TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

OVERVIEW

The budget request contained $63.5 billion for research, development, test, and evaluation. This represents a $600.0 million increase over the amount authorized for fiscal year 2015.

The committee recommends $63.8 billion, an increase of $257.5 million to the budget request.

The committee recommendations for the fiscal year 2015 research, development, test, and evaluation program are identified in division D of this Act.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, ARMY

Overview

The budget request contained $6.6 billion for research, development, test, and evaluation, Army. The committee recommends $6.6 billion, a decrease of $13.9 million to the budget request.

The committee recommendations for the fiscal year 2015 research, development, test, and evaluation, Army program are identified in division D of this Act.

Items of Special Interest

Active protective system

The budget request contained $53.7 million in PE 63005A for combat vehicle and automotive advance technology, which includes funding for Active Protection System (APS) research and development.

The committee is encouraged that funding for APS research and development was included in the fiscal year 2015 budget request. In the committee report (H. Rept. 113–102) accompanying the National Defense Authorization Act for Fiscal Year 2014, the committee noted that a lack of investment could soon create a critical capability gap for Army combat vehicles due to the rapid proliferation of advanced anti-tank guided missiles and next-generation rocket propelled grenades. The committee notes that there are numerous types of APS available, including some that have already been fielded on operational vehicles in other countries and have performed well in recent demonstrations. It is crucial the Army keeps momentum going in this important effort; therefore, the committee encourages the Army to establish a program of record to develop, procure and equip required combat vehicles with APS as soon as feasible based on availability of funding.

The committee recommends $53.7 million, the full amount requested, in PE 63005A for combat vehicle and automotive advance technology.

Applied Communication Information Network

The committee is aware that the Department of Defense has been conducting research on a suite of capabilities that provides real time information on vessels of interest in a riverine environ-

ment. The objective of this research, which is part of the Applied Communication Information Network (ACIN), is to integrate Government off-the-Shelf, Commercial off-the-Shelf and emerging technologies to provide integrated command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) capabilities in a scalable, low-risk, cost-effective and user-friendly system. The committee recognizes the need for a laboratory and test-bed capabilities with proven management and systems administration to support such efforts. The committee is aware that ACIN has demonstrated expertise in this area with a track record of transitioning its research into operational use. The committee encourages continued support for the ACIN to advance fielding of critical C4ISR technologies to military users in the riverine environment.

Combat feeding research and development

The budget request contained $10.9 million across several Army program elements for research and development of combat feeding technologies.

The committee notes that the Department of Defense Combat Feeding Research and Engineering Program (CFREP) is the only program within the Department of Defense that engages in research and development, to include high-risk, high payoff science and technology, for combat rations, field food service equipment and combat feeding systems to support the Army, Navy, Marine Corps, Air Force, Defense Logistics Agency, and National Aeronautics and Space Administration.

The committee is aware the budget request for fiscal year 2015 reflects a significant reduction when compared to projections for fiscal year 2015 in last year's budget request. The committee is concerned that the proposed reductions could have a disproportionate impact on CFREP's ability to perform its mission. The committee understands the reduced funding level may decrease CFREP's ability to support requirements of future operating environments; develop innovative products that improve warfighter physical and cognitive performance; supply the military services with world-class products leading to an increasing dependence on industry that has no incentive to innovate due to lack of a market; contribute to reducing cost to the services over the long-term due to increasingly inefficient supply chains and reliance on commercial solutions. In developing its fiscal year 2016 budget, the committee encourages the Secretary of the Army to increase funding for combat feeding technology projects.

The committee recommends $16.3 million, an increase of $5.4 million, for Army combat feeding research and development.

Combat identification for dismounted users

The committee recognizes the importance of developing and deploying combat identification systems for dismounted users that utilize both radio frequency and infrared laser technologies to provide an all-weather, day-night, high-reliability individual kit to address specific anti-fratricide factors in dismounted operations. The committee is concerned that "friendly fire" incidents continue to be a source of casualties between U.S. forces, as well as partners and

allies, due to the lack of such capabilities. The committee believes such capabilities exist and have been successfully demonstrated, and encourages the Department of Defense to proceed with further testing and evaluation to determine if these capabilities can be more widely fielded.

Dual mode tactical missiles

The committee continues to recommend that the Department of Defense pursue an all-weather, moving target-capable tactical missile that could be integrated on different military platforms. While the committee understands that certain capabilities, such as a single mode seeker missile, are appropriate when prosecuting certain targets, the committee is concerned that current capabilities may have difficulties defeating other targets in a cost-efficient and precise manner, while also ensuring low collateral damage.

The committee is particularly interested in capabilities to counter high-speed, erratically maneuvering targets on land and at sea, as well as understanding how dual mode missiles could be used in counterterrorism (CT) operations. The committee notes the use of dual mode missiles, to include allied missile programs, could potentially close existing operational gaps, reduce the risk of collateral damage, and may result in cost savings relative to current Tactics, Techniques, and Procedures used as part of current direct action CT operations. The committee is aware of the recent integration and successful testing of a fully operational dual mode missile off an MQ–9 Reaper unmanned aerial vehicle system for the United Kingdom Ministry of Defense. The committee notes the Royal Air Force has used this dual mode missile extensively in overseas contingency operations and have reported positive feedback. Further, the committee is also aware that the Secretary of the Navy is funding an initial analysis of dual mode missile integration on the F/A–18 Super Hornet aircraft, and that initial feedback has been positive.

The committee directs the Secretary of the Defense to provide a briefing to the House Committee on Armed Services by February 15, 2015, on the capabilities of existing U.S. and allied missile programs which utilize dual mode seeker technology. The briefing should also include an assessment of the applicability of current dual-mode missiles within the Nation's counterterrorism efforts, including against high-speed, rapidly moving targets on land and sea, as well as an update of U.S. and allied efforts to integrate dual-mode missile technologies onto the MQ–9 Reaper weapon system.

Electronic Warfare Advanced Technology

The committee is aware that the budget request for research, development test, and evaluation, Army included PE 63008A, "Electronic Warfare Advanced Technology." According to the budget justification documents, this program element "matures and demonstrates software, algorithms and services that focus on tactical cyber situational awareness, autonomous network defense, cross domain security and encryption solutions." The committee believes that the title for this program element is misleading and does not adequately describe or justify the way these funds are used. The committee urges the Army to appropriately title this program ele-

ment in future budget submissions to properly identify the scope of work being conducted.

Expeditionary communications

The committee understands that expeditionary missions, such as non-combatant evacuation operations or humanitarian assistance, present unique communication challenges as they can often take place in austere environments where little or no communications infrastructure remains intact. Moreover, the U.S. military often has a distinct requirement to communicate with other elements of the U.S. Government, non-governmental organizations, and host nation officials, and this must be facilitated with sufficient capability to do so effectively and securely. As the Department of Defense works to improve its expeditionary communications infrastructure, the committee urges the Department to explore the availability of secure, commercial cellular wireless networks that have been successfully deployed by the Department in tactical theaters of operation.

Fabric-based respiratory protective equipment

The committee notes that in the committee report (H. Rept. 113–102) accompanying the National Defense Authorization Act for Fiscal Year 2014, the committee directed the Secretary of the Army to submit a report to the congressional defense committees by February 15, 2014, evaluating the potential utility of fabric-based solutions to address soldier and civilian personnel exposure to inhaled hazards, including sand, dust, smoke, and pollutants, such as diesel exhaust and lead. The committee is concerned that the Secretary of the Army has failed to deliver this report to the congressional defense committees. Further, the committee understands that no substantive evaluation of potential protective technologies has taken place. The committee has been informed by the Program Executive Office-Soldier that the proper entity to evaluate fabric-based solutions is the U.S. Army Natick Soldier Research, Development, and Engineering Center (NSRDEC) in Natick, Massachusetts. The committee understands that NSRDEC has technical and scientific expertise in the areas of environmental protection, protective clothing, multi-functional textiles, materials, and fibers.

