

TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Subtitle A—Authorization of Appropriations

Authorization of appropriations (sec. 201)

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

Subtitle B—Program Requirements, Restrictions, and Limitations

Next Generation Foundry for the Defense Microelectronics Activity (sec. 211)

The committee recommends a provision that would prohibit the Department of Defense from executing any funds in PE 603720S for the 90 nanometer Next Generation Foundry until 60 days after the Department delivers to the congressional defense committees a defense microelectronics strategy and a full life cycle cost estimate of the Defense Microelectronics Activity's Next Generation Foundry. This strategy, as well as the committee's recommendation to decrease funds available in this program element, are described elsewhere in this report.

Advanced rotorcraft initiative (sec. 212)

The committee recommends a provision that would direct the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) to develop and submit a strategy to the congressional defense committees no later than 180 days after the enactment of this Act on the use of integrated platform design teams and agile prototyping approaches for the development of advanced rotorcraft capabilities.

The committee notes that the Department of Defense (DOD) has recently stated that increasing prototyping of advanced technology capabilities is a potential approach to be able to keep the technical expertise of the defense industrial base exercised in a reduced budgetary environment. With declining budgets leading to reduced numbers of acquisition programs and quantities of weapon systems, it is crucial that design experience and skills in the various sectors of the defense industrial base be preserved. These skills are important not only to be readily available when the Department requires them, but the ability to sustain and pass these skills on to successive generations of engineers is intertwined intimately with the challenges of attracting and retaining the best and brightest engineers and technicians to work in both the public and private sectors of the national security enterprise. Such talent will not be

recruited or retained without the key attraction of multiple opportunities for very challenging work over the course of one's professional career.

One of the key challenges facing the defense industrial base today is that the design and development cycles of major defense acquisition programs (MDAP) are so protracted. The skills typically acquired and honed through multiple design cycles are not being adequately learned. The result is that many of the MDAPs are behind schedule and above cost because the design and development teams are actually doing "on the job training". Such a situation is far from acceptable, and hence the acknowledgement that the DOD needs to develop a comprehensive strategy identifying and growing integrated platform design teams. Providing these teams the opportunity to exercise their skills in a series of relatively frequent prototyping activities is long overdue.

The Department needs to go beyond the rhetoric of occasional speeches and needs to undertake a serious effort to develop a comprehensive strategy that encompasses elements within USD(AT&L) including the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) and the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy, as well as the services. Two key elements that must be addressed in such a strategy are integrated platform design teams and agile prototyping activities.

Depending upon the defense industrial base sector, integrated platform design teams should be viewed as critical national assets. They can provide the capability to quickly develop and field revolutionary defense capabilities. These teams are small, by nature, typically consisting of an engineering and design core of less than 50 people. This core group is prized for its cross-disciplinary nature, breadth of knowledge, and past experience with successfully shepherding defense products all the way from concept to initial fielding.

As demonstrated in the "golden age" of aerospace development, integrated platform design teams were most effectively built and managed by running complex, integrated development projects in rapid succession, preferably with 1-4 year timelines. The most effective projects involved complex, integrated systems or platforms (such as complete aircraft), which also drove advancement of subsystems and component technologies beyond what was available off-the-shelf commercially.

Closing the design-to-initial operations cycle is essential to building and maintaining design capabilities. The successful core design team is typically surrounded by talented technicians and operators. In this manner, engineering, manufacturing, testing, and operations capabilities are tightly integrated without organizational or communications barriers. The close interactions between these various areas of expertise promote design validation through real-world operational experimentation.

Lastly, it is imperative that the core engineers work under streamlined management, driven to motivate and empower the team. To foster rapid technological advances, the team must be granted significant requirements leeway and be insulated from ex-

cessive pressures of process, thus focusing entirely on time and cost-effective development and fielding.

In the absence of sufficient new major defense acquisition programs, a mechanism to keep integrated platform design teams exercised is the use of agile prototyping. This concept, sometimes referred to as exploratory development, is a framework to ensure that rapid, higher risk technology development can continue without the linkages to formal requirements and the attendant commitment to production and a formal acquisition program. In the historical parlance of aeronautics, X-planes have been the classic example. The point of such technology development activities is not to produce systems that have a formal operational requirement, but to create technology options and reduce technical risk for whenever formal operational and programmatic requirements emerge in the future.

One area of the defense industrial base that has not seen significant new innovations is rotorcraft. Over the last decade, rotorcraft have been crucial in our war fighting operations. The committee believes that among the various defense industrial base sectors, the preservation of integrated platform design teams and the use of agile prototyping is most needed in this sector. The committee observes that it has been over 2 decades since the last completely new DOD rotorcraft, the V-22 Osprey, was developed.

Last year, the committee expressed its views on the state of DOD's rotorcraft science and technology (S&T) activities in its report. The committee continues to express concern over the overall state of DOD's rotorcraft S&T programs. Specifically, the committee strongly believes that the DOD is not engaging to the maximum possible extent in a coordinated fashion with its limited resources with the broadest range of industry and academia to foster innovative concepts for the next-generation of rotorcraft. The committee acknowledges the efforts that the ASD(R&E) is taking to coordinate the DOD's rotorcraft S&T activities, primarily by the Army, and its claims that it is making progress on the S&T plan in the Future Vertical Lift (FVL) Strategic Plan.

USD(AT&L)'s Vertical Lift Consortium (VLC)—self-formed by industry over 2 years ago—is not being exercised adequately by the services. The VLC is an open and competitive forum that leverages all sectors of the vertical lift community to encourage teaming of innovative small business and non-traditional contractors with major defense firms and academia. The VLC is contracted with the DOD through the establishment of an Other Transaction Authority (OTA). The OTA allows the formation of competitive teams to rapidly develop and flight demonstrate innovative vertical lift technologies that address capability gaps identified in the DOD FVL Strategic Plan such as performance, survivability, and affordability. The committee understands the DOD is completing an overdue report on the VLC that was called for by the Committee on Armed Services of the House of Representatives last year that was due April 1, 2012.

The Army is pursuing its Joint Multi-role (JMR) development program—without funding from other services. Absent further funding, current plans envision only one technology demonstrator in the 2017–2020 timeframe and initial fielding of a platform in the 2030 timeframe. The committee is concerned that only a single

technology demonstrator will fly and that pressures will be such that this vehicle will ultimately turn into the platform for the program of record—thus suppressing a truly competitive process for innovative concepts. Furthermore, the committee strongly urges that the Army develop Technology Capability Enabled Demonstrations, as it has for soldier-centric technologies, for advancing rotorcraft capabilities.

In addition, the Defense Advanced Research Projects Agency (DARPA) has launched an X-Plane Rotorcraft program in fiscal year 2013 and it remains to be seen what this program will lead to. The committee strongly urges DARPA to structure its X-Plane Rotorcraft program to develop specific performance steps beyond the Army's desired attributes for platforms under the JMR program. DARPA should also consider expanding its X-Plane Rotorcraft program to provide for at least two competing teams. In addition, the committee urges DARPA to investigate how advances that it is making in advanced manufacturing can be applicable to the rotorcraft sector.

Given the situation depicted above, the committee directs that the USD(AT&L), working with the services and DARPA, develop and submit to the congressional defense committees a strategy that will address measures that DOD will take to retain—and where appropriate—develop, integrated platform design teams. Given the complexity of this problem, this strategy shall focus initially on the rotorcraft sector. The strategy shall also address how agile prototyping practices and programs can be established, including rotorcraft X-planes, and what level of resources would be required. The strategy should consider possibly restructuring the Army's JMR program to include more technology demonstration platforms with challenge goals of significant reductions in cost and time to flight.

Lastly, the strategy should also address how other innovative approaches such as competitive prize awards can be applied. The committee found it disappointing that in a report by the Office of Science and Technology Policy, dated March 2012, "Implementation of Federal Prize Authority: Progress Report", there was only one example of DOD using this prize authority. The strategy should address how prizes could be potentially used to address some challenge problems, primarily for unmanned rotorcraft, such as: nap-of-earth automated flight, urban operation near buildings, slope landings, automated autorotation or power-off recovery, and automated selection of landing areas.

In the development of this strategy, the committee directs the USD(AT&L) to work with the VLC for their inputs and to consider both manned and unmanned rotorcraft across the broad range of DOD missions.

Transfer of certain fiscal year 2012 Navy research, development, test, and evaluation funds (sec. 213)

The committee recommends a provision that would permit the Secretary of the Navy to use, subject to appropriations, prior year funds that have been made available from program cancellations reflected in the fiscal 2013 budget request. The funds available from cancellations are as follows:

Program	Recommended Amount (Dollars in millions)
Medium-range Maritime Unmanned Aerial System	\$8.8
Total	\$8.8

Authority for Department of Defense laboratories to enter into education partnerships with educational institutions in United States territories and possessions (sec. 214)

The committee recommends a provision, based upon a Department of Defense legislative proposal, that would authorize the directors of defense laboratories to enter into education partnership agreements with educational institutions in United States territories and possessions. Currently, a defense laboratory can only enter into an education partnership with educational institutions in the 50 states and the District of Columbia.

This provision will increase opportunities for defense laboratories to interact with additional educational institutions to further science, technology, engineering, and mathematics objectives. In addition, this provision would provide a potential opportunity for educational institutions in the U.S. territories and possessions to contribute to the national defense through a partnership with a Department of Defense laboratory.

Transfer of certain fiscal year 2012 Air Force research, development, test, and evaluation funds (sec. 215)

The committee recommends a provision that would permit the Secretary of the Air Force to use, subject to appropriations, prior year funds that have been made available from program cancellations reflected in the fiscal 2013 budget request. The funds available from cancellations are as follows:

Program	Recommended Amount (Dollars in millions)
C-130 avionics modernization program	\$6.5
Miniature air-launched decoy, phase II	7.9
RQ-4 Global Hawk Block 30	64.0
Total	\$78.4

Subtitle C—Missile Defense Matters

Homeland ballistic missile defense (sec. 231)

The committee recommends a provision that would express the sense of Congress on homeland ballistic missile defense, and would require a report on the status of efforts to improve the homeland defense capability of the United States.

The committee notes that the first policy priority described in the February 2010 Ballistic Missile Defense Review is to continue providing homeland ballistic missile defense against the potential future threat of limited ballistic missile attack from nations such as North Korea and Iran. The currently deployed Ground-based Mid-course Defense (GMD) system, with 30 Ground-Based Interceptors deployed in Alaska and California, provides protection of the

United States against such future threats. This policy relies on two approaches: 1) improving the reliability and performance of the GMD system, particularly its Ground-Based Interceptors; and 2) taking prudent steps to hedge against the possibility that the threat might grow faster or larger than anticipated. The Department of Defense is taking significant steps on both approaches. The provision would require the Department to report on the steps it is taking on both approaches, including the results of its efforts to demonstrate in flight testing the correction to the problem that caused the GMD flight test failure of December 2010.

Regional ballistic missile defense (sec. 232)

The committee recommends a provision that would express the sense of Congress on regional ballistic missile defense, and would require a report on the European Phased Adaptive Approach to missile defense and other regional missile defense efforts of the United States.

The committee notes that the threat to forward-deployed U.S. forces, allies and partners from regional ballistic missiles, particularly from Iran and North Korea, is serious and growing rapidly. Consequently, the Department of Defense has “made defending against near-term regional threats a top priority in our missile defense plans, programs and capabilities,” as Secretary of Defense Robert Gates stated in the Ballistic Missile Defense Review of February 2010.

The committee believes the Department of Defense has an obligation to provide force protection to forward-deployed U.S. forces, assets, and facilities, and to defend allies, from the threat of regional ballistic missile attack. The Department is implementing a set of programs and efforts to enhance U.S. and allied capabilities to defend against such regional ballistic missiles, especially against Iran and North Korea. These efforts, which include the European Phased Adaptive Approach to missile defense and similar phased and adaptive efforts tailored to the Middle East and the Asia-Pacific region, are essential to providing force protection for our deployed forces. These efforts are balanced with programs to enhance homeland defense, and are designed to meet the integrated missile defense priorities of the geographic combatant commands. Some of the regional missile defense capabilities, such as forward-deployed AN/TPY-2 missile defense radars in Japan and Turkey, and development of the Standard Missile-3 Block IIB interceptor missile, are intended to enhance homeland defense.

The Department also has numerous programs of cooperation with international partners to improve regional missile defense capabilities, including our North Atlantic Treaty Organization allies, Israel, and Japan, among others. The committee supports these regional missile defense programs and partnerships, and believes they are an important component of regional security and stability.

Missile defense cooperation with Russia (sec. 233)

The committee recommends a provision that would express the sense of Congress in support of efforts of the United States to pursue missile defense cooperation with Russia that would enhance the security of the United States, its North Atlantic Treaty Organi-

zation (NATO) allies, and Russia, particularly against missile threats from Iran. The provision states that the United States should pursue such cooperation in a manner that does not in any way limit United States missile defenses and that ensures the protection of United States classified information. The provision also states the view that the United States should not provide Russia with sensitive missile defense information that would in any way compromise United States national security, including “hit-to-kill” technology and interceptor telemetry.

The committee notes that, for more than a decade, the United States has been pursuing and discussing, cooperation with Russia on shared early warning and ballistic missile defense issues. Congress has supported such efforts, and section 221 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111–383) states the sense of Congress “to support the efforts of the United States government and the North Atlantic Treaty Organization to pursue cooperation with the Russian Federation on ballistic missile defense relative to Iranian missile threats.”

In addition to United States bilateral efforts with Russia on missile defense cooperation, NATO has undertaken efforts to seek such cooperation with Russia. At the Lisbon Summit in November 2010, NATO committed to “actively seek cooperation on missile defense with Russia,” and declared that “NATO-Russia cooperation is of strategic importance,” and that “the security of the North Atlantic Treaty Organization and Russia is intertwined.”

The committee believes that missile defense cooperation with Russia could enhance the security of the United States, and could send a strong signal to Iran that the United States and Russia are joined in their opposition to Iran’s nuclear and missile programs. The committee commends the administration for seeking such cooperation, and for its commitment to take the steps necessary to ensure that United States information is adequately safeguarded, including its commitment to “not provide Russia with sensitive information that would in any way compromise our national security, including hit-to-kill technology and interceptor telemetry,” as stated by Robert Nabors, Assistant to the President and Director of the Office of Legislative Affairs in a letter dated April 13, 2012.

Next-generation Exo-atmospheric Kill Vehicle (sec. 234)

The committee recommends a provision that would require the Director of the Missile Defense Agency to develop a long-term plan for the Exo-atmospheric Kill Vehicle (EKV) that addresses both modifications and enhancements to the current EKV and options for the competitive development of a next-generation EKV for the Ground-Based Interceptor of the Ground-Based Midcourse Defense system and any other interceptor that might be developed for the defense of the United States against long-range ballistic missiles. The provision would also require the Director to submit a report to Congress setting forth the plan and an estimate of the cost and schedule of implementing the plan.

**Modernization of the Patriot air and missile defense system
(sec. 235)**

The committee recommends a provision that would require the Secretary of the Army to submit to the congressional defense committees a plan for support of requirements in connection with the modernization of the Patriot air and missile defense system. The plan would also include an assessment of the integrated air and missile defense capabilities required to meet the demands of evolving and emerging threats, and a plan for achieving reductions in the life cycle cost of the Patriot system.

Medium Extended Air Defense System (sec. 236)

The committee recommends a provision that would prohibit the obligation or expenditure of fiscal year 2013 funds for the Medium Extended Air Defense System (MEADS).

Section 235 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81) limited the obligation or expenditure of more than 25 percent of the fiscal year 2012 funds authorized for MEADS until the Department of Defense submitted to the congressional defense committees a plan to use such funds as final obligations for the MEADS program. The Department submitted that plan in April 2012, as described elsewhere in this report.

Although the budget request included \$400.9 million for the MEADS program, the committee believes it would be inconsistent with section 235 to authorize additional funds for MEADS, or to allow additional funds to be obligated or expended for MEADS.

The committee is aware that additional funding would be needed for the Army to continue providing security and technology transfer support for sensitive MEADS-related technology and equipment furnished by the United States to Germany and Italy on a temporary basis, in the event Germany and Italy choose to proceed without the United States for an additional year of MEADS design and development.

The committee understands the importance of ensuring the necessary security and technology transfer support for this sensitive technology and equipment until it is returned to the United States, and does not intend to hinder the ability of the Army to provide such security.

The committee directs the Secretary of the Army to provide the committee, within 30 days after the enactment of this Act, a revised estimate as to how much it would cost for the United States MEADS National Program Office to provide appropriate oversight and security of the sensitive U.S. Government Furnished Equipment (GFE) relative to the program. The committee further directs the Secretary to provide the committee with a plan for how the Army intends to budget for these costs through fiscal year 2013 utilizing funds authorized and appropriated in fiscal year 2012.

The committee is aware of the possibility that additional legislative authority may be necessary to permit the Army to ensure continued security and technology transfer support for the sensitive GFE. The committee directs the Army to provide the committee with any views on this matter on an expedited basis, to permit early committee consideration of such views.

Availability of funds for Iron Dome short-range rocket defense program (sec. 237)

The committee recommends a provision that would authorize the Secretary of Defense to provide up to \$210.0 million in fiscal year 2013 funds to the Government of Israel for the Iron Dome short-range rocket defense system.

After the budget request was submitted, the Department of Defense announced it would submit a request for additional funding to provide to the Government of Israel to procure additional Iron Dome short-range rocket defense systems. Although the Department has not yet submitted the request, the committee understands that the fiscal year 2013 funding request will be for \$210.0 million. The committee is aware of reports that the request being considered by the Department could include funding of as much as \$680.0 million over multiple fiscal years, including fiscal year 2013. The committee looks forward to receiving the Department's request, and to continuing its support for Israel's missile defense programs, as described elsewhere in this report.

The committee notes that Israel has recently come under fire from short-range rockets from the Gaza strip. Israel currently has three operational Iron Dome batteries, and a fourth battery nearing deployment. However, these existing batteries do not provide adequate protection for the populated areas in Israel within range of short-range rocket attacks. The funding authorized in the provision would permit Israel to acquire additional Iron Dome systems to provide protection for more of its population against recurring short-range rocket attacks.

Subtitle D—Reports

Mission packages for the littoral combat ship (sec. 251)

The committee recommends a provision that would require the Secretary of the Navy to produce a report, in consultation with the Director of Operational Test and Evaluation, on the mine countermeasures warfare, antisubmarine warfare, and surface warfare mission packages for the Littoral Combat Ship (LCS).

The Secretary's report would be required, at a minimum, to set forth the following:

- (1) A plan for the Mission Packages demonstrating that Preliminary Design Review for every capability increment precedes Milestone B or equivalent approval for that increment;
- (2) A plan for demonstrating that the capability increment for each Mission Package, combined with a Littoral Combat Ship, on the basis of a Preliminary Design Review and post-Preliminary Design Review assessment, will achieve the capability specified for that increment; and
- (3) A plan for demonstrating the survivability and lethality of the Littoral Combat Ship with its Mission Packages sufficiently early in the development phase of the system to minimize costs of concurrency.

The committee remains concerned about this program's ability to deliver combat-ready LCS when our sailors need them in support of worldwide maritime operations. The development and fielding of these mission module capabilities will require the Navy to field a

range of 24 critical technologies, including sensors, vehicles, and weapons. In addition, there have been perturbations in the objective systems to be deployed in the mission modules, as the Navy is replacing some items because of poor performance or increasing costs. All of this argues for pursuing the regular order in defining, developing, testing, and fielding incremental improvements in capability for the LCS. This provision will make it clear that the Navy should follow a regular, transparent process in managing the mission module program.

Comptroller General of the United States annual reports on the acquisition program for the Amphibious Combat Vehicle (sec. 252)

The committee recommends a provision that would require the Comptroller General to conduct an annual review of the Marine Corps Amphibious Combat Vehicle acquisition program, and to submit a report to the congressional defense committees by March 15 of each year, from 2013 until the award of the first contract for full rate production. Where appropriate and feasible, each report shall assess whether the program is meeting cost, schedule, performance, and risk mitigation goals; the progress and results of developmental and operational testing and plans to correct any shortcomings in vehicle performance, operational effectiveness, reliability, suitability, and safety; the procurement plans, production results, and efforts to improve manufacturing efficiency and supplier performance; the acquisition strategy, including whether it complies with acquisition management best practices and the acquisition policies and regulations of the Department of Defense; and, the risks reflected in the integrated master schedule and test and evaluation master plan related to probability of success, funding required for the vehicle compared to funding programmed, and development and production concurrency. In addition, the first report shall assess the sufficiency and objectivity of the analysis of alternatives, the initial capabilities document, and the capability development document.

While the committee fully supports the Marine Corps' efforts to develop and field a capable replacement for its Vietnam-era Assault Amphibious Vehicle, the committee is mindful of the cost increases, schedule delays, and performance problems associated with the Marine Corps' last attempt to develop such a replacement under the cancelled Expeditionary Fighting Vehicle program. Given the importance of the Amphibious Combat Vehicle, the committee intends to subject the program to continuing and robust oversight.

Conditional requirement for report on amphibious assault vehicles for the Marine Corps (sec. 253)

The committee recommends a provision that would require the Secretary of the Navy and the Commandant of the Marine Corps to jointly submit to the congressional defense committees a report by February 1, 2013, if the ongoing Marine Corps ground combat vehicle fleet mix study recommends the acquisition of a Marine Personnel Carrier (MPC). The report would include an explanation of the role of the MPC in fulfilling the two Marine Expeditionary Brigades (MEB) forcible entry requirement; the fraction of the as-

sault echelon of the MEBs comprised of MPCs, along with an assessment of the operational risks associated with using ship-to-shore connectors to ferry MPCs rather than tanks and artillery; and an estimate of the acquisition and life cycle costs of a split fleet of Amphibious Combat Vehicles and MPCs as compared to the costs of a pure fleet of Amphibious Combat Vehicles.

Subtitle E—Other Matters

Transfer of administration of Ocean Research and Resources Advisory Panel from Department of the Navy to National Oceanic and Atmospheric Administration (sec. 271)

The committee recommends a provision, based upon a Department of Defense legislative proposal, that would transfer responsibility for administration of the Ocean Research Advisory Panel (ORAP) from the Department of the Navy to the National Oceanic and Atmospheric Administration of the Department of Commerce. This change would allow the functions of the ORAP to be aligned more appropriately to address the full range of ocean, coastal, and Great Lakes policy issues.

Budget Items

Army

Medium Extended Air Defense System

The budget request included \$400.9 million in PE 64869A for development of the Medium Extended Air Defense System (MEADS). Under the tri-national (United States, Germany and Italy) Memorandum of Understanding (MOU) on development of MEADS, the Department of Defense is obligated to seek fiscal year 2013 congressional funding for the MEADS program as the final increment of U.S. funding.

