tightly to the Department's overarching fiscal goals; lower production and sustainment costs where the vast majority of our program costs occur. As part of this effort, we are increasing the use of Fixed-Price Incentive contracts, where it makes sense to do so, such as during the transition to full rate production when requirements are firm, production processes are under control, and bidders can estimate costs with confidence. This contract vehicle caps the government's cost exposure, provides a strong incentive to

industry to control cost and allows the government to share in cost reductions. "Incentive" is important, since it shares the costs of overruns and rewards of under-runs between government and industry, giving both sides of the transaction an incentive for good performance. This type of contracting is not a panacea, however. The government has a range of contract options for good reason and we expect our managers to use the most effective contract type in any given situation. We do think this vehicle could be used more frequently, and in appropriate cases where firm fixed price contracting is not justified it provides strong incentives to control costs.

We believe that small businesses can make a substantial contribution to controlling the Department's costs, not as primes on large programs of course, but particularly as innovative sub-contractors. Small businesses have repeatedly demonstrated their contribution to leading the nation in innovation and driving the economy by their example of hiring over 65 percent of all new jobs and holding more patents than all the nation's universities and large corporations combined. We want our defense industry to leverage that innovation and opportunity into our competitions; Components and prime contractors should understand the small business capabilities within their industry and increase market research and outreach efforts to ensure small businesses are utilized to improve our products and reduce total costs.

(3) Promote Real Competition: Competition is the single most powerful tool available to the Department to drive productivity improvement and to control cost. Competition, in the classical head-to-head sense is not always available, but the Department has not worked hard enough to avail itself of all possible competitive situations and it is not doing everything it can to create a competitive environment within major programs. Under "Better Buying Power," a competition strategy must be presented at each program milestone. We are requiring that program managers have a competition strategy for their program throughout the product lifecycle. Since it is not practical to develop and produce two of everything the Department needs, competitive environments for programs must often be created in other ways. This might take the form of a related program that could serve as partial substitute for the program in question, a plan to regain competition in an unproductive sole source situation, breakout of subcontracted work, adapting commercial products through open systems and open architectures, or other strategies.

In recent years, the Department has achieved the highest rates of competition in its history, as measured by competitively awarded contracts. Having said that, the fact is that a significant fraction of those competitive procurements have involved what is termed "ineffective competition," since only one offer to a solicitation was received even when publicized under full and open competition. We are working with our contracting officers to re-examine these situations and request certified cost or pricing data, do the cost and pricing analysis and conduct negotiations when there is only a single offer. Simple steps like providing clearer requirements and slightly more time to prepare proposals has been demonstrated to dramatically reduce the number of single bid responses to competitive solicitations and we are implementing these reforms across the Department.

(4) Improve Tradecraft in Services Acquisition: While not closely associated with major program development or production, contracted services spending now represents more than 50 percent of our total contracted spending. In 2009, the Department spent more than \$212 billion in contracted services, using more than 100,000 contract vehicles held by more than 32,000

contractors. This contractor support is critical to the Department, but practices for buying such services are not as mature as those for buying weapons systems. This substantial amount of spend demands a management structure to strategically source these goods and services and we are undertaking a number of actions such as: directing each component to create a senior manager for acquisition of services, standardized requirements, development of "best practices" and performance metrics for the several distinct types of services the Department acquires, encouraging more frequent re-compete, using more fixed price contracts, and increasing the use of lower cost small businesses for services contracts.

(5) Reduce Non-Productive Processes and Bureaucracy: Unnecessary and low-value added processes and document requirements are a significant drag on acquisition productivity, distracting to the workforces in government and industry alike, and must be aggressively identified and eliminated. We cannot achieve Should Cost goals solely by providing incentives to industry to reduce overhead and increase productivity; the government must also eliminate unnecessary and often counterproductive overhead. We have eliminated unproductive reviews done at the Office of the Secretary of Defense (OSD) level while retaining those necessary to support major investment decisions or to uncover and respond to significant program execution issues. Insight at the AT&L level into program execution performance can generally be achieved through established status reporting mechanisms and informal staff contacts. There is a balance between this appropriate level of oversight and that which is excessive and tends to relieve the chain of command from management responsibility. Paperwork associated with the acquisition process has also become bloated and at the same time often fails, without significant re-work and additional reviews, to provide necessary and important content for decision-making. A team has already been established to review the content of our required documents and recommend ways to streamline them while increasing the substantive and relevant information that we need to support decisions.

We will also reduce non-value-added overhead imposed on industry. Industry has its own internal unproductive processes which add to project costs, but these are in some part a reflection of the requirements which the government imposes. A great number of the inputs we received from industry over the past months were directed at what was viewed as excessive overhead expenses based solely on non value-added mandates and reporting requirements. We are taking this seriously and reviewing options to address costs associated with non-value added reporting.

#### OTHER INITIATIVES TO CONTROL COST GROWTH

##### Strengthening Earned Value Management

Earned value management is a proven technique for establishing a well founded contract baseline program plan as well as managing and monitoring program execution, particularly in development programs. Effective EVM provides for realistic program planning and provides a valuable tool for pinpointing execution problems as soon as they arise. The Department, with the leadership of PARCA and the Defense Contract Management Agency (DCMA), is working with industry and program teams to re-establish discipline and compliance with standards in this critical area and to increase the use of EVM as a program planning and management tool. Earned Value Management systems are not by themselves a solution to the Department's cost

growth problems, but successful development programs are characterized by a well-structured and run system and personnel with the skill and knowledge to act on the information it provides.

#### **Improving Contractor Past Performance Assessment Program**

Applying meaningful past performance assessments in source selection can be a strong incentive to industry to improve its cost performance. DoD is working to improve the contractor performance reporting system, the management tool known as the Contractor Performance Assessment Reporting System (CPARS). CPARS can do a much better job of providing assessments of a contractor's effectiveness in forecasting, managing and controlling cost for both Systems and Services contracts. DoD has developed a compliance tracking tool, and has conducted initial past performance evaluations on about 50% of eligible awards. While results are improving, past performance reporting guidance and controls must be further strengthened to provide useful and meaningful information to source selection officials and to provide meaningful incentives to control cost growth.

#### **Improving The Acquisition Workforce**

In addition to reforming our acquisition process, we are also in the process of strengthening the acquisition workforce -- our most important asset for controlling cost growth. For the last year the Department has been working aggressively to find efficiencies and to move resources from non-productive activities to value added efforts that provide products and services needed by our war-fighters. This broad Department wide effort of which "Better Buying Power" is a part has led to reductions in staff in many areas. Secretary Gates has essentially frozen civilian workforce increases, with one exception; the acquisition workforce. The increases provided for by the Defense Acquisition Workforce Development Fund (DAWDF) will continue as planned. These increases are focused on the specific skill sets, such as program management, system engineering, and contracting that are needed to control contractor costs. Numbers alone are not enough, quality also matters, and to that end we are also looking at ways to increase the levels of expertise in our workforce, particularly the expertise needed to deal effectively with our suppliers. We have determined that our acquisition training has been too focused on internal processes and not adequately oriented toward effectively managing our suppliers. We are in the process of correcting this and there will be significant dividends in the future from having a workforce that is better prepared to negotiate a contract, deal with a technology issue, or respond to a purported cost increase.

#### **EXAMPLES OF EFFECTIVE COST CONTROL IN MAJOR PROGRAMS BASED ON "BETTER BUYING POWER" AND OTHER INITIATIVES.**

Affordability constraints, in the form of unit production cost requirements, have been applied to both the Army's new Ground Combat Vehicle (GCV) and the Navy's new Ballistic Missile Submarine (SSBNX).

Should Cost and Fixed Price Incentive based contracting were applied to the Joint Strike Fighter Lot IV production contract resulting in a target price well below the Independent Cost Estimate.

Fixed Price Incentive (firm target) contracting was applied to the Air Force's Small Diameter Bomb II program which had substantially reduced program risk through a thorough pre-EMD technology demonstration program.

Competition was used on the Navy's Littoral Combat Ship (LCS) production to save more than \$1 billion in the next 5 years alone, with additional savings expected over the life of the program.

#### **Summary**

The Department fully supports the changes enacted in recent legislation and our current "Better Buying Power" initiatives and other policy initiatives are aligned and consistent with their intent. Defense Acquisition did not get to its present state in a short period, and it will take time to see significant impact and realize the results of the changes we are instituting. Secretary Gates, Under Secretary Carter, and I, as well as our entire acquisition team, are totally committed to reducing both cost growth *and* cost in all the products and services we acquire. We know that this will be a long journey and that it will take tenacity and constancy of purpose to implement the necessary changes, but we also know that if we are not successful then the consequences will be unacceptable to our nation and to the Department.

**SENATE GOVERNMENT AFFAIRS COMMITTEE**  
**Tuesday, March 29, 2011**  
**Acquisition of Major Weapon Systems**

Chairman Carper, Distinguished Members of the Committee, it is a privilege to be able to testify about my experiences with defense acquisition programs. I want to briefly highlight a few principles and note several tools that are fundamental to an effective defense acquisition enterprise.

First, people run programs. In the Goldwater Nichols legislation, the Congress was amazingly prescient in assigning acquisition responsibility to the civilian chain of command working for the President. The DoD and Service Acquisition Executives are critical positions and these individuals are the key to successfully executing and improving defense acquisition. As the Undersecretary, I wrote a memo to Secretary Gates advocating the great importance of these positions. The acquisition executive must serve as the first line of defense against overstated requirements, understated budgets, unrealistic schedules, immature technology and Service-unique programs. Every unaffordable program a Service wants cannot be adjudicated by the Secretary of Defense or the President. It is harmful to the defense acquisition enterprise to delay filling these positions with qualified people.

Second, the President's acquisition team must enable the defense acquisition team to make the thousands of necessary, hard decisions every day. Military requirements officers and industry are constantly seeking to change and improve ongoing programs. The tough job is locking the design and executing the program. The acquisition executive must support program managers who say "no." The military promotion system will reward a requirements officer who pushes for more requirements and punish a military acquisition program manager who resists making costly changes to

a program. Similarly, civil servants in acquisition who want successful careers are cautious about hard issues. The President's acquisition team must support and empower these program managers when they try to make responsible decisions about spending taxpayer money.

Third, people execute programs, not paper. It is not possible to write a universally applicable procedure that will deliver successful results. No amount of process, procedure and certification will make the hard decisions that trained people must make. The growing volume of legislation and certification requirements do pose a serious risk of adding months and higher costs – at a time when our adversaries are doing things faster and cheaper. We should resist the urge to add to the acquisition laws and regulations which already resemble the tax code and consume a program manager's time and energy for little results. As a student of defense acquisition, I can tell you there are many valid examples of capable people delivering great results when freed from the constraints of the normal process.

Fourth, we need to increase the authority of acquisition program managers commensurate with the public accountability being levied on the defense acquisition team. People without accountability chop documents, cut budgets, increase requirements, impose new certification standards – then everyone wants to know why a program manager is late and over budget.

Finally, there are several tools that can enable more successful execution of defense acquisition programs.

The Department must use competitive prototyping to evaluate the validity of requirements, to mature technology with smaller teams, to inform our estimates of final development and procurement cost, and to assist in the

refinement of concepts of operation. I used to tell program managers that the cost of a program is known the day the contract is signed – the only question is whether they know the cost. It is very difficult to estimate the cost and schedule of a complex program based solely on paper. Appropriate prototyping is important.

At a more general level, DoD needs to pursue the development of prototypes to train our personnel in program management and systems engineering, to attract talented scientists and engineers to work on defense programs, and to inspire a new generation of young people to pursue technical educations.

DoD must use collaborative processes to make timely program development decisions and to appropriately include all stakeholders to achieve alignment – acquisition, budget, and requirements alignment. A Configuration Steering Board process was used to keep the F-16 a low cost fighter, and I reinstituted this practice in DoD. I used such collaborative approaches very successfully on the Mine Resistant Ambush Protected (MRAP) vehicle, the DoD Biometrics program, the Virginia Class submarine, DDG 1000 destroyer, the P-8 maritime aircraft, and other programs.

We instituted Joint Analysis Teams to review portfolios of programs which cut across Services. These teams shaped joint, interoperable, executable, and affordable development programs, seeking to build consensus through membership that included all relevant DoD stakeholders.

The Department has often used blue ribbon panels or independent reviews to assess problems. I sought to make this a regular process through creating Defense Support Teams which seek to harness experienced, independent outside experts to review program development plans and to



solve execution problems. DST's can partially offset the Department's inability to hire adequate government personnel to manage our programs.

As DDR&E, I began a practice of Quick Look Technology Readiness Assessments. It is of no value to spend tax dollars and to reach Milestone B, only to determine that the technology is immature. Quick Look assessments are necessary to drive investment in the timely maturation of key technologies.

These are just a few of the tools which I believe are fundamental to proper creation and management of complex acquisition programs. These tools must be employed by capable people with adequate authority.

The press stories will always report the programs which go badly. However, there are many programs which successfully deliver capability to the warfighter. The real key is trained and experienced acquisition team members with management support, decision making authority, realistic requirements, and adequate budgets. Under these conditions, program managers will carefully spend taxpayer dollars and successfully deliver capability to the men and women who serve this Nation.

I appreciate the chance to testify today, and I look forward to your questions.

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**GAO****United States Government Accountability Office**

Testimony before the Committee on Homeland Security and Governmental Affairs, Subcommittee on Federal Financial Management, Government Information, Federal Services and International Security, United States Senate

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For Release on Delivery  
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Tuesday, March 29, 2011

## **DOD COST OVERRUNS**

### **Trends in Nunn-McCurdy Breaches and Tools to Manage Weapon Systems Acquisition Costs**

Statement of Michael J. Sullivan, Director  
Acquisition and Sourcing Management



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**GAO-11-499T**

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Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss tools available to minimize Department of Defense (DOD) cost overruns and our recent work on the Nunn-McCurdy process. For nearly 30 years, the statutory provision known as Nunn-McCurdy<sup>1</sup> has been a tool for Congress to use to hold DOD accountable for cost growth on major defense programs. The purpose of the statute was to provide Congress greater visibility into major defense programs' cost growth and to encourage DOD to manage and control cost growth. A Nunn-McCurdy breach occurs when a program's unit cost exceeds certain thresholds. When that happens, DOD must notify Congress of the breach. There are two types of Nunn-McCurdy breaches: significant breaches and critical breaches.<sup>2</sup> A breach of the significant cost growth threshold occurs when the program acquisition unit cost or the procurement unit cost increases by at least 15 percent over the current baseline estimate or at least 30 percent over the original baseline estimate.<sup>3</sup> A breach of the critical cost growth threshold occurs when the program acquisition unit cost or the procurement unit cost increases by at least 25 percent over the current baseline estimate or at least 50 percent over the original baseline estimate. The Nunn-McCurdy process has been amended a number of times over the years. For example, in the Weapon Systems Acquisition Reform Act of 2009, Congress enacted a new provision requiring the Secretary of Defense to terminate a program that

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<sup>1</sup>10 U.S.C. § 2433. The statutory provision is known as Nunn-McCurdy because it was first introduced by Senator Nunn and passed as a 1-year provision as part of the Department of Defense Authorization Act, 1982, 127 Cong. Rec. 9760-63 (1981), Pub. L. No. 97-86, § 917. The following year, Representative McCurdy introduced a permanent provision based on Senator Nunn's provision, which was enacted as part of the Department of Defense Authorization Act, 1983, 128 Cong. Rec. 18345-48 (1982), Pub. L. No. 97-252, § 1107. There are a number of statutory provisions that help implement cost growth reporting under Nunn-McCurdy. For the purposes of this testimony, we refer to these statutory provisions as the Nunn-McCurdy process.

<sup>2</sup>The Nunn-McCurdy statute did not use the terms "significant" or "critical" to describe the cost growth thresholds until 2006, when the statute was amended by section 802 of the National Defense Authorization Act for Fiscal Year 2006, Pub. L. No. 109-163.

<sup>3</sup>Program acquisition unit cost is the total cost of development, procurement, acquisition operations and maintenance, and military construction divided by the number of units procured. Procurement unit cost is the total procurement cost divided by the number of units to be procured.

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experiences a breach of the critical cost growth threshold, unless the Secretary of Defense submits a written certification to Congress.<sup>4</sup>

My statement focuses on (1) trends in Nunn-McCurdy breaches, (2) factors that may be responsible for these trends, (3) changes DOD is making or proposing to make to the Nunn-McCurdy process, and (4) other tools DOD can use to minimize cost overruns. My testimony includes information from our March 2011 report on Nunn-McCurdy breaches, which is being released today.<sup>5</sup> The report contains information on the scope of our analysis and the methodology used. In addition, we drew on our published body of work on weapon system acquisitions and best practices to identify tools that can be used to minimize cost overruns. The work that supports this statement was performed in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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### **Nunn-McCurdy Breaches Increased after Changes in Statute or Presidential Administration**

Since 1997, there have been 74 Nunn-McCurdy breaches involving 47 major defense acquisition programs.<sup>6</sup> (See fig. 1.) There were a larger number of breaches in 2001, 2005, 2006, and 2009, which coincides with new statutory requirements or changes presidential administration. As a result of Congress requiring DOD to measure cost growth against the original baseline estimate, the number of breaches reported increased in 2005 and 2006. The number of breaches was also high in 2001 and 2009—the first years of new presidential administrations. During both transitions, no annual comprehensive Selected Acquisition Reports (SAR) were submitted, which, along with other factors, may have affected when

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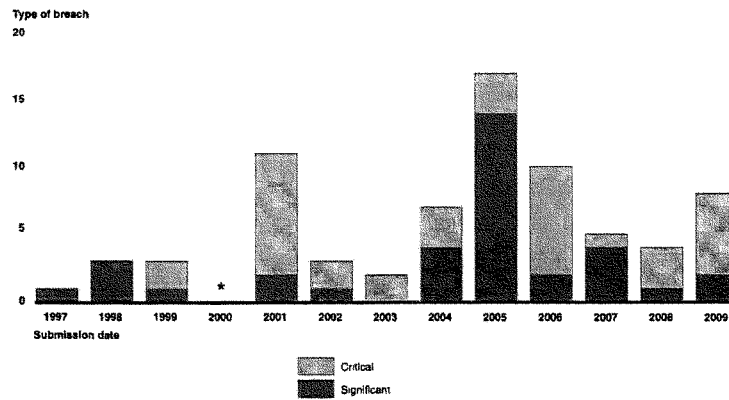
<sup>4</sup>Weapon Systems Acquisition Reform Act of 2009, Pub. L. No. 111-23, § 206 (codified at 10 U.S.C. § 2433a(b)).

<sup>5</sup>GAO, *Trends in Nunn-McCurdy Cost Breaches for Major Defense Acquisition Programs*, GAO-11-285R (Washington D.C.: Mar. 9, 2011).

<sup>6</sup>See GAO-11-285R for more information about the methodology we used to count breaches and remove duplicate entries from data provided by DOD.

breaches were reported.<sup>7</sup> For example, according to DOD, during the transition from one administration to another in 2001, the cost of several programs breached Nunn-McCurdy thresholds because of a change in management philosophy, which included fully funding these programs to higher independent cost estimates.

**Figure 1: Critical and Significant Breaches by Calendar Year, 1997-2009**



Source: GAO analysis of DOD data.

\*No breaches were reported in 2000.

Note: This figure uses the terms significant and critical to categorize reported program cost growth. We note, however, that prior to 2006, the statute did not use those terms to describe the cost growth thresholds.

<sup>7</sup>DOD is required to submit SARs to Congress at the end of each fiscal year quarter on current major defense acquisition programs, although certain exceptions apply. SARs for the first quarter of a fiscal year are known as comprehensive annual SARs. Each comprehensive annual SAR is required to be submitted within 60 days after the date on which the President transmits the budget to Congress for the following fiscal year. 10 U.S.C. § 2432(b)(1), (c)(4), (d). While DOD is required to report breaches in quarterly SAR submissions, most breaches are typically reported in comprehensive annual SARs.