Therefore, the committee directs the Secretary of the Army to submit a report to the congressional defense committees not later than December 1, 2014, containing NSRDEC's evaluation of the capabilities of known fabric-based solutions to mitigate soldier exposure to the inhalation of sand, dust, smoke, and pollutants.

High explosive guided mortar program

The budget request contained no funding for the High Explosive Guided Mortar (HEGM) program. The budget request contained no funding for the XM395 Accelerated Precision Mortar Initiative (APMI).

The APMI round is a precision guided 120mm mortar munition that was procured to address an operational need from forces in Operation Enduring Freedom (OEF). The committee notes the Army procured 5,480 APMI rounds to address the operational need, and that to date, approximately 2,328 have been fielded in OEF,

and the remaining are part of the war reserve inventory. The committee notes the Army has chosen not to transition this program to an official program of record, and that the Army does not anticipate a requirement to procure additional APMI rounds. The committee understands that based on positive feedback from OEF on APMI performance, the Army is moving forward with the HEGM program and anticipates starting the program in fiscal year 2016, with fielding beginning around 2022. Based on information provided by the Army, the committee understands HEGM would provide for increased capabilities over those demonstrated by APMI.

Given the continued constrained budget environment, the committee expects the military services to maximize research and development funding, reduce procurement costs, and when possible develop joint requirements, instead of resourcing duplicative, stand-alone programs. The committee would expect the Army to conduct a comprehensive analysis of alternatives that would include the APMI and Marine Corps precision extended range munition program before initiating a next generation precision guided mortar program.

High Performance Computing Modernization program

The committee is aware that the Army Corps of Engineers serves as executive agent for the Department of Defense High Performance Computing Modernization (HPCM) program, a responsibility that devolved from the Office of the Secretary of Defense in fiscal year 2012. The purpose of this program is to apply supercomputing resources to solve Department of Defense problems in research, development, test, and evaluation, and acquisition engineering. To meet this mission, the HPCM program must maintain state-of-the-art supercomputing resource centers, as well as software engineering talent to maintain modern and secure software applications for the user community.

The committee is also aware that the HPCM program has been operating at a level not currently supported by the level of funding requested in the President's request. The committee is concerned that the shortfall has only been mitigated by the repeated intervention of Congress to get the program to a sustainable level. The committee believes that the Department should conduct a thorough assessment of the program to ensure future budget requests are sufficient to right-size the budget to the needed infrastructure and support capabilities.

Therefore, the committee directs the Secretary of the Army, in coordination with the Assistant Secretary of Defense for Research and Engineering, to review the HPCM program, and to submit a report on the findings to the congressional defense committees not later than September 30, 2014. The review should examine the following:

(1) Identify the capabilities that will be lost and the impact on Department if the HPCMP is funded at the budget request for fiscal year 2015 level throughout the Future Years Defense Program (FYDP);

(2) Identify the resources reduced, including manpower, in order to operate at the budget request for fiscal year 2015 level throughout the FYDP; and

(3) A strategy for closing the gap between the budget requests and the fiscal year 2012 HPCMP funding level throughout the FYDP.

Improved Turbine Engine Program

The committee continues to support the budget request for the Improved Turbine Engine Program (ITEP). ITEP is a competitive acquisition that is based on current research efforts and is designed to develop a more fuel efficient and powerful engine for the current Black Hawk and Apache helicopter fleets. The committee notes the benefits of improved fuel efficiencies through lower, specific fuel consumption that ITEP brings to the battlefield. In addition, the committee encourages the Army to consider maintenance and sustainment costs for ITEP and specifically, how these calculations would drive affordability of the program.

The committee believes it is important that ITEP transition from Science and Technology to the Preliminary Design phase of Engineering and Manufacturing Development as soon as possible. Providing adequate funding for ITEP to maintain or accelerate the schedule will reduce risk and ensure continued program advancement and success. The committee encourages the Army to maintain its schedule to control development and program costs, mitigate technical risk, validate performance, and ensure the warfighter receives the best possible solution.

The committee, however, believes that the ITEP Business Case Analysis and Cost Estimate may be outdated and is concerned that it might not sufficiently factor in the total fuel savings or maintenance and logistics cost savings associated with the engine. Therefore, the committee directs the Secretary of the Army to brief the House Committee on Armed Services by December 1, 2014, on a path to update the study.

Joint Air-to-Ground Missile program

The budget request contained $83.8 million in PE 65450A for Joint Air-to-Ground Missile (JAGM) research and development.

The committee continues to support the JAGM program based on the need for a replacement to the Hellfire missile program that provides an all-weather, long-range moving target capability. In addition, the continuation of the JAGM program would help sustain the tactical missile industrial base. Tactical missile technology remains an area of asymmetric advantage and technological superiority for the United States that the committee believes must be retained.

The committee has received the briefing as required in the committee report (H. Rept. 113–102) accompanying the National Defense Authorization Act for Fiscal Year 2014. The committee notes the Army continues to pursue a "dual mode" seeker as part of Increment 1 of the new acquisition strategy, with a milestone B decision planned in fiscal year 2015. From this briefing, the committee also understands the JAGM program completed a successful Critical Design Review in January 2014, and the program remains on cost, schedule and performance. The committee notes there will be a full and open competition for the engineering and manufacturing development contract award. The committee acknowledges that

Army funding is constrained by the current budget environment, however, given current technology readiness levels as demonstrated during the technology development phase, the committee encourages acceleration of the Increment I program.

The committee recommends $83.8 million, the full amount requested, in PE 65450A for continued JAGM research and development.

Joint Light Tactical Vehicle

The budget request contained $45.7 million in PE 65812A, and $11.5 million in PE 65812M to complete the engineering and manufacturing development phase of the Joint Light Tactical Vehicle (JLTV) program. The budget request also contained $164.6 million in Other Procurement, Army, and $7.5 million in Procurement, Marine Corps for the procurement of 183 low-rate initial production JLTVs.

The Joint Light Tactical Vehicle (JLTV) will complement the current fleet of Up-Armor high mobility, multi-purpose wheeled vehicles and would provide improved protection, payload, and performance to the Army's and the Marine Corps' light tactical wheeled vehicle fleets.

The committee notes the budget request would mark the first year of procurement for JLTV, and would also complete limited user testing. The committee supports the JLTV program and recognizes that the program remains on schedule despite the impacts resulting from the Budget Control Act of 2011 (Public Law 112–25), and understands a milestone C decision is scheduled for June 2015. The committee notes that JLTV does not have any significant technology issues that would preclude development. Therefore, the committee expects the program to remain on schedule. The committee notes the JLTV program is the only new tactical wheeled vehicle modernization program for the foreseeable future, and the committee believes the JLTV program will be critical for maintaining the viability of the industrial base.

The committee recommends $45.7 million in PE 65812A, $11.5 million in PE 65812M, and elsewhere in this report, $164.6 million in Other Procurement, Army, and $7.5 million in Procurement, Marine Corps, the full amount of the total request, for the JLTV program.