The committee notes that section 235 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81), limited the obligation or expenditure of more than 25 percent of the fiscal year 2012 funds for MEADS until the Department submits a plan to use such funds as final obligations under the MEADS program for either: (1) implementing a restructured program of reduced scope; or (2) contract termination liability costs with respect to the contracts covering the program. In keeping with section 235 of that Act, the committee recommends a reduction of \$400.9 million in PE 64869A, the entire amount of the budget request for continued development of the MEADS program.

On April 26, 2012, the Department of Defense submitted a report to the congressional defense committees with the plan required by section 235. The Department reported that it plans to “use the FY [fiscal year] 2012 funds as final obligations to implement a restructured program of reduced scope.” In accordance with section 235, Department of Defense officials proposed options to their German and Italian counterparts for reducing the scope of the MEADS Proof of Concept program, but the partner governments did not agree to the Department’s proposals. The report noted that “[a]ll three MEADS Participants must reach unanimous agreement be-

fore the Proof of Concept can be amended or the prime contract can be terminated.”

The Department’s report also noted that, “[i]f Congress does not appropriate FY 2013 funding, the U.S. DOD [Department of Defense] would take the position that the FY 2012 funds represent the U.S. DOD’s final financial contribution under the MOU. The U.S. DOD would also take the position that failure to provide FY 2013 funding would not be a unilateral withdrawal from the MOU, with reference to the MOU’s provision subjecting Participants’ activities under the MOU ‘to the availability of funds appropriated for such purposes.’” In January 2012, Acting Under Secretary of Defense for Acquisition, Technology, and Logistics, Frank Kendall, informed his German and Italian counterparts that, “it is very unlikely that Congress will authorize and appropriate any U.S. FY 2013 funds for MEADS.” Given that the U.S. responsibility under the MEADS MOU is made “subject to the availability of funds appropriated for the purposes of carrying out MEADS activities,” and that the United States is not withdrawing unilaterally from the MOU, the committee urges the Department to continue its efforts to reach agreement with its German and Italian partners on a plan to restructure the MEADS program further to reduce its scope, using fiscal year 2012 funds as the final U.S. obligations for the program.

Improved turbine engine program

The budget request included \$72.3 million in PE 23744A for the Improved Turbine Engine Program (ITEP). The committee notes that the fiscal year 2013 request assumed contract award for engineering and manufacturing development would occur in fiscal year 2012. The program is delayed, however, and contract award is not anticipated until fiscal 2014. The committee recommends a decrease of \$54.0 million in PE 23744A for ITEP.

The committee also notes that the Army’s ITEP strategy includes dual vendor competitive development through milestone C. The committee supports competition in technology development and encourages the Army to take advantage of the capability and interest of multiple helicopter engine developers through competitive prototyping.

Air Force

Next generation aerial refueling aircraft

The budget request included \$1,815.6 million to continue development of the KC-46A, the next-generation aerial refueling aircraft.

The program office received fiscal year 2010 and fiscal year 2011 Tanker Replacement Transfer Fund (TRTF) funds in fiscal year 2011 that provided \$135.0 million more research, development, test, and evaluation (RDT&E) funding than the Air Force believed it needed during that period. The Department of the Air Force applied \$47.9 million of the \$135.0 million to small business innovation research activities, leaving \$87.1 million of the \$135.0 million in excess fiscal year 2011 funding available to cover fiscal year 2012 activities. Since Congress already provided full funding of the

fiscal year 2012 requirement, the Department could apply \$87.1 million in fiscal year 2012 funds against fiscal year 2013 funding requirements. Therefore, the committee recommends a reduction of \$87.1 million in the budget request for the KC-46A EMD program.

Defense-wide

Special Operations/Low Intensity Conflict Advanced Development and Combatting Terrorism Technology Support

The budget request includes \$77.1 million in PE 603122D8Z for Combatting Terrorism Technology Support (CTTS) and \$26.3 million in PE 603121 for Special Operations/Low Intensity Conflict (SO/LIC) Advanced Development. The budget lines fund a broad spectrum of technology development ranging from chemical, biological, radiological, and nuclear countermeasures; to explosives detection and improvised explosive device (IED) defeat; to special reconnaissance capabilities; to decision, planning, and analytical tools; to irregular warfare support—all for various interagency customers.

The committee is concerned that a significant portion of these activities appear to overlap or exist in a non-coordinated fashion with activities under the Joint IED Defeat Organization (JIEDDO), U.S. Special Operations Command (USSOCOM), the military departments, and other Department of Defense (DOD) agencies. Furthermore, it is not clear what transition mechanisms are in place to ensure technologies developed under these activities have an enduring impact on the capabilities of the special operations or general purpose forces.

The committee also notes that the new defense strategic guidance highlights Counter Terrorism and Irregular Warfare (CT & IW) as the first of 10 mission areas for the Joint Force. The committee feels that of all the activities in these two budget lines, the CT & IW area does not have significant funding in other DOD organizations and hence is most appropriate for funding in the CTTS and SO/LIC budget lines.

The committee directs the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict, in coordination with the Commander of USSOCOM and the Director of JIEDDO, to submit to the congressional defense committees not later than 90 days after enactment of this Act, a report that: (1) describes and assesses the effectiveness of the coordination mechanisms in place to avoid duplication of efforts funded by these two budget lines and other relevant defense entities, including JIEDDO and USSOCOM; (2) outlines the differences between technologies funded by the CTTS and SO/LIC budget lines and other relevant defense entities, including JIEDDO and SOCOM; (3) provides a listing of which technologies have successfully transitioned to the services and USSOCOM; and (4) describes how the CT & IW programs funded by SO/LIC fit within the Department's broader CT & IW strategy.

Furthermore the committee recommends a decrease of \$11.3 million from PE 603122D8Z for activities relating to counter-IED activities, given that they appear to be duplicative of activities conducted by JIEDDO.

Industrial base innovation fund

The budget request included \$22.0 million in PE 603680D8Z for defense-wide manufacturing science and technology. The committee, along with other congressional defense committees, has been a strong supporter of programs that sustain and advance targeted sectors and capabilities of the defense industrial base. A February 2006 report by the Defense Science Board regarding the Department of Defense's Manufacturing Technology Program points out that manufacturing technology plays a critical role in addressing development, acquisition, and sustainment problems associated with advanced weapons programs and recommended increased funding in this area.

Furthermore, the 2010 Quadrennial Defense Review explicitly stressed the importance of the defense industrial base and the Department of Defense's new strategic guidance released in January 2012, stated that the Department "will make every effort to maintain an adequate industrial base and our investment in science and technology." In addition, the administration recently announced the formation of a national network of institutes for manufacturing innovation, which in part, are planned to address Department of Defense mission requirements.

The committee recommends an additional \$30.0 million to continue the Industrial Base Innovation Fund (IBIF) program in the above program element line. The committee directs the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy to continue to make competitive, merit-based investments in manufacturing research and development that address defense industrial base shortfalls, especially those related to more urgent production requirements and diminishing defense manufacturing sources and material shortages, and a sustainable defense design team base. Other areas of emphasis encouraged are those related to the emerging fields of model-based engineering and integrated computational materials engineering, as highlighted in a recent National Research Council report, and new innovative technologies being developed through public-private partnerships such as the National Advanced Manufacturing Partnership, Connecting American Manufacturing, and the National Digital Engineering and Manufacturing Consortium.

Furthermore, if the Department of Defense believes that the IBIF is important to the sustainment of the industrial base, then the Department should institutionalize this program with adequate resources in future years and consider it as an important component of its wider manufacturing and industrial base strategy, in part, informed by its on-going "Sector-by-Sector, Tier-by-Tier" analyses.

Defense microelectronics strategy and Next Generation Foundry

The Senate report accompanying S. 1235 (S. Rept. 112-26) of the National Defense Authorization Act for Fiscal Year 2012 directed the Assistant Secretary of Defense for Research and Engineering to brief the congressional defense committees by September 30, 2011, on a microelectronics strategy that would address components including resilient advanced microprocessors, application specific in-

egrated circuits, field programmable gate arrays, printed circuit boards, photonics devices, and other related electronics components for the next-generation of military and intelligence systems. The committee notes that the promising field of photonics includes research on devices, for example, lasers that are fully monolithically integrated as interconnects on integrated circuits. If successful, such devices could significantly reduce the power consumption, weight, and cooling requirements of networks for both terrestrial applications, as well as for weapon systems. In addition, the committee understood this strategy would also address the full spectrum of the supply chain including design, mask development and inspection, fabrication, packaging and assembly, and testing. However, the committee has not received this strategy yet and is concerned that the Department of Defense (DOD) is requesting \$10.0 million in fiscal year 2013 for the development of a 90 nanometer (nm) Next Generation Foundry for the Defense Microelectronics Activity without the context of this broader strategy.

The committee fully appreciates the DOD's need to upgrade its fabrication capabilities for microelectronics devices that are obsolete and no longer produced by the commercial sector, but are still required by its weapon systems. In addition, the committee understands that developing this capability is at least a 5 year endeavor and that if the Department delays, there may be detrimental consequences in the out-years to the warfighting readiness and capabilities of weapon systems that rely upon outdated microelectronics devices.

However, the committee is not satisfied that a complete life cycle cost estimate has been conducted that accounts for the full costs of this upgrade, including whether workforce training and/or expansion is required. The committee believes that this comprehensive planning must be completed before spending the full \$10.0 million the initial year. Hence, the committee recommends a decrease of \$3.0 million to PE 603720S for the 90 nm Next Generation Foundry budget request. In addition, the committee recommends a fence on this funding that is described elsewhere in this report.

Lastly, due to its ongoing oversight and concerns regarding the security of the electronics supply chain, the committee expects the defense microelectronics strategy to address linkages to the broader policy guidance and regulations that DOD is developing for two areas. One is related to "Trusted Systems and Networks" that addresses both the needs for procuring DOD-unique components for well-defined mission critical systems from suppliers that are certified under Defense Microelectronics Activity's Trusted Integrated Circuit Suppliers program and the management of risk in the supply chain for other integrated circuit-related products. The other is related to combating counterfeit components and the need for "Trustworthy Suppliers" that adhere to DOD requirements and established industry standards. The committee is expecting that these new policies and regulations, under the umbrella of the DOD's Program Protection process, will identify the steps that the DOD will take to ensure that it will procure microelectronic systems through trusted contractors and subcontractors and that potential vulnerabilities due to non-domestic foundries will be addressed. The committee directs the Under Secretary of Defense for

Acquisition, Technology, and Logistics to brief the Committees on Armed Services of the Senate and the House of Representatives on the status of these policies no later than December 31, 2012.

Advanced sensor applications program

The budget request included \$16.9 million for the Advanced Sensor Applications Program (ASAP). This represents a reduction from a level of \$18.4 million in fiscal year 2012 and reflects a general reduction applied to a number of budget line items in an across-the-board manner. The committee believes that this reduction, while modest by other program standards, will cause the program to postpone important testing and experiments. The committee believes that these efforts are too important to postpone or cancel, and therefore, recommends an additional \$2.0 million for ASAP.

U.S.-Israeli cooperative missile defense programs

The budget request included \$99.8 million in PE 63913C for the Missile Defense Agency for United States-Israeli cooperative missile defense programs, including: \$10.7 million to improve the existing Arrow Weapon System; \$50.9 million for continued development of the Arrow-3 upper-tier interceptor missile, and \$38.3 million for co-development of a short-range missile defense system called "David's Sling." These systems are part of Israel's layered defenses against missiles and rockets of different ranges, from longer-range missiles from Iran or Syria, to short-range missiles and large caliber rockets fired from Lebanese territory in the summer of 2006, to the very short-range rockets fired recently from Gaza. The United States is co-managing and jointly developing these systems to ensure that they are compatible and interoperable with U.S. missile defense systems.

The committee recognizes that the missile threat to Israel from ballistic missiles and rockets of varying ranges is extremely serious and increasing, and that effective missile defenses are an essential component of Israel's security and regional stability. The committee supports efforts to enhance and accelerate these systems, including technical and schedule risk reduction, in a manner that is consistent with the terms and conditions of the joint Project Agreements governing the management and execution of these cooperative projects.

Therefore, the committee recommends an increase of \$100.0 million in PE 63193C for U.S.-Israeli cooperative missile defense programs, including: \$20.0 million to improve the Arrow Weapon System, \$20.0 million for the Arrow-3 upper-tier interceptor program, and \$60.0 million for the David's Sling weapon system. The committee expects that the Department of Defense will continue its efforts to enhance the joint management of these programs, including efforts to avoid excessive concurrency.

The budget request included no funds for the Israeli Iron Dome short-range rocket defense system. However, after the budget submission the Department of Defense stated it would seek additional funds from Congress for the United States to provide to Israel to acquire additional Iron Dome short-range rocket defense systems. The committee understands that the fiscal year 2013 funding request will be for \$210.0 million, and recommends an additional in-

crease of \$210.0 million in PE 63913C for the Israeli Iron Dome system. A legislative provision that would authorize this funding is described elsewhere in this report. The committee is aware of reports that the additional request for Iron Dome funding could be for as much as \$680.0 million over multiple fiscal years, and looks forward to receiving the Department's request, and to continuing its support for Israeli missile defense programs.

Department of Defense Corrosion Program shortfall

The budget request included \$10.1 million for the Department of Defense (DOD) Corrosion Program divided between Operation and Maintenance and Research, Development, Test, and Evaluation (RDT&E). The DOD has consistently underfunded the DOD Corrosion Program in fiscal years 2011, 2012, and now 2013. The DOD Corrosion Program has identified to Congress a \$41.5 million requirements shortfall in RDT&E funding.

The committee remains concerned that corrosion is costly and can have negative effects on military equipment in terms of cost, readiness, operator and maintenance burdens, and safety. The DOD estimates that the negative effects of corrosion cost approximately \$23.0 billion in annual maintenance expenditures for weapon systems and infrastructure.

The committee has recommended a provision that would amend the DOD reporting requirements to Congress by requiring additional information on corrosion projects, including validated returns on investment for completed corrosion projects, activities, and information on how corrosion funding is used for military projects, the Technical Corrosion Collaboration pilot program, and other corrosion-related activities. Additionally, the Government Accountability Office has stated that the Corrosion Policy and Oversight Office within the DOD Corrosion Program delivers at least a 14 to 1 ratio return on investment to the taxpayer through corrosion project opportunities and activity requirements. Ensuring proper corrosion prevention and control plays a major role in the sustainment costs and life cycle range of many current and future weapon systems including the F-22, F-35, and various ground vehicles, ships, and aircraft.

The committee continues to urge the Secretary of Defense to fully fund the corrosion control requirements in the fiscal year 2014 base budget request.

In light of the committee requesting additional information from the DOD Corrosion Program, the committee recommends an increase of \$20.8 million in RDT&E, line 099, Program Element 64016D8Z for the DOD Corrosion Program to address the identified shortfall.

Defense research and development Rapid Innovation Program science and technology thrust areas

The Defense Research and Development Rapid Innovation Program (RIP) is a competitive, merit-based program established by section 1073 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111-383) that is designed to fund innovative technologies, reduce acquisition or life cycle costs, address technical risks, improve the timeliness of test and evaluation

outcomes, and rapidly insert technologies needed to meet critical national security needs. The committee notes that \$200.0 million was appropriated for the RIP in the Department of Defense Appropriations Act, 2012 (Public Law 112-74); however, no funds were requested in fiscal year 2013. While the RIP is still new and the committee has yet to see the results of the first round of projects funded by fiscal year 2011 funds, there is clearly strong service support because of the overwhelming response from industry—especially small businesses—providing new innovative technologies and opening up more collaborative opportunities with a broader base of small businesses and non-traditional suppliers to the DOD.

The committee understands that the Assistant Secretary of Defense for Research and Engineering will soon be conducting a review of the fiscal year 2011 projects to assess the value of continuing the RIP. If the review validates the program, then the Department should integrate it into its future annual budget requests.

The committee recommends an increase of \$200.0 million in funding for the RIP to PE 604775D8Z, and suggests an emphasis on the following areas:

1. Enhancing energy security and independence. For increased investment in technologies that will improve energy efficiency, enhance energy security, and reduce the Department's dependence on fossil fuels through advances in traditional and alternative energy storage, power systems, renewable energy production and more energy efficient ground, air, and naval systems. The committee notes that the Department of Defense remains critically dependent upon energy for both its far-flung infrastructure, and for its global military operations. The Department currently consumes as much energy as two-thirds of all the world's nations. Improved energy efficiency in remote areas such as Afghanistan can reduce the dependence of our armed forces on fragile fuel supply lines that are vulnerable to enemy attack, and thus can help save lives;

2. Developing, utilizing, and maintaining advanced materials. For increased investment in a broad range of materials technologies that can provide: enhanced performance in extreme environments; improved strength and reduced weight for the spectrum of applications ranging from aerospace to lighter soldier loads; greater survivability of ground, air, and naval systems; and reduced life cycle costs through better maintainability for a wide variety of the challenging environments and unique properties demanded of military systems. Such materials could include advanced composites and metals, nanomaterials, and rare-earth alternatives. Whether increasing survivability, improving fuel efficiency for greater performance, or decreasing maintenance costs, advanced materials are a foundational enabling component of military systems across all services and all warfighting domains;

3. Improving manufacturing technologies and capabilities. For increased investment in advanced and innovative manufacturing technologies across the spectrum of applications to significantly compress design to production time cycles, reduce cost, minimize waste and energy consumption, and improve

product quality and reliability. Historically, the Department has heavily invested in the technologies to improve the performance of military systems, but not in the processes to reduce the costs of the production of those military systems. Numerous high-level studies have stressed the benefits of advancing the state of manufacturing technologies—whether for a ship hull or a radiation-hardened chip—for long-term savings and the need to capitalize on the latest innovations in manufacturing processes for defense systems. Projects in this area should be coordinated with the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy to ensure that investments are guided, in part, by shortfalls identified in industrial base analyses such as the ongoing “Sector by Sector, Tier by Tier” study effort;

4. Advancing microelectronics. For increased investment in the development of resilient advanced microprocessors, application-specific integrated circuits, field programmable gate arrays, printed circuit boards, photonics devices, and other related electronics components for the next-generation of military and intelligence systems. Similar to advanced materials, advanced microelectronics are a cross-cutting enabler across all military systems. Given that the majority of costs of most advanced weapons platforms are in electronics and supporting software, investments in this area to improve processing capacity, decrease weight and power requirements, and increase resiliency should have high payoff; and

5. Developing cybersecurity tools. For increased investment in areas such as internet and network mapping capabilities, software reverse engineering and vulnerability analysis, network data collection and analysis, new innovative defensive techniques against cyber attacks—especially in virtual environments, and integrated cloud security capabilities. The security of DOD’s war fighting and business networks, as well as the networks of the defense industrial base is a serious concern. DOD needs access to the latest innovative technologies in this field in order to stay ahead of rapidly growing and evolving threats in cyberspace.

Funding authorized for the RIP may be used to augment existing research and development efforts or initiate new projects. As provided in section 1073, the Secretary of Defense may transfer funds available for the RIP 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. All such funding is required by law to be allocated on the basis of a merit-based selection, pursuant to a broad agency announcement or similar competitive process.

General fund enterprise business systems realignment

The budget request included \$9.9 million in Research, Development, Test, and Evaluation (RDT&E), for General Fund Enterprise Business System (GFEBs).

The committee has received a request from the Army to realign \$17.2 million into GFEBs to support the engineering development effort necessary to process classified and sensitive transactions and to mitigate the risk of exposing classified information.

Accordingly, the committee recommends an increase of \$17.2 million in RDT&E for GFEBs realignment.

Developmental test and evaluation

The budget request included \$15.1 million in PE 605804D8Z for developmental test and evaluation, which was a decrease of about \$0.7 million from the fiscal year 2012 budget request, and about \$4.2 million below the fiscal year 2012 appropriation of \$19.3 million.

The committee notes the Weapon Systems Acquisition Reform Act of 2009 (Public Law 111–23) required the Department of Defense to rebuild its systems engineering and developmental testing organizations to ensure that design problems are understood and addressed early in the acquisition process.

While the Department has taken great strides in improving its acquisition process, the committee notes that the Fiscal Year 2011 Annual Report by the Director of Operational Test and Evaluation—dated December 2011—provided a list of 17 major defense acquisition programs that had discoveries of significant problems during operational test and evaluation that should have been detected and corrected during developmental test and evaluation.

Furthermore, the committee notes that the Department’s defense-wide systems engineering budget request is almost three times greater than the developmental test and evaluation budget request. In fiscal year 2012, the committee recommended an increase of \$5.0 million to developmental test and evaluation. The committee believes the Department is continuing to underfund its developmental test and evaluation activities, as evidenced by the unacceptable number of problems being discovered in operational test and evaluation. Hence, the committee recommends an increase of \$5.0 million in the above program element line.

Shallow Water Combat Submersible Program

The budget request includes \$8.9 million in PE 1160483BB for the continued development of the Shallow Water Combat Submersible. The committee understands that the contractor’s failure to meet systems engineering requirements will result in an overall program delay of several months and require at least an additional \$8.0 million to complete research and development activities. According to U.S. Special Operations Command (USSOCOM), “extreme schedule variations from the baseline resulted in the inability to accurately track progress and cost.” At the request of USSOCOM, the committee recommends a transfer of \$8.0 million from Procurement, Defense-wide, to Research, Development, Test, and Evaluation, Defense-wide, for cost growth in the engineering and manufacturing development phase of the program.

Defense Advanced Research Projects Agency programs

The budget request included \$2.8 billion for the research and management activities of the Defense Advanced Research Projects

Agency (DARPA). While DARPA's fiscal performance has notably improved, the committee is still concerned about the timeliness of sustained funding execution. The committee recommends a reduction of \$100.0 million from DARPA's overall budget to reflect continuing concerns about timely and effective execution of funds by the agency, as well as concerns about specific programs.

DARPA is pursuing a broad range of manufacturing-related programs with over \$500.0 million planned over the future-years defense program. The committee continues to support DARPA's efforts to revolutionize manufacturing technologies and methods. However, DARPA's transition plans for these programs are not clear. One of the metrics of success to DARPA's efforts in this area will be when the defense industrial base (as well as the broader national industrial base) incorporates new innovative manufacturing technologies and methods that will focus on increasing affordability and decreasing timelines. In order to accomplish this goal, DARPA needs to work more closely with the Services' Manufacturing Technology programs and the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy and its research and development activities tied to new national manufacturing initiatives such as the Advanced Manufacturing Program. In addition, DARPA needs to work with the appropriate entities within the Department in considering the legal and policy implications to open-source manufacturing such as trusted supply chains, export controls and intellectual property issues.

The Fast, Adaptable, Next-Generation Ground Combat Vehicle is a program where model-based design tools and highly adaptable foundry-style manufacturing techniques are being explored with respect to combat vehicle design and production. The committee continues to be concerned that force protection and related armor technologies, which are an integral component of any ground combat vehicle, are not adequately being addressed in conjunction with the Army.

Hence, the committee directs DARPA to commission a review of its Adaptive Vehicle Make (AVM) umbrella program by an external review panel and submit the results of this review to the congressional defense committees 90 days after the enactment of this Act. The review should assess DARPA's transition plans for the AVM program and how well potential policy and legal issues are being addressed.