The Air Force had a higher proportion of total breaches compared to its proportion of total programs, whereas the Navy had a smaller proportion of breaches compared to its proportion of programs. Aircraft, satellite, and helicopter programs have experienced the largest number of breaches. Of the 47 programs that breached, 18 programs breached more than one time. Only one of the programs with multiple breaches—the Armed Reconnaissance Helicopter—was not recertified after a breach of the critical cost growth threshold and was terminated. The Navy Area Theater Ballistic Missile Defense was also not recertified and was terminated because of poor performance and projected future cost and schedule problems. Some programs that have experienced a critical breach—including the Advanced Seal Delivery System, Army Tactical Missile System-BAT, Comanche Reconnaissance Attack Helicopter, Land Warrior, and VH-71 Presidential Helicopter Replacement—have also been terminated.

### Engineering and Design Issues Are Most Cited by DOD as being Responsible for Nunn-McCurdy Breaches

Nunn-McCurdy breaches are often the result of multiple, interrelated factors. Our analysis of DOD data and SARs showed that the primary reasons cited for the unit cost growth that led to Nunn-McCurdy breaches were engineering and design issues, schedule issues, and quantity changes. For example, we reported in 2003 that the Space Based Infrared System High program began with immature technologies and was based on faulty and overly optimistic assumptions about software reuse and productivity levels, the benefits of commercial practices, management stability, and the level of understanding of requirements.<sup>8</sup> The program has breached four times. A large number of programs that breached also cited revised estimates, due in part to changing assumptions; requirements changes; and economic changes, such as labor and overhead rates, as factors that contributed to the breaches. (See fig. 2.) For example, we previously reported that initial development cost estimates for the Army's Warfighter Information Network-Tactical communications system were understated by at least \$1.3 billion, or nearly 160 percent, as of July 2008, in part because the estimates assumed that commercial-off-the-shelf radio technology would be available.<sup>9</sup> This assumption proved to be wrong, and the program breached in 2006.

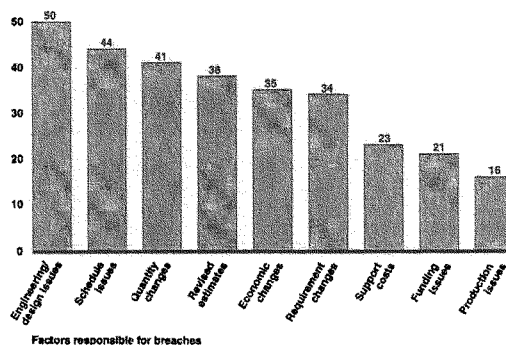
<sup>8</sup>GAO, *Defense Acquisitions: Despite Restructuring, SBIRS High Program Remains at Risk of Cost and Schedule Overruns*, GAO-04-48 (Washington, D.C.: Oct. 31, 2003).

<sup>9</sup>GAO, *Defense Acquisitions: A Knowledge-Based Funding Approach Could Improve Major Weapon System Program Outcomes*, GAO-08-619 (Washington, D.C.: July 2, 2008).

**Figure 2: Factors Cited in SARs as being Responsible for Nunn-McCurdy Breaches**

Number of breaches citing this factor

60



Source: GAO analysis of DOD data.

### DOD Has Introduced New Practices to Mitigate Risk of Breaches and Plans to Propose Changes to Nunn-McCurdy Process

DOD has instituted a process to provide earlier warning of potential Nunn-McCurdy breaches and plans to propose changes to the Nunn-McCurdy process to reduce several statutory requirements for breaches caused by quantity changes.

Specifically, the Joint Staff has implemented a process to provide an earlier evaluation of the factors that are contributing to cost growth so that programs can take mitigating actions before experiencing a significant Nunn-McCurdy breach. This new process has merit, as our analysis shows that nearly 40 percent of Nunn-McCurdy breaches occurred after a production decision had been made—when a program has fewer options for restructuring. DOD plans to propose a legislative amendment to reduce several statutory requirements added in 2009 for Nunn-McCurdy breaches when it determines that a breach was caused primarily by quantity changes that were unrelated to poor performance. According to DOD, not

all breaches are indicators of poor performance because quantity reductions or capabilities added to a program after it begins can affect unit cost. DOD officials point to Excalibur as an example of a program that would qualify for this relief. The Excalibur program experienced a Nunn-McCurdy breach of the critical cost growth threshold after the Army reduced quantities from 30,000 to 6,264. The quantity reductions were the result of Army assessments that concluded it did not need as many of these munitions as planned, rather than in response to program-specific cost concerns. While in the case of Excalibur the Army reduced quantities based on capability needs, we have previously reported that quantities are often reduced in response to cost overruns on programs.<sup>10</sup> Tracking changes in research and development costs, which are not sensitive to quantity changes, would be one way DOD could evaluate program performance in this context.

### Using Knowledge-Based Acquisition Practices Can Help Minimize the Risk of Cost Overruns

The Nunn-McCurdy process can be a useful mechanism for holding programs accountable for cost growth and restructuring them in the wake of cost growth; however, its effect is limited because, in general, programs have already experienced significant problems by the time it is triggered. It is not realistic to expect cost growth to be entirely preventable, but it can be significantly reduced. To put programs in a position to minimize the risk of cost growth, DOD must use the tools available to it to establish programs in which there is a match between requirements and resources—including funding—from the start and execute those programs using knowledge-based acquisition practices. In our previous work, we have identified proven management practices—many of which have been incorporated into DOD policy, but have yet to be fully implemented in practice—that can serve as tools to prevent DOD cost overruns.<sup>11</sup> Greater adherence to the following practices at key phases of

<sup>10</sup>GAO-08-619.

<sup>11</sup>GAO, *Best Practices: Better Management of Technology Development Can Improve Weapon System Outcomes*, GAO/NSIAD-99-162 (Washington, D.C.: July 30, 1999); *Best Practices: Better Matching of Needs and Resources Will Lead to Better Weapon System Outcomes*, GAO-01-288 (Washington, D.C.: Mar. 8, 2001); *Best Practices: Capturing Design and Manufacturing Knowledge Early Improves Acquisition Outcomes*, GAO-02-701 (Washington, D.C.: July 15, 2002); GAO-08-619; *Best Practices: DOD Can Achieve Better Outcomes by Standardizing the Way Manufacturing Risks Are Managed*, GAO-10-439 (Washington, D.C.: Apr. 22, 2010); and *Opportunities to Reduce Potential Duplication in Government Programs, Save Tax Dollars, and Enhance Revenue*, GAO-11-318SP (Washington, D.C.: Mar. 1, 2011).



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the acquisition process can help reduce weapon system costs, contain pressures for increased funding, and better address critical warfighter needs.

- **Early and continued systems engineering analysis:** Early systems engineering, ideally beginning before a program is initiated and a business case is set, is critical to designing a system that meets requirements within available resources, such as technologies, time, money, and people.<sup>12</sup> Specifically, a robust analysis of alternatives and preliminary design review (PDR)—which analyze the achievability of required capabilities before committing to a program—can help ensure that new programs have a sound, executable business case that represents a cost-effective solution to meeting warfighters' needs. Such engineering knowledge can identify key trade-offs in requirements and technology that are essential to managing cost. Systems engineering continues to be an important tool through a program's critical design review (CDR) and system demonstration.
- **Leveraging mature technologies and processes:** Programs often have insufficient knowledge about the maturity of technology. More prototyping early in programs could help DOD ensure that a system's proposed design can meet performance requirements. Further, having predictable manufacturing processes before decisions are made to move into production can reduce unknowns.<sup>13</sup>
- **Establishing realistic cost and schedule estimates that are matched to available resources:** Cost and schedule estimates are often based on overly optimistic assumptions. Our previous work shows that without the ability to generate reliable cost estimates, programs are at risk of experiencing cost overruns, missed deadlines, and performance shortfalls.<sup>14</sup> Inaccurate estimates do not provide the

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<sup>12</sup>GAO-01-258.

<sup>13</sup>GAO-02-701.

<sup>14</sup>GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-35P (Washington, D.C.: March 2009).

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necessary foundation for sufficient funding commitments. Engineering knowledge is required to achieve more accurate, reliable cost estimates at the outset of a program.

- **Clear, well-defined requirements:** Our work has shown that DOD's culture and environment often allow programs to start with too many unknowns, for example, entering the acquisition process without a full understanding of requirements.<sup>15</sup> Additionally, minimizing requirements changes could decrease the amount of cost growth experienced by acquisition programs.
- **Incremental approach to acquiring capabilities:** Programs can put themselves in a better position to succeed by implementing incremental acquisition strategies that limit the time in development.<sup>16</sup>

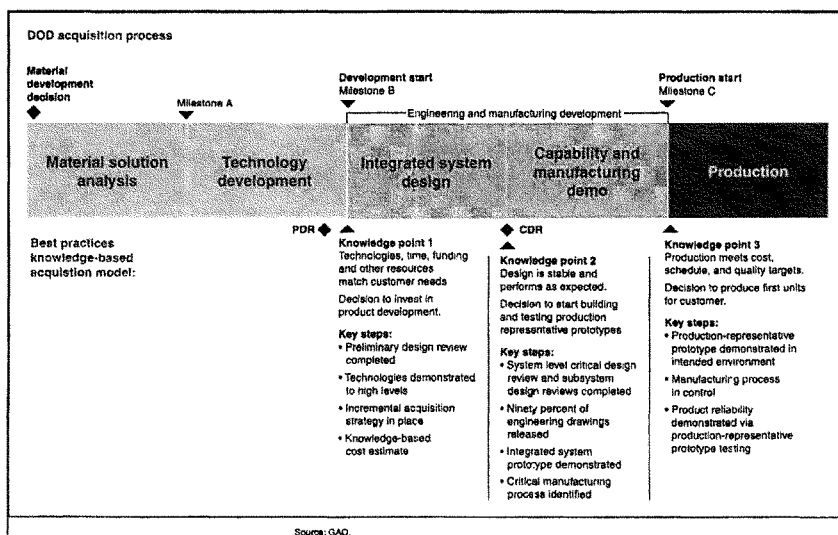
Our prior work on best product development practices found that successful programs use these tools as they progress through the acquisition process to gather knowledge that confirms that their requirements are achievable, their technologies are mature, their designs are stable, and their production processes are in control. Successful product developers ensure a high level of knowledge is achieved by key junctures in development. We characterize these junctures as knowledge points. The following figure depicts how these tools can come into play as a program moves through its development process and into production. It summarizes the activities necessary for successful outcomes at each key knowledge point.

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<sup>15</sup>GAO, *Defense Acquisitions: Strong Leadership Is Key to Planning and Executing Stable Weapon Programs*, GAO-10-622 (Washington, D.C.: May 6, 2010).

<sup>16</sup>GAO-08-619.

Figure 3: DOD Acquisition Process and GAO Knowledge-Based Acquisition Practices



Mr. Chairman, this completes my prepared statement. I would be happy to respond to any questions you or other members of the subcommittee may have at this time.

## Contacts and Acknowledgments

For further information about this statement, please contact Michael J. Sullivan at (202) 512-4841 or [sullivanm@gao.gov](mailto:sullivanm@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals who made key contributions to this statement include Ron Schwenn, Assistant Director; Morgan Delaney Ramaker; Kristine Hassinger; Leigh Ann Nally; Kenneth Patron; and Roxanna Sun.

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STATEMENT OF  
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SPECIALIST IN DEFENSE ACQUISITION  
CONGRESSIONAL RESEARCH SERVICE  
BEFORE THE  
SENATE COMMITTEE ON HOMELAND SECURITY & GOVERNMENTAL  
AFFAIRS  
SUBCOMMITTEE ON  
FEDERAL FINANCIAL MANAGEMENT, GOVERNMENT INFORMATION,  
FEDERAL SERVICES, AND INTERNATIONAL SECURITY  
HEARING ON  
TOOLS TO PREVENT DOD COST OVERRUNS

March 29, 2011

**CRS Report for Congress**  
*Prepared for Members and Committees of Congress*

Chairman Carper, Ranking Member Brown, distinguished members of the subcommittee, thank you for the opportunity to appear before you today to discuss the Nunn-McCurdy Act and cost growth in major defense acquisition programs. As requested, this statement examines acquisition reform and options that Congress may choose to consider to improve the defense acquisition system. Specifically, this statement focuses on

- the history of the Nunn-McCurdy Act,
- consequences for weapon systems that experience Nunn-McCurdy breaches, and
- issues for Congress.

## Background

Over the years, Major Defense Acquisition Programs (MDAPs)<sup>1</sup> have been plagued by substantial cost growth. Cost growth has been so systemic and widespread, that time and again, the Department of Defense has had to resort to terminating or substantially curtailing a host of programs.

Over the years, numerous Army programs have been terminated or substantially restructured, including the Crusader self-propelled artillery system, Comanche helicopter, Joint Common Missile, Armed Reconnaissance Helicopter, and more recently, most of the Future Combat System. The Navy recently curtailed the DDG-1000 destroyer program in favor of the less expensive DDG-51 design. The Virginia-class submarine, which has suffered its own cost growth, was intended to be a cost-effective replacement for the Seawolf, which was curtailed because of cost growth.<sup>2</sup> In addition, the Navy Area Defense (NAD), VXX presidential helicopter, and Marine Corps Expeditionary Fighting Vehicle programs were cancelled. For its part, the Air Force scaled back the F-22 and terminated the Combat Search and Rescue helicopter. Among satellite programs, terminations include much of the Future Imagery Architecture, the Transformational Communications Satellite (TSAT), and the Space Radar. Other space programs, such as the Space Tracking and Surveillance System (STSS), have been restructured.

Cost growth was a significant factor in many of these decisions. Had DOD and Congress known at the onset what the true cost of these systems would have been, different decisions could have been made, and billions of dollars spent on systems that were never fielded or prematurely cancelled could have been spent on other priorities.

For 25 years, the Nunn-McCurdy Act has served as one of the principal mechanisms for notifying Congress of cost overruns in Major Defense Acquisition Programs (MDAPs). The act's origins can be traced back to May 14, 1981, when Senator Sam Nunn offered a floor amendment requiring the Department of Defense (DOD) to notify Congress if, in Fiscal Year (FY) 1982, total program acquisition unit costs for any Major Defense Acquisition Program increased more than

<sup>1</sup> A Major Defense Acquisition Program (MDAP) is a program estimated to require research, development, test, and evaluation (RDT&E) costs of more than \$365 million or procurement costs of more than \$2.190 billion (in FY 2000 constant dollars). In 1983, the procurement cost of a program had to be one billion dollars (in FY1980 constant dollars) to be considered an MDAP.

<sup>2</sup> U.S. Government Accountability Office, *Defense Acquisitions: Improved Management Practices Could help Minimize Cost Growth in Navy Shipbuilding Programs*, GAO-05-183, February 28, 2005, p. 62.

15% beyond the cost estimate, and when costs increased more than 25%.<sup>3</sup> The amendment was included in the FY1982 Department of Defense Authorization.<sup>4</sup>

That same year, Representative Dave McCurdy, then chairman of the House Armed Services Committee Special Panel on Defense Procurement Procedures, held a series of hearings examining weapon system cost growth.<sup>5</sup> Together, Senator Nunn and Representative McCurdy successfully led the effort to pass the Nunn-McCurdy Act, which perpetuated the requirement that DOD notify Congress when cost overruns exceed certain thresholds.<sup>6</sup>

### Why the Nunn-McCurdy Act Was Established

In the early 1980s, a number of major weapons systems programs were experiencing dramatic cost overruns, overruns which increased the defense budget by billions of dollars but resulted in the same number, or in some cases fewer, weapons. Programs experiencing cost growth included the Patriot missile system (37% cost growth), the Hellfire missile (48% growth), the Blackhawk helicopter (24% growth), and the F-18 (21% growth). According to the December 1980 Selected Acquisition Report, there was a \$47 billion cost increase for 47 major weapon systems in just the last three months of 1980.<sup>7</sup>

Senator Nunn was not only concerned with escalating and unplanned cost growth; he was also concerned that Congress was spending too much time debating the relative merits of individual weapon systems and not focusing on the overall management and accountability of how DOD acquires major weapon systems. One of the reasons for enacting Nunn-McCurdy was to inform Congress whether the DOD acquisition process was working effectively. Referring to DOD's acquisition system, Senator Nunn concluded

If the system works, if the cost estimates and the inflation estimates are anywhere near accurate, giving a 15-percent margin on R & D, a 10-percent margin on inflation in the procurement accounts, then the reports will not be necessary. If the system does not work, then, of course, we should know and we should be alerted.<sup>8</sup>

Another reason for enacting Nunn-McCurdy was to hold the department accountable for cost overruns. It was believed that publicly exposing cost overruns would force the Department of Defense to rein in cost growth. According to Representative McCurdy,

The assumption behind the Nunn-McCurdy provision... was that the prospect of an adverse reaction from the Office of Management and Budget, Congress, or the public would force

<sup>3</sup> Specifically, the amendment required DOD to notify Congress if total program acquisition unit costs for any MDAP for which no procurement funds were authorized increased by more than 15%, and total program acquisition unit cost for any MDAP or current unit acquisition cost increased by more than 25%. See: *Congressional Record* May 14, 1981 pg. S. 5014-15.

<sup>4</sup> 95 Stat. 1129. See: *Congressional Record* May 14, 1981 pg. S. 5016.

<sup>5</sup> U.S. Congress, House Armed Services Committee, Special Panel on Defense Procurement Procedures, *House Armed Services Hearings*, Vol. 11, 97<sup>th</sup> Cong., 1<sup>st</sup> sess. (Washington: GPO, 1981), p. 1.

<sup>6</sup> See, Department of Defense Authorization Act, 1983 (96 Stat. 718).

<sup>7</sup> Selected Acquisition Reports are DOD documents describing DOD acquisition programs.

<sup>8</sup> *Congressional Record*, May 14, 1981, p. S5012.

senior Pentagon officials to address the question of whether the program in question—at their newly reported, higher costs—were worth continuing.<sup>9</sup>

Nunn-McCurdy was not intended to create a mechanism for managing programs or allocating funds, which is why, as originally enacted, it was set up as an after-the-fact reporting requirement.

## How the Nunn-McCurdy Act Operates

The Nunn-McCurdy Act requires DOD to report to Congress whenever a major defense acquisition program experiences cost overruns that exceed certain thresholds. A program that experiences cost growth exceeding any of the established thresholds is said to have a Nunn-McCurdy breach.

### Nunn-McCurdy Thresholds

There are two categories of breaches: significant breaches and critical breaches. As shown in **Table 1**, a "significant" Nunn-McCurdy breach occurs when the Program Acquisition Unit Cost (PAUC- defined as the total cost of development, procurement, and construction divided by the number of units) or the Procurement Unit Cost (PUC- defined as the total procurement cost divided by the number of units to be procured) increases 15% or more over the current baseline estimate or 30% or more over the original baseline estimate.<sup>10</sup> A "critical" breach occurs when the PAUC or PUC increases 25% or more over the current baseline estimate or 50% or more over the original baseline estimate.<sup>11</sup>

**Table 1. Nunn-McCurdy Breach Thresholds**

	Significant Breach	Critical Breach
Current Baseline Estimate	≥15%	≥25%
Original Baseline Estimate	≥30%	≥50%

Source: 10 U.S.C. § 2433.

### Consequences of a Nunn-McCurdy Breach

In the event of a significant breach, DOD must notify Congress of the breach and submit to Congress a Selected Acquisition Report (SAR) for the fiscal quarter in which the breach occurred

<sup>9</sup> Dave McCurdy, "Reassert Cost Controls," *DefenseNews*, April 24, 2006, p. 21. Ibid.

<sup>10</sup> Title X of the U.S. Code codifies the laws establishing and regulating the Department of Defense. Program acquisition unit cost and procurement unit cost are defined in 10 U.S.C. § 2432(a). DOD often uses the term Average Procurement Unit Cost (APUC) instead of Program Unit Cost (PUC), which is the term used in the statute.

<sup>11</sup> An *original baseline estimate* is the cost estimate included in the original program description (known as an Acquisition Program Baseline) that is prepared prior to a program entering "engineering and manufacturing development" (also known as "Milestone B"), or at program initiation, whichever occurs later. A *current baseline estimate* is the estimate that is included in the most recently revised program description (Acquisition Program Baseline). If the original baseline estimate has not been revised, the original baseline estimate is also the current baseline estimate. For a more detailed discussion on baselines, see Appendix.



or in the quarter in which it was determined that a breach occurred.<sup>12</sup> For a significant breach, no further action is required.

