## **NUCLEAR ENERGY**

Agreement Between the
UNITED STATES OF AMERICA
and OTHER GOVERNMENTS

Signed at Canberra November 22, 2021

Entered into force February 8, 2022



#### NOTE BY THE DEPARTMENT OF STATE

Pursuant to Public Law 89—497, approved July 8, 1966 (80 Stat. 271; 1 U.S.C. 113)—

"...the Treaties and Other International Acts Series issued under the authority of the Secretary of State shall be competent evidence... of the treaties, international agreements other than treaties, and proclamations by the President of such treaties and international agreements other than treaties, as the case may be, therein contained, in all the courts of law and equity and of maritime jurisdiction, and in all the tribunals and public offices of the United States, and of the several States, without any further proof or authentication thereof."

AGREEMENT BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA, THE GOVERNMENT OF AUSTRALIA, AND THE GOVERNMENT OF THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND FOR THE EXCHANGE OF NAVAL NUCLEAR PROPULSION INFORMATION

The Government of the United States of America (the "United States"), the Government of Australia ("Australia"), and the Government of the United Kingdom of Great Britain and Northern Ireland (the "United Kingdom") (collectively, the "Parties"),

Recalling their leaders' announcement of an enhanced trilateral security partnership among the Parties called AUKUS, of which the first initiative is a shared ambition to support Australia in acquiring nuclear-powered submarines for the Royal Australian Navy;

In this regard, recalling that the Parties have embarked on a trilateral effort to seek an optimal pathway to deliver this capability;

Considering that the United Kingdom and Australia are participating with the United States in international arrangements pursuant to which they are making substantial and material contributions to their mutual defense and security;

Recognizing that their common defense and security will be advanced by the exchange of naval nuclear propulsion information concerning military reactors;

Believing that such exchange can be undertaken without unreasonable risk to each Party's common defense and security;

Reaffirming their respective obligations under the Treaty on the Non-Proliferation of Nuclear Weapons, done at London, Moscow, and Washington on July 1, 1968 (NPT); and

Taking into consideration the United States Atomic Energy Act of 1954, as amended,

Have agreed as follows:

## ARTICLE I General Provision

While the United States, the United Kingdom, and Australia are participating in international arrangements for their mutual defense and security and making substantial and material contributions thereto, each Party may communicate to and exchange with the other Parties information, in accordance with the provisions of this Agreement, provided that the communicating Party determines that such cooperation will promote and will not constitute an unreasonable risk to its defense and security.

## ARTICLE II Exchange of Information

Each Party may communicate to or exchange with the other Parties naval nuclear propulsion information as is determined to be necessary to research, develop, design, manufacture, operate, regulate, and dispose of military reactors, and may provide support to facilitate such communication or exchange, to the extent and by such means as may be mutually agreed.

## ARTICLE III Responsibility for Use of Information

The use of any information (including design drawings and specifications) communicated or exchanged under this Agreement shall be the responsibility of the Party receiving it, and the originating Party does not provide any indemnity, and does not warrant the accuracy or completeness of such information and does not warrant the suitability or completeness of such information for any particular use or application.

## ARTICLE IV Conditions

- A. Cooperation under this Agreement shall be carried out by each of the Parties in accordance with its applicable laws.
- B. Nothing in this Agreement shall preclude the communication or exchange of naval nuclear propulsion information that may be transmissible under other arrangements or agreements between any of the Parties.

C. Cooperation under this Agreement shall require the application of International Atomic Energy Agency safeguards with respect to all nuclear material in all peaceful nuclear activities within the territory of Australia, under its jurisdiction, or carried out under its control anywhere. Implementation of the Agreement between Australia and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, signed at Vienna on July 10, 1974, and the Protocol Additional to the Agreement between Australia and the International Atomic Energy Agency for the Application of Safeguards in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons, signed at Vienna on September 23, 1997, shall be considered to fulfill this requirement.

