TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Subtitle A—Authorization of Appropriations

SEC. 201. AUTHORIZATION OF APPROPRIATIONS.

Funds are hereby authorized to be appropriated for fiscal year 2019 for the use of the Department of Defense for research, development, test, and evaluation, as specified in the funding table in section 4201.

Subtitle B—Program Requirements, Restrictions, and Limitations

SEC. 211. MODIFICATION OF AUTHORITY TO CARRY OUT CERTAIN PROTOTYPE PROJECTS.

Section 2371b of title 10, United States Code, is amended—

(1) in subsection (a)(2)—

(A) in subparagraph (A), in the matter before clause (i), by striking "(for a prototype project)" and inserting "for a prototype project, and any follow-on production contract or transaction that is awarded pursuant to subsection (f),";

(B) in subparagraph (B)—

(i) in the matter before clause (i), by striking "(for a prototype project)" and inserting "for a prototype project, and any follow-on production contract or transaction that is awarded pursuant to subsection (f),"; and

(ii) in clause (i), in the matter before subclause (I), by striking "Under Secretary of Defense for Acquisition, Technology, and Logistics" and inserting "Under Secretary of Defense for Research and Engineering or the Under Secretary of Defense for Acquisition and Sustainment";

(C) in paragraph (3), by striking "Under Secretary of Defense for Acquisition, Technology, and Logistics" and inserting "Under Secretaries of Defense";

(2) in subsection (b)(2), by inserting "the prototype" after "carry out"; and

(3) in subsection (f)—

(A) by redesignating paragraph (3) as paragraph (5); and

(B) by inserting after paragraph (2) the following new paragraphs:

"(3) A follow-on production contract or transaction may be awarded, pursuant to this subsection, when the Department determines that an individual prototype or prototype subproject as part of a consortium is successfully completed by the participants.

"(4) Award of a follow-on production contract or transaction pursuant to the terms under this subsection is not contingent upon the successful completion of all activities within a consortium as a condition for an award for follow-on production of a successfully completed prototype or prototype subproject within that consortium.".

SEC. 212. EXTENSION OF DIRECTED ENERGY PROTOTYPE AUTHORITY.

Section 219(c)(4) of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328; 10 U.S.C. 2431 note) is amended—

(1) in subparagraph (A), by striking "Except as provided in subparagraph (B)" and inserting "Except as provided in subparagraph (C)";

(2) by redesignating subparagraph (B) as subparagraph (C);

(3) by inserting after subparagraph (A) the following:

"(B) Except as provided in subparagraph (C) and subject to the availability of appropriations for such purpose, of the funds authorized to be appropriated by the National Defense Authorization Act for Fiscal Year 2019 or otherwise made available for fiscal year 2019 for research, development, test, and evaluation, defense-wide, up to $100,000,000 may be available to the Under Secretary to allocate to the military departments, the defense agencies, and the combatant commands to carry out the program established under paragraph (1).''; and

(4) in subparagraph (C), as so redesignated, by striking "made available under subparagraph (A)" and inserting "made available under subparagraph (A) or subparagraph (B)".

SEC. 213. PROHIBITION ON AVAILABILITY OF FUNDS FOR THE WEATHER COMMON COMPONENT PROGRAM.

(a) PROHIBITION.—None of the funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2019 for research, development, test, and evaluation, Air Force, for weather service (PE 0305111F, Project 672738) for product development, test and evaluation, and management services associated with the Weather Common Component program may be obligated or expended.

(b) REPORT REQUIRED.—

(1) IN GENERAL.—The Secretary of the Air force shall submit to the congressional defense committees a report on technologies and capabilities that—

(A) provide real-time or near real-time meteorological situational awareness data through the use of sensors installed on manned and unmanned aircraft; and

(B) were developed primarily using funds of the Department of Defense.

(2) ELEMENTS.—The report under paragraph (1) shall include—

(A) a description of all technologies and capabilities described in paragraph (1) that exist as of the date on which the report is submitted;

(B) a description of any testing activities that have been completed for such technologies and capabilities, and the results of those testing activities;

(C) the total amount of funds used by the Department of Defense for the development of such technologies and capabilities;

(D) a list of capability gaps or shortfalls in any major commands of the Air Force relating to the gathering, processing, exploitation, and dissemination of real-time or near real-time meteorological situational awareness data for unmanned systems;

(E) an explanation of how such gaps or shortfalls may be remedied to supplement the weather forecasting capabilities of the Air Force and to enhance the efficiency or effectiveness of combat air power; and

(F) a plan for fielding existing technologies and capabilities to mitigate such gaps or shortfalls.

SEC. 214. LIMITATION ON AVAILABILITY OF FUNDS FOR F–35 CONTINUOUS CAPABILITY DEVELOPMENT AND DELIVERY.

(a) LIMITATION.—Except as provided in subsection (b), of the funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2019 for the F–35 continuous capability development and delivery program, not more than 75 percent may be obligated or expended until a period of 15 days has elapsed following the date on which the Secretary of Defense submits to the congressional defense committees a detailed cost estimate and baseline schedule for the program, which shall include any information required for a major defense acquisition program under section 2435 of title 10, United States Code.

(b) EXCEPTION.—The limitation in subsection (a) does not apply to any funds authorized to be appropriated or otherwise made avail-

able for the development of the F–35 dual capable aircraft capability.

SEC. 215. LIMITATION ON AVAILABILITY OF FUNDS PENDING REPORT ON AGILE SOFTWARE DEVELOPMENT AND SOFTWARE OPERATIONS.

(a) LIMITATION.—Of the of funds described in subsection (d), not more than 80 percent may be obligated or expended until a period of 30 days has elapsed following the date on which the Secretary of the Air Force submits the report required under subsection (b).

(b) REPORT.—Not later than 60 days after the date of the enactment of this Act, the Secretary of the Air Force, in consultation with the Director of Defense Pricing/Defense Procurement and Acquisition Policy and the Director of the Defense Digital Service, shall submit to the congressional defense committees a report that includes a description of each of the following:

(1) How cost estimates in support of modernization and upgrade activities for Air and Space Operations Centers are being conducted and using what methods.

(2) The contracting strategy and types of contracts being used to execute Agile Software Development and Software Operations (referred to in this section as "Agile DevOps") activities.

(3) How intellectual property ownership issues associated with software applications developed with Agile DevOps processes will be addressed to ensure future sustainment, maintenance, and upgrades to software applications after the applications are fielded.

(4) A description of the tools and software applications that have been developed for the Air and Space Operations Centers and the costs and cost categories associated with each.

(5) Challenges the Air Force has faced in executing acquisition activities modernizing the Air and Space Operations Centers and how the Air Force plans to address the challenges identified.

(6) The Secretary's strategy for ensuring that software applications developed for Air Operations Centers are transportable and translatable among all the Centers to avoid any duplication of efforts.

(c) REVIEW.—Before submitting the report under subsection (b), the Secretary of the Air Force shall ensure that the report is reviewed and approved by the Director of Defense Pricing/Defense Procurement and Acquisition Policy.

(d) FUNDS DESCRIBED.—The funds described in this subsection are the following:

(1) Funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2019 for research, development, test, and evaluation, Air Force, for Air and Space Operations Centers (PE 0207410F, Project 674596).

(2) Funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2019 for other procurement, Air Force, for Air and Space Operations Centers.

SEC. 216. LIMITATION ON AVAILABILITY OF FUNDS FOR CERTAIN HIGH ENERGY LASER ADVANCED TECHNOLOGY.

(a) LIMITATION.—Of the funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2019 for the De-

partment of Defense for High Energy Laser Advanced Technology (PE 0603924D8Z), not more than 50 percent may be obligated or expended until the date on which the Secretary of Defense submits to the congressional defense committees a roadmap and detailed assessment of the high energy laser programs of the Department of Defense, which shall include plans for coordination across the Department and transition to programs of record.

(b) RULE OF CONSTRUCTION.—The limitation in subsection (a) shall not be construed to apply to any other high energy laser program of the Department of Defense other than the program element specified in such subsection.

SEC. 217. PLAN FOR THE STRATEGIC CAPABILITIES OFFICE OF THE DEPARTMENT OF DEFENSE.

(a) PLAN REQUIRED.—Not later than March 1, 2019, the Secretary of Defense, acting through the Under Secretary of Defense for Research and Engineering, shall submit to the congressional defense committees a plan—

(1) to eliminate the Strategic Capabilities Office of the Department of Defense by not later than October 1, 2020;

(2) to transfer the functions of the Strategic Capabilities Office to another organization or element of the Department by not later than October 1, 2020; or

(3) to retain the Strategic Capabilities Office.

(b) ELEMENTS.—The plan required under subsection (a) shall include the following:

(1) A timeline for the potential elimination, transfer, or retention of some or all of the activities, functions, programs, plans, and resources of the Strategic Capabilities Office.

(2) A strategy for mitigating risk to the programs of the Strategic Capabilities Office.

(3) A strategy for implementing the lessons learned and best practices of the Strategic Capabilities Office across the organizations and elements of the Department of Defense to promote enterprise-wide innovation.

(4) An assessment of the transition outcomes, research portfolio, and mission accomplishment in the key functions of the Strategic Capabilities Office described in subsection (c).

(5) An assessment of the relationship of the Strategic Capabilities Office with—

(A) the acquisition and rapid capabilities programs of the military departments;

(B) Department laboratories;

(C) the Defense Advanced Research Projects Agency; and

(D) other research and development activities.

(6) Assessment of management and bureaucratic challenges to the effective and efficient execution of the Strategic Capabilities Office missions, especially with respect to contracting and personnel management.

(c) KEY FUNCTIONS DESCRIBED.—The key functions described in this subsection are the following:

(1) Repurposing existing Government and commercial systems for new technological advantage.

(2) Developing novel concepts of operation that are lower cost, more effective, and more responsive to changing threats than traditional concepts of operation.

(3) Developing joint systems and concepts of operations to meet emerging threats and military requirements based on partnerships with the military departments and combatant commanders.

(4) Developing prototypes and new concepts of operations that can inform the development of requirements and the establishment of acquisition programs.

(d) FORM OF PLAN.—The plan required under subsection (a) shall be submitted in unclassified form, but may include a classified annex.

SEC. 218. NATIONAL DEFENSE SCIENCE AND TECHNOLOGY STRATEGY.

(a) ANNUAL STRATEGY.—

(1) IN GENERAL.—Not later than February 4, 2019, the Secretary of Defense shall develop a strategy—

(A) to articulate the science and technology priorities, goals, and investments of the Department of Defense; and

(B) to make recommendations on the future of the defense research and engineering enterprise and its continued success in an era of strategic competition.

(2) ELEMENTS.—The strategy required by paragraph (1) shall—

(A) be aligned with the National Defense Strategy and Governmentwide strategic science and technology priorities, including the defense budget priorities of the Office of Science and Technology Policy of the President;

(B) link the priorities, goals, and outcomes in paragraph (1)(A) with needed critical enablers to specific programs, or broader portfolios, including—

(i) personnel and workforce capabilities;

(ii) facilities for research and test infrastructure;

(iii) relationships with academia, the acquisition community, the operational community, and the commercial sector; and

(iv) funding, investments, personnel, facilities, and relationships with departments, agencies, or other Federal entities outside the Department of Defense without which defense capabilities would be severely degraded;

(C) evaluate the coordination of acquisition priorities, programs, and timelines of the Department with the activities of the defense research and engineering enterprise; and

(D) include recommendations for changes in authorities, regulations, policies, or any other relevant areas, that would support the achievement of the goals set forth in the strategy.

(3) ANNUAL UPDATES.—Not less frequently than once each year, the Secretary shall revise and update the strategy required by paragraph (1).

(4) ANNUAL REPORTS.—(A) Not later than February 4, 2019, and not less frequently than once each year thereafter through December 31, 2021, the Secretary shall submit to the congressional defense committees the strategy required by para-

graph (1), as may be revised and updated in accordance with paragraph (3).

(B) The reports submitted pursuant to subparagraph (A) shall be submitted in unclassified form, but may include a classified annex.

(5) BRIEFING.—Not later than 14 days after the date on which the strategy under paragraph (1) is completed, the Secretary shall provide to the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives a briefing on the implementation of the strategy.

(6) DESIGNATION.—The strategy developed under paragraph (1) shall be known as the "National Defense Science and Technology Strategy".

(b) ASSESSMENT AND RECOMMENDATIONS.—

(1) IN GENERAL.—Not later than February 4, 2019, the Secretary shall submit to the congressional defense committees a report with an assessment and recommendations on the future of major elements of the defense research and engineering enterprise, evaluating warfighting contributions, portfolio management and coordination, workforce management including special hiring authorities, facilities and test infrastructure, relationships with private sector and interagency partners, and governance, including a comparison with the enterprises of other countries and the private sector.

(2) MAJOR ELEMENTS OF THE DEFENSE RESEARCH AND ENGINEERING ENTERPRISE.—The major elements of the defense research and engineering enterprise referred to in paragraph (1) include the following:

(A) The science and technology elements of the military departments.

(B) The Department of Defense laboratories.

(C) The test ranges and facilities of the Department.

(D) The Defense Advanced Research Projects Agency (DARPA).

(E) The Defense Innovation Unit Experimental (DIU(x)).

(F) The Strategic Capabilities Office of the Department.

(G) The Small Business Innovation Research program of the Department.

(H) The Small Business Technology Transfer program of the Department.

(I) Such other elements, offices, programs, and activities of the Department as the Secretary considers appropriate for purposes of the this section.

(3) CONSULTATION AND COMMENTS.—In making recommendations under paragraph (1), the Secretary shall consult with and seek comments from groups and entities relevant to the recommendations, such as the military departments, the combatant commands, the federally funded research and development centers (FFRDCs), commercial partners of the Department (including small business concerns), or any advisory committee established by the Department that the Secretary determines is appropriate based on the duties of the advisory committee and the expertise of its members.

(4) FORM OF SUBMISSION.—The report submitted pursuant to paragraph (1) shall be submitted in unclassified form, but may include a classified annex.

SEC. 219. MODIFICATION OF CVN–73 TO SUPPORT FIELDING OF MQ–25 UNMANNED AERIAL VEHICLE.

The Secretary of the Navy shall—

(1) modify the compartments and infrastructure of the aircraft carrier designated CVN–73 to support the fielding of the MQ–25 unmanned aerial vehicle before the date on which the refueling and complex overhaul of the aircraft carrier is completed; and

(2) ensure such modification is sufficient to complete the full installation of MQ–25 in no more than a single maintenance period after such overhaul.

SEC. 220. ESTABLISHMENT OF INNOVATORS INFORMATION REPOSITORY IN THE DEPARTMENT OF DEFENSE.

(a) IN GENERAL.—Not later than one year after the date of the enactment of this Act, the Secretary of Defense shall, acting through the Defense Technical Information Center, establish an innovators information repository within the Department of Defense in accordance with this section.

(b) MAINTENANCE OF INFORMATION REPOSITORY.—The Under Secretary of Defense for Research and Engineering shall maintain the information repository and ensure that it is periodically updated.

(c) ELEMENTS OF INFORMATION REPOSITORY.—The information repository established under subsection (a) shall—

(1) be coordinated across the Department of Defense enterprise to focus on small business innovators that are small, independent United States businesses, including those participating in the Small Business Innovation Research program or the Small Business Technology Transfer program;

(2) include appropriate information about each participant, including a description of—

(A) the need or requirement applicable to the participant;

(B) the participant's technology with appropriate technical detail and appropriate protections of proprietary information or data;

(C) any prior business of the participant with the Department; and

(D) whether the participant's technology was incorporated into a program of record; and

(3) incorporate the appropriate classification due to compilation of information.

(d) USE OF INFORMATION REPOSITORY.—After the information repository is established under subsection (a), the Secretary shall encourage use of the information repository by Department organizations involved in technology development and protection, including program offices, before initiating a Request for Information or a Request for Proposal to determine whether an organic technology exists or is being developed currently by a an entity supported by the Department (which may include a company, academic consortium, or other entity).

SEC. 221. STRATEGIC PLAN FOR DEPARTMENT OF DEFENSE TEST AND EVALUATION RESOURCES.

Section 196(d) of title 10, United States Code, is amended—

(1) by amending paragraph (1) to read as follows: "(1) Not less often than once every two fiscal years, the Under Secretary of Defense for Research and Engineering, in coordination with the Director of the Department of Defense Test Resources Management Center, the Director of Operational Test and Evaluation, the Director of the Defense Intelligence Agency, the Secretaries of the military departments, and the heads of Defense Agencies with test and evaluation responsibilities, shall complete a strategic plan reflecting the future needs of the Department of Defense with respect to test and evaluation facilities and resources. Each strategic plan shall cover the period of thirty fiscal years beginning with the fiscal year in which the plan is submitted under paragraph (3). The strategic plan shall be based on a comprehensive review of both funded and unfunded test and evaluation requirements of the Department, future threats to national security, and the adequacy of the test and evaluation facilities and resources of the Department to meet those future requirements and threats."; and

(2) in paragraph (2)(C), by striking "needed to meet such requirements" and inserting "needed to meet current and future requirements based on current and emerging threats".

SEC. 222. COLLABORATION BETWEEN DEFENSE LABORATORIES, INDUSTRY, AND ACADEMIA; OPEN CAMPUS PROGRAM.

(a) COLLABORATION.—The Secretary of Defense may carry out activities to prioritize innovative collaboration between Department of Defense science and technology reinvention laboratories, industry, and academia.

(b) OPEN CAMPUS PROGRAM.—In carrying out subsection (a), the Secretary, acting through the Commander of the Air Force Research Laboratory, the Commander of the Army Research, Development and Engineering Command, and the Chief of Naval Research, or such other officials of the Department as the Secretary considers appropriate, may develop and implement an open campus program for the Department science and technology reinvention laboratories which shall be modeled after the open campus program of the Army Research Laboratory.

SEC. 223. PERMANENT EXTENSION AND CODIFICATION OF AUTHORITY TO CONDUCT TECHNOLOGY PROTECTION FEATURES ACTIVITIES DURING RESEARCH AND DEVELOPMENT OF DEFENSE SYSTEMS.

(a) IN GENERAL.—Chapter 139 of title 10, United States Code, is amended by inserting before section 2358 the following new section:

"§ 2357. Technology protection features activities

"(a) ACTIVITIES.—The Secretary of Defense shall carry out activities to develop and incorporate technology protection features in a designated system during the research and development phase of such system.

"(b) COST-SHARING.—Any contract for the design or development of a system resulting from activities under subsection (a) for the purpose of enhancing or enabling the exportability of the system, ei-

ther for the development of program protection strategies for the system or the design and incorporation of exportability features into the system, shall include a cost-sharing provision that requires the contractor to bear half of the cost of such activities, or such other portion of such cost as the Secretary considers appropriate upon showing of good cause.

"(c) DEFINITIONS.—In this section:

"(1) The term 'designated system' means any system (including a major system, as defined in section 2302(5) of title 10, United States Code) that the Under Secretary of Defense for Acquisition and Sustainment designates for purposes of this section.

"(2) The term 'technology protection features' means the technical modifications necessary to protect critical program information, including anti-tamper technologies and other systems engineering activities intended to prevent or delay exploitation of critical technologies in a designated system.".

(b) CLERICAL AMENDMENT.—The table of sections at the beginning of chapter 139 of title 10, United States Code, is amended by inserting before the item relating to section 2358 the following new item:

"2357. Technology protection features activities.".

(c) CONFORMING REPEAL.—Section 243 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (10 U.S.C. 2358 note) is repealed.

SEC. 224. CODIFICATION AND REAUTHORIZATION OF DEFENSE RESEARCH AND DEVELOPMENT RAPID INNOVATION PROGRAM.

(a) CODIFICATION.—

(1) IN GENERAL.—Chapter 139 of title 10, United States Code, is amended by inserting after section 2359 the following new section:

"§ 2359a. Defense Research and Development Rapid Innovation Program

"(a) PROGRAM ESTABLISHED.—(1) The Secretary of Defense shall establish a competitive, merit-based program to accelerate the fielding of technologies developed pursuant to phase II Small Business Innovation Research Program projects, technologies developed by the defense laboratories, and other innovative technologies (including dual use technologies).

"(2) The purpose of this program is to stimulate innovative technologies and reduce acquisition or lifecycle costs, address technical risks, improve the timeliness and thoroughness of test and evaluation outcomes, and rapidly insert such products directly in support of primarily major defense acquisition programs, but also other defense acquisition programs that meet critical national security needs.

"(b) GUIDELINES.—The Secretary shall issue guidelines for the operation of the program. At a minimum such guidance shall provide for the following:

"(1) The issuance of one or more broad agency announcements or the use of any other competitive or merit-based processes by the Department of Defense for candidate proposals in

support of defense acquisition programs as described in subsection (a).

"(2) The review of candidate proposals by the Department of Defense and by each military department and the merit-based selection of the most promising cost-effective proposals for funding through contracts, cooperative agreements, and other transactions for the purposes of carrying out the program.

"(3) The total amount of funding provided to any project under the program from funding provided under subsection (d) shall not exceed $3,000,000, unless the Secretary, or the Secretary's designee, approves a larger amount of funding for the project.

"(4) No project shall receive more than a total of two years of funding under the program from funding provided under subsection (d), unless the Secretary, or the Secretary's designee, approves funding for any additional year.

"(5) Mechanisms to facilitate transition of follow-on or current projects carried out under the program into defense acquisition programs, through the use of the authorities of section 2302e of this title or such other authorities as may be appropriate to conduct further testing, low rate production, or full rate production of technologies developed under the program.

"(6) Projects are selected using merit-based selection procedures and the selection of projects is not subject to undue influence by Congress or other Federal agencies.

"(c) TREATMENT PURSUANT TO CERTAIN CONGRESSIONAL RULES.—Nothing in this section shall be interpreted to require or enable any official of the Department of Defense to provide funding under this section to any earmark as defined pursuant to House Rule XXI, clause 9, or any congressionally directed spending item as defined pursuant to Senate Rule XLIV, paragraph 5.

"(d) FUNDING.—Subject to the availability of appropriations for such purpose, the amounts authorized to be appropriated for research, development, test, and evaluation for a fiscal year may be used for such fiscal year for the program established under subsection (a).

"(e) TRANSFER AUTHORITY.—(1) The Secretary may transfer funds available for the program to the research, development, test, and evaluation accounts of a military department, defense agency, or the unified combatant command for special operations forces pursuant to a proposal, or any part of a proposal, that the Secretary determines would directly support the purposes of the program.

"(2) The transfer authority provided in this subsection is in addition to any other transfer authority available to the Department of Defense.".

(2) CLERICAL AMENDMENT.—The table of sections at the beginning of chapter 139 of such title is amended by inserting after the item relating to section 2359 the following new item:

"2359a. Defense Research and Development Rapid Innovation Program.".

(b) CONFORMING AMENDMENTS.—

(1) REPEAL OF OLD PROVISION.—Section 1073 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111–383; 10 U.S.C. 2359 note) is hereby repealed.

(2) REPEAL OF OLD TABLE OF CONTENTS ITEM.—The table of contents in section 2(b) of such Act is amended by striking the item relating to section 1073.

SEC. 225. PROCEDURES FOR RAPID REACTION TO EMERGING TECHNOLOGY.

(a) REQUIREMENT TO ESTABLISH PROCEDURES.—Not later than 180 days after the date of the enactment of this Act, the Under Secretary of Defense for Research and Engineering shall prescribe procedures for the designation and development of technologies that are—

(1) urgently needed—

(A) to react to a technological development of an adversary of the United States; or

(B) to respond to a significant and urgent emerging technology; and

(2) not receiving appropriate research funding or attention from the Department of Defense.

(b) ELEMENTS.—The procedures prescribed under subsection (a) shall include the following:

(1) A process for streamlined communications between the Under Secretary, the Joint Chiefs of Staff, the commanders of the combatant commands, the science and technology executives within each military department, and the science and technology community, including—

(A) a process for the commanders of the combatant commands and the Joint Chiefs of Staff to communicate their needs to the science and technology community; and

(B) a process for the science and technology community to propose technologies that meet the needs communicated by the combatant commands and the Joint Chiefs of Staff.

(2) Procedures for the development of technologies proposed pursuant to paragraph (1)(B), including—

(A) a process for demonstrating performance of the proposed technologies on a short timeline;

(B) a process for developing a development strategy for a technology, including integration into future budget years; and

(C) a process for making investment determinations based on information obtained pursuant to subparagraphs (A) and (B).

(c) BRIEFING.—Not later than 180 days after the date of the enactment of this Act, the Under Secretary shall provide to the congressional defense committees a briefing on the procedures required by subsection (a).

SEC. 226. ACTIVITIES ON IDENTIFICATION AND DEVELOPMENT OF ENHANCED PERSONAL PROTECTIVE EQUIPMENT AGAINST BLAST INJURY.

(a) ACTIVITIES REQUIRED.—During calendar year 2019, the Secretary of the Army shall, in consultation with the Director of Operational Test and Evaluation, carry out a set of activities to identify and develop personal equipment to provide enhanced protection against injuries caused by blasts in combat and training.

(b) ACTIVITIES.—

(1) CONTINUOUS EVALUATION PROCESS.—For purposes of the activities required by subsection (a), the Secretary shall es-

tablish a process to continuously solicit from government, industry, academia, and other appropriate entities personal protective equipment that is ready for testing and evaluation in order to identify and evaluate equipment or clothing that is more effective in protecting members of the Armed Forces from the harmful effects of blast injuries, including traumatic brain injuries, and would be suitable for expedited procurement and fielding.

(2) GOALS.—The goals of the activities shall include:

(A) Development of streamlined requirements for procurement of personal protective equipment.

(B) Appropriate testing of personal protective equipment prior to procurement and fielding.

(C) Development of expedited mechanisms for deployment of effective personal protective equipment.

(D) Identification of areas of research in which increased investment has the potential to improve the quality of personal protective equipment and the capability of the industrial base to produce such equipment.

(E) Such other goals as the Secretary considers appropriate.

(3) PARTNERSHIPS FOR CERTAIN ASSESSMENTS.—As part of the activities, the Secretary should continue to establish partnerships with appropriate academic institutions for purposes of assessing the following:

(A) The ability of various forms of personal protective equipment to protect against common blast injuries, including traumatic brain injuries.