Lightweight segmented tactical ladders

The committee acknowledges that improved mobility of the soldier increases safety and improves mission capability. The committee is aware that the tactical ladder is an important piece of equipment that is critical to many missions throughout the world. The committee understands that current tactical ladder systems are made from metal or fiberglass, weigh 40 pounds or more, and are often cumbersome to transport, especially on foot. The committee is also aware there may be commercially available, lightweight carbon fiber composite ladders that reduce ladder weight load to 11 pounds or less, while maintaining the strength and durability of heavier ladders. The committee also notes that current telescoping and foldout tactical ladders require a single soldier to carry the entire load, whereas a segmented ladder provides the op-

tion for weight distribution among members of a group to improve portability.

Therefore, the committee directs the Secretary of the Army to provide a briefing to the House Committee on Armed Services not later than December 31, 2014, on the potential benefits of lightweight segmented tactical ladders. The briefing should include an overview of the current military inventory and a review of available carbon fiber commercial ladder options that may reduce weight and provide additional flexibility to soldiers.

Non-invasive medical diagnostic tools

The committee recognizes the value in developing high-fidelity medical instruments to provide diagnostic analysis through non-invasive means. The committee believes that such tools lend themselves to use in austere environments like combat zones, natural and civil disasters, and settings where rapid and accurate diagnostic data must be obtained in an unsettled, often chaotic, environment where standard clinical support may be lacking. The committee encourages the Department of Defense to explore development of such non-invasive medical diagnostic tools for use in austere and highly unstable environments.

Operational testing of High Energy Laser Mobile Demonstrator

The committee believes that the High Energy Laser Mobile Demonstrator (HEL–MD) is of great value to the Army and to the Department of Defense's efforts to develop directed energy weapons. The committee is concerned that the Army does not have a clear plan for the future of the HEL–MD. Therefore, the committee directs the Secretary of the Army to provide a briefing on the plan for the future of the HEL–MD to the House Armed Services Committee by December 1, 2014. This plan shall include an analysis on the feasibility of operational testing of the HEL–MD, including the possibility of operational testing of the HEL–MD in international locations such as Israel.

Rotorcraft hostile fire protection

The committee is encouraged by the continued effort of the Army and other military services to develop a hostile fire detection and defeat system that will function in the harsh environments produced by rotorcraft operations. In the past, hostile fire detection systems for rotorcraft have been limited to acoustic-based technologies even though rotor noise, wind noise and echoing off of topography restricts the system's accuracy. The committee wants to ensure that the Army is considering advanced technologies, like radar, that will pinpoint and integrate the location of hostile fire into the aircraft's defeat systems for engagement of incoming projectiles. Therefore, the committee directs the Secretary of the Army to submit a report to the congressional defense committees by February 9, 2015, that details the Army's efforts to potentially implement a radar, ultraviolet and infrared based hostile fire detection and defeat system into existing rotorcraft platforms.

Small Airborne Networking Radio program

The budget request contained no funding for the Small Airborne Networking Radio (SANR).

The committee is aware that the Army has deferred the SANR program indefinitely while moving forward with the less ambitious Small Airborne Link–16 Terminal. The committee is concerned regarding the lack of information from the Army on the future of the SANR program and believes that full integration of the soldier radio waveform, originally intended to be provided by the SANR program, into Army airborne platforms will be essential in the future.

Therefore, the committee directs the Secretary of the Army to provide a briefing to the House Committee on Armed Services not later than December 1, 2014, with an update on the status of the SANR program.

Soldier protection system and weight reduction for personnel protection equipment

The budget request contained $27.8 million in PE 64601A for Infantry Support Weapons. Of this amount, $7.5 million supports the continued development of the Army's Soldier Protection System (SPS). Elsewhere in this report, the committee notes that the budget request contained $63.1 million in Operations and Maintenance, Army for the initial procurement of SPS components.

The SPS provides a lighter weight modular, scalable integrated system of mission tailorable personnel protection equipment (PPE) while also improving the level of mobility, form, fit, and function for both male and female soldiers. The committee is aware the SPS includes subsystems such as protection for the head, eyes, extremities, torso, and other integrated sensor packages. The committee notes a milestone C decision is expected in fiscal year 2015. The committee notes the Army would field two to three brigade combat team sets per year and has programmed approximately $575.0 million for SPS across the Future Years Defense Program. While the committee commends the Army on their SPS effort, the committee encourages the Army to provide enough funding to maintain two vendors for competitive purposes, and also encourages the accelerated fielding of SPS to all soldiers.

The committee has long championed the importance of reducing the weight of current body armor and personnel protection equipment systems, as well as stressing the critical need for robust investment in weight reduction initiatives, along with technology insertions to improve performance and survivability. The committee believes current body armor systems provide outstanding protection to the warfighter, but their weight contributes to the over-burden issue and decline in performance. The committee understands that body armor system weights have remained relatively constant over the last decade in spite of advances in materials technologies because protection levels have also increased in response to threats.

The committee commends the Army for addressing this challenge by shifting from a more discrete component level development strategy to a more systems engineering and system level approach to body armor and PPE development as a means to improve soldier

capabilities. The committee believes the Department must maintain significant investment in near-term solutions that can effectively reduce the weight of body armor, while also investing in the development of revolutionary new material technologies that could provide for significant breakthroughs in weight and performance.

The committee recommends $7.5 million in PE 64601A for SPS, and elsewhere in this report recommends $63.1 million for the procurement and fielding of SPS, the full amount of the budget request.

Stryker Vehicle Survivability Upgrades

The committee supports efforts to increase the protection level of Army Stryker vehicles and believes there is a need for additional innovation and competition within the program. In particular, the committee continues to support the ongoing Program Executive Officer, Ground Combat Systems, Stryker Vehicle Survivability Systems Integration Study program. The committee notes that this program has performed several integration studies reviewing the potential for incorporating occupant-centric survivability technologies onto Stryker vehicles. In addition, the committee understands that these kit-based solutions may potentially be installed during depot reset or in the field, and could enhance Stryker survivability and mobility across the fleet. The committee also notes that there are two variants of the Stryker vehicle, the Mobile Gun System (MGS) and the NBC Reconnaissance Vehicle (NBCRV), that do not have the same level of protection as "Double V" equipped variants and that may immediately benefit from Stryker upgrades explored as part of the study program. The committee encourages the Army to test and evaluate these technologies on the Stryker platform, with emphasis on the MGS and NBCRV variants that currently lack the same protection levels as other Stryker vehicles. The committee directs the Secretary of the Army to brief the committee by December 15, 2014 describing the technologies identified within the Stryker Vehicle Survivability Systems Integration Study program, as well as the outcomes of any testing of these technologies on the Stryker platform.

Transparent armor technology development

The budget request contained $110.0 million in PE 63005A for Combat Vehicle and Automotive Advanced Technology. Of this amount, $53.7 million was requested for combat vehicle survivability research and development to include transparent armor technology.

This program element matures, integrates and demonstrates combat and tactical vehicle automotive technologies that enable a lighter, more mobile and more survivable force. The combat vehicle survivability project matures and demonstrates protection and survivability technologies such as active protection systems, advanced vehicle armors, blast mitigation and safety devices to address both traditional and asymmetric threats to ground vehicles. The committee believes this project should also consider emerging technologies in the fields of glass, polymers, and coatings to field more resilient and lightweight transparent armor.

The committee notes that improved transparent armor materials are required for improved durability and survivability of combat and tactical vehicles, as well as potentially reducing overall life-cycle and repair costs. The committee encourages the Tank Automotive Research Development and Engineering Center to engage in cooperative agreements with industry and academia in order to further the development of transparent armor material technology.

The committee recommends $110.0 million, the full amount of the request, in PE 63005A for combat vehicle and automotive advanced technology.