In the event of a critical breach, in addition to notifying Congress and submitting a SAR, the Secretary of Defense is required to conduct a root-cause analysis to determine what factors caused the cost growth that led to a critical breach and, in consultation with the Director of Cost Assessment and Program Evaluation, assess

1. the estimated cost of the program if no changes are made to the current requirements,
2. the estimated cost of the program if requirements are modified,
3. the estimated cost of reasonable alternatives to the program, and
4. the extent to which funding from other programs will need to be cut to cover the cost growth of this program.<sup>13</sup>

After the reassessment, the program must be terminated unless the Secretary of Defense certifies in writing no later than 60 days after a SAR is provided to Congress that the program will not be terminated because it meets certain requirements.<sup>14</sup> A certification, which uses the exact wording found in 10 U.S.C. § 2433a(b), essentially certifies that

1. the program is essential to national security,
2. there is no viable cost-effective alternative to the program that meets the joint military requirements,
3. the new cost estimates have been determined by the Director of Cost Assessment and Program Evaluation to be reasonable,
4. the program is a higher priority than programs whose funding will be reduced to cover the increased cost of this program, and
5. the management structure is sufficient to control additional cost growth.<sup>15</sup>

This certification must be provided to Congress with a copy of the root-cause analysis report.<sup>16</sup> In addition to the certification and the root-cause analysis, a program that is not terminated must

1. be restructured in a manner that addresses the root cause of the cost growth,

<sup>12</sup> 10 U.S.C. § 2433. A Selected Acquisition Report includes the (1) quantity of items to be purchased, (2) program acquisition cost, (3) program acquisition unit cost, (4) current procurement cost, (5) current procurement unit cost, and (6) the reasons for changes in any of these costs. See 10 U.S.C. § 2432(b),(c). Originally, DOD was required to submit a SAR for the quarter in which it was determined that a breach occurred. In some circumstances, a breach will occur in one quarter but the formal determination that the breach occurred takes place in the following quarter. To address this issue, Congress gave DOD the flexibility to submit a SAR for the quarter immediately preceding the quarter in which the determination was made—which would be the quarter in which the breach actually occurred.

<sup>13</sup> 10 U.S.C. § 2433a(a).

<sup>14</sup> The requirement that a program be terminated if it is not certified by the Secretary of Defense was added to the Nunn-McCurdy Act on May 22, 2009, as part of the Weapon Systems Acquisition Reform Act of 2009. According to the amended act, if a program is terminated, the Secretary of Defense must submit a written report explaining (1) why the program was terminated, (2) the alternatives that were considered to fix the program, and (3) how DOD intends to meet the requirement that the program was intended to fill (10 U.S.C. § 2433a(d)).

<sup>15</sup> 10 U.S.C. § 2433a(b).

<sup>16</sup> 10 U.S.C. § 2433a(b)(3).

2. have its prior milestone approval rescinded, and
3. receive a new milestone approval before taking any contract action—including signing new contracts or exercising options—without approval from the Milestone Decision Authority.

DOD must also (1) notify Congress of all funding changes made to other programs to cover the cost growth of the program in question and (2) hold regular reviews of the program.<sup>17</sup>

### How the Nunn-McCurdy Act Has Evolved

Some analysts argue that Nunn-McCurdy has been effective as a reporting mechanism for informing Congress of cost overruns in Major Defense Acquisition Programs. As discussed above, Congress is (1) notified when the cost of a program increases beyond established thresholds and (2) provided with additional information on such programs (i.e., Selected Acquisition Reports). As a result of the Nunn-McCurdy process, Congress has substantial visibility into the cost performance of the acquisition stage of MDAPs. The increased visibility into DOD cost performance has painted a picture of widespread cost growth in major defense acquisition programs. However, some analyses show that despite Nunn-McCurdy and other defense acquisition reform efforts, the size of MDAP cost overruns have grown over time and may continue to grow in the foreseeable future.<sup>18</sup>

Responding to the accumulation of data on cost growth, Congress has statutorily amended Nunn-McCurdy a number of times over the years, transforming Nunn-McCurdy from being primarily a reporting system aimed at determining whether the acquisition system is working, to a more robust information-gathering and management tool. These changes were fueled in part by concerns that programs with chronic cost growth and schedule delays were not being terminated and Congress was not being provided specific information on what was causing the cost growth.

One of the most significant changes to Nunn-McCurdy occurred in the FY2006 National Defense Authorization Act, when Congress added the original baseline as a threshold against which to measure cost growth to improve visibility into the cost growth experienced by a program from its inception. The new standard gave Congress more visibility into cost performance by preventing DOD from avoiding a Nunn-McCurdy breach by simply re-baselining a program. The new law resulted in an increase in the Nunn-McCurdy breaches.<sup>19</sup>

A number of other significant changes to Nunn-McCurdy were enacted in the Weapon System Acquisition Reform Act of 2009 (P.L. 111-23). Many of the changes included in the act imply that

<sup>17</sup> 10 U.S.C. § 2433A(c).

<sup>18</sup> See Obaid Younossi, Mark V. Arena, and Robert S. Leonard, et al., *Is Weapon System Cost Growth Increasing?*, RAND Corporation, A Quantitative Assessment of Completed and Ongoing Programs, Santa Monica, CA, 2007. One analysis found that "cost overruns are increasing by an average of 1.86 percentage points per year. If this trend is allowed to continue, the analysis suggests that in 10 years the average overrun will exceed 56 percent...." See: Deloitte Consulting LLP, *Can We Afford Our Own Future? Why A&D Programs are Late and Over-budget—and What Can Be Done to Fix the Problem*, 2008, p. 2. See also Mark V. Arena, Irv Blickstein, and Obaid Younossi, et al., *Why Has the Cost of Navy Ships Risen? A Macroscopic Examination of the Trends in U.S. Naval Ship Costs Over the Past Several Decades*, RAND Corporation, 2006, p. xiv.

<sup>19</sup> For an analysis of how some DOD MDAPs were frequently rebaselined, thereby avoiding the Nunn-McCurdy requirements, see U.S. Government Accountability Office, *Defense Acquisitions: Information for Congress on Performance on Major Programs Can Be More Complete, Timely, and Accessible*, GAO-05-182, March 28, 2005.

Congress is also using Nunn-McCurdy as a management tool. For example, the 2009 act mandated that a program with a critical breach be presumed terminated unless the Secretary of Defense certified the program. The 2009 act also required that when a program is certified, DOD must (1) revoke the prior milestone approval, (2) restructure the program, and (3) provide Congress a written explanation of the root-cause of the cost growth.

### Unrealistic Cost Estimates Contribute to Nunn-McCurdy Breaches

Poor cost estimating was a recurring theme during the McCurdy hearings and has been identified by various DOD officials, analysts, and industry officials as a primary cause of cost growth in DOD acquisitions.<sup>20</sup> Low cost estimates can make future cost growth almost inevitable. Michael Gilmore, then of the Congressional Budget Office and currently the Director of Operational Test and Evaluation, stated when discussing overly optimistic cost estimates, "no program manager in the world is going to be able to manage the program in such a way that the costs will not grow... it's not really so much cost growth as cost realism setting in."<sup>21</sup> Unrealistically low cost estimates set the stage for future Nunn-McCurdy breaches.

In 2006, Gary Payton, Air Force Deputy Under Secretary for Space Programs, made a direct link between unrealistically optimistic estimates and Nunn-McCurdy breaches. In a presentation entitled *Nunn-McCurdy's Aren't Fun*, he argued that "[U]nbridled optimism regarding cost, schedule, performance, and risks is a recipe for failure."<sup>22</sup> As set forth in the presentation,

Understated costs leads to lower budget → leads to industry bidding price less than budget  
→ leads to lower award price → leads to government repeatedly changing scope, schedule,  
budget profile → leads to five to ten years later recognition "real" cost multiple of bid →  
leads to Nunn-McCurdy Breach.<sup>23</sup>

GAO has also linked optimistic cost estimates with significant cost growth, finding that "the Navy tends to underestimate the costs needed to construct ships—resulting in unrealistic budgets and large cost increases after ship construction has begun."<sup>24</sup> Cost growth on Navy shipbuilding programs complicates the Navy's task of building ships in desired quantities while also adequately funding other Navy program priorities.

<sup>20</sup> For example, during the McCurdy hearings, then Director of the Program Analysis and Evaluation Office, Maj. Gen. Patrick M. Roddy stated that there are three fundamental cost growth drivers: inflation, poor cost estimating, and scheduling. GAO testified that "[C]ost estimating is probably the key ingredient in reducing cost growth ... [A]s far back as the early 1970's, GAO has reported that both planning and development cost estimates on Federal acquisitions in many cases are quite optimistic...unrealistically low contractor and agency estimates on the front end aggravates cost growth. What is needed is more candor up front in presenting programs to the Congress and not promising more than can be realistically delivered." And then Deputy Secretary of Defense Frank C. Carlucci, in a written statement to Congress, stated that "early cost, schedule, and performance estimates are overly optimistic." See: House Armed Services Hearings, 97<sup>th</sup> Cong., 1<sup>st</sup> Sess., Volume 11, 1981. Op. Cit. P. 74, 1009, and 1085, respectively.

<sup>21</sup> U.S. Congress, House Committee on the Budget, *Long-Term Sustainability of Current Defense Plans*, 111<sup>th</sup> Cong., 1<sup>st</sup> sess., February 4, 2009.

<sup>22</sup> See <http://www.dtic.mil/ndia/2006systems/Wednesday/payton.pdf>, p. 10. Last visited December 23, 2008.

<sup>23</sup> Ibid.

<sup>24</sup> Government Accountability Office, *Defense Acquisitions: Realistic Business Cases Needed to Execute Navy Shipbuilding Programs*. GAO-07-943T. July 24, 2007, p. 17.

### Why Cost Estimates Are Sometimes Unrealistically Optimistic

Senior Defense officials, both past and current, acknowledge that program advocates have strong incentives to underestimate program acquisition costs. Contractors use low cost estimates to win the contract; program representatives use low estimates to argue for approval of the system against competing systems.<sup>25</sup> In 1981, then-Deputy Secretary of Defense Frank C. Carlucci testified that low cost estimates “are fueled by optimistic contractor proposals to win competitions and program managers who want to see their programs funded.”<sup>26</sup> Almost 30 years later, then-Under Secretary of Defense for Acquisition, Technology, and Logistics John Young echoed this sentiment, stating “the enterprise will often pressure acquisition teams and industry to provide low, optimistic estimates to help start programs.”<sup>27</sup>

### Creating More Realistic Cost Estimates

The extent to which cost estimates are useful depends in part on the reliability of the cost estimates. The absence of more reliable cost estimates denies Congress the ability to decide on competing strategic and budget priorities based on realistic cost assumptions and denies DOD the opportunity to develop a well-conceived acquisition plan. As the 2010 *Quadrennial Defense Review* stated, “our system of defining requirements and developing capability too often encourages reliance on overly optimistic cost estimates. In order for the Pentagon to produce weapons systems efficiently, it is critical to have budget stability—but it is impossible to attain such stability in DOD’s modernization budgets if we continue to underestimate the cost of such systems from the start.”<sup>28</sup>

Congress and DOD have undertaken a number of initiatives over the years to improve MDAP cost estimates, including establishing the Cost Analysis Improvement Group in 1972 (an independent cost analysis office within DOD),<sup>29</sup> the Defense Acquisition Board in 1987,<sup>30</sup> and the Director of Cost Assessment and Program Evaluation (CAPE) in 2009.<sup>31</sup> The CAPE was established to “ensure that the cost estimation and cost analysis processes of the Department of Defense provide accurate information and realistic estimates of cost” for MDAPs.<sup>32</sup>

The CAPE is contributing to the understanding and development of budgeting and contracting decisions for major defense acquisition programs, such as the F-35 Joint Strike Fighter program. However, given how recently the CAPE was established, only time will tell to what extent the CAPE will be more effective than past efforts to inject more realism into the Department’s cost estimates for acquisition programs. We just do not yet have data to compare CAPE estimates to

<sup>25</sup> See: House Armed Services Hearings, 97<sup>th</sup> Cong., 1<sup>st</sup> Sess., Volume 11, 1981. Op. Cit. p. 883.

<sup>26</sup> House Armed Services Hearings, 97<sup>th</sup> Cong., 1<sup>st</sup> Sess., Volume 11, 1981. Op. Cit. p. 1086.

<sup>27</sup> John J. Young, Jr., *Reasons for Cost Changes for Selected Major Defense Acquisition Programs (MDAPs)*, Memorandum, January 30, 2009.

<sup>28</sup> Department of Defense, *Quadrennial Defense Review Report*, February 2010, p. 76.

<sup>29</sup> The CAIG was established on January 25, 1972, in a memo by Secretary of Defense Melvin Laird. See Donald Strull, *The Cost Analysis Improvement Group: A History*, Logistics Management Institute, McLean, VA, 1998, p. 12.

<sup>30</sup> *Ibid.*, p. 31. The Defense Acquisition Board succeeded the Defense Systems Acquisition Review Council (DSARC) the establishment of the Defense Acquisition Board resulted in an increasing demand for independent cost estimates generated by the CAIG.

<sup>31</sup> Weapon Systems Acquisition Reform Act of 2009 (P.L. 111-23).

<sup>32</sup> *Ibid.*, 123 STAT. 1706.

actual costs, or more importantly, to determine whether the CAPE is helping DOD generate more realistic cost estimates.

One option for Congress could be to consider requiring the CAPE to include in its annual report to Congress data on DOD cost estimates and confidence levels, CAPE cost estimates and confidence levels, and analyses of how such cost estimates compare to actual MDAP costs.<sup>33</sup> Such a report could provide Congress with a single source for measuring, over time, the effectiveness of cost estimates and confidence levels that were developed by program offices and the CAPE. A comprehensive annual report could also provide Congress additional cost information that could be used to help decide between competing strategic and budget priorities.

### Other Drivers of Cost Growth

Unrealistic cost estimation is just one factor contributing to cost growth. Other factors include programs not getting stable funding, insufficient testing early in the acquisition process, adding requirements, and poor contractor management and oversight. Each of these factors can undermine a program's ability to execute on time and within budget. For example, adding requirements to a program after a cost estimate has been completed will likely undermine the accuracy and usefulness of the estimate because the assumptions upon which the estimate was based are no longer valid. Similarly, early developmental testing can identify flaws in a system at a stage in development where it is cheaper to identify and fix problems.

Some analysts have argued that it simply takes too long to develop and field major weapon systems. Ten to twenty year development programs are often an indication that the program is seeking ill-defined capabilities or is pursuing technologies that are not yet achievable, which in turn will result in cost growth. As a result, some have suggested instituting time-certain development, which would set a limit on the time available to develop and field a new system. Such an approach was suggested by the Quadrennial Defense Review Independent Panel. The panel recommended that "[W]ith rare exceptions, increments of military capability should be defined and designed for delivery within 5 to 7 years with no more than moderate risk."<sup>34</sup>

### Limitations of Nunn-McCurdy

#### Nunn-McCurdy Does Not Require Reporting on Operations & Support Costs

The Nunn-McCurdy Act does not apply to all elements of a weapon system's life-cycle costs. For example, the Act does not apply to costs incurred during operations, support, or disposal.<sup>35</sup> Analysts have estimated that operations & support (O&S) costs account for two-thirds or more of

<sup>33</sup> One method of evaluating the reliability of a cost estimate is through the use of confidence levels, which is generated by conducting uncertainty analyses that measure the probability of cost growth. Programs with a 50 percent confidence level have a 50 percent chance of staying within the estimated cost; programs with an 80 percent confidence level have an 80 percent chance of staying within the estimated costs.

<sup>34</sup> QDR Independent Panel, *The QDR In Perspective: Meeting America's National Security Needs in the 21<sup>st</sup> Century*, The Final Report of the Quadrennial Defense Review Independent Panel, August 2010, p. xviii.

<sup>35</sup> Operations and support costs are funded from Military Personnel, Operations and Maintenance, Procurement, and occasionally RDT&E appropriations.

a system's total life-cycle cost.<sup>36</sup> Weapon systems have experienced O&S cost growth as well as acquisition cost growth. Cost growth in O&S can reduce the funds available to acquire new or upgrade existing weapon systems in years far beyond the current fiscal year. Given the costs associated with operations and support, Congress may want to consider applying Nunn-McCurdy-type reporting requirements to O&S costs.

Many of the decisions that determine O&S costs are made early in the acquisition process—before significant O&S costs are actually incurred. Because O&S costs are such a significant percentage of a system's lifecycle cost, and because decisions affecting these costs are made so early in the acquisition process, understanding and validating O&S cost estimates are critical to making informed decisions on major systems that will require substantial funding in the future. Precisely because O&S costs are not incurred until much later in the life-cycle, these costs do not always get the same attention as acquisition costs at Milestone B (the engineering and manufacturing development and demonstration phase) or Milestone C (the production and deployment phase). Some decisions made earlier in the acquisition process could result in lower acquisition costs at the expense of higher long-term O&S costs—and ultimately higher overall life-cycle costs.

Applying a Nunn-McCurdy type of reporting requirement to O&S costs might help Congress set its budgetary priorities as well as gather and track cost data for future analysis.<sup>37</sup> Another option for Congress would be to require the CAPE to include in an annual report to Congress a comparison of original O&S cost estimates to current actual costs (adjusted for inflation) for ongoing programs. The extent to which these options may be viable depends on the reliability of the data available. Without good data on O&S costs, DOD and Congress may not have important information upon which to make budget decisions.

### Nunn-McCurdy Timelines

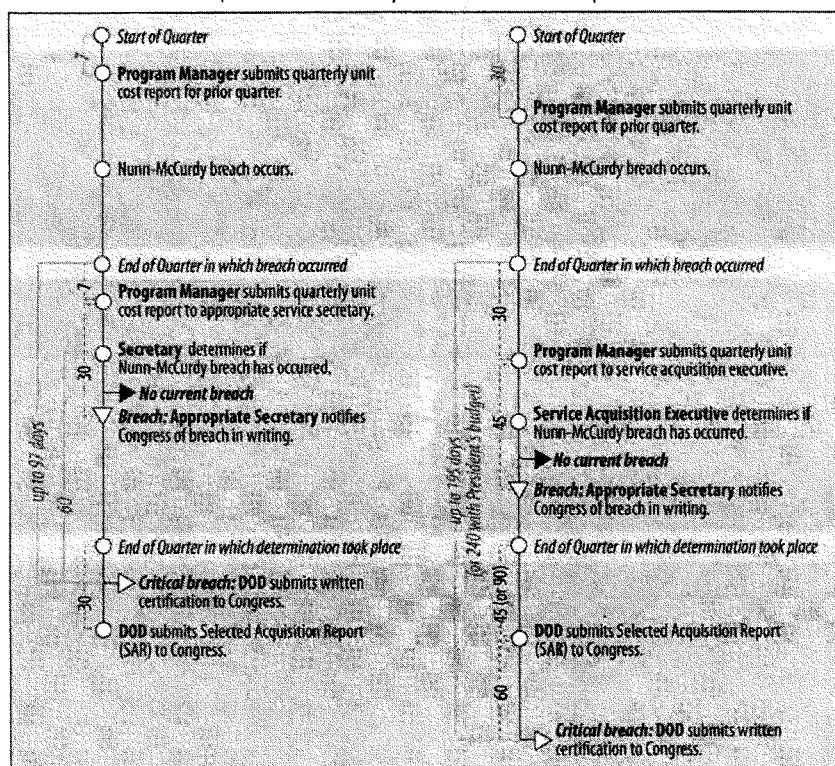
The timeline for when DOD must notify Congress of a breach and certify a program has changed since Nunn-McCurdy was first enacted in 1983. Originally, no more than 97 days elapsed from the end of the quarter in which a critical breach occurred to when the Secretary of Defense certified a program to Congress. Today, it could be up to 195 days (6.5 months), or 240 days in a quarter when the SAR is filed following the submission of the President's budget (see **Figure 1**).