## ARTICLE V Guaranties

- A. The Parties shall accord full security protection to classified information communicated or exchanged pursuant to this Agreement in accordance with the Annexes to this Agreement, and in accordance with applicable national law and regulations of the Parties. In no case shall any Party maintain security standards for safeguarding classified information made available pursuant to this Agreement less restrictive than those set forth in the Annexes to this Agreement in effect on the date this Agreement comes into force.
- B. Unclassified naval nuclear propulsion information communicated or exchanged pursuant to this Agreement shall be accorded at least the same level of protection by the recipient Party as that accorded to such information by the originating Party. The Parties shall consult with each other regarding the appropriate protection for such information.
- C. Naval nuclear propulsion information communicated or exchanged pursuant to this Agreement shall be made available through channels existing or hereafter established for the communication or exchange of such information between the Parties.
- D. Naval nuclear propulsion information communicated or exchanged pursuant to this Agreement shall not be communicated or exchanged by the recipient Party or persons under its jurisdiction to any unauthorized persons or beyond the jurisdiction or control of the Parties. Any Party may stipulate the degree to which any of the information communicated or exchanged by it or persons

under its jurisdiction pursuant to this Agreement may be disseminated or distributed; may specify the categories of persons who may have access to such information; and may impose such other restrictions on the dissemination or distribution of such information as it deems necessary.

#### ARTICLE VI Dissemination of Information

Nothing in this Agreement shall be interpreted or shall operate as a bar or restriction to consultation or cooperation in any field of defense by any Party with other nations or international organizations. No Party, however, shall communicate or exchange naval nuclear propulsion information made available by another Party pursuant to this Agreement to any other nations, foreign or international entities, or individuals who are not nationals of the Parties. No Party shall communicate or exchange naval nuclear propulsion information made available by another Party pursuant to this Agreement to an individual who is not its national and who is a national of another Party without the consent of that other Party.

## ARTICLE VII Classification Policies

Mutually determined classification policies shall be maintained with respect to all classified information communicated or exchanged under this Agreement. The Parties shall consult with each other on the classification policies.

# ARTICLE VIII Intellectual Property

Without prejudice to any future agreement or arrangement between the Parties as to Intellectual Property in the context of the design, construction, operation, regulation, and disposal of a naval nuclear-powered vessel:

A. With respect to any invention or discovery employing information which has been communicated or exchanged pursuant to Article II of this Agreement, and made or conceived by the recipient Party, or any agency or corporation owned or controlled thereby, or any of their agents or contractors, or any employee of any of the foregoing, after the date of such communication or exchange but during the period this Agreement is in force:

- 1. in the case of such invention or discovery in which rights are owned by the recipient Party, or any agency or corporation owned or controlled thereby, the recipient Party shall, to the extent owned by any of them:
  - (a) transfer and assign to the originating Party all right, title, and interest in and to the invention or discovery, or patent application or patent thereon, in the country of that originating Party, subject to (i) the retention of a royalty-free, non-exclusive, irrevocable license to use for the governmental purposes of the recipient Party and for the purposes of mutual defense; and (ii) the grant to the other, non-originating Party a royalty-free, non-exclusive, irrevocable license to use for the governmental purposes of such Party and for the purposes of mutual defense; and
  - (b) grant to both the originating Party and the other Party a royalty-free, non-exclusive, irrevocable license for the governmental purposes of the originating Party and the other Party and for purposes of mutual defense in the country of the recipient Party or third countries, including use in the production of material in such countries for sale to the recipient Party by a contractor of that originating Party or for the other Party.
- B. With respect to any invention or discovery, or patent application or patent thereon, or license or sublicense therein, covered by paragraph A of this Article, each Party:
- 1. may, to the extent of its right, title, and interest therein, deal with the same in its own country as it may desire, but shall in no event discriminate against citizens of any Party in respect of granting any license or sublicense under the patents owned by it in its own or any other country;
- 2. hereby waives any and all claims against any Party for compensation, royalty, or award, and hereby releases the other Parties with respect to any and all such claims.

- C. 1. No patent application with respect to any classified invention or discovery employing classified information which has been communicated or exchanged pursuant to Article II may be filed:
  - (a) by any Party or any person in the country of any Party except in accordance with agreed conditions and procedures; or
  - (b) in any country not a party to this Agreement.
- 2. Appropriate secrecy or prohibition orders shall be issued for the purpose of giving effect to this paragraph.