UH–72 Helicopter health monitoring system

The committee is aware that the UH–72 Light Utility Helicopter (LUH) is not currently equipped with a health monitoring system. However, the committee has been informed that the commercial variant of the UH–72, the EC–145, is currently being outfitted with a Next Generation Health Monitoring System (NGHMS).

The committee understands that a NGHMS could provide total aircraft monitoring and diagnostics of mechanical and electrical systems within a lightweight distributed architecture consisting of miniature sensors that contain processing and analysis functions operating with non-proprietary data protocols in a secure cloud management infrastructure. NGHMS maintenance intelligence could provide early warning for failing systems that may reduce costly emergency maintenance, improving UH–72 maintenance schedules and fleet readiness.

Therefore, the committee encourages Army Program Executive Officer Aviation and Program Manager Utility Helicopter, to engage in a demonstration of NGHMS on the UH–72. In addition, the committee directs the Secretary of the Army to submit a report to the congressional defense committees by February 15, 2015, that describes the potential for integrating and demonstrating NGHMS on the UH–72 platform. However, the committee expects that if the Army makes the decision to proceed with a program of record that it will be done using full and open competition in accordance with Federal Acquisition Regulations.

Universal tactical controller for unmanned systems

The budget request contained no funding for a universal tactical controller for unmanned systems.

The committee is aware that there is not presently a documented roadmap for acquiring a universal tactical controller for unmanned air and ground assets because there is neither a validated requirement, nor specific funding programmed. However, in the committee report (H. Rept. 112–479) accompanying the National Defense Authorization Act for Fiscal Year 2013, the committee directed the Secretary of the Army, in coordination with the Secretary of the Navy, to conduct an advisability and feasibility study for developing a universal controller for Class I unmanned aerial systems and unmanned ground systems.

As a result of this report, the committee recognizes the Army and the Marine Corps have collaborated to experiment with the feasibility of a universal tactical robotic controller for unmanned air and ground systems at the battalion and below echelons, with the re-

sults being viewed favorably. The committee notes that a draft Army Capabilities Development Document (CDD) for the Common Robotic System–Individual (CRS–I) has been generated which includes the capability for a common tactical controller that can control both air and ground assets. The committee understands that once the CRS–I CDD is validated, funding is programmed, and the program is initiated, acquisition of such a controller would likely be achieved through full and open competition and fielded as part of the CRS–I program.

Given these findings and the military services' growing reliance on unmanned systems for a variety of missions, the committee encourages the Army and the Marine Corps to accelerate the development of a universal common tactical controller, to generate an acquisition roadmap, and to program funding for this initiative in the fiscal year 2016 Future Years Defense Program.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, NAVY

Overview

The budget request contained $16.3 billion for research, development, test, and evaluation, Navy. The committee recommends $16.2 billion, a decrease of $82.5 million to the budget request.

The committee recommendations for the fiscal year 2015 research, development, test, and evaluation, Navy are identified in division D of this Act.

Items of Special Interest

Amphibious Combat Vehicle increment 1.1 program

The budget request contained $105.7 million in PE 63611M for the Amphibious Combat Vehicle (ACV) program.

The committee understands that the Marine Corps has significantly changed its acquisition strategy for the ACV program and will now use an incremental approach to developing, procuring, and fielding a next generation family of amphibious combat vehicles. The committee notes that in the near term, the Marine Corps is planning to use the first vehicle increment, ACV increment 1.1, as an armored personnel carrier that would deliver marines from ship-to-shore by means of a connector craft, and be used for inland missions. The committee recognizes this would address an immediate near-term, urgent capability gap for improved tactical mobility and survivability for deployed Marine infantry units.

The committee notes that while the proposed schedule for ACV increment 1.1 is aggressive, the committee expects the Marine Corps to benefit from lessons learned from previous next generation assault amphibious vehicle programs that suffered from requirements creep and immature technology readiness levels that led to significant cost overruns and schedule delays. The committee understands that results from previous developmental testing conducted on vehicles participating in the former Marine Personnel Carrier (MPC) vehicle program, to include limited user demonstrations, have informed the Marine Corps that the technology for these potential vehicles is highly mature and is consistent with a stable set of requirements for this vehicle. Accordingly, the com-

mittee understands that the Marine Corps is recommending a streamlined procurement and fielding strategy for the ACV increment 1.1 vehicle. The committee supports the intent to streamline the procurement and fielding of the ACV increment 1.1 vehicle, and believes this program could potentially serve as an example for future major defense acquisition program reform. However, the committee notes that this streamlined approach to ACV increment 1.1 is contingent on mature technology and validated and stabilized requirements. The committee will continue to closely monitor this program under the auspices of the committee's ongoing comprehensive acquisition reform effort.

Therefore, the committee directs the Assistant Secretary of the Navy (Research, Development, and Acquisition), in coordination with Headquarters Marine Corps, to brief the committee not later than September 1, 2014, on the justification used to streamline the ACV increment 1.1 vehicle program, to include the documented results from the Marine Requirements Oversight Council and the Joint Requirements Oversight Council reviews, as well as the documented results from the Materiel Development Decision. The committee also directs the Assistant Secretary to brief the committee on any potential procedural and/or regulatory barriers that may prevent the Marine Corps from streamlining the ACV increment 1.1 program. Based on information already provided to the committee by the Marine Corps regarding the streamlined procurement strategy for the ACV increment 1.1 program, the committee understands additional funds would also be required in fiscal year 2015 to support a contract award in fiscal year 2015.

The committee recommends $190.8 million, an increase of $85.1 million, in PE 63611M for the ACV Increment 1.1 vehicle program.

Briefing on the Navy Laser Weapon System

The committee directs the Secretary of the Navy to brief the House Committee on Armed Services by March 2, 2015, on the performance of the Navy Laser Weapon System (LaWS) after deployment aboard the USS *Ponce*. The committee requests the following development groups be represented at this brief: Directed Energy and Electric Weapons, Office of Naval Research; Naval Surface Warfare Center; Ship Command of the USS *Ponce* while testing LaWS; the actual operators of LaWS aboard the USS *Ponce*; and any other briefers the Secretary deems appropriate. This brief shall include: the preparation of the weapon system for deployment at sea, structural and power accommodations on the USS *Ponce*, any special training for the officers and crew, performance of LaWS from the perspective of the operators, recommendations for future pre-deployment training, and an assessment on the feasibility of near-term deployment of a directed energy ship defense system across the Navy.

Marine Corps Rifle Mounted Optical Systems and Modifications

The committee continues to support the Commandant of the Marine Corps's ongoing efforts to lighten the combat carrying load of Marines, as well as efforts to modernize individual warfighter equipment. The committee understands the Marine Corps is developing the Family of Optical Systems and Modifications (FOSAM) in

response to a universal urgent need from deployed Marines. The FOSAM is a suite of multi-functional weapon optical systems to include various thermal, image intensifier, magnified optical, laser range-finding, illuminating, and pointer functionalities that would replace multiple single-purpose systems. The committee understands the FOSAM could improve functional capability for the warfighter, lessen the weight of individual equipment items, reduce the number of equipment items requiring field maintenance, and drive down operating costs. The committee encourages the Marine Corps to execute their current acquisition strategies for FOSAM and expects any future contracts to be competitively awarded.

MQ–4C Triton program

The budget request contained $498.0 million in PE 35220N for research and development of the MQ–4C Triton unmanned aerial system (UAS).