(B) The value of real-time data analytics to track the effectiveness of various forms of personal protective equipment to protect against common blast injuries, including traumatic brain injuries.

(C) The availability of commercial-off the-shelf personal protective technology to protect against traumatic brain injury resulting from blasts.

(D) The extent to which the equipment determined through the assessment to be most effective to protect against common blast injuries is readily modifiable for different body types and to provide lightweight material options to enhance maneuverability.

(c) AUTHORITIES.—In carrying out activities under subsection (a), the Secretary may use any authority as follows:

(1) Experimental procurement authority under section 2373 of title 10, United States Code.

(2) Other transactions authority under section 2371 and 2371b of title 10, United States Code.

(3) Authority to award technology prizes under section 2374a of title 10, United States Code.

(4) Authority under the Defense Acquisition Challenge Program under section 2359b of title 10, United States Code.

(5) Any other authority on acquisition, technology transfer, and personnel management that the Secretary considers appropriate.

(d) CERTAIN TREATMENT OF ACTIVITIES.—Any activities under this section shall be deemed to have been through the use of com-

petitive procedures for the purposes of section 2304 of title 10, United States Code.

(e) ON-GOING ASSESSMENT FOLLOWING ACTIVITIES.—After the completion of activities under subsection (a), the Secretary shall, on an on-going basis, do the following:

(1) Evaluate the extent to which personal protective equipment identified through the activities would—

(A) enhance survivability of personnel from blasts in combat and training; and

(B) enhance prevention of brain damage, and reduction of any resultant chronic brain dysfunction, from blasts in combat and training.

(2) In the case of personal protective equipment so identified that would provide enhancements as described in paragraph (1), estimate the costs that would be incurred to procure such enhanced personal protective equipment, and develop a schedule for the procurement of such equipment.

(3) Estimate the potential health care cost savings that would occur from expanded use of personal protective equipment described in paragraph (2).

(f) REPORT.—Not later than December 1, 2019, the Secretary shall submit to the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives a report on the activities under subsection (a) as of the date of the report.

(g) FUNDING.—Of the amount authorized to be appropriated for fiscal year 2019 by this Act for research, development, test, and evaluation, as specified in the funding tables in division D, $10,000,000 may be used to carry out this section.

SEC. 227. HUMAN FACTORS MODELING AND SIMULATION ACTIVITIES.

(a) ACTIVITIES REQUIRED.—The Secretary of Defense shall develop and provide for the carrying out of human factors modeling and simulation activities designed to do the following:

(1) Provide warfighters and civilians with personalized assessment, education, and training tools.

(2) Identify and implement effective ways to interface and team warfighters with machines.

(3) Result in the use of intelligent, adaptive augmentation to enhance decision making.

(4) Result in the development of techniques, technologies, and practices to mitigate critical stressors that impede warfighter and civilian protection, sustainment, and performance.

(b) PURPOSE.—The overall purpose of the activities shall be to accelerate research and development that enhances capabilities for human performance, human-systems integration, and training for the warfighter.

(c) PARTICIPANTS IN ACTIVITIES.—Participants in the activities may include the following:

(1) Elements of the Department of Defense engaged in science and technology activities.

(2) Program Executive Offices of the Department.

(3) Academia.

(4) The private sector.

(5) Such other participants as the Secretary considers appropriate.

SEC. 228. EXPANSION OF MISSION AREAS SUPPORTED BY MECHANISMS FOR EXPEDITED ACCESS TO TECHNICAL TALENT AND EXPERTISE AT ACADEMIC INSTITUTIONS.

Section 217(e) of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2358 note) is amended—

(1) by redesignating paragraph (23) as paragraph (27); and

(2) by inserting after paragraph (22) the following new paragraphs:

"(23) Space.

"(24) Infrastructure resilience.

"(25) Photonics.

"(26) Autonomy.".

SEC. 229. ADVANCED MANUFACTURING ACTIVITIES.

(a) DESIGNATION.—The Under Secretary of Defense for Acquisition and Sustainment and the Under Secretary of Defense for Research and Engineering shall jointly, in coordination with Secretaries of the military departments, establish at least one activity per military service to demonstrate advanced manufacturing techniques and capabilities at depot-level activities or military arsenal facilities of the military departments.

(b) PURPOSES.—The activities established pursuant to subsection (a) shall—

(1) support efforts to implement advanced manufacturing techniques and capabilities;

(2) identify improvements to sustainment methods for component parts and other logistics needs;

(3) identify and implement appropriate information security protections to ensure security of advanced manufacturing;

(4) aid in the procurement of advanced manufacturing equipment and support services;

(5) enhance partnerships between the defense industrial base and Department of Defense laboratories, academic institutions, and industry; and

(6) to the degree practicable, include an educational or training component to build an advanced manufacturing workforce.

(c) COOPERATIVE AGREEMENTS AND PARTNERSHIPS.—

(1) IN GENERAL.—The Under Secretaries may enter into a cooperative agreement and use public-private and public-public partnerships to facilitate development of advanced manufacturing techniques in support of the defense industrial base.

(2) REQUIREMENTS.—A cooperative agreement entered into under paragraph (1) and a partnership used under such paragraph shall facilitate—

(A) development and implementation of advanced manufacturing techniques and capabilities;

(B) appropriate sharing of information in the adaptation of advanced manufacturing, including technical data rights;

(C) implementation of appropriate information security protections into advanced manufacturing tools and techniques; and

(D) support of necessary workforce development.

(d) AUTHORITIES.—In carrying out this section, the Under Secretaries may use the following authorities:

(1) Section 2196 of title 10, United States Code, relating to the Manufacturing Engineering Education Program.

(2) Section 2368 of such title, relating to centers for science, technology, and engineering partnership.

(3) Section 2374a of such title, relating to prizes for advanced technology achievements.

(4) Section 2474 of such title, relating to centers of industrial and technical excellence.

(5) Section 2521 of such title, relating to the Manufacturing Technology Program.

(6) Section 12 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a) and section 6305 of title 31, United States Code, relating to cooperative research and development agreements.

(7) Such other authorities as the Under Secretaries considers appropriate.

SEC. 230. NATIONAL SECURITY INNOVATION ACTIVITIES.

(a) ESTABLISHMENT.—The Under Secretary of Defense for Research and Engineering shall establish activities to develop interaction between the Department of Defense and the commercial technology industry and academia with regard to emerging hardware products and technologies with national security applications.

(b) ELEMENTS.—The activities required by subsection (a) shall include the following:

(1) Informing and encouraging private investment in specific hardware technologies of interest to future defense technology needs with unique national security applications.

(2) Funding research and technology development in hardware-intensive capabilities that private industry has not sufficiently supported to meet rapidly emerging defense and national security needs.

(3) Contributing to the development of policies, policy implementation, and actions to deter strategic acquisition of industrial and technical capabilities in the private sector by foreign entities that could potentially exclude companies from participating in the Department of Defense technology and industrial base.

(4) Identifying promising emerging technology in industry and academia for the Department of Defense for potential support or research and development cooperation.

(c) TRANSFER OF PERSONNEL AND RESOURCES.—

(1) IN GENERAL.—Subject to paragraph (2), the Under Secretary may transfer such personnel, resources, and authorities that are under the control of the Under Secretary as the Under Secretary considers appropriate to carry out the activities established under subsection (a) from other elements of the Department under the control of the Under Secretary or upon approval of the Secretary of Defense.

(2) CERTIFICATION.—The Under Secretary may only make a transfer of personnel, resources, or authorities under paragraph (1) upon certification by the Under Secretary that the activities established under paragraph (a) can attract sufficient private

sector investment, has personnel with sufficient technical and management expertise, and has identified relevant technologies and systems for potential investment in order to carry out the activities established under subsection (a), independent of further government funding beyond this authorization.

(d) ESTABLISHMENT OF NONPROFIT ENTITY.—The Under Secretary may establish or fund a nonprofit entity to carry out the program activities under subsection (a).

(e) PLAN.—

(1) IN GENERAL.—Not later than one year after the date of the enactment of this Act, the Under Secretary shall submit to the congressional defense committees a detailed plan to carry out this section.

(2) ELEMENTS.—The plan required by paragraph (1) shall include the following:

(A) A description of the additional authorities needed to carry out the activities set forth in subsection (b).

(B) Plans for transfers under subsection (c), including plans for private fund-matching and investment mechanisms, oversight, treatment of rights relating to technical data developed, and relevant dates and goals of such transfers.

(C) Plans for attracting the participation of the commercial technology industry and academia and how those plans fit into the current Department of Defense research and engineering enterprise.

(f) AUTHORITIES.—In carrying out this section, the Under Secretary may use the following authorities:

(1) Section 1711 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91), relating to a pilot program on strengthening manufacturing in the defense industrial base.

(2) Section 1599g of title 10 of the United States Code, relating to public-private talent exchanges.

(3) Section 2368 of such title, relating to Centers for Science, Technology, and Engineering Partnerships.

(4) Section 2374a of such title, relating to prizes for advanced technology achievements.

(5) Section 2474 of such title, relating to Centers of Industrial and Technical Excellence.

(6) Section 2521 of such title, relating to the Manufacturing Technology Program.

(7) Subchapter VI of chapter 33 of title 5, United States Code, relating to assignments to and from States.

(8) Chapter 47 of such title, relating to personnel research programs and demonstration projects.

(9) Section 12 of the Stevenson-Wydler Technology Innovation Act of 1980 (15 U.S.C. 3710a) and section 6305 of title 31, United States Code, relating to cooperative research and development agreements.

(10) Such other authorities as the Under Secretary considers appropriate.

(g) NOTICE REQUIRED.—Not later than 15 days before the date on which the Under Secretary first exercises the authority granted under subsection (d) and not later than 15 days before the date on

which the Under Secretary first obligates or expends any amount authorized under subsection (h), the Under Secretary shall notify the congressional defense committees of such exercise, obligation, or expenditure, as the case may be.

(h) FUNDING.—Of the amount authorized to be appropriated for fiscal year 2019 for the Department of Defense by section 201 and subject to the availability of appropriations, up to $75,000,000 may be available to carry out this section.

SEC. 231. PARTNERSHIP INTERMEDIARIES FOR PROMOTION OF DEFENSE RESEARCH AND EDUCATION.

Section 2368 of title 10, United States Code, is amended—

(1) by redesignating subsections (f) and (g) as subsections (g) and (h), respectively; and

(2) by inserting after subsection (e) the following new subsection (f):

"(f) USE OF PARTNERSHIP INTERMEDIARIES TO PROMOTE DEFENSE RESEARCH AND EDUCATION.—(1) Subject to the approval of the Secretary or the head of the another department or agency of the Federal Government concerned, the Director of a Center may enter into a contract, memorandum of understanding or other transition with a partnership intermediary that provides for the partnership intermediary to perform services for the Department of Defense that increase the likelihood of success in the conduct of cooperative or joint activities of the Center with industry or academic institutions.

"(2) In this subsection, the term 'partnership intermediary' means an agency of a State or local government, or a nonprofit entity owned in whole or in part by, chartered by, funded in whole or in part by, or operated in whole or in part by or on behalf of a State or local government, that assists, counsels, advises, evaluates, or otherwise cooperates with industry or academic institutions that need or can make demonstrably productive use of technology-related assistance from a Center.".

SEC. 232. LIMITATION ON USE OF FUNDS FOR SURFACE NAVY LASER WEAPON SYSTEM.

(a) LIMITATION.—None of the funds authorized to be appropriated or otherwise made available by this Act may be used to exceed, in fiscal year 2019, a procurement quantity of one Surface Navy Laser Weapon System, also known as the High Energy Laser and Integrated Optical-dazzler with Surveillance (HELIOS), unless the Secretary of the Navy submits to the congressional defense committees a report on such system with the elements set forth in subsection (b).

(b) ELEMENTS.—The elements set forth in this subsection are, with respect to the system described in subsection (a), the following:

(1) A document setting forth the requirements for the system, including desired performance characteristics.

(2) An acquisition plan that includes the following:

(A) A program schedule to accomplish design completion, technology maturation, risk reduction, and other activities, including dates of key design reviews (such as Preliminary Design Review and Critical Design Review) and program initiation decision (such as Milestone B) if applicable.

(B) A contracting strategy, including requests for proposals, the extent to which contracts will be competitively

awarded, option years, option quantities, option prices, and ceiling prices.

(C) The fiscal years of procurement and delivery for each engineering development model, prototype, or similar unit planned to be acquired.

(D) A justification for the fiscal years of procurement and delivery for each engineering development model, prototype, or similar unit planned to be acquired.

(3) A test plan and schedule sufficient to achieve operational effectiveness and operational suitability determinations (such as Early Operational Capability and Initial Operational Capability) related to the requirements set forth in paragraph (1).

(4) Associated funding and item quantities, disaggregated by fiscal year and appropriation, requested in the Fiscal Year 2019 Future Years Defense Program.

(5) An estimate of the acquisition costs, including the total costs for procurement, research, development, test, and evaluation.

SEC. 233. EXPANSION OF COORDINATION REQUIREMENT FOR SUPPORT FOR NATIONAL SECURITY INNOVATION AND ENTREPRENEURIAL EDUCATION.

Section 225(e) of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2359 note) is amended by adding at the end the following new paragraphs:

"(16) The National Security Technology Accelerator.

"(17) The I-Corps Program.".

SEC. 234. DEFENSE QUANTUM INFORMATION SCIENCE AND TECHNOLOGY RESEARCH AND DEVELOPMENT PROGRAM.

(a) ESTABLISHMENT.—The Secretary of Defense shall carry out a quantum information science and technology research and development program.

(b) PURPOSES.—The purposes of the program required by subsection (a) are as follows:

(1) To ensure global superiority of the United States in quantum information science necessary for meeting national security requirements.

(2) To coordinate all quantum information science and technology research and development within the Department of Defense and to provide for interagency cooperation and collaboration on quantum information science and technology research and development between the Department of Defense and other departments and agencies of the United States and appropriate private sector entities that are involved in quantum information science and technology research and development.

(3) To develop and manage a portfolio of fundamental and applied quantum information science and technology and engineering research initiatives that is stable, consistent, and balanced across scientific disciplines.

(4) To accelerate the transition and deployment of technologies and concepts derived from quantum information science and technology research and development into the Armed Forces, and to establish policies, procedures, and standards for measuring the success of such efforts.

(5) To collect, synthesize, and disseminate critical information on quantum information science and technology research and development.

(6) To establish and support appropriate research, innovation, and industrial base, including facilities and infrastructure, to support the needs of Department of Defense missions and systems related to quantum information science and technology.

(c) ADMINISTRATION.—In carrying out the program required by subsection (a), the Secretary shall act through the Under Secretary of Defense for Research and Engineering, who shall supervise the planning, management, and coordination of the program. The Under Secretary, in consultation with the Secretaries of the military departments and the heads of participating Defense Agencies and other departments and agencies of the United States, shall—

(1) prescribe a set of long-term challenges and a set of specific technical goals for the program, including—

(A) optimization of analysis of national security data sets;

(B) development of defense related quantum computing algorithms;

(C) design of new materials and molecular functions;

(D) secure communications and cryptography, including development of quantum communications protocols;

(E) quantum sensing and metrology;

(F) development of mathematics relating to quantum enhancements to sensing, communications, and computing; and

(G) processing and manufacturing of low-cost, robust, and reliable quantum information science and technology-enabled devices and systems;

(2) develop a coordinated and integrated research and investment plan for meeting the near-, mid-, and long-term challenges with definitive milestones while achieving the specific technical goals that builds upon the Department's increased investment in quantum information science and technology research and development, commercial sector and global investments, and other United States Government investments in the quantum sciences;

(3) not later than 180 days after the date of the enactment of this Act, develop and continuously update guidance, including classification and data management plans for defense-related quantum information science and technology activities, and policies for control of personnel participating on such activities to minimize the effects of loss of intellectual property in basic and applied quantum science and information considered sensitive to the leadership of the United States in the field of quantum information science and technology; and

(4) develop memoranda of agreement, joint funding agreements, and other cooperative arrangements necessary for meeting the long-term challenges and achieving the specific technical goals.

(d) REPORT.—

(1) IN GENERAL.—Not later than December 31, 2020, the Secretary shall submit to the congressional defense committees

a report on the program, in both classified and unclassified format.

(2) ELEMENTS.—The report required by paragraph (1) shall include the following:

(A) A description of the knowledge-base of the Department with respect to quantum sciences, plans to defend against quantum based attacks, and any plans of the Secretary to enhance such knowledge-base.

(B) A plan that describes how the Secretary intends to use quantum sciences for military applications and to meet other needs of the Department.

(C) An assessment of the efforts of foreign powers to use quantum sciences for military applications and other purposes.

(D) A description of activities undertaken consistent with this section, including funding for activities consistent with the section.

(E) Such other matters as the Secretary considers appropriate.

SEC. 235. JOINT DIRECTED ENERGY TEST ACTIVITIES.

(a) TEST ACTIVITIES.—The Under Secretary of Defense for Research and Engineering shall, in the Under Secretary's capacity as the official with principal responsibility for the development and demonstration of directed energy weapons for the Department of Defense pursuant to section 219(a)(1) of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328; 10 U.S.C. 2431 note), develop, establish, and coordinate directed energy testing activities adequate to ensure the achievement by the Department of Defense of goals of the Department for developing and deploying directed energy systems to match national security needs.

(b) ELEMENTS.—The activity established under subsection (a) shall include the following:

(1) The High Energy Laser System Test Facility of the Army Test and Evaluation Command.

(2) Such other test resources and activities as the Under Secretary may designate for purposes of this section.

(c) DESIGNATION.—The test activities established under subsection (a) shall be considered part of the Major Range and Test Facility Base (as defined in 196(i) of title 10, United States Code).

(d) PRIORITIZATION OF EFFORT.—In developing and coordinating testing activities pursuant to subsection (a), the Under Secretary shall prioritize efforts consistent with the following:

(1) Paragraphs (2) through (5) of section 219(a) of the National Defense Authorization Act for Fiscal Year 2017 (10 U.S.C. 2431 note).

(2) Enabling the standardized collection and evaluation of testing data to establish testing references and benchmarks.

(3) Concentrating sufficient personnel expertise of directed energy weapon systems in order to validate the effectiveness of new weapon systems against a variety of targets.

(4) Consolidating modern state-of-the-art testing infrastructure including telemetry, sensors, and optics to support advanced technology testing and evaluation.

(5) Formulating a joint lethality or vulnerability information repository that can be accessed by any of the military de-

partments of Defense Agencies, similar to a Joint Munitions Effectiveness Manuals (JMEMs).

(6) Reducing duplication of directed energy weapon testing.

(7) Ensuring that an adequate workforce and adequate testing facilities are maintained to support missions of the Department of Defense.

SEC. 236. REQUIREMENT FOR ESTABLISHMENT OF ARRANGEMENTS FOR EXPEDITED ACCESS TO TECHNICAL TALENT AND EXPERTISE AT ACADEMIC INSTITUTIONS TO SUPPORT DEPARTMENT OF DEFENSE MISSIONS.

(a) IN GENERAL.—Subsection (a)(1) of section 217 of the National Defense Authorization Act for Fiscal Year 2018 (Public Law 115–91; 10 U.S.C. 2358 note) is amended by striking "and each secretary of a military department may establish one or more" and inserting "shall, acting through the secretaries of the military departments, establish not fewer than three".

(b) EXTENSION.—Subsection (f) of such section is amended by striking "September 30, 2020" and inserting "September 30, 2022".

SEC. 237. AUTHORITY FOR JOINT DIRECTED ENERGY TRANSITION OFFICE TO CONDUCT RESEARCH RELATING TO HIGH POWERED MICROWAVE CAPABILITIES.

Section 219(b)(3) of the National Defense Authorization Act for Fiscal Year 2017 (Public Law 114–328; 10 U.S.C. 2431 note) is amended by inserting ", including high-powered microwaves," after "energy systems and technologies".

SEC. 238. JOINT ARTIFICIAL INTELLIGENCE RESEARCH, DEVELOPMENT, AND TRANSITION ACTIVITIES.

(a) ESTABLISHMENT.—

(1) IN GENERAL.—The Secretary of Defense shall establish a set of activities within the Department of Defense to coordinate the efforts of the Department to develop, mature, and transition artificial intelligence technologies into operational use.

(2) EMPHASIS.—The set of activities established under paragraph (1) shall apply artificial intelligence and machine learning solutions to operational problems and coordinate activities involving artificial intelligence and artificial intelligence enabled capabilities within the Department.

(b) DESIGNATION.—Not later than one year after the date of the enactment of this Act, the Secretary shall designate a senior official of the Department with principal responsibility for the coordination of activities relating to the development and demonstration of artificial intelligence and machine learning for the Department.

(c) DUTIES.—The duties of the official designated under subsection (b) shall include the following:

(1) STRATEGIC PLAN.—Developing a detailed strategic plan to develop, mature, adopt, and transition artificial intelligence technologies into operational use. Such plan shall include the following:

(A) A strategic roadmap for the identification and coordination of the development and fielding of artificial intelligence technologies and key enabling capabilities.

(B) The continuous evaluation and adaptation of relevant artificial intelligence capabilities developed both inside the Department and in other organizations for military missions and business operations.

(2) ACCELERATION OF DEVELOPMENT AND FIELDING OF ARTIFICIAL INTELLIGENCE.—To the degree practicable, the designated official shall—

(A) use the flexibility of regulations, personnel, acquisition, partnerships with industry and academia, or other relevant policies of the Department to accelerate the development and fielding of artificial intelligence capabilities;

(B) ensure engagement with defense and private industries, research universities, and unaffiliated, nonprofit research institutions;

(C) provide technical advice and support to entities in the Department and the military departments to optimize the use of artificial intelligence and machine learning technologies to meet Department missions;

(D) support the development of requirements for artificial intelligence capabilities that address the highest priority capability gaps of the Department and technical feasibility;

(E) develop and support capabilities for technical analysis and assessment of threat capabilities based on artificial intelligence;

(F) ensure that the Department has appropriate workforce and capabilities at laboratories, test ranges, and within the organic defense industrial base to support the artificial intelligence capabilities and requirements of the Department;

(G) develop classification guidance for all artificial intelligence related activities of the Department;

(H) work with appropriate officials to develop appropriate ethical, legal, and other policies for the Department governing the development and use of artificial intelligence enabled systems and technologies in operational situations; and

(I) ensure—

(i) that artificial intelligence programs of each military department and of the Defense Agencies are consistent with the priorities identified under this section; and

(ii) appropriate coordination of artificial intelligence activities of the Department with interagency, industry, and international efforts relating to artificial intelligence, including relevant participation in standards setting bodies.

(3) GOVERNANCE AND OVERSIGHT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING POLICY.—Regularly convening appropriate officials across the Department—

(A) to integrate the functional activities of the organizations and elements of the Department with respect to artificial intelligence and machine learning;

(B) to ensure there are efficient and effective artificial intelligence and machine learning capabilities throughout the Department; and

(C) to develop and continuously improve research, innovation, policy, joint processes, and procedures to facilitate the development, acquisition, integration, advancement,

oversight, and sustainment of artificial intelligence and machine learning throughout the Department.

(d) ACCESS TO INFORMATION.—The Secretary shall ensure that the official designated under subsection (b) has access to such information on programs and activities of the military departments and other Defense Agencies as the Secretary considers appropriate to carry out the coordination described in subsection (b) and the duties set forth in subsection (c).

(e) STUDY ON ARTIFICIAL INTELLIGENCE TOPICS.—

(1) IN GENERAL.—Not later than one year after the date of the enactment of this Act, the official designated under subsection (b) shall—

(A) complete a study on past and current advances in artificial intelligence and the future of the discipline, including the methods and means necessary to advance the development of the discipline, to comprehensively address the national security needs and requirements of the Department; and

(B) submit to the congressional defense committees a report on the findings of the designated official with respect to the study completed under subparagraph (A).

(2) CONSULTATION WITH EXPERTS.—In conducting the study required by paragraph (1)(A), the designated official shall consult with experts within the Department, other Federal agencies, academia, any advisory committee established by the Secretary that the Secretary determines appropriate based on the duties of the advisory committee and the expertise of its members, and the commercial sector, as the Secretary considers appropriate.

(3) ELEMENTS.—The study required by paragraph (1)(A) shall include the following:

(A) A comprehensive and national-level review of—

(i) advances in artificial intelligence, machine learning, and associated technologies relevant to the needs of the Department and the Armed Forces; and

(ii) the competitiveness of the Department in artificial intelligence, machine learning, and such technologies.

(B) Near-term actionable recommendations to the Secretary for the Department to secure and maintain technical advantage in artificial intelligence, including ways—

(i) to more effectively organize the Department for artificial intelligence;

(ii) to educate, recruit, and retain leading talent; and

(iii) to most effectively leverage investments in basic and advanced research and commercial progress in these technologies.

(C) Recommendations on the establishment of Departmentwide data standards and the provision of incentives for the sharing of open training data, including those relevant for research into systems that integrate artificial intelligence and machine learning with human teams.

(D) Recommendations for engagement by the Department with relevant agencies that will be involved with artificial intelligence in the future.

(E) Recommendations for legislative action relating to artificial intelligence, machine learning, and associated technologies, including recommendations to more effectively fund and organize the Department.

(f) DELINEATION OF DEFINITION OF ARTIFICIAL INTELLIGENCE.—Not later than one year after the date of the enactment of this Act, the Secretary shall delineate a definition of the term "artificial intelligence" for use within the Department.

(g) ARTIFICIAL INTELLIGENCE DEFINED.—In this section, the term "artificial intelligence" includes the following:

(1) Any artificial system that performs tasks under varying and unpredictable circumstances without significant human oversight, or that can learn from experience and improve performance when exposed to data sets.

(2) An artificial system developed in computer software, physical hardware, or other context that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action.

(3) An artificial system designed to think or act like a human, including cognitive architectures and neural networks.

(4) A set of techniques, including machine learning, that is designed to approximate a cognitive task.