## ARTICLE IX Definitions

For the purposes of this Agreement:

- A. "Classified information" means information, data, materials, services or any other matter with the security designation of United States Confidential or higher, United Kingdom OFFICIAL-SENSITIVE or higher, and Australia Protected or higher applied under the laws, regulations and government-wide policies of the Parties respectively. Classified information also includes information designated by the Government of the United States as "Restricted Data," or "National Security Information"; that designated by the Government of the United Kingdom as "Atomic" and "Naval Nuclear Propulsion Program Information (NNPPI)"; and for the Government of Australia, the Australian equivalent as mutually determined by the Parties.
- B. "Naval nuclear propulsion information" means classified information and unclassified information concerning the design, arrangement, development, manufacture, testing, operation, administration, training, maintenance, or repair of the propulsion plants of naval nuclear-powered vessels and prototypes, including the associated shipboard and shore-based nuclear support facilities.
- C. "Unclassified naval nuclear propulsion information" means naval nuclear propulsion information that requires safeguarding or dissemination controls pursuant to and consistent with the applicable law, regulations, and government-wide policies of the United States but is not classified information.

D. "Military reactor" means a reactor for the propulsion of naval vessels.

#### E. "Person" means:

- 1. any individual, corporation, partnership, firm, association, trust, estate, public or private institution, group, government agency, or government corporation other than the United States Department of Energy, the United Kingdom Ministry of Defence, or the Australian Department of Defence (or successor entity tasked with the delivery of a naval nuclear propulsion program); and
- 2. any legal successor, representative, agent, or agency of the foregoing.
- F. "Reactor" means an apparatus, other than an atomic weapon, in which a self-supporting fission chain reaction is maintained and controlled by utilizing uranium, plutonium, or thorium, or any combination of uranium, plutonium, or thorium.

## ARTICLE X Final Provisions

- A. This Agreement shall enter into force for all Parties on the date of the last note in an exchange of diplomatic notes among the Parties providing notification that each Party has completed all domestic requirements for the entry into force of this Agreement. This Agreement shall remain in force until December 31, 2023, and shall automatically extend for four additional periods of six months each, unless superseded by a subsequent agreement. Any Party may, by giving at least six months written notice to the other Parties, terminate this Agreement.
- B. If any Party at any time following the entry into force of this Agreement materially breaches, terminates, or abrogates this Agreement, the other Parties shall each have the right to require the return or destruction of any naval nuclear propulsion information communicated or exchanged pursuant to this Agreement.

- C. Notwithstanding the suspension, termination, or expiration of this Agreement or cessation of cooperation hereunder for any reason, Articles III, V (paragraphs A, B, and D), VI, VII, and VIII of this Agreement shall continue in effect so long as any naval nuclear propulsion information communicated or exchanged pursuant to Article II of this Agreement remains in the recipient Party or under the recipient Party's jurisdiction or control.
- D. The Parties may enter into implementing arrangements (IA) to implement the provisions of this Agreement. For the avoidance of doubt, in the case of any inconsistency between an IA and this Agreement, the provisions of this Agreement shall prevail.
- E. The Parties shall settle any disagreements arising in the implementation or interpretation of this Agreement through mutual consultations and negotiations without recourse to any dispute settlement mechanisms.

In witness whereof, the undersigned, being duly authorized by their respective Governments, have signed this Agreement.

Done at CANBERRA, this 22 MD day of NOVEMBER, 2021, in three originals.

For the Government of the United States of America:

For the Government of Australia:

For the Government of the United Kingdom of Great Britain and Northern Ireland:

TECHNICAL ANNEX TO THE AGREEMENT BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA, THE GOVERNMENT OF AUSTRALIA, AND THE GOVERNMENT OF THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND FOR THE EXCHANGE OF NAVAL NUCLEAR PROPULSION INFORMATION

The following implementing provisions are agreed between the Parties in connection with the Agreement Between the Government of the United States of America, the Government of Australia, and the Government of the United Kingdom of Great Britain and Northern Ireland for the Exchange of Naval Nuclear Propulsion Information (hereinafter referred to as "the Agreement"), of which this Technical Annex is an integral part:

#### SECTION I

With respect to the communication or exchange of naval nuclear propulsion information pursuant to Article II of the Agreement, the following specific provisions shall apply:

- A. All cooperative efforts and communication or exchange of any information pursuant to Article II of the Agreement shall be controlled by the Director, United States Naval Nuclear Propulsion Program, the Director General Nuclear to the United Kingdom Ministry of Defence, and the Secretary of the Australian Department of Defence, using mutually established procedures.
- B. This cooperation shall be carried out in such a manner as to not adversely affect the programmatic resources of each Party's naval nuclear propulsion program.
- C. The receiving Party shall assume any responsibility or liability arising from such Party's use or application of information transferred pursuant to Article II of the Agreement, and shall hold the originating Party harmless in all respects for any liability or claim arising from the use or application of this information.
- D. If any persons are to be involved in any aspect of, or share information pertaining to or transferred pursuant to Article II of the Agreement, the participation of such persons shall be agreed upon in advance by all Parties.
- E. Each Party shall keep the other Parties informed with regard to applications of any information transferred pursuant to Article II of the Agreement.

#### SECTION II

With respect to all naval nuclear propulsion information to be transferred pursuant to Article II of the Agreement, the following additional requirements shall apply:

- A. All provisions of the Agreement shall apply to such information and to any application or use which results from or is derived from the transfer of such information.
- B. The administrative controls established pursuant to the Agreement for the handling of information marked as "RESTRICTED DATA", "ATOMIC", and the Australian equivalent as mutually determined by the Parties shall apply to information marked as "RESTRICTED DATA", "ATOMIC", and the Australian equivalent as mutually determined by the Parties, transferred under Article II of the Agreement.
- C. The administrative controls for the handling of classified "NATIONAL SECURITY INFORMATION" and unclassified naval nuclear propulsion information transferred under Article II of the Agreement shall be as mutually established between the Director of the United States Naval Nuclear Propulsion Program, the Director General Nuclear to the United Kingdom Ministry of Defence, and the Secretary of the Australian Department of Defence.

SECURITY ANNEX TO THE AGREEMENT BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA, THE GOVERNMENT OF AUSTRALIA, AND THE GOVERNMENT OF THE UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND FOR THE EXCHANGE OF NAVAL NUCLEAR PROPULSION INFORMATION

The following are the security arrangements between the Parties for the protection of naval nuclear propulsion information communicated or exchanged pursuant to the Agreement Between the Government of the United States of America, the Government of Australia, and the Government of the United Kingdom of Great Britain and Northern Ireland for the Exchange of Naval Nuclear Propulsion Information (hereinafter referred to as "the Agreement"), of which this Security Annex is an integral part:

### SECTION I - PERSONNEL SECURITY

- A. No individual shall be entitled to access naval nuclear propulsion information solely by virtue of rank, appointment, or security clearance. Access to naval nuclear propulsion information shall be afforded only to those individuals whose official duties require such access and who have been cleared by the Party providing such access. No individual shall be granted access unless it is affirmatively determined that such access will not endanger the national security, or pose an undue risk to the common defense and security.
- B. Prior to affording access to naval nuclear propulsion information, a determination of eligibility and suitability (decision to grant security clearance) for each individual to be afforded such access shall be made by a responsible authority, as determined by each Party.
- C. The decision as to whether the granting of a clearance will not endanger the national security or pose an undue risk to the common defense and security shall be a determination based on all available information. Prior to this determination, an investigation shall be conducted by a responsible authority, as determined by each Party, and the information thus developed shall be reviewed and adjudicated using criteria developed by the Party making the determination. The Parties agree that these criteria may be revised. Each Party shall make available to the others the established criteria used in making access determinations and shall notify the others if significant changes occur to the criteria.
- D. The minimum scope and extent of such investigation shall be related to the nature and significance of the access to be afforded in accordance with the criteria developed by the Party conducting the investigation.