The committee notes that low rate initial production for the MQ–4C has been delayed one year to fiscal year 2016. The committee believes that this is a prudent delay that will allow sufficient development and testing to be completed and to minimize the risks of concurrent development and production. In addition, the committee is encouraged that the Department of the Navy has maintained stable requirements for the MQ–4C Triton. The Department of Defense's history of rushing complex systems into production before adequate testing has occurred and constantly changing requirements has resulted in excessive cost growth and unnecessary schedule delays. The committee encourages the Navy to continue with a conservative approach to the schedule and requirements for the MQ–4C in order to ensure that the program remains on a realistic path to providing the Navy with initial operational capability in 2018.

Additionally, the committee is concerned about significant delays in the research and development funding profile for development of the multi-intelligence (Multi-INT) signals intelligence (SIGINT) suite for the Triton aircraft. Sliding the development of this capability significantly elevates the risks associated with integrating SIGINT capabilities into the baseline aircraft ahead of the planned Milestone C event, the full rate production decision for the Multi-INT capability. Further, the committee is concerned about the maturity of the Triton Multi-INT concept of operations and resourcing with respect to integration of the ground station within the national and Department of the Navy processing, exploitation and dissemination enterprise.

Therefore, the committee recommends $530.4 million, an increase of $32.4 million, for MQ–4C baseline Triton research and development to return the development schedule of the Multi-INT Triton sensor suite back to the plan proposed by the Department of the Navy for fiscal year 2014.

Navy deployment of the laser weapon system

The committee commends the Navy on its recent efforts to operationally deploy a directed energy laser weapon system. The Department of Defense has invested significant resources in directed energy weapon system research and development (R&D) with lim-

ited success at fielding an operational system. The committee recognizes the challenges posed by these R&D efforts, and understands the complexity of the issues that still need to be addressed in order to transition directed energy technology to viable weapon systems. Recent demonstrations within the directed energy community, such as the Counter-electronics High Power Advanced Missile Project (CHAMP) by the Air Force and the High Energy Laser Mobile Demonstrator (HEL-MD) by the Army, have shown significant progress toward addressing these issues. The committee notes that the deployment of the Laser Weapon System (LaWS) by the Navy onboard the USS *Ponce*, which will occur late in 2014, was the first deployment of a high energy laser system on a U.S. vessel in a realistic maritime environment. The committee congratulates the Navy on the achievement of this major milestone and looks forward to seeing the results of this deployment and how it will inform future decisions related to directed energy weapons.

Navy reimbursable work for other Federal agencies

The committee is aware that the Chief of Naval Operations recently issued guidance to Navy working capital funded entities, including the science and technology laboratories and test and evaluation centers, to cease conducting reimbursable work for other Federal agencies. The committee is concerned that such a moratorium ignores how working capital funded entities operate and the value that outside, reimbursable work can have on reducing the overall rate structure for entities like the naval warfare centers. The committee also believes that such a move could be detrimental to the overall efficiency of the Federal research and test enterprise by forcing other Federal partners to rely on contractors to provide these services, or to build additional, redundant scientific and test capabilities. For example, the Department of Homeland Security works very closely with the naval warfare centers to provide science, technology, test and evaluation capabilities for its programs, and without that support, the Department of Homeland Security would have to devote a larger percentage of its research, development, test, and evaluation budget to providing those services itself.

Therefore, the committee directs the Secretary of the Navy, in coordination with the Chief of Naval Operations, to provide a briefing to the House Committee on Armed Services by March 1, 2015, on the rationale for the decision to cease reimbursable work for Federal agencies outside of the Navy, and an analysis of the policy impacts of this decision, including the ability to facilitate interagency work and fully utilize existing infrastructure. The briefing should also examine the anticipated effect on Navy working capital fund rates if the policy is enforced, as well as the impact if the policy is rescinded. Finally, the briefing should examine the impact on each naval warfare center, and the role of the warfare center's commanding officers in making decisions related to reimbursable work.

Next Generation Land Attack and Offensive Anti-Surface Warfare weapon development

The budget request contained $32.4 million in PE 24229N for Tomahawk and Next Generation Land Attack Weapon (NGLAW)

development. The budget request also contained $194.3 million in Weapons Procurement, Navy for procurement of 100 Tomahawk missiles, which is a decrease of 96 missiles from what had been planned for procurement in the fiscal year 2014 budget request. The budget request also proposes to terminate Tomahawk Block IV procurement beginning in fiscal year 2016. In addition, the budget request contained $203.0 million in PE 64786N for development of Increment I and Increment II of the Offensive Anti-Surface Warfare (OASUW) weapon.

The committee is concerned by the Secretary of the Navy's recommendation to terminate procurement in 2016 of the Nation's only long-range, surface-launched land-attack cruise missile production capability prior to finalizing concept development of NGLAW, which is not planned to be operationally fielded until 2024 at the earliest. Furthermore, the committee is concerned that the capability to recertify current inventory Block IV Tomahawk missiles could be put at risk if the Secretary of the Navy decides to shutter the Tomahawk Block IV production line in fiscal year 2016. The committee is also concerned that the Secretary has not clearly articulated a medium- to long-range conventional cruise missile requirements and capabilities strategy or roadmap that explains the bridge between production of current missiles to the development, production, and fielding of OASUW and NGLAW. The Secretary has also not clearly articulated how the missile requirements and capabilities differ between OASUW and NGLAW in meeting combatant commander requirements, or the reason that a separate missile is needed for OASUW and NGLAW in order to meet offensive surface-attack mission requirements. Further, the Secretary has not clearly articulated how the inventory stock of long-range cruise missiles will be replenished if the current stock of Tomahawk missiles is utilized to fulfill test, training, and warfighting requirements between 2016–24. The committee is also concerned that the Navy is well below all categories of inventory requirements and is discouraged that the Navy is only using one category of inventory requirements in stating that there is no risk by terminating Tomahawk Block IV production in fiscal year 2016.

The recommendation to shutter the Tomahawk Block IV production line is further compounded by the fact that OASUW Increment I is just beginning to transition to a program of record, and OASUW Increment II is still in the concept definition and refinement phase. The committee supports current efforts to develop an OASUW Increment I capability to fulfill the urgent operational need of the Commander, U.S. Pacific Command, and encourages the Secretary to aggressively pursue fielding this capability.

Therefore, the committee is skeptical of the Secretary of the Navy's decision to cease production of Tomahawk Block IV in 2016. The committee directs the Secretary of the Navy to provide a report to the congressional defense committees in conjunction with the submission of the budget request for fiscal year 2016, that articulates the following: (1) a 15-year medium to long-range land attack cruise missile strategy and roadmap; (2) known or anticipated shortfalls and capability gaps of current cruise missiles; (3) an explanation of requirement differences between OASUW and NGLAW missile capabilities; (4) a transition strategy from current

production land-attack cruise missiles to recertification of current inventory cruise missiles that discusses anticipated cost, schedule, and execution risks and issues; and (5) the cost, schedule, and execution risk associated with replenishment of current inventory cruise missiles that may be used for test, training, and operational requirements in order to maintain a sufficient inventory of cruise missiles until NGLAW is operationally fielded. The report may contain a classified annex or any other information that the Secretary desires to convey to the congressional defense committees.

The committee recommends $32.4 million, the full amount requested, in PE 24229N for Tomahawk and Next Generation Land Attack Weapon (NGLAW) development. The committee recommends $276.3 million, an increase of $82.0 million, in Weapons Procurement, Navy for procurement of 196 Tomahawk missiles and to reduce risk to the Tomahawk missile industrial base. Elsewhere in this Act, the committee includes a provision that would authorize multi-year procurement authority for Tomahawk Block IV missiles if the Secretary of the Navy determines during deliberations of the fiscal year 2016 budget request that it is not prudent to shutter the production line at this time. The committee would support the Secretary's decision to procure the maximum amount of additional missiles to fully satisfy inventory requirements and bridge transition to Tomahawk Block IV recertification and modernization in the most cost-effective manner possible, and especially during periods of constrained fiscal resources. Finally, the committee recommends $203.0 million, the full amount requested, in PE 64786N for development of Increment I and Increment II of the Offensive Anti-Surface Warfare weapon.