(5) An artificial system designed to act rationally, including an intelligent software agent or embodied robot that achieves goals using perception, planning, reasoning, learning, communicating, decision making, and acting.

Subtitle C—Reports and Other Matters

SEC. 241. REPORT ON SURVIVABILITY OF AIR DEFENSE ARTILLERY.

(a) REPORT REQUIRED.—Not later than March 1, 2019, the Secretary of the Army shall submit to the Committees on Armed Services of the Senate and the House of Representatives a report on the efforts of the Army to improve the survivability of air defense artillery, with a particular focus on the efforts of the Army to improve passive and active nonkinetic capabilities and training with respect to such artillery.

(b) ELEMENTS.—The report required under subsection (a) shall include the following:

(1) An analysis of the utility of relevant passive and active non-kinetic integrated air and missile defense capabilities, including tactical mobility, new passive and active sensors, signature reduction, concealment, and deception systems, and electronic warfare and high-powered radio frequency systems.

(2) An analysis of the utility of relevant active kinetic capabilities, such as a new, long-range counter-maneuvering threat missile and additional indirect fire protection capability units to defend Patriot and Terminal High Altitude Area Defense batteries.

(c) FORM OF REPORT.—The report required under subsection (a) shall be submitted in unclassified form, but may contain a classified annex.

SEC. 242. T–45 AIRCRAFT PHYSIOLOGICAL EPISODE MITIGATION ACTIONS.

Section 1063(b) of the National Defense Authorization Act for Fiscal Year 2018 (131 Stat. 1576; Public Law 115–91) is amended by adding at the end the following new paragraphs:

"(5) A list of all modifications to the T–45 aircraft and associated ground equipment carried out during fiscal years 2017 through 2019 to mitigate the risk of physiological episodes among T–45 crewmembers.

"(6) The results achieved by the modifications listed pursuant to paragraph (5), as determined by relevant testing and operational activities.

"(7) The cost of the modifications listed pursuant to paragraph (5).

"(8) Any plans of the Navy for future modifications to the T–45 aircraft that are intended to mitigate the risk of physiological episodes among T–45 crewmembers.".

SEC. 243. REPORT ON EFFORTS OF THE AIR FORCE TO MITIGATE PHYSIOLOGICAL EPISODES AFFECTING AIRCRAFT CREWMEMBERS.

(a) REPORT REQUIRED.—Not later than March 1, 2019, the Secretary of the Air Force shall submit to the congressional defense committees a report on all efforts of the Air Force to reduce the occurrence of, and mitigate the risk posed by, physiological episodes affecting crewmembers of covered aircraft.

(b) ELEMENTS.—The report required under subsection (a) shall include—

(1) information on the rate of physiological episodes affecting crewmembers of covered aircraft;

(2) a description of the specific actions carried out by the Air Force to address such episodes, including a description of any upgrades or other modifications made to covered aircraft to address such episodes;

(3) schedules and cost estimates for any upgrades or modifications identified under paragraph (3); and

(4) an explanation of any organizational or other changes to the Air Force carried out to address such physiological episodes.

(c) COVERED AIRCRAFT DEFINED.—In this section, the term "covered aircraft" means—

(1) F–35A aircraft of the Air Force;

(2) T–6A aircraft of the Air Force; and

(3) any other aircraft of the Air Force as determined by the Secretary of the Air Force.

SEC. 244. REPORT ON DEFENSE INNOVATION UNIT EXPERIMENTAL.

Not later than May 1, 2019, the Under Secretary of Defense for Research and Engineering shall submit to the congressional defense committees a report on Defense Innovation Unit Experimental (in this section referred to as the "Unit"). Such a report shall include the following:

(1) The integration of the Unit into the broader Department of Defense research and engineering community to coordinate and de-conflict activities of the Unit with similar activities of the military departments, Defense Agencies, Department of Defense laboratories, the Defense Advanced Research Project Agen-

cy, the Small Business Innovation Research Program, and other entities.

(2) The metrics used to measure the effectiveness of the Unit and the results of these metrics.

(3) The number and types of transitions by the Unit to the military departments or fielded to the warfighter.

(4) The impact of the Unit's initiatives, outreach, and investments on Department of Defense access to technology leaders and technology not otherwise accessible to the Department including—

(A) identification of—

(i) the number of non-traditional defense contractors with Department of Defense contracts or other transactions resulting directly from the Unit's initiatives, investments, or outreach; and

(ii) the number of traditional defense contractors with contracts or other transactions resulting directly from the Unit's initiatives;

(B) the number of innovations delivered into the hands of the warfighter; and

(C) how the Department is notifying its internal components about participation in the Unit.

(5) The workforce strategy of the Unit, including whether the Unit has appropriate personnel authorities to attract and retain talent with technical and business expertise.

(6) How the Department of Defense is documenting and institutionalizing lessons learned and best practices of the Unit to alleviate the systematic problems with technology access and timely contract or other transaction execution.

(7) An assessment of management and bureaucratic challenges to the effective and efficient execution of the Unit's missions, especially with respect to contracting and personnel management.

SEC. 245. MODIFICATION OF FUNDING CRITERIA UNDER HISTORICALLY BLACK COLLEGES AND UNIVERSITIES AND MINORITY INSTITUTIONS PROGRAM.

Section 2362(d) of title 10, United States Code, is amended—

(1) in the subsection heading, by striking "PRIORITY" and inserting "CRITERIA"; and

(2) by striking "give priority in providing" and inserting "limit".

SEC. 246. REPORT ON OA–X LIGHT ATTACK AIRCRAFT APPLICABILITY TO PARTNER NATION SUPPORT.

(a) REPORT REQUIRED.—Not later than February 1, 2019, the Secretary of the Air Force shall submit to the congressional defense committees a report on the OA–X light attack aircraft experiment and how the program incorporates partner nation requirements.

(b) ELEMENTS.—The report under subsection (a) shall include a description of—

(1) how the OA–X light attack experiment will support partner nations' low-cost counter terrorism light attack capability;

(2) the extent to which the attributes of affordability, interoperability, sustainability, and simplicity of maintenance and operations are included in the requirements for the OA–X; and

(3) how Federal Aviation Administration certification and a reasonable path for military type certifications for commercial derivative aircraft are factored into foreign military sales for a partner nation.

SEC. 247. REPORTS ON COMPARATIVE CAPABILITIES OF ADVERSARIES IN KEY TECHNOLOGY AREAS.

(a) IN GENERAL.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall, in coordination with the Director of the Defense Intelligence Agency, submit to the appropriate committees of Congress a set of classified reports that set forth a direct comparison between the capabilities of the United States in emerging technology areas and the capabilities of adversaries of the United States in such areas.

(b) ELEMENTS.—The reports required by subsection (a) shall include, for each technology area covered, the following:

(1) An evaluation of spending by the United States and adversaries on such technology.

(2) An evaluation of the quantity and quality of research on such technology.

(3) An evaluation of the test infrastructure and workforce supporting such technology.

(4) An assessment of the technological progress of the United States and adversaries on such technology.

(5) Descriptions of timelines for operational deployment of such technology.

(6) An assessment of the intent or willingness of adversaries to use such technology.

(c) TECHNICAL AREAS.—The Secretary shall ensure that the reports submitted under subsection (a) cover the following:

(1) Hypersonics.

(2) Artificial intelligence.

(3) Quantum information science.

(4) Directed energy weapons.

(5) Such other emerging technical areas as the Secretary considers appropriate.

(d) COORDINATION.—The Secretary shall prepare the reports in coordination with other appropriate officials of the intelligence community and with such other partners in the technology areas covered by the reports as the Secretary considers appropriate.

(e) APPROPRIATE COMMITTEES OF CONGRESS DEFINED.—In this section, the term "appropriate committees of Congress" means—

(1) the Committee on Armed Services and the Select Committee on Intelligence of the Senate; and

(2) the Committee on Armed Services and the Permanent Select Committee on Intelligence of the House of Representatives.

SEC. 248. REPORT ON ACTIVE PROTECTION SYSTEMS FOR ARMORED COMBAT AND TACTICAL VEHICLES.

(a) REPORT REQUIRED.—Not later than 60 days after the date of the enactment of this Act, the Secretary of the Army shall submit to the Committees on Armed Services of the Senate and the House of Representatives a report on technologies related to active protection systems (APS) for armored combat and tactical vehicles.

(b) CONTENTS.—The report required by subsection (a) shall include the following:

(1) With respect to the active protection systems that the Army has recently tested on the M1A2 Abrams, the M2A3 Bradley, and the STRYKER, the following:

(A) An assessment of the effectiveness of such systems.

(B) Plans of the Secretary to further test such systems.

(C) Proposals for future development of such systems.

(D) A timeline for fielding such systems.

(2) Plans for how the Army will incorporate active protection systems into new armored combat and tactical vehicle designs, such as Mobile Protection Firepower (MPF), Armored Multi-Purpose Vehicle (AMPV), and Next Generation Combat Vehicle (NGCV).

SEC. 249. NEXT GENERATION COMBAT VEHICLE.

(a) PROTOTYPE.—The Secretary of the Army shall take appropriate actions to ensure that all necessary resources are planned and programmed for accelerated prototyping, component development, testing, or acquisition for the Next Generation Combat Vehicle (NGCV).

(b) REPORT.—

(1) IN GENERAL.—Not later than March 1, 2019, the Secretary shall submit to the Committees on Armed Services of the Senate and the House of Representatives a report on the development of the Next Generation Combat Vehicle.

(2) ANALYSIS.—

(A) IN GENERAL.—The report required by paragraph (1) shall include a thorough analysis of the requirements of the Next Generation Combat Vehicle.

(B) RELEVANCE TO NATIONAL DEFENSE STRATEGY.—In carrying out subparagraph (A), the Secretary shall ensure that the requirements are relevant to the most recently published National Defense Strategy.

(C) THREATS AND TERRAIN.—The Secretary shall ensure that the analysis includes consideration of threats and terrain.

(D) COMPONENT TECHNOLOGIES.—The Secretary shall ensure that the analysis includes consideration of the latest enabling component technologies developed by the Tank Automotive, Research, Development, Engineering Center of the Army that have the potential to dramatically change basic combat vehicle design and improve lethality, protection, mobility, range, and sustainment.

(c) LIMITATION.—Of the funds authorized to be appropriated for fiscal year 2019 by section 201 and available for research, development, testing, and evaluation, Army, for the Next Generation Combat Vehicle, not more than 90 percent may be obligated or expended until the Secretary submits the report required by subsection (b).

SEC. 250. MODIFICATION OF REPORTS ON MECHANISMS TO PROVIDE FUNDS TO DEFENSE LABORATORIES FOR RESEARCH AND DEVELOPMENT OF TECHNOLOGIES FOR MILITARY MISSIONS.

Subsection (c) of section 2363 of title 10, United States Code, is amended to read as follows:

"(c) RELEASE AND DISSEMINATION OF INFORMATION ON CONTRIBUTIONS FROM USE OF AUTHORITY TO MILITARY MISSIONS.—

"(1) COLLECTION OF INFORMATION.—The Secretary shall establish and maintain mechanisms for the continuous collection of information on achievements, best practices identified, lessons learned, and challenges arising in the exercise of the authority in this section.

"(2) RELEASE OF INFORMATION.—The Secretary shall establish and maintain mechanisms as follows:

"(A) Mechanisms for the release to the public of information on achievements and best practices described in paragraph (1) in unclassified form.

"(B) Mechanisms for dissemination to appropriate civilian and military officials of information on achievements and best practices described in paragraph (1) in classified form.".

SEC. 251. BRIEFINGS ON MOBILE PROTECTED FIREPOWER AND FUTURE VERTICAL LIFT PROGRAMS.

(a) IN GENERAL.—Not later than March 1, 2019, the Secretary of the Army shall provide a briefing to the Committee on Armed Services of the Senate and the Committee on Armed Services of the House of Representatives on the requirements of the Army for Mobile Protected Firepower (MPF) and Future Vertical Lift (FVL).

(b) CONTENTS.—The briefing provided pursuant to subsection (a) shall include the following:

(1) With respect to the Mobile Protected Firepower program, the following:

(A) An explanation of how Mobile Protected Firepower could survive against the effects of anti-armor and anti-aircraft networks established within anti-access, area-denial defenses.

(B) An explanation of how Mobile Protected Firepower would improve offensive overmatch against a peer adversary.

(C) Details regarding the total number of Mobile Protected Firepower systems needed by the Army.

(D) An explanation of how the Mobile Protected Firepower system will be logistically supported within light formations.

(E) Plans to integrate active protection systems into the designs of the Mobile Protected Firepower program.

(2) With respect to the Future Vertical Lift program, the following:

(A) An explanation of how Future Vertical Lift could survive against the effects of anti-aircraft networks established within anti-access, area-denial defenses.

(B) An explanation of how Future Vertical Lift would improve offensive overmatch against a peer adversary.

(C) A review of the doctrine, organization, training, materiel, leadership, education, personnel, and facilities applicable to determine the total number of Future Vertical Lift Capability Set 1 or Future Attack Reconnaissance Aircraft (FARA), required by the Army.

(D) An implementation plan for the establishment of Future Vertical Lift, including a timeline for achieving initial and full operational capability.

(E) A description of the budget requirements for Future Vertical Lift to reach full operational capability, including an identification and cost of any infrastructure and equipment requirements.

(F) A detailed list of all analysis used to determine the priority of Future Vertical Lift and which programs were terminated, extended, de-scoped, or delayed in order to fund Future Vertical Lift Capability Set 1 or Future Attack Reconnaissance Aircraft in the Future Year's Defense Plan.

(G) An assessment of the analysis of alternatives on the Future Vertical Lift Capability Set 3 program.

(H) An identification of any additional authorities that may be required for achieving full operational capability of Future Vertical Lift.

(I) Any other matters deemed relevant by the Secretary.

SEC. 252. IMPROVEMENT OF THE AIR FORCE SUPPLY CHAIN.

(a) IN GENERAL.—The Assistant Secretary of the Air Force for Acquisition, Technology, and Logistics may use funds described in subsection (b) as follows:

(1) For nontraditional technologies and sustainment practices (such as additive manufacturing, artificial intelligence, predictive maintenance, and other software-intensive and software-defined capabilities) to—

(A) increase the availability of aircraft to the Air Force; and

(B) decrease backlogs and lead times for the production of parts for such aircraft.

(2) To advance the qualification, certification, and integration of additive manufacturing into the Air Force supply chain.

(3) To otherwise identify and reduce supply chain risk for the Air Force.

(4) To define workforce development requirements and training for personnel who implement and support additive manufacturing for the Air Force at the warfighter, end-item designer and equipment operator, and acquisition officer levels.

(b) FUNDING.—Of the amounts authorized to be appropriated for fiscal year 2019 by section 201 for research, development, test, and evaluation for the Air Force and available for Tech Transition Program (Program Element (0604858F)), up to $42,800,000 may be available as described in subsection (a).

SEC. 253. REVIEW OF GUIDANCE ON BLAST EXPOSURE DURING TRAINING.

(a) INITIAL REVIEW.—Not later than 180 days after the date of the enactment of this Act, the Secretary of Defense shall review the decibel level exposure, concussive effects exposure, and the frequency of exposure to heavy weapons fire of an individual during training exercises to establish appropriate limitations on such exposures.

(b) ELEMENTS.—The review required by subsection (a) shall take into account current data and evidence on the cognitive effects of blast exposure and shall include consideration of the following:

(1) The impact of exposure over multiple successive days of training.

(2) The impact of multiple types of heavy weapons being fired in close succession.

(3) The feasibility of cumulative annual or lifetime exposure limits.

(4) The minimum safe distance for observers and instructors.

(c) UPDATED TRAINING GUIDANCE.—Not later than 180 days after the date of the completion of the review under subsection (a), each Secretary of a military department shall update any relevant training guidance to account for the conclusions of the review.

(d) UPDATED REVIEW.—

(1) IN GENERAL.—Not later than two years after the initial review conducted under subsection (a), and not later than two years thereafter, the Secretary of Defense shall conduct an updated review under such subsection, including consideration of the matters set forth under subsection (b), and update training guidance under subsection (c).

(2) CONSIDERATION OF NEW RESEARCH AND EVIDENCE.—Each updated review conducted under paragraph (1) shall take into account new research and evidence that has emerged since the previous review.

(e) BRIEFING REQUIRED.—The Secretary of Defense shall brief the Committees on Armed Services of the Senate and the House of Representatives on a summary of the results of the initial review under subsection (a), each updated review conducted under subsection (d), and any updates to training guidance and procedures resulting from any such review or updated review.

SEC. 254. COMPETITIVE ACQUISITION STRATEGY FOR BRADLEY FIGHTING VEHICLE TRANSMISSION REPLACEMENT.

(a) PLAN REQUIRED.—The Secretary of the Army shall develop a strategy to competitively procure a new transmission for the Bradley Fighting Vehicle family of vehicles.

(b) ADDITIONAL STRATEGY REQUIREMENTS.—The plan required by subsection (a) shall include the following:

(1) An analysis of the potential cost savings and performance improvements associated with developing or procuring a new transmission common to the Bradley Fighting Vehicle family of vehicles, including the Armored Multipurpose Vehicle and the Paladin Integrated Management artillery system.

(2) A plan to use full and open competition as required by the Federal Acquisition Regulation.

(c) TIMELINE.—Not later than February 15, 2019, the Secretary of the Army shall submit to the congressional defense committees the strategy developed under subsection (a).

(d) LIMITATION.—None of the funds authorized to be appropriated for fiscal year 2019 by this Act for Weapons and Tracked Combat Vehicles, Army, may be obligated or expended to procure a Bradley Fighting Vehicle replacement transmission until the date that is 30 days after the date on which the Secretary of the Army submits to the congressional defense committees the plan required by subsection (a).

SEC. 255. INDEPENDENT ASSESSMENT OF ELECTRONIC WARFARE PLANS AND PROGRAMS.

(a) AGREEMENT.—

(1) IN GENERAL.—The Secretary of Defense shall seek to enter into an agreement with the private scientific advisory

group known as "JASON" to perform the services covered by this section.

(2) TIMING.—The Secretary shall seek to enter into the agreement described in paragraph (1) not later than 120 days after the date of the enactment of this Act.

(b) INDEPENDENT ASSESSMENT.—Under an agreement between the Secretary and JASON under this section, JASON shall—

(1) assess the strategies, programs, order of battle, and doctrine of the Department of Defense related to the electronic warfare mission area and electromagnetic spectrum operations;

(2) assess the strategies, programs, order of battle, and doctrine of potential adversaries, such as China, Iran, and the Russian Federation, related to the same;

(3) develop recommendations for improvements to the strategies, programs, and doctrine of the Department of Defense in order to enable the United States to achieve and maintain superiority in the electromagnetic spectrum in future conflicts; and

(4) develop recommendations for the Secretary, Congress, and such other Federal entities as JASON considers appropriate, including recommendations for—

(A) closing technical, policy, or resource gaps;

(B) improving cooperation and appropriate integration within the Department of Defense entities;

(C) improving cooperation between the United States and other countries and international organizations as appropriate; and

(D) such other important matters identified by JASON that are directly relevant to the strategies of the Department of Defense described in paragraph (3).

(c) LIAISONS.—The Secretary shall appoint appropriate liaisons to JASON to support the timely conduct of the services covered by this section.

(d) MATERIALS.—The Secretary shall provide access to JASON to materials relevant to the services covered by this section, consistent with the protection of sources and methods and other critically sensitive information.

(e) CLEARANCES.—The Secretary shall ensure that appropriate members and staff of JASON have the necessary clearances, obtained in an expedited manner, to conduct the services covered by this section.

(f) REPORT.—Not later than October 1, 2019, the Secretary shall submit to the congressional defense committees a report on—

(1) the findings of JASON with respect to the assessments carried out under subsection (b); and

(2) the recommendations developed by JASON pursuant to such subsection.

(g) ALTERNATE CONTRACT SCIENTIFIC ORGANIZATION.—

(1) IN GENERAL.—If the Secretary is unable within the period prescribed in paragraph (2) of subsection (a) to enter into an agreement described in paragraph (1) of such subsection with JASON on terms acceptable to the Secretary, the Secretary shall seek to enter into such agreement with another appropriate scientific organization that—

(A) is not part of the government; and

(B) has expertise and objectivity comparable to that of JASON.

(2) TREATMENT.—If the Secretary enters into an agreement with another organization as described in paragraph (1), any reference in this section to JASON shall be treated as a reference to the other organization.

TITLE III—OPERATION AND MAINTENANCE

Subtitle A—Authorization of Appropriations

Subtitle B—Energy and Environment

Subtitle C—Logistics and Sustainment

Subtitle D—Reports

Subtitle E—Other Matters

TITLE XLII—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION.

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
(In Thousands of Dollars)

Line	Program Element	Item	FY 2019 Request	House Authorized	Senate Authorized	Conference Change	Conference Authorized
		RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY					
		BASIC RESEARCH					
001	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	11,585	11,585	11,585		11,585
002	0601102A	DEFENSE RESEARCH SCIENCES	276,912	276,912	289,412	12,500	289,412
		Basic research increase			[7,500]	[7,500]	
		Quantum information sciences			[5,000]	[5,000]	
003	0601103A	UNIVERSITY RESEARCH INITIATIVES	65,283	65,283	65,283		65,283
004	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	92,115	92,115	97,115	5,000	97,115
		Basic research program increase			[5,000]	[5,000]	
		SUBTOTAL BASIC RESEARCH	**445,895**	**445,895**	**463,395**	**17,500**	**463,395**
		APPLIED RESEARCH					
005	0602105A	MATERIALS TECHNOLOGY	28,600	29,600	28,600	1,000	29,600
		Conformal batteries and composite armor		[1,000]		[1,000]	
006	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY	32,366	36,366	37,366	9,000	41,366
		Expand Army Research lab Open Campus project		[4,000]		[4,000]	
		Program increase			[5,000]	[5,000]	
007	0602122A	TRACTOR HIP	8,674	8,674	8,674		8,674
008	0602126A	TRACTOR JACK	400	400	400		400

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
(In Thousands of Dollars)

Line	Program Element	Item	FY 2019 Request	House Authorized	Senate Authorized	Conference Change	Conference Authorized
009	0602211A	AVIATION TECHNOLOGY	64,847	64,847	59,847		64,847
		Mission systems / engine and drives coordination			[–5,000]		
010	0602270A	ELECTRONIC WARFARE TECHNOLOGY	25,571	25,571	25,571		25,571
011	0602303A	MISSILE TECHNOLOGY	50,183	50,183	50,183		50,183
012	0602307A	ADVANCED WEAPONS TECHNOLOGY	29,502	29,502	29,502		29,502
013	0602308A	ADVANCED CONCEPTS AND SIMULATION	28,500	28,500	38,500		28,500
		Pilot for cyber modeling and simulation			[10,000]		
014	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	70,450	70,450	70,450		70,450
015	0602618A	BALLISTICS TECHNOLOGY	75,541	75,541	75,541		75,541
016	0602622A	CHEMICAL, SMOKE AND EQUIPMENT DEFEATING TECHNOLOGY	5,032	5,032	5,032		5,032
017	0602623A	JOINT SERVICE SMALL ARMS PROGRAM	12,394	12,394	12,394		12,394
018	0602624A	WEAPONS AND MUNITIONS TECHNOLOGY	40,444	50,444	42,944	12,500	52,944
		Accelerate Army railgun development and prototyping		[10,000]		[10,000]	
		Advanced warheads technology			[2,500]	[2,500]	
019	0602705A	ELECTRONICS AND ELECTRONIC DEVICES	58,283	58,283	58,283		58,283
020	0602709A	NIGHT VISION TECHNOLOGY	29,582	29,582	29,582		29,582
021	0602712A	COUNTERMINE SYSTEMS	21,244	21,244	21,244		21,244
022	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY	24,131	24,131	26,631	2,500	26,631
		General program increase			[2,500]	[2,500]	
023	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY	13,242	13,242	13,242		13,242
024	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	55,003	55,003	50,003	–5,000	50,003
		General Program Reduction			[–5,000]	[–5,000]	
025	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY	14,958	14,958	14,958		14,958
026	0602784A	MILITARY ENGINEERING TECHNOLOGY	78,159	78,159	78,159		78,159
027	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	21,862	21,862	21,862		21,862
028	0602786A	WARFIGHTER TECHNOLOGY	40,566	45,566	40,566	5,000	45,566
		Program increase		[5,000]		[5,000]	

029	0602787A	MEDICAL TECHNOLOGY	90,075	90,075	90,075		90,075
		SUBTOTAL APPLIED RESEARCH	**919,609**	**939,609**	**929,609**	**25,000**	**944,609**
		ADVANCED TECHNOLOGY DEVELOPMENT					
030	0603001A	WARFIGHTER ADVANCED TECHNOLOGY	39,338	39,338	39,338		39,338
031	0603002A	MEDICAL ADVANCED TECHNOLOGY	62,496	62,496	62,496		62,496
032	0603003A	AVIATION ADVANCED TECHNOLOGY	124,958	124,958	119,958		124,958
		Platform design and structures systems			[–5,000]		
033	0603004A	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	102,686	102,686	122,686	20,000	122,686
		Accelerate ERCA gun			[20,000]	[20,000]	
034	0603005A	COMBAT VEHICLE AND AUTOMOTIVE ADVANCED TECHNOLOGY	119,739	119,739	192,239	9,500	129,239
		Modular scalable powertrain			[2,500]	[2,500]	
		Prototype Next Generation Combat Vehicle			[70,000]	[7,000]	
035	0603006A	SPACE APPLICATION ADVANCED TECHNOLOGY	13,000	13,000	13,000		13,000
036	0603007A	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOLOGY	8,044	8,044	8,044		8,044
037	0603009A	TRACTOR HIKE	22,631	22,631	22,631		22,631
038	0603015A	NEXT GENERATION TRAINING & SIMULATION SYSTEMS	25,682	25,682	25,682		25,682
040	0603125A	COMBATING TERRORISM—TECHNOLOGY DEVELOPMENT	3,762	3,762	3,762		3,762
041	0603130A	TRACTOR NAIL	4,896	4,896	4,896		4,896
042	0603131A	TRACTOR EGGS	6,041	6,041	6,041		6,041
043	0603270A	ELECTRONIC WARFARE TECHNOLOGY	31,491	31,491	31,491		31,491
044	0603313A	MISSILE AND ROCKET ADVANCED TECHNOLOGY	61,132	71,132	61,132	10,000	71,132
		Shoot-on-the-Move Technology Development for SHORAD platforms		[10,000]		[10,000]	
045	0603322A	TRACTOR CAGE	16,845	16,845	16,845		16,845
046	0603461A	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM	183,322	188,322	188,322	10,000	193,322
		Enhance and accelerate Army artificial intelligence and machine learning.		[5,000]		[5,000]	
		Program increase			[5,000]	[5,000]	
047	0603606A	LANDMINE WARFARE AND BARRIER ADVANCED TECHNOLOGY	11,104	11,104	11,104		11,104
048	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	5,885	5,885	5,885		5,885
049	0603710A	NIGHT VISION ADVANCED TECHNOLOGY	61,376	58,876	61,376	–2,500	58,876
		Program decrease		[–2,500]		[–2,500]	