<sup>36</sup> Walt Cooper, *O&S Trends and Current Issues*, Office of the Secretary of Defense, Cost Analysis Improvement Group, Washington, D.C., May 2007. See also, Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics, *Report of the Defense Science Board on Developmental Test & Evaluation*, Washington, D.C., May 2008, p. 22.

<sup>37</sup> Some drivers of O&S cost growth are difficult to project and may be unavoidable, such as fuel costs and tempo of operations.

**Figure 1. Evolution of Nunn-McCurdy Reporting Timelines**

Comparison of FY1983 requirements vs. current requirements



Source: CRS analysis of 10 USC § 2433.

**Notes:**

- (1) Assumes that a Nunn-McCurdy breach does not occur within the first 30 days of the quarter, when the prior quarter's unit cost report has not yet been filed.
- (2) A SAR must be submitted within 45 days from the end of a quarter except for the first fiscal quarter, when the SAR must be submitted within 60 days from the time when the President submits the budget to Congress (10 U.S.C. § 2432(f)). The President's budget is generally submitted the first week of February. For purposes of this figure, it is assumed that the President's budget is submitted 30 days after the end of the quarter.

Some analysts have argued that under the current statute, too much time elapses from when a critical breach is first identified to when DOD certifies the program to Congress. According to these analysts, the Nunn-McCurdy timelines often span two budget cycles, and in some cases can exceed 300 days from when a program manager accurately suspects that a critical Nunn-McCurdy breach has taken place. One option for Congress could be to consider shortening some

of the Nunn-McCurdy timeframes. Condensing the timeframes could give Congress more of an opportunity to consider budgeting options for troubled programs.<sup>38</sup>

Congress took such an approach when it enacted the Intelligence Authorization Act for FY2010 (P.L. 111-259). The intelligence authorization act included provisions that essentially applied Nunn-McCurdy to major intelligence acquisition programs.<sup>39</sup> One of the few substantive differences in the intelligence bill was the timeline for when the Director of Intelligence must certify a program. In the event that a program with a critical breach is not terminated, the Director of National Intelligence must submit a report and certification to Congress no later than 120 days from the end of the quarter in which the critical breach occurred. By way of comparison, the Secretary of Defense has more than 190 days to submit such a certification to Congress.

Others have argued that while Nunn-McCurdy is a good reporting mechanism, it is not set up to be an effective program management tool. The after-the-fact nature of the reporting requirements prompted Senator John Tower, then Chairman of the Senate Armed Services Committee, to declare Nunn-McCurdy as being akin to "closing the gate after the horse has galloped off into the boondocks."<sup>40</sup> Then Under Secretary of Defense Ashton Carter reportedly stated that DOD needs a mechanism that is similar to Nunn-McCurdy but that comes into effect before a program has already experienced significant cost growth, a mechanism "that gives the managerial tip-off earlier than Nunn-McCurdy."<sup>41</sup> DOD is working to identify programs that are starting to experience cost and schedule growth before a Nunn-McCurdy breach occurs.

Mr. Chairman, distinguished members of the subcommittee, when weapon systems end up costing far more than originally anticipated, the scramble to plug budget shortfalls undermines long-term strategic planning. Systemic cost growth jeopardizes the ability of the United States to execute a long-term, coherent, and stable strategy that will give U.S. armed forces the weapons they need to meet future threats.

This concludes my testimony. Thank you again for the opportunity to appear before you to discuss these issues. I will be pleased to respond to any questions you might have.

<sup>38</sup> Some analysts have gone further, arguing that the time it takes to report a breach to Congress could be shortened by notifying Congress when a Unit Cost Report or when a Contract Performance Report indicates that a program has breached a Nunn-McCurdy threshold. However, according to DOD, "The timing of breach determinations is one of the most difficult parts of Nunn-McCurdy." Within the Department, there is a great deal of discussion and deliberation at all levels prior to the formal breach determination and notification to Congress. Initial breach indications from the contractor or program manager could be premature. For example, even if the program manager has reasonable cause to believe there is a Nunn-McCurdy breach, senior leadership could initiate cost reductions or scale back the program. Using the Unit Cost Reports or Contractor Performance Reports to determine a Nunn-McCurdy breach could deprive DOD of the opportunity to manage programs and take steps to rein in cost growth.

<sup>39</sup> See U.S. Congress, Senate Select Committee on Intelligence, *Intelligence Authorization Act for Fiscal Year 2010*, To accompany S. 1494, 111<sup>th</sup> Cong., 1<sup>st</sup> sess., July 22, 2009, S.Rept. 111-55 (Washington: GPO, 2009), p. Sec. 324. Sections 323 (Reports on the Acquisition of Major Systems) and 324 (Critical Cost Growth in Major Systems) outline the reporting requirements for programs whose total acquisition cost experiences cost growth of 15% or 25% above the baseline estimate.

<sup>40</sup> *Congressional Record*, May 14, 1981, p. S5012.

<sup>41</sup> Marina Malenic, "Pentagon Pledges Support for Bomber Industrial Base," *Defense Daily*, March 30, 2010, p. 1



## Appendix. What Is a Current Baseline Estimate and an Original Baseline Estimate?

According to Title X of the U.S. Code, DOD is required to establish a baseline description of all major defense acquisition programs when the program is officially started. This baseline description includes information on the program's planned cost, schedule, and performance.<sup>42</sup> The cost information is referred to as the "baseline estimate." The baseline description (including the cost estimate) is contained in the Acquisition Program Baseline (APB).<sup>43</sup>

APBs are required to initiate a program, and can only be revised

- at the milestone reviews or when full rate production begins,<sup>44</sup>
- if there is a major program restructuring that is fully funded, or
- as a result of a program breach if the breach is primarily the result of external causes beyond the control of the program manager.<sup>45</sup>

Under current DOD policy, current APBs cannot be revised to avoid a Nunn-McCurdy breach.<sup>46</sup>

An *original baseline estimate* is the cost estimate included in the original APB that is prepared prior to the program entering "engineering and manufacturing development" (also known as "Milestone B"), or at program initiation, whichever occurs later.<sup>47</sup> An original baseline estimate can only be revised if the program has a critical Nunn-McCurdy breach (see **Table 1**).<sup>48</sup>

A *current baseline estimate* is the baseline estimate that is included in the most recently revised APB. If the original baseline estimate has not been revised, the original baseline estimate is also the current baseline estimate.

<sup>42</sup> 10 U.S.C. § 2435(a).

<sup>43</sup> The APB contains the key cost, schedule, and performance parameters (both objectives and thresholds). According to the *Defense Acquisition Guidebook*, the program, as described by the APB, "should represent the program as it is expected to be developed, produced and/or deployed, sustained and funded." See Department of Defense, *Defense Acquisition Guidebook*, Chapter 2, 2.1.1.

<sup>44</sup> For a discussion on the defense acquisition system and milestones, see CRS Report RL34026, *Defense Acquisitions: How DOD Acquires Weapon Systems and Recent Efforts to Reform the Process*, by Moshe Schwartz.

<sup>45</sup> In all three cases, the APB can only be revised with the approval of the Milestone Decision Authority. See Department of Defense, *Defense Acquisition Guidebook*, pp. Chapter 2, 2.1.1. The Defense Acquisition Guidebook is in revision to reflect the new DoDI 5000.02 that was issued December 8, 2008. See also Kenneth J. Krieg, *Memorandum: Acquisition Program Baselines (APBs) for Major Defense Acquisition Programs (MDAPs)*, Undersecretary of Defense, Acquisition, Technology, and Logistics, July 17, 2007.

<sup>46</sup> Kenneth J. Krieg, *Memorandum: Acquisition Program Baselines (APBs) for Major Defense Acquisition Programs (MDAPs)*, Undersecretary of Defense, Acquisition, Technology, and Logistics, p. 2, July 17, 2007.

<sup>47</sup> 10 U.S.C. § 2435(d). For programs with an acquisition unit cost or procurement unit cost that exceeded the original baseline estimate by more than 50 percent as of January 6, 2006, the original baseline estimate for the program for purposes of Nunn-McCurdy is defined as the current baseline estimate that existed as of January 6, 2006.

<sup>48</sup> 10 U.S.C. § 2435(d).

CHARRTS No.: SHSGACFEDMGMTGOVT-01-001

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #1

Life Cycle Competition

Question: What is the Department's policy of how or when in the acquisition life cycle competition must be conducted. For example, in development, production or in the operations and maintenance phase should competition be required -if so in what phase and under what conditions?

Answer: Consistent with the requirements of law, the Department's acquisition policies require competition at all stages of the acquisition cycle unless one of the limited exceptions to competition is clearly justified. To this end, Program Managers are required to explain how a competitive environment will be sought, promoted, and sustained throughout all program phases. PMs must explain the measures taken to ensure competition or the option of competition, at both the prime and subcontract level, throughout the program life cycle. Measures may include, if cost effective: competitive prototyping; dual sourcing; unbundling of contracts; funding of next-generation prototypes or subsystems; use of modular, open architectures to enable competition for subsystem upgrades; use of build-to-print approaches to enable production through multiple sources; acquisition of technical data packages; periodic competition for subsystem upgrades; licensing of additional suppliers; and periodic system or subsystem reviews to address long-term competitive effects of program decisions.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-002

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #2

Life Cycle Competition

Question: Exactly how many acquisition executives and program managers does the Department currently have? Could you specify between career and appointed. Over the last ten years, how many acquisition executives or program managers, in career service have been fired, had their pay grade reduced, or otherwise disciplined due to poor performance?

Answer:

Acquisition Executives

- 1 – Office of the Secretary of Defense (appointed)
- 1 – Army (appointed)
- 1 – Department of Navy (appointed)
- 1 – Air Force (appointed)
- 12 – Defense Agencies (career)

Program Managers

As of March 31, 2011, there are 15,490 filled positions designated as program management. (all career)

The Department does not maintain data on acquisition executives or program managers in career service who have been fired, had their pay grade reduced, or were otherwise disciplined due to poor performance. Program managers and acquisition executives are sometimes removed from their positions due to poor performance however this is not a frequent event. Adverse personnel actions such as counseling, reassignment, or failures to promote to the next military grade are more common but the Department does not collect statistics on these activities. It is extremely rare for a program manager or acquisition executive to be reduced in grade or fired from government due to poor performance.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-003

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #3

Medium Extended Air Defense System (MEADS)

Question: Mr. Kendall, in your verbal testimony before the Subcommittee you stated that the Department is in negotiations with Germany and Italy over coming to an agreement on mutual termination of the MEADS program. What is the current status of those negotiations?

Answer: At the time I testified I was uncertain as to the level of interest Italy and Germany might have in mutual termination. Neither partner has expressed any interest in this option. The National Armaments Directors (NADs) of Germany, Italy, and the United States (Dr. Carter) met on April 6 in Brussels, Belgium, to discuss the status of the MEADS Program and determine a way ahead. The NADs decided to endorse the Proof of Concept effort that was proposed by the NATO MEADS Management Agency (NAMEADSMA) and agreed that it was to be completed within the existing MEADS Design and Development Memorandum of Understanding program funding. From April to September of this year, NAMEADSMA will be working on a contract amendment, consistent with the Proof of Concept. The NAMEADSMA General Manager will provide the contract amendment, program master schedule, and funding profile for review, NAD endorsement, and Department of Defense approval in October. If the restructured Proof of Concept does not appear to be a low-to-medium risk program that does not provide demonstrated MEADS capabilities, the Department will of course re-assess the situation.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-004

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #4

Medium Extended Air Defense System (MEADS)

Question: What is the \$804 million in cost to complete the memorandum of understanding through fiscal year 2013 going to be spent on - can the Department provide a breakdown of what this spending will go for?

Answer: The U.S. Memorandum of Understanding (MOU) commitment for MEADS funding is \$407 million for 2012 and \$397 million for 2013 – totaling \$804 million. Of this \$804 million, \$697 million will go directly to the NATO office and prime contract and \$107 million will fund U.S.-only, MOU-related efforts required in support of the MEADS program.

The \$697 million in funding to the NATO MEADS Management Agency (NAMEADSMA) provides for the NATO MEADS prime contract and the NAMEADSMA program office. The U.S. commitment to NAMEADSMA is \$354 million for 2012 and \$343 million for 2013 – totaling \$697 million. This amount, when combined with the additional 42 percent funding contribution of the Partner nations, will fund the Proof of Concept to complete development of the 360-degree radar, lightweight launcher, and battle management hardware elements of MEADS. These elements, with reduced capability software, will be put through ground tests and two intercept flight tests to demonstrate MEADS capabilities.

The remaining \$107 million will fund U.S.-controlled missile performance modeling and simulation, U.S. program integration, U.S. National Program Office administration and operations, and security and technology transfer controls (\$43 million in FY 2012 and \$41 million in FY 2013) development of the radar exciter and Exportable Missile Module (\$11 million in FY 2012 and \$12 million in FY 2013).

CHARTS No.: SHSGACFEDMGMTGOVT-01-005

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #5

Medium Extended Air Defense System (MEADS)

Question: Mr. Kendall, in your verbal testimony, you stated termination costs of the MEADS program could cost up to \$800 million. How did you determine that figure? Can you provide a breakdown of the unilateral termination costs?

Answer: There are two separate but related issues regarding MEADS termination: (1) unilateral withdrawal from the MEADS Memorandum of Understanding (MOU); and (2) action by the Partner nations to terminate the prime contract. In the case of a unilateral withdrawal from the MOU by a Partner nation, the withdrawing Partner nation would be responsible for MOU withdrawal costs per the MOU provisions. The actual MOU withdrawal costs are capped by that nation's remaining MOU funding commitment, subject to decisions by the remaining Partner nations whether to proceed with a restructure or to terminate the program and associated contracts. Section V of the MOU states that the total program phase cost ceiling is \$4 Billion equivalent U.S. dollars (EUSD) (in 2004 dollars) and that each Participant will contribute its equitable share of the full costs of the MEADS project. The U.S. cost share of the MOU cooperative program is 58%, for a ceiling of \$2.324B EUSD (2004 dollars). In February 2011 (the time of the President's FY12 budget announcement), the remaining MOU funding commitment for the U.S. was \$846 million. Since February, the U.S. provided the remaining FY11 funding for the program per our MOU commitment. The U.S. obligation toward cooperative MOU program costs for NATO MEADS Management Agency in FY12 and FY13 are \$350M and \$338M, respectively, totaling \$688M (current year). The remainder of the U.S. FY12 and FY13 budget amount, which is approximately \$116M, is required for U.S.-specific MEADS work -- including Government Furnished Property (GFP) obligations under the MOU -- implemented through the US Army National Program Office.

In the event of a unilateral MOU withdrawal by a Partner nation, the remaining partners would have 6 months to determine whether to terminate or to restructure the contract and proceed. Should the remaining nations proceed, the withdrawing nation would be responsible for restructure costs up to their MOU obligation limits (up to \$804M for the United States, as noted above). Should the remaining Partners choose to terminate NATO MEADS Management Agency (NAMEADSMA) contracts, contract termination costs would be based on a termination proposal from the prime contractor as well as any related U.S. GFP termination costs. Because our MEADS Partner nations have made it clear that they have no interest in pursuing termination, NAMEADSMA has not requested detailed contract termination proposals. Contract termination costs (and related government termination costs) in a contract termination scenario would be driven by existing obligations like long-lead item procurements and orders, targets, test and integration infrastructure, and other contract costs (leases, support contractors, etc). In a unilateral withdrawal, the withdrawing nation would be liable for termination or restructure costs up to the MOU commitment ceiling.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-006

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #6

Joint Strike Fighter Engine Program

Question: On March 24, 2011, the Defense Department unilaterally instructed GE and Rolls-Royce to halt work on the second engine (F-136) for the F-35 Joint Strike Fighter program. That decision, if left unchecked, would create a \$100 billion non-competed, sole-source contract for a single contractor-Pratt & Whitney-that has already incurred \$2.5 billion in cost overruns. How can the Defense Department justify responding to a program plagued by cost overruns by eliminating competition altogether?

Answer: The development of the F135 is proceeding satisfactorily and has demonstrated acceptable technical and financial performance. Although costs for F135 development have grown, a significant portion of the increase in F135 development costs is a result of the extension of the F-35 development program for reasons unrelated to the engine.

Competition is beneficial in many circumstances. However, those benefits in this case are uncertain, difficult to quantify, and would not be realized until beyond the current Future Years Defense Program. Conversely, Cost Assessment and Program Evaluation estimated costs to complete development and carry an alternate engine to a competitive procurement posture (\$2.9 billion) are real, quantifiable, and increasingly unaffordable in what has become an austere fiscal environment.

CHARTS No.: SHSGACFEDMGMTGOVT-01-007

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #7

Joint Strike Fighter Engine Program

Question: What have been the specific, principal causes of the Pratt & Whitney F-135 engine's massive cost overruns and what is the total amount of the overrun to date (\$2.5 billion)? Please describe each cause in detail.

Answer:

F-135 System Development and Demonstration (SDD) 2001 contract costs at contract – \$4.8 billion

F-135 SDD current estimate to complete – \$8.2 billion

Delta – \$3.4 billion

Costs associated with lift fan development – \$1.1 billion (of the \$3.4 billion)

Costs increases, excluding lift fan development – \$2.3 billion

Breakdown of the \$2.3 billion

<b>F-135 SDD Cost History</b>	<b>\$billion</b>
<b><i>Contract Award 2001</i></b>	<b><i>4.8</i></b>
New scope adjustments	1.1
Cost growth	0.8
<b><i>FY 2010 President's Budget (PB)</i></b>	<b><i>6.7</i></b>
Estimated additional new scope from Nunn McCurdy review	0.3
Estimated additional cost growth from Nunn McCurdy review	0.3
<b><i>FY 2011 PB</i></b>	<b><i>7.3</i></b>
Estimated additional new scope Technical Baseline Review (TBR)	0.4
Estimated additional cost growth Technical Baseline Review (TBR)	0.5
<b><i>FY 2012 PB</i></b>	<b><i>8.2</i></b>

Much of the cost growth on the F-135 SDD (cost plus) contract is associated with cost growth experienced in the overall F-35 JSF SDD program. For example, the \$1.1 billion new scope adjustment from contract award to the FY 2010 President's Budget was for the additional 18 months added to the F-35 SDD program to address the weight growth issue in 2004-2005. The F-135 SDD program was not experiencing issues, but the F-135 development schedule was forced to adjust to match the delay in the overall F-35 schedule, incurring additional costs. Additionally, under the F-135 SDD contract, the contractor is responsible for total integration of the F-35 propulsion system. Examples of items present in the F-135 SDD contract above and beyond the development of the core engine include, but are not limited to: development, integration, and testing of Short Take-Off and Vertical Landing (STOVL) and Conventional Take-Off and Landing (CTOL) unique items including the STOVL nozzle, CTOL nozzle, and STOVL flight controls hardware and software. Additionally, each restructure of the F-35 SDD



program, including added schedule to complete, has resulted in corresponding additional costs to F-135 SDD to account for additional test flights, associated support, and, with the most recent restructure, additional engines and spares for added flight test aircraft.

A summary of issues discovered during the ground testing of the engines include Thermal Management system shortfalls, durability shortfalls, 3<sup>rd</sup> blade Low Pressure Turbine failure, afterburner screech, fan rotor (tip clip), and the current STOVL probation issues of Roll Post heating, clutch thermal, and driveshaft articulation.

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Hearing Date: March 29, 2011  
Committee: SHSGACFEDMGMTGOVT  
Member: Senator Brown, Senator Portman  
Witness: Honorable Kendall, III  
Question: #8

Joint Strike Fighter Engine Program

Question: What is the Pratt & Whitney engine's contracted for delivery date? What is the current expected delivery date?