The committee is strongly disappointed in DARPA's report to the congressional defense committees requested in the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111-383) on the transition plan for the National Cyber Range (NCR) that identified U.S. Cyber Command as the transition partner. Given that U.S. Cyber Command has not agreed to be the transition partner, and given that this facility and technology represents at least a \$116.0 million investment through fiscal year 2011, the committee recommends increasing PE 605118OTE by \$4.0 million and directs the Director of Operational Test and Evaluation to continue testing the NCR with the broad cyber community in fiscal year 2013 until a final plan is developed for the NCR by the Department of Defense.

Items of Special Interest

Adaptive engine technology development program

The committee notes the Air Force budget request for fiscal year 2013 includes \$214.0 million for the Adaptive Engine Technology Development (AETD) program. The Air Force has explained that this engine technology program has the potential to achieve a 25 percent reduction in cruise specific fuel consumption compared to existing state-of-the-art engines such as the F135 engine. This fuel efficiency goal was set by the National Aeronautics Research and Development Plan of 2010 that provides overarching research goals and objectives to the interagency aeronautics research and development community, of which the Department of Defense is a key member. Such aggressive fuel consumption reduction goals are driven by the need to reduce overall fuel costs in military operations, as well as to make significant improvements to unrefueled aircraft range and time-on-station.

The committee supports the Air Force Research Lab's (AFRL) efforts to pursue increased fuel efficiency and support the military aircraft engine industrial base through science and technology (S&T) programs including AETD. The committee's support for AETD is based on two understandings. First, the committee understands that AFRL will award up to two contracts for the AETD program through a fully open and competitive process that will not unduly advantage competitors who performed for the predecessor Adaptive Versatile Engine Technology program, nor disadvantage competitors performing for other military aircraft engine research or production programs.

Second, the committee has received assurances in testimony from the Air Force that AETD is purely a technology maturation program and is not a new "alternate engine" program for the F-35 Joint Strike Fighter. The committee notes that further development of the alternate engine for the F-35 is prohibited under current law, and expects the Air Force to abide by the letter and the spirit of this law.

The committee notes that it will review annually the progress of the AETD program during the course of its annual reviews of the Air Force's S&T programs.

Air Force cyber and information technology research

The fiscal year 2013 Air Force budget request included \$136.0 million for research and development in PE 602788F (Dominant Information Technology) and PE 603788F (Global Information Dev/Demo) for a broad spectrum of activities in cyber science and technology (S&T); autonomy, command and control, and decision support; connectivity and dissemination; and processing and exploitation technologies. The committee notes that these investment areas are consistent with the Air Force's Technology Horizons S&T plans, as well as with elements of the Department of Defense's overarching S&T priority areas. However, the committee notes that this investment level is a reduction of almost 20 percent compared to the fiscal year 2012 funding levels, and that funding is projected to increase again in the fiscal year 2014–2017 time frame. The committee understands that the fiscal year 2013 decrease in fund-

ing in these areas is due to a “strategic pause” that the Air Force is taking to develop an investment plan for its activities. However, given the strategic importance of these technology areas—as identified in the new defense strategic guidance issued in January 2012, the committee is concerned about this significant drop in funding that would impact cyber-related research and development (R&D).

Hence, the committee directs the Air Force to provide a report to the congressional defense committees detailing its investment strategy for these technology areas outlined above within 180 days after the enactment of this Act. The report should, at a minimum: 1) identify the Air Force’s near-, mid-, and far-term S&T priorities for cyber and information-related technologies and the resources—both in funding and personnel—projected to address these priorities; 2) lay out a transition strategy for the results of these S&T efforts into weapon systems, including cyber tools; 3) address how the Air Force will recruit, train, and retain a highly skilled workforce in these areas; and 4) address laboratory infrastructure and research facilities necessary for the accomplishment of this R&D.

Air Force space developmental test and evaluation

In the Developmental Test and Evaluation and Systems Engineering FY 2011 Annual Report to Congress, the Deputy Assistant Secretary of Defense (DASD) for Developmental Test and Evaluation (DT&E) stated that the Air Force Space Community should “grow their Developmental Test and Evaluation workforce and training in order for it to provide a robust government DT&E capability.”

The committee notes that while the Air Force has an operational test and evaluation organization, it does not have a developmental test and evaluation organization for space systems similar to what it has for its aeronautical systems.

Hence the committee directs the Air Force to provide a report to the congressional defense committees by December 31, 2012, on how it currently accomplishes its developmental test and evaluation activities for its space systems, the effectiveness of the current construct, and a plan for how they are responding to the above observation made by the DASD for DT&E.

Applied mathematics and computational science

The committee recognizes the important role that applied mathematics and computational science play in support of current Department of Defense (DOD) activities, including modeling and simulation, high performance computing, and large-scale data analysis. In addition, the committee acknowledges the foundational impact of applied mathematics and computational science on some of the DOD’s science and technology (S&T) emphasis areas, such as autonomy, cyber sciences, and data-to-decisions.

However, the committee is aware of some concerns about the lack of a robust interaction between DOD laboratories and weapons centers and the academic research community in the fields of applied mathematics and computational science. The Assistant Secretary of Defense for Research and Engineering (ASDR&E) held a workshop on mathematics in January 2012, and a workshop on computer science in May 2011, that addressed leading areas of

mathematics and computer science research from a disciplinary perspective. However, what is needed is a better understanding on how advances in the applied mathematics and computational sciences communities can assist in addressing the fundamental mathematical challenges underpinning some of the DOD S&T emphasis areas referenced above. For instance, DOD needs to ensure that advances and challenges identified in these workshops in areas of information science, mathematical modeling, human-machine interactions, and robotics will enable advances in the DOD's S&T emphasis area of autonomy.

Hence, the committee urges the ASDR&E and the service S&T executives to ensure that the DOD robustly engages with the academic mathematics and computational science communities to leverage their expertise. The committee believes that more active engagement will enable the contributions of these communities to assist progress in the DOD's S&T emphasis areas that will ultimately lead to the next-generation of warfighting capabilities and technologies.

Army manned airborne intelligence, surveillance, and reconnaissance platforms

The budget request included \$47.4 million in PE 65626A to complete four Engineering and Manufacturing Development (EMD) phase Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) aircraft. The committee understands that the Army plans to take delivery of these EMD phase EMARSS aircraft, conduct a utility assessment of them and then field them into the U.S. Army Intelligence and Security Command (INSCOM) Aerial Exploitation Battalions (AEB). Once these EMARSS aircraft reach the INSCOM AEBs, they will join a vastly heterogeneous fleet of aging programs of records—such as the Guardrail and Airborne Reconnaissance Low aircraft—and various quick-reaction capability (QRC) platforms.

The Army requested the funding for these aircraft despite the fact that there is no procurement funding in the future-years defense program to purchase any more EMARSS aircraft. Moreover, the Army asked to complete and retain these aircraft despite the fact that this committee signaled its clear intent—both through cuts to the EMARSS program and through report language on the MC-12W Project Liberty program in the Senate report accompanying S. 1235 (S. Rept. 112-26), the National Defense Authorization Act for Fiscal Year 2012—that the committee would not support procuring a second, separate fleet of C-12-based manned airborne intelligence, surveillance, and reconnaissance (ISR) platforms.

The committee does not recommend denying the requested funds, in part because the Air Force was allowed to send the Liberty fleet to Air National Guard units and to man those units to support the deployment of enough aircraft to sustain only two combat air patrols, which are expected to be allocated to Special Operations Command support. The committee also believes that the new Army G-2 needs time to assess all of the airborne ISR programs and assets that the Army has accumulated and to chart a course looking ahead to the drawdown in Afghanistan.

At the same time, the committee emphasizes its growing concerns about the state of the Army's manned airborne ISR portfolio. The wide mixture of manned airborne ISR platforms and sensors described above reflects the adaptation of Army Military Intelligence to the dynamic demands of the battlefield after 11 years of war. With soldiers gradually returning from the battlefield and with mounting pressure to decrease defense spending, now is the time for the Army to rationalize this fleet rather than to keep adding to it with low numbers of diverse aircraft.

The committee directs the Army G-2, the Army G-8, and the Assistant Secretary of the Army for Acquisition, Logistics, and Technology to develop a plan for Army manned airborne ISR platforms. This plan should address the following questions:

- What requirements for manned airborne ISR support to Army general purpose forces can be met with shared assets from other services;
- What requirements for manned airborne ISR support to Army general purpose forces need to be met organically;
- Given the set of requirements that need to be met organically, what existing QRC systems need to become programs of record;
- Which current programs of record need to be modernized or eliminated; and
- How will the Army resource these platform choices?

The committee directs the Army to provide this plan to the congressional defense and intelligence committees in conjunction with the submission of the budget request for fiscal year 2014. The committee expects the Army to consult with the committee as this plan is crafted. If requirements change or if assumptions about the level of support available from other services change, the committee would like to be kept apprised.

Army robotics

The committee notes that ground robotic vehicles have saved many lives in the fight against improvised explosive devices (IED) and other efforts are underway to use ground robotics to accomplish "dirty, dull, and dangerous" tasks, including the transport of equipment and supplies, that will make our troops more safe and effective. Leading the research effort in ground robotics and autonomous control systems is the Army's Tank and Automotive Research Development and Engineering Center working collaboratively with industry and academia, as well as the Army Research Laboratory with the Robotics Collaborative Technology Alliance. The Army also works closely with the Robotic Systems Joint Project Office that is dedicated to continuous improvement of unmanned system capabilities to meet current and future joint military requirements.

The committee believes that Army investments in the development of new ground robotics technologies to date are inadequate and lack focus. The Senate report accompanying S. 1235 (S. Rept. 112-26) of the National Defense Authorization Act for Fiscal Year 2012 highlighted the importance of robotic ground vehicle technologies and acknowledged that the Army leadership was in the process of determining operational and technical requirements for

ground robotics vehicles that will guide the development of a long-term research, development, and acquisition strategy. The committee understood that this strategy would be developed by the end of 2011 and used to guide Army research and development investments in robotic ground vehicles in fiscal year 2013 and beyond. However, the Army has not yet produced this strategy.

The committee understands that recent Army strategic planning efforts on ground robotic vehicles have resulted in the development of an Unmanned Systems (Air, Ground, Maritime) Initial Capabilities Document that is approved by both the Army and Marine Corps, and is awaiting approval by the Joint Staff. Furthermore, the committee understands that the multi-service Joint Ground Robotics Integration Team, established by the Army's Maneuver Center of Excellence, is developing an Unmanned Ground Systems (UGS) Campaign Plan for the Army. It is expected that this campaign plan will provide the Army with the unity of effort across the unmanned enterprise including science and technology; experimentation, test and evaluation, and safety; development and fielding; training and sustainment; and deployment and employment. The committee believes this integrated effort is crucial to address not only technical challenges, but the more important policy and operational concepts issues that will ultimately inform the Army's investment plans in this area. Ultimately, the goal of this UGS Campaign Plan should be an affordably modernized force that fully integrates manned and unmanned teaming capabilities with improved persistence, protection, endurance, and autonomy.

The committee expects the Army to complete and approve this UGS Campaign Plan in 2012, and to be briefed no later than December 31, 2012.

Ballistic missile defense overview

The budget request included \$9.7 billion for missile defense, including \$7.8 billion for the Missile Defense Agency (MDA) and \$1.9 billion for Army and related missile defense programs.

In the area of homeland defense, 30 Ground-Based Interceptors (GBI) have been deployed in Alaska and California as part of the Ground-based Midcourse Defense (GMD) system, and are providing protection of the United States from the possible future threat of limited ballistic missile attack from nations such as North Korea and Iran. As outlined in the February 2010 Ballistic Missile Defense Review, the Department of Defense has a program to improve the reliability and performance of the GMD system. The GBI reliability program is intended to double the number of threat intercontinental ballistic missiles (ICBM) that the current GMD system could defeat, without adding any GBIs—thus effectively doubling the capability of the existing GMD system.

In December 2011, the Missile Defense Agency (MDA) awarded the GMD development and sustainment contract. Its cost was roughly \$1.0 billion below the government cost estimate. This cost reduction resulted from competition, and permitted a reduction in the negotiated price of GBIs from about \$75.0 million to about \$53.0 million each. One benefit of the new GMD contract is the inclusion of a defects clause that holds the contractor accountable for quality failures, and would require the contractor—not the tax-

payer—to pay the costs of defective work. The committee commends MDA for achieving such substantial cost reduction and contractor accountability, and encourages MDA to pursue similar benefits in future contracts through competition.

In the budget request, the Missile Defense Agency is requesting an additional five GBIs as test and spare missiles. These additional interceptors would provide several benefits that would: 1) allow a more robust test and evaluation program; 2) allow the operational deployment of eight additional GBIs in spare silos at Missile Field–2 at Fort Greely, Alaska, if needed to meet a potential expansion of future threats from North Korea or Iran; and 3) keep the GBI production line warm into fiscal year 2018, thus permitting future procurement of additional GBIs, if needed.

As a result of a GMD flight test failure in December 2010, MDA’s highest priority is to correct the problem that caused the failure and to demonstrate the correction in two flight tests prior to resuming production or refurbishment of the newest model of exo-atmospheric kill vehicle (EKV) that failed—the Capability Enhancement-II model. This plan is consistent with the committee’s position, and the committee commends MDA for its rigorous and disciplined approach to demonstrating that the new kill vehicle will work as intended before resuming production. As part of this approach, MDA is requiring the EKV contractors to meet more rigorous manufacturing and production quality standards, which has delayed the two planned flight tests several months. The committee believes it is important to take such prudent steps to improve quality and increase confidence in the system.

The committee notes that the Integrated Master Test Plan for missile defense includes a series of planned GMD tests through 2022, including salvo testing, multiple simultaneous engagement testing, and operational testing. These tests are planned at a rate of roughly one test per year, which the Director of Operational Test and Evaluation testified is the best rate that has been achievable over the last decade. The Director of MDA testified that “conducting flight tests at a pace greater than once a year prohibits thorough analysis of pre-mission and post-mission flight test data and causes greater risk of further failure and setbacks to developing our homeland defense capability as rapidly as possible.”

In addition to its plans and programs to improve the reliability and performance of the GMD system, the Department is also pursuing a strategy to hedge against the possibility that the future ICBM threat from North Korea or Iran could emerge faster or in greater numbers than anticipated. Under this homeland defense hedging strategy, the Department has already made or implemented a number of decisions to improve the missile defense posture of the United States. For example, the Department has completed the construction of eight extra GBI silos at Missile Field 2 at Fort Greely, Alaska, which would permit the deployment of eight additional GBIs if needed to cope with a future emerging threat. The Department is evaluating the evolving threat and considering other potential hedging options, such as the advisability, feasibility, and affordability of deploying additional GBIs in the future, either in Alaska or possibly on the East Coast. The committee recommends a provision that would require the Department to report

on these homeland defense activities, as described elsewhere in this report. The committee notes that section 233 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81) required a report on the homeland defense hedging policy and strategy that was due in March, but which the Department has not yet submitted. The committee understands that the review process has taken much longer than originally planned, and is still continuing. However, the committee still expects the Department to provide the report as soon as it is finished, and to provide an interim report in case of any significant anticipated delay.

The committee notes that the threat of regional missiles, particularly short- and medium-range missiles from Iran and North Korea, is serious and growing. These missiles pose a significant risk to forward-deployed U.S. forces, allies, and partners in Europe, the Middle East, and Asia. The Department has an obligation to provide force protection to U.S. forces against ballistic missiles deployed in these regions, as well as to meet our security commitments to our allies. To meet these needs, the Department is pursuing a Phased Adaptive Approach (PAA) to regional missile defense, tailored to each region.

In 2011, the Department completed the deployment of Phase 1 of the European Phased Adaptive Approach (EPAA) to missile defense, which is intended to defend our deployed forces and allies against Iranian missiles. This included: the deployment of an Aegis Ballistic Missile Defense (BMD) ship in the eastern Mediterranean Sea, equipped with Standard Missile–3 (SM–3) Block IA interceptors; the deployment of an AN/TPY–2 X-band missile defense radar in Turkey; and establishment of a command and control facility in Germany.

During 2011, the administration also completed negotiations on all the bilateral agreements required to implement all four phases of the EPAA, including: agreements with Romania and Poland for the deployment of Aegis Ashore systems on their territory; an agreement with Turkey to deploy the AN/TPY–2 radar on its territory; and an agreement with Spain to permit the forward stationing of four Aegis BMD ships at Rota.

The core capability of the EPAA will be the Aegis BMD system, both at sea and on land, with four increasingly capable variants of the SM–3 interceptor missile, the SM–3 Blocks IA, IB, IIA and IIB. As indicated previously, the committee strongly supports the development, testing, production, and deployment of operationally effective Aegis BMD and SM–3 capabilities in sufficient numbers to support the needs of the regional combatant commanders to implement the PAA in Europe and other regions, and to help protect the Homeland.

In April 2011, an Aegis BMD ship with an SM–3 IA interceptor, using sensor information from a forward-deployed AN/TPY–2 radar like the one now deployed in Turkey, successfully intercepted an intermediate-range ballistic missile target during a flight test. This was a demonstration of the EPAA Phase 1 capability.

In September 2011, the first flight test of the SM–3 Block IB interceptor failed to intercept the target. The MDA has analyzed the problem, and conducted a repeat test on May 10, 2012, which successfully intercepted the target, to demonstrate the problem has

been resolved. The September flight test failure caused a delay in the planned initial procurement of SM-3 IB missiles, and MDA plans to procure additional SM-3 IA missiles to meet the needs of combatant commanders for additional interceptor inventory. Prior to a full production decision for SM-3 IB, MDA would need to demonstrate success in five planned flight tests, three in 2012 and two more in 2013. The SM-3 IB is intended for deployment in Phase 2 of the EPAA in the 2015 timeframe, both at sea and at an Aegis Ashore site in Romania.

Phase 3 of the EPAA is planned for deployment in the 2018 timeframe, and will include the SM-3 IIA interceptor at sea and at Aegis Ashore sites in Poland and Romania. The SM-3 IIA is being co-developed with Japan, which will also deploy the missile on its Kongo-class Aegis BMD ships. During 2011, MDA completed the preliminary design review and extended the development phase of the SM-3 IIA with Japan to reduce technical and schedule risk. The first flight test (non-intercept) of the SM-3 IIA is planned for fiscal year 2014, and nine more tests are planned before the Phase 3 deployment. Phase 3 is designed to provide a robust defense against Iranian intermediate-range missiles.

The last planned variant of the SM-3 missile is the Block IIB, which is intended for deployment in Phase 4 of the EPAA in the 2021 timeframe. The SM-3 IIB is intended to defend against possible future long-range Iranian missiles that could reach the United States. This system would augment the GMD system for homeland defense and would provide an early intercept capability that could permit a "shoot-look-shoot" option to permit GBIs being held in reserve. The committee believes it is important to develop a second type of interceptor system to defend the Homeland, in addition to the GBI system. By pursuing a competitive approach to the concept development phase, MDA has engaged the significant engineering and design talent of the industrial base. The committee believes it is important to maintain this competitive approach, particularly since it could produce the most innovative, cost-effective, and operationally effective results.

The budget request for the Missile Defense Agency would reduce the Terminal High Altitude Area Defense (THAAD) system from a planned procurement of nine batteries to six batteries in the future-years defense program (FYDP), and the number of THAAD interceptors was reduced correspondingly by 122 compared to the plan presented in the fiscal year 2012 budget request. Given that the combatant commander interest in THAAD remains undiminished, the committee is disappointed to see these planned reductions to the THAAD system. In testimony to the committee, LTG Richard Formica, the Commander of U.S. Army Space and Missile Defense Command, and Commander of the Joint Functional Component Command for Integrated Missile Defense, explained that the choice of how many THAAD batteries to procure in the FYDP came down to considering the missile defense "priority between investing in the Homeland and investing in the region." However, the committee understands that the Department plans to continue THAAD production beyond the FYDP, including plans to maintain a procurement objective of 503 missiles.

Previous difficulties with the THAAD production line have delayed the program, and resulted in slower production than planned. These production rate issues appear to be close to resolution. The committee notes that the THAAD production line will remain open through fiscal year 2017, including the production of two THAAD batteries for the United Arab Emirates, and will be capable of producing additional THAAD systems in the future. The committee encourages the Department to explore options to restore THAAD production to higher levels in the future. Furthermore, the committee recommends an increase of \$100.0 million for additional procurement of THAAD interceptors, as described elsewhere in this report.

In October 2011, the THAAD system conducted a successful initial operational test and evaluation (IOT&E) flight test, intercepting two targets nearly simultaneously. This test, using the operational THAAD soldiers, represented operationally realistic conditions with fielded equipment. Based on lessons learned from this test, MDA decided to add a new flight test in 2012 to gain experience with THAAD and debris mitigation in a flight test to integrate THAAD with Aegis BMD, and Patriot all operating simultaneously. This will take place prior to the first operational test involving THAAD, Aegis BMD, and Patriot PAC-3 defending against five separate targets in flight. The committee believes this integration flight test, described by the Director of MDA as the “largest, most complex missile defense ever attempted,” is a useful risk mitigation step before the first multi-system operational test in 2013.

In testimony to the committee in April 2012, the Director of MDA stated that the “greatest future enhancement for both homeland and regional missile defense in the next 10 years is the development of the Precision Tracking Space System (PTSS) satellites, which will provide fire control quality track data of raids of hostile ballistic missiles over their entire flight trajectories. . . .” He also noted that “the need for persistent, full trajectory, tracking of ballistic missiles is one of the war-fighter’s highest development priorities as stated in the 2012 STRATCOM PCL [U.S. Strategic Command’s Prioritized Capabilities List].”

In 2011, the Missile Defense Executive Board, the Department’s acquisition oversight body for missile defense, directed U.S. Strategic Command to conduct an assessment of the cost and performance of the three alternative remote missile defense sensor systems—including PTSS, the Airborne Infrared system, and forward-based AN/TPY-2 radars—to make recommendations for the fiscal year 2013 budget request. Strategic Command’s recommendations are reflected in the budget request, which includes \$276.3 million to continue development of PTSS, ends the Airborne Infrared program as a program of record (Congress appropriated no funds for it in fiscal year 2012), and would stop procurement of forward-based AN/TPY-2 radars at five, rather than nine. This assessment, based on operational considerations, had participation from the geographic combatant commands, the Joint Staff, Air Force Space Command, the Joint Functional Component Commands under U.S. Strategic Command, the DOD Cost Analysis and Program Evaluation (CAPE) office, and the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. In addition, the

DOD CAPE is currently performing an Independent Cost Estimate and technical evaluation of PTSS that is due in October 2012.

In June 2011, the Acting Chairman of the Joint Chiefs of Staff wrote to the committee that, “the Joint Staff supports PTSS as the most cost effective future sensor providing assured access and persistent tracking coverage in an integrated Ballistic Missile Defense Architecture.” He also noted that he fully concurred with the assessment of the Joint Functional Component Commander for Integrated Missile Defense for U.S. Strategic command that “PTSS would provide a capability that increases our forces’ ability to defend against larger raids and would reduce our reliance on terrestrial based radar systems and airborne sensor platforms that require overseas basing agreements.”