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
(In Thousands of Dollars)

Line	Program Element	Item	FY 2019 Request	House Authorized	Senate Authorized	Conference Change	Conference Authorized
050	0603728A	ENVIRONMENTAL QUALITY TECHNOLOGY DEMONSTRATIONS	9,136	9,136	9,136		9,136
051	0603734A	MILITARY ENGINEERING ADVANCED TECHNOLOGY	25,864	25,864	38,864	7,000	32,864
		Minor MILCON			[8,000]	[2,000]	
		Program increase			[5,000]	[5,000]	
052	0603772A	ADVANCED TACTICAL COMPUTER SCIENCE AND SENSOR TECHNOLOGY	34,883	39,883	37,383	7,500	42,383
		PNT research			[2,500]	[2,500]	
		Program increase		[5,000]		[5,000]	
053	0603794A	C3 ADVANCED TECHNOLOGY	52,387	49,887	47,387	–5,000	47,387
		Program decrease		[–2,500]	[–5,000]	[–5,000]	
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	**1,026,698**	**1,041,698**	**1,129,698**	**56,500**	**1,083,198**
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES					
054	0603305A	ARMY MISSLE DEFENSE SYSTEMS INTEGRATION	10,777	10,777	10,777		10,777
056	0603327A	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING	42,802	43,802	42,802		42,802
		Realignment of EDI APS Unit Set from OCO to Base		[1,000]			
057	0603619A	LANDMINE WARFARE AND BARRIER—ADV DEV	45,254	45,254	45,254		45,254
058	0603627A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ADV DEV	22,700	22,700	22,700		22,700
059	0603639A	TANK AND MEDIUM CALIBER AMMUNITION	41,974	55,974	55,974	12,000	53,974
		Army UFR: test and evaluation of the M999 155mm Anti-Personnel Improved Conventional Munition.		[14,000]	[14,000]	[12,000]	
060	0603645A	ARMORED SYSTEM MODERNIZATION—ADV DEV	119,395	119,395	119,395	–8,000	111,395
		Developmental testing early to need				[–8,000]	
061	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	8,746	8,746	8,746		8,746
062	0603766A	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM—ADV DEV	35,667	35,667	43,667		35,667
		ISR capabilities to support long range field artillery			[8,000]		
063	0603774A	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	7,350	7,350	7,350		7,350
064	0603779A	ENVIRONMENTAL QUALITY TECHNOLOGY—DEM/VAL	14,749	14,749	14,749		14,749

065	0603790A	NATO RESEARCH AND DEVELOPMENT	3,687	3,687	3,687		3,687
066	0603801A	AVIATION—ADV DEV	10,793	10,793	10,793		10,793
067	0603804A	LOGISTICS AND ENGINEER EQUIPMENT—ADV DEV	14,248	14,248	14,248		14,248
068	0603807A	MEDICAL SYSTEMS—ADV DEV	34,284	34,284	34,284		34,284
069	0603827A	SOLDIER SYSTEMS—ADVANCED DEVELOPMENT	18,044	28,044	18,044	10,000	28,044
		Advanced materials research for personal protective equipment (PPE)		[10,000]		[10,000]	
070	0604017A	ROBOTICS DEVELOPMENT	95,660	95,660	95,660	–13,702	81,958
		RCV Phase 2 funding ahead of need				[–13,702]	
071	0604020A	CROSS FUNCTIONAL TEAM (CFT) ADVANCED DEVELOPMENT & PROTOTYPING	38,000	68,000	38,000	–28,500	9,500
		Iron Dome short range air defense experimentation		[30,000]			
		Unjustified request				[–28,500]	
072	0604100A	ANALYSIS OF ALTERNATIVES	9,765	9,765	9,765		9,765
073	0604113A	FUTURE TACTICAL UNMANNED AIRCRAFT SYSTEM (FTUAS)	12,393	12,393	12,393		12,393
074	0604114A	LOWER TIER AIR MISSILE DEFENSE (LTAMD) SENSOR	120,374	120,374	120,374	–11,015	109,359
		Contracting award planning early to need				[–2,515]	
		Test funding ahead of need				[–8,500]	
075	0604115A	TECHNOLOGY MATURATION INITIATIVES	95,347	95,347	95,347		95,347
076	0604117A	MANEUVER—SHORT RANGE AIR DEFENSE (M-SHORAD)	95,085	118,085	95,085	–10,000	85,085
		Delayed new start effort				[–10,000]	
		Realignment of EDI APS Unit Set from OCO to Base		[23,000]			
077	0604118A	TRACTOR BEAM	52,894	52,894	52,894		52,894
079	0604121A	SYNTHETIC TRAINING ENVIRONMENT REFINEMENT & PROTOTYPING	77,939	77,939	77,939		77,939
080	0604319A	INDIRECT FIRE PROTECTION CAPABILITY INCREMENT 2–INTERCEPT (IFPC2)	51,030	51,030	81,030		51,030
		Accelerate delivery and capacity for IFPC			[30,000]		
081	0305251A	CYBERSPACE OPERATIONS FORCES AND FORCE SUPPORT	65,817	65,817	70,817		65,817
		Army Cyber Center of Excellence			[5,000]		
082	1206120A	ASSURED POSITIONING, NAVIGATION AND TIMING (PNT)	146,300	146,300	146,300		146,300
083	1206308A	ARMY SPACE SYSTEMS INTEGRATION	38,319	38,319	38,319		38,319
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	**1,329,393**	**1,407,393**	**1,386,393**	**–49,217**	**1,280,176**
		SYSTEM DEVELOPMENT & DEMONSTRATION					
084	0604201A	AIRCRAFT AVIONICS	32,293	32,293	32,293		32,293

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(In Thousands of Dollars)

Line	Program Element	Item	FY 2019 Request	House Authorized	Senate Authorized	Conference Change	Conference Authorized
085	0604270A	ELECTRONIC WARFARE DEVELOPMENT	78,699	78,699	78,699	–5,749	72,950
		Funding excess to need				[–5,749]	
088	0604328A	TRACTOR CAGE	17,050	17,050	17,050		17,050
089	0604601A	INFANTRY SUPPORT WEAPONS	83,155	83,155	83,155		83,155
090	0604604A	MEDIUM TACTICAL VEHICLES	3,704	3,704	3,704		3,704
091	0604611A	JAVELIN	10,623	10,623	10,623	–5,000	5,623
		Schedule delays				[–5,000]	
092	0604622A	FAMILY OF HEAVY TACTICAL VEHICLES	11,950	11,950	11,950		11,950
093	0604633A	AIR TRAFFIC CONTROL	12,347	12,347	12,347		12,347
095	0604642A	LIGHT TACTICAL WHEELED VEHICLES	8,212	8,212	8,212		8,212
096	0604645A	ARMORED SYSTEMS MODERNIZATION (ASM)—ENG DEV	393,613	393,613	318,613	–75,000	318,613
		Mobile Protected Firepower decrease			[–75,000]	[–75,000]	
097	0604710A	NIGHT VISION SYSTEMS—ENG DEV	139,614	139,614	139,614		139,614
098	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	4,507	4,507	4,507		4,507
099	0604715A	NON-SYSTEM TRAINING DEVICES—ENG DEV	49,436	49,436	49,436	–5,000	44,436
		Historical underexecution				[–5,000]	
100	0604741A	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE—ENG DEV	95,172	95,172	95,172		95,172
101	0604742A	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT	22,628	22,628	22,628		22,628
102	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	13,297	13,297	13,297		13,297
103	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS)—ENG DEV	9,145	9,145	9,145		9,145
104	0604768A	BRILLIANT ANTI-ARMOR SUBMUNITION (BAT)	9,894	9,894	9,894	–3,000	6,894
		Prior year carryover				[–3,000]	
105	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT) CORE	21,964	21,964	21,964		21,964
106	0604798A	BRIGADE ANALYSIS, INTEGRATION AND EVALUATION	49,288	49,288	49,288		49,288
107	0604802A	WEAPONS AND MUNITIONS—ENG DEV	183,100	183,100	183,100	–7,000	176,100
		Delayed new start efforts				[–7,000]	
108	0604804A	LOGISTICS AND ENGINEER EQUIPMENT—ENG DEV	79,706	75,906	79,706	–3,225	76,481

		Late MSV-L contract award and concurrency		[–3,800]		[–3,225]	
109	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS—ENG DEV	15,970	15,970	15,970		15,970
110	0604807A	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIPMENT—ENG DEV	44,542	44,542	44,542		44,542
111	0604808A	LANDMINE WARFARE/BARRIER—ENG DEV	50,817	50,817	50,817	–5,700	45,117
		Prior year carryover				[–5,700]	
112	0604818A	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFTWARE	178,693	178,693	178,693	–10,000	168,693
		Command post integrated infrastructure delayed new start				[–10,000]	
113	0604820A	RADAR DEVELOPMENT	39,338	39,338	39,338		39,338
114	0604822A	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEBS)	37,851	37,851	37,851		37,851
115	0604823A	FIREFINDER	45,473	45,473	45,473		45,473
116	0604827A	SOLDIER SYSTEMS—WARRIOR DEM/VAL	10,395	10,395	10,395		10,395
117	0604852A	SUITE OF SURVIVABILITY ENHANCEMENT SYSTEMS—EMD	69,204	55,804	78,204	–13,400	55,804
		Program reduction		[–13,400]		[–13,400]	
		Suite of Vehicle Protection Systems			[9,000]		
118	0604854A	ARTILLERY SYSTEMS—EMD	1,781	1,781	1,781		1,781
119	0605013A	INFORMATION TECHNOLOGY DEVELOPMENT	113,758	113,758	113,758	–33,382	80,376
		Prior year carryover				[–33,382]	
120	0605018A	INTEGRATED PERSONNEL AND PAY SYSTEM-ARMY (IPPS-A)	166,603	166,603	166,603		166,603
121	0605028A	ARMORED MULTI-PURPOSE VEHICLE (AMPV)	118,239	118,239	118,239		118,239
122	0605029A	INTEGRATED GROUND SECURITY SURVEILLANCE RESPONSE CAPABILITY (IGSSR-C).	3,211	3,211	3,211		3,211
123	0605030A	JOINT TACTICAL NETWORK CENTER (JTNC)	15,889	15,889	15,889		15,889
124	0605031A	JOINT TACTICAL NETWORK (JTN)	41,972	41,972	41,972		41,972
125	0605032A	TRACTOR TIRE	41,166	41,166	41,166		41,166
126	0605033A	GROUND-BASED OPERATIONAL SURVEILLANCE SYSTEM—EXPEDITIONARY (GBOSS-E).	5,175	5,175	5,175		5,175
127	0605034A	TACTICAL SECURITY SYSTEM (TSS)	4,496	4,496	4,496		4,496
128	0605035A	COMMON INFRARED COUNTERMEASURES (CIRCM)	51,178	51,178	51,178		51,178
129	0605036A	COMBATING WEAPONS OF MASS DESTRUCTION (CWMD)	11,311	11,311	11,311		11,311
131	0605038A	NUCLEAR BIOLOGICAL CHEMICAL RECONNAISSANCE VEHICLE (NBCRV) SENSOR SUITE.	17,154	17,154	17,154		17,154
132	0605041A	DEFENSIVE CYBER TOOL DEVELOPMENT	36,626	36,626	36,626		36,626

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133	0605042A	TACTICAL NETWORK RADIO SYSTEMS (LOW-TIER)	3,829	3,829	3,829		3,829
134	0605047A	CONTRACT WRITING SYSTEM	41,928	41,928			41,928
		Duplication concern in contract writing systems			[–41,928]		
135	0605049A	MISSILE WARNING SYSTEM MODERNIZATION (MWSM)	28,276	28,276	28,276	–2,739	25,537
		Funding early to need				[–2,739]	
136	0605051A	AIRCRAFT SURVIVABILITY DEVELOPMENT	21,965	21,965	21,965		21,965
137	0605052A	INDIRECT FIRE PROTECTION CAPABILITY INC 2—BLOCK 1	157,710	157,710	157,710	–12,000	145,710
		Developmental testing early to need				[–12,000]	
138	0605053A	GROUND ROBOTICS	86,167	86,167	86,167	–2,026	84,141
		CRS-I contract delay				[–2,026]	
139	0605054A	EMERGING TECHNOLOGY INITIATIVES	42,866	68,266	42,866	25,400	68,266
		Army UFR: program increase		[25,400]		[25,400]	
140	0605380A	AMF JOINT TACTICAL RADIO SYSTEM (JTRS)	15,984	15,984	15,984		15,984
141	0605450A	JOINT AIR-TO-GROUND MISSILE (JAGM)	11,773	11,773	11,773		11,773
142	0605457A	ARMY INTEGRATED AIR AND MISSILE DEFENSE (AIAMD)	277,607	277,607	277,607		277,607
143	0605766A	NATIONAL CAPABILITIES INTEGRATION (MIP)	12,340	12,340	12,340		12,340
144	0605812A	JOINT LIGHT TACTICAL VEHICLE (JLTV) ENGINEERING AND MANUFACTURING DEVELOPMENT PH.	2,686	2,686	2,686		2,686
145	0605830A	AVIATION GROUND SUPPORT EQUIPMENT	2,706	2,706	2,706		2,706
147	0303032A	TROJAN—RH12	4,521	4,521	4,521		4,521
150	0304270A	ELECTRONIC WARFARE DEVELOPMENT	8,922	8,922	8,922		8,922
151	1205117A	TRACTOR BEARS	23,170	23,170	23,170		23,170
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	**3,192,689**	**3,200,889**	**3,084,761**	**–157,821**	**3,034,868**
		RDT&E MANAGEMENT SUPPORT					
152	0604256A	THREAT SIMULATOR DEVELOPMENT	12,835	12,835	12,835		12,835
153	0604258A	TARGET SYSTEMS DEVELOPMENT	12,135	12,135	12,135		12,135

154	0604759A	MAJOR T&E INVESTMENT	82,996	82,996	107,996	25,000	107,996
		Program increase			[25,000]	[25,000]	
155	0605103A	RAND ARROYO CENTER	19,821	19,821	19,821		19,821
156	0605301A	ARMY KWAJALEIN ATOLL	246,574	246,574	246,574		246,574
157	0605326A	CONCEPTS EXPERIMENTATION PROGRAM	30,430	30,430	30,430		30,430
159	0605601A	ARMY TEST RANGES AND FACILITIES	305,759	305,759	320,759	15,000	320,759
		Increase to help manage directed energy workloads			[15,000]	[15,000]	
160	0605602A	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	62,379	62,379	62,379		62,379
161	0605604A	SURVIVABILITY/LETHALITY ANALYSIS	40,496	40,496	40,496		40,496
162	0605606A	AIRCRAFT CERTIFICATION	3,941	3,941	3,941		3,941
163	0605702A	METEOROLOGICAL SUPPORT TO RDT&E ACTIVITIES	9,767	9,767	9,767		9,767
164	0605706A	MATERIEL SYSTEMS ANALYSIS	21,226	21,226	21,226		21,226
165	0605709A	EXPLOITATION OF FOREIGN ITEMS	13,026	13,026	13,026		13,026
166	0605712A	SUPPORT OF OPERATIONAL TESTING	52,718	52,718	52,718		52,718
167	0605716A	ARMY EVALUATION CENTER	57,049	57,049	57,049		57,049
168	0605718A	ARMY MODELING & SIM X-CMD COLLABORATION & INTEG	2,801	2,801	2,801		2,801
169	0605801A	PROGRAMWIDE ACTIVITIES	60,942	60,942	60,942		60,942
170	0605803A	TECHNICAL INFORMATION ACTIVITIES	29,050	29,050	29,050		29,050
171	0605805A	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFETY	42,332	42,332	42,332		42,332
172	0605857A	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	3,216	3,216	3,216		3,216
173	0605898A	ARMY DIRECT REPORT HEADQUARTERS—R&D - MHA	54,145	54,145	54,145		54,145
174	0606001A	MILITARY GROUND-BASED CREW TECHNOLOGY	4,896	4,896	4,896		4,896
175	0606002A	RONALD REAGAN BALLISTIC MISSILE DEFENSE TEST SITE	63,011	63,011	63,011		63,011
176	0606003A	COUNTERINTEL AND HUMAN INTEL MODERNIZATION	2,636	2,636	2,636		2,636
177	0606942A	ASSESSMENTS AND EVALUATIONS CYBER VULNERABILITIES	88,300	88,300	88,300		88,300
		SUBTOTAL RDT&E MANAGEMENT SUPPORT	**1,322,481**	**1,322,481**	**1,362,481**	**40,000**	**1,362,481**
		OPERATIONAL SYSTEMS DEVELOPMENT					
181	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	8,886	8,886	8,886		8,886
182	0603813A	TRACTOR PULL	4,067	4,067	4,067		4,067
183	0605024A	ANTI-TAMPER TECHNOLOGY SUPPORT	4,254	4,254	4,254		4,254
184	0607131A	WEAPONS AND MUNITIONS PRODUCT IMPROVEMENT PROGRAMS	16,022	16,022	16,022		16,022

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185	0607133A	TRACTOR SMOKE	4,577	4,577	4,577		4,577
186	0607134A	LONG RANGE PRECISION FIRES (LRPF)	186,475	186,475	186,475	–27,000	159,475
		Excess program growth				[–27,000]	
187	0607135A	APACHE PRODUCT IMPROVEMENT PROGRAM	31,049	31,049	31,049		31,049
188	0607136A	BLACKHAWK PRODUCT IMPROVEMENT PROGRAM	35,240	35,240	35,240		35,240
189	0607137A	CHINOOK PRODUCT IMPROVEMENT PROGRAM	157,822	157,822	157,822	–2,719	155,103
		Program management support excess growth				[–2,719]	
190	0607138A	FIXED WING PRODUCT IMPROVEMENT PROGRAM	4,189	4,189	4,189		4,189
191	0607139A	IMPROVED TURBINE ENGINE PROGRAM	192,637	192,637	192,637		192,637
194	0607142A	AVIATION ROCKET SYSTEM PRODUCT IMPROVEMENT AND DEVELOPMENT	60,860	60,860	60,860	–13,000	47,860
		Research studies excess growth				[–13,000]	
195	0607143A	UNMANNED AIRCRAFT SYSTEM UNIVERSAL PRODUCTS	52,019	52,019	52,019	–13,500	38,519
		Unjustified growth				[–13,500]	
196	0607665A	FAMILY OF BIOMETRICS	2,400	2,400	2,400		2,400
197	0607865A	PATRIOT PRODUCT IMPROVEMENT	65,369	90,369	65,369	10,000	75,369
		Increase PATRIOT improvement efforts		[25,000]		[10,000]	
198	0202429A	AEROSTAT JOINT PROJECT—COCOM EXERCISE	1	1	1		1
199	0203728A	JOINT AUTOMATED DEEP OPERATION COORDINATION SYSTEM (JADOCS)	30,954	30,954	30,954		30,954
200	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	411,927	411,927	411,927	–42,918	369,009
		Abrams ECP 1B schedule delay				[–14,978]	
		Bradley A5 ECP schedule delay				[–12,221]	
		Recovery vehicle improvement program delay				[–6,000]	
		Stryker program management excess growth				[–9,719]	
202	0203743A	155MM SELF-PROPELLED HOWITZER IMPROVEMENTS	40,676	40,676	40,676	–3,475	37,201
		Prior year carryover				[–3,475]	
203	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROGRAMS	17,706	17,706	17,706		17,706
204	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	146	146	146		146

205	0203758A	DIGITIZATION	6,316	6,316	6,316		6,316
206	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	1,643	3,643	1,643		1,643
		Realignment of EDI APS Unit Set from OCO to Base		[2,000]			
207	0203802A	OTHER MISSILE PRODUCT IMPROVEMENT PROGRAMS	4,947	4,947	4,947		4,947
208	0203808A	TRACTOR CARD	34,050	34,050	34,050		34,050
210	0205410A	MATERIALS HANDLING EQUIPMENT	1,464	1,464	1,464		1,464
211	0205412A	ENVIRONMENTAL QUALITY TECHNOLOGY—OPERATIONAL SYSTEM DEV	249	249	249		249
212	0205456A	LOWER TIER AIR AND MISSILE DEFENSE (AMD) SYSTEM	79,283	79,283	79,283	–485	78,798
		unjustified request				[–485]	
213	0205778A	GUIDED MULTIPLE-LAUNCH ROCKET SYSTEM (GMLRS)	154,102	154,102	154,102	–28,148	125,954
		Unjustified growth				[–28,148]	
216	0303028A	SECURITY AND INTELLIGENCE ACTIVITIES	12,280	12,280	12,280		12,280
217	0303140A	INFORMATION SYSTEMS SECURITY PROGRAM	68,533	68,533	68,533		68,533
218	0303141A	GLOBAL COMBAT SUPPORT SYSTEM	68,619	68,619	68,619	–3,546	65,073
		Increment 2 contract award delay				[–3,546]	
220	0303150A	WWMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	2,034	2,034	2,034		2,034
223	0305172A	COMBINED ADVANCED APPLICATIONS	1,500	1,500	1,500		1,500
224	0305179A	INTEGRATED BROADCAST SERVICE (IBS)	450	450	450		450
225	0305204A	TACTICAL UNMANNED AERIAL VEHICLES	6,000	6,000	6,000		6,000
226	0305206A	AIRBORNE RECONNAISSANCE SYSTEMS	12,416	26,416	12,416		12,416
		Realignment of EDI APS Unit Set from OCO to Base		[14,000]			
227	0305208A	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	38,667	38,667	38,667	–5,000	33,667
		Integration and testing unjustified growth				[–5,000]	
229	0305232A	RQ–11 UAV	6,180	6,180	6,180		6,180
230	0305233A	RQ–7 UAV	12,863	12,863	12,863		12,863
231	0307665A	BIOMETRICS ENABLED INTELLIGENCE	4,310	4,310	4,310		4,310
233	0708045A	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	53,958	53,958	53,958		53,958
234	1203142A	SATCOM GROUND ENVIRONMENT (SPACE)	12,119	12,119	12,119		12,119
235	1208053A	JOINT TACTICAL GROUND SYSTEM	7,400	7,400	7,400		7,400
235A	9999999999	CLASSIFIED PROGRAMS	5,955	5,955	5,955		5,955
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	**1,922,614**	**1,963,614**	**1,922,614**	**–129,791**	**1,792,823**

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		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	**10,159,379**	**10,321,579**	**10,278,951**	**–197,829**	**9,961,550**
		RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY					
		BASIC RESEARCH					
001	0601103N	UNIVERSITY RESEARCH INITIATIVES	119,433	129,433	124,433	15,000	134,433
		Basic research program increase			[5,000]	[5,000]	
		Defense University Research Instrumentation Program		[10,000]		[10,000]	
002	0601152N	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	19,237	19,237	19,237		19,237
003	0601153N	DEFENSE RESEARCH SCIENCES	458,708	458,708	468,708	10,000	468,708
		Basic research program increase			[5,000]	[5,000]	
		Quantum information sciences			[5,000]	[5,000]	
		SUBTOTAL BASIC RESEARCH	**597,378**	**607,378**	**612,378**	**25,000**	**622,378**
		APPLIED RESEARCH					
004	0602114N	POWER PROJECTION APPLIED RESEARCH	14,643	14,643	17,143	2,500	17,143
		Directed energy			[2,500]	[2,500]	
005	0602123N	FORCE PROTECTION APPLIED RESEARCH	124,049	124,049	124,049		124,049
006	0602131M	MARINE CORPS LANDING FORCE TECHNOLOGY	59,607	59,607	59,607		59,607
007	0602235N	COMMON PICTURE APPLIED RESEARCH	36,348	41,348	36,348		36,348
		Enhance and accelerate Navy artificial intelligence research		[5,000]			
008	0602236N	WARFIGHTER SUSTAINMENT APPLIED RESEARCH	56,197	56,197	48,697	–1,480	54,717
		ONR global growth			[–7,500]	[–1,480]	
009	0602271N	ELECTROMAGNETIC SYSTEMS APPLIED RESEARCH	83,800	83,800	83,800		83,800
010	0602435N	OCEAN WARFIGHTING ENVIRONMENT APPLIED RESEARCH	42,998	42,998	42,998		42,998
011	0602651M	JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	6,349	6,349	6,349		6,349
012	0602747N	UNDERSEA WARFARE APPLIED RESEARCH	58,049	78,049	78,049	20,000	78,049