Answer: The information requested is provided in the following table:

Engine	Delivery dates	Contract dates	Engine	Delivery dates	Forecast Delivery	Contract dates
LRIP 1-1 CTOL	1/31/2010	7/7/09	LRIP 3-1 STOVL	5/13/2011		9/2010/2010
LRIP 1-2 CTOL	3/25/2010	7/31/09	LRIP 3-2 CTOL	4/13/2011		10/8/2010
LRIP 1-3 CTOL spare	3/25/2010	10/23/09	LRIP 3-3 STOVL		6/29/2011	11/5/2010
LRIP 1-4 CTOL spare	4/30/2010	10/23/09	LRIP 3-4 CTOL	5/24/2011		12/2/2010
LRIP 2-1 CTOL	5/28/2010	10/23/09	LRIP 3-5 STOVL		7/5/2011	1/3/2011
LRIP 2-2 CTOL	6/30/2010	11/16/09	LRIP 3-6 STOVL		7/21/2011	1/17/2011
LRIP 2-3 CTOL	7/31/2010	12/16/09	LRIP 3-7 CTOL		6/12/2011	12/3/2010
LRIP 2-4 CTOL	9/3/2010	1/16/2010	LRIP 3-8 STOVL		8/7/2011	2/14/2011
LRIP 2-5 CTOL	9/25/2010	2/19/2010	LRIP 3-9 CTOL Spare		6/15/2011	*
LRIP 2-6 CTOL	9/27/2010	3/18/2010	LRIP 3-10 CTOL		6/28/2011	3/7/2011
LRIP 2-7 CTOL (Spare)	2/2/2011	*	LRIP 3-11 CTOL		7/15/2011	3/21/2011
LRIP 2-9 STOVL	12/3/2010	4/16/2010	LRIP 3-12 STOVL		8/21/2011	4/4/2011
LRIP 2-8 CTOL (Modules)	2/7/2011	*	LRIP 3-13 CTOL		8/15/2011	4/15/2011
LRIP 2-10 STOVL	12/27/2010	5/7/2010	LRIP 3-14 STOVL		9/7/2011	4/29/2011
LRIP 2-11 STOVL	2/9/2011	2/4/2011	LRIP 3-15 STOVL		9/21/2011	6/13/2011
LRIP 2-14 STOVL	2/22/2011	2/21/2011	LRIP 3-16 CTOL		9/15/2011	5/20/2011
LRIP 2-12 STOVL	3/2/2011	3/2/2011	LRIP 3-17 STOVL		10/21/2011	7/26/2011
LRIP 2-13 STOVL	3/23/2011	3/15/2011	LRIP 3-18 CTOL		10/7/2011	7/5/2011
LRIP 2-15 STOVL (Spare)	3/31/2011	*	LRIP 3-19 CTOL Spare		10/15/2011	*
LRIP 2-16 STOVL (Modules)	4/19/2011	*	LRIP 3-20 STOVL UK Spare		11/7/2011	*
			LRIP 3-21 STOVL Modules		11/15/2011	*

\* -- Unit broken down into modules for spares, no contract date

CHARRTS No.: SHSGACFEDMGMTGOVT-01-009

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #9

Joint Strike Fighter Engine Program

Question: What measures have you taken to ensure that Pratt & Whitney's record of cost overruns will not continue through the 30-year life of this program?

Answer: The 2010 Technical Baseline Review (TBR) was a thorough bottom-up review of the System Development and Demonstration (SDD) program – aircraft and engine. The TBR provides the Department with the most realistic basis for managing the completion of the development and test phase since program inception. The estimate to complete development and testing for the F-35 and F-135 is based on realistic assumptions and adequate risk. On the production side, the Department is transitioning to fixed-price contracts for hardware for the F-35 air vehicle and the F-135 engine earlier than originally planned (Low-Rate Initial Production 4). The Government and contractor are pursuing various cost reduction initiatives, recommended by the F-135 Joint Assessment Team, to control and reduce manufacturing costs for the F-135. One important cost improvement measure is the Component Improvement Program (CIP). CIP is considered a critical aspect to managing and controlling long-term operations and support costs for all Department engine programs. CIP funding has been removed by Congress in the last few budget submissions (President's Budget (PB) FY 2010 and PB FY 2011). The Department included CIP funding in the FY 2012 PB request and would urge that Congress supports the PB for this important cost control investment.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-010

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #10

Joint Strike Fighter Engine Program

Question: What is the history of Nunn-McCurdy breaches in the F-135 engine program? Please describe in detail (a) the nature and extent of each breach the program has experienced; (b) the reasons given by Pratt & Whitney for each breach; (c) the measures the Defense Department has taken in response to each breach; (d) any modification to the F-135 program in response to each breach; and (e) the Secretary of Defense's justifications for continuing the program. Please also provide the Subcommittee with copies of correspondence between the Defense Department and Pratt & Whitney concerning the breach.

Answer: There have been no Nunn-McCurdy breaches for the F-135 engine program. The F-135 has not been a separate program, but rather, a part of the overall F-35 program. Historically, this is consistent with most, if not all, major aircraft development and production programs. The F-35 Joint Strike Fighter (JSF) program experienced a Nunn-McCurdy critical cost breach last year. The Secretary of the Air Force notified Congress on March 25, 2010, that the F-35 program acquisition unit cost (PAUC) and average per unit cost (APUC) had breached the critical cost growth threshold. The Under Secretary of Defense for Acquisition, Technology and Logistics certified the F-35 program on June 2, 2010. The F-135 engine was not a separate program but part of the propulsion system of the overall F-35 program. Section 802 of the FY 2011 National Defense Authorization Act directed the Secretary to designate the F-35 JSF engine development and production as a major subprogram of the overall F-35 program. That designation will become effective following the upcoming Milestone B Defense Acquisition Board review. The FY 2011 Selected Acquisition Report will consist of an engine subprogram, air system subprogram, and an overall F-35 program. Subprogram Acquisition Program Baselines will be approved as well.

Sub-questions (a) – (e) are not applicable.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-011

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #11

Joint Strike Fighter Engine Program

Question: One solution to the problem of cost overruns is structuring the contracting process to require contractors to assume some or all of the risk of overly optimistic cost estimates. The cost-plus method is clearly not well-suited to that purpose. In what circumstances should the Defense Department be soliciting fixed-priced offers, rather than cost-plus bids, to shift the risk of overruns from the American taxpayer to the contractor?

Answer: The Department seeks to structure contracts for its weapon systems by negotiating contract types that place only a reasonable degree of risk on the contractor with incentives to drive efficient and economical contract performance. Generally, the government assumes the risk of significant uncertainties in accurately forecasting the labor and material required to perform these contracts. Fixed-price incentive (firm target) (FPIF) contracts are particularly appropriate once a program has moved into the phases of production when there is a moderate degree of uncertainty in the labor or material required to perform the contract. FPIF contracts contain ceiling prices that are negotiated to cover the most probable risks unique to a given program and a profit-sharing formula to motivate the contractor to control costs and meet other objectives. The ceiling price establishes the government's maximum liability. The Air Force tanker program provides an example of a case in which fixed price development is appropriate. In this case requirements were very firm, the technology risk was low, the bidders were experienced in the type of work intended, they had the financial ability to absorb any overruns, and a strong business case to do so if necessary.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-012

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #12

Joint Tactical Radio System Program

Question: According to a recent GAO report, the Joint Tactical Radio System (JTRS) program is categorized as "critical" in terms of suffering a Nunn McCurdy Breach if the research and development (R&D) costs were taken into consideration. Can you please outline the reasons for the continued funding of R&D for the Handheld Manpack and Small Form Fit (HMS) program?

Answer: The Joint Tactical Radio System (JTRS) program is not a single acquisition program. Specifically, JTRS is composed of five separate ACAT I programs: Ground Mobile Radio (GMR); Handheld, Manpack, Small Form Fit (HMS); Airborne and Maritime Fixed (AMF); Multifunctional Information Distribution System JTRS (MIDS-J); and Network Enterprise Domain (NED). Each acquisition program has an Acquisition Program Baseline (APB) and its own Nunn-McCurdy criteria for breach. The breach criteria require the inclusion of research and development cost in the calculation of the total Program Acquisition Unit Cost (PAUC). This metric is separately tracked for each acquisition program in addition to the production cost (APUC). The JTRS program was restructured in March 2006 following a contract "show cause" issued to Boeing (GMR) from the Army Acquisition Executive for poor performance as evidenced in the May 2005 GMR demonstration at Fort Huachuca. A reduced set of requirements was approved in March 2006. In addition, all five JTRS programs were directed to implement evolutionary acquisition strategies. Currently, the NED, MIDS-J, and AMF programs are not close to critical cost breach levels.

Congress was notified of a critical cost breach for the GMR program on May 16, 2011. The breach was declared based primarily on significant reductions to baseline production quantities, which increased both the APUC and PAUC.

The HMS program has experienced cost growth due to changes in both the number and type of radios that are scheduled for production, contract changes for additional capabilities, and unplanned contract cost growth. In particular, the number of manpack radios has significantly increased while the number of embedded small form factor radios has decreased. Since the PAUC and APUC metrics do not differentiate, this change in the distribution of the variants has caused an increase in PAUC and APUC. Based on the FY 2012 Presidential Budget submission, the HMS Program is not in a Nunn McCurdy breach. The HMS rifleman radio has been approved for low rate production. The HMS man pack radio has been approved for low rate production, but only in very limited quantities to support testing and urgent operational need. The small form factor radios are being considered for production with the platforms they are embedded in.

Remaining research, development, testing and evaluation funding for HMS is allocated primarily

to testing and evaluation and completion of added scope enhancements requested by the Department. The HMS program of record is the only family of radios that fully meets current Joint Requirements Oversight Council validated tactical radio requirements, and developmental and operational testing results to date for the handheld variant of the radio has been very positive. The manpack variant is not as mature, however test hardware results indicate it is maturing acceptably and this radio is the lead platform for the development of the Mobile User Objective System (MUOS) waveform. The significant user demand for HMS variants, testing results, and maturing hardware, when coupled with the critical linkage as the lead terminal for the MUOS narrowband Satellite Communication system, warrant continued funding and support for the HMS program.

CHARTS No.: SHSGACFEDMGMTGOVT-01-013

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #13

Joint Tactical Radio System Program

Question: The recent JTRS Acquisition Defense Memorandum (ADM) (January 2011) calls for the Army to submit a plan for competition in the JTRS production programs by February 1, 2011. Has the Army submitted such a plan? Has the Army complied with any of the reporting requirements in the JTRS ADM. If so, can you please provide the Subcommittee with the reports requested?

Answer: The January 2011 Joint Tactical Radio System (JTRS) ADM listed three actions for the Army. Details are provided below. To date, none of the actions have resulted in formal responses or reports, however the intent of the actions is being accomplished.

Action 1: The Army and Office of the Assistant Secretary of Defense for Networks & Information Integration were directed to commission and co-lead an Independent Assessment of the Network Enterprise Domain (NED). The assessment was directed to examine the Wideband Networking Waveform (WNW) and the Joint WNW Network Manager (JWNM) first (by January 31, 2011), followed by a full assessment of the NED (by March 15, 2011). Later direction modified the assessment to a single Army lead. Concurrently, the Army began preparations for significant leadership changes to the JTRS Joint Program Executive Office (JPEO) and requested a delay to this assessment. The leadership changes, including the replacement of the JPEO, were made effective March 6, 2011. The Army immediately kicked off a Tiger Team consisting of a mix of internal and external stakeholders and subject matter experts to evaluate JTRS programs and develop strategy options for the new JPEO. This team has written draft findings and recently began staffing and coordinating their results. The NED assessment will follow the completion of the Tiger Team effort and is now expected to complete in July, 2011.

Action 2: The Army was directed to deliver a plan to "introduce competition into the JTRS production programs at the earliest opportunity" by February 1, 2011. The Army has not submitted a written response to this action. However, documentation supporting the recent Handheld Manpack Small Form Fit (HMS) program Milestone C review included early competition as a key element of the acquisition strategy and a critical watch item. The JPEO is currently evaluating options to introduce competition for the GMR radio.

Action 3: The Army was directed to deliver a list "outlining those work efforts (core requirements) that will continue and those that will be deferred" by February 1, 2011. The Army has not submitted a list at this time. However, the Army instituted significant leadership changes to the JTRS JPEO effective March 6, 2011. The new leadership team made significant organizational and personnel changes immediately and has redirected the JPEO's efforts toward critical path tasks.



CHARRTS No.: SHSGACFEDMGMTGOVT-01-014

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #14

Joint Tactical Radio System Program

Question: We understand that there are commercially developed tactical radios that could meet many of the requirements of the Ground Mobile Radio (GMR) program and Handheld Manpack Small Form Fit (HMS) program. What is Office of the Secretary of Defense (OSD) doing to ensure that commercially developed products are integrated into the program in FY2012.

Answer: The availability and viability of commercially developed alternative radios varies by Joint Tactical Radio System (JTRS) family and the Department is working to introduce additional competition for these products. For the HMS program handheld and manpack products, there are current commercial radio products that can meet many, but not all, requirements. For the handheld and manpack products, the currently available products may not meet size, weight, and battery life requirements; may not have been operationally tested with the Soldier Radio Waveform (SRW); and/or may not have completed National Security Agency Security Certification. Specifically for the manpack products, currently available products may not meet the two channel requirements and/or the requirement to accommodate the Mobile User Objective System waveform. However, the Army and the Department of Defense are committed to encouraging competition for tactical radios and are planning specific testing events in the summer and fall of 2012 (and thereafter on a recurring basis) that will provide the opportunity to evaluate competing commercial products in an operational environment. For the GMR, multiple vendors have submitted that they can provide systems that meet many, but not all of the GMR requirements. In particular, power amplifier size, channel count, and form factor are key requirements that must be relaxed in some combination for the vendor solutions to be viable. In addition, several of the vendor solutions would require additional RDT&E funding prior to successful production. A Nunn-McCurdy Review of the GMR program has been directed by USD(AT&L) in response to the Critical Cost Breach declared on May 16, 2011. The Review will include a detailed assessment of commercially developed tactical radios as alternatives to the Program of Record.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-015

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #15

Joint Tactical Radio System Program

Question: Recently, the Army staff informed the House Armed Services Committee that Defense Department is reviewing the Army's Network Strategy to ensure that the Army's acquisition strategy supports the needs of the war fighters and the fielding of the Brigade Combat Team Tactical (BCT) Network. Would you please detail the essence of your evolving acquisition strategy, the timelines, and how you are proposing to align these with the Army's needs in Afghanistan and the BCT modernization schedule?

Answer: In the last Early Infantry Brigade Combat Team Acquisition Decision Memorandum, the Army was directed to deliver a Network Strategy and Architecture by March 31, 2011, and brief key stakeholders by April 15, 2011. The Army completed these actions on time. The Network Strategy is still being matured as it works through the Department. However, the key element of the strategy is to move from a philosophy centered around large scale acquisition programs that field over time to a strategy focused on a Capability Set approach where the brigades that are in Reset for a given period are outfitted with an integrated set of communications, networking, and command and control applications. While current planning expects major acquisitions to field to the entire Army on independent schedules, the new approach allows the precise makeup of the integrated set of capabilities to change from one 2-year block to the next. The Army Network Strategy contains a streamlined end-to-end process for establishing requirements, evaluating new products, and completing operational test events. Aligning to the Army's needs in Afghanistan and the BCT modernization schedule are the most critical motivations for the current change.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-016

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Brown, Senator Portman

Witness: Honorable Kendall, III

Question: #16

Joint Tactical Radio System Program

Question: When the JTRS Cluster 5 (now HMS) was awarded in 2004 for \$295 million, the original contract was to be completed in 2011 at a total cost of \$1.1 billion if all options were executed. We see that the Army is requesting approximately \$260 million in continued RDT&E for JTRS HMS development between FY11 and FY12. Can you describe in detail the total Research Development Testing & Evaluation (RDTE) expenditure to date, what change in scope to the original requirements, and the cost to complete development will be based on the Army request for additional funding?

Answer: The HMS program will have expended \$904 million in RDT&E through the end of FY 2011. Expenditures to date include the development of the Handheld Manpack Small Form Fit (HMS) system (hardware, software, waveform porting, and contractor testing), Government Program Office and Government Testing costs. The total development effort through FY 2016 is approximately \$1.2 billion. The program's current contract base value is \$627 million (negotiated cost plus fee – C/CPAF) with the contractor's estimate at completion (EAC) of \$758 million, which also includes the contract base and award fees. Not reflected in the contract estimates is approximately \$186 million of additional content, which was partially requested in FY 2012 President's Budget.

Changes in the RDT&E costs reflect additional in-scope work modifications and management adjustments.

Major capability enhancements to Increment 1 from what was originally required currently include: development of the Mobile User Objective System (MUOS) terminal, supporting software changes and waveform integration; development of Small Form Factor (SFF) K (a training system for the Navy and Air Force); modifications to the Rifleman Radio (to address primarily power, range, and battery life issues discovered during the Limited User Test); and integration of Soldier Radio Waveform and Bowman Waveform. Additional enhancements requested as part of FY 2012 President's Budget include: engineering changes to SFF B (due to changes in technical requirements from the Nett Warrior program, the SFF B host platform); integration of HMS onto unmanned aircraft (following 2010 Army decision that it was critical to have HMS on an air platform); integration of additional UHF/VHF line of sight waveforms; Air Traffic Control; and over the air transfer and zeroization (originally objective Operational Requirements Document requirements added due to Warfighter demands for critical capabilities).

In addition to added capability enhancements, the Program Manager has directed several adjustments to the program based on Warfighter priorities and technical challenges, which

impacted schedule and costs. The introduction of Future Combat System and Increment 1 Spin Outs drove early changes to the program priorities and scheduled events. Additionally, technical challenges due to concurrent development of hardware, operating environment, and waveforms, as well as subsequent integration of waveforms into the radios adversely impacted the overall schedule and increased cost. Finally, with each delay and additional enhancement, the program's schedule was extended which increased program management and testing costs.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-017

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Honorable Kendall, III

Question: #17

Number of Program Managers

Question: How many of the program managers work for you in your role at OSD? Or work for Dr. Ash Carter?

Answer: All program managers are assigned by and report to their respective Component Acquisition Executives or designees, depending on the program level. There is one exception – the PM for Chemical Demilitarization-Assembled Chemical Weapons Alternatives (Chem Demil-ACWA). Although assigned and rated by the Army Acquisition Executive, the PM Chem Demil ACWA reports directly to the Under Secretary of Defense for Acquisition, Technology and Logistics. As Defense Acquisition Executive, the Under Secretary of Defense for Acquisition, Technology and Logistics has authority over the entire defense acquisition system.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-018

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Honorable Kendall, III

Question: #18

Enforcing Reforms

Question: How do you enforce the types of reforms (reducing requirements creep, etc) we are talking about when the program managers do not report to Dr. Carter and instead work for the individual military services?

Answer: As Defense Acquisition Executive, the Under Secretary of Defense for Acquisition, Technology and Logistics has authority over the entire defense acquisition system. Since early last year, Dr. Carter has been working through the Component Acquisition Executives (CAEs) who report to him to craft and implement a series of initiatives geared toward gaining greater efficiencies and productivity. On September 14, 2010, he issued a memorandum for acquisition professionals: "Better Buying Power (BBP): Guidance for Obtaining Greater Efficiency and Productivity in Defense Spending." He provided additional guidance with an implementation memorandum for the CAEs on November 3, 2010. These memorandums establish a framework for the enterprise to institutionalize the BBP reforms.

For example, the BBP memorandum mandates treating affordability as a requirement. This means conducting a program at a cost constrained by the resources that the Department can allocate for that specific capability. An affordability target is set at the beginning of a new program, typically at Milestone A. At Milestone B, when a system's detailed design has begun, a systems engineering tradeoff analysis must be presented that shows how cost varies as the major design parameters and time to complete are varied. This analysis will allow decisions to be made about how the system could be made less expensively without the loss of important capability and forms the basis for an "affordability requirement" that will be documented in the Acquisition Decision Memorandum. The CAEs must also adhere to the same process at their level of approval. This process will improve the Department's ability to understand and control costs from the beginning of a program.

With regard to reducing "requirements creep" for ongoing programs, Dr. Carter, the Under Secretary of Defense for Acquisition, Technology and Logistics, has also mandated greater use of Configuration Steering Boards (CSBs) to address requirements instability. CSBs conducted by the Components review all proposed requirements changes and any proposed significant technical configuration changes which could potentially impact cost and schedule for a Major Defense Acquisition Program. Changes may not be approved unless funds are identified and schedule impacts mitigated. CSBs also create a collaborative forum for Program Managers to propose and describe reductions in requirements, which can significantly lower cost without substantially reducing capability.