- E. When immediate access to naval nuclear propulsion information is essential for the individual concerned to carry out the individual's assigned task, and the delay caused by awaiting full clearance would be detrimental to the national interest, the responsible authority empowered to grant such clearance may authorize a provisional clearance based on the records immediately available. In each such case, the responsible authority, as determined by each Party, shall institute immediately the procedures necessary to satisfy the full clearance requirements set forth in the above paragraphs.
- F. Each establishment handling naval nuclear propulsion information shall maintain an appropriate record of the clearance of individuals authorized to have access to such information at that establishment. Each clearance shall be reviewed periodically to ensure that it conforms with the current standards applicable to the individual's employment, and shall be re-examined as a matter of priority when new information is received which indicates that continued employment involving access to naval nuclear propulsion information may no longer be consistent with the interests of security.
- G. Effective liaison shall be maintained between the national agencies responsible for national security and the agencies responsible for the clearance determination and program execution to assure prompt notification of information with derogatory implications developed subsequently to the grant of security clearance.

#### SECTION II - PHYSICAL SECURITY

- A. Naval nuclear propulsion information shall be protected physically against espionage, sabotage, unauthorized access, or any other hostile activity. Such protection shall be commensurate with the importance of the security interest involved.
- B. Programs for physical security of naval nuclear propulsion information shall be established so as to assure:
  - 1. Proper protection of naval nuclear propulsion information on hand for immediate use, in storage, or in transit;

- 2. The establishment of security areas, with controlled access, when deemed necessary by reason of the sensitivity, character, volume, and use of the naval nuclear propulsion information and the character and location of the building or buildings involved. Perimeter barriers (natural or structural) shall be established when considered necessary to prevent or impede access by unauthorized individuals because of the particular sensitivity or revealing characteristics of the naval nuclear propulsion information involved;
- 3. A system of controlled access which shall embody procedures for authorization by a responsible authority, accurate methods of personnel identification, and accountability for identification media, and a means of enforcing limitations on movement and access to security areas; and
- 4. The exchange of information regarding security system technologies, and information relating to their application to nuclear or nuclear related facilities.

#### SECTION III - CONTROL OF CLASSIFIED INFORMATION

- A. Document and information control programs shall be maintained which will have for their basic purposes:
  - 1. Classification in strict accord with the sensitivity of the information involved.
  - 2. Control of access.
  - 3. Ready accountability commensurate with the degree of sensitivity.
  - 4. Periodic review for purposes of downgrading or declassification.
  - 5. Destruction when no longer needed.
- B. Information or material shall be classified strictly in accordance with applicable classification policies. The authority to classify naval nuclear propulsion information shall be granted to the minimum number of individuals and at the highest administrative levels consistent with operational requirements and such individuals shall be charged with strict compliance with classification standards. To promote uniformity, the following special rules shall be observed:
  - 1. Documents shall be classified according to content and not necessarily according to relationship to other documents.

- 2. Classification of a file or group of documents physically connected shall be at least as high as that of the most highly classified document therein.
- 3. Each document shall bear only one classification, even though separate pages, paragraphs, sections, or components thereof may bear different classifications and the over-all classification shall be at least as high as the highest classified portion of the document.
- 4. Documents and material shall be conspicuously marked so that current classifications are clearly visible and readily understandable. For information that is orally communicated, the communicating Party shall clearly state the applicable classification level before it is communicated.
- 5. When a document is reproduced, all original security markings thereon shall also be reproduced or shown on each reproduction.
- The use of naval nuclear propulsion information shall be limited to approved locations, as determined by each Party. Except during the periods when such information is in use by authorized personnel, it shall be stored in repositories of approved design and construction. Naval nuclear propulsion information stored and/or processed in computer systems shall be protected against unauthorized access, destruction, and illegal modification. The nature and extent of the protection given shall be commensurate with the assessed threat to and vulnerability of the systems involved. Threats, vulnerabilities, and resultant risks shall be assessed by an approved responsible authority, as determined by each Party. The level of protection demanded in computer systems dealing with naval nuclear propulsion information shall be commensurate with that demanded by non-naval nuclear propulsion information classified at the same levels. In addition, security controls shall be implemented to ensure that personnel who are not authorized for access to naval nuclear propulsion information, albeit security cleared for other classified information, cannot gain access to such information. The nature and quality of such controls shall be endorsed by an appropriate responsible authority, as determined by each Party.
- D. Requirements for intra-Party transmission of naval nuclear propulsion information made available by another Party shall be as follows:
  - 1. Top Secret naval nuclear propulsion information by military, diplomatic, or other official courier.