		Academic partnerships for undersea unmanned warfare research and energy technology.		[20,000]	[20,000]	[20,000]	
013	0602750N	FUTURE NAVAL CAPABILITIES APPLIED RESEARCH	147,771	147,771	147,771		147,771
014	0602782N	MINE AND EXPEDITIONARY WARFARE APPLIED RESEARCH	37,545	37,545	37,545		37,545
015	0602792N	INNOVATIVE NAVAL PROTOTYPES (INP) APPLIED RESEARCH	159,697	169,697	164,697		159,697
		Accelerate Navy railgun development and prototyping		[10,000]			
		Directed energy and electronic warfare/unmanned and autonomous systems.			[5,000]		
016	0602861N	SCIENCE AND TECHNOLOGY MANAGEMENT—ONR FIELD ACITIVITIES	64,418	64,418	64,418		64,418
		SUBTOTAL APPLIED RESEARCH	**891,471**	**926,471**	**911,471**	**21,020**	**912,491**
		ADVANCED TECHNOLOGY DEVELOPMENT					
019	0603123N	FORCE PROTECTION ADVANCED TECHNOLOGY	2,423	2,423	2,423		2,423
021	0603640M	USMC ADVANCED TECHNOLOGY DEMONSTRATION (ATD)	150,245	150,245	140,245	–4,199	146,046
		Unjustified growth			[–10,000]	[–4,199]	
022	0603651M	JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	13,313	13,313	13,313		13,313
023	0603671N	NAVY ADVANCED TECHNOLOGY DEVELOPMENT (ATD)	131,502	155,002	131,502	23,500	155,002
		Program increase-one sensor plus integration		[23,500]		[23,500]	
024	0603673N	FUTURE NAVAL CAPABILITIES ADVANCED TECHNOLOGY DEVELOPMENT	232,996	232,996	232,996		232,996
025	0603680N	MANUFACTURING TECHNOLOGY PROGRAM	58,657	58,657	58,657		58,657
030	0603801N	INNOVATIVE NAVAL PROTOTYPES (INP) ADVANCED TECHNOLOGY DEVELOPMENT.	161,859	181,859	166,359	20,000	181,859
		Accelerate Navy railgun development and prototyping		[20,000]		[20,000]	
		DE & EW/unmanned and autonomous systems			[4,500]		
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	**750,995**	**794,495**	**745,495**	**39,301**	**790,296**
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES					
031	0603207N	AIR/OCEAN TACTICAL APPLICATIONS	29,747	29,747	29,747		29,747
032	0603216N	AVIATION SURVIVABILITY	7,050	7,050	7,050		7,050
033	0603251N	AIRCRAFT SYSTEMS	793	793	793		793
034	0603254N	ASW SYSTEMS DEVELOPMENT	7,058	12,058	7,058		7,058
		Prototyping fiber deployment sonobuoy systems		[5,000]			

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035	0603261N	TACTICAL AIRBORNE RECONNAISSANCE	3,540	3,540	3,540		3,540
036	0603382N	ADVANCED COMBAT SYSTEMS TECHNOLOGY	59,741	59,741	62,241		59,741
		Locust/HCUS/INP Transition			[2,500]		
037	0603502N	SURFACE AND SHALLOW WATER MINE COUNTERMEASURES	62,727	62,727	36,727	–2,000	60,727
		Barracuda EDMs ahead of PDR and CDR			[–26,000]	[–2,000]	
038	0603506N	SURFACE SHIP TORPEDO DEFENSE	8,570	18,570	8,570		8,570
		Program increase		[10,000]			
039	0603512N	CARRIER SYSTEMS DEVELOPMENT	5,440	5,440	5,440		5,440
040	0603525N	PILOT FISH	162,222	162,222	162,222		162,222
041	0603527N	RETRACT LARCH	11,745	11,745	11,745		11,745
042	0603536N	RETRACT JUNIPER	114,265	114,265	114,265		114,265
043	0603542N	RADIOLOGICAL CONTROL	740	740	740		740
044	0603553N	SURFACE ASW	1,122	1,122	1,122		1,122
045	0603561N	ADVANCED SUBMARINE SYSTEM DEVELOPMENT	109,086	89,086	112,586	–13,000	96,086
		Advanced submarine propulsion development			[3,500]		
		Excessive cost growth		[–7,000]			
		Prior year inefficiencies impact		[–13,000]		[–13,000]	
046	0603562N	SUBMARINE TACTICAL WARFARE SYSTEMS	9,374	9,374	9,374		9,374
047	0603563N	SHIP CONCEPT ADVANCED DESIGN	89,419	89,419	107,419	18,000	107,419
		CHAMP acceleration			[18,000]	[18,000]	
048	0603564N	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDIES	13,348	13,348	13,348		13,348
049	0603570N	ADVANCED NUCLEAR POWER SYSTEMS	256,137	256,137	256,137		256,137
050	0603573N	ADVANCED SURFACE MACHINERY SYSTEMS	22,109	22,109	22,109		22,109
051	0603576N	CHALK EAGLE	29,744	29,744	29,744		29,744
052	0603581N	LITTORAL COMBAT SHIP (LCS)	27,997	27,997	27,997		27,997
053	0603582N	COMBAT SYSTEM INTEGRATION	16,351	16,351	16,351		16,351
054	0603595N	OHIO REPLACEMENT	514,846	526,846	514,846	12,000	526,846

		Advanced Submarines Control and Precision Propulsion Module Integration.		[12,000]		[12,000]	
055	0603596N	LCS MISSION MODULES	103,633	103,633	133,033		103,633
		Project 2552: Align with deferred LCS–6 SSMM test			[–5,000]		
		Transfer from PE 64028N			[16,700]		
		Transfer from PE 64126N			[10,100]		
		Transfer from PE 64127N			[7,600]		
056	0603597N	AUTOMATED TEST AND ANALYSIS	7,931	7,931	7,931		7,931
057	0603599N	FRIGATE DEVELOPMENT	134,772	134,772	134,772		134,772
058	0603609N	CONVENTIONAL MUNITIONS	9,307	9,307	9,307		9,307
060	0603635M	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM	1,828	1,828	1,828		1,828
061	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	43,148	43,148	43,148		43,148
062	0603713N	OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT	5,915	5,915	5,915		5,915
063	0603721N	ENVIRONMENTAL PROTECTION	19,811	24,811	19,811		19,811
		High-Pressure Waterjet Explosive Ordnance Disposal Technology development.		[5,000]			
064	0603724N	NAVY ENERGY PROGRAM	25,656	25,656	25,656		25,656
065	0603725N	FACILITIES IMPROVEMENT	5,301	5,301	5,301		5,301
066	0603734N	CHALK CORAL	267,985	267,985	267,985		267,985
067	0603739N	NAVY LOGISTIC PRODUCTIVITY	4,059	4,059	4,059		4,059
068	0603746N	RETRACT MAPLE	377,878	377,878	377,878		377,878
069	0603748N	LINK PLUMERIA	381,770	381,770	381,770		381,770
070	0603751N	RETRACT ELM	60,535	60,535	60,535		60,535
073	0603790N	NATO RESEARCH AND DEVELOPMENT	9,652	9,652	9,652		9,652
074	0603795N	LAND ATTACK TECHNOLOGY	15,529	15,529			15,529
		Program delay and no GLGP EMD FYDP funding			[–15,529]		
075	0603851M	JOINT NON-LETHAL WEAPONS TESTING	27,581	32,581	27,581		27,581
		Joint service adoption of non-lethal weapon technologies		[5,000]			
076	0603860N	JOINT PRECISION APPROACH AND LANDING SYSTEMS—DEM/VAL	101,566	101,566	101,566		101,566
077	0603925N	DIRECTED ENERGY AND ELECTRIC WEAPON SYSTEMS	223,344	171,344	223,344	–80,932	142,412
		Program decrease		[–52,000]		[–80,932]	
078	0604014N	F/A –18 INFRARED SEARCH AND TRACK (IRST)	108,700	108,700	132,700		108,700

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		IRST block II risk reduction			[24,000]		
079	0604027N	DIGITAL WARFARE OFFICE	26,691	26,691	26,691		26,691
080	0604028N	SMALL AND MEDIUM UNMANNED UNDERSEA VEHICLES	16,717	16,717			16,717
		Transfer to PE 63596N			[–16,717]		
081	0604029N	UNMANNED UNDERSEA VEHICLE CORE TECHNOLOGIES	30,187	30,187	30,187		30,187
082	0604030N	RAPID PROTOTYPING, EXPERIMENTATION AND DEMONSTRATION.	48,796	48,796	48,796		48,796
083	0604031N	LARGE UNMANNED UNDERSEA VEHICLES	92,613	71,413	71,413	–21,200	71,413
		Excessive Snakehead LDUUV growth		[–21,200]	[–21,200]	[–21,200]	
084	0604112N	GERALD R. FORD CLASS NUCLEAR AIRCRAFT CARRIER (CVN 78—80)	58,121	73,121	58,121		58,121
		EMALS software support activity		[15,000]			
086	0604126N	LITTORAL AIRBORNE MCM	17,622	17,622	7,522		17,622
		Transfer to PE 63596N			[–10,100]		
087	0604127N	SURFACE MINE COUNTERMEASURES	18,154	18,154	10,554		18,154
		Transfer to PE 63596N			[–7,600]		
088	0604272N	TACTICAL AIR DIRECTIONAL INFRARED COUNTERMEASURES (TADIRCM)	47,278	47,278	47,278		47,278
090	0604289M	NEXT GENERATION LOGISTICS	11,081	11,081	11,081		11,081
092	0604320M	RAPID TECHNOLOGY CAPABILITY PROTOTYPE	7,107	7,107	7,107		7,107
093	0604454N	LX (R)	5,549	5,549	5,549		5,549
094	0604536N	ADVANCED UNDERSEA PROTOTYPING	87,669	87,669	87,669		87,669
095	0604659N	PRECISION STRIKE WEAPONS DEVELOPMENT PROGRAM	132,818	132,818	132,818	–12,900	119,918
		Project 3378 schedule delays				[–12,900]	
096	0604707N	SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT.	7,230	7,230	7,230		7,230
097	0604786N	OFFENSIVE ANTI-SURFACE WARFARE WEAPON DEVELOPMENT	143,062	143,062	143,062		143,062
099	0303354N	ASW SYSTEMS DEVELOPMENT—MIP	8,889	8,889	8,889		8,889
100	0304240M	ADVANCED TACTICAL UNMANNED AIRCRAFT SYSTEM	25,291	10,341	25,291	–14,000	11,291
		Unjustified cost growth		[–14,950]		[–14,000]	

101	0304240N	ADVANCED TACTICAL UNMANNED AIRCRAFT SYSTEM	9,300	9,300	9,300		9,300
102	0304270N	ELECTRONIC WARFARE DEVELOPMENT—MIP	466	466	466		466
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	**4,293,713**	**4,237,563**	**4,273,967**	**–114,032**	**4,179,681**
		SYSTEM DEVELOPMENT & DEMONSTRATION					
103	0603208N	TRAINING SYSTEM AIRCRAFT	12,798	13,798	12,798		12,798
		TH–57 follow-on training system development		[1,000]			
104	0604212N	OTHER HELO DEVELOPMENT	32,128	32,128	32,128		32,128
105	0604214M	AV–8B AIRCRAFT—ENG DEV	46,363	46,363	30,163	–4,000	42,363
		Lacks operational justification/need			[–16,200]	[–4,000]	
107	0604215N	STANDARDS DEVELOPMENT	3,771	3,771	3,771		3,771
108	0604216N	MULTI-MISSION HELICOPTER UPGRADE DEVELOPMENT	16,611	16,611	16,611		16,611
109	0604218N	AIR/OCEAN EQUIPMENT ENGINEERING	17,368	17,368	17,368		17,368
110	0604221N	P–3 MODERNIZATION PROGRAM	2,134	2,134	2,134		2,134
111	0604230N	WARFARE SUPPORT SYSTEM	9,729	9,729	9,729		9,729
112	0604231N	TACTICAL COMMAND SYSTEM	57,688	57,688	57,688		57,688
113	0604234N	ADVANCED HAWKEYE	223,565	215,565	223,565	–10,000	213,565
		excess carryover				[–10,000]	
		Forward financed in the FY18 Omnibus		[–10,000]			
		Program increase--IFF range improvement		[2,000]			
114	0604245M	H–1 UPGRADES	58,097	58,097	58,097		58,097
116	0604261N	ACOUSTIC SEARCH SENSORS	42,485	42,485	42,485		42,485
117	0604262N	V–22A	143,079	143,079	143,079		143,079
118	0604264N	AIR CREW SYSTEMS DEVELOPMENT	20,980	20,980	30,980	10,000	30,980
		Increase to advance aircrew physiological monitoring			[10,000]	[10,000]	
119	0604269N	EA–18	147,419	147,419	242,719	95,300	242,719
		UPL—EA–18G Advanced Modes / Cognitive EW			[95,300]	[95,300]	
120	0604270N	ELECTRONIC WARFARE DEVELOPMENT	89,824	121,424	121,424	31,600	121,424
		Navy UFR: EA–18G offensive airborne electronic attack special mission pods.		[31,600]	[31,600]	[31,600]	
121	0604273M	EXECUTIVE HELO DEVELOPMENT	245,064	245,064	245,064		245,064
123	0604274N	NEXT GENERATION JAMMER (NGJ)	459,529	459,529	459,529		459,529

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124	0604280N	JOINT TACTICAL RADIO SYSTEM—NAVY (JTRS-NAVY)	3,272	3,272	3,272		3,272
125	0604282N	NEXT GENERATION JAMMER (NGJ) INCREMENT II	115,253	115,253	115,253	–5,774	109,479
		Engineering previously funded				[–5,774]	
126	0604307N	SURFACE COMBATANT COMBAT SYSTEM ENGINEERING	397,403	377,403	397,403	–10,300	387,103
		ACB 20 unexecutable growth		[–20,000]		[–10,300]	
127	0604311N	LPD–17 CLASS SYSTEMS INTEGRATION	939	939	50,939		939
		Mk 41 VLS integration			[50,000]		
128	0604329N	SMALL DIAMETER BOMB (SDB)	104,448	104,448	104,448		104,448
129	0604366N	STANDARD MISSILE IMPROVEMENTS	165,881	180,881	184,881	15,000	180,881
		XFU electronics unit integration		[15,000]	[19,000]	[15,000]	
130	0604373N	AIRBORNE MCM	10,831	10,831	10,831		10,831
131	0604378N	NAVAL INTEGRATED FIRE CONTROL—COUNTER AIR SYSTEMS ENGINEERING	33,429	26,529	33,429		33,429
		Excess overhead		[–6,900]			
132	0604501N	ADVANCED ABOVE WATER SENSORS	35,635	35,635	35,635		35,635
133	0604503N	SSN–688 AND TRIDENT MODERNIZATION	126,932	126,932	126,932		126,932
134	0604504N	AIR CONTROL	62,448	62,448	62,448		62,448
135	0604512N	SHIPBOARD AVIATION SYSTEMS	9,710	9,710	9,710		9,710
136	0604518N	COMBAT INFORMATION CENTER CONVERSION	19,303	19,303	19,303		19,303
137	0604522N	AIR AND MISSILE DEFENSE RADAR (AMDR) SYSTEM	27,059	27,059	27,059		27,059
138	0604530N	ADVANCED ARRESTING GEAR (AAG)	184,106	184,106	184,106		184,106
139	0604558N	NEW DESIGN SSN	148,233	126,833	148,233		148,233
		Excess cost growth		[–21,400]			
140	0604562N	SUBMARINE TACTICAL WARFARE SYSTEM	60,824	60,824	60,824		60,824
141	0604567N	SHIP CONTRACT DESIGN/ LIVE FIRE T&E	60,062	60,062	66,062	6,000	66,062
		Planning to support FY21 award of LHA–9			[6,000]	[6,000]	
142	0604574N	NAVY TACTICAL COMPUTER RESOURCES	4,642	4,642	4,642		4,642
144	0604601N	MINE DEVELOPMENT	25,756	25,756	25,756		25,756

145	0604610N	LIGHTWEIGHT TORPEDO DEVELOPMENT	95,147	95,147	95,147	–32,000	63,147
		Project 3418 post-system design and engineering funds early to need				[–32,000]	
146	0604654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	7,107	7,107	7,107		7,107
147	0604703N	PERSONNEL, TRAINING, SIMULATION, AND HUMAN FACTORS	6,539	6,539	6,539		6,539
148	0604727N	JOINT STANDOFF WEAPON SYSTEMS	441	441	441		441
149	0604755N	SHIP SELF DEFENSE (DETECT & CONTROL)	180,391	180,391	180,391		180,391
150	0604756N	SHIP SELF DEFENSE (ENGAGE: HARD KILL)	178,538	178,538	178,538		178,538
151	0604757N	SHIP SELF DEFENSE (ENGAGE: SOFT KILL/EW)	120,507	120,507	120,507		120,507
152	0604761N	INTELLIGENCE ENGINEERING	29,715	29,715	29,715		29,715
153	0604771N	MEDICAL DEVELOPMENT	8,095	8,095	8,095		8,095
154	0604777N	NAVIGATION/ID SYSTEM	121,026	121,026	121,026		121,026
155	0604800M	JOINT STRIKE FIGHTER (JSF)—EMD	66,566	66,566	66,566		66,566
156	0604800N	JOINT STRIKE FIGHTER (JSF)—EMD	65,494	65,494	65,494		65,494
159	0605013M	INFORMATION TECHNOLOGY DEVELOPMENT	14,005	14,005	14,005		14,005
160	0605013N	INFORMATION TECHNOLOGY DEVELOPMENT	268,567	268,567	178,467	–60,000	208,567
		General reduction			[–26,300]	[–60,000]	
		Lengthy delivery timelines for Navy Personnel and Pay System			[–63,800]		
161	0605024N	ANTI-TAMPER TECHNOLOGY SUPPORT	5,618	5,618	5,618		5,618
162	0605212M	CH–53K RDTE	326,945	326,945	326,945		326,945
164	0605215N	MISSION PLANNING	32,714	32,714	32,714		32,714
165	0605217N	COMMON AVIONICS	51,486	51,486	51,486		51,486
166	0605220N	SHIP TO SHORE CONNECTOR (SSC)	1,444	1,444	1,444		1,444
167	0605327N	T-AO 205 CLASS	1,298	1,298	1,298		1,298
168	0605414N	UNMANNED CARRIER AVIATION (UCA)	718,942	602,042	718,942	–116,900	602,042
		Insufficient Air Vehicle budget justification		[–116,900]		[–116,900]	
169	0605450M	JOINT AIR-TO-GROUND MISSILE (JAGM)	6,759	11,759	6,759	5,000	11,759
		JAGM-F for USN and USMC		[5,000]		[5,000]	
171	0605500N	MULTI-MISSION MARITIME AIRCRAFT (MMA)	37,296	37,296	37,296		37,296
172	0605504N	MULTI-MISSION MARITIME (MMA) INCREMENT III	160,389	160,389	160,389		160,389
173	0605611M	MARINE CORPS ASSAULT VEHICLES SYSTEM DEVELOPMENT & DEMONSTRATION.	98,223	98,223	98,223	–22,099	76,124
		Project 0026 excess concurrency				[–22,099]	

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174	0605813M	JOINT LIGHT TACTICAL VEHICLE (JLTV) SYSTEM DEVELOPMENT & DEMONSTRATION.	2,260	2,260	2,260		2,260
175	0204202N	DDG–1000	161,264	161,264	161,264	–9,300	151,964
		Testing early to need				[–9,300]	
180	0304785N	TACTICAL CRYPTOLOGIC SYSTEMS	44,098	44,098	44,098		44,098
182	0306250M	CYBER OPERATIONS TECHNOLOGY DEVELOPMENT	6,808	6,808	6,808		6,808
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	**6,042,480**	**5,921,880**	**6,148,080**	**–107,473**	**5,935,007**
		MANAGEMENT SUPPORT					
183	0604256N	THREAT SIMULATOR DEVELOPMENT	94,576	94,576	94,576		94,576
184	0604258N	TARGET SYSTEMS DEVELOPMENT	10,981	10,981	10,981		10,981
185	0604759N	MAJOR T&E INVESTMENT	77,014	83,014	77,014	6,000	83,014
		Program increase		[6,000]		[6,000]	
186	0605126N	JOINT THEATER AIR AND MISSILE DEFENSE ORGANIZATION	48	48	48		48
187	0605152N	STUDIES AND ANALYSIS SUPPORT—NAVY	3,942	3,942	3,942		3,942
188	0605154N	CENTER FOR NAVAL ANALYSES	48,797	48,797	48,797		48,797
189	0605285N	NEXT GENERATION FIGHTER	5,000	5,000	5,000		5,000
191	0605804N	TECHNICAL INFORMATION SERVICES	1,029	1,029	1,029		1,029
192	0605853N	MANAGEMENT, TECHNICAL & INTERNATIONAL SUPPORT	87,565	87,565	78,565		87,565
		Insufficient budget justification			[–9,000]		
193	0605856N	STRATEGIC TECHNICAL SUPPORT	4,231	4,231	4,231		4,231
194	0605861N	RDT&E SCIENCE AND TECHNOLOGY MANAGEMENT	1,072	1,072	1,072		1,072
195	0605863N	RDT&E SHIP AND AIRCRAFT SUPPORT	97,471	97,471	97,471		97,471
196	0605864N	TEST AND EVALUATION SUPPORT	373,834	373,834	373,834		373,834
197	0605865N	OPERATIONAL TEST AND EVALUATION CAPABILITY	21,554	21,554	21,554		21,554
198	0605866N	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	16,227	16,227	16,227		16,227
200	0605873M	MARINE CORPS PROGRAM WIDE SUPPORT	24,303	24,303	24,303		24,303

201	0605898N	MANAGEMENT HQ—R&D	43,262	43,262	43,262		43,262
202	0606355N	WARFARE INNOVATION MANAGEMENT	41,918	41,918	41,918		41,918
203	0606942M	ASSESSMENTS AND EVALUATIONS CYBER VULNERABILITIES	7,000	7,000	7,000		7,000
204	0606942N	ASSESSMENTS AND EVALUATIONS CYBER VULNERABILITIES	48,800	48,800	48,800		48,800
205	0305327N	INSIDER THREAT	1,682	1,682	1,682		1,682
206	0902498N	MANAGEMENT HEADQUARTERS (DEPARTMENTAL SUPPORT ACTIVITIES)	1,579	1,579	1,579		1,579
208	1206867N	SEW SURVEILLANCE/RECONNAISSANCE SUPPORT	8,684	8,684	8,684		8,684
		SUBTOTAL MANAGEMENT SUPPORT	**1,020,569**	**1,026,569**	**1,011,569**	**6,000**	**1,026,569**
		OPERATIONAL SYSTEMS DEVELOPMENT					
210	0604227N	HARPOON MODIFICATIONS	5,426	5,426	5,426		5,426
211	0604840M	F–35 C2D2	259,122	259,122	259,122		259,122
212	0604840N	F–35 C2D2	252,360	252,360	252,360		252,360
213	0607658N	COOPERATIVE ENGAGEMENT CAPABILITY (CEC)	130,515	119,315	130,515	–1,700	128,815
		Excess cost growth		[–11,200]		[–1,700]	
214	0607700N	DEPLOYABLE JOINT COMMAND AND CONTROL	3,127	3,127	3,127		3,127
215	0101221N	STRATEGIC SUB & WEAPONS SYSTEM SUPPORT	157,679	166,679	157,679	9,000	166,679
		Project 2228, technical applications, systems engineering modeling and simulation capability and tool development.		[9,000]		[9,000]	
216	0101224N	SSBN SECURITY TECHNOLOGY PROGRAM	43,198	39,198	43,198	–1,000	42,198
		Excess program growth		[–4,000]		[–1,000]	
217	0101226N	SUBMARINE ACOUSTIC WARFARE DEVELOPMENT	11,311	11,311	11,311		11,311
218	0101402N	NAVY STRATEGIC COMMUNICATIONS	39,313	39,313	39,313		39,313
219	0204136N	F/A–18 SQUADRONS	193,086	200,586	193,086	7,000	200,086
		Engine noise reduction engineering		[2,500]		[2,000]	
		JAGM-F for USN and USMC		[5,000]		[5,000]	
220	0204163N	FLEET TELECOMMUNICATIONS (TACTICAL)	25,014	25,014	25,014	–11,835	13,179
		High frequency over-the-horizon robust communications enterprise concurrency.				[–11,835]	
221	0204228N	SURFACE SUPPORT	11,661	11,661	11,661		11,661
222	0204229N	TOMAHAWK AND TOMAHAWK MISSION PLANNING CENTER (TMPC)	282,395	282,395	291,095		282,395
		Restore MST to maintain 2020 IOC			[8,700]		

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223	0204311N	INTEGRATED SURVEILLANCE SYSTEM	36,959	36,959	71,959	35,000	71,959
		Additional TRAPS units			[35,000]	[35,000]	
224	0204313N	SHIP-TOWED ARRAY SURVEILLANCE SYSTEMS	15,454	15,454	15,454		15,454
225	0204413N	AMPHIBIOUS TACTICAL SUPPORT UNITS (DISPLACEMENT CRAFT)	6,073	6,073	6,073		6,073
226	0204460M	GROUND/AIR TASK ORIENTED RADAR (G/ATOR)	45,029	45,029	45,029		45,029
227	0204571N	CONSOLIDATED TRAINING SYSTEMS DEVELOPMENT	104,903	104,903	104,903		104,903
228	0204574N	CRYPTOLOGIC DIRECT SUPPORT	4,544	4,544	4,544		4,544
229	0204575N	ELECTRONIC WARFARE (EW) READINESS SUPPORT	66,889	66,889	66,889		66,889
230	0205601N	HARM IMPROVEMENT	120,762	120,762	21,522		120,762
		Cancel ER program			[–99,240]		
231	0205604N	TACTICAL DATA LINKS	104,696	104,696	116,696	12,000	116,696
		UPL—Tactical Targeting Network Technology acceleration			[12,000]	[12,000]	
232	0205620N	SURFACE ASW COMBAT SYSTEM INTEGRATION	28,421	28,421	28,421		28,421
233	0205632N	MK–48 ADCAP	94,155	68,555	94,155	–25,600	68,555
		Excessive TI–1 cost growth		[–25,600]		[–25,600]	
234	0205633N	AVIATION IMPROVEMENTS	121,805	136,805	136,805	15,000	136,805
		Navy UFR: F/A–18E/F Super Hornet engine enhancements		[15,000]	[15,000]	[15,000]	
235	0205675N	OPERATIONAL NUCLEAR POWER SYSTEMS	117,028	117,028	117,028		117,028
236	0206313M	MARINE CORPS COMMUNICATIONS SYSTEMS	174,779	174,779	174,779		174,779
237	0206335M	COMMON AVIATION COMMAND AND CONTROL SYSTEM (CAC2S)	4,826	4,826	4,826		4,826
238	0206623M	MARINE CORPS GROUND COMBAT/SUPPORTING ARMS SYSTEMS	97,152	97,152	97,152		97,152
239	0206624M	MARINE CORPS COMBAT SERVICES SUPPORT	30,156	30,156	30,156		30,156
240	0206625M	USMC INTELLIGENCE/ELECTRONIC WARFARE SYSTEMS (MIP)	39,976	39,976	39,976		39,976
241	0206629M	AMPHIBIOUS ASSAULT VEHICLE	22,637	22,637		–1,947	20,690
		Lacks operational justification/need			[–22,637]	[–1,947]	
242	0207161N	TACTICAL AIM MISSILES	40,121	40,121	40,121		40,121
243	0207163N	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	32,473	32,473	32,473	–2,867	29,606