These are just two examples of many where reform is effectively enforced in the acquisition process.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-019

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Honorable Kendall, III

Question: #19

Weapon System Acquisition Reform Act (PL 111-23)

Question: In your testimony you stated that the Department of Defense is complying with the key principles of the Weapon System Acquisition Reform Act (PL 111-23). Those principles included increased competition and testing. Why did DOD allow the Navy to push for a change in its acquisition strategy for the Littoral Combat Ship that removed the very competition the bill called for?

Answer: The Department of Defense (DoD) remains committed to competitive acquisition. The decision to award to both competitors in the case of Littoral Combat Ship (LCS) did not remove competition in the LCS program. In fact, the strategy preserves future opportunities for competition in the program. With LCS, the Navy exploited a unique opportunity to leverage the efficiencies of two mature and stable designs at two hot production lines to increase production rates, maximize buying power, and meet its urgent operational requirements sooner. The Department reaped the benefits of an extremely intense LCS competition in FY 2010. The Navy's downselect approach for LCS proved a powerful competitive force. It succeeded in delivering positive industry responses, which resulted in significant savings for the Department. The agility, innovation, and willingness to seize opportunities displayed in this LCS competition are exactly the types of things the Department must do to deliver better value to the taxpayer and improve the way the Department does business.

The Department has multiple competitive opportunities for acquiring the remaining ships. The FY 2010 – FY 2015 dual block-buy approach taken ensures maximum competition throughout the lifecycle of the program, meeting the spirit and intent of the Weapon Systems Acquisition Reform Act of 2009, including compliance with the competitive prototyping requirement. The Department envisions two shipbuilders in continuous competition building the remainder of the LCS seaframes. Further, because the contractors will deliver technical data packages to the Navy, additional opportunities for future competition, either at the prime or subcontract level, are available.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-020

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Honorable Kendall, III

Question: #20

Operational Testing

Question: Has operational testing been completed on the Littoral Combat Ship? Why not?

Answer: Operational testing for the Littoral Combat Ship (LCS) is not completed. Initial operational testing for the seaframe and Surface Warfare (SUW) Mission Package (MP) is planned to start with LCS 1 in early FY 2013, following pre-planned seaframe Developmental Testing (DT), final contract trials, fleet operational periods, maintenance availabilities, and DT with the Mine Countermeasures (MCM) MP and the SUW MP. The schedule for LCS 1 allowed for early deployment of LCS 1 in FY 2010, during which valuable operational experience was gained with the ship and its crews. Initial operational testing for the MCM MP is planned to start with LCS 2 in the first half of FY 2013. LCS 2 will conduct post-delivery maintenance, seaframe DT, final contract trials, and DT with the MCM MP prior to the start of MCM MP operational testing. Initial operational testing with the Anti-Submarine Warfare MP and follow-on operational testing with incremental improvements to the MCM and SUW MPs is planned from FY 2013 and beyond as new capabilities are introduced.



CHARRTS No.: SHSGACFEDMGMTGOVT-01-021

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Honorable Kendall, III

Question: #21

Operational Testing

Question: Why will the Department of Defense purchase hundreds of Joint Strike Fighters before operational testing is complete?

Answer: The Joint Strike Fighters (JSF) program does have substantial concurrency of development, test and production built into the JSF schedule, a fact that the Department acknowledges. That concurrency is designed to provide the Warfighters with a 5<sup>th</sup> generation strike fighter to replace aging legacy aircraft as quickly, efficiently, and affordably as possible. The Department acknowledges the risks and benefits of procuring aircraft prior to the completion of operational testing. As part of the Technical Baseline Review and the Secretary of Defense's subsequent review of the program in formulating the President's Budget for Fiscal Year 2012, the Department has adjusted the procurement profile and reduced concurrency to mitigate the risk while still maintaining a production ramp sufficient to allow the manufacturing processes to mature.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-022

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Honorable Kendall, III

Question: #22

Cost and Data Information

Question: Do current contracts with major defense contractors require that they provide cost and data information to the government? Which programs in particular do not provide this information? Why not?

Answer: The Truth in Negotiations Act (TINA), codified for the Department of Defense (DoD) at 10 USC 2306a, requires contractors to provide cost or pricing data that is certified to be current, accurate, and complete in support of negotiation of contract prices. There are exceptions to requirements for certified data: adequate price competition, prices set by law or regulation, commercial items, and exceptional cases. In all cases, however, the contracting officer must make a determination that the price is fair and reasonable and, in support of that determination, the contracting officer may require uncertified data and other information be submitted by the contractor.

Certified cost or pricing data is generally required where the negotiations are based on cost projections. By law, it is normally obtained for non-commercial procurements valued over \$700,000 that are available from only one source. The procedures and requirements for obtaining certified data are described in detail in Federal Acquisition Regulation Part 15 and Defense Federal Acquisition Regulation Supplement Part 215.

Certified data is not required for fixed prices contracts resulting from competitive procurements if there is adequate competition. Competition helps ensure that the contractor proposes its lowest price in order to win the competition; the marketplace controls the fixed price. Likewise, commercial items are considered to have prices set in the competitive marketplace. Similarly, prices set by law or regulation would not benefit from submission of data since it could have no impact on the price. Exceptional case waivers of certified data submission cover a wide variety of situations, but often involve critically needed products that are only available from one source that primarily does commercial business and is not willing to share cost data with the Government.

Annually, as required by section 817 of Public Law 107-314, the Department submits a report to Congress on Exceptions and Waivers Relating Submissions of Certified Cost or Pricing Data under TINA and Cost Accounting Standards.

The FY 2010 report was sent on May 15, 2011, to the Senate Committees on Armed Services and Appropriations and the House of Representatives Committees on Armed Services and Appropriations.

The law requires the Department to report commercial item exceptions and waivers to the TINA requirements for submission of certified cost or pricing data valued at \$15 million or more, and waivers of applicability of Cost Accounting Standards that are valued at \$15 million or more.

In the Department's latest report, there were 30 commercial item exceptions totaling \$5.4 billion; and 2 exceptional case waivers totaling \$99.1 million to the requirement for the submission of certified cost or pricing data under TINA.

Uncertified data can be requested by contracting officers, but both TINA and the implementing regulations in the Federal Acquisition Regulation and Defense Federal Acquisition Regulation Supplement require that such submissions be required judiciously. Unnecessary submissions of data increase the costs and discourage new contractors from entering into Government contracting. Contracting officers are encouraged to use information available in Government records and publically available information to the extent possible to support the determination of a fair and reasonable price. If, however, the contracting officer concludes that uncertified cost or price data from the contractor is required to make a determination of fair and reasonable price, the authority to request the data is available.

In summary, Government policy and the underlying statutes require the contracting officer to gather sufficient data to determine that prices for contracts are fair and reasonable. In some cases, the data must be certified by the contractor to be accurate, current, and complete as of the date of agreement on price.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-023

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Honorable Kendall, III

Question: #23

Acquisition Workforce

Question: How has the Department of Defense acquisition workforce improved over the last two years given the massive increase in resources that Congress has provided for their professional development?

Answer: The defense acquisition workforce has improved through added workforce capacity and resources to improve development and quality. In April 2009, the DoD began a major effort to restore acquisition workforce capacity by restoring its size to above 1998 levels. As part of the DoD initiative to add new capacity, 8,600 civilian positions have been filled consistent with a hiring strategy to build both the entry-level and journeymen workforce. The targeted growth strategy has resulted in strengthened in-house systems engineering, program management, contracting, cost estimating, test, and contract pricing capacity and capability. In addition, the Department has increased capacity of the Defense Contract Management Agency and Defense Contract Audit Agency. We have also improved our workforce by increasing opportunities for leadership and professional development, increasing acquisition training capacity, expanding training for requirements and contingency personnel, conducting competency assessments, and developing new career path tools.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-029

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: PDUUSD(AT&amp;L) Kendall III

Question: #29

Question: GAO sent this subcommittee a letter analyzing Nunn-McCurdy breaches from 1997 to 2009. It showed that 16 different defense companies have had more than one of their weapon systems breach Nunn-McCurdy. More than half of the weapon systems that breached Nunn-McCurdy are built by two defense companies. One company had 18 different weapon systems breach Nunn-McCurdy 18 times in 12 years. Why does DOD keep contracting with companies whose weapon systems consistently experience serious cost overruns? How does a company's record of Nunn-McCurdy breaches factor into the awarding of new contracts? If I'm a defense company with a record of Nunn-McCurdy breaches, does my product get rated lower in a bidding competition than a company with the exact same proposal, but no history of Nunn-McCurdy breaches? Please provide specifics.

Answer: The evaluation of past performance is conducted for all competitive acquisitions in accordance with the Federal Acquisition Regulation 15.305. The past performance evaluation considers each offeror's demonstrated recent and relevant record of performance in supplying products and services that meet the contract's requirements.

However, there is no specific requirement to identify Nunn-McCurdy breaches in the Department's Contractor Performance Assessment Reporting System (CPARS). CPARS Policy provides instructions for completing a contractor performance assessment report. One element to evaluate is cost control (not applicable for firm-fixed price or firm-fixed price with economic price adjustment) where an assessment of the contractor's effectiveness in forecasting, managing, and controlling contract cost is required. The assessing official may be a program manager or the equivalent individual responsible for a program. The assessment considers whether the contractor is experiencing cost growth or underrun, identifies causes, and considers contractor-proposed solutions for the cost overruns. Another consideration is the extent to which the contractor demonstrates a sense of cost responsibility through the efficient use of resources in each work effort assessed.

Cost control, along with technical (quality of product) product performance, systems engineering, software engineering, logistic support/sustainment, product assurance, other technical performance and schedule factors must be considered when determining the evaluation rating for a contractor's performance.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-031

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: PDUSD(AT&amp;L) Kendall III

Question: #31

Question: What happens when a weapon system breaches Nunn-McCurdy more than once? GAO's report shows that 18 of the 47 programs to trigger a Nunn McCurdy breach from 1997-2009 have breached more than once. According to GAO, there were 8 programs that breached Nunn McCurdy 3 or more times, including the \$13 billion dollar Global Hawk program and the \$284 billion dollar F-35/Joint Strike Fighter program. Why aren't these cost problems fixed on the first or second times they are breached?

Answer: The Nunn-McCurdy statute establishes two levels of breaches, significant and critical, each with its own statutory reporting requirements, and the GAO report was not clear enough in these distinctions. The thresholds for a significant breach are lower than those for a critical breach. Therefore, many of the repeat breaches are sequential, where programs first breach the significant threshold and later breach the critical threshold. No DoD program has had three critical breaches. In the case of the lower significant breach, the Joint Staff has established it as a trigger for a review of the program and potential consideration of requirement adjustment. The statutory requirements for a critical breach are extensive, and they involve individuals from the program office to the Office of the Secretary of Defense. The Department undergoes an extensive evaluation of alternatives and options as part of the critical breach certification and frequently restructures the programs to address underlying issues and achieve an executable affordable program.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-032

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: PDUUSD(AT&amp;L) Kendall III

Question: #32

Question: GAO's letter to this subcommittee shows that if you narrowed Nunn-McCurdy's scope so that cost increases of 15 percent or more in just a program's R&D budget could trigger a breach, then 9 programs that haven't breached Nunn-McCurdy would do so under this new definition. Some of these programs are still in development-such as the CH-53K helicopter. Do you monitor R&D cost growth? If you find any programs with high R&D cost growth, do you put them in any sort of "high risk" category? Are any of the programs listed in GAO's letter on your "high risk" watch list? Are you confident that the CH-53K program won't trigger Nunn-McCurdy?

Answer: We closely monitor R&D cost growth, and this parameter is included as part of a program's baseline with thresholds that require notification through the acquisition chain of command. We monitor all programs for these types of issues, and I personally review programs not less than monthly with program managers, Program Executive Officers, and the Service Acquisition Executives. The CH-53K program is among those we are watching closely.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-034

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: PDUSD(AT&L) Kendall III

Question: #34

Question: What improvements are you trying to make to the Pentagon's internal Defense Acquisition Executive Summary process to better utilize this long-standing quarterly review that is intended to flag problems?

Answer: We have expanded the breadth and depth of coverage for this process. Each program submits a status report with objective performance data not less than quarterly. I reinstated independent staff reviews by various elements of the OSD staff, to include areas such as testing, funding, and contracting. I personally chair an in-depth review, monthly, of programs of interest. I do this with the full participation of the program managers, program executive officers, service acquisition staff, and key OSD staff organizations such as Systems Engineering, Performance Assessment and Root Cause Analysis, and Developmental Testing. Action items are actually tracked and monitored to ensure proper follow-through on any issues identified. In several cases, I have directed separate independent deep dives on specific aspects of programs to address or better understand key issues to help programs succeed.



CHARRTS No.: SHSGACFEDMGMTGOVT-01-035

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: PDUSD(AT&L) Kendall III

Question: #35

Question: Can you give the subcommittee a copy of the January and February DAES agenda's so it can get a feel for the types of programs and problems that are reviewed?

Answer: The January 2011 and February 2011 agendas are below.

**January DAES Agenda:**

Opening Remarks

Data Assessment Summary

Program Briefings:

JTRS HMS & Schedule Delay

Assessment

JSOW

AMRAAM

WGS

Action Items (Group B)

Closing Remarks

**February DAES Agenda:**

Opening Remarks

Data Assessment Summary

Program Briefings:

V-22

P-8A

CH-53K and CVN 78 Issues

Nunn-McCurdy Action Item Status

Action Items (Group C)

Closing Remarks

CHARTS No.: SHSGACFEDMGMTGOVT-01-036  
Hearing Date: March 29, 2011  
Committee: SHSGACFEDMGMTGOVT  
Member: Senator Carper  
Witness: PDUSD(AT&L) Kendall III  
Question: #36

Question: On page 3 of your prepared statement you mentioned that PARCA actively monitors programs and has completed 13 root cause analyses, etc. Please provide the subcommittee with copies of all 13 reviews and examples of how these 'lessons learned' are reshaping major programs.

Answer: We have worked to be more proactive in identifying the root causes of cost and schedule growth so that we focus our solutions on underlying and fundamental issues. We have started initiating "Nunn-McCurdy-like" activities on programs with a significant possibility of having a critical Nunn-McCurdy breach in the future. PARCA has also begun completing a draft analysis early in the Nunn-McCurdy certification process to better inform the deliberations of the Integrated Product Teams.

One example of this was the Global Hawk program. PARCA concluded that nearly half of the total cost growth was the combination of a program structure that permitted known requirements and development activities to be deferred and budgetary pressures that motivated these deferrals. To clarify the requirements, the Department decided to break the program into subprograms.

Additional examples of using PARCA's results to reshape major programs include the Remote Minehunting System (RMS) and the F-35. In the case of RMS, PARCA concluded that a significant issue was that the program failed to deal effectively with RMS reliability issues apparent since 2005. The program's execution roadmap now includes a very strong emphasis on reliability issues, including both impressive work within the program and the solicitation of technical assistance from outside. With the F-35, PARCA concluded that there was a general reluctance to accept unfavorable information that slowed down the ability of the contractor and government to recognize and respond to problems. Now, the F-35 program has a much more aggressive approach to recognizing various challenges.

A key element has been PARCA's statutorily required semi-annual assessments of programs after a critical Nunn-McCurdy breach. These assessments have highlighted program progress in addressing the fundamental issues that cause the cost growth prior to the breach.

(Enclosure: non-discretionary Root Cause Analysis reports)

CHARRTS No.: SHSGACFEDMGMTGOVT-01-037

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: PDUUSD(AT&L) Kendall III

Question: #37

Question: On page 4 mentions the Department expects to declare a new Nunn-McCurdy breach 'shortly.' Please provide the subcommittee with details on this breach including program and dollar amount.

Answer: On May 13, 2011, the Secretary of the Army notified Congress that the Joint Tactical Radio System Ground Mobile Radio had exceeded the Nunn-McCurdy critical unit cost thresholds, due primarily to an 88 percent reduction in the Army Acquisition Objective quantities from 86,209 to 10,293. As a result, the program acquisition unit cost and average procurement unit cost have increased 92 percent and 23 percent, respectively (in FY 2002 base-year dollars).

CHARRTS No.: SHSGACFEDMGMTGOVT-01-038

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: PDUSD(AT&amp;L) Kendall III

Question: #38

Question: Please provide a list of all 'Nunn-McCurdy'-like reviews you have convened, to including program, reasons for the review, cost trend that precipitated the review and timeline when completion. The subcommittee is familiar with the Global Hawk review. Please provide a copy of the final report on this Nunn-McCurdy-like review and assessment of what impact the review had on the program.

Answer: To date, the Department has conducted Nunn-McCurdy-like reviews for three programs: Advanced Threat Infrared Countermeasure/Common Missile Warning System, E-2D Advanced Hawkeye, and Global Hawk (RQ-4 A/B). The Nunn-McCurdy-like reviews for these programs preceded an actual review and certification required under the law. Starting the Nunn-McCurdy-like reviews prior to the official breach determination and notification to Congress provides the Department with additional time to complete the more lengthy components of the process, such as identification and costing of alternatives to the program of record. Since the Nunn-McCurdy-like reviews preceded the actual Nunn-McCurdy reviews, the certification packages for those programs were the final reports for the reviews.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-039  
Hearing Date: March 29, 2011  
Committee: SHSGACFEDMGMTGOVT  
Member: Senator Carper  
Witness: PDUUSD(AT&L) Kendall III  
Question: #39

Question: You mentioned a goal of tying profit more closely to the production phase of a program instead of it development phase. Please provide more detail -- is a new DFARS revision planned, for example? Please provide some specific program examples.

Answer: We want to incentivize contractors to drive down costs and to achieve improved performance. Our Better Buying Power initiative is end to end. We realize that we must acquire designs that will provide us reasonably priced weapon systems both during production and in sustainment. In Engineering & Manufacturing Development (EMD), we recommend using fixed-price incentive (firm target) or cost-plus-incentive fee contracts as appropriate to drive down costs and improve performance prior to going to full-rate production. As cost and performance goals are realized and programs demonstrate affordability, contractors earn the opportunity for full-rate production contracts where fixed-price contracts are preferred. Small Diameter Bomb II, Ship to Shore Connector, and Joint Air-To-Ground Missile are examples of programs entering EMD with an incentive fee arrangement and have a fixed-price type of contract planned for full-rate production. Revision of the DFARS is not required to achieve good business deals. However, should revisions to the existing profit policy contained in the DFARS be deemed necessary, we would obtain prior public comment.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-040

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: PDUSD(AT&amp;L) Kendall III

Question: #40

Question: Page 9 of your testimony mentions improving past performance by better use of assessment. Please provide additional details on improving the use of CPARS, the compliance tracking tool mentioned and those "initial past performance evaluation on about 50 percent of eligible awards." What were the programs? How was application of past performance different in these cases than in prior competitions?

Answer: The Contractor Performance Assessment Reporting System is the input mechanism for evaluation of a contractor's past performance. The Contractor Performance Assessment Report (CPAR) is written by a government assessing official and is forwarded through the automated system to the contractor point of contact for review/comment and return. If the contractor does not agree with the assessment, the contractor can provide comments. A government reviewing official provides the check-and-balance when there is a disagreement. The signature of the reviewing official finalizes and completes the CPAR, which is then forwarded to the Past Performance Information Retrieval System (PPIRS). At this time, DoD is anticipating strengthening guidance and management controls.

In conjunction with the Office of Management and Budget, the PPIRS program management office has established a method to determine compliance metrics, which is available on PPIRS for agencies to run reports. The compliance percentage is based upon the number of contracts and orders in the Federal Procurement Data System meeting the thresholds for the DoD against the number of completed performance assessments reports in PPIRS. The calculation does not take into account specific programs, rather the total number of reports completed. Therefore, I cannot identify those programs that made up 'about 50 percent of eligible awards' you referred to.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-024

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Dr. Burke

Question: #24

Auditing

Question: Dr. Burke, are you aware that the Government Accountability Office has found that Department of Defense cannot identify, aggregate, or account for the full cost of military equipment it acquires? (GAO Report 10-695, "Additional Actions Needed to Improve Financial Management of Military Equipment," Government Accountability Office, July 2010).