Given the strong military support for PTSS as the most cost-effective means of providing persistent tracking and targeting of ballistic missiles for homeland and regional missile defense, and its expected operational benefits, the committee supports continuing with development of PTSS as a high priority program.

Cyber research, development, test, and evaluation, and training infrastructure

The Department of Defense’s new strategic guidance emphasizes the importance of operating effectively in cyberspace and states that the United States will “invest in advanced capabilities to defend its networks, operational capability, and resiliency in cyberspace”. To the Department’s credit, cyber was one of the few areas where the DOD increased its investments in both defensive and offensive capabilities.

Developing and testing these cyber capabilities and training personnel effectively for cyber operations requires a cyber infrastructure that can be used by the research community, the acquisition community for development and testing (both developmental and operational), and the operational community for training, exercises, and rehearsals. While this infrastructure is necessary for all these missions, it is typically referred to as “cyber test and evaluation (T&E) infrastructure”, or simply “cyber ranges”.

Despite the importance of this cyber T&E infrastructure, comprehensive oversight and strategic planning for long-term funding, personnel plans, and modernization investments do not exist. There is a significant disconnect between the DOD’s policy statements to increase cyber operations and security, and its lack of attention to its cyber ranges. The last few years have seen a decline in the funding and the personnel attached to a number of key DOD-wide cyber ranges—while the demand for more rigorous testing and training has increased.

Currently, there are a number of cyber ranges either in operation or still undergoing development that could be considered “national assets” due to their scope and capabilities, and that could be components of a broader federated cyber range infrastructure for the DOD.

The National Cyber Range (NCR) was developed by the Defense Advanced Research Projects Agency (DARPA) with the goal of creating a secure, self-contained facility that could rapidly emulate complex defense and commercial networks, allowing for the cost-ef-

fective and timely validation of cyber technologies. The NCR is currently in a 1 year beta operation phase and is in the process of securing Sensitive Compartmented Information security accreditation. In a letter to the committee in June 2011, the Under Secretary of Defense for Acquisition, Technology, and Logistics stated that the NCR would transition to U.S. Cyber Command (CYBERCOM), but CYBERCOM has not agreed to this plan, and there are no funds requested for CYBERCOM to operate and support the range. Hence the future of the NCR, an investment of \$116.0 million through fiscal year 2011, is unknown. The fiscal year 2013 budget request contains only \$1.8 million for DARPA to close out the contract.

The Joint Information Operations Range (JIOR) is a nation-wide network of 68 nodes for live, virtual, and constructive operations across the full spectrum of security classifications. Originally operated by the Joint Forces Command (JFCOM), it was transferred to the Joint Staff in fiscal year 2011. However, funding and personnel are being reduced. Only 39 research, development, test, and evaluation and training events are planned for fiscal year 2012 compared to 60 events that were conducted in fiscal year 2011.

The DOD Cyber/Defense Information Systems Agency Information Assurance Range is an operationally realistic environment for emulating the Global Information Grid Information Assurance/Computer Network Defense capabilities that is used for research and development, test and evaluation, and training. Funding and personnel are relatively constant over the out-years, but the number of RDT&E and training events planned at this range is also declining.

In addition, U.S. Cyber Command has developed a virtual training environment for the DOD annual Cyber Flag exercise that has the potential to be integrated with other environments and ranges. This range supports training operations involving friendly, neutral, and adversarial participants, and is instrumented for situational awareness and training assessments.

Lastly, there is the potential to broaden the scope of uses of the Joint Systems Integration Center/Joint System Integration and Interoperability Lab that was formerly under JFCOM and now under the Joint Staff. While the current focus of this range is to replicate operational command and control networks and assess system interoperability, its capabilities could be used for broader information assurance assessments and activities, including direct linkage to the JIOR.

Recently, through prompting, the Department has recognized the need to take a more strategic view of its cyber ranges. In a report to Congress requested in section 933 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112-81), Report on Acquisition and Oversight of Department of Defense Cyberspace Operations Capabilities, the Under Secretary of Defense for Acquisition, Technology, and Logistics stated that the Department's Cyber Investment Management Board has directed the Director of the Test Resources Management Center and the Director of Operational Test and Evaluation to develop an enterprise roadmap for cyber T&E infrastructure capabilities. Furthermore, the committee is awaiting a brief on the Department's analysis of T&E resources

needed to address the capability gaps outlined by the “2010 Test and Evaluation Strategic Plan”—a reporting requirement from the House report accompanying H.R. 1540 (H. Rpt. 112–78) of the National Defense Authorization Act for Fiscal Year 2012.

However, these activities have not yet addressed the key issue of centralized oversight and management of these or potentially new cyber ranges. While the committee sees the management of cyber ranges as a natural extension of the Department’s oversight of the Major Range and Test Facilities Base through the Test Resources Management Center, the committee believes that the Department should conduct its own evaluation. Hence, the committee directs the Under Secretary of Defense for Acquisition, Technology, and Logistics and the Under Secretary of Defense for Intelligence, working with the Director of Operational Test and Evaluation, and the Director of the Test Resources Management Center to submit a report to the congressional defense committees 180 days after the enactment of this Act on the determination of an entity within the Department that will have oversight of the cyber T&E range infrastructure, funding and personnel.

In addition to identifying the management structure for the cyber ranges, this report shall identify the entities (e.g., such as executive agents) that will provide funding and resources for the operation and modernization of the ranges, as well as the mechanisms for the allocation of range resources to range users. The committee expects that future budget requests will not simply arrest but reverse the decline in funding and activities at the Department’s cyber ranges, commensurate with the importance that the Department attaches to the cyber mission.

Department of Defense labs workforce and infrastructure

As a key element of the Department of Defense’s (DOD’s) roughly \$12.0 billion per year science and technology portfolio, its laboratories contribute to a broad range of science and technology activities, ranging from conducting Nobel-prize winning basic research to rapidly developing and fielding capabilities for the warfighter. The lab enterprise includes 62 organizations spread across 22 states with a total workforce of about 60,000 employees, more than half of whom are degreed scientists and engineers. In certain critical national security-related areas, these organizations—and more importantly, the highly skilled scientists, engineers and technicians in them—are national assets.

The committee understands that among the numerous challenges facing the DOD lab enterprise, two key issues require focused and sustained attention:

- (a) recruiting and retaining the best and brightest scientists, engineers, and technicians; and
- (b) modernizing aging infrastructure.

Congress has provided a number of authorities to the labs over the years, including direct hiring authority of scientists and engineers with advanced degrees. However, in testimony before the Subcommittee on Emerging Threats and Capabilities Subcommittee of the Senate Committee on Armed Services on April 17, 2012, it appears that there may be a need for the labs to have a similar authority for scientists, engineers, and technicians with un-

dergraduate technical degrees with unique skills, expertise, and experience. Hence, the committee directs each service science and technology executive, consulting with the Assistant Secretary of Defense for Research and Engineering and the Under Secretary of Defense for Personnel and Readiness, to submit a report to the congressional defense committees not later than 180 days after the enactment of this Act that will describe whether direct hiring authority of undergraduate scientists and engineers is required, and provide an explanation why existing authorities under the laboratory personnel demonstration program authorized by section 342 of the National Defense Authorization Act for Fiscal Year 1995 (Public Law 103–337), as amended, are not sufficient to meet this need for direct hiring authority.

Concerning aging laboratory infrastructure, the committee is pleased that the Army has initiated a survey of its laboratory infrastructure and directs the Navy and Air Force to undertake similar surveys of its laboratory infrastructure. In addition, the committee understands the Assistant Secretary of Defense for Research and Engineering is also conducting a survey of the DOD's laboratories. The committee directs the services to brief the congressional defense committees on the results of their surveys no later than March 1, 2013.

Dry Combat Submersible

The committee notes that U.S. Special Operations Command (USSOCOM) has deferred plans for the foreseeable future to procure Dry Combat Submersible-Light and associated Future Dry Deck Shelter Extension Modifications in light of higher priority requirements and budget constraints. The committee also notes USSOCOM intends to continue forward with modified plans to field a single Dry Combat Submersible variant. The committee expects, consistent with the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81), that the Under Secretary of Defense for Acquisition, Technology, and Logistics will make a determination, prior to a milestone B decision, on whether to treat the Dry Combat Submersible program as a Major Defense Acquisition Program.

Energy efficiency research and development coordination and transition

The committee is encouraged by the Defense Department's efforts to coordinate with the Department of Energy in pursuing and evaluating energy efficient technologies. The wide variety of investments made by the Defense Department towards reducing energy usage has already illustrated savings; however, the numerous organizations pursuing these initiatives within the Defense Department and other federal agencies also presents increasing potential for duplicative research and development as well as successful technologies not identified and effectively transitioned. The continued cooperation and combination of technical expertise as coordinated in the July 2010, memorandum of understanding (MOU) between the Departments of Defense and Energy is important in maximizing the return on these investments. The committee encourages the Defense Department to continue both internal efforts and co-

ordination with other agencies to manage ongoing and planned energy efficiency research and development as well as continuing to establish processes for effectively transitioning technologies for broader application across the Department of Defense.

Hexavalent chromium

The committee is encouraged by the Defense Department's efforts to reduce and eliminate materials identified by the Department of Defense Chemical and Material Risk Management Directorate. In particular, the Department outlined aggressive plans to reduce the use of hexavalent chromium. The committee supports the Department's efforts to continue to pursue research, development, testing, and evaluation of substitute solutions as well as effective transition into existing and future programs of record.

Human bone collections for Department of Defense research

The committee understands the importance of the Department of Defense (DOD) to conduct research and study collections of human bones. This research has contributed to the development of personal protective equipment, improved medical procedures, as well as medical devices for wounded service members. Furthermore, the committee understands that collections currently utilized by DOD may require a significant wait-time to conduct the necessary research and the collections may lack the demographic diversity in size and other characteristics needed to represent the U.S. armed services today.

The committee encourages the DOD to utilize as broad of a spectrum of publicly available bone collections as possible and relevant when conducting research requiring the use of human bones.

Hypersonics ground test and evaluation capabilities and workforce

Crucial to advancing the field of hypersonics that will support the development of advanced weapons systems, is a robust ground test and evaluation infrastructure that enables a broad range of research and development capabilities. Whether for vehicle aerodynamics, thermal design, or propulsion system development, ground test facilities are crucial to not only reducing risk in development, but for the research community to expand foundational knowledge in this area of aeronautics, as well as to increase confidence in computational design tools.

Much of the U.S. hypersonics test and evaluation infrastructure—primarily shared between the Department of Defense (DOD) and the National Aeronautics and Space Administration (NASA), but also including some capabilities in other parts of the government and the private sector—is dated; existing facilities have limits in either test duration, or in accurately replicating the physics of hypersonic flows, or in the size of the models that can be tested. Furthermore, the development of hypersonic air vehicles—including gliders or those with air breathing propulsion—has experienced periods of increasing and decreasing demand in the past few decades. This situation has led to a large degree of uncertainty in the demand for hypersonic test and evaluation facilities and hence they

have been a target for cost savings in the current fiscal environment.

However, the DOD's new defense strategic guidance emphasizes the importance of projecting power despite anti-access/area denial challenges. In addition to rebalancing focus towards the Asia-Pacific region, the guidance states that the U.S. military "will invest as required to ensure its ability to operate effectively in anti-access and area denial (A2/AD) environments."

The committee notes that the wide expanses of distances in the Asia-Pacific region, the growing A2/AD threat which requires greater stand-off distances, and the increasing need in modern warfare for fast response times for time-critical targeting all point to the need for the Department to invest in high-speed weapon and platform technologies, including hypersonics.

The committee notes that the state of the Nation's hypersonics ground test and evaluation facilities and workforce have not received adequate attention over the years facing both threats of divestiture as well as gradual decay, and is concerned that the broad developmental hypersonics community needs renewed attention.

Hence, the committee directs the Secretary of the Air Force to conduct a study on the ability of the Air Force air and ground test and evaluation infrastructure facilities, including wind tunnels and air test ranges, as well as associated instrumentation, to support defense hypersonic test and evaluation activities for the near and far term. The study should consider the needs of research and technology development as well as potential future DOD weapons programs. The Secretary shall incorporate the results of the study into a master plan for requirements and proposed investments to meet the DOD needs through 2025. The Secretary of the Air Force shall consult with the secretaries of the other military departments, the Directors of the appropriate defense agencies, the Assistant Secretary of Defense for Research and Engineering (who oversees the Joint Technology Office on Hypersonics), and the Director of the Test Resource Management Center to assess the requirements needed to support hypersonic research, development, test, and evaluation throughout the DOD and to include all DOD requirements in the master plan. In addition, the Secretary shall consult with NASA and leverage current studies under the National Partnership for Aeronautical Testing.

The study shall contain the following:

(a) Document the current condition and adequacy of the Air Force test and evaluation infrastructure required to support hypersonic research and development within DOD;

(b) Identify test and evaluation infrastructure that could be used to support DOD hypersonic research and development outside the Department of the Air Force and assess means to ensure the availability of such capabilities to the DOD now and in the future; and

(c) Include a time phased plan to acquire required hypersonic research and development test and evaluation capabilities including identification of the resources necessary to acquire any needed capabilities that are currently not available.

The Secretary shall submit a report of the findings of this study not later than 1 year after the enactment of this Act.

According to section 139d(a)(5)(D) of the Weapon System Acquisition Reform Act (WSARA) of 2009 (Public Law 111–23), the Deputy Assistant Secretary of Defense (DASD) for Developmental Test and Evaluation (DT&E) shall provide advocacy, oversight, and guidance to elements of the acquisition workforce responsible for developmental test and evaluation. In addition, section 139d(b)(1)(A) of WSARA mandates that the service acquisition executive of each military department develops plans to ensure the military department concerned has provided appropriate resources for developmental test organizations with adequate numbers of trained personnel.

Hence, the Deputy Assistant Secretary of Defense for Developmental Test and Evaluation, dual-hatted as the Director of the Test Resource Management Center, shall work with the Air Force acquisition executive, as well as the Commanders of the Air Force Materiel Command and the Air Force Research Laboratory, to ensure that the following objectives are met:

(a) Develop and sustain the expertise of the hypersonics test and evaluation workforce; and

(b) Develop the next generation of hypersonics T&E experts via Science, Technology, Engineering, and Mathematics efforts.

The DASD for DT&E, along with the two Air Force officials identified, shall brief the congressional defense committees no later than 180 days after the enactment of this Act on what specific steps are being taken to meet these objectives.

Internet cartography

One of the foundations of military operations are up-to-date maps that vary in scale and detail to enable commanders to visualize the terrain, understand the operational situation, plan courses of action, and create a common understanding with subordinates and peers. The Department of Defense (DOD) for decades has supported a combat support defense agency whose mission has solely or largely been focused on mapping, charting and geodesy.

In the cyber domain, the need to understand the operational “terrain” is no less important. Yet, DOD has never established a telecommunications and computer network mapping program to address Department-wide requirements for intelligence, network defense, campaign planning, exercises and wargames, support to military operations, targeting, and establishing a common operational picture. The National Security Agency (NSA) certainly collects and analyzes a wealth of data on foreign networks, but it does so only to support its mission set, and not on a comprehensive or consistent basis. Other DOD components map the cyber terrain in even more sporadic and limited ways.

In part, this basic need has not been met because it has been considered to be too hard—the Internet appears to be too complex, too large in scale, and experiencing too rapid changes. In addition, collecting the necessary detail accurately at the necessary volume and speed was considered technically too difficult.

This appears to be changing. Commercial capabilities exist that hold promise for meeting the needs of U.S. Cyber Command and the intelligence community.

The committee encourages the Cyber Command J-3, the NSA Threat Operations Center, and the Defense Information Systems Agency-managed Community Data Center to collaborate on a pilot program to demonstrate a capability to produce detailed, accurate Internet maps, update them rapidly, display them interactively, and overlay enriching information. The committee believes that an effective pilot demonstration program could be conducted inexpensively, and encourages the Department to pursue such efforts with available resources.

The committee also directs the Vice Chairman of the Joint Chiefs of Staff, in conjunction with the Under Secretary of Defense for Policy, to undertake a study of DOD's broad needs for cyberspace mapping and make a recommendation on whether DOD needs to create a focused program and assign the mission to one or more organizations to manage. The Vice Chairman shall brief the congressional defense committees on this assessment by March 1, 2013.

Massachusetts Institute of Technology—Lincoln Laboratory improvement project

As a designated Department of Defense Federally Funded Research and Development Center, Lincoln Laboratory conducts research and development pertinent to national security on behalf of the military services, the Office of the Secretary of Defense, the intelligence community, and other government agencies. The committee understands that the Air Force and Lincoln Laboratory are considering modernizing and improving some of the Laboratory's research facilities required for the development of certain systems and technology for national security needs.

The committee strongly urges the Department of Defense to expedite its deliberations with the Office of Management and Budget to develop a path forward to permit the Air Force to conclude an arrangement with the Massachusetts Institute of Technology for improving and modernizing the Lincoln Laboratory complex at Hanscom Air Force Base, Massachusetts.

Medical Countermeasures Initiative

The budget request included \$98.9 million in a variety of defense-wide research and development budget lines for the Medical Countermeasures Initiative (MCMCI). This initiative is intended to advance significantly the development and manufacturing of bio-defense medical countermeasures, including vaccines and therapeutics. Such advances are important to meet the growing risks of biological threats, including genetically engineered threats, potential terrorist threats, and naturally occurring disease outbreaks like pandemic influenza.

The committee notes that this initiative is a coordinated and collaborative interagency effort, guided by updated national strategy and guidance documents, and involves particularly close cooperation between the Department of Defense and the Department of Health and Human Services. Congress has previously encouraged such interagency collaboration and coordination, and the committee commends the administration for placing a priority on improving the medical countermeasures capability of the nation, particularly

countermeasures to protect military forces against biological threats.

The MCMI program is intended to establish an advanced development and manufacturing facility on a cost-shared basis with industry and academia. The Department will not own the facility, which will ensure this approach is more cost-effective and efficient than would otherwise be the case.

The committee notes that section 1601 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–136), directed the Secretary of Defense to “carry out a program to accelerate the research, development and procurement of biomedical countermeasures, including but not limited to therapeutics and vaccines, for the protection of the Armed Forces . . .” The committee believes the MCMI program is an important effort to meet this requirement.

Naval electromagnetic railgun projectiles

The Navy is developing an electromagnetic rail gun for engagements of surface and air threats at ranges up to 200 nautical miles. The committee expressed concerns with the program last year, but now feels that the Navy is making progress in overcoming the various technical challenges on the launcher. However, much remains to be done on the development of suitable projectiles.

The committee is aware that in the past, the Navy and the Defense Advanced Research Projects Agency (DARPA) discussed collaborating on projectile development, but no serious joint efforts emerged. The committee now understands that the Navy and DARPA are planning to work together on projectile development, including hardening and guidance/navigation systems. The technologies may include low cost sensors tolerant of high accelerations and temperatures, advanced materials, modeling and simulation, and exo-atmospheric control systems. Given the investments made to date in the launcher, the committee fully supports this collaboration. The committee also encourages the Navy and the Air Force to collaborate on this project given the Air Force’s expertise in hypersonics, as well as high-speed, high acceleration fusing and warhead technologies.

Naval Engineering Education Center

The committee notes that the Navy faces significant challenges in training and hiring the next-generation of naval engineers. As former Secretary of the Navy Donald Winter said in 2007, “Hiring top-quality people who have experience with large shipbuilding programs is essential. The ability to assign an experienced and capable team must be a precondition to a program’s initiation. Finding and developing the people we need is easier said than done, and it will take time to rectify this problem, but we cannot ignore the leverage that can be obtained by putting the right, experienced and prepared people, in the right positions.” The Naval Engineering Education Center (NEEC) was established in 2010 to help address the issues identified by then-Secretary Winter and now supports research and educational opportunities for more than 100 students at member universities with the goal of attracting and retaining qualified naval engineering talent. The committee commends the

Navy for proactively working to address its naval engineering workforce issues and has been impressed with the success of the program in meeting its goals to date.

However, the committee is concerned that the Navy has not identified a long-term, stable funding source for the NEEC. The committee understands that, to date, the NEEC has been substantially funded by Operation and Maintenance funds provided to Navy laboratories to pay for overhead expenses. The committee believes this is an unsustainable funding arrangement and is concerned that continuing in such a way will hinder the growth and effectiveness of the NEEC over time. The committee believes robust and predictable funding is important to sustaining meaningful research activities, recruiting students to participate in the program, and ensuring professors and Navy personnel remain fully engaged.

In light of these concerns, the committee directs the Secretary of the Navy to provide a report, not later than December 31, 2012, outlining: (1) the Navy's plan to ensure the sustainability of the NEEC; (2) the potential funding sources to provide robust and predictable support to the program; (3) the projected funding levels for the NEEC across the future-years defense program; (4) a value assessment of the NEEC to date in meeting the goals of the program; and (5) the metrics the Navy will use to measure the success of the program in future years.

Support for the Minerva Research Initiative

The budget request included \$19.4 million in PE 61110D8Z for Department of Defense Basic Research Initiatives. Of this amount, \$16.5 million was requested for the Minerva Research Initiative.

The Minerva program was established by then-Secretary of Defense Robert Gates in 2008 as a way to improve the Department's understanding of social, cultural, and political forces that shape regions of the world of strategic importance to U.S. national security policy. The current Secretary of Defense, Leon Panetta, has since expressed his support for the initiative.

The committee supports the Department's fiscal year 2013 funding request for Minerva, despite a significant cut in the program's fiscal year 2012 appropriations that unfortunately impacted the number of new research grants. The committee believes that the research supported by Minerva is more important than ever in today's uncertain geopolitical environment. It is important to develop a deeper understanding for responses to significant events and issues such as the Arab awakening, the continuing—and growing in some regions—threat of violent Islamic extremism, and the dynamics of resource-driven conflicts in many parts of the world. In addition, it is vital to gain a better understanding of, and respond to, the trends and developments in China's military growth and modernization, strategic interests, and technological advances, particularly as they relate to the People's Liberation Army's role in setting priorities and influencing China's national security, economic, and foreign policy agenda.

To this end, the committee encourages the Assistant Secretary of Defense for Research and Engineering and the Under Secretary of Defense for Policy to ensure that fiscal year 2013 funds for the Initiative properly reflect the new strategic defense guidance, pub-

lished by the Department of Defense in 2012. The committee also urges the Initiative to invest in nationally recognized academic experts for the chairs at the professional military education institutes. Lastly, the committee encourages the Department to ensure that funding for Minerva-type research increases in the individual services.