		System improvement program efforts schedule delay				[–2,867]	
249	0303138N	CONSOLIDATED AFLOAT NETWORK ENTERPRISE SERVICES (CANES)	23,697	23,697	23,697		23,697
250	0303140N	INFORMATION SYSTEMS SECURITY PROGRAM	44,228	44,228	44,228		44,228
252	0305192N	MILITARY INTELLIGENCE PROGRAM (MIP) ACTIVITIES	6,081	6,081	6,081		6,081
253	0305204N	TACTICAL UNMANNED AERIAL VEHICLES	8,529	8,529	8,529		8,529
254	0305205N	UAS INTEGRATION AND INTEROPERABILITY	41,212	41,212	41,212		41,212
255	0305208M	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	7,687	7,687	7,687		7,687
256	0305208N	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	42,846	42,846	42,846		42,846
257	0305220N	MQ–4C TRITON	14,395	14,395	14,395		14,395
258	0305231N	MQ–8 UAV	9,843	9,843	9,843		9,843
259	0305232M	RQ–11 UAV	524	524	524		524
260	0305234N	SMALL (LEVEL 0) TACTICAL UAS (STUASL0)	5,360	5,360	5,360		5,360
261	0305239M	RQ–21A	10,914	10,914	10,914		10,914
262	0305241N	MULTI-INTELLIGENCE SENSOR DEVELOPMENT	81,231	81,231	81,231		81,231
263	0305242M	UNMANNED AERIAL SYSTEMS (UAS) PAYLOADS (MIP)	5,956	5,956	5,956		5,956
264	0305421N	RQ–4 MODERNIZATION	219,894	216,894	219,894		219,894
		Program decrease		[–3,000]			
265	0308601N	MODELING AND SIMULATION SUPPORT	7,097	7,097	7,097		7,097
266	0702207N	DEPOT MAINTENANCE (NON-IF)	36,560	36,560	36,560		36,560
267	0708730N	MARITIME TECHNOLOGY (MARITECH)	7,284	7,284	7,284		7,284
268	1203109N	SATELLITE COMMUNICATIONS (SPACE)	39,174	39,174	39,174		39,174
268A	9999999999	CLASSIFIED PROGRAMS	1,549,503	1,549,503	1,549,503		1,549,503
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	**4,885,060**	**4,872,760**	**4,833,883**	**33,051**	**4,918,111**
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	**18,481,666**	**18,387,116**	**18,536,843**	**–97,133**	**18,384,533**
		RESEARCH, DEVELOPMENT, TEST & EVAL, AF					
		BASIC RESEARCH					
001	0601102F	DEFENSE RESEARCH SCIENCES	348,322	348,322	358,322	5,000	353,322
		Basic research program increase			[5,000]	[5,000]	
		Quantum information sciences			[5,000]		
002	0601103F	UNIVERSITY RESEARCH INITIATIVES	154,991	154,991	154,991		154,991

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003	0601108F	HIGH ENERGY LASER RESEARCH INITIATIVES	14,506	14,506	17,006		14,506
		Directed energy research			[2,500]		
		SUBTOTAL BASIC RESEARCH	**517,819**	**517,819**	**530,319**	**5,000**	**522,819**
		APPLIED RESEARCH					
004	0602102F	MATERIALS	125,373	144,373	129,373	17,000	142,373
		Additional facility engineering research and development		[3,000]			
		Advanced materials analysis			[4,000]	[4,000]	
		Structural Biology Techniques		[3,000]		[3,000]	
		Sub-atomic particle research		[3,000]			
		Thermal protecting systems for hypersonics		[10,000]		[10,000]	
005	0602201F	AEROSPACE VEHICLE TECHNOLOGIES	130,547	140,547	135,547	10,000	140,547
		Hypersonic vehicle structures		[10,000]	[5,000]	[10,000]	
006	0602202F	HUMAN EFFECTIVENESS APPLIED RESEARCH	112,518	112,518	112,518		112,518
007	0602203F	AEROSPACE PROPULSION	190,919	195,919	213,419	5,000	195,919
		Affordable Responsive Modular Rocket			[15,000]		
		Multi-mode propulsion			[3,000]		
		Program increase		[5,000]		[5,000]	
		Solid rocket motor produce on-demand			[2,000]		
		Turbine engine technology			[2,500]		
008	0602204F	AEROSPACE SENSORS	166,534	166,534	159,034		166,534
		General program reduction			[–7,500]		
009	0602298F	SCIENCE AND TECHNOLOGY MANAGEMENT— MAJOR HEADQUARTERS ACTIVITIES.	8,288	8,288	8,288		8,288
011	0602602F	CONVENTIONAL MUNITIONS	112,841	112,841	112,841		112,841
012	0602605F	DIRECTED ENERGY TECHNOLOGY	141,898	141,898	145,898		141,898
		Skywave technologies laboratory			[4,000]		

013	0602788F	DOMINANT INFORMATION SCIENCES AND METHODS	162,420	172,420	162,420	10,000	172,420
		Enhance and accelerate Air Force artificial intelligence research		[10,000]		[10,000]	
014	0602890F	HIGH ENERGY LASER RESEARCH	43,359	43,359	55,859	2,500	45,859
		Directed energy research			[2,500]	[2,500]	
		High powered microwave			[10,000]		
015	1206601F	SPACE TECHNOLOGY	117,645	117,645	123,645		117,645
		Wargaming and simulator lab			[6,000]		
		SUBTOTAL APPLIED RESEARCH	**1,312,342**	**1,356,342**	**1,358,842**	**44,500**	**1,356,842**
		ADVANCED TECHNOLOGY DEVELOPMENT					
016	0603112F	ADVANCED MATERIALS FOR WEAPON SYSTEMS	34,426	44,426	31,926	8,500	42,926
		General program reduction			[–5,000]		
		Metals Affordability Initiative		[10,000]	[2,500]	[8,500]	
017	0603199F	SUSTAINMENT SCIENCE AND TECHNOLOGY (S&T)	15,150	20,150	16,150		15,150
		Air Force artificial intelligence research and non-operational support activities.		[5,000]			
		Prevention/enhanced maintainability technologies			[1,000]		
018	0603203F	ADVANCED AEROSPACE SENSORS	39,968	39,968	39,968		39,968
019	0603211F	AEROSPACE TECHNOLOGY DEV/DEMO	121,002	121,002	131,002	5,000	126,002
		Design/Manufacture aircraft aft body drag reduction devices			[10,000]	[5,000]	
020	0603216F	AEROSPACE PROPULSION AND POWER TECHNOLOGY	115,462	125,462	139,462	9,000	124,462
		General program increase			[9,000]	[9,000]	
		Laser power system enhancement		[10,000]			
		Multi-mode propulsion			[5,000]		
		Technology for the Sustainment of Strategic Systems			[10,000]		
021	0603270F	ELECTRONIC COMBAT TECHNOLOGY	55,319	55,319	60,319		55,319
		RF/EO/IR warning and countermeasures			[5,000]		
022	0603401F	ADVANCED SPACECRAFT TECHNOLOGY	54,895	54,895	54,895		54,895
023	0603444F	MAUI SPACE SURVEILLANCE SYSTEM (MSSS)	10,674	10,674	10,674		10,674
024	0603456F	HUMAN EFFECTIVENESS ADVANCED TECHNOLOGY DEVELOPMENT	36,463	46,463	36,463	5,000	41,463
		Autonomous life support system development		[10,000]		[5,000]	
025	0603601F	CONVENTIONAL WEAPONS TECHNOLOGY	194,981	194,981	194,981		194,981

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026	0603605F	ADVANCED WEAPONS TECHNOLOGY	43,368	43,368	53,368	10,000	53,368
		Demonstrator laser weapon system			[10,000]	[10,000]	
027	0603680F	MANUFACTURING TECHNOLOGY PROGRAM	42,025	47,025	42,025	5,000	47,025
		Academic and industrial partnerships for aerospace materials		[5,000]		[5,000]	
028	0603788F	BATTLESPACE KNOWLEDGE DEVELOPMENT AND DEMONSTRATION	51,064	64,364	51,064		51,064
		Additional facility engineering research and development		[8,300]			
		Enhance and accelerate Air Force artificial intelligence research		[5,000]			
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	**814,797**	**868,097**	**862,297**	**42,500**	**857,297**
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES					
030	0603260F	INTELLIGENCE ADVANCED DEVELOPMENT	5,568	5,568	5,568		5,568
032	0603742F	COMBAT IDENTIFICATION TECHNOLOGY	18,194	18,194	18,194		18,194
033	0603790F	NATO RESEARCH AND DEVELOPMENT	2,305	2,305	2,305		2,305
035	0603851F	INTERCONTINENTAL BALLISTIC MISSILE—DEM/VAL	41,856	41,856	41,856		41,856
037	0604015F	LONG RANGE STRIKE—BOMBER	2,314,196	2,314,196	2,314,196		2,314,196
038	0604201F	INTEGRATED AVIONICS PLANNING AND DEVELOPMENT	14,894	14,894	14,894		14,894
039	0604257F	ADVANCED TECHNOLOGY AND SENSORS	34,585	34,585	34,585		34,585
040	0604288F	NATIONAL AIRBORNE OPS CENTER (NAOC) RECAP	9,740	9,740	9,740		9,740
041	0604317F	TECHNOLOGY TRANSFER	12,960	12,960	12,960		12,960
042	0604327F	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDBTDS) PROGRAM	71,501	71,501	71,501	–1,800	69,701
		Program excess				[–1,800]	
043	0604414F	CYBER RESILIENCY OF WEAPON SYSTEMS-ACS	62,618	62,618	62,618		62,618
046	0604776F	DEPLOYMENT & DISTRIBUTION ENTERPRISE R&D	28,350	28,350	38,350		28,350
		Tanker prototype			[10,000]		
048	0604858F	TECH TRANSITION PROGRAM	1,186,075	1,201,075	1,408,875	147,800	1,333,875
		Acceleration of Hypersonic Conventional Strike Weapon			[100,000]	[100,000]	
		Competitively Awarded Transition Programs		[5,000]		[5,000]	

		Low cost attritable aircraft prototype			[80,000]		
		Non-engine development technology		[10,000]			
		Rapid Sustainment Initiative			[42,800]	[42,800]	
049	0605230F	GROUND BASED STRATEGIC DETERRENT	345,041	414,441	414,441	69,400	414,441
		Accelerated execution of program		[69,400]	[69,400]	[69,400]	
050	0207110F	NEXT GENERATION AIR DOMINANCE	503,997	413,997	503,997	–60,000	443,997
		Ahead of need		[–90,000]		[–60,000]	
051	0207455F	THREE DIMENSIONAL LONG-RANGE RADAR (3DELRR)	40,326	40,326	40,326		40,326
052	0208099F	UNIFIED PLATFORM (UP)	29,800	29,800	29,800		29,800
054	0305236F	COMMON DATA LINK EXECUTIVE AGENT (CDL EA)	41,880	41,880	41,880		41,880
055	0305601F	MISSION PARTNER ENVIRONMENTS	10,074	10,074	10,074		10,074
056	0306250F	CYBER OPERATIONS TECHNOLOGY DEVELOPMENT	253,825	253,825	253,825		253,825
057	0306415F	ENABLED CYBER ACTIVITIES	16,325	16,325	16,325		16,325
059	0901410F	CONTRACTING INFORMATION TECHNOLOGY SYSTEM	17,577	17,577			17,577
		Duplication concern			[–17,577]		
060	1203164F	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPMENT) (SPACE)	286,629	286,629	286,629		286,629
061	1203710F	EO/IR WEATHER SYSTEMS	7,940	7,940	7,940		7,940
062	1206422F	WEATHER SYSTEM FOLLOW-ON	138,052	148,052	138,052	6,000	144,052
		Commercial weather data pilot		[10,000]		[6,000]	
063	1206425F	SPACE SITUATION AWARENESS SYSTEMS	39,338	39,338	39,338	–10,000	29,338
		Ahead of need				[–10,000]	
064	1206434F	MIDTERM POLAR MILSATCOM SYSTEM	383,113	383,113	383,113		383,113
065	1206438F	SPACE CONTROL TECHNOLOGY	91,018	106,018	91,018		91,018
		NTS–3 Payload		[15,000]			
066	1206730F	SPACE SECURITY AND DEFENSE PROGRAM	45,542	49,542	45,542		45,542
		Allied launch services		[4,000]			
067	1206760F	PROTECTED TACTICAL ENTERPRISE SERVICE (PTES)	51,419	51,419	51,419		51,419
068	1206761F	PROTECTED TACTICAL SERVICE (PTS)	29,776	29,776	29,776		29,776
069	1206855F	PROTECTED SATCOM SERVICES (PSCS)—AGGREGATED	29,379	29,379	29,379		29,379
070	1206857F	OPERATIONALLY RESPONSIVE SPACE	366,050	297,050	316,050	5,000	371,050
		Blackjack		[50,000]		[110,000]	
		Space RCO Advanced Solar Power—early to need		[–119,000]	[–50,000]	[–105,000]	

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		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	**6,529,943**	**6,484,343**	**6,764,566**	**156,400**	**6,686,343**
		SYSTEM DEVELOPMENT & DEMONSTRATION					
071	0604200F	FUTURE ADVANCED WEAPON ANALYSIS & PROGRAMS	39,602	39,602	39,602		39,602
072	0604201F	INTEGRATED AVIONICS PLANNING AND DEVELOPMENT	58,531	58,531	58,531		58,531
073	0604222F	NUCLEAR WEAPONS SUPPORT	4,468	4,468	4,468		4,468
074	0604270F	ELECTRONIC WARFARE DEVELOPMENT	1,909	1,909	1,909		1,909
075	0604281F	TACTICAL DATA NETWORKS ENTERPRISE	207,746	207,746	257,746	50,000	257,746
		Increase to accelerate 21st Century Battle Management Command and Control.			[50,000]	[50,000]	
076	0604287F	PHYSICAL SECURITY EQUIPMENT	14,421	14,421	14,421		14,421
077	0604329F	SMALL DIAMETER BOMB (SDB)—EMD	73,158	93,158	73,158		73,158
		SDB II cost reduction initiatives		[20,000]			
081	0604429F	AIRBORNE ELECTRONIC ATTACK	7,153	7,153	7,153		7,153
083	0604602F	ARMAMENT/ORDNANCE DEVELOPMENT	58,590	58,590	58,590		58,590
084	0604604F	SUBMUNITIONS	2,990	2,990	2,990		2,990
085	0604617F	AGILE COMBAT SUPPORT	20,028	20,028	20,028		20,028
086	0604618F	JOINT DIRECT ATTACK MUNITION	15,787	15,787	15,787		15,787
087	0604706F	LIFE SUPPORT SYSTEMS	8,919	8,919	8,919		8,919
088	0604735F	COMBAT TRAINING RANGES	35,895	62,895	35,895	8,000	43,895
		Advanced threat radar system		[27,000]		[8,000]	
089	0604800F	F–35—EMD	69,001	69,001	69,001		69,001
091	0604932F	LONG RANGE STANDOFF WEAPON	614,920	699,920	699,920	85,000	699,920
		Accelerated execution of program		[85,000]	[85,000]	[85,000]	
092	0604933F	ICBM FUZE MODERNIZATION	172,902	172,902	172,902		172,902
097	0605221F	KC–46	88,170	88,170	88,170	–5,000	83,170
		Excess to need				[–5,000]	

098	0605223F	ADVANCED PILOT TRAINING	265,465	265,465	265,465		265,465
099	0605229F	COMBAT RESCUE HELICOPTER	457,652	457,652	457,652		457,652
105	0605830F	ACQ WORKFORCE- GLOBAL BATTLE MGMT	3,617	3,617	3,617		3,617
106	0605931F	B–2 DEFENSIVE MANAGEMENT SYSTEM	261,758	261,758	261,758		261,758
107	0101125F	NUCLEAR WEAPONS MODERNIZATION	91,907	91,907	91,907		91,907
108	0207171F	F–15 EPAWSS	137,095	137,095	137,095		137,095
109	0207328F	STAND IN ATTACK WEAPON	43,175	43,175	43,175	–22,600	20,575
		Excess to need				[–22,600]	
110	0207423F	ADVANCED COMMUNICATIONS SYSTEMS	14,888	14,888	14,888		14,888
111	0207701F	FULL COMBAT MISSION TRAINING	1,015	1,015	1,015		1,015
115	0307581F	JSTARS RECAP		623,000	50,000	30,000	30,000
		Continue JSTARS recap GMTI radar development			[50,000]	[30,000]	
		JSTARS recap EMD execution		[623,000]			
116	0401310F	C–32 EXECUTIVE TRANSPORT RECAPITALIZATION	7,943	7,943	7,943		7,943
117	0401319F	PRESIDENTIAL AIRCRAFT RECAPITALIZATION (PAR)	673,032	673,032	673,032		673,032
118	0701212F	AUTOMATED TEST SYSTEMS	13,653	13,653	13,653		13,653
119	1203176F	COMBAT SURVIVOR EVADER LOCATOR	939	939	939		939
120	1203269F	GPS IIIC	451,889	451,889	451,889	–18,000	433,889
		SMI insufficient justification				[–18,000]	
121	1203940F	SPACE SITUATION AWARENESS OPERATIONS	46,668	46,668	46,668		46,668
122	1206421F	COUNTERSPACE SYSTEMS	20,676	20,676	20,676		20,676
123	1206425F	SPACE SITUATION AWARENESS SYSTEMS	134,463	134,463	134,463		134,463
124	1206426F	SPACE FENCE	20,215	20,215	20,215		20,215
125	1206431F	ADVANCED EHF MILSATCOM (SPACE)	151,506	151,506	151,506		151,506
126	1206432F	POLAR MILSATCOM (SPACE)	27,337	27,337	27,337		27,337
127	1206433F	WIDEBAND GLOBAL SATCOM (SPACE)	3,970	3,970	3,970		3,970
128	1206441F	SPACE BASED INFRARED SYSTEM (SBIRS) HIGH EMD	60,565	60,565	60,565		60,565
129	1206442F	EVOLVED SBIRS	643,126	643,126	743,126	100,000	743,126
		Accelerate sensor development			[100,000]	[100,000]	
130	1206853F	EVOLVED EXPENDABLE LAUNCH VEHICLE PROGRAM (SPACE)—EMD	245,447	245,447	245,447		245,447
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	**5,272,191**	**6,027,191**	**5,557,191**	**227,400**	**5,499,591**

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		MANAGEMENT SUPPORT					
131	0604256F	THREAT SIMULATOR DEVELOPMENT	34,256	34,256	34,256		34,256
132	0604759F	MAJOR T&E INVESTMENT	91,844	91,844	106,844	15,000	106,844
		Test infrastructure improvements			[15,000]	[15,000]	
133	0605101F	RAND PROJECT AIR FORCE	34,614	34,614	34,614		34,614
135	0605712F	INITIAL OPERATIONAL TEST & EVALUATION	18,043	18,043	18,043		18,043
136	0605807F	TEST AND EVALUATION SUPPORT	692,784	724,684	692,784	31,900	724,684
		Test range modernization		[31,900]		[31,900]	
137	0605826F	ACQ WORKFORCE- GLOBAL POWER	233,924	233,924	233,924		233,924
138	0605827F	ACQ WORKFORCE- GLOBAL VIG & COMBAT SYS	263,488	263,488	263,488		263,488
139	0605828F	ACQ WORKFORCE- GLOBAL REACH	153,591	153,591	153,591		153,591
140	0605829F	ACQ WORKFORCE- CYBER, NETWORK, & BUS SYS	232,315	232,315	232,315		232,315
141	0605830F	ACQ WORKFORCE- GLOBAL BATTLE MGMT	169,868	169,868	169,868		169,868
142	0605831F	ACQ WORKFORCE- CAPABILITY INTEGRATION	226,219	226,219	226,219		226,219
143	0605832F	ACQ WORKFORCE- ADVANCED PRGM TECHNOLOGY	38,400	38,400	38,400		38,400
144	0605833F	ACQ WORKFORCE- NUCLEAR SYSTEMS	125,761	125,761	125,761		125,761
147	0605898F	MANAGEMENT HQ—R&D	10,642	10,642	10,642		10,642
148	0605976F	FACILITIES RESTORATION AND MODERNIZATION—TEST AND EVALUATION SUPPORT.	162,216	162,216	162,216		162,216
149	0605978F	FACILITIES SUSTAINMENT—TEST AND EVALUATION SUPPORT	28,888	28,888	28,888		28,888
150	0606017F	REQUIREMENTS ANALYSIS AND MATURATION	35,285	35,285	35,285		35,285
153	0308602F	ENTEPRISE INFORMATION SERVICES (EIS)	20,545	20,545	20,545		20,545
154	0702806F	ACQUISITION AND MANAGEMENT SUPPORT	12,367	12,367	12,367		12,367
155	0804731F	GENERAL SKILL TRAINING	1,448	1,448	1,448		1,448
157	1001004F	INTERNATIONAL ACTIVITIES	3,998	3,998	3,998		3,998
158	1206116F	SPACE TEST AND TRAINING RANGE DEVELOPMENT	23,254	23,254	23,254		23,254
159	1206392F	SPACE AND MISSILE CENTER (SMC) CIVILIAN WORKFORCE	169,912	169,912	169,912		169,912

160	1206398F	SPACE & MISSILE SYSTEMS CENTER—MHA	10,508	10,508	10,508		10,508
161	1206860F	ROCKET SYSTEMS LAUNCH PROGRAM (SPACE)	19,721	29,721	19,721		19,721
		Rocket systems launch program		[10,000]			
162	1206864F	SPACE TEST PROGRAM (STP)	25,620	25,620	25,620		25,620
		SUBTOTAL MANAGEMENT SUPPORT	**2,839,511**	**2,881,411**	**2,854,511**	**46,900**	**2,886,411**
		OPERATIONAL SYSTEMS DEVELOPMENT					
165	0604233F	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	11,344	11,344	11,344		11,344
167	0605018F	AF INTEGRATED PERSONNEL AND PAY SYSTEM (AF-IPPS)	47,287	47,287	13,141	–6,185	41,102
		Poor agile development implementation and lenghty delivery timeline			[–34,146]	[–6,185]	
168	0605024F	ANTI-TAMPER TECHNOLOGY EXECUTIVE AGENCY	32,770	32,770	32,770		32,770
169	0605117F	FOREIGN MATERIEL ACQUISITION AND EXPLOITATION	68,368	68,368	68,368		68,368
170	0605278F	HC/MC–130 RECAP RDT&E	32,574	32,574	32,574		32,574
171	0606018F	NC3 INTEGRATION	26,112	26,112	26,112		26,112
172	0606942F	ASSESSMENTS AND EVALUATIONS CYBER VULNERABILITIES	99,100	99,100	99,100		99,100
173	0101113F	B–52 SQUADRONS	280,414	295,114	295,214	14,759	295,173
		Air Force requested realignment		[14,700]	[14,800]	[14,759]	
174	0101122F	AIR-LAUNCHED CRUISE MISSILE (ALCM)	5,955	5,955	5,955		5,955
175	0101126F	B–1B SQUADRONS	76,030	76,030	76,030	–12,800	63,230
		FITP delayed new start				[–12,800]	
176	0101127F	B–2 SQUADRONS	105,561	105,561	105,561		105,561
177	0101213F	MINUTEMAN SQUADRONS	156,047	156,047	156,047		156,047
179	0101316F	WORLDWIDE JOINT STRATEGIC COMMUNICATIONS	10,442	10,442	10,442		10,442
180	0101324F	INTEGRATED STRATEGIC PLANNING & ANALYSIS NETWORK	22,833	22,833	22,833		22,833
181	0101328F	ICBM REENTRY VEHICLES	18,412	18,412	18,412		18,412
183	0102110F	UH–1N REPLACEMENT PROGRAM	288,022	288,022	288,022		288,022
184	0102326F	REGION/SECTOR OPERATION CONTROL CENTER MODERNIZATION PROGRAM	9,252	9,252	9,252		9,252
186	0205219F	MQ–9 UAV	115,345	115,345	115,345		115,345
188	0207131F	A–10 SQUADRONS	26,738	26,738	26,738		26,738
189	0207133F	F–16 SQUADRONS	191,564	191,564	191,564		191,564
190	0207134F	F–15E SQUADRONS	192,883	242,883	192,883	8,600	201,483
		ALQ–128 EW suite for ANG units		[50,000]		[50,000]	