Oceanographic research

The budget request contained $45.4 million in PE 62435N for the Ocean Warfighting Environment Applied Research program.

For academic research, the Navy operates and maintains Auxiliary General Purpose Oceanographic Research (AGOR) vessels. Three of these vessels require a mid-life overhaul, partial funding for which was provided in the Consolidated and Further Continuing Appropriations Act, 2013 (Public Law 113–6). The committee notes that funding provided to date does not fully support all of the items that the Navy has determined are necessary to fully extend the life of these AGOR ships to 40–45 years.

Accordingly, the committee recommends $65.4 million, an increase of $20.0 million, in PE 62435N for Ocean Warfighting Environment Applied Research, to procure the entirety of a mid-life overhaul. The committee notes that the inclusion of this authorization of appropriations is predicated on merit-based selection procedures in accordance with the requirements of section 2304(k) and 2374 of title 10, United States Code, or on competitive procedures.

The committee continues to believe that oceanographic research is a core function of the Navy, and remains committed to ensuring the ability of the Navy to sustain its research priorities, even in the face of fiscally constrained budgets. The committee is concerned that the Navy has been decreasing funding in oceanographic research, especially sea-going research, and about the negative long-term implications these trends are likely to have on areas like anti-

submarine warfare and battlespace awareness. The committee believes that the Navy infrastructure such as the AGOR vessels, deep submergence facilities such as the Hawaii Undersea Research Laboratory, or the instrumentation investments made by the Defense University Research Instrumentation Program are vital components to the Navy's program. Navy science and technology funding also plays a key role in information stewardship, including ocean mapping, oceanographic and meteorological data, that supports Navy, national and international scientific goals.

Precision extended range munition program

The budget request contained $156.6 million in PE 26623M for Marine Corps Ground Combat/Supporting Arms Systems. Of this amount, $11.6 million was for the 120mm Precision Extended Range Munition (PERM) program.

The PERM is a GPS-guided, precision munition that consists of a propelling system, warhead, guidance system, fuze and container, and will be fired from a 120mm Rifled Towed Mortar.

Section 216 of the National Defense Authorization Act for Fiscal Year 2014 (Public Law 113–66) required the Chairman of the Joint Chiefs of Staff to certify to the congressional defense committees the stand-alone operational need for PERM, as well as a sufficient business case for PERM, as opposed to not using existing precision munitions in the war reserve. The committee notes this certification has not yet been provided, however, the committee has been informed by the Marine Corps, as well as the Joint Staff, that a favorable certification is imminent.

The committee is aware that the PERM program is the only 120mm extended range precision guided mortar program of record. The committee understands the PERM program is currently on schedule and a milestone C decision is currently scheduled for first quarter fiscal year 2015. The committee expects the Army and Marine Corps to continue to coordinate efforts for next generation precision guided munition programs.

The committee recommends $11.6 million, full funding of the request, in PE 26623M for PERM development and low rate initial production.

Submarine detection research

The committee is concerned about the emerging threat of submarines that could potentially be deployed by adversaries in littoral areas of the United States. These platforms are expected to employ sophisticated quieting technologies to mask operations and deployment patterns. However, the committee understands that such submarines create wakes that can alter water column stresses and seafloor roughness over movable sediment beds, and that alteration of this roughness could leave a detectable non-acoustical signature that can be exploited to identify and track enemy forces in littoral zones, and also help to guide mobility operations of U.S. forces. The committee notes that recent advancements in multibeam sonar processing technologies may allow for the near real-time detection of the small mobile roughness elements. Therefore, the committee encourages the Navy to evaluate advanced concepts

and technologies for non-acoustic submarine detection focused on littoral zone seafloor scarring.

University-National Oceanographic Laboratory System ships

The committee recognizes that there is a growing need for at-sea research and development platforms, especially with regard to the development and testing of new anti-submarine warfare technologies. In particular, the committee understands that there is a focus on new operational concepts that promise to improve wide area surveillance, detection, and attack capabilities against quiet adversary submarines operating in noisy and shallow water environments. A key element of this assessment process is support provided by the University-National Oceanographic Laboratory System ships and their research base to assist in anti-submarine warfare research. The committee supports continued investment in the University-National Oceanographic Laboratory System ships and would urge the Department of the Navy to continue this critical research.

Unmanned aerial system electronic attack demonstration

The budget request contained $7.8 million in PE 64376M for Marine Air-Ground Task Force electronic warfare development, but included no funds for an unmanned aerial system (UAS) electronic attack demonstration.

The committee notes that the Department of the Navy conducted a demonstration of an unmanned MQ–9 Reaper in a weapons and tactics instructor exercise at the Naval Air Weapons Station China Lake, California, in October 2013, which included 86 aircraft, over 200 aircrew members and over 3,000 ground forces in a realistic threat environment. The committee understands that the MQ–9 was configured with a prototype stand-off jamming system which was able to defeat early warning threat radars, allowing the F/A–18 and AV–8B aircraft to penetrate the simulated enemy air defenses. The committee further notes that the unmanned MQ–9 Reaper would provide over 20 hours of on-station time, which is about 15 hours longer than manned aircraft with similar capabilities, and would require less logistical support in a deployed location.

Based on the results of the October 2013 demonstration and the ability of a UAS to perform an airborne electronic warfare mission, the committee encourages the Department of the Navy to continue to pursue this capability by conducting a more sophisticated demonstration in fiscal year 2015 that would include multiple UAS electronic attack aircraft with a UAS mission package that includes electronic attack, electronic support measures and communication features.

Unmanned Carrier-Launched Surveillance and Strike Program

The budget request contained $403.0 million in PE 64404N for Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) development.

The committee believes that current UCLASS Air System Segment requirements will not address the emerging anti-access/area-denial (A2/AD) challenges to U.S. power projection that originally

motivated creation of the Navy Unmanned Combat Air System (N-UCAS) program during the 2006 Quadrennial Defense Review (QDR), and which were reaffirmed in both the 2010 QDR and 2012 Defense Strategic Guidance. In particular, the disproportionate emphasis in the requirements on unrefueled endurance to enable continuous intelligence, surveillance, and reconnaissance (ISR) support to the Carrier Strike Group (CSG), a capability need presumably satisfied by the planned acquisition of 68 MQ–4C Tritons, would result in an aircraft with serious deficiencies in both survivability and internal weapons payload capacity and flexibility. Further, the cost limits for the aircraft are more consistent with a much less capable aircraft and will not enable the Navy to build a relevant vehicle that leverages readily available and mature technology. As planned, UCLASS appears unsupportive of the 2012 Defense Strategic Guidance for the United States to "maintain its ability to project power in areas in which our access and freedom to operate are challenged."

The committee believes that the Navy needs a long-range, survivable unmanned ISR-strike aircraft as an integral part of the carrier air wings as soon as possible. However, investing in a program today that does not adequately address the threat will only delay, and could preclude, investment in and fielding of the right system later. Therefore, the committee believes special attention needs to be paid to threshold UCLASS requirements.

Finally, the committee is concerned with multiple aspects of the proposed UCLASS acquisition strategy, including: insufficient time and funding for contractors to mature their designs in support of a full-scope Preliminary Design Review, due in part to late-developing and still-evolving air system performance requirements; the additional risk to the program associated with the Navy's decision to abandon the precision landing system developed and successfully tested during the UCAS-D effort; and the potential risk associated with NAVAIR developing the UCLASS Mission Control System internally.