**TITLE XLII—RESEARCH, DEVELOPMENT, TEST,
AND EVALUATION**

TITLE XLII—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

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

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

Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY					
BASIC RESEARCH					
001	0601101A	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	20,860		20,860
002	0601102A	DEFENSE RESEARCH SCIENCES	219,180		219,180
003	0601103A	UNIVERSITY RESEARCH INITIATIVES	80,986		80,986
004	0601104A	UNIVERSITY AND INDUSTRY RESEARCH CENTERS	123,045		123,045
		SUBTOTAL, BASIC RESEARCH	444,071	0	444,071
APPLIED RESEARCH					
005	0602105A	MATERIALS TECHNOLOGY	29,041		29,041
006	0602120A	SENSORS AND ELECTRONIC SURVIVABILITY	45,260		45,260
007	0602122A	TRACTOR HIP	22,439		22,439
008	0602211A	AVIATION TECHNOLOGY	51,607		51,607
009	0602270A	ELECTRONIC WARFARE TECHNOLOGY	15,068		15,068
010	0602303A	MISSILE TECHNOLOGY	49,383		49,383
011	0602307A	ADVANCED WEAPONS TECHNOLOGY	25,999		25,999
012	0602308A	ADVANCED CONCEPTS AND SIMULATION	23,507		23,507
013	0602601A	COMBAT VEHICLE AND AUTOMOTIVE TECHNOLOGY	69,062		69,062

014	0602618A	BALLISTICS TECHNOLOGY	60,823
015	0602622A	CHEMICAL, SMOKE AND EQUIPMENT DEFEATING TECHNOLOGY	4,465
016	0602623A	JOINT SERVICE SMALL ARMS PROGRAM	7,169
017	0602624A	WEAPONS AND MUNITIONS TECHNOLOGY	35,218
018	0602705A	ELECTRONICS AND ELECTRONIC DEVICES	60,300
019	0602709A	NIGHT VISION TECHNOLOGY	53,244
020	0602712A	COUNTERMINE SYSTEMS	18,850
021	0602716A	HUMAN FACTORS ENGINEERING TECHNOLOGY	19,872
022	0602720A	ENVIRONMENTAL QUALITY TECHNOLOGY	20,095
023	0602782A	COMMAND, CONTROL, COMMUNICATIONS TECHNOLOGY	28,852
024	0602783A	COMPUTER AND SOFTWARE TECHNOLOGY	9,830
025	0602784A	MILITARY ENGINEERING TECHNOLOGY	70,693
026	0602785A	MANPOWER/PERSONNEL/TRAINING TECHNOLOGY	17,781
027	0602786A	WARFIGHTER TECHNOLOGY	28,281
028	0602787A	MEDICAL TECHNOLOGY	107,891
		SUBTOTAL, APPLIED RESEARCH	0
			874,730

029	0603001A	ADVANCED TECHNOLOGY DEVELOPMENT	39,359
030	0603002A	WARFIGHTER ADVANCED TECHNOLOGY	69,580
031	0603003A	MEDICAL ADVANCED TECHNOLOGY	64,215
032	0603004A	AVIATION ADVANCED TECHNOLOGY	67,613
033	0603005A	WEAPONS AND MUNITIONS ADVANCED TECHNOLOGY	104,359
034	0603006A	COMBAT VEHICLE AND AUTOMOTIVE ADVANCED TECHNOLOGY	4,157
035	0603007A	COMMAND, CONTROL, COMMUNICATIONS ADVANCED TECHNOLOGY	9,856
036	0603008A	MANPOWER, PERSONNEL AND TRAINING ADVANCED TECHNOLOGY	50,661
037	0603009A	ELECTRONIC WARFARE ADVANCED TECHNOLOGY	9,126
038	0603015A	TRACTOR HIKE	17,257
039	0603020A	NEXT GENERATION TRAINING & SIMULATION SYSTEMS	9,925
040	0603105A	TRACTOR ROSE	6,984
041	0603125A	MILITARY HIV RESEARCH	9,716
042	0603130A	COMBATING TERRORISM—TECHNOLOGY DEVELOPMENT	3,487
		TRACTOR NAIL	

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043	0603131A	TRACTOR EGGS	2,323		2,323
044	0603270A	ELECTRONIC WARFARE TECHNOLOGY	21,683		21,683
045	0603313A	MISSILE AND ROCKET ADVANCED TECHNOLOGY	71,111		71,111
046	0603322A	TRACTOR CAGE	10,902		10,902
047	0603461A	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM	180,582		180,582
048	0603606A	LANDMINE WARFARE AND BARRIER ADVANCED TECHNOLOGY	27,204		27,204
049	0603607A	JOINT SERVICE SMALL ARMS PROGRAM	6,095		6,095
050	0603710A	NIGHT VISION ADVANCED TECHNOLOGY	37,217		37,217
051	0603728A	ENVIRONMENTAL QUALITY TECHNOLOGY DEMONSTRATIONS	13,626		13,626
052	0603734A	MILITARY ENGINEERING ADVANCED TECHNOLOGY	28,458		28,458
053	0603772A	ADVANCED TACTICAL COMPUTER SCIENCE AND SENSOR TECHNOLOGY	25,226		25,226
		SUBTOTAL, ADVANCED TECHNOLOGY DEVELOPMENT	890,722	0	890,722
ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES					
054	0603305A	ARMY MISSILE DEFENSE SYSTEMS INTEGRATION	14,505		14,505
055	0603308A	ARMY SPACE SYSTEMS INTEGRATION	9,876		9,876
056	0603619A	LANDMINE WARFARE AND BARRIER—ADV DEV	5,054		5,054
057	0603627A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS—ADV DEV	2,725		2,725
058	0603639A	TANK AND MEDIUM CALIBER AMMUNITION	30,560		30,560
059	0603653A	ADVANCED TANK ARMAMENT SYSTEM (ATAS)	14,347		14,347
060	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	10,073		10,073
061	0603766A	TACTICAL ELECTRONIC SURVEILLANCE SYSTEM—ADV DEV	8,660		8,660
062	0603774A	NIGHT VISION SYSTEMS ADVANCED DEVELOPMENT	10,715		10,715
063	0603779A	ENVIRONMENTAL QUALITY TECHNOLOGY—DEMVAL	4,631		4,631
064	0603782A	WARFIGHTER INFORMATION NETWORK-TACTICAL—DEMVAL	278,018		278,018
065	0603790A	NATO RESEARCH AND DEVELOPMENT	4,961		4,961
066	0603801A	AVIATION—ADV DEV	8,602		8,602

067	0603804A	LOGISTICS AND ENGINEER EQUIPMENT—ADV DEV	14,605	14,605
068	0603805A	COMBAT SERVICE SUPPORT CONTROL SYSTEM EVALUATION AND ANALYSIS	5,054	5,054
069	0603807A	MEDICAL SYSTEMS—ADV DEV	24,384	24,384
070	0603827A	SOLDIER SYSTEMS—ADVANCED DEVELOPMENT	32,050	32,050
071	0603850A	INTEGRATED BROADCAST SERVICE	96	96
072	0604115A	TECHNOLOGY MATURATION INITIATIVES	24,868	24,868
073	0604131A	TRACTOR JUTE	59	59
074	0604284A	JOINT COOPERATIVE TARGET IDENTIFICATION—GROUND (JCTI-G)/TECHNOLOGY DEV	0	0
075	0604319A	INDIRECT FIRE PROTECTION CAPABILITY INCREMENT 2—INTERCEPT (IFPC2)	76,039	76,039
076	0604775A	DEFENSE RAPID INNOVATION PROGRAM	0	0
077	0604785A	INTEGRATED BASE DEFENSE (BUDGET ACTIVITY 4)	4,043	4,043
078	0305205A	ENDURANCE UAVS	26,196	26,196
		SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	610,121	610,121

SYSTEM DEVELOPMENT & DEMONSTRATION				
079	0604201A	AIRCRAFT AVIONICS	78,538	78,538
080	0604220A	ARMED, DEPLOYABLE HELOS	90,494	90,494
081	0604270A	ELECTRONIC WARFARE DEVELOPMENT	181,347	181,347
082	0604280A	JOINT TACTICAL RADIO	0	0
083	0604290A	MID-TIER NETWORKING VEHICULAR RADIO (MNVVR)	12,636	12,636
084	0604321A	ALL SOURCE ANALYSIS SYSTEM	5,694	5,694
085	0604328A	TRACTOR CAGE	32,095	32,095
086	0604601A	INFANTRY SUPPORT WEAPONS	96,478	96,478
087	0604604A	MEDIUM TACTICAL VEHICLES	3,006	3,006
088	0604609A	SMOKE, OBSCURANT AND TARGET DEFEATING SYS—ENG DEV	0	0
089	0604611A	JAVELIN	5,040	5,040
090	0604622A	FAMILY OF HEAVY TACTICAL VEHICLES	3,077	3,077
091	0604633A	AIR TRAFFIC CONTROL	9,769	9,769
092	0604641A	TACTICAL UNMANNED GROUND VEHICLE (TUGV)	13,141	13,141
		Transfer from OPA line 191 at Army request		12,000
093	0604642A	LIGHT TACTICAL WHEELED VEHICLES	0	[12,000]
094	0604661A	FCS SYSTEMS OF SYSTEMS ENGR & PROGRAM MGMT	0	0

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095	0604662A	FCS RECONNAISSANCE (UAV) PLATFORMS	0		0
096	0604663A	FCS UNMANNED GROUND VEHICLES	0		0
097	0604664A	FCS UNATTENDED GROUND SENSORS	0		0
098	0604665A	FCS SUSTAINMENT & TRAINING R&D	0		0
099	0604710A	NIGHT VISION SYSTEMS—ENG DEV	32,621		32,621
100	0604713A	COMBAT FEEDING, CLOTHING, AND EQUIPMENT	2,132		2,132
101	0604715A	NON-SYSTEM TRAINING DEVICES—ENG DEV	44,787		44,787
102	0604716A	TERRAIN INFORMATION—ENG DEV	1,008		1,008
103	0604741A	AIR DEFENSE COMMAND, CONTROL AND INTELLIGENCE—ENG DEV	73,333		73,333
104	0604742A	CONSTRUCTIVE SIMULATION SYSTEMS DEVELOPMENT	28,937		28,937
105	0604746A	AUTOMATIC TEST EQUIPMENT DEVELOPMENT	10,815		10,815
106	0604760A	DISTRIBUTIVE INTERACTIVE SIMULATIONS (DIS)—ENG DEV	13,926		13,926
107	0604780A	COMBINED ARMS TACTICAL TRAINER (CATT) CORE	17,797		17,797
108	0604798A	BRIGADE ANALYSIS, INTEGRATION AND EVALUATION	214,270		214,270
109	0604802A	WEAPONS AND MUNITIONS—ENG DEV	14,581		14,581
110	0604804A	LOGISTICS AND ENGINEER EQUIPMENT—ENG DEV	43,706		43,706
111	0604805A	COMMAND, CONTROL, COMMUNICATIONS SYSTEMS—ENG DEV	20,776		20,776
112	0604807A	MEDICAL MATERIEL/MEDICAL BIOLOGICAL DEFENSE EQUIPMENT—ENG DEV	43,395		43,395
113	0604808A	LANDMINE WARFARE/BARRIER—ENG DEV	104,983		104,983
114	0604814A	ARTILLERY MUNITIONS—EMD	4,346		4,346
115	0604817A	COMBAT IDENTIFICATION	0		0
116	0604818A	ARMY TACTICAL COMMAND & CONTROL HARDWARE & SOFTWARE	77,223		77,223
117	0604820A	RADAR DEVELOPMENT	3,486		3,486
118	0604822A	GENERAL FUND ENTERPRISE BUSINESS SYSTEM (GFEBS)	9,963	17,200	27,163
		GFEBS realignment per Army request		[17,200]	
119	0604823A	FIREFINDER	20,517		20,517
120	0604827A	SOLDIER SYSTEMS—WARRIOR DEMVAL	51,851		51,851

121	0604854A	ARTILLERY SYSTEMS—EMD	167,797	167,797	
122	0604869A	PATRIOT/MEADS COMBINED AGGREGATE PROGRAM (CAP)	400,861	400,861	0
		No funds authorized		[-400,861]	
123	0604870A	NUCLEAR ARMS CONTROL MONITORING SENSOR NETWORK	7,922	7,922	
124	0605013A	INFORMATION TECHNOLOGY DEVELOPMENT	51,463	51,463	
125	0605018A	INTEGRATED PERSONNEL AND PAY SYSTEM-ARMY (PPS-A)	158,646	158,646	
126	0605450A	JOINT AIR-TO-GROUND MISSILE (JAGM)	10,000	10,000	
127	0605455A	SLAMRAAM	0	0	
128	0605456A	PAC-3/MSE MISSILE	69,029	69,029	
129	0605457A	ARMY INTEGRATED AIR AND MISSILE DEFENSE (AIAMD)	277,374	277,374	
130	0605625A	MANNED GROUND VEHICLE	639,874	639,874	
131	0605626A	AERIAL COMMON SENSOR	47,426	47,426	
132	0605812A	JOINT LIGHT TACTICAL VEHICLE (JLTV) ENGINEERING AND MANUFACTURING DEVELOPMENT PH	72,295	72,295	
133	0303032A	TROJAN—RH12	4,232	4,232	
134	0304270A	ELECTRONIC WARFARE DEVELOPMENT	13,942	13,942	
		SUBTOTAL, SYSTEM DEVELOPMENT & DEMONSTRATION	3,286,629	-371,661	2,914,968
RD&E MANAGEMENT SUPPORT					
135	0604256A	THREAT SIMULATOR DEVELOPMENT	18,090	18,090	
136	0604258A	TARGET SYSTEMS DEVELOPMENT	14,034	14,034	
137	0604759A	MAJOR T&E INVESTMENT	37,394	37,394	
138	0605103A	RAND ARROYO CENTER	21,026	21,026	
139	0605301A	ARMY KWAJALEIN ATOLL	176,816	176,816	
140	0605326A	CONCEPTS EXPERIMENTATION PROGRAM	27,902	27,902	
141	0605502A	SMALL BUSINESS INNOVATIVE RESEARCH	0	0	
142	0605601A	ARMY TEST RANGES AND FACILITIES	369,900	369,900	
143	0605602A	ARMY TECHNICAL TEST INSTRUMENTATION AND TARGETS	69,183	69,183	
144	0605604A	SURVIVABILITY/LETHALITY ANALYSIS	44,753	44,753	
145	0605605A	DOD HIGH ENERGY LASER TEST FACILITY	0	0	
146	0605606A	AIRCRAFT CERTIFICATION	5,762	5,762	
147	0605702A	METEOROLOGICAL SUPPORT TO RD&E ACTIVITIES	7,402	7,402	
148	0605706A	MATERIEL SYSTEMS ANALYSIS	19,954	19,954	

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Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
149	0605709A	EXPLOITATION OF FOREIGN ITEMS	5,535		5,535
150	0605712A	SUPPORT OF OPERATIONAL TESTING	67,789		67,789
151	0605716A	ARMY EVALUATION CENTER	62,765		62,765
152	0605718A	ARMY MODELING & SIM X-CMD COLLABORATION & INTEG	1,545		1,545
153	0605801A	PROGRAMWIDE ACTIVITIES	83,422		83,422
154	0605803A	TECHNICAL INFORMATION ACTIVITIES	50,820		50,820
155	0605805A	MUNITIONS STANDARDIZATION, EFFECTIVENESS AND SAFETY	46,763		46,763
156	0605857A	ENVIRONMENTAL QUALITY TECHNOLOGY MGMT SUPPORT	4,601		4,601
157	0605898A	MANAGEMENT HQ—R&D	18,524		18,524
158	0909999A	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	0		0
		SUBTOTAL, RDT&E MANAGEMENT SUPPORT	1,153,980	0	1,153,980
OPERATIONAL SYSTEMS DEVELOPMENT					
159	0603778A	MLRS PRODUCT IMPROVEMENT PROGRAM	143,005		143,005
160	0607665A	FAMILY OF BIOMETRICS	0		0
161	0607865A	PATRIOT PRODUCT IMPROVEMENT	109,978		109,978
162	0102419A	AEROSTAT JOINT PROJECT OFFICE	190,422		190,422
163	020347A	INTELLIGENCE SUPPORT TO CYBER (ISC) MIP	0		0
164	0203726A	ADV FIELD ARTILLERY TACTICAL DATA SYSTEM	32,556		32,556
165	0203735A	COMBAT VEHICLE IMPROVEMENT PROGRAMS	253,959		253,959
166	0203740A	MANEUVER CONTROL SYSTEM	68,325		68,325
167	0203744A	AIRCRAFT MODIFICATIONS/PRODUCT IMPROVEMENT PROGRAMS	280,247	-54,000	226,247
		Improved turbine engine program delay		[-54,000]	
168	0203752A	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	898		898
169	0203758A	DIGITIZATION	35,180		35,180
170	0203759A	FORCE XXI BATTLE COMMAND, BRIGADE AND BELOW (FBCB2)	0		0
171	0203801A	MISSILE/AIR DEFENSE PRODUCT IMPROVEMENT PROGRAM	20,733		20,733

172	0203808A	TRACTOR CARD	63,243	63,243
173	0208053A	JOINT TACTICAL GROUND SYSTEM	31,738	31,738
174	0208058A	JOINT HIGH SPEED VESSEL (JHSV)	35	35
176	0303028A	SECURITY AND INTELLIGENCE ACTIVITIES	7,591	7,591
177	0303140A	INFORMATION SYSTEMS SECURITY PROGRAM	15,961	15,961
178	0303141A	GLOBAL COMBAT SUPPORT SYSTEM	120,927	120,927
179	0303142A	SATCOM GROUND ENVIRONMENT (SPACE)	15,756	15,756
180	0303150A	WMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	14,443	14,443
182	0305204A	TACTICAL UNMANNED AERIAL VEHICLES	31,303	31,303
183	0305208A	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	40,876	40,876
184	0305219A	MQ-1 SKY WARRIOR A UAV	74,618	74,618
185	0305232A	RQ-11 UAV	4,039	4,039
186	0305233A	RQ-7 UAV	31,158	31,158
187	0305235A	VERTICAL UAS	2,387	2,387
188	0307665A	BIOMETRICS ENABLED INTELLIGENCE	15,248	15,248
189	0708045A	END ITEM INDUSTRIAL PREPAREDNESS ACTIVITIES	59,908	59,908
189A	9999999999	CLASSIFIED PROGRAMS	4,628	4,628
		SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	1,669,162	1,615,162
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	8,929,415	8,503,754
			-54,000	
			-425,661	
		RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY		
		BASIC RESEARCH		
001	0601103N	UNIVERSITY RESEARCH INITIATIVES	113,690	113,690
002	0601152N	IN-HOUSE LABORATORY INDEPENDENT RESEARCH	18,261	18,261
003	0601153N	DEFENSE RESEARCH SCIENCES	473,070	473,070
		SUBTOTAL, BASIC RESEARCH	605,021	605,021
		APPLIED RESEARCH		
004	0602114N	POWER PROJECTION APPLIED RESEARCH	89,189	89,189
005	0602123N	FORCE PROTECTION APPLIED RESEARCH	143,301	143,301
006	0602131M	MARINE CORPS LANDING FORCE TECHNOLOGY	46,528	46,528
007	0602235N	COMMON PICTURE APPLIED RESEARCH	41,696	41,696
			0	

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008	0602236N	WARFIGHTER SUSTAINMENT APPLIED RESEARCH	44,127		44,127
009	0602271N	ELECTROMAGNETIC SYSTEMS APPLIED RESEARCH	78,228		78,228
010	0602435N	OCEAN WARFIGHTING ENVIRONMENT APPLIED RESEARCH	49,635		49,635
011	0602651M	JOINT NON-LETHAL WEAPONS APPLIED RESEARCH	5,973		5,973
012	0602747N	UNDERSEA WARFARE APPLIED RESEARCH	96,814		96,814
013	0602750N	FUTURE NAVAL CAPABILITIES APPLIED RESEARCH	162,417		162,417
014	0602782N	MINE AND EXPEDITIONARY WARFARE APPLIED RESEARCH	32,394		32,394
		SUBTOTAL, APPLIED RESEARCH	790,302	0	790,302
ADVANCED TECHNOLOGY DEVELOPMENT					
015	0603114N	POWER PROJECTION ADVANCED TECHNOLOGY	56,543		56,543
016	0603123N	FORCE PROTECTION ADVANCED TECHNOLOGY	18,616		18,616
017	0603235N	COMMON PICTURE ADVANCED TECHNOLOGY	0		0
018	0603236N	WARFIGHTER SUSTAINMENT ADVANCED TECHNOLOGY	0		0
019	0603271N	ELECTROMAGNETIC SYSTEMS ADVANCED TECHNOLOGY	54,858		54,858
020	0603640M	USMC ADVANCED TECHNOLOGY DEMONSTRATION (ATD)	130,598		130,598
021	0603651M	JOINT NON-LETHAL WEAPONS TECHNOLOGY DEVELOPMENT	11,706		11,706
022	0603673N	FUTURE NAVAL CAPABILITIES ADVANCED TECHNOLOGY DEVELOPMENT	256,382		256,382
023	0603729N	WARFIGHTER PROTECTION ADVANCED TECHNOLOGY	3,880		3,880
024	0603747N	UNDERSEA WARFARE ADVANCED TECHNOLOGY	0		0
025	0603758N	NAVY WARFIGHTING EXPERIMENTS AND DEMONSTRATIONS	51,819		51,819
026	0603782N	MINE AND EXPEDITIONARY WARFARE ADVANCED TECHNOLOGY	0		0
		SUBTOTAL, ADVANCED TECHNOLOGY DEVELOPMENT	564,402	0	564,402
ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES					
027	0603128N	UNMANNED AERIAL SYSTEM	0		0
028	0603207N	AIR/OCEAN TACTICAL APPLICATIONS	34,085		34,085

029	0603216N	AVIATION SURVIVABILITY	8,783
030	0603237N	DEPLOYABLE JOINT COMMAND AND CONTROL	3,773
031	0603251N	AIRCRAFT SYSTEMS	24,512
032	0603254N	ASW SYSTEMS DEVELOPMENT	8,090
033	0603261N	TACTICAL AIRBORNE RECONNAISSANCE	5,301
034	0603382N	ADVANCED COMBAT SYSTEMS TECHNOLOGY	1,506
035	0603502N	SURFACE AND SHALLOW WATER MINE COUNTERMEASURES	190,622
036	0603506N	SURFACE SHIP TORPEDO DEFENSE	93,346
037	0603512N	CARRIER SYSTEMS DEVELOPMENT	108,871
038	0603513N	SHIPBOARD SYSTEM COMPONENT DEVELOPMENT	0
039	0603525N	PILOT FISH	101,169
040	0603527N	RETRACT LARCH	74,312
041	0603536N	RETRACT JUNIPER	90,730
042	0603542N	RADIOLOGICAL CONTROL	777
043	0603553N	SURFACE ASW	6,704
044	0603561N	ADVANCED SUBMARINE SYSTEM DEVELOPMENT	555,123
045	0603562N	SUBMARINE TACTICAL WARFARE SYSTEMS	9,368
046	0603563N	SHIP CONCEPT ADVANCED DESIGN	24,609
047	0603564N	SHIP PRELIMINARY DESIGN & FEASIBILITY STUDIES	13,710
048	0603570N	ADVANCED NUCLEAR POWER SYSTEMS	249,748
049	0603573N	ADVANCED SURFACE MACHINERY SYSTEMS	29,897
050	0603576N	CHALK EAGLE	509,988
051	0603581N	LITTORAL COMBAT SHIP (LCS)	429,420
052	0603582N	COMBAT SYSTEM INTEGRATION	56,551
053	0603609N	CONVENTIONAL MUNITIONS	7,342
054	0603611M	MARINE CORPS ASSAULT VEHICLES	95,182
055	0603635M	MARINE CORPS GROUND COMBAT/SUPPORT SYSTEM	10,496
056	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	52,331
057	0603658N	COOPERATIVE ENGAGEMENT	56,512
058	0603713N	OCEAN ENGINEERING TECHNOLOGY DEVELOPMENT	7,029
059	0603721N	ENVIRONMENTAL PROTECTION	21,080
060	0603724N	NAVY ENERGY PROGRAM	55,324