- 2. Secret and Confidential naval nuclear propulsion information by official courier or registered mail within the postal system of the United States. Secret and Confidential naval nuclear propulsion information by official courier only within the United Kingdom and within Australia.
- 3. All naval nuclear propulsion information transmitted by electronic means shall be encrypted when outside a physically secure environment approved by an appropriate responsible authority, as determined by each Party, for the protection of such information.
- E. Naval nuclear propulsion information shall be transmitted between the United States, the United Kingdom, and Australia only by means of diplomatic pouch, by military, diplomatic or other official courier, or by other mutually acceptable means.
- F. Accountability procedures shall be established to control dissemination of documents containing Secret or Top Secret naval nuclear propulsion information, including the assignment of accountability numbers to documents containing Top Secret naval nuclear propulsion information. Top Secret control officers shall be designated to maintain accountability registers for the receipt and dispatch of Top Secret documents. Receipts shall be used to evidence transfer of Top Secret, Secret and, when appropriate, Confidential documents.
- G. Documents containing naval nuclear propulsion information, when no longer needed, shall be destroyed by burning, shredding, pulping, or any other method which assures complete destruction of the information contained therein. Work sheets, carbon paper, stenographer's notes, imperfect copies, computer printouts, the various types of data storage media, and similar material which warrant classification shall be safeguarded and destroyed in the manner prescribed for documents of the same classification. Destruction of Top Secret, Secret and receipted Confidential documents shall be evidenced by appropriate entries in accountability records.

#### SECTION IV - GENERAL REQUIREMENTS

A. <u>Security Assurances</u>. It is recognized that exchange of information may require individuals in the United States or the United Kingdom to visit Australia and vice versa. In furtherance of this activity, the responsible authority of the sponsoring Party shall furnish (in advance) to the responsible authority, as determined by the Party to be visited, an assurance in writing that the visitor is eligible for access to classified information in the country of the sponsoring Party. This assurance shall include the following data:

- 1. Full name (not initials) of the visitor;
- 2. Date and place of birth;
- 3. Citizenship;
- 4. Official title or description of official position; and
- 5. The kind of security clearance granted to the individual and the scope of investigation upon which the clearance determination was based.
- B. Security of Classified Contracts. Every classified contract, sub-contract, consultant agreement, or other arrangement entered into by any Party to the Agreement, and relating to information exchanged under the Agreement, shall contain appropriate clauses imposing obligations to abide by the security arrangements set forth in this Security Annex.
- C. Security Education. Responsibility for maintenance of adequate security shall rest at various executive and administrative levels and each individual shall be required to observe proper security measures. To assure that all individuals authorized access to naval nuclear propulsion information are properly advised, the Parties agree to maintain an adequate program to inform all persons of their responsibilities under the Agreement, including a specific initial indoctrination and orientation, periodic re-emphasis of individual responsibilities and a termination interview, stressing the continuing responsibilities for protection of naval nuclear propulsion information.
- D. Loss or Compromise. In event of loss or possible compromise of naval nuclear propulsion information exchanged under the Agreement, any individual having knowledge of such loss or compromise shall be required to promptly report such loss or compromise to the appropriate responsible authority, as determined by each Party. The Party in whose jurisdiction the loss or possible compromise occurred shall undertake an immediate investigation into the circumstances surrounding the incident. The originating Party shall be notified promptly of the loss or compromise and the findings of the investigation.
- E. Reports. Each Party shall from time to time submit such reports as are requested concerning the information communicated or exchanged under the Agreement and the dissemination of information on which particular restrictions have been placed by the providing Party.

F. <u>Facility Index</u>. Each Party shall maintain appropriate records of its approved non-Government facilities where naval nuclear propulsion information may be stored.

#### SECTION V - CONTINUING REVIEW OF SECURITY SYSTEM

The Parties recognize that effective and prompt implementation of the security policies can be materially advanced through reciprocal visits of security personnel. Accordingly, the Parties agree to continue thorough exchange of views relative to security policies, standards, and procedures and to permit respective security working groups to examine and view at first hand the implementing procedures of the agencies responsible for the administration of the naval nuclear propulsion programs, such action to be undertaken with a view to achieving an understanding of adequacy and reasonable comparability of the respective systems.