Therefore, the committee directs the Secretary of Defense to conduct a review of the requirements for a carrier-based unmanned aircraft system to extend the ISR and precision strike reach of the carrier air wing in A2/AD threat environments projected for 2025–2035, and to provide a report on the review to the congressional defense committees by December 30, 2014. The review should pay special attention to revised threshold requirements for unrefueled mission endurance, automated aerial refueling, refueled mission endurance, survivability, internal weapons carriage and flexibility, and autonomy/mission control system functionality. It should include mission- and campaign-level quantitative analysis of representative carrier-based unmanned air system missions in the 2025–2035 timeframe, including but not limited to ISR, precision strike, and electronic attack. It should also consider the overall composition of the future carrier air wing, including the optimal mix of manned and unmanned squadrons, for conducting representative joint ISR-strike campaigns in the 2030 timeframe. The committee also includes a provision elsewhere in this Act that would prohibit the Secretary of the Navy from awarding a contract for the UCLASS air vehicle segment until the Secretary of Defense com-

pletes the requirements review and provides the report to the congressional defense committees.

Virginia Payload Module program

The budget request contained $132.6 million in PE 64580N for development of the Virginia Payload Module (VPM) program.

The committee believes that undersea strike capability will be a critical capability for the U.S. military in the future, as U.S. forces begin to operate in increasingly contested environments. In addition, the committee notes that with the pending retirement of the four guided-missile nuclear submarines (SSGN), the U.S. military will lose a significant portion of its undersea strike capability. The committee believes that the VPM program is the lowest risk, lowest cost, and best path for maintaining, and eventually expanding, critical undersea strike capabilities. The committee also notes that by integrating the new strike capability into Block V Virginia-class submarines, the Navy is avoiding having to start an entirely new program that could take decades to come to fruition, whereas in contrast, the VPM program could provide this new capability to the fleet in time to partially compensate for the retirement of the SSGNs. Therefore the committee continues to support the VPM program.

The committee recommends $132.6 million, the full amount requested, in PE 64580N for development of the VPM program.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, AIR FORCE

Overview

The budget request contained $23.7 billion for research, development, test, and evaluation, Air Force. The committee recommends $23.9 billion, an increase of $125.5 million to the budget request.

The committee recommendations for the fiscal year 2015 research, development, test and evaluation, Air Force program are identified in division D of this Act.

Items of Special Interest

Additive manufacturing

The committee is aware that additive manufacturing techniques and capabilities have the potential to dramatically lower the cost of maintaining aging weapon platforms for the defense sustainment community. Currently, the Air Force uses additive manufacturing for design iteration, prototyping, tooling and fixtures, and for some noncritical parts. However, in the future, the Air Force hopes to use additive manufacturing for building actual aerospace parts. The Air Force anticipates soon using additive manufacturing for parts like fuel nozzles and heat exchangers. The committee believes that the Air Force, and the rest of the Department of Defense, can utilize additive manufacturing improvements to save money in upfront manufacturing costs; improve fleet readiness by creating on-demand alternatives to current parts supply chain; reduce parts certification and transition costs; and reduce costs with creative improved weapon systems parts that are lighter and stronger. The committee encourages the Air Force to look at creative applications

of additive manufacturing technology to reduce sustainment costs for its weapon platforms and other systems.

Air Force tactical exploitation of national capabilities talon hate program

The Department of the Air Force Tactical Exploitation of National Capabilities (AFTENCAP) project pursues a wide range of technological and operational objectives through transition of proven national capabilities to warfighters for operational use and participation in design of future national capabilities in order to leverage them for tactical users. The committee supports the TENCAP program.

The Talon Hate program, developed under AFTENCAP, fields in fiscal year 2015 and should provide a unique multi-domain capability to counter threats in the U.S. Pacific Command (USPACOM) area of responsibility (AOR). The committee understands the importance of reliable, jam-proof communications between 4th and 5th generation fighters, the need to broadcast multi-source information in a Link 16 compatible format, and the need to integrate national strategic data into that communication network. While the Talon Hate program will field four developmental pods for F–15s in the USPACOM AOR, the committee is concerned that a strategic plan to address this mission has not been developed, along with an analysis of alternative technical approaches to meeting the associated warfighter requirements.

Therefore, the committee directs that the Secretary of the Air Force, in coordination with the Chairman of the Joint Chiefs of Staff and the Under Secretary of Defense for Intelligence, to provide a briefing to the House Committee on Armed Services and the House Permanent Select Committee on Intelligence, by February 16, 2015, on the enduring military requirements associated with the Talon Hate program, a comprehensive cost and benefit analysis of the various technical approaches to solving those requirements, and the associated strategic plan to addressing the requirements including near and mid-term recommendations.

Air Force weapons simulation framework

The committee is aware that the Air Force ceded ownership of weapon system models to the prime contractors in the late 1980s. At the time, the Air Force decided to treat weapons as closed systems with the developer maintaining responsibility for every element of the system, to include all simulations. Government-owned models were relinquished and the government's ability to conduct independent studies atrophied. The committee is concerned that such processes put the Air Force at a disadvantage to the commercial providers in the weapons acquisition process, and run counter to trends like open architecture, which allow the government to provide broad architectural guidance but leave execution to the contractor.

The committee is aware, though, that the Army has maintained its development of Government-owned simulation resources in support of such programs as the Joint Common Missile. This has allowed the Air Force to regrow some of its modeling and simulation capability by working closely with the Army. The committee urges

the Air Force to continue to work with the Army, and industry, to develop a conventional weapons simulation framework to lower life-cycle costs for conventional weapons and conduct benchmark tests for programs such as the Small Diameter Bomb.

B–52 Strategic Radar Replacement program

The budget request contained $55.5 million in PE 11113F for B–52 squadrons, but contained no funding for the B–52 Strategic Radar Replacement (SR2) program.

The committee notes that the B–52 SR2 program is a radar replacement program that could take advantage of the advanced capabilities of modern, non-developmental radars, and maximize commonality with other platforms. In April 2011, the Air Force Requirements Oversight Council recommended replacement of the existing B–52 radar with a non-developmental radar system. However, due to Air Force budget affordability concerns stemming from compliance with the Budget Control Act of 2011 (Public Law 112–25), the B–52 Strategic Radar Replacement program was terminated in the fiscal year 2013 budget request. In 2013, the Air Force reported to the congressional defense committees that a radar replacement is estimated to be the lower cost option rather than sustaining the current radar over the projected service life of the B–52. The committee understands the sustainment costs for the legacy radar system are predicted to significantly increase after 2017 based on obsolescence and diminishing manufacturing sources issues.

Therefore, based on the projected savings, as well as the need for common conventional capability across the B–52 aircraft fleet, the committee encourages the Secretary of the Air Force to include funding in the fiscal year 2016 budget request that would begin replacement of the B–52 legacy radar system.

Common airborne sense and avoid

The budget request contained $11.8 million in PE 35220F for the design, development, integration and testing of a common airborne sense and avoid (C–ABSAA) capability for unmanned aerial vehicles.

The C–ABSAA system would provide the capability to integrate unmanned aerial vehicles into United States national airspace system and globally. The committee notes that plans for fiscal year 2015 include continuing to refine C–ABSAA requirements and continuing to mature the C–ABSAA system with the Air Force Research Lab. The committee supports this plan and encourages the Department of the Air Force to continue annual funding to support a Milestone B decision in fiscal year 2019.

The committee recommends $11.8 million, the full amount of the budget request, in PE 35220F for C–ABSAA design, development, integration and testing.