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(In Thousands of Dollars)

Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
061	0603725N	FACILITIES IMPROVEMENT	3,401		3,401
062	0603734N	CHALK CORAL	45,966		45,966
063	0603739N	NAVY LOGISTIC PRODUCTIVITY	3,811		3,811
064	0603746N	RETRACT MAPLE	341,305		341,305
065	0603748N	LINK PLUMERIA	181,220		181,220
066	0603751N	RETRACT ELM	174,014		174,014
067	0603755N	SHIP SELF DEFENSE—DE/MVAL	0		0
068	0603764N	LINK EVERGREEN	68,654		68,654
069	0603787N	SPECIAL PROCESSES	44,487		44,487
070	0603790N	NATO RESEARCH AND DEVELOPMENT	9,389		9,389
071	0603795N	LAND ATTACK TECHNOLOGY	16,132		16,132
072	0603851M	JOINT NON-LETHAL WEAPONS TESTING	44,994		44,994
073	0603860N	JOINT PRECISION APPROACH AND LANDING SYSTEMS—DE/MVAL	137,369		137,369
074	0603889N	COUNTERDRUG RD&E PROJECTS	0		0
075	0603925N	DIRECTED ENERGY AND ELECTRIC WEAPON SYSTEMS	0		0
076	0604272N	TACTICAL AIR DIRECTIONAL INFRARED COUNTERMEASURES (TADIRC)	73,934		73,934
077	0604279N	ASE SELF-PROTECTION OPTIMIZATION	711		711
078	0604653N	JOINT COUNTER RADIO CONTROLLED IED ELECTRONIC WARFARE (JCREW)	71,300		71,300
079	0604659N	PRECISION STRIKE WEAPONS DEVELOPMENT PROGRAM	5,654		5,654
080	0604707N	SPACE AND ELECTRONIC WARFARE (SEW) ARCHITECTURE/ENGINEERING SUPPORT	31,549		31,549
081	0604775N	DEFENSE RAPID INNOVATION PROGRAM	0		0
082	0604786N	OFFENSIVE ANTI-SURFACE WARFARE WEAPON DEVELOPMENT	86,801		86,801
083	0605812M	JOINT LIGHT TACTICAL VEHICLE (JLTV) ENGINEERING AND MANUFACTURING DEVELOPMENT PH	44,500		44,500
084	0303354N	ASW SYSTEMS DEVELOPMENT—MIP	13,172		13,172
085	0303562N	SUBMARINE TACTICAL WARFARE SYSTEMS—MIP	0		0
086	0304270N	ELECTRONIC WARFARE DEVELOPMENT—MIP	643		643
		SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	4,335,297	0	4,335,297

087	0604212N	OTHER HELO DEVELOPMENT	33,978
088	0604214N	AV-8B AIRCRAFT—ENG DEV	32,789
089	0604215N	STANDARDS DEVELOPMENT	84,988
090	0604216N	MULTI-MISSION HELICOPTER UPGRADE DEVELOPMENT	6,866
091	0604218N	AIR/OCEAN EQUIPMENT ENGINEERING	4,060
092	0604221N	P-3 MODERNIZATION PROGRAM	3,451
093	0604230N	WARFARE SUPPORT SYSTEM	13,071
094	0604231N	TACTICAL COMMAND SYSTEM	71,645
095	0604234N	ADVANCED HAWKEYE	119,065
096	0604245N	H-1 UPGRADES	31,105
097	0604261N	ACOUSTIC SEARCH SENSORS	34,299
098	0604262N	V-22A	54,412
099	0604264N	AIR CREW SYSTEMS DEVELOPMENT	2,717
100	0604269N	EA-18	13,009
101	0604270N	ELECTRONIC WARFARE DEVELOPMENT	51,304
102	0604273N	VH-71A EXECUTIVE HELO DEVELOPMENT	61,163
103	0604274N	NEXT GENERATION JAMMER (NGJ)	187,024
104	0604280N	JOINT TACTICAL RADIO SYSTEM—NAVY (JTRS-NAVY)	337,480
105	0604307N	SURFACE COMBATANT COMBAT SYSTEM ENGINEERING	260,616
106	0604311N	LPD-17 CLASS SYSTEMS INTEGRATION	824
107	0604329N	SMALL DIAMETER BOMB (SDB)	31,064
108	0604366N	STANDARD MISSILE IMPROVEMENTS	63,891
109	0604373N	AIRBORNE MCM	73,246
110	0604376M	MARINE AIR GROUND TASK FORCE (MAGTF) ELECTRONIC WARFARE (EW) FOR AVIATION	10,568
111	0604378N	NAVAL INTEGRATED FIRE CONTROL—COUNTER AIR SYSTEMS ENGINEERING	39,974
112	0604404N	UNMANNED CARRIER LAUNCHED AIRBORNE SURVEILLANCE AND STRIKE (UCLASS) SYSTEM	122,481
113	0604501N	ADVANCED ABOVE WATER SENSORS	255,516
114	0604503N	SSN-688 AND TRIDENT MODERNIZATION	82,620
115	0604504N	AIR CONTROL	5,633
116	0604512N	SHIPBOARD AVIATION SYSTEMS	55,826

SYSTEM DEVELOPMENT & DEMONSTRATION

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

Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
117	0604518N	COMBAT INFORMATION CENTER CONVERSION	918		918
118	0604558N	NEW DESIGN SSN	165,230		165,230
119	0604562N	SUBMARINE TACTICAL WARFARE SYSTEM	49,141		49,141
120	0604567N	SHIP CONTRACT DESIGN/ LIVE FIRE T&E	196,737		196,737
121	0604574N	NAVY TACTICAL COMPUTER RESOURCES	3,889		3,889
122	0604601N	MINE DEVELOPMENT	8,335		8,335
123	0604610N	LIGHTWEIGHT TORPEDO DEVELOPMENT	49,818		49,818
124	0604654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	10,099		10,099
125	0604703N	PERSONNEL, TRAINING, SIMULATION, AND HUMAN FACTORS	7,348		7,348
126	0604727N	JOINT STANDOFF WEAPON SYSTEMS	5,518		5,518
127	0604755N	SHIP SELF DEFENSE (DETECT & CONTROL)	87,662		87,662
128	0604756N	SHIP SELF DEFENSE (ENGAGE: HARD KILL)	64,079		64,079
129	0604757N	SHIP SELF DEFENSE (ENGAGE: SOFT KILL/EW)	151,489		151,489
130	0604761N	INTELLIGENCE ENGINEERING	0		0
131	0604771N	MEDICAL DEVELOPMENT	12,707		12,707
132	0604777N	NAVIGATION/ID SYSTEM	47,764		47,764
133	0604800M	JOINT STRIKE FIGHTER (JSF)—EMD	737,149		737,149
134	0604800N	JOINT STRIKE FIGHTER (JSF)—EMD	743,926		743,926
135	0605013M	INFORMATION TECHNOLOGY DEVELOPMENT	12,143		12,143
136	0605013N	INFORMATION TECHNOLOGY DEVELOPMENT	72,209		72,209
137	0605018N	NAVY INTEGRATED MILITARY HUMAN RESOURCES SYSTEM (N-IMHRS)	0		0
138	0605212N	CH-53K RDTE	606,204		606,204
139	0605450N	JOINT AIR-TO-GROUND MISSILE (JAGM)	0		0
140	0605500N	MULTI-MISSION MARITIME AIRCRAFT (MMA)	421,102		421,102
141	0204202N	DDG-1000	124,655		124,655
142	0304231N	TACTICAL COMMAND SYSTEM—MIP	1,170		1,170
143	0304503N	SSN-688 AND TRIDENT MODERNIZATION—MIP	0		0

144	0304785N	TACTICAL CRYPTOLOGIC SYSTEMS	23,255	23,255
145	0305124N	SPECIAL APPLICATIONS PROGRAM	0	0
		SUBTOTAL, SYSTEM DEVELOPMENT & DEMONSTRATION	5,747,232	5,747,232
ROD&E MANAGEMENT SUPPORT				
146	0604256N	THREAT SIMULATOR DEVELOPMENT	30,790	30,790
147	0604258N	TARGET SYSTEMS DEVELOPMENT	59,221	59,221
148	0604759N	MAJOR T&E INVESTMENT	35,894	35,894
149	0605126N	JOINT THEATER AIR AND MISSILE DEFENSE ORGANIZATION	7,573	7,573
150	0605152N	STUDIES AND ANALYSIS SUPPORT—NAVY	20,963	20,963
151	0605154N	CENTER FOR NAVAL ANALYSES	46,856	46,856
152	0605502N	SMALL BUSINESS INNOVATIVE RESEARCH	0	0
153	0605804N	TECHNICAL INFORMATION SERVICES	796	796
154	0605853N	MANAGEMENT, TECHNICAL & INTERNATIONAL SUPPORT	32,782	32,782
155	0605856N	STRATEGIC TECHNICAL SUPPORT	3,306	3,306
156	0605861N	ROD&E SCIENCE AND TECHNOLOGY MANAGEMENT	70,302	70,302
157	0605863N	ROD&E SHIP AND AIRCRAFT SUPPORT	144,033	144,033
158	0605864N	TEST AND EVALUATION SUPPORT	342,298	342,298
159	0605865N	OPERATIONAL TEST AND EVALUATION CAPABILITY	16,399	16,399
160	0605866N	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	4,579	4,579
161	0605867N	SEW SURVEILLANCE/RECONNAISSANCE SUPPORT	8,000	8,000
162	0605873M	MARINE CORPS PROGRAM WIDE SUPPORT	18,490	18,490
163	0305885N	TACTICAL CRYPTOLOGIC ACTIVITIES	2,795	2,795
164	0804758N	SERVICE SUPPORT TO JFCOM, INTC	0	0
165	0909999N	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	0	0
		SUBTOTAL, ROD&E MANAGEMENT SUPPORT	845,077	845,077
OPERATIONAL SYSTEMS DEVELOPMENT				
167	0604402N	UNMANNED COMBAT AIR VEHICLE (UCAV) ADVANCED COMPONENT AND PROTOTYPE DEVELOPMENT	142,282	142,282
168	0604717M	MARINE CORPS COMBAT SERVICES SUPPORT	0	0
169	0604766M	MARINE CORPS DATA SYSTEMS	0	0

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

Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
170	0101221N	STRATEGIC SUB & WEAPONS SYSTEM SUPPORT	105,892		105,892
171	0101224N	SSBN SECURITY TECHNOLOGY PROGRAM	34,729		34,729
172	0101226N	SUBMARINE ACOUSTIC WARFARE DEVELOPMENT	1,434		1,434
173	0101402N	NAVY STRATEGIC COMMUNICATIONS	19,208		19,208
174	0203761N	RAPID TECHNOLOGY TRANSITION (RTT)	25,566		25,566
175	0204136N	F/A-18 SQUADRONS	188,299		188,299
176	0204152N	E-2 SQUADRONS	8,610		8,610
177	0204163N	FLEET TELECOMMUNICATIONS (TACTICAL)	15,695		15,695
178	0204228N	SURFACE SUPPORT	4,171		4,171
179	0204229N	TOMAHAWK AND TOMAHAWK MISSION PLANNING CENTER (TMPC)	11,265		11,265
180	0204311N	INTEGRATED SURVEILLANCE SYSTEM	45,922		45,922
181	0204413N	AMPHIBIOUS TACTICAL SUPPORT UNITS (DISPLACEMENT CRAFT)	8,435		8,435
182	0204460M	GROUND/AIR TASK ORIENTED RADAR (G/ATOR)	75,088		75,088
183	0204571N	CONSOLIDATED TRAINING SYSTEMS DEVELOPMENT	20,229		20,229
184	0204574N	CRYPTOLOGIC DIRECT SUPPORT	1,756		1,756
185	0204575N	ELECTRONIC WARFARE (EW) READINESS SUPPORT	19,843		19,843
186	0205601N	HARM IMPROVEMENT	11,477		11,477
187	0205604N	TACTICAL DATA LINKS	118,818		118,818
188	0205620N	SURFACE ASW COMBAT SYSTEM INTEGRATION	27,342		27,342
189	0205632N	MK-48 ADCAP	28,717		28,717
190	0205633N	AVIATION IMPROVEMENTS	89,157		89,157
191	0205658N	NAVY SCIENCE ASSISTANCE PROGRAM	3,450		3,450
192	0205675N	OPERATIONAL NUCLEAR POWER SYSTEMS	86,435		86,435
193	0206313M	MARINE CORPS COMMUNICATIONS SYSTEMS	219,054		219,054
194	0206623M	MARINE CORPS GROUND COMBAT/SUPPORTING ARMS SYSTEMS	181,693		181,693
195	0206624M	MARINE CORPS COMBAT SERVICES SUPPORT	58,393		58,393
196	0206625M	USMC INTELLIGENCE/ELECTRONIC WARFARE SYSTEMS (MIP)	22,966		22,966

197	0207161N	TACTICAL AIM MISSILES	21,107	21,107
198	0207163N	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	2,857	2,857
199	0208058N	JOINT HIGH SPEED VESSEL (JHSV)	1,932	1,932
204	0303109N	SATELLITE COMMUNICATIONS (SPACE)	188,482	188,482
205	0303138N	CONSOLIDATED AFLOAT NETWORK ENTERPRISE SERVICES (CANES)	16,749	16,749
206	0303140N	INFORMATION SYSTEMS SECURITY PROGRAM	26,307	26,307
207	0303150M	WMCCS/GLOBAL COMMAND AND CONTROL SYSTEM	500	500
208	0303238N	CONSOLIDATED AFLOAT NETWORK ENTERPRISE SERVICES (CANES)—MIP	0	0
210	0305149N	COBRA JUDY	17,091	17,091
211	0305160N	NAVY METEOROLOGICAL AND OCEAN SENSORS-SPACE (METOC)	810	810
212	0305192N	MILITARY INTELLIGENCE PROGRAM (MIP) ACTIVITIES	8,617	8,617
213	0305204N	TACTICAL UNMANNED AERIAL VEHICLES	9,066	9,066
214	0305206N	AIRBORNE RECONNAISSANCE SYSTEMS	0	0
215	0305207N	MANNED RECONNAISSANCE SYSTEMS	30,654	30,654
216	0305208M	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	25,917	25,917
217	0305208N	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	14,676	14,676
218	0305220N	RQ-4 UAV	657,483	657,483
219	0305231N	MQ-8 UAV	99,600	99,600
220	0305232M	RQ-11 UAV	495	495
221	0305233N	RQ-7 UAV	863	863
222	0305234M	SMALL (LEVEL 0) TACTICAL UAS (STUASLO)	0	0
223	0305234N	SMALL (LEVEL 0) TACTICAL UAS (STUASLO)	9,734	9,734
224	0305237N	MEDIUM RANGE MARITIME UAS	0	0
225	0305239M	RQ-21A	22,343	22,343
226	0308601N	MODELING AND SIMULATION SUPPORT	5,908	5,908
227	0702207N	DEPOT MAINTENANCE (NON-IF)	27,391	27,391
228	0702239N	AVIONICS COMPONENT IMPROVEMENT PROGRAM	0	0
229	0708011N	INDUSTRIAL PREPAREDNESS	54,879	54,879
230	0708730N	MARITIME TECHNOLOGY (MARITECH)	5,000	5,000
230A	9999999999	CLASSIFIED PROGRAMS	1,151,159	1,151,159
		SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	3,975,546	3,975,546
			0	0

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

Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
230B		PRIOR YEAR SAVINGS		-8,832	-8,832
		Medium range maritime UAS cancellation		[-8,832]	
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	16,882,877	-8,832	16,874,045
		RESEARCH, DEVELOPMENT, TEST & EVAL, AF			
		BASIC RESEARCH			
001	0601102F	DEFENSE RESEARCH SCIENCES	361,787		361,787
002	0601103F	UNIVERSITY RESEARCH INITIATIVES	141,153		141,153
003	0601108F	HIGH ENERGY LASER RESEARCH INITIATIVES	13,094		13,094
		SUBTOTAL, BASIC RESEARCH	516,034	0	516,034
		APPLIED RESEARCH			
004	0602102F	MATERIALS	114,166		114,166
005	0602201F	AEROSPACE VEHICLE TECHNOLOGIES	120,719		120,719
006	0602202F	HUMAN EFFECTIVENESS APPLIED RESEARCH	89,319		89,319
007	0602203F	AEROSPACE PROPULSION	232,547		232,547
008	0602204F	AEROSPACE SENSORS	127,637		127,637
009	0602601F	SPACE TECHNOLOGY	98,375		98,375
010	0602602F	CONVENTIONAL MUNITIONS	77,175		77,175
011	0602605F	DIRECTED ENERGY TECHNOLOGY	106,196		106,196
012	0602788F	DOMINANT INFORMATION SCIENCES AND METHODS	104,362		104,362
013	0602890F	HIGH ENERGY LASER RESEARCH	38,557		38,557
		SUBTOTAL, APPLIED RESEARCH	1,109,053	0	1,109,053
		ADVANCED TECHNOLOGY DEVELOPMENT			
014	0603112F	ADVANCED MATERIALS FOR WEAPON SYSTEMS	47,890		47,890

015	0603199F	SUSTAINMENT SCIENCE AND TECHNOLOGY (S&T)	6,565		6,565
016	0603203F	ADVANCED AEROSPACE SENSORS	37,657		37,657
017	0603211F	AEROSPACE TECHNOLOGY DEV/DEMO	81,376		81,376
018	0603216F	AEROSPACE PROPULSION AND POWER TECHNOLOGY	151,152		151,152
019	0603270F	ELECTRONIC COMBAT TECHNOLOGY	32,941		32,941
020	0603401F	ADVANCED SPACECRAFT TECHNOLOGY	64,557		64,557
021	0603444F	MAUI SPACE SURVEILLANCE SYSTEM (MSS)	29,256		29,256
022	0603456F	HUMAN EFFECTIVENESS ADVANCED TECHNOLOGY DEVELOPMENT	21,523		21,523
023	0603601F	CONVENTIONAL WEAPONS TECHNOLOGY	36,352		36,352
024	0603605F	ADVANCED WEAPONS TECHNOLOGY	19,004		19,004
025	0603680F	MANUFACTURING TECHNOLOGY PROGRAM	37,045		37,045
026	0603788F	BATTLESPACE KNOWLEDGE DEVELOPMENT AND DEMONSTRATION	31,419		31,419
027	0603924F	HIGH ENERGY LASER ADVANCED TECHNOLOGY PROGRAM	0		0
		SUBTOTAL, ADVANCED TECHNOLOGY DEVELOPMENT	596,737	0	596,737

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028	0603260F	INTELLIGENCE ADVANCED DEVELOPMENT	3,866		3,866
029	0603287F	PHYSICAL SECURITY EQUIPMENT	3,704		3,704
030	0603430F	ADVANCED EHF MILSATCOM (SPACE)	229,171		227,671
		Excess funding		-1,500	
				[-1,500]	
031	0603432F	POLAR MILSATCOM (SPACE)	120,676		120,676
032	0603438F	SPACE CONTROL TECHNOLOGY	25,144		23,144
		Excess funding		-2,000	
				[-2,000]	
033	0603742F	COMBAT IDENTIFICATION TECHNOLOGY	32,243		32,243
034	0603790F	NATO RESEARCH AND DEVELOPMENT	4,507		4,507
035	0603791F	INTERNATIONAL SPACE COOPERATIVE R&D	652		652
036	0603830F	SPACE PROTECTION PROGRAM (SPP)	10,429		10,429
037	0603850F	INTEGRATED BROADCAST SERVICE—DEM/VAL	19,938		19,938
038	0603851F	INTERCONTINENTAL BALLISTIC MISSILE—DEM/VAL	71,181		71,181
039	0603854F	WIDEBAND GLOBAL SATCOM RDT&E (SPACE)	12,027		12,027
040	0603859F	POLLUTION PREVENTION—DEM/VAL	2,054		2,054
041	0603860F	JOINT PRECISION APPROACH AND LANDING SYSTEMS—DEM/VAL	57,975		57,975

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

Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
042	0604015F	LONG RANGE STRIKE	291,742		291,742
043	0604283F	BATTLE MGMT COM & CTRL SENSOR DEVELOPMENT	114,417		114,417
044	0604317F	TECHNOLOGY TRANSFER	2,576		2,576
045	0604327F	HARD AND DEEPLY BURIED TARGET DEFEAT SYSTEM (HDBTDS) PROGRAM	16,711		16,711
046	0604330F	JOINT DUAL ROLE AIR DOMINANCE MISSILE	0		0
047	0604337F	REQUIREMENTS ANALYSIS AND MATURATION	16,343		16,343
048	0604422F	WEATHER SATELLITE FOLLOW-ON	2,000		2,000
049	0604436F	NEXT-GENERATION MILSATCOM TECHNOLOGY DEVELOPMENT	0		0
050	0604635F	GROUND ATTACK WEAPONS FUZE DEVELOPMENT	9,423		9,423
051	0604775F	DEFENSE RAPID INNOVATION PROGRAM	0		0
052	0604796F	ALTERNATIVE FUELS	0		0
053	0604830F	AUTOMATED AIR-TO-AIR REFUELING	0		0
054	0604857F	OPERATIONALLY RESPONSIVE SPACE	0	45,000	45,000
		Restore Operationally Responsive Space		[45,000]	
055	0604858F	TECH TRANSITION PROGRAM	37,558	-3,000	34,558
		Excess funding		[-3,000]	
056	0305164F	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPMENT) (SPACE)	96,840		96,840
057	0305178F	NATIONAL POLAR-ORBITING OPERATIONAL ENVIRONMENTAL SATELLITE SYSTEM (NPOESS)	0		0
		SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	1,181,177	38,500	1,219,677
		SYSTEM DEVELOPMENT & DEMONSTRATION			
058	0603840F	GLOBAL BROADCAST SERVICE (GBS)	14,652		14,652
059	0604222F	NUCLEAR WEAPONS SUPPORT	25,713		25,713
060	0604233F	SPECIALIZED UNDERGRADUATE FLIGHT TRAINING	6,583		6,583
061	0604270F	ELECTRONIC WARFARE DEVELOPMENT	1,975		1,975
062	0604280F	JOINT TACTICAL RADIO	2,594		2,594
063	0604281F	TACTICAL DATA NETWORKS ENTERPRISE	24,534		24,534