Answer: Yes, I am aware of these GAO findings contained in Report 10-695. However, the Department has begun laying a foundation to address weaknesses that currently impair our ability to identify, aggregate, and account for the full cost of military equipment assets. The Chief Management Officer is working with the Under Secretary of Defense (Comptroller); the Under Secretary of Defense (Acquisition, Technology, and Logistics); and the military department Chief Management Officers, as appropriate, to define Department-wide cost accounting requirements and develop the process and system capabilities needed to support better cost accounting and management. At the same time, the Department is sensitive to the cost of obtaining information solely for purposes of proprietary financial reporting or audit compliance where this information is not otherwise used by management. As recognized by the GAO, this is consistent with DoD current Financial Improvement/Audit Readiness (FIAR) priorities that focus specifically on "Existence and Completeness" for military equipment.

The Department is in the process of assessing the costs and associated benefits of reporting and auditing property cost information in financial statements and will finalize a business case with the results. The policies that are addressed in this audit report should provide cost-effective management information when future target systems have been implemented, capturing cost information as a byproduct of business processes. DoD agrees with the need to establish a framework that provides improved cost and management information that will support better management of Major Defense Acquisition Programs (MDAPs). The Department is already implementing solutions to address the report's recommendations as stated in our detailed responses.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-025

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Dr. Burke

Question: #25

Auditing

Question: Comment - In some cases the military services cannot yet account (to an auditor's standard) for the mere existence and completeness of its major weapon systems.

Answer: The Department has begun laying a foundation to address weaknesses that currently impair our ability to identify, aggregate, and account for the full cost of military equipment assets. The Chief Management Officer is working with the Under Secretary of Defense (Comptroller); the Under Secretary of Defense (Acquisition, Technology, and Logistics); and the military department Chief Management Officers, as appropriate, to define Department-wide cost accounting requirements and develop the process and system capabilities needed to support better cost accounting and management. At the same time, the Department is sensitive to the cost of obtaining information solely for purposes of proprietary financial reporting or audit compliance where this information is not otherwise used by management. As recognized by the GAO, this is consistent with DoD current Financial Improvement/Audit Readiness (FIAR) priorities that focus specifically on "Existence and Completeness" for military equipment. The Department is in the process of assessing the costs and associated benefits of reporting and auditing property cost information in financial statements and will finalize a business case with the results. The policies that are addressed in this audit report should provide cost-effective management information when future target systems have been implemented, capturing cost information as a byproduct of business processes. DoD agrees with the need to establish a framework that provides improved cost and management information that will support better management of Major Defense Acquisition Programs (MDAPs). The Department is already implementing solutions to address the report's recommendations as stated in our detailed responses.



CHARRTS No.: SHSGACFEDMGMTGOVT-01-026

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Dr. Burke

Question: #26

Cost Estimates

Question: How does CAPE assemble reliable cost estimates for future weapon system costs past weapon system costs cannot be captured?

Answer: The CAPE cost assessment organization relies heavily on data provided from the defense industry on the actual costs of development and production of weapon systems to build cost estimates for ongoing or future weapon system programs. This data is collected systematically from defense industry in Cost and Software Data Reports (CSDRs) submitted electronically to the Defense Cost and Resource Center operated within the CAPE organization. The data is available and is used by all three military departments, and defense agencies, to prepare cost estimates for major weapon system and automated information system programs.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-027

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Dr. Burke

Question: #27

Cost and Data Information

Question: Do current contracts with major defense contractors require that they provide cost and data information to the government? Which programs in particular do not provide this information? Why not?

Answer: Current contracts for major defense programs include provisions that require the submission of Cost and Software Data Reports (CSDRs) and Earned Value Management (EVM) information to the government. There are a number of programs that are not required to provide this type of information in two situations: 1) The requirement to provide CSDRs to government can be waived if the program is subject to competition on a recurring basis and 2) the requirement for CSDR and EVM reporting is not required for programs below specific dollar thresholds.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-028

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Coburn

Witness: Dr. Burke

Question: #28

Cost Data

Question: Is it a requirement on all major weapon systems that the contractor provide cost data to allow for future cost estimation?

Answer: It is required that contractors submit cost data for all Major Defense Acquisition Program (MDAP) and Major Automated Information System (MAIS) contracts which exceed \$50M in value, via the Department's Cost and Software Data Reporting (CSDR) system.

This contractor cost data is also required for MDAP and MAIS contracts between \$20M and \$50M deemed high-risk or high technical interest. Cost data is not required for procurement of commercial systems, or for non-commercial systems bought under competitively awarded, firm fixed-price contracts, as long as competitive conditions continue to exist.

The CSDR contractor cost data collection system is managed by the Defense Cost and Resource Center (DCARC) within the Office of the Director of Cost Assessment and Program Evaluation (CAPE). The data is made available to authorized analysts within the DoD cost estimating community via a secure web-based system.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-030  
Hearing Date: March 29, 2011  
Committee: SHSGACFEDMGMTGOVT  
Member: Senator Carper  
Witness: Dr. Burke  
Question: #30

Question: To what extent does the CAPE estimate get incorporated into the official program estimate and budget request? Let's use the F-35 for an example. Did DOD use the CAPE estimate to set the budget for the F-35? Should DOD be required to budget to the independent estimate?

Answer: CAPE prepares independent cost estimates as statutorily required by U.S. Code Title 10. The independent cost estimate (ICE) is one of several key documents that the milestone decision authority (MDA) considers at critical reviews of major weapon systems acquisitions. The presentation and discussion of cost estimates is often central at milestone reviews and the Director of Cost Assessment and Program Evaluation (D, CAPE) is required to "concur in the choice of a cost estimate within the baseline description..." (Public Law 111-23, May 22, 2009).

While there is no requirement that the MDA fund to the CAPE ICE, the decision of which estimate to use to baseline a program must be reviewed and concurred with by CAPE. For the F-35 program, the Department has most recently funded the program to CAPE estimates because the Department found that these estimates provided the most credible foundation for resourcing the program based on program execution to date. In most cases, the cost estimate used as a basis for the budget and baseline of major acquisition programs is the CAPE ICE or a Component cost estimate with comparable results. The Department should retain the flexibility to budget programs based on a comprehensive review of available information – this does not necessarily mean that the Department should be required to budget specifically to the ICE in all cases as long as the ICE is duly considered and with D, CAPE concurrence for choice of an estimate as noted above.

CHARRTS No.: SHSGACFEDMGMTGOVT-01-033

Hearing Date: March 29, 2011

Committee: SHSGACFEDMGMTGOVT

Member: Senator Carper

Witness: Dr. Burke

Question: #33

Question: The frequency of Nunn-McCurdy breaches from 1997-2009 might suggest that the program managers' and the contractors' cost estimates are unrealistically low. Many analysts believe that cost overruns are derived from overly optimistic cost estimates that facilitate cost increases when their true costs come to bear. Why doesn't DOD just figure out a very conservative cost estimate that allows DOD to over-budget for a program at the beginning of its life? At least then Congress and DOD could make sound decisions about the rest of their budget knowing that they likely wouldn't have to devote more funds to these programs down the line. Has DOD ever considered adding a buffer to all of its cost estimates to account for the inevitability of major cost overruns?

Answer: While it may sound attractive to budget and program "excess" resources for major defense acquisition programs to prevent possible cost growth and the potential need for additional resources from other parts of the budget, in practice it would not be efficient to deliberately program excess resources for a defense acquisition program. The Department has a portfolio of nearly 100 major defense acquisition programs, and we fully expect that some will require additional resources, and some will require fewer resources than implied by the CAPE life-cycle cost estimates for the programs. Using very conservative cost estimates to over-budget for all acquisition programs would be less efficient in use of DoD resources than programming for approximately an equal likelihood that a given program within the portfolio will underrun or overrun the cost estimate. Also, the Department does specifically identify key risks associated with program execution and programs the correct level of resources to cover those key risk areas.



ACQUISITION,  
TECHNOLOGY  
AND LOGISTICS

OFFICE OF THE UNDER SECRETARY OF DEFENSE  
3000 DEFENSE PENTAGON  
WASHINGTON, DC 20301-3000

INFO MEMO

May 18, 2011

FOR: UNDER SECRETARY OF DEFENSE (AT&L)

FROM: GARY R. BLISS, DIRECTOR, PERFORMANCE ASSESSMENTS AND ROOT  
CAUSE ANALYSES (PARCA)

*2/1/11 14 M2 11*

SUBJECT: PARCA Root Cause Analysis for the Assembled Chemical Weapons Alternatives  
(ACWA) Program

- This memorandum summarizes PARCA's root cause analysis of the ACWA program's cost growth which triggered a critical Nunn-McCurdy breach as described in the December 2010 Selected Acquisition Report (SAR). That SAR reported a 39.2 percent increase in program acquisition unit cost (PAUC) as compared with current baseline. The PAUC is defined as the total program cost divided by the tons of chemical munitions destroyed.
  - The SAR attributed the cost growth to design immaturity, escalation in costs and quantities of materials, additional cost to prove out first-of-a-kind equipment (FOAK), and a higher assessment of risk.
  - The current program office estimate for PAUC cost growth has increased to 42.7 percent but this does not affect the identification of root causes. The PAUC growth at the site in Bluegrass, Kentucky (BGCAPP) is 45 percent and the PAUC growth at site in Pueblo, Colorado (PCAPP) is 38 percent (both critical breaches).
- About one-quarter of the cost growth is due to factors exogenous to the program. These factors include expanded use of explosive destruction technology at both sites, moving to 24/7 operations, and compliance with a proposed permit modification to treat by-products.
- The root cause of nearly three-quarters of the cost growth is that the government did not follow adequate acquisition rigor to deal with uncertainty and risk inherent in large construction projects, like ACWA, which develop and use new processes, handle dangerous materials, and are subject to comprehensive regulation.
  - The government did not require a design mature enough to develop an accurate cost estimate before establishing a program baseline. Indeed, at the time that the baseline was established in 2007, the PCAPP design was 60 percent complete and the BGCAPP design was only about 13 percent complete.
  - The government did not adequately plan for uncertainty when establishing the baseline. Historically, cost estimates for this type of work are necessarily uncertain.

- Both commercial and government historical data demonstrate that the cost projections for process plant projects are significantly underestimated. The degree of uncertainty is reflected both in the extent to which costs are underestimated but also in the large variation in that underestimate.
- In addition, based on their historical experience with similar projects, the Department of Energy mandates that designs must be complete before baselines are established and adds 20 percent to the cost of the project for contingencies.
- As both designs matured, costs grew via two mechanisms.
  - The funding to address and manage risk increased. This includes both estimates of risk and risk mitigation strategies such as increased FOAK testing.
  - There was a better appreciation of the complexity. Most notably, estimates for BGCAPP's facility control system, by itself, accounted for about \$200M of cost growth.
- During execution, lack of acquisition rigor continued to affect program performance.
  - Due to the degree of uncertainty, the contract structure necessarily had a short-term focus. However, the contractor was not incentivized to reduce overall program uncertainty and to control the total program cost.
  - An effective adaptation of EVM for a program, where new content was added continually, was never established.
  - The models used to anticipate the consequences of known risks were optimistic which distorted both the view of total project uncertainty and the uncertainty associated with particular risk elements.
  - Various acquisition processes to enforce rigor were not completed e.g. an acquisition strategy was never signed.
- Although designs are now complete, there is still a great deal of uncertainty in the program. Two particular areas of uncertainty are systemization at BGCAPP and achieving the throughput rates in operations. PARCA will work with the program office to identify assessment methodologies and metrics in these areas.

COORDINATION: NONE

cc: PDUSD AT&L

Prepared by: D. Nicholls, PARCA (571) 256-0646 (USA003004-11)

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ACQUISITION

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE  
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MAY 21 2010

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION,  
TECHNOLOGY, AND LOGISTICS

SUBJECT: PARCA Root Cause Analysis for the Apache Longbow Block III Program

This memorandum summarizes PARCA's root cause analysis of the Apache Longbow Block III (AB3) critical Nunn-McCurdy breaches described in its December 2009 SAR. The critical breaches were 31.2% in APUC and 25.5% in PAUC against the current APB. The SAR attributes the cost growth to the addition of 56 new aircraft and to minor fact of life changes.

The current AB3 APB calls for the remanufacture of 634 existing Apache Block I and Block II aircraft to create the Block III configuration. In 2009, the Army was directed to add 56 Apache Block III aircraft, which were added to the program as newly built rather than remanufactured aircraft. Based on the costs in the SAR, the addition of higher-cost new aircraft raised the program's APUC by 19% and PAUC by 24%. This was the dominant factor in the cost growth that caused the Nunn-McCurdy breach. Factors cited by the Army for causing the additional 7% of growth included configuration changes and higher than expected costs in non-recurring engineering, some system components, and labor.

Although the addition of new-build aircraft was the dominant cause of the Nunn-McCurdy breach, the program that emerges from the recertification process will have substantially higher costs for remanufactured aircraft alone. CAPE estimates show increases for the remanufacture program alone of more than 35% for both PAUC and APUC. This in itself is not news. We note that the program's APB was created using the Army estimate, and that the CAIG (now CAPE) estimate was 32% higher at that time.

We also note that, although the contractor has performed well on the current SDD contract, risks to the program remain. Specific areas of risk include increasing software content, extensions of the SDD schedule, and the ability of the contractor to provide production aircraft at prices consistent with the program baseline.

Gary R. Bliss  
Director, Performance Assessments and  
Root Cause Analyses





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MAY 19 2010

MEMORANDUM FOR PRINCIPAL DEPUTY UNDER SECRETARY OF DEFENSE FOR  
ACQUISITION, TECHNOLOGY, AND LOGISTICS

SUBJECT: PARCA Root Cause Analysis for the Advanced Threat Infrared  
Countermeasure/Common Missile Warning System (ATIRCM/CMWS) Program

This memorandum summarizes PARCA's root cause analysis of the cost growth described by the Advanced Threat Infrared Countermeasure/Common Missile Warning System (ATIRCM/CMWS) program in its December 2009 SAR which triggered a Nunn-McCurdy breach. The SAR attributed the 291% increase in the Program Acquisition Unit cost (PAUC) for the ATIRCM Quick Reaction Capability (QRC) to the reduction in A-kit quantity from 815 to 208 units. The SAR also attributed the 25% increase in the PAUC for the CMWS to an increase in procurement B-kit quantities and added costs for a new electronic control unit.

The primary root causes of ATIRCM QRC cost growth are a combination of unrealistic performance expectations and technological immaturity at MS B. The inability of the program to meet ORD weight requirements was understood early and, in fact, contractual specifications were never consistent with the ORD requirements. As a result, ATIRCM/CMWS, as currently designed, cannot be carried on any helicopter other than the CH-47. This fact led directly to the reduction in quantities and the associated increase in unit costs. The technological immaturity was associated with the fiber optic concept and the light weight laser. The fiber optic concept had to be abandoned because it required materials which were not available commercially. Consequently, the system required additional components to include a second jam head which increased unit costs and further increased weight. The laser was also technologically immature and, although it was redesigned twice, the combination of the power and weight demands was unachievable. Ultimately, the development of a lighter laser was abandoned altogether in favor of a heavier, commercially available laser but not until after consuming significant time and money. We note that the cost growth associated with the additional development cost and time would have been sufficient to cause a critical Nunn-McCurdy breach even without the change in quantity.

Unanticipated design issues are the root cause of the cost growth for CMWS. Specifically, the CMWS was not able to meet reliability requirements for target recognition against operational backgrounds. This required additional funding for software, development, schedule slips, and to retrofit systems with a new electronic control unit.

Gary R. Bliss  
Director, Program Assessments and  
Root Cause Analyses



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MAY 21 2010

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION,  
TECHNOLOGY, AND LOGISTICS

SUBJECT: PARCA Root Cause Analysis for the DDG-1000 Program

This memorandum summarizes PARCA's analysis of the root causes of the cost growth which triggered the Nunn-McCurdy breach described by DDG-1000 program in its December, 2009 SAR. In that SAR, the Navy reported an increase in estimated Program Acquisition Unit cost (PAUC) of 86%. The Navy attributed this cost growth to the reduction in quantity from ten ships to three ships.

Based on the SAR, the quantity change from ten ships to three ships accounts for 79 points of the PAUC cost growth. The Navy has stated that the change in quantity from ten ships to three ships was motivated by their decision to purchase DDG-51s rather DDG-1000s. The smaller DDG-51 is cheaper than the DDG-1000 and more ships can be bought within budget constraints. The Navy further states that the DDG-51 provides superior area defense anti-air warfare, ballistic missile defense, and open ocean anti-submarine warfare capabilities. These are all destroyer capabilities that the Navy has stated they wish to emphasize. The remaining 7 points of reported PAUC cost growth are increases in development costs primarily due to increased content.

The DDG-1000 program has faced technological and fiscal challenges. Technologically, the DDG-1000 is incorporating ten transformational new technologies -- four of which were immature at MS-B with an assessed Technology Readiness Level (TRL) of 5. Fiscally, the DDG-1000 was funded to significantly less than the CAIG estimate. Subsequently, a series of cuts significantly substantially increased the risk to program executability. Nevertheless, the government and contractor appear to have executed well to this point.

Given the above, PARCA concludes that the primary root cause for the Nunn-McCurdy breach is the quantity change cited. That said, the lead ship is only 16% complete and some uncertainty in final costs necessarily remains. The estimate for production depends heavily on the successful integration of several advanced technologies -- especially the Total Ship Computing Environment, the Integrated Power System, and the Advanced Gun System/Long Range Land Attack Projectile systems. These are, therefore, key areas for PARCA to monitor both for the semi-annual monitoring required by WSARA 09 and as part of PARCA's normal program assessment. We will work with OSD DDR&E and the Navy to monitor these factors.

*Gary R. Bliss*  
Gary R. Bliss

Director, Performance Assessments and  
Root Cause Analyses



OFFICE OF THE UNDER SECRETARY OF DEFENSE  
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## INFO MEMO

December 2, 2010. 4:29 p m.

FOR: UNDER SECRETARY OF DEFENSE (AT&amp;L)

FROM: GARY R. BLISS, DIRECTOR, PERFORMANCE ASSESSMENTS AND ROOT CAUSE ANALYSES *S/As 3/24/10*

SUBJECT: PARCA Root Cause Analysis for the Excalibur Program

- This memorandum summarizes PARCA's root cause analysis of the Excalibur Program's cost growth which triggered the Nunn-McCurdy breach reported to Congress in August, 2010. As shown in the table, there are critical breaches in both Average Unit Procurement Unit cost (APUC) and Program Acquisition Unit Cost (PAUC) against both the original (2004) and the current (2007) baselines. The Army attributed these breaches to the reduction in quantity from 30,000 rounds to 6,246 rounds reported in a May 12, 2010 Acquisition Decision Memorandum.

APB	Cost Growth	
	PAUC	APUC
Original	211%	159%
Current	199%	130%

- The proximate cause for the Nunn-McCurdy breach is the change in quantity. Prior to the quantity change, program costs increased due to difficulties with the Inertial Measurement Unit, meeting an Urgent Operational Need, and several cost estimating methodology adjustments. In total, however, these factors increased the APUC and PAUC by 21% and 4% respectively compared to the original baseline. Since there have been no other significant increases in cost, there would not have been a Nunn-McCurdy breach without the fivefold reduction in quantity. The primary impact of the quantity change on the unit cost is to reduce the proportion of the cheaper Increment 1b munitions purchased in the total program. Secondly, the quantity reduction magnified the impact of the doubling of unit cost for the 1,000 munitions bought in FY11 due to parts obsolescence, additional funding for potential termination of the program, and no FY10 purchase.
- The root cause of the Nunn-McCurdy breach is the Army's reassessment of a cost-effective mix of munitions to achieve precision fires. The Under Secretary of the Army directed the decrease in Excalibur quantity based upon a Munitions Mix study which concluded that the Army should buy a minimal, business case quantity of Excalibur munitions stating that the Precision Guidance Kit would mitigate the risk of doing so. The exact quantity of Excalibur munitions was based upon a classified scenario in the Quantitative War Reserve Requirements Munitions Model.

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- The government and contractor appear to have executed well to this point. However, some uncertainty remains with the 18 month development effort. This effort will fix shortcomings identified in the recent "shoot off", improve producibility, and complete qualification testing. PARCA will reassess this uncertainty as part of its statutory semi-annual reviews of the program.