Cyber operations program elements

The committee notes that the Air Force has created specific program element and procurement lines for Offensive Cyber Operations (OCO) and Defense Cyber Operations (DCO). The committee is aware that this was done to consolidate the funding activities in

these areas into single program lines to allow for rapid technology development and deployment for offensive and defensive tools. The committee commends the Air Force for being proactive in consolidating its activities, providing transparency in oversight for Congress while also allowing for rapid acquisition on the part of the Air Force. The committee believes this is a model for program management and oversight that should be emulated by the other services and Defense Agencies, to the extent that is practicable.

E–8 Joint Surveillance and Target Attack Radar System replacement program

The budget request contained $73.1 million in PE 37581F for Next Generation (NextGen) Joint Surveillance Target Attack Radar System (JSTARS) research and development. NextGen JSTARS would replace the current E–8C JSTARS aircraft and provide battle management, command and control, intelligence, surveillance and reconnaissance for the combatant commanders. The Department of the Air Force currently plans to attain initial operational capability with four NextGen JSTARS aircraft in fiscal year 2022, and to attain full operational capability with 16 aircraft in fiscal year 2025.

The committee notes that the E–8C JSTARS aircraft has provided effective joint air command and control in both land and maritime arenas. However, current JSTARS platforms are aging and the sustainment costs have increased. The committee also notes that the budget request includes a Department of the Air Force proposal to recapitalize the JSTARS fleet with a commercially available aircraft that will decrease the logistics footprint, decrease sustainment costs, increase operational flexibility, and operate in an anti-access/area denial environment. The committee supports this decision. However, the committee notes that past intelligence, surveillance, and reconnaissance aircraft programs have failed due to the selection of platforms too small to properly support the necessary mission equipment and crew. Therefore, the committee encourages the Air Force to carefully review its requirements for the crew size, electrical power, mission systems equipment, and aircraft performance to ensure that any new JSTARS platform can provide equal or better capability than the current E–8C aircraft.

The committee also notes that the Department of the Air Force currently plans to retire the JSTARS T–3 test aircraft in fiscal year 2015 and to retire five additional E–8C aircraft in fiscal year 2016. The committee further notes that that the NextGen JSTARS program is scheduled to release a request for proposal in late fiscal year 2015 and source selection is planned to be conducted in fiscal year 2016. The committee expects that the Department of the Air Force will take no action to prematurely retire E–8C aircraft before 2016, and before the committee is fully briefed on the acquisition strategy, schedule, costs, and key performance parameters of the NextGen JSTARS aircraft program.

Finally, the committee understands that the Department of the Air Force intends to leverage high technological-readiness-level communication, sensor, battle management and command and control system technologies to reduce program cost, reduce schedule

and reduce risk of the NextGen JSTARS aircraft program. The committee is concerned that a lengthy acquisition program will result in a capabilities gap which will leave the combatant commanders without an acceptable level of ground moving target indicator and battle management command and control capability for several years. The committee notes that the JSTARS analysis of alternatives described a need for the integration of existing technology rather than the acquisition of new systems, and believes that the use of existing technology combined with a commercially available aircraft can result in a significantly faster acquisition program. Accordingly, the committee urges the Department of the Air Force to accelerate the NextGen JSTARS program.

The committee recommends $73.1 million, the full amount requested, in PE 37581F for NextGen JSTARS research and development.

EC–130 Compass Call aircraft replacement program

The committee notes that the current fleet of EC–130H "Compass Call" aircraft are the Air Force's only wide-area, airborne Command and Control Warfare/Information Operations weapon system, and that the Air Force plans to retire seven Compass Call aircraft in fiscal year 2016. In addition, the committee understands that the Air Force is conducting an analysis of alternatives (AOA) on a follow-on capability to replace the current Compass Call aircraft. The committee directs the Secretary of the Air Force to provide a briefing to the House Committee on Armed Services not later than June 1, 2015, on the status and content of the AOA.

Ejection seat safety and reliability improvement program

The budget request contained no funds for the procurement of modernized and upgraded ejection seats for Department of the Air Force fighter and bomber aircraft.

The committee understands that aircraft aging and heavy operations tempo have produced fatigue and corrosion in legacy ejection seat designs which were designed and procured by the Department of the Air Force in the mid–1970s. The committee further understands that the incorporation of modern helmet mounted displays creates significant risk to pilot survival during high-speed ejections because aerodynamic forces at high speeds within the current ejection seat operational envelope lift the modern helmet off the pilot, generating high-neck tension loads. Data indicates that the Joint Helmet Mounted Cueing System and helmet mounted displays in tactical fighter aircraft can structurally fail above 450 knots, which causes wind-stream aerodynamics on the pilot's helmet to generate neck tension loads over 700 pounds, well above risk-of-injury thresholds to the pilot. The committee notes that the Department of Defense Military Handbook 516B (MIL–HDBK–516B) for Airworthiness Certification Criteria prescribes a requirement for less than 5 percent risk of major injury resulting from an aircraft ejection event, but that the requirement stipulated is not being met today for ejection seats in legacy fighter aircraft or fifth generation tactical aircraft. The committee understands that state-of-the art upgraded ejection seats can effectively address these risks while at the same time providing significantly improved ease of mainte-

nance and increased aircraft availability, but the Department of the Air Force has failed to take advantage of the new and improved ejection seat technology that would greatly enhance protection of pilots in ejection seat aircraft during emergency situations. The committee notes that the high-speed ejection of a tactical fighter pilot in January 2014 resulted in a pilot fatality because of the ejection's high-neck tension load encountered during the ejection.

Subsequently, the committee encourages the Department of the Air Force to develop a strategy to begin replacing the 1970s-designed ejection seats equipped in most legacy fighter and bomber aircraft as soon as possible. The committee believes that minimizing sustainment life-cycle costs through commonality with currently-fielded components should also be included as a prime determinant in selecting an upgraded ejection seat.

Accordingly, the committee directs the Inspector General of the Department of Defense to provide a report to the congressional defense committees with the submission of the President's fiscal year 2016 budget to Congress, that articulates which Department of Defense type, model, series ejection seat equipped aircraft meet the aircrew survivability and equipment airworthiness requirements stipulated by current policy and regulation of the Department for pilots and aircrew that wear advanced helmet display equipment, night vision goggles, or both, during flying operations.

Therefore, elsewhere in this Act, the committee establishes two budget lines in research, development, test, and evaluation, Air Force account, and the Aircraft Procurement, Air Force account titled "Ejection Seat Reliability Improvement Program". The committee recommends $10.5 million, an increase of $10.5 million, of which $3.5 million is for initial qualification in the research, development, test, and evaluation, Air Force account, and $7.0 million is for initial installation of upgraded ejection seats in the Aircraft Procurement, Air Force account.

F–35 25mm cannon ammunition

The committee is concerned about the Air Force's plans for evaluating and fielding 25mm cannon ammunition for the F–35 Joint Strike Fighter. Specifically, the committee is concerned about the procurement of some types of 25mm ammunition, potentially at the exclusion of any alternative North American National Technology Industrial Base offerings. Therefore, the committee directs the Secretary of the Air Force to provide a briefing to the House Committee on Armed Services not later than August 1, 2014, on the Air Force's plans to evaluate, test, and field 25mm cannon ammunition for the Air Force's F–35 fleet.

F–35 aircraft program

The F–35 aircraft program is the largest acquisition program within the Department of Defense, with a current planned procurement of 2,443 aircraft for the Navy, Marine Corps, and Air Force to meet fifth generation U.S. fighter requirements. The committee notes that despite the decreased budget authority