064	0604287F	PHYSICAL SECURITY EQUIPMENT	51	51
065	0604329F	SMALL DIAMETER BOMB (SDB)—EMD	143,000	143,000
066	0604421F	COUNTERSPACE SYSTEMS	28,797	28,797
067	0604425F	SPACE SITUATION AWARENESS SYSTEMS	247,252	247,252
		Excess funding	-20,000	
			[-20,000]	
068	0604429F	AIRBORNE ELECTRONIC ATTACK	4,118	4,118
069	0604441F	SPACE BASED INFRARED SYSTEM (SBIRS) HIGH EMD	446,594	446,594
		Excess funding	-2,000	
			[-2,000]	
070	0604602F	ARMAMENT/ORDNANCE DEVELOPMENT	9,951	9,951
071	0604604F	SUBMUNITIONS	2,567	2,567
072	0604617F	AGILE COMBAT SUPPORT	13,059	13,059
073	0604706F	LIFE SUPPORT SYSTEMS	9,720	9,720
074	0604735F	COMBAT TRAINING RANGES	9,222	9,222
075	0604740F	INTEGRATED COMMAND & CONTROL APPLICATIONS (IC2A)	0	0
076	0604750F	INTELLIGENCE EQUIPMENT	803	803
077	0604800F	F-35—EMD	1,210,306	1,210,306
078	0604851F	INTERCONTINENTAL BALLISTIC MISSILE—EMD	135,437	135,437
079	0604853F	EVOLVED EXPENDABLE LAUNCH VEHICLE PROGRAM (SPACE)—EMD	7,980	7,980
080	0604932F	LONG RANGE STANDOFF WEAPON	2,004	2,004
081	0604933F	ICBM FUZE MODERNIZATION	73,512	73,512
082	0605213F	F-22 MODERNIZATION INCREMENT 3.2B	140,100	140,100
083	0605221F	NEXT GENERATION AERIAL REFUELING AIRCRAFT	1,815,588	1,728,458
		Excess prior year funds	-87,130	
			[-87,130]	
084	0605229F	CSAR HH-60 RECAPITALIZATION	123,210	123,210
085	0605278F	HC/MC-130 RECAP RDT&E	19,039	19,039
086	0605931F	B-2 DEFENSIVE MANAGEMENT SYSTEM	281,056	281,056
087	0101125F	NUCLEAR WEAPONS MODERNIZATION	80,200	80,200
088	0207100F	LIGHT ATTACK ARMED RECONNAISSANCE (LAAR) SQUADRONS	0	0
089	0207604F	READINESS TRAINING RANGES, OPERATIONS AND MAINTENANCE	310	310
090	0207701F	FULL COMBAT MISSION TRAINING	14,861	14,861
091	0305230F	MC-12	19,949	19,949
092	0401138F	C-27J AIRLIFT SQUADRONS	0	0

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Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
093	0401318F	CV-22	28,027		28,027
094	0401845F	AIRBORNE SENIOR LEADER C3 (SLC3S)	1,960		1,960
		SUBTOTAL, SYSTEM DEVELOPMENT & DEMONSTRATION	4,966,724	-109,130	4,857,594
		RD&E MANAGEMENT SUPPORT			
095	0604256F	THREAT SIMULATOR DEVELOPMENT	22,812		22,812
096	0604759F	MAJOR T&E INVESTMENT	42,236		42,236
097	0605101F	RAND PROJECT AIR FORCE	25,579		25,579
098	0605502F	SMALL BUSINESS INNOVATION RESEARCH	0		0
099	0605712F	INITIAL OPERATIONAL TEST & EVALUATION	16,197		16,197
100	0605807F	TEST AND EVALUATION SUPPORT	722,071		722,071
101	0605860F	ROCKET SYSTEMS LAUNCH PROGRAM (SPACE)	16,200		16,200
102	0605864F	SPACE TEST PROGRAM (STP)	10,051	35,000	45,051
		Restore Space Test Program		[35,000]	
103	0605976F	FACILITIES RESTORATION AND MODERNIZATION—TEST AND EVALUATION SUPPORT	42,597		42,597
104	0605978F	FACILITIES SUSTAINMENT—TEST AND EVALUATION SUPPORT	27,301		27,301
105	0606323F	MULTI-SERVICE SYSTEMS ENGINEERING INITIATIVE	13,964		13,964
106	0606392F	SPACE AND MISSILE CENTER (SMC) CIVILIAN WORKFORCE	203,766		203,766
107	0702806F	ACQUISITION AND MANAGEMENT SUPPORT	42,430		42,430
108	0804731F	GENERAL SKILL TRAINING	1,294		1,294
109	0909980F	JUDGMENT FUND REIMBURSEMENT	0		0
110	0909999F	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	0		0
111	1001004F	INTERNATIONAL ACTIVITIES	3,851		3,851
		SUBTOTAL, RD&E MANAGEMENT SUPPORT	1,190,349	35,000	1,225,349
		OPERATIONAL SYSTEMS DEVELOPMENT			
112	0603423F	GLOBAL POSITIONING SYSTEM III—OPERATIONAL CONTROL SEGMENT	371,595	-1,500	370,095

113	0604263F	Excess funding	0	
114	0605018F	COMMON VERTICAL LIFT SUPPORT PLATFORM	91,697	
115	0605024F	AF INTEGRATED PERSONNEL AND PAY SYSTEM (AF-IPPS)	17,037	
117	0101113F	ANTI-TAMPER TECHNOLOGY EXECUTIVE AGENCY	53,208	
118	0101122F	B-52 SQUADRONS	431	
119	0101126F	AIR-LAUNCHED CRUISE MISSILE (ALCM)	16,265	
120	0101127F	B-1B SQUADRONS	20,970	
		B-2 SQUADRONS		
		Efficiencies		
121	0101313F	STRAT WAR PLANNING SYSTEM—USSTRATCOM	30,889	
122	0101314F	NIGHT FIST—USSTRATCOM	10	
124	0102326F	REGION/SECTOR OPERATION CONTROL CENTER MODERNIZATION PROGRAM	5,609	
125	0102823F	STRATEGIC AEROSPACE INTELLIGENCE SYSTEM ACTIVITIES	0	
126	0203761F	WARFIGHTER RAPID ACQUISITION PROCESS (WRAP) RAPID TRANSITION FUND	15,098	
127	0205219F	MQ-9 UAV	147,971	
128	0207040F	MULTI-PLATFORM ELECTRONIC WARFARE EQUIPMENT	49,848	
129	0207131F	A-10 SQUADRONS	13,538	
130	0207133F	F-16 SQUADRONS	190,257	
131	0207134F	F-15E SQUADRONS	192,677	
132	0207136F	MANNED DESTRUCTIVE SUPPRESSION	13,683	
133	0207138F	F-22A SQUADRONS	371,667	
134	0207142F	F-35 SQUADRONS	8,117	
135	0207161F	TACTICAL AIM MISSILES	8,234	
136	0207163F	ADVANCED MEDIUM RANGE AIR-TO-AIR MISSILE (AMRAAM)	87,041	
137	0207170F	JOINT HELMET MOUNTED CUEING SYSTEM (JHMCS)	1,472	
138	0207224F	COMBAT RESCUE AND RECOVERY	2,095	
139	0207227F	COMBAT RESCUE—PARARESCUE	1,119	
140	0207247F	AF TENCAP	63,853	
141	0207249F	PRECISION ATTACK SYSTEMS PROCUREMENT	1,063	
142	0207253F	COMPASS CALL	12,094	
143	0207268F	AIRCRAFT ENGINE COMPONENT IMPROVEMENT PROGRAM	187,984	
144	0207277F	ISR INNOVATIONS	0	
		[–1,500]		
		[–15,000]		

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Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
145	0207325F	JOINT AIR-TO-SURFACE STANDOFF MISSILE (JASSM)	7,950		7,950
146	0207410F	AIR & SPACE OPERATIONS CENTER (AOC)	76,315		76,315
147	0207412F	CONTROL AND REPORTING CENTER (CRC)	8,653		8,653
148	0207417F	AIRBORNE WARNING AND CONTROL SYSTEM (AWACS)	65,200		65,200
149	0207418F	TACTICAL AIRBORNE CONTROL SYSTEMS	5,767		5,767
150	0207423F	ADVANCED COMMUNICATIONS SYSTEMS	0		0
152	0207431F	COMBAT AIR INTELLIGENCE SYSTEM ACTIVITIES	5,756		5,756
153	0207438F	THEATER BATTLE MANAGEMENT (TBM) C4I	0		0
154	0207444F	TACTICAL AIR CONTROL PARTY-MOD	16,226		16,226
155	0207445F	FIGHTER TACTICAL DATA LINK	0		0
156	0207448F	C2ISR TACTICAL DATA LINK	1,633		1,633
157	0207449F	COMMAND AND CONTROL (C2) CONSTELLATION	18,086		18,086
158	0207452F	DCAPES	15,690		15,690
159	0207581F	JOINT SURVEILLANCE/TARGET ATTACK RADAR SYSTEM (JSTARS)	24,241		24,241
160	0207590F	SEEK EAGLE	22,654		22,654
161	0207601F	USAF MODELING AND SIMULATION	15,501		15,501
162	0207605F	WARGAMING AND SIMULATION CENTERS	5,699		5,699
163	0207697F	DISTRIBUTED TRAINING AND EXERCISES	4,425		4,425
164	0208006F	MISSION PLANNING SYSTEMS	69,377		69,377
165	0208021F	INFORMATION WARFARE SUPPORT	7,159		7,159
166	0208059F	CYBER COMMAND ACTIVITIES	66,888		66,888
174	0301400F	SPACE SUPERIORITY INTELLIGENCE	12,056		12,056
175	0302015F	E-4B NATIONAL AIRBORNE OPERATIONS CENTER (NAOC)	4,159		4,159
176	0303131F	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK (MEECN)	20,124		20,124
177	0303140F	INFORMATION SYSTEMS SECURITY PROGRAM	69,133		69,133
178	0303141F	GLOBAL COMBAT SUPPORT SYSTEM	6,512		6,512
179	0303150F	GLOBAL COMMAND AND CONTROL SYSTEM	4,316		4,316

180	0303601F	MILSATCOM TERMINALS	107,237
182	0304260F	AIRBORNE SIGINT ENTERPRISE	129,106
185	0305099F	GLOBAL AIR TRAFFIC MANAGEMENT (GATM)	4,461
186	0305103F	CYBER SECURITY INITIATIVE	2,055
187	0305105F	DOD CYBER CRIME CENTER	285
188	0305110F	SATELLITE CONTROL NETWORK (SPACE)	33,773
189	0305111F	WEATHER SERVICE	29,048
190	0305114F	AIR TRAFFIC CONTROL, APPROACH, AND LANDING SYSTEM (ATCAL)	43,187
191	0305116F	AERIAL TARGETS	50,496
194	0305128F	SECURITY AND INVESTIGATIVE ACTIVITIES	354
195	0305145F	ARMS CONTROL IMPLEMENTATION	4,000
196	0305146F	DEFENSE JOINT COUNTERINTELLIGENCE ACTIVITIES	342
198	0305164F	NAVSTAR GLOBAL POSITIONING SYSTEM (USER EQUIPMENT) (SPACE)	29,621
199	0305165F	NAVSTAR GLOBAL POSITIONING SYSTEM (SPACE AND CONTROL SEGMENTS)	14,335
201	0305173F	SPACE AND MISSILE TEST AND EVALUATION CENTER	3,680
202	0305174F	SPACE INNOVATION AND DEVELOPMENT CENTER	2,430
203	0305182F	SPACELIFT RANGE SYSTEM (SPACE)	8,760
204	0305193F	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO)	0
205	0305202F	DRAGON U-2	23,644
206	0305205F	ENDURANCE UNMANNED AERIAL VEHICLES	21,000
207	0305206F	AIRBORNE RECONNAISSANCE SYSTEMS	96,735
208	0305207F	MANNNED RECONNAISSANCE SYSTEMS	13,316
209	0305208F	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	63,501
210	0305219F	MQ-1 PREDATOR A UAV	9,122
211	0305220F	RQ-4 UAV	236,265
212	0305221F	NETWORK-CENTRIC COLLABORATIVE TARGETING	7,367
213	0305236F	COMMON DATA LINK (CDL)	38,094
214	0305238F	NATO AGS	210,109
215	0305240F	SUPPORT TO DCGS ENTERPRISE	24,500
216	0305265F	GPS III SPACE SEGMENT	318,992
217	0305614F	JSPOC MISSION SYSTEM	54,645
218	0305881F	RAPID CYBER ACQUISITION	4,007

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219	0305887F	INTELLIGENCE SUPPORT TO INFORMATION WARFARE	13,357		13,357
220	0305913F	NUDET DETECTION SYSTEM (SPACE)	64,965		64,965
221	0305940F	SPACE SITUATION AWARENESS OPERATIONS	19,586		19,586
222	0307141F	INFORMATION OPERATIONS TECHNOLOGY INTEGRATION & TOOL DEVELOPMENT	0		0
223	0308699F	SHARED EARLY WARNING (SEW)	1,175		1,175
224	0401115F	C-130 AIRLIFT SQUADRON	5,000		5,000
225	0401119F	C-5 AIRLIFT SQUADRONS (IF)	35,115		35,115
226	0401130F	C-17 AIRCRAFT (IF)	99,225		99,225
227	0401132F	C-130J PROGRAM	30,652		30,652
228	0401134F	LARGE AIRCRAFT IR COUNTERMEASURES (LAIRCIM)	7,758		7,758
229	0401139F	LIGHT MOBILITY AIRCRAFT (LIMA)	100		100
230	0401218F	KC-135S	0		0
231	0401219F	KC-10S	24,022		24,022
232	0401314F	OPERATIONAL SUPPORT AIRLIFT	7,471		7,471
233	0401315F	C-STOL AIRCRAFT	0		0
234	0408011F	SPECIAL TACTICS / COMBAT CONTROL	4,984		4,984
235	0702207F	DEPOT MAINTENANCE (NON-IF)	1,588		1,588
236	0708012F	LOGISTICS SUPPORT ACTIVITIES	577		577
237	0708610F	LOGISTICS INFORMATION TECHNOLOGY (LOGIT)	119,327		119,327
238	0708611F	SUPPORT SYSTEMS DEVELOPMENT	15,873		15,873
239	0801711F	RECRUITING ACTIVITIES	0		0
240	0804743F	OTHER FLIGHT TRAINING	349		349
241	0804757F	JOINT NATIONAL TRAINING CENTER	0		0
242	0808716F	OTHER PERSONNEL ACTIVITIES	117		117
243	0901202F	JOINT PERSONNEL RECOVERY AGENCY	2,018		2,018
244	0901218F	CIVILIAN COMPENSATION PROGRAM	1,561		1,561
245	0901220F	PERSONNEL ADMINISTRATION	7,634		7,634

246	0901226F	AIR FORCE STUDIES AND ANALYSIS AGENCY	1,175	1,175
247	0901279F	FACILITIES OPERATION—ADMINISTRATIVE	3,491	3,491
248	0901538F	FINANCIAL MANAGEMENT INFORMATION SYSTEMS DEVELOPMENT	100,160	100,160
249	0902998F	MANAGEMENT HQ—ADP SUPPORT (AF)	0	0
249A	9999999999	CLASSIFIED PROGRAMS	11,172,183	11,149,583
		Classified reduction		-22,600
		Classified reduction		[-4,600]
		Classified reduction		[-18,000]
		SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	15,867,972	15,828,872
249B		PRIOR YEAR SAVINGS		-78,426
		C-130 AMP cancellation		[-6,509]
		IMALD II Cancellation		[-7,917]
		Global Hawk Block 30 cancellation		[-64,000]
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, AF	25,428,046	25,274,890
		RESEARCH, DEVELOPMENT, TEST & EVAL, DW		
		BASIC RESEARCH		
001	0601000BR	DTRA BASIC RESEARCH INITIATIVE	45,071	45,071
002	0601101E	DEFENSE RESEARCH SCIENCES	309,051	309,051
003	060111008Z	BASIC RESEARCH INITIATIVES	19,405	19,405
004	0601117E	BASIC OPERATIONAL MEDICAL RESEARCH SCIENCE	39,676	39,676
005	060112008Z	NATIONAL DEFENSE EDUCATION PROGRAM	87,979	87,979
006	0601384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	50,566	50,566
		SUBTOTAL, BASIC RESEARCH	551,748	551,748
		APPLIED RESEARCH		
007	060200008Z	JOINT MUNITIONS TECHNOLOGY	20,615	20,615
008	0602115E	BIOMEDICAL TECHNOLOGY	110,900	110,900
009	06022808Z	HISTORICALLY BLACK COLLEGES AND UNIVERSITIES (HBCU) SCIENCE	0	0
010	060223408Z	LINCOLN LABORATORY RESEARCH PROGRAM	36,826	36,826
011	060225008Z	SYSTEMS 2020 APPLIED RESEARCH	7,898	7,898

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012	0602303E	INFORMATION & COMMUNICATIONS TECHNOLOGY	392,421		392,421
013	0602304E	COGNITIVE COMPUTING SYSTEMS	30,424		30,424
014	0602305E	MACHINE INTELLIGENCE	0		0
015	0602383E	BIOLOGICAL WARFARE DEFENSE	19,236		19,236
016	0602384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	223,269		223,269
017	060266308Z	DATA TO DECISIONS APPLIED RESEARCH	13,753		13,753
018	060266808Z	CYBER SECURITY RESEARCH	18,985		18,985
019	060267008Z	HUMAN, SOCIAL AND CULTURE BEHAVIOR MODELING (HSCB) APPLIED RESEARCH	6,771		6,771
020	0602702E	TACTICAL TECHNOLOGY	233,209		233,209
021	0602715E	MATERIALS AND BIOLOGICAL TECHNOLOGY	166,067		166,067
022	0602716E	ELECTRONICS TECHNOLOGY	222,416		222,416
023	0602718BR	WEAPONS OF MASS DESTRUCTION DEFEAT TECHNOLOGIES	172,352		172,352
024	1160401BB	SPECIAL OPERATIONS TECHNOLOGY DEVELOPMENT	28,739		28,739
		SUBTOTAL, APPLIED RESEARCH	1,703,881	0	1,703,881
ADVANCED TECHNOLOGY DEVELOPMENT (ATD)					
025	060300008Z	JOINT MUNITIONS ADVANCED TECHNOLOGY	25,612		25,612
026	0603121D8Z	SO/LIC ADVANCED DEVELOPMENT	26,324		26,324
027	0603122D8Z	COMBATING TERRORISM TECHNOLOGY SUPPORT	77,144	-11,300	65,844
		Reduction due to duplication of effort		(-11,300)	
028	0603160BR	COUNTERPROLIFERATION INITIATIVES—PROLIFERATION PREVENTION AND DEFEAT	275,022		275,022
029	0603175C	BALLISTIC MISSILE DEFENSE TECHNOLOGY	79,975		79,975
030	060320008Z	JOINT ADVANCED CONCEPTS	0		0
031	0603225D8Z	JOINT DOD-DOE MUNITIONS TECHNOLOGY DEVELOPMENT	20,032		20,032
032	0603264S	AGILE TRANSPORTATION FOR THE 21ST CENTURY (AT21)—THEATER CAPABILITY	3,892		3,892
033	0603274C	SPECIAL PROGRAM—MDA TECHNOLOGY	36,685		36,685
034	0603286E	ADVANCED AEROSPACE SYSTEMS	174,316		174,316

035	0603287E	SPACE PROGRAMS AND TECHNOLOGY	159,704		159,704
036	0603384BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—ADVANCED DEVELOPMENT	234,280		234,280
037	060361808Z	JOINT ELECTRONIC ADVANCED TECHNOLOGY	6,983		6,983
038	060364808Z	JOINT CAPABILITY TECHNOLOGY DEMONSTRATIONS	158,263		158,263
039	0603662D8Z	NETWORKED COMMUNICATIONS CAPABILITIES	25,393		25,393
040	0603663D8Z	DATA TO DECISIONS ADVANCED TECHNOLOGY DEVELOPMENT	13,754		13,754
041	0603665D8Z	BIOMETRICS SCIENCE AND TECHNOLOGY	0		0
042	0603668D8Z	CYBER SECURITY ADVANCED RESEARCH	19,935		19,935
043	0603670D8Z	HUMAN, SOCIAL AND CULTURE BEHAVIOR MODELING (HSCB) ADVANCED DEVELOPMENT	8,235		8,235
044	0603680D8Z	DEFENSE-WIDE MANUFACTURING SCIENCE AND TECHNOLOGY PROGRAM	21,966		21,966
		Industrial Base Innovation Fund		30,000	30,000
		EMERGING CAPABILITIES TECHNOLOGY DEVELOPMENT	24,662		24,662
045	0603699D8Z	JOINT ROBOTICS PROGRAM/AUTONOMOUS SYSTEMS	0		0
046	0603711D8Z	GENERIC LOGISTICS R&D TECHNOLOGY DEMONSTRATIONS	24,605		24,605
047	0603712S	DEPLOYMENT AND DISTRIBUTION ENTERPRISE TECHNOLOGY	30,678		30,678
048	0603713S	STRATEGIC ENVIRONMENTAL RESEARCH PROGRAM	65,282		65,282
049	0603716D8Z	MICROELECTRONICS TECHNOLOGY DEVELOPMENT AND SUPPORT	72,234		72,234
050	0603720S	DMEA upgrade reduction		-3,000	-3,000
		JOINT WARFIGHTING PROGRAM	8,403		8,403
051	0603727D8Z	ADVANCED ELECTRONICS TECHNOLOGIES	111,008		111,008
052	0603739E	HIGH PERFORMANCE COMPUTING MODERNIZATION PROGRAM	0		0
053	0603755D8Z	COMMAND, CONTROL AND COMMUNICATIONS SYSTEMS	237,859		237,859
054	0603760E	CLASSIFIED DARPA PROGRAMS	3,000		3,000
055	0603765E	NETWORK-CENTRIC WARFARE TECHNOLOGY	236,883		236,883
056	0603766E	SENSOR TECHNOLOGY	299,438		299,438
057	0603767E	DISTRIBUTED LEARNING ADVANCED TECHNOLOGY DEVELOPMENT	12,195		12,195
058	0603769SE	SOFTWARE ENGINEERING INSTITUTE	30,036		30,036
059	0603781D8Z	QUICK REACTION SPECIAL PROJECTS	107,002		107,002
060	0603826D8Z	JOINT EXPERIMENTATION	0		0
061	0603828D8Z	JOINT EXPERIMENTATION	21,230		21,230
062	0603828I	DOD MODELING AND SIMULATION MANAGEMENT OFFICE	47,433		47,433
063	0603832D8Z	DIRECTED ENERGY RESEARCH	46,944		46,944
064	0603901C				