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		Operational flight plan funding excess to need				[–41,400]	
191	0207136F	MANNED DESTRUCTIVE SUPPRESSION	15,238	15,238	15,238		15,238
192	0207138F	F–22A SQUADRONS	603,553	583,853	603,553	–15,100	588,453
		Program reduction		[–19,700]		[–15,100]	
193	0207142F	F–35 SQUADRONS	549,501	549,501	549,501		549,501
194	0207161F	TACTICAL AIM MISSILES	37,230	37,230	37,230		37,230
195	0207163F	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	61,393	61,393	61,393		61,393
196	0207227F	COMBAT RESCUE—PARARESCUE	647	647	647		647
198	0207249F	PRECISION ATTACK SYSTEMS PROCUREMENT	14,891	14,891	14,891		14,891
199	0207253F	COMPASS CALL	13,901	13,901	13,901		13,901
200	0207268F	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	121,203	121,203	121,203		121,203
202	0207325F	JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)	60,062	60,062	60,062		60,062
203	0207410F	AIR & SPACE OPERATIONS CENTER (AOC)	106,102	79,602	106,102	–8,000	98,102
		Unjustified request		[–26,500]		[–8,000]	
204	0207412F	CONTROL AND REPORTING CENTER (CRC)	6,413	6,413	6,413		6,413
205	0207417F	AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)	120,664	78,864	130,664	–7,280	113,384
		Increase to accelerate 21st Century Battle Management Command and Control.			[10,000]	[10,000]	
		Program reduction		[–5,800]			
		Radar controller program delay		[–36,000]		[–17,280]	
206	0207418F	TACTICAL AIRBORNE CONTROL SYSTEMS	2,659	2,659	2,659		2,659
208	0207431F	COMBAT AIR INTELLIGENCE SYSTEM ACTIVITIES	10,316	10,316	10,316		10,316
209	0207444F	TACTICAL AIR CONTROL PARTY-MOD	6,149	6,149	6,149		6,149
210	0207448F	C2ISR TACTICAL DATA LINK	1,738	1,738	1,738		1,738
211	0207452F	DCAPES	13,297	13,297	13,297		13,297
212	0207573F	NATIONAL TECHNICAL NUCLEAR FORENSICS	1,788	1,788	1,788		1,788
213	0207581F	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM (JSTARS)	14,888	14,888	14,888		14,888

214	0207590F	SEEK EAGLE	24,699	24,699	24,699		24,699
215	0207601F	USAF MODELING AND SIMULATION	17,078	17,078	17,078		17,078
216	0207605F	WARGAMING AND SIMULATION CENTERS	6,141	6,141	6,141		6,141
218	0207697F	DISTRIBUTED TRAINING AND EXERCISES	4,225	4,225	4,225		4,225
219	0208006F	MISSION PLANNING SYSTEMS	63,653	63,653	63,653		63,653
220	0208007F	TACTICAL DECEPTION	6,949	6,949	6,949		6,949
221	0208087F	AF OFFENSIVE CYBERSPACE OPERATIONS	40,526	40,526	40,526		40,526
222	0208088F	AF DEFENSIVE CYBERSPACE OPERATIONS	24,166	24,166	24,166		24,166
223	0208097F	JOINT CYBER COMMAND AND CONTROL (JCC2)	13,000	13,000	13,000		13,000
224	0208099F	UNIFIED PLATFORM (UP)	28,759	28,759	28,759		28,759
229	0301017F	GLOBAL SENSOR INTEGRATED ON NETWORK (GSIN)	3,579	3,579	3,579		3,579
230	0301112F	NUCLEAR PLANNING AND EXECUTION SYSTEM (NPES)	29,620	29,620	29,620		29,620
237	0301401F	AIR FORCE SPACE AND CYBER NON-TRADITIONAL ISR FOR BATTLESPACE AWARENESS.	6,633	6,633	6,633		6,633
238	0302015F	E–4B NATIONAL AIRBORNE OPERATIONS CENTER (NAOC)	57,758	57,758	57,758		57,758
240	0303131F	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK (MEECN)	99,088	99,088	99,088	–13,700	85,388
		Underexecution				[–13,700]	
241	0303133F	HIGH FREQUENCY RADIO SYSTEMS	51,612	51,612	51,612		51,612
242	0303140F	INFORMATION SYSTEMS SECURITY PROGRAM	34,612	34,612	34,612		34,612
244	0303142F	GLOBAL FORCE MANAGEMENT—DATA INITIATIVE	2,170	2,170	2,170		2,170
246	0304260F	AIRBORNE SIGINT ENTERPRISE	106,873	109,873	106,873	3,000	109,873
		SIGINT single-pod development		[3,000]		[3,000]	
247	0304310F	COMMERCIAL ECONOMIC ANALYSIS	3,472	3,472	3,472		3,472
250	0305015F	C2 AIR OPERATIONS SUITE—C2 INFO SERVICES	8,608	8,608	8,608		8,608
251	0305020F	CCMD INTELLIGENCE INFORMATION TECHNOLOGY	1,586	1,586	1,586		1,586
252	0305099F	GLOBAL AIR TRAFFIC MANAGEMENT (GATM)	4,492	4,492	4,492		4,492
254	0305111F	WEATHER SERVICE	26,942	26,942	26,942		26,942
255	0305114F	AIR TRAFFIC CONTROL, APPROACH, AND LANDING SYSTEM (ATCALS)	6,271	8,771	6,271	2,500	8,771
		Augmentation of air surveillance and early warning radar systems		[2,500]		[2,500]	
256	0305116F	AERIAL TARGETS	8,383	8,383	8,383		8,383
259	0305128F	SECURITY AND INVESTIGATIVE ACTIVITIES	418	418	418		418
261	0305146F	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	3,845	3,845	3,845		3,845

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268	0305202F	DRAGON U–2	48,518	65,518	48,518	17,000	65,518
		EO/IR sensor upgrades		[17,000]		[17,000]	
270	0305206F	AIRBORNE RECONNAISSANCE SYSTEMS	175,334	175,334	175,334	10,000	185,334
		Gorgon Stare		[10,800]		[10,000]	
		Program reduction		[–10,800]			
271	0305207F	MANNED RECONNAISSANCE SYSTEMS	14,223	14,223	14,223		14,223
272	0305208F	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	24,554	24,554	24,554		24,554
273	0305220F	RQ–4 UAV	221,690	211,890	221,690		221,690
		RQ–4 infrastructure unjustified request		[–9,800]			
274	0305221F	NETWORK-CENTRIC COLLABORATIVE TARGETING	14,288	14,288	14,288		14,288
275	0305238F	NATO AGS	51,527	51,527	51,527		51,527
276	0305240F	SUPPORT TO DCGS ENTERPRISE	26,579	26,579	26,579		26,579
278	0305600F	INTERNATIONAL INTELLIGENCE TECHNOLOGY AND ARCHITECTURES	8,464	8,464	8,464		8,464
280	0305881F	RAPID CYBER ACQUISITION	4,303	4,303	4,303		4,303
284	0305984F	PERSONNEL RECOVERY COMMAND & CTRL (PRC2)	2,466	2,466	2,466		2,466
285	0307577F	INTELLIGENCE MISSION DATA (IMD)	4,117	4,117	4,117		4,117
287	0401115F	C–130 AIRLIFT SQUADRON	105,988	105,988	105,988		105,988
288	0401119F	C–5 AIRLIFT SQUADRONS (IF)	25,071	25,071	25,071		25,071
289	0401130F	C–17 AIRCRAFT (IF)	48,299	48,299	48,299		48,299
290	0401132F	C–130J PROGRAM	15,409	15,409	15,409		15,409
291	0401134F	LARGE AIRCRAFT IR COUNTERMEASURES (LAIRCM)	4,334	4,334	4,334		4,334
292	0401218F	KC–135S	3,493	3,493	3,493		3,493
293	0401219F	KC–10S	6,569	6,569	6,569		6,569
294	0401314F	OPERATIONAL SUPPORT AIRLIFT	3,172	3,172	3,172		3,172
295	0401318F	CV–22	18,502	18,502	18,502		18,502
296	0401840F	AMC COMMAND AND CONTROL SYSTEM	1,688	1,688	1,688		1,688
297	0408011F	SPECIAL TACTICS / COMBAT CONTROL	2,541	2,541	2,541		2,541

298	0702207F	DEPOT MAINTENANCE (NON-IF)	1,897	1,897	1,897		1,897
299	0708055F	MAINTENANCE, REPAIR & OVERHAUL SYSTEM	50,933	50,933	15,873		50,933
		Poor agile development implementation			[–35,060]		
300	0708610F	LOGISTICS INFORMATION TECHNOLOGY (LOGIT)	13,787	13,787	13,787		13,787
301	0708611F	SUPPORT SYSTEMS DEVELOPMENT	4,497	4,497	4,497		4,497
302	0804743F	OTHER FLIGHT TRAINING	2,022	2,022	2,022		2,022
303	0808716F	OTHER PERSONNEL ACTIVITIES	108	108	108		108
304	0901202F	JOINT PERSONNEL RECOVERY AGENCY	2,023	2,023	2,023		2,023
305	0901218F	CIVILIAN COMPENSATION PROGRAM	3,772	3,772	3,772		3,772
306	0901220F	PERSONNEL ADMINISTRATION	6,358	6,358	6,358		6,358
307	0901226F	AIR FORCE STUDIES AND ANALYSIS AGENCY	1,418	1,418	1,418		1,418
308	0901538F	FINANCIAL MANAGEMENT INFORMATION SYSTEMS DEVELOPMENT	99,734	99,734	87,918	–5,900	93,834
		Poor agile development implementation			[–11,816]	[–5,900]	
309	1201921F	SERVICE SUPPORT TO STRATCOM—SPACE ACTIVITIES	14,161	14,161	14,161		14,161
310	1202247F	AF TENCAP	26,986	26,986	26,986		26,986
311	1203001F	FAMILY OF ADVANCED BLOS TERMINALS (FAB-T)	80,168	80,168	80,168		80,168
312	1203110F	SATELLITE CONTROL NETWORK (SPACE)	17,808	17,808	17,808		17,808
314	1203165F	NAVSTAR GLOBAL POSITIONING SYSTEM (SPACE AND CONTROL SEGMENTS)	8,937	8,937	8,937		8,937
315	1203173F	SPACE AND MISSILE TEST AND EVALUATION CENTER	59,935	59,935	59,935		59,935
316	1203174F	SPACE INNOVATION, INTEGRATION AND RAPID TECHNOLOGY DEVELOPMENT	21,019	21,019	21,019		21,019
317	1203179F	INTEGRATED BROADCAST SERVICE (IBS)	8,568	8,568	8,568		8,568
318	1203182F	SPACELIFT RANGE SYSTEM (SPACE)	10,641	10,641	10,641		10,641
319	1203265F	GPS III SPACE SEGMENT	144,543	144,543	144,543		144,543
320	1203400F	SPACE SUPERIORITY INTELLIGENCE	16,278	16,278	16,278		16,278
321	1203614F	JSPOC MISSION SYSTEM	72,256	72,256	62,256	–10,000	62,256
		Assumed cost savings			[–10,000]	[–10,000]	
322	1203620F	NATIONAL SPACE DEFENSE CENTER	42,209	42,209	42,209		42,209
325	1203913F	NUDET DETECTION SYSTEM (SPACE)	19,778	19,778	19,778		19,778
326	1203940F	SPACE SITUATION AWARENESS OPERATIONS	19,572	19,572	19,572		19,572
327	1206423F	GLOBAL POSITIONING SYSTEM III—OPERATIONAL CONTROL SEGMENT	513,235	513,235	513,235		513,235
327A	9999999999	CLASSIFIED PROGRAMS	16,534,124	16,390,224	16,534,124		16,534,124
		Classifed adjustment		[–40,000]			

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		Forward financed in the FY18 Omnibus		[–89,900]			
		PDSA staff reduction		[–14,000]			
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	**22,891,740**	**22,737,240**	**22,825,518**	**–23,106**	**22,868,634**
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, AF	**40,178,343**	**40,872,443**	**40,753,244**	**499,594**	**40,677,937**
		RESEARCH, DEVELOPMENT, TEST & EVAL, DW					
		BASIC RESEARCH					
001	0601000BR	DTRA BASIC RESEARCH	37,023	37,023	37,023		37,023
002	0601101E	DEFENSE RESEARCH SCIENCES	422,130	416,130	429,630	–6,000	416,130
		Basic research program increase			[5,000]		
		Critical materials			[2,500]		
		Program decrease		[–6,000]		[–6,000]	
003	0601110D8Z	BASIC RESEARCH INITIATIVES	42,702	42,702	52,702		42,702
		Quantum information sciences			[5,000]		
		University-lab research partnership			[5,000]		
004	0601117E	BASIC OPERATIONAL MEDICAL RESEARCH SCIENCE	47,825	47,825	57,825	10,000	57,825
		TBI Treatment for blast injuries			[10,000]	[10,000]	
005	0601120D8Z	NATIONAL DEFENSE EDUCATION PROGRAM	85,919	85,919	85,919		85,919
006	0601228D8Z	HISTORICALLY BLACK COLLEGES AND UNIVERSITIES/MINORITY INSTITUTIONS	30,412	40,412	30,412	10,000	40,412
		Program increase		[10,000]		[10,000]	
007	0601384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	42,103	42,103	42,103		42,103
		SUBTOTAL BASIC RESEARCH	**708,114**	**712,114**	**735,614**	**14,000**	**722,114**
		APPLIED RESEARCH					
008	0602000D8Z	JOINT MUNITIONS TECHNOLOGY	19,170	19,170	21,670	2,500	21,670
		Insensitive munitions			[2,500]	[2,500]	

009	0602115E	BIOMEDICAL TECHNOLOGY	101,300	101,300	101,300		101,300
011	0602234D8Z	LINCOLN LABORATORY RESEARCH PROGRAM	51,596	51,596	51,596		51,596
012	0602251D8Z	APPLIED RESEARCH FOR THE ADVANCEMENT OF S&T PRIORITIES	60,688	60,688	53,188		60,688
		General program reduction			[–7,500]		
013	0602303E	INFORMATION & COMMUNICATIONS TECHNOLOGY	395,317	395,317	395,317		395,317
014	0602383E	BIOLOGICAL WARFARE DEFENSE	38,640	38,640	38,640		38,640
015	0602384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	192,674	192,674	192,674		192,674
016	0602668D8Z	CYBER SECURITY RESEARCH	14,969	14,969	14,969		14,969
017	0602702E	TACTICAL TECHNOLOGY	335,466	335,466	332,966	–2,500	332,966
		General program increase			[2,500]	[2,500]	
		MAD-FIRES reduction			[–5,000]	[–5,000]	
018	0602715E	MATERIALS AND BIOLOGICAL TECHNOLOGY	226,898	226,898	211,898	–8,000	218,898
		General program reduction			[–15,000]	[–8,000]	
019	0602716E	ELECTRONICS TECHNOLOGY	333,847	333,847	333,847		333,847
020	0602718BR	COUNTER WEAPONS OF MASS DESTRUCTION APPLIED RESEARCH	161,151	161,151	161,151	–4,000	157,151
		JIDO program decrease				[–4,000]	
021	0602751D8Z	SOFTWARE ENGINEERING INSTITUTE (SEI) APPLIED RESEARCH	9,300	9,300	9,300		9,300
022	1160401BB	SOF TECHNOLOGY DEVELOPMENT	35,921	35,921	35,921		35,921
		SUBTOTAL APPLIED RESEARCH	**1,976,937**	**1,976,937**	**1,954,437**	**–12,000**	**1,964,937**
		ADVANCED TECHNOLOGY DEVELOPMENT					
023	0603000D8Z	JOINT MUNITIONS ADVANCED TECHNOLOGY	25,598	25,598	25,598		25,598
024	0603122D8Z	COMBATING TERRORISM TECHNOLOGY SUPPORT	125,271	125,271	111,271	–14,000	111,271
		General program reduction			[–14,000]	[–14,000]	
025	0603133D8Z	FOREIGN COMPARATIVE TESTING	24,532	24,532	24,532		24,532
027	0603160BR	COUNTER WEAPONS OF MASS DESTRUCTION ADVANCED TECHNOLOGY DEVELOPMENT.	299,858	299,858	299,858	–29,000	270,858
		JIDO program decrease				[–29,000]	
028	0603176C	ADVANCED CONCEPTS AND PERFORMANCE ASSESSMENT	13,017	13,017	13,017		13,017
029	0603178C	WEAPONS TECHNOLOGY		10,000	13,400	10,000	10,000
		Accelerate hypersonic defense capability		[10,000]	[13,400]	[10,000]	
031	0603180C	ADVANCED RESEARCH	20,365	40,365	42,565	22,000	42,365

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		Accelerate hypersonic missile defense		[20,000]	[22,200]	[22,000]	
032	0603225D8Z	JOINT DOD-DOE MUNITIONS TECHNOLOGY DEVELOPMENT	18,644	18,644	18,644		18,644
034	0603286E	ADVANCED AEROSPACE SYSTEMS	277,603	277,603	282,603	5,000	282,603
		Hypersonics weapons programs development and transition			[5,000]	[5,000]	
035	0603287E	SPACE PROGRAMS AND TECHNOLOGY	254,671	254,671	364,671		254,671
		Blackjack increase			[110,000]		
036	0603288D8Z	ANALYTIC ASSESSMENTS	19,472	19,472	19,472		19,472
037	0603289D8Z	ADVANCED INNOVATIVE ANALYSIS AND CONCEPTS	37,263	37,263	37,263		37,263
038	0603291D8Z	ADVANCED INNOVATIVE ANALYSIS AND CONCEPTS—MHA	13,621	13,621	13,621		13,621
039	0603294C	COMMON KILL VEHICLE TECHNOLOGY	189,753	100,753	189,753	–89,000	100,753
		Early to need		[–89,000]		[–89,000]	
040	0603342D8W	DEFENSE INNOVATION UNIT EXPERIMENTAL (DIUX)	29,364	29,364	29,864		29,364
		Defense technology innovation			[500]		
041	0603375D8Z	TECHNOLOGY INNOVATION	83,143	83,143	103,143		83,143
		Commercial SAR satellites			[20,000]		
042	0603384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—ADVANCED DEVELOPMENT.	142,826	142,826	142,826		142,826
043	0603527D8Z	RETRACT LARCH	161,128	161,128	161,128		161,128
044	0603618D8Z	JOINT ELECTRONIC ADVANCED TECHNOLOGY	12,918	12,918	12,918		12,918
045	0603648D8Z	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS	106,049	106,049	106,049		106,049
046	0603662D8Z	NETWORKED COMMUNICATIONS CAPABILITIES	12,696	12,696	5,196		12,696
		General program reduction			[–7,500]		
047	0603680D8Z	DEFENSE-WIDE MANUFACTURING SCIENCE AND TECHNOLOGY PROGRAM	114,637	114,637	121,637		114,637
		Enhancing cybersecurity for small vendors			[5,000]		
		Eye protection system			[2,000]		
048	0603680S	MANUFACTURING TECHNOLOGY PROGRAM	49,667	49,667	52,167	2,500	52,167
		General program increase			[2,500]	[2,500]	

049	0603699D8Z	EMERGING CAPABILITIES TECHNOLOGY DEVELOPMENT	48,338	48,338	48,338		48,338
050	0603712S	GENERIC LOGISTICS R&D TECHNOLOGY DEMONSTRATIONS	11,778	11,778	12,778	1,000	12,778
		General program increase			[1,000]	[1,000]	
052	0603716D8Z	STRATEGIC ENVIRONMENTAL RESEARCH PROGRAM	76,514	76,514	86,514	10,000	86,514
		Readiness Increase			[10,000]	[10,000]	
053	0603720S	MICROELECTRONICS TECHNOLOGY DEVELOPMENT AND SUPPORT	168,931	168,931	173,931	5,000	173,931
		Tunable filter, support for microelectronics development			[5,000]	[5,000]	
054	0603727D8Z	JOINT WARFIGHTING PROGRAM	5,992	5,992	5,992		5,992
055	0603739E	ADVANCED ELECTRONICS TECHNOLOGIES	111,099	111,099	118,599	7,500	118,599
		Support for the Electronics Resurgence Initiative			[7,500]	[7,500]	
056	0603760E	COMMAND, CONTROL AND COMMUNICATIONS SYSTEMS	185,984	185,984	185,984		185,984
057	0603766E	NETWORK-CENTRIC WARFARE TECHNOLOGY	438,569	438,569	428,569	–4,500	434,069
		General program reduction			[–10,000]	[–4,500]	
058	0603767E	SENSOR TECHNOLOGY	190,128	190,128	191,628	1,500	191,628
		Sensors and processing systems technology			[1,500]	[1,500]	
059	0603769D8Z	DISTRIBUTED LEARNING ADVANCED TECHNOLOGY DEVELOPMENT	13,564	13,564	13,564		13,564
060	0603781D8Z	SOFTWARE ENGINEERING INSTITUTE	15,050	15,050	15,050		15,050
061	0603826D8Z	QUICK REACTION SPECIAL PROJECTS	69,626	69,626	59,626	–10,000	59,626
		General program reduction			[–10,000]	[–10,000]	
062	0603833D8Z	ENGINEERING SCIENCE & TECHNOLOGY	19,415	19,415	19,415		19,415
063	0603924D8Z	HIGH ENERGY LASER ADVANCED TECHNOLOGY PROGRAM	69,533	69,533	69,533		69,533
064	0603941D8Z	TEST & EVALUATION SCIENCE & TECHNOLOGY	96,389	96,389	111,389	15,000	111,389
		Hypersonics and directed energy test			[10,000]	[10,000]	
		Workforce development			[5,000]	[5,000]	
065	0604055D8Z	OPERATIONAL ENERGY CAPABILITY IMPROVEMENT	40,582	40,582	50,582	5,000	45,582
		Readiness Increase			[10,000]	[5,000]	
066	0303310D8Z	CWMD SYSTEMS	26,644	26,644	26,644		26,644
067	1160402BB	SOF ADVANCED TECHNOLOGY DEVELOPMENT	79,380	79,380	79,380		79,380
067A	0603XXXD8Z	NATIONAL SECURITY INNOVATION ACTIVITIES			150,000	75,000	75,000
		Establish office for capital investment			[150,000]	[75,000]	
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	**3,699,612**	**3,640,612**	**4,038,712**	**13,000**	**3,712,612**

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		ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES					
068	0603161D8Z	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT RDT&E ADC&P.	28,140	28,140	28,140		28,140
069	0603600D8Z	WALKOFF	92,222	92,222	92,222		92,222
070	0603821D8Z	ACQUISITION ENTERPRISE DATA & INFORMATION SERVICES	2,506	2,506	2,506		2,506
071	0603851D8Z	ENVIRONMENTAL SECURITY TECHNICAL CERTIFICATION PROGRAM	40,016	40,016	50,016	2,000	42,016
		Readiness Increase			[10,000]	[2,000]	
072	0603881C	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT	214,173	359,173	398,273	184,100	398,273
		Accelerate USFK JEON delivery		[100,000]	[184,100]	[184,100]	
		Address cyber threats		[45,000]			
073	0603882C	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGMENT	926,359	726,359	718,359	–109,000	817,359
		Address cyber threats		[8,000]		[8,000]	
		Forward financed in the FY18 Omnibus		[–208,000]	[–208,000]	[–117,000]	
074	0603884BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—DEM/VAL	129,886	129,886	129,886		129,886
075	0603884C	BALLISTIC MISSILE DEFENSE SENSORS	220,876	245,876	244,876	29,000	249,876
		Accelerate USFK JEON delivery		[20,000]	[24,000]	[24,000]	
		Address cyber threats		[5,000]		[5,000]	
076	0603890C	BMD ENABLING PROGRAMS	540,926	540,926	540,926		540,926
077	0603891C	SPECIAL PROGRAMS—MDA	422,348	422,348	422,348		422,348
078	0603892C	AEGIS BMD	767,539	767,539	767,539		767,539
081	0603896C	BALLISTIC MISSILE DEFENSE COMMAND AND CONTROL, BATTLE MANAGEMENT AND COMMUNICATI.	475,168	483,168	425,168	8,000	483,168
		Address cyber threats		[8,000]		[8,000]	
		Inconsistent capability delivery			[–50,000]		
082	0603898C	BALLISTIC MISSILE DEFENSE JOINT WARFIGHTER SUPPORT	48,767	48,767	48,767		48,767
083	0603904C	MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)	54,925	54,925	54,925		54,925
084	0603906C	REGARDING TRENCH	16,916	16,916	16,916		16,916

085	0603907C	SEA BASED X-BAND RADAR (SBX)	149,715	116,715	116,715	–13,000	136,715
		Forward financed in the FY18 Omnibus		[–33,000]	[–33,000]	[–13,000]	
086	0603913C	ISRAELI COOPERATIVE PROGRAMS	300,000	300,000	300,000		300,000
087	0603914C	BALLISTIC MISSILE DEFENSE TEST	365,681	430,681	437,581	86,900	452,581
		Accelerate USFK JEON delivery		[50,000]	[71,900]	[71,900]	
		Address cyber threats		[15,000]		[15,000]	
088	0603915C	BALLISTIC MISSILE DEFENSE TARGETS	517,852	491,352	486,352	–26,500	491,352
		Accelerate USFK JEON delivery		[4,500]	[4,500]	[4,500]	
		Address cyber threats		[5,000]		[5,000]	
		Forward financed in the FY18 Omnibus		[–36,000]	[–36,000]	[–36,000]	
089	0603920D8Z	HUMANITARIAN DEMINING	11,347	11,347	11,347		11,347
090	0603923D8Z	COALITION WARFARE	8,528	8,528	8,528		8,528
091	0604016D8Z	DEPARTMENT OF DEFENSE CORROSION PROGRAM	3,477	3,477	8,477	5,000	8,477
		Corrosion prevention			[5,000]	[5,000]	
092	0604115C	TECHNOLOGY MATURATION INITIATIVES	148,822	203,822	228,822	55,000	203,822
		Address cyber threats		[5,000]		[5,000]	
		Laser scaling for boost phase intercept		[50,000]	[80,000]	[50,000]	
093	0604132D8Z	MISSILE DEFEAT PROJECT	58,607	58,607	58,607		58,607
094	0604134BR	COUNTER IMPROVISED-THREAT DEMONSTRATION, PROTOTYPE DEVELOPMENT, AND TESTING.	12,993	12,993	12,993	–12,993	
		JIDO program decrease				[–12,993]	
095	0604181C	HYPERSONIC DEFENSE	120,444	130,444	130,944	10,500	130,944
		Accelerate hypersonic defense capability		[10,000]	[10,500]	[10,500]	
096	0604250D8Z	ADVANCED INNOVATIVE TECHNOLOGIES	1,431,702	1,381,702	1,481,702		1,431,702
		Program reduction		[–50,000]		[–50,000]	
		Quartermaster Pathfinder			[50,000]	[50,000]	
097	0604294D8Z	TRUSTED & ASSURED MICROELECTRONICS	233,142	233,142	238,642	5,500	238,642
		New trust approach development			[5,500]	[5,500]	
098	0604331D8Z	RAPID PROTOTYPING PROGRAM	99,333	99,333	99,333		99,333
098A	0604342D8Z	DEFENSE TECHNOLOGY OFFSET		100,000		100,000	100,000
		Directed energy		[100,000]		[100,000]	