COORDINATION: NONE

cc: PDUSD AT&L

Prepared By: Dr. David J. Nicholls,, PARCA, 571-256-0646 (USA006789-10)

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MAY 23 2011

INFO MEMO

FOR: UNDER SECRETARY OF DEFENSE (AT&L)

FROM: GARY R. BLISS, DIRECTOR, PERFORMANCE ASSESSMENTS AND ROOT  
CAUSE ANALYSES *g/b*

SUBJECT: PARCA's Root Cause Analysis of the Global Hawk Program

- This memorandum summarizes PARCA's root cause analysis of the Global Hawk program's increase of more than 25 percent in Average Unit Procurement Cost (APUC) relative to the current (2007) baseline. This was reported by the Air Force to USD(AT&L) in a memorandum dated April 6<sup>th</sup>, 2011.
  - The December 2010 SAR reported APUC cost growth of 22.9 percent. Since then, the cost position has deteriorated markedly. The program office estimate for APUC cost growth at the beginning of the Nunn-McCurdy certification process was 37 percent.
  - Development costs have also increased by 28 percent since 2007. The bulk of this growth has been systems engineering, program management, and testing. This does not contribute to the critical cost breach in APUC and is insufficient to cause a Program Acquisition Unit Cost (PAUC) critical breach.
- The proximate causes of the cost growth in APUC include more sparing/support equipment, a production acceptance test/modification facility, diminished manufacturing sources (DMS), rearchitectures of the communications and the ground station, replanning the operational testing, an increased number of more expensive Block 30 aircraft, and a sensor depot. Notably, the costs of the delivered Global Hawk airframes, payloads, and ground stations have remained constant since 2007.
- The root causes of the APUC cost growth in this program are as follows:
  - Approximately one-third of the total cost growth is due to the additional requirements for sparing, support equipment and changes in the mix of aircraft purchased. These factors are exogenous to the program.
  - Nearly one-half of the total cost growth is due to having known, but unfunded, requirements in the baseline and the deferral of development activities. The program structure reflected a spiral legacy which facilitated deferring requirement and activities. Budgetary pressures provided the motivation.

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- The root cause of remainder of the cost growth was primarily an unrealistic schedule based upon the continued underestimation of the differences between the RQ-4A and RQ-4B aircraft and systems integration requirements for the payloads.
- Several factors exacerbated this cost growth by affecting government and contractor ability to respond to issues. Qualitative impacts of these factors can be identified (such as the substantial remaining risk to achieve required reliability) but quantitative impacts are inextricably convoluted with the root causes above.
  - The management structure was unable to efficiently pursue the long-term development of a weapon system while responding to short-term operational priorities. This inability was particularly significant due to the challenges posed by the extreme concurrency of the program between development, production and sustainment and the extensive use of now-obsolete, commercial-off-the-shelf (COTS) components.
  - The government incentives were unable to motivate Northrop-Grumman Corporation (NGC) to deliver on-time products of acceptable quality. The government negotiating position was also eroded by extreme delays in contract definitization.
  - The evolving acquisition environment makes it very difficult to incentivize the contractor to contain costs. NGC is the sole source for this system. Moreover, NGC is in an increasingly strong industrial position for unmanned aerial systems as it now receives five times as much development funding as any other company in this sector.
  - Oversight was not consistent and persistent. As examples, the approved 2007 Acquisition Strategy still explicitly continued the old spiral acquisition strategy and a reliability program was directed but not pursued.
- There are highly significant, future liabilities for the Global Hawk program that normally would have been addressed well before we had produced a significant number of aircraft. In its statutorily-required reviews, PARCA will assess the progress in addressing these liabilities which are:
  - An unusually high amount of retrofit which will result from improving reliability, improving affordability, and dealing with DMS issues.
  - An extensive (and currently ill-defined) reliability growth program that will be required to achieve operational objectives.

COORDINATION: NONE

cc: PDUSD AT&L

Prepared by: D. Nicholls, PARCA, 571-256-0646 (USA003104-11)

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MAY 25 2010

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION,  
TECHNOLOGY AND LOGISTICS

SUBJECT: PARCA Root Cause Analysis for the Joint Strike fighter (JSF) Program

This memorandum summarizes PARCA's root cause analysis of the cost growth which triggered the Nunn-McCurdy breach described by the Joint Strike fighter (JSF) Program in its December 2009 SAR. That SAR reported an increase in Program Acquisition Unit Cost (PAUC) of 57% compared to the original APB. From a purely computational point of view, the production PAUC growth is due to recognizing the consequences of programmatic or technical changes that drive cost and the more conservative estimating framework selected as the basis for the estimate in 2009. The decision by DoD to adopt this more conservative set of estimating assumptions is the proximate cause of the breach occurring at this time.

Our analysis only addresses the cost growth identified in the SAR although we recognize that the latest OSD CAPE estimate for the restructured program may be significantly greater than the SAR estimate. Our root causes fall into two large categories: flawed programmatic and technological assumptions at program inception; and a series of execution actions which hindered the overall government/contractor management's ability to address the problems as they were encountered. Additionally, modest changes, such as putting the Electro-Optical Tracking System on all JSF aircraft, have caused some cost growth.

**Issues with program inception and their consequences.** Unrealistic baseline estimates for cost and schedule are root causes of the subsequent growth. The Milestone B cost estimate was too low because the estimated airframe weights were too low, the escalation rates used were incorrect, and the acquisition strategy was incorrectly modeled in the cost model. These factors accounted for 23 points of the PAUC cost growth. Additionally, a very aggressive and concurrent development schedule was assumed in order to meet externally mandated IOC dates and to reduce acquisition cycle time.

Moreover, excessive optimism at MS B about the weight estimate and weight control led directly to a major redesign. That optimism could have been tempered by our experience with developing both the AV-8B (which demonstrated the challenges associated with STOVL) and the F-111 (which demonstrated the challenges posed by the integration of multiservice requirements). The need for a redesign had three consequences. First, both the materials and production processes and the assembly and tooling concepts had to be changed to produce more weight efficient structures. Second, the need for a redesign combined with pressure to contain cost growth and stay on schedule resulted in the loss of most of the affordability initiatives assumed in the MS B estimate. Finally, all of the major development milestones were delayed

by several years. These factors accounted for 26 points of the PAUC cost growth. In addition, stretches in the production profile have added another 5 points to PAUC.

**Other issues in JSF's management and execution.** Given that the JSF entered System Design and Development with flawed technological, estimating, and programmatic assumptions, the program was on a path to uncover significant problems. Each of the following factors materially impacted the program's ability to overcome these latent problems as they were incurred.

- After the Oct 2001 contract award, the contractor took many months to properly staff the project which particularly affected early systems engineering and design efforts.
- The JPO, along with other government oversight and the contractor, created an environment in which there was a general intolerance for failing to meet externally-driven schedule goals.
- The award fee, as implemented was ineffective in sending signals to the contractor. As examples, the dollar amount of fee revenue was only weakly influenced by poor contractor performance prior to 2007 and incentives to control production and development costs proved to have marginal effect.
- Systems engineering discipline and procedures appear not to have been rigorously followed as evidenced by problems implementing risk management, technology maturity assessments, and systems engineering integration planning.
- Finally, there was a general reluctance to accept unfavorable information. This slowed down the ability of the contractor and government to recognize and respond to problems.

However, disentangling each of these execution factors' contribution to cost growth – separate from the initial causes – is challenging. We can, for example, identify that the early refusal to entertain any alternative that would hold IOC at risk delayed recognition that weight growth required a redesign. We can also estimate the total cost of this redesign. But, separately computing the additional time and resources required to address this issue due to this IOC fixation is infeasible.

The F-35 is about 17% into its estimated total program acquisition costs, so a 57% PAUC increase is mostly a statement about expected costs in the future. Specific areas of uncertainty in the immediate future include the ability of the contractor to develop and integrate the mission systems on a schedule that supports testing and production, to overcome inevitable problems revealed during testing while maintaining the design stability required for production ramp up, and to minimize the production cost of the aircraft with acceptable impacts on other attributes. PARCA will work with OSD, the Services, the Program Office, and the contractors to assess performance in these areas.



Gary R. Bliss

Director, Performance Assessments and  
Root Cause Analyses





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MAY 20 2010

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION,  
TECHNOLOGY AND LOGISTICS

SUBJECT: PARCA Root Cause Analysis for the Remote Minehunting System (RMS)  
Program

This memorandum summarizes PARCA's root cause analysis of the cost growth which triggered the critical Nunn-McCurdy breach described by the Remote Minehunting System (RMS) program in its December 2009 SAR. The Navy reported that the Program Average Unit Cost (PAUC) and Average Program Unit Cost (APUC) had increased by 80% and 55% respectively as compared with the 2006 Approved Program Baseline (APB). The SAR attributed these increases to a reduction in production quantities, the use of an incorrect average unit cost as a basis of estimate in the 2006 APB, and an increase in RDT&E costs from the reliability growth program. The causes of the increase in APUC are a subset of the causes of the increase in PAUC and so this memorandum will focus on the growth of PAUC.

The decrease in quantity and an unrealistic cost estimate for the 2006 APB are two of the root causes for the increase in PAUC. The change in quantity was due to the Navy decisions to use the RMS to support only the Littoral Combat Ship's minehunting mission but not its anti-submarine warfare mission. The cost estimate supporting the 2006 APB was incorrect since the program assumed a first unit cost lower than the contracted cost of units being built at the time.

Additionally, we find that a third root cause was poor performance of the government program management and governance. Most significantly, the program failed to deal effectively with RMS reliability issues apparent since 2005. Despite several years of activity, improvements in reliability have been very modest and have yet to reach even the reduced requirements the Navy has now stipulated. The consequences of this failure are a need for a formal design review, a belated investment in a formal reliability growth program which includes reliability as a contractual deliverable, the purchase of 8 units which do not satisfy ORD reliability requirements, and a delay in production. The failure to deal effectively with the reliability issues was mainly due to an insistence on contracting for the hardware and engineering services based on built-to-print terms where the government accepted responsibility for the RMS design. The program office exacerbated the situation by approving the technical data package submitted by Lockheed Martin although they had individually reviewed less than 10% of the drawings.

*Gary R. Bliss*  
Gary R. Bliss

Director, Program Assessments and  
Root Cause Analyses



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MAY 17 2010

MEMORANDUM FOR UNDER SECRETARY OF DEFENSE FOR ACQUISITION,  
TECHNOLOGY, AND LOGISTICS

SUBJECT: PARCA Root Cause Analysis for the Wideband Global Satellite (WGS) Program

This memorandum summarizes PARCA's root cause analysis for the cost growth which triggered the Nunn-McCurdy breach declared by the Wideband Global Satellite (WGS) program in its December 2009 SAR. Specifically, the SAR stated that the addition of two additional satellites (WGS 7 and 8) after a two-year production break resulted in Average Program Unit Cost (APUC) growth of 27.2% over the current Acquisition Program Baseline (APB) which is a Critical Cost Growth threshold breach

Nearly one-third of the growth of current APUC is due to anomalies in its computation when established in FY01. The first three satellites were purchased in fixed price contracts. Subsequently, it was discovered that actual contractor costs were much higher than the contract price. The government paid realistic prices for the next three satellites. Since the government cannot include the higher than contracted value (i.e., the true cost) for the first three satellites, it artificially causes the APUC for future buys to increase as more satellites are purchased even if the unit cost of the subsequent satellites had remained constant.

About two-thirds of the growth in APUC is due the fact that the unit costs of satellites 7 and 8 are about 50% higher than preceding satellites. The root cause for this increase in unit costs is mostly attributable to unanticipated design and business base issues which result from extending the program for two additional satellites. The WGS is based on Boeing's HS702HP bus which was designed as a commercial bus. Up to this point, the fact that commercial buyers shared in significant satellite production costs reduced the cost of the satellites to the DoD. But now, without a commercial demand, the DoD must pay these costs. Specific consequences include higher component costs, obsolescence induced redesign, qualification, testing costs, and storage/restart costs. We note that the computation of APUC in the current baseline was also in error because it excluded anticipated known fees. Although this error was small, without it, this program would not have reached a critical breach for the procurement of satellites 7 and 8.

*Gary R. Bliss*  
Gary R. Bliss

Director, Program Assessments and  
Root Cause Analyses

**Post Hearing Questions for the Record  
Submitted to Mr. Michael Sullivan  
From Senator Coburn**

**"Tools to Prevent DOD Cost Overruns"  
March 29, 2011**

1. Does the Congressional budgeting process have a negative impact on the major weapons systems programs? If so, how significant is it? What is the effect of unpredictable funding and acquisition funding through continuing resolutions on acquisition programs?

Funding stability is an essential ingredient to a successful program, however we have not specifically reported on the effect congressional budget actions has on it. In 2010, we conducted case studies of five stable weapon programs and found that in addition to having annual funding baselines based on realistic cost estimates, the programs typically received annual development appropriations close to their full funding requests. However, stable funding alone will not prevent other acquisition problems, such as those stemming from unrealistic performance requirements, immature technologies, and highly concurrent schedules. In addition, while program managers often point to funding instability as a factor contributing to program instability, we have seen that funding instability can be the result, not the cause, of performance problems. For example, in 2002, we found that, while the F-22 program office attributed some of its production cost increases to a reduction in quantities, the program had been significantly affected by design and manufacturing problems that started during development. In short, successful programs enjoy funding stability, but funding stability does not ensure program success.

Our most recent work on the effect of continuing resolutions on agency operations was conducted in 2009. DOD was not one of the six agencies studied in this review, in part, because it has typically been subject to continuing resolutions of shorter durations than other agencies. In the 2009 report, we noted both that it is difficult to isolate the effects of continuing resolutions on agencies and that agencies have flexibility in managing around some of the effects of continuing resolutions. However, we also recognized that continuing resolutions do present difficulties in agency management and may have negative consequences for programs and other activities.

2. What incentive is there for a contractor to submit realistic cost and technical proposals for a new weapons system? Is there any financial downside for the contractor for later cost increases?

In DOD's current acquisition environment, there is little incentive for contractors to submit realistic assessments of cost, schedule, and technical performance in their

proposals for weapon system development contracts. The focus of both the service sponsors in the department and industry is on capturing and maintaining program funding. The military services over promise capabilities and underestimate costs to capture the funding needed to start and sustain development programs and this encourages the industry to propose unrealistic cost estimates, optimistic performance, and understated technical risks during the proposal process.

The financial downside for the contractor is limited. For systems development, DOD typically uses cost-reimbursement contracts, in which DOD generally pays the allowable costs incurred for the contractor's best efforts, to the extent provided by the contract. These development contracts are often awarded without the government performing the needed upfront analysis to fully understand whether its requirements can be met and significant contract cost increases can occur as the scope of the requirements become better understood. With either a cost reimbursement or a firm-fixed price contract, if the government changes the requirements after contract performance begins, which in turn causes a price or cost increase for the contractor, the government must pay for these changes.

3. What is the proper distribution of financial risk between the contractor and the government in major defense acquisition programs? Are contractors assuming any risk at this time?

The distribution of financial risk between the contractor and the government should be directly related to the amount of risk and uncertainty in a program. As a result, DOD can reduce its financial risk by reducing the risk in its programs before it commits to large scale investments. The principal means that agencies have for allocating cost risk between the government and the contractor is the choice of contract type. According to the Federal Acquisition Regulation, cost reimbursement contracts—which place more of the risk for cost increases on the government—are suitable for use only when uncertainties involved in contract performance do not permit costs to be estimated with sufficient accuracy to use any type of fixed-price contract. This is typically the case for weapon system development because DOD often sets optimistic requirements for weapon programs that require new technologies. Unfortunately, when early analysis is not performed to ensure that specific DOD needs can be met and that requirements are firmly established and understood prior to starting system development, additional cost risk to the government can occur. In certain cases, the government may decide that the immediacy of a need warrants taking on extra risk. For instance, in the case of the Mine Resistant Ambush Protected Vehicle, DOD's concurrent approach to producing, testing, and fielding the vehicles provided an urgently needed operational capability. Absent such urgency, the government should take a more measured, less risky evolutionary, knowledge-based approach for developing and delivering warfighter capabilities. In contrast, a firm-fixed price contract provides for a fixed price, and places more risk and responsibility for contract costs on the contractor, providing more incentive for efficient and economical contract performance. This

contracting arrangement only works though if the government has a good understanding of its requirements prior to contract award and can hold them stable throughout the course of the program.

4. Given the Navy's actions on the Littoral Combat Ship (LCS), the massive purchase of Joint Strike Fighters before operational testing is complete, and the fact that the Air Force's refueling tanker was selected based on 'paper' proposals from Boeing and EADS, is it fair to say that the Department of Defense has ignored the Weapon System Acquisition Reform Act? If not, how have they implemented its provisions?

Since 2009, we have reviewed the implementation of several aspects of the Weapon System Acquisition Reform Act, including the use of early systems engineering reviews and competitive prototyping to make sure requirements are defined and feasible, the inclusion of measures to ensure competition in acquisition plans, and the establishment of new systems engineering and developmental test organizations. During these reviews we have primarily focused on planned programs, rather than ongoing ones, and have found that many, but not all of DOD's planned programs are implementing the reforms. Specifically,

- Almost all of the planned major defense acquisition programs in our 2011 assessment of weapon programs intended to conduct a preliminary design review before development start, but fewer were planning to take other actions, such as developing prototypes, that could improve their chances of success. Thirteen of the 14 planned major defense acquisition programs we reviewed intended to hold a preliminary design review, and all 10 that provided dates for this review planned to hold it before milestone B—the beginning of system development—as required by the Weapon Systems Acquisition Reform Act of 2009. Nine of the 14 planned programs intend to develop prototypes of the proposed weapon system or a key system element before milestone B.
- Fewer than half of planned programs in our 2011 assessment of weapon programs had acquisition strategies to ensure competition throughout the acquisition cycle. The Weapon Systems Acquisition Reform Act of 2009 requires that DOD ensure that the acquisition strategy for each major defense acquisition program includes measures to ensure competition, or the option of competition, throughout the program's life cycle. These measures may include developing competitive prototypes, dual-source contracting, and periodic competitions for subsystem upgrades. Six of the 14 planned programs in our 2011 assessment reported having acquisition strategies that called for competition post-milestone B at the system or subsystem level.
- In 2011, we reported that the new offices for systems engineering and developmental test and evaluation were continuing to make progress implementing Reform Act requirements. However, there are workforce challenges at both the DOD and military service level that could curb systems

engineering and developmental test efforts, if not properly addressed. Specifically, the developmental test and evaluation office reported having difficulty covering its portfolio of about 250 defense acquisition programs with its current authorized staff of 63 people. Current and former testing officials believed the office needed more influence and resources to be effective, but they said thorough analysis had not been done to determine the appropriate office size. In addition, we found that the military services may not be able to continue to grow or maintain these workforces, in part, because of budget cuts.

5. Your reports show that weapons costs, as measured by total program unit costs of systems, have grown faster than total DOD budgets have grown. What is the implication of this phenomenon? How long has this been happening? Is the problem getting worse?

Cost growth, both in the aggregate and on a per unit basis, is a long standing problem in DOD. In 2008, we reported that DOD's portfolio of weapon system programs had grown at a pace that far exceeded available resources. From 1992 to 2007, the estimated acquisition costs remaining for major weapons programs increased almost 120 percent, while the annual funding provided for these programs only increased 57 percent, creating a fiscal bow wave that did not seem to be sustainable. Since that time, the number of major defense acquisition programs has remained stable, but cost of these programs and the fiscal pressures within DOD have continued to grow.

DOD's long standing tendency to commit to more programs than its current and likely future funding resources can support results in inefficiencies that can exacerbate DOD weapon acquisition problems. Because it starts too many programs, DOD is often forced to shift funds from one program to pay for another, reduce system capabilities, cut procurement quantities, and extend program schedules. At the aggregate level, when DOD commits to more programs than it can fund, it also forces Congress to make difficult choices, such as pulling dollars from other high-priority federal programs to fund DOD's acquisitions or accepting gaps in warfighting capabilities.

# Major Weapon System Cost Growth