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065	0603902C	NEXT GENERATION AEGIS MISSILE	224,077		224,077
066	0603941D8Z	TEST & EVALUATION SCIENCE & TECHNOLOGY	92,602		92,602
067	0603942D8Z	TECHNOLOGY TRANSFER	0		0
068	0604055D8Z	OPERATIONAL ENERGY CAPABILITY IMPROVEMENT	26,244		26,244
069	0303310D8Z	CWMD SYSTEMS	53,946		53,946
070	1160402BB	SPECIAL OPERATIONS ADVANCED TECHNOLOGY DEVELOPMENT	45,317		45,317
071	1160422BB	AVIATION ENGINEERING ANALYSIS	861		861
072	1160472BB	SOF INFORMATION AND BROADCAST SYSTEMS ADVANCED TECHNOLOGY	4,959		4,959
		SUBTOTAL, ADVANCED TECHNOLOGY DEVELOPMENT (ATD)	3,194,413	15,700	3,210,113
073	0603161D8Z	ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	3,194,413	15,700	3,210,113
074	0603527D8Z	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT RDT&E ADC&P	33,234		33,234
075	0603600D8Z	RETRACT LARCH	21,023		21,023
076	0603709D8Z	WALKOFF	94,624		94,624
077	0603714D8Z	JOINT ROBOTICS PROGRAM	0		0
		ADVANCED SENSOR APPLICATIONS PROGRAM	16,958	2,000	18,958
		Reverse cuts to testing		(2,000)	
078	0603851D8Z	ENVIRONMENTAL SECURITY TECHNICAL CERTIFICATION PROGRAM	75,941		75,941
079	0603881C	BALLISTIC MISSILE DEFENSE TERMINAL DEFENSE SEGMENT	316,929		316,929
080	0603882C	BALLISTIC MISSILE DEFENSE MIDCOURSE DEFENSE SEGMENT	903,172		903,172
081	0603884BP	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—DEW/VAL	179,023		179,023
082	0603884C	BALLISTIC MISSILE DEFENSE SENSORS	347,012		347,012
083	0603888C	BALLISTIC MISSILE DEFENSE TEST & TARGETS	0		0
084	0603890C	BMD ENABLING PROGRAMS	362,711		362,711
085	0603891C	SPECIAL PROGRAMS—MDA	272,387		272,387
086	0603892C	AEGIS BMD	992,407		992,407
087	0603893C	SPACE TRACKING & SURVEILLANCE SYSTEM	51,313		51,313

088	0603895C	BALLISTIC MISSILE DEFENSE SYSTEM SPACE PROGRAMS	6,912	6,912	
089	0603896C	BALLISTIC MISSILE DEFENSE COMMAND AND CONTROL, BATTLE MANAGEMENT & COMMUNICA- TION	366,552	366,552	
090	0603898C	BALLISTIC MISSILE DEFENSE JOINT WARTIGHTER SUPPORT	55,550	55,550	
091	0603904C	MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)	63,043	63,043	
092	0603906C	REGARDING TRENCH	11,371	11,371	
093	0603907C	SEA BASED X-BAND RADAR (SBX)	9,730	9,730	
094	0603913C	ISRAELI COOPERATIVE PROGRAMS	99,836	409,836	
		Arrow Weapon System improvements		310,000	
		Arrow-3 interceptor		[20,000]	
		David's Sling short-range BMD		[20,000]	
		Iron Dome short-range rocket defense		[60,000]	
		Iron Dome short-range rocket defense		[210,000]	
095	0603914C	BALLISTIC MISSILE DEFENSE TEST	454,400	454,400	
096	0603915C	BALLISTIC MISSILE DEFENSE TARGETS	435,747	435,747	
097	060392008Z	HUMANITARIAN DEMINING	13,231	13,231	
098	060392308Z	COALITION WARFARE	11,398	11,398	
099	060401608Z	DEPARTMENT OF DEFENSE CORROSION PROGRAM	3,283	20,800	
		Increase for requirements shortfall		[20,800]	
100	060440008Z	DEPARTMENT OF DEFENSE (DOD) UNMANNED AIRCRAFT SYSTEM (UAS) COMMON DEVELOPMENT	12,368	12,368	
101	060467008Z	HUMAN, SOCIAL AND CULTURE BEHAVIOR MODELING (HSCB) RESEARCH AND ENGINEERING	5,131	5,131	
102	060477508Z	DEFENSE RAPID INNOVATION PROGRAM	0	200,000	
		Rapid Innovation Program		[200,000]	
103	060478708Z	JOINT SYSTEMS INTEGRATION COMMAND (JSIC)	0	0	
104	06047871	JOINT SYSTEMS INTEGRATION	3,273	3,273	
105	060482808Z	JOINT FIRES INTEGRATION AND INTEROPERABILITY TEAM	0	0	
106	0604828J	JOINT FIRES INTEGRATION AND INTEROPERABILITY TEAM	7,364	7,364	
107	0604880C	LAND-BASED SM-3 (LBSM3)	276,338	276,338	
108	0604881C	AEGIS SM-3 BLOCK IIA CO-DEVELOPMENT	420,630	420,630	
109	0604883C	PRECISION TRACKING SPACE SENSOR RDT&E	297,375	297,375	
110	0604884C	AIRBORNE INFRARED (ABIR)	0	0	
111	0604886C	ADVANCED REMOTE SENSOR TECHNOLOGY (ARST)	58,742	58,742	
112	060501708Z	REDUCTION OF TOTAL OWNERSHIP COST	0	0	

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(In Thousands of Dollars)

Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
113	0303191D8Z	JOINT ELECTROMAGNETIC TECHNOLOGY (JET) PROGRAM	3,158		3,158
		SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	6,282,166	532,800	6,814,966
		SYSTEM DEVELOPMENT AND DEMONSTRATION (SDD)			
114	0604051D8Z	DEFENSE ACQUISITION CHALLENGE PROGRAM (DACP)	0		0
115	0604161D8Z	NUCLEAR AND CONVENTIONAL PHYSICAL SECURITY EQUIPMENT RDT&E SDD	6,817		6,817
116	0604165D8Z	PROMPT GLOBAL STRIKE CAPABILITY DEVELOPMENT	110,383		110,383
117	06043848P	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM—EMD	311,071		311,071
118	0604709D8Z	JOINT ROBOTICS PROGRAM—EMD	0		0
119	0604764K	ADVANCED IT SERVICES JOINT PROGRAM OFFICE (AITS-JPO)	25,787		25,787
120	0604771D8Z	JOINT TACTICAL INFORMATION DISTRIBUTION SYSTEM (JTIDS)	20,688		20,688
121	0605000BR	WEAPONS OF MASS DESTRUCTION DEFEAT CAPABILITIES	5,749		5,749
122	06050138L	INFORMATION TECHNOLOGY DEVELOPMENT	12,699		12,699
123	06050188TA	DEFENSE INTEGRATED MILITARY HUMAN RESOURCES SYSTEM (DIMHRS)	0		0
124	06050208TA	BUSINESS TRANSFORMATION AGENCY R&D ACTIVITIES	0		0
125	0605021SE	HOMELAND PERSONNEL SECURITY INITIATIVE	387		387
126	0605022D8Z	DEFENSE EXPORTABILITY PROGRAM	1,859		1,859
127	0605027D8Z	OUSD(C) IT DEVELOPMENT INITIATIVES	7,010		7,010
128	0605070S	DOD ENTERPRISE SYSTEMS DEVELOPMENT AND DEMONSTRATION	133,104		133,104
129	0605075D8Z	DCMO POLICY AND INTEGRATION	25,269		25,269
130	0605140D8Z	TRUSTED FOUNDRY	0		0
131	0605210D8Z	DEFENSE-WIDE ELECTRONIC PROCUREMENT CAPABILITIES	10,238		10,238
132	0303141K	GLOBAL COMBAT SUPPORT SYSTEM	19,670		19,670
133	0305304D8Z	DOD ENTERPRISE ENERGY INFORMATION MANAGEMENT (E2IM)	3,556		3,556
134	0807708D8Z	WOUNDED ILL AND INJURED SENIOR OVERSIGHT COMMITTEE (WII-SOC) STAFF OFFICE	0		0
		SUBTOTAL, SYSTEM DEVELOPMENT AND DEMONSTRATION (SDD)	694,287	0	694,287

135	0604774D8Z	DT&E MANAGEMENT SUPPORT	6,383	6,383
136	0604875D8Z	DEFENSE READINESS REPORTING SYSTEM (DRRS)	3,845	3,845
137	0604940D8Z	JOINT SYSTEMS ARCHITECTURE DEVELOPMENT	144,109	144,109
138	0604942D8Z	CENTRAL TEST AND EVALUATION INVESTMENT DEVELOPMENT (CTEIP)	2,419	2,419
139	0604943D8Z	ASSESSMENTS AND EVALUATIONS	8,214	8,214
140	0605100D8Z	THERMAL VICAR	19,380	19,380
141	0605104D8Z	JOINT MISSION ENVIRONMENT TEST CAPABILITY (JMETC)	32,266	32,266
142	0605110D8Z	TECHNICAL STUDIES, SUPPORT AND ANALYSIS	840	840
143	0605117D8Z	USD(A&T)--CRITICAL TECHNOLOGY SUPPORT	56,012	56,012
144	0605126I	FOREIGN MATERIEL ACQUISITION AND EXPLOITATION	55,508	55,508
145	0605128D8Z	JOINT INTEGRATED AIR AND MISSILE DEFENSE ORGANIZATION (JIAMDO)	0	0
146	0605130D8Z	CLASSIFIED PROGRAM USD(P)	18,174	18,174
147	0605142D8Z	FOREIGN COMPARATIVE TESTING	43,195	43,195
148	0605151D8Z	SYSTEMS ENGINEERING	6,457	6,457
149	0605161D8Z	STUDIES AND ANALYSIS SUPPORT--OSD	4,901	4,901
150	0605170D8Z	NUCLEAR MATTERS-PHYSICAL SECURITY	6,307	6,307
151	0605200D8Z	SUPPORT TO NETWORKS AND INFORMATION INTEGRATION	6,601	6,601
152	0605384BP	GENERAL SUPPORT TO USD (INTELLIGENCE)	92,849	92,849
153	0605502BR	CHEMICAL AND BIOLOGICAL DEFENSE PROGRAM	0	0
154	0605502C	SMALL BUSINESS INNOVATION RESEARCH	0	0
155	0605502D8W	SMALL BUSINESS INNOVATIVE RESEARCH--MDA	0	0
156	0605502D8Z	SMALL BUSINESS INNOVATIVE RESEARCH	0	0
157	0605502E	SMALL BUSINESS INNOVATIVE RESEARCH	0	0
158	0605502S	SMALL BUSINESS INNOVATIVE RESEARCH	0	0
159	0605790D8Z	SMALL BUSINESS INNOVATION RESEARCH (SBIR) SMALL BUSINESS TECHNOLOGY TRANSFER (S	1,857	1,857
160	0605798D8Z	DEFENSE TECHNOLOGY ANALYSIS	12,056	12,056
161	0605799D8Z	EMERGING CAPABILITIES	0	0
162	0605801KA	DEFENSE TECHNICAL INFORMATION CENTER (DTIC)	55,454	55,454
163	0605803SE	R&D IN SUPPORT OF DOD ENLISTMENT, TESTING AND EVALUATION	16,364	16,364
164	0605804D8Z	DEVELOPMENT TEST AND EVALUATION	15,110	15,110
		DT&E increase	5,000	5,000
			[5,000]	[5,000]

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Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
165	0605897E	DARPA AGENCY RELOCATION	0		0
166	0605898E	MANAGEMENT HQ—R&D	69,767		69,767
167	0606100D8Z	BUDGET AND PROGRAM ASSESSMENTS	4,454		4,454
168	0606301D8Z	AVIATION SAFETY TECHNOLOGIES	0		0
169	0203345D8Z	DEFENSE OPERATIONS SECURITY INITIATIVE (DOSI)	2,637		2,637
170	0204571J	JOINT STAFF ANALYTICAL SUPPORT	0		0
173	0303166D8Z	SUPPORT TO INFORMATION OPERATIONS (IO) CAPABILITIES	0		0
174	0303166I	SUPPORT TO INFORMATION OPERATIONS (IO) CAPABILITIES	8,238		8,238
175	0303169D8Z	INFORMATION TECHNOLOGY RAPID ACQUISITION	0		0
176	0305103E	CYBER SECURITY INITIATIVE	1,801		1,801
177	0305193D8Z	INTELLIGENCE SUPPORT TO INFORMATION OPERATIONS (IO)	16,041		16,041
179	0305400D8Z	WARFIGHTING AND INTELLIGENCE-RELATED SUPPORT	0		0
180	0804767D8Z	COCOM EXERCISE ENGAGEMENT AND TRAINING TRANSFORMATION (CE2T2)	77,475		77,475
181	0901585C	PENTAGON RESERVATION	0		0
182	0901598C	MANAGEMENT HQ—MDA	34,855		34,855
183	0901598D8W	MANAGEMENT HEADQUARTERS WHS	104		104
184	0909999D8Z	FINANCING FOR CANCELLED ACCOUNT ADJUSTMENTS	0		0
184A	999999999999	CLASSIFIED PROGRAMS	64,255		64,255
		SUBTOTAL, ROT&E MANAGEMENT SUPPORT	887,928	5,000	892,928
OPERATIONAL SYSTEMS DEVELOPMENT					
185	0604130V	ENTERPRISE SECURITY SYSTEM (ESS)	8,866		8,866
186	0605127I	REGIONAL INTERNATIONAL OUTREACH (RIO) AND PARTNERSHIP FOR PEACE INFORMATION MGMT	3,238		3,238
187	0605147T	OVERSEAS HUMANITARIAN ASSISTANCE SHARED INFORMATION SYSTEM (OHAISIS)	288		288
188	0607384BP	CHEMICAL AND BIOLOGICAL DEFENSE (OPERATIONAL SYSTEMS DEVELOPMENT)	14,745		14,745
189	0607828D8Z	JOINT INTEGRATION AND INTEROPERABILITY	0		0
190	0607828J	JOINT INTEGRATION AND INTEROPERABILITY	5,013		5,013

191	0208043J	PLANNING AND DECISION AID SYSTEM (PDAS)	3,922	3,922
192	0208045K	C4I INTEROPERABILITY	72,574	72,574
194	0301144K	JOINT/ALLIED COALITION INFORMATION SHARING	6,214	6,214
201	0302016K	NATIONAL MILITARY COMMAND SYSTEM-WIDE SUPPORT	499	499
202	0302019K	DEFENSE INFO INFRASTRUCTURE ENGINEERING AND INTEGRATION	14,498	14,498
203	0303126K	LONG-HAUL COMMUNICATIONS—DCS	26,164	26,164
204	0303131K	MINIMUM ESSENTIAL EMERGENCY COMMUNICATIONS NETWORK (MEECN)	12,931	12,931
205	0303135G	PUBLIC KEY INFRASTRUCTURE (PKI)	6,296	6,296
206	0303136G	KEY MANAGEMENT INFRASTRUCTURE (KMI)	30,948	30,948
207	0303140D8Z	INFORMATION SYSTEMS SECURITY PROGRAM	11,780	11,780
208	0303140G	INFORMATION SYSTEMS SECURITY PROGRAM	191,452	191,452
209	0303140K	INFORMATION SYSTEMS SECURITY PROGRAM	0	0
210	0303149J	C4I FOR THE WARRIOR	0	0
211	0303150K	GLOBAL COMMAND AND CONTROL SYSTEM	36,575	36,575
212	0303153K	DEFENSE SPECTRUM ORGANIZATION	24,278	24,278
213	0303170K	NET-CENTRIC ENTERPRISE SERVICES (NCES)	2,924	2,924
214	0303260D8Z	DEFENSE MILITARY DECEPTION PROGRAM OFFICE (DMDPO)	1,294	1,294
215	0303610K	TELEPORT PROGRAM	6,050	6,050
217	0304210B8	SPECIAL APPLICATIONS FOR CONTINGENCIES	17,058	17,058
220	0305103D8Z	CYBER SECURITY INITIATIVE	0	0
222	0305103K	CYBER SECURITY INITIATIVE	4,189	4,189
223	0305125D8Z	CRITICAL INFRASTRUCTURE PROTECTION (CIP)	10,462	10,462
227	0305186D8Z	POLICY R&D PROGRAMS	6,360	6,360
229	0305199D8Z	NET CENTRICITY	21,190	21,190
232	0305208B8	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	7,714	7,714
		USSOCOM UFR	600	600
			[600]	
235	0305208K	DISTRIBUTED COMMON GROUND/SURFACE SYSTEMS	3,247	3,247
237	0305219B8	MQ-1 PREDATOR A UAV	1,355	1,355
239	0305231B8	MQ-8 UAV	0	0
240	0305387D8Z	HOMELAND DEFENSE TECHNOLOGY TRANSFER PROGRAM	2,303	2,303
241	0305600D8Z	INTERNATIONAL INTELLIGENCE TECHNOLOGY AND ARCHITECTURES	1,478	1,478
249	0708011S	INDUSTRIAL PREPAREDNESS	27,044	27,044

SEC. 4201. RESEARCH, DEVELOPMENT, TEST, AND EVALUATION
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Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
250	070801ZS	LOGISTICS SUPPORT ACTIVITIES	4,711		4,711
251	0902298I	MANAGEMENT HQ—OJCS	4,100		4,100
252	100101808Z	NATO AGS	0		0
253	11052198B	MQ-9 UAV	3,002		3,002
254	11052328B	RQ-11 UAV	0		0
255	11052338B	RQ-7 UAV	0		0
256	11602798B	SMALL BUSINESS INNOVATIVE RESEARCH/SMALL BUS TECH TRANSFER PILOT PROG	0		0
257	11604038B	SPECIAL OPERATIONS AVIATION SYSTEMS ADVANCED DEVELOPMENT	97,267		97,267
258	11604048B	SPECIAL OPERATIONS TACTICAL SYSTEMS DEVELOPMENT	821		821
259	11604058B	SPECIAL OPERATIONS INTELLIGENCE SYSTEMS DEVELOPMENT	25,935		25,935
260	11604088B	SOF OPERATIONAL ENHANCEMENTS	51,700		51,700
261	11604218B	SPECIAL OPERATIONS CV-22 DEVELOPMENT	1,822		1,822
262	11604278B	MISSION TRAINING AND PREPARATION SYSTEMS (MTPS)	10,131		10,131
263	11604298B	AC/MC-130J	19,647		19,647
264	11604748B	SOF COMMUNICATIONS EQUIPMENT AND ELECTRONICS SYSTEMS	2,225		2,225
265	11604768B	SOF TACTICAL RADIO SYSTEMS	3,036		3,036
266	11604778B	SOF WEAPONS SYSTEMS	1,511		1,511
267	11604788B	SOF SOLDIER PROTECTION AND SURVIVAL SYSTEMS	4,263		4,263
268	11604798B	SOF VISUAL AUGMENTATION, LASERS AND SENSOR SYSTEMS	4,448		4,448
269	11604808B	SOF TACTICAL VEHICLES	11,325		11,325
270	11604818B	SOF MUNITIONS	1,515		1,515
271	11604828B	SOF ROTARY WING AVIATION	24,430		24,430
272	11604838B	SOF UNDERWATER SYSTEMS	26,405	8,000	34,405
		Transfer from PDW Line 64 at USSOCOM request		[8,000]	
273	11604848B	SOF SURFACE CRAFT	8,573		8,573
274	11604888B	SOF MILITARY INFORMATION SUPPORT OPERATIONS	0		0
275	11604898B	SOF GLOBAL VIDEO SURVEILLANCE ACTIVITIES	7,620		7,620

276	11604908B	SOF OPERATIONAL ENHANCEMENTS INTELLIGENCE	16,386		16,386
276A	9999999999	CLASSIFIED PROGRAMS	3,754,516		3,754,516
		SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	4,667,738	8,600	4,676,338
		UNDISTRIBUTED			
		UNDISTRIBUTED		-100,000	-100,000
		DARPA undistributed reduction		[-75,000]	
		DARPA classified programs reduction		[-25,000]	
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, DW	17,982,161	462,100	18,444,261
		OPERATIONAL TEST & EVAL, DEFENSE			
		RDT&E MANAGEMENT SUPPORT			
001	06051180TE	OPERATIONAL TEST AND EVALUATION	72,501	4,000	76,501
		NCR transition		[-4,000]	
002	06051310TE	LIVE FIRE TEST AND EVALUATION	49,201		49,201
003	06058140TE	OPERATIONAL TEST ACTIVITIES AND ANALYSES	63,566		63,566
		TOTAL, OPERATIONAL TEST & EVAL, DEFENSE	185,268	4,000	189,268
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL	69,407,767	-121,549	69,286,218

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 2013 Request	Senate Change	Senate Authorized
		RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY			
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES			
060	0603747A	SOLDIER SUPPORT AND SURVIVABILITY	19,860		19,860
		SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	19,860	0	19,860

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

Line	Program Element	Item	FY 2013 Request	Senate Change	Senate Authorized
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, ARMY	19,860	0	19,860
		RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY			
		ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES			
056	0603654N	JOINT SERVICE EXPLOSIVE ORDNANCE DEVELOPMENT	4,600		4,600
		SUBTOTAL, ADVANCED COMPONENT DEVELOPMENT & PROTOTYPES	4,600	0	4,600
		SYSTEM DEVELOPMENT & DEMONSTRATION			
131	0604771N	MEDICAL DEVELOPMENT	2,173		2,173
		SUBTOTAL, SYSTEM DEVELOPMENT & DEMONSTRATION	2,173	0	2,173
		RD&E MANAGEMENT SUPPORT			
160	0605866N	NAVY SPACE AND ELECTRONIC WARFARE (SEW) SUPPORT	5,200		5,200
		SUBTOTAL, RD&E MANAGEMENT SUPPORT	5,200	0	5,200
		OPERATIONAL SYSTEMS DEVELOPMENT			
195	0206624M	MARINE CORPS COMBAT SERVICES SUPPORT	6,762		6,762
221	0305233N	RQ-7 UAV	7,600		7,600
230A	99999999999	CLASSIFIED PROGRAMS	33,784		33,784
		SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	48,146	0	48,146
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, NAVY	60,119	0	60,119
		RESEARCH, DEVELOPMENT, TEST & EVAL, AF			
		OPERATIONAL SYSTEMS DEVELOPMENT			
249A	99999999999	CLASSIFIED PROGRAMS	53,150		53,150
		SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	53,150	0	53,150
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, AF	53,150	0	53,150

239	0305231BB	RESEARCH, DEVELOPMENT, TEST & EVAL, DW			
276A	99999999999	OPERATIONAL SYSTEMS DEVELOPMENT			
		MQ-8 UAV	5,000		5,000
		CLASSIFIED PROGRAMS	107,387		107,387
		SUBTOTAL, OPERATIONAL SYSTEMS DEVELOPMENT	112,387	0	112,387
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL, DW	112,387	0	112,387
		TOTAL, RESEARCH, DEVELOPMENT, TEST & EVAL	245,516	0	245,516