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099	0604400D8Z	DEPARTMENT OF DEFENSE (DOD) UNMANNED SYSTEM COMMON DEVELOPMENT.	3,781	3,781	3,781		3,781
100	0604673C	PACIFIC DISCRIMINATING RADAR	95,765	95,765	95,765		95,765
101	0604682D8Z	WARGAMING AND SUPPORT FOR STRATEGIC ANALYSIS (SSA)	3,768	3,768	3,768		3,768
103	0604826J	JOINT C5 CAPABILITY DEVELOPMENT, INTEGRATION AND INTEROPERABILITY ASSESSMENTS.	22,435	22,435	22,435		22,435
104	0604873C	LONG RANGE DISCRIMINATION RADAR (LRDR)	164,562	164,562	164,562		164,562
105	0604874C	IMPROVED HOMELAND DEFENSE INTERCEPTORS	561,220	421,820	421,820	–139,400	421,820
		Forward financed in the FY18 Omnibus		[–139,400]	[–139,400]	[–139,400]	
106	0604876C	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT TEST	61,017	61,017	61,017		61,017
107	0604878C	AEGIS BMD TEST	95,756	95,756	95,756		95,756
108	0604879C	BALLISTIC MISSILE DEFENSE SENSOR TEST	81,001	81,001	81,001		81,001
109	0604880C	LAND-BASED SM–3 (LBSM3)	27,692	27,842	27,692		27,692
		Retain Poland CHUs		[150]			
111	0604887C	BALLISTIC MISSILE DEFENSE MIDCOURSE SEGMENT TEST	81,934	72,634	72,634	–9,300	72,634
		Forward financed in the FY18 Omnibus		[–9,300]	[–9,300]	[–9,300]	
112	0604894C	MULTI-OBJECT KILL VEHICLE	8,256	8,256	8,256	–1,386	6,870
		Unjustifed growth				[–1,386]	
113	0300206R	ENTERPRISE INFORMATION TECHNOLOGY SYSTEMS	2,600	2,600	2,600		2,600
114	0303191D8Z	JOINT ELECTROMAGNETIC TECHNOLOGY (JET) PROGRAM	3,104	3,104	3,104		3,104
115	0305103C	CYBER SECURITY INITIATIVE	985	985	985		985
116	1206893C	SPACE TRACKING & SURVEILLANCE SYSTEM	36,955	36,955	36,955		36,955
117	1206895C	BALLISTIC MISSILE DEFENSE SYSTEM SPACE PROGRAMS	16,484	74,484	89,484	78,000	94,484
		Address cyber threats		[8,000]		[5,000]	
		Develop space sensor architecture		[50,000]	[73,000]	[73,000]	
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES	**8,709,725**	**8,717,675**	**8,752,525**	**252,421**	**8,962,146**

		SYSTEM DEVELOPMENT AND DEMONSTRATION					
118	0604161D8Z	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT RDT&E SDD	8,333	8,333	8,333		8,333
119	0604165D8Z	PROMPT GLOBAL STRIKE CAPABILITY DEVELOPMENT	263,414	413,414	263,414	150,000	413,414
		Accelerate program		[150,000]		[150,000]	
120	0604384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—EMD	388,701	388,701	388,701		388,701
121	0604771D8Z	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)	19,503	19,503	19,503		19,503
122	0605000BR	COUNTER WEAPONS OF MASS DESTRUCTION SYSTEMS DEVELOPMENT	6,163	6,163	6,163		6,163
123	0605013BL	INFORMATION TECHNOLOGY DEVELOPMENT	11,988	11,988			11,988
		Lengthy delivery timelines			[–11,988]		
124	0605021SE	HOMELAND PERSONNEL SECURITY INITIATIVE	296	296	296		296
125	0605022D8Z	DEFENSE EXPORTABILITY PROGRAM	1,489	1,489	1,489		1,489
126	0605027D8Z	OUSD(C) IT DEVELOPMENT INITIATIVES	9,590	9,590	9,590		9,590
127	0605070S	DOD ENTERPRISE SYSTEMS DEVELOPMENT AND DEMONSTRATION	3,173	3,173	3,173		3,173
128	0605075D8Z	DCMO POLICY AND INTEGRATION	2,105	2,105	3,105		2,105
		Data and advanced analytics			[1,000]		
129	0605080S	DEFENSE AGENCY INITIATIVES (DAI)—FINANCIAL SYSTEM	21,156	21,156	21,156		21,156
130	0605090S	DEFENSE RETIRED AND ANNUITANT PAY SYSTEM (DRAS)	10,731	10,731	10,731		10,731
132	0605210D8Z	DEFENSE-WIDE ELECTRONIC PROCUREMENT CAPABILITIES	6,374	6,374			6,374
		Duplication concern			[–6,374]		
133	0605294D8Z	TRUSTED & ASSURED MICROELECTRONICS	56,178	56,178	58,678	2,500	58,678
		New trust approach development			[2,500]	[2,500]	
134	0303141K	GLOBAL COMBAT SUPPORT SYSTEM	2,512	2,512	2,512		2,512
135	0305304D8Z	DOD ENTERPRISE ENERGY INFORMATION MANAGEMENT (EEIM)	2,435	2,435	2,435		2,435
136	0305310D8Z	CWMD SYSTEMS: SYSTEM DEVELOPMENT AND DEMONSTRATION	17,048	17,048	17,048		17,048
		SUBTOTAL SYSTEM DEVELOPMENT AND DEMONSTRATION	**831,189**	**981,189**	**816,327**	**152,500**	**983,689**
		MANAGEMENT SUPPORT					
137	0604774D8Z	DEFENSE READINESS REPORTING SYSTEM (DRRS)	6,661	6,661	6,661		6,661
138	0604875D8Z	JOINT SYSTEMS ARCHITECTURE DEVELOPMENT	4,088	4,088	4,088		4,088
139	0604940D8Z	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT (CTEIP)	258,796	258,796	268,796	10,000	268,796
		Advanced hypersonic wind tunnel experimentation			[10,000]	[10,000]	
140	0604942D8Z	ASSESSMENTS AND EVALUATIONS	31,356	31,356	31,356		31,356

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141	0605001E	MISSION SUPPORT	65,646	65,646	65,646		65,646
142	0605100D8Z	JOINT MISSION ENVIRONMENT TEST CAPABILITY (JMETC)	84,184	84,184	89,184	5,000	89,184
		Cyber range capacity and development			[5,000]	[5,000]	
143	0605104D8Z	TECHNICAL STUDIES, SUPPORT AND ANALYSIS	22,576	22,576	17,576		22,576
		General program reduction			[–5,000]		
144	0605126J	JOINT INTEGRATED AIR AND MISSILE DEFENSE ORGANIZATION (JIAMDO)	52,565	42,565	52,565		52,565
		Unjustified program growth		[–10,000]			
146	0605142D8Z	SYSTEMS ENGINEERING	38,872	38,872	38,872		38,872
147	0605151D8Z	STUDIES AND ANALYSIS SUPPORT—OSD	3,534	3,534	3,534		3,534
148	0605161D8Z	NUCLEAR MATTERS-PHYSICAL SECURITY	5,050	5,050	5,050		5,050
149	0605170D8Z	SUPPORT TO NETWORKS AND INFORMATION INTEGRATION	11,450	11,450	11,450		11,450
150	0605200D8Z	GENERAL SUPPORT TO USD (INTELLIGENCE)	1,693	1,693	1,693		1,693
151	0605384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	102,883	102,883	102,883		102,883
159	0605790D8Z	SMALL BUSINESS INNOVATION RESEARCH (SBIR)/ SMALL BUSINESS TECHNOLOGY TRANSFER.	2,545	2,545	2,545		2,545
160	0605798D8Z	DEFENSE TECHNOLOGY ANALYSIS	24,487	24,487	24,487		24,487
161	0605801KA	DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	56,853	56,853	56,853		56,853
162	0605803SE	R&D IN SUPPORT OF DOD ENLISTMENT, TESTING AND EVALUATION	24,914	24,914	24,914		24,914
163	0605804D8Z	DEVELOPMENT TEST AND EVALUATION	20,179	20,179	25,179	5,000	25,179
		Improve software testing capabilities			[5,000]	[5,000]	
164	0605898E	MANAGEMENT HQ—R&D	13,643	13,643	13,643		13,643
165	0605998KA	MANAGEMENT HQ—DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	4,124	4,124	4,124		4,124
166	0606100D8Z	BUDGET AND PROGRAM ASSESSMENTS	5,768	5,768	5,768		5,768
167	0606225D8Z	ODNA TECHNOLOGY AND RESOURCE ANALYSIS	1,030	1,030	1,030		1,030
168	0606589D8W	DEFENSE DIGITAL SERVICE (DDS) DEVELOPMENT SUPPORT	1,000	1,000	1,000		1,000
169	0606942C	ASSESSMENTS AND EVALUATIONS CYBER VULNERABILITIES	3,400	3,400	3,400		3,400
170	0606942S	ASSESSMENTS AND EVALUATIONS CYBER VULNERABILITIES	4,000	4,000	4,000		4,000

171	0203345D8Z	DEFENSE OPERATIONS SECURITY INITIATIVE (DOSI)	3,008	3,008	3,008		3,008
172	0204571J	JOINT STAFF ANALYTICAL SUPPORT	6,658	6,658	6,658		6,658
175	0303166J	SUPPORT TO INFORMATION OPERATIONS (IO) CAPABILITIES	652	652	652		652
176	0303260D8Z	DEFENSE MILITARY DECEPTION PROGRAM OFFICE (DMDPO)	1,005	1,005	1,005		1,005
177	0305172K	COMBINED ADVANCED APPLICATIONS	21,363	21,363	21,363		21,363
180	0305245D8Z	INTELLIGENCE CAPABILITIES AND INNOVATION INVESTMENTS	109,529	109,529	109,529		109,529
181	0306310D8Z	CWMD SYSTEMS: RDT&E MANAGEMENT SUPPORT	1,244	1,244	1,244		1,244
184	0804768J	COCOM EXERCISE ENGAGEMENT AND TRAINING TRANSFORMATION (CE2T2)—NON-MHA.	42,940	42,940	42,940		42,940
185	0901598C	MANAGEMENT HQ—MDA	28,626	28,626	28,626		28,626
187	0903235K	JOINT SERVICE PROVIDER (JSP)	5,104	5,104	5,104		5,104
188A	9999999999	CLASSIFIED PROGRAMS	45,604	45,604	45,604		45,604
		SUBTOTAL MANAGEMENT SUPPORT	**1,117,030**	**1,107,030**	**1,132,030**	**20,000**	**1,137,030**
		OPERATIONAL SYSTEM DEVELOPMENT					
189	0604130V	ENTERPRISE SECURITY SYSTEM (ESS)	9,750	9,750	9,750		9,750
190	0605127T	REGIONAL INTERNATIONAL OUTREACH (RIO) AND PARTNERSHIP FOR PEACE INFORMATION MANA.	1,855	1,855	1,855		1,855
191	0605147T	OVERSEAS HUMANITARIAN ASSISTANCE SHARED INFORMATION SYSTEM (OHASIS).	304	304	304		304
192	0607210D8Z	INDUSTRIAL BASE ANALYSIS AND SUSTAINMENT SUPPORT	10,376	10,376	10,376		10,376
193	0607310D8Z	CWMD SYSTEMS: OPERATIONAL SYSTEMS DEVELOPMENT	5,915	5,915	5,915		5,915
194	0607327T	GLOBAL THEATER SECURITY COOPERATION MANAGEMENT INFORMATION SYSTEMS (G-TSCMIS).	5,869	5,869	5,869		5,869
195	0607384BP	CHEMICAL AND BIOLOGICAL DEFENSE (OPERATIONAL SYSTEMS DEVELOPMENT).	48,741	48,741	48,741		48,741
196	0208043J	PLANNING AND DECISION AID SYSTEM (PDAS)	3,037	3,037	3,037		3,037
197	0208045K	C4I INTEROPERABILITY	62,814	62,814	62,814		62,814
203	0302019K	DEFENSE INFO INFRASTRUCTURE ENGINEERING AND INTEGRATION	16,561	16,561	16,561		16,561
204	0303126K	LONG-HAUL COMMUNICATIONS—DCS	14,769	14,769	14,769		14,769
205	0303131K	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK (MEECN)	17,579	17,579	17,579		17,579
207	0303136G	KEY MANAGEMENT INFRASTRUCTURE (KMI)	31,737	31,737	31,737		31,737

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208	0303140D8Z	INFORMATION SYSTEMS SECURITY PROGRAM	7,940	17,940	7,940	10,000	17,940
		Expand cyber scholarship program		[10,000]		[10,000]	
209	0303140G	INFORMATION SYSTEMS SECURITY PROGRAM	229,252	229,252	229,252		229,252
210	0303140K	INFORMATION SYSTEMS SECURITY PROGRAM	19,611	19,611	19,611		19,611
211	0303150K	GLOBAL COMMAND AND CONTROL SYSTEM	46,900	46,900	46,900		46,900
212	0303153K	DEFENSE SPECTRUM ORGANIZATION	7,570	7,570	7,570		7,570
213	0303228K	JOINT INFORMATION ENVIRONMENT (JIE)	7,947	7,947	7,947		7,947
215	0303430K	FEDERAL INVESTIGATIVE SERVICES INFORMATION TECHNOLOGY	39,400	39,400	39,400		39,400
224	0305186D8Z	POLICY R&D PROGRAMS	6,262	6,262	3,262		6,262
		General program reduction			[–3,000]		
225	0305199D8Z	NET CENTRICITY	16,780	16,780	16,780		16,780
227	0305208BB	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	6,286	6,286	6,286		6,286
230	0305208K	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	2,970	2,970	2,970		2,970
233	0305327V	INSIDER THREAT	5,954	5,954	10,954		5,954
		Personnel security and continuous evaluation			[5,000]		
234	0305387D8Z	HOMELAND DEFENSE TECHNOLOGY TRANSFER PROGRAM	2,198	2,198	2,198		2,198
240	0307577D8Z	INTELLIGENCE MISSION DATA (IMD)	6,889	6,889	6,889		6,889
242	0708012K	LOGISTICS SUPPORT ACTIVITIES	1,317	1,317	1,317		1,317
243	0708012S	PACIFIC DISASTER CENTERS	1,770	1,770	1,770		1,770
244	0708047S	DEFENSE PROPERTY ACCOUNTABILITY SYSTEM	1,805	1,805	1,805		1,805
246	1105219BB	MQ–9 UAV	18,403	18,403	18,403		18,403
248	1160403BB	AVIATION SYSTEMS	184,993	179,993	184,993	–5,000	179,993
		Realignment of funds		[–5,000]		[–5,000]	
249	1160405BB	INTELLIGENCE SYSTEMS DEVELOPMENT	10,625	10,625	10,625		10,625
250	1160408BB	OPERATIONAL ENHANCEMENTS	102,307	102,307	102,307		102,307
251	1160431BB	WARRIOR SYSTEMS	46,942	51,942	46,942		46,942
		Freeze-dried canine plasma for hemorrhagic control		[5,000]			

252	1160432BB	SPECIAL PROGRAMS	2,479	2,479	2,479		2,479
253	1160434BB	UNMANNED ISR	27,270	27,270	27,270		27,270
254	1160480BB	SOF TACTICAL VEHICLES	1,121	1,121	1,121		1,121
255	1160483BB	MARITIME SYSTEMS	42,471	42,471	42,471		42,471
256	1160489BB	GLOBAL VIDEO SURVEILLANCE ACTIVITIES	4,780	4,780	4,780		4,780
257	1160490BB	OPERATIONAL ENHANCEMENTS INTELLIGENCE	12,176	12,176	12,176		12,176
258	1203610K	TELEPORT PROGRAM	2,323	2,323	2,323		2,323
258A	9999999999	CLASSIFIED PROGRAMS	3,877,898	3,877,898	3,887,898	10,000	3,887,898
		Classified increase			[10,000]	[10,000]	
		SUBTOTAL OPERATIONAL SYSTEM DEVELOPMENT	**4,973,946**	**4,983,946**	**4,985,946**	**15,000**	**4,988,946**
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, DW	**22,016,553**	**22,119,503**	**22,415,591**	**454,921**	**22,471,474**
		OPERATIONAL TEST & EVAL, DEFENSE					
		MANAGEMENT SUPPORT					
001	0605118OTE	OPERATIONAL TEST AND EVALUATION	85,685	85,685	85,685		85,685
002	0605131OTE	LIVE FIRE TEST AND EVALUATION	64,332	64,332	64,332		64,332
003	0605814OTE	OPERATIONAL TEST ACTIVITIES AND ANALYSES	70,992	70,992	81,892	10,900	81,892
		Increase for test and evaluation technologies			[10,900]	[10,900]	
		SUBTOTAL MANAGEMENT SUPPORT	**221,009**	**221,009**	**231,909**	**10,900**	**231,909**
		TOTAL OPERATIONAL TEST & EVAL, DEFENSE	**221,009**	**221,009**	**231,909**	**10,900**	**231,909**
		TOTAL RDT&E	**91,056,950**	**91,921,650**	**92,216,538**	**670,453**	**91,727,403**

SEC. 4202. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR OVERSEAS CONTINGENCY OPERATIONS.

SEC. 4202. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Program Element	Item	FY 2019 Request	House Authorized	Senate Authorized	Conference Change	Conference Authorized
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES					

SEC. 4202. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Program Element	Item	FY 2019 Request	House Authorized	Senate Authorized	Conference Change	Conference Authorized
056	0603327A	AIR AND MISSILE DEFENSE SYSTEMS ENGINEERING	1,000		1,000		1,000
		Realignment of EDI APS Unit Set from OCO to Base		[–1,000]			
058	0603627A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS-ADV DEV	1,500	1,500	1,500		1,500
061	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	3,000	3,000	3,000		3,000
076	0604117A	MANEUVER—SHORT RANGE AIR DEFENSE (M-SHORAD)	23,000		23,000		23,000
		Realignment of EDI APS Unit Set from OCO to Base		[–23,000]			
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	**28,500**	**28,500**	**28,500**		**28,500**
		SYSTEM DEVELOPMENT & DEMONSTRATION					
088	0604328A	TRACTOR CAGE	12,000	12,000	12,000		12,000
100	0604741A	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE—ENG DEV	119,300	119,300	119,300		119,300
125	0605032A	TRACTOR TIRE	66,760	66,760	66,760		66,760
128	0605035A	COMMON INFRARED COUNTERMEASURES (CIRCM)	2,670	2,670	2,670		2,670
136	0605051A	AIRCRAFT SURVIVABILITY DEVELOPMENT	34,933	34,933	34,933		34,933
147	0303032A	TROJAN—RH12	1,200	1,200	1,200		1,200
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	**236,863**	**236,863**	**236,863**		**236,863**
		OPERATIONAL SYSTEMS DEVELOPMENT					
184	0607131A	WEAPONS AND MUNITIONS PRODUCT IMPROVEMENT PROGRAMS	2,548	2,548	2,548		2,548
185	0607133A	TRACTOR SMOKE	7,780	7,780	7,780		7,780
206	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	2,000		2,000		2,000
		Realignment of EDI APS Unit Set from OCO to Base		[–2,000]			
209	0205402A	INTEGRATED BASE DEFENSE—OPERATIONAL SYSTEM DEV	8,000	8,000	8,000		8,000
216	0303028A	SECURITY AND INTELLIGENCE ACTIVITIES	23,199	23,199	23,199		23,199
226	0305206A	AIRBORNE RECONNAISSANCE SYSTEMS	14,000		14,000		14,000
		Realignment of EDI APS Unit Set from OCO to Base		[–14,000]			
231	0307665A	BIOMETRICS ENABLED INTELLIGENCE	2,214	2,214	2,214		2,214

		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	**59,741**	**59,741**	**59,741**	**59,741**
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	**325,104**	**285,104**	**325,104**	**325,104**
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES				
041	0603527N	RETRACT LARCH	18,000	18,000	18,000	18,000
061	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	13,900	13,900	13,900	13,900
074	0603795N	LAND ATTACK TECHNOLOGY	1,400	1,400	1,400	1,400
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	**33,300**	**33,300**	**33,300**	**33,300**
		SYSTEM DEVELOPMENT & DEMONSTRATION				
149	0604755N	SHIP SELF DEFENSE (DETECT & CONTROL)	1,100	1,100	1,100	1,100
		SUBTOTAL SYSTEM DEVELOPMENT & DEMONSTRATION	**1,100**	**1,100**	**1,100**	**1,100**
		OPERATIONAL SYSTEMS DEVELOPMENT				
236	0206313M	MARINE CORPS COMMUNICATIONS SYSTEMS	16,130	16,130	16,130	16,130
268A	9999999999	CLASSIFIED PROGRAMS	117,282	117,282	117,282	117,282
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	**133,412**	**133,412**	**133,412**	**133,412**
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	**167,812**	**167,812**	**167,812**	**167,812**
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES				
065	1206438F	SPACE CONTROL TECHNOLOGY	1,100	1,100	1,100	1,100
070	1206857F	OPERATIONALLY RESPONSIVE SPACE	12,395	12,395	12,395	12,395
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	**13,495**	**13,495**	**13,495**	**13,495**
		OPERATIONAL SYSTEMS DEVELOPMENT				
186	0205219F	MQ–9 UAV	4,500	4,500	4,500	4,500
187	0205671F	JOINT COUNTER RCIED ELECTRONIC WARFARE	4,000	4,000	4,000	4,000
188	0207131F	A–10 SQUADRONS	1,000	1,000	1,000	1,000
217	0207610F	BATTLEFIELD ABN COMM NODE (BACN)	42,349	42,349	42,349	42,349
228	0208288F	INTEL DATA APPLICATIONS	1,200	1,200	1,200	1,200

SEC. 4202. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION FOR OVERSEAS CONTINGENCY OPERATIONS
(In Thousands of Dollars)

Line	Program Element	Item	FY 2019 Request	House Authorized	Senate Authorized	Conference Change	Conference Authorized
254	0305111F	WEATHER SERVICE	3,000	3,000	3,000		3,000
268	0305202F	DRAGON U–2	22,100	22,100	22,100		22,100
272	0305208F	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	29,500	29,500	29,500		29,500
310	1202247F	AF TENCAP	5,000	5,000	5,000		5,000
327A	9999999999	CLASSIFIED PROGRAMS	188,127	188,127	188,127		188,127
		SUBTOTAL OPERATIONAL SYSTEMS DEVELOPMENT	**300,776**	**300,776**	**300,776**		**300,776**
		TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, AF	**314,271**	**314,271**	**314,271**		**314,271**
		ADVANCED TECHNOLOGY DEVELOPMENT					
024	0603122D8Z	COMBATING TERRORISM TECHNOLOGY SUPPORT	25,000	25,000	25,000		25,000
026	0603134BR	COUNTER IMPROVISED-THREAT SIMULATION	13,648	13,648	13,648		13,648
		SUBTOTAL ADVANCED TECHNOLOGY DEVELOPMENT	**38,648**	**38,648**	**38,648**		**38,648**
		ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES					
094	0604134BR	COUNTER IMPROVISED-THREAT DEMONSTRATION, PROTOTYPE DEVELOPMENT, AND TESTING.	242,668	242,668	242,668	–84,161	158,507
		JIDO program adjustment				[–84,161]	
		SUBTOTAL ADVANCED COMPONENT DEVELOPMENT AND PROTOTYPES	**242,668**	**242,668**	**242,668**		**242,668**
		OPERATIONAL SYSTEM DEVELOPMENT					
250	1160408BB	OPERATIONAL ENHANCEMENTS	3,632	3,632	3,632		3,632
251	1160431BB	WARRIOR SYSTEMS	11,040	11,040	11,040		11,040
253	1160434BB	UNMANNED ISR	11,700	11,700	11,700		11,700
254	1160480BB	SOF TACTICAL VEHICLES	725	725	725		725
258A	9999999999	CLASSIFIED PROGRAMS	192,131	192,131	192,131		192,131
		SUBTOTAL OPERATIONAL SYSTEM DEVELOPMENT	**219,228**	**219,228**	**219,228**		**219,228**

	TOTAL RESEARCH, DEVELOPMENT, TEST & EVAL, DW	**500,544**	**500,544**	**500,544**	**–84,161**	**416,383**
	TOTAL RDT&E	**1,307,731**	**1,267,731**	**1,307,731**	**–84,161**	**1,223,570**

TITLE XLIII—OPERATION AND MAINTENANCE

SEC. 4301. OPERATION AND MAINTENANCE.

SEC. 4301. OPERATION AND MAINTENANCE
(In Thousands of Dollars)

Line	Item	FY 2019 Request	House Authorized	Senate Authorized	Conference Change	Conference Authorized
	OPERATION & MAINTENANCE, ARMY					
	OPERATING FORCES					
010	MANEUVER UNITS	2,076,360	1,631,060	2,076,360	–291,000	1,785,360
	Excess growth				[–15,000]	
	Readiness restoration		[9,400]		[9,400]	
	Realign OCO requirements from Base to OCO		[–454,700]		[–285,400]	
020	MODULAR SUPPORT BRIGADES	107,946	109,746	107,946	1,800	109,746
	Readiness restoration		[1,800]		[1,800]	
030	ECHELONS ABOVE BRIGADE	732,485	588,515	732,485	7,600	740,085
	Readiness restoration		[7,600]		[7,600]	
	Realign OCO requirements from Base to OCO		[–151,570]			
040	THEATER LEVEL ASSETS	1,169,508	945,308	1,169,508	18,300	1,187,808
	Readiness restoration		[18,300]		[18,300]	
	Realign OCO requirements from Base to OCO		[–242,500]			
050	LAND FORCES OPERATIONS SUPPORT	1,180,460	1,197,960	1,180,460	17,500	1,197,960
	Readiness restoration		[17,500]		[17,500]	
060	AVIATION ASSETS	1,467,500	1,485,300	1,467,500	–32,200	1,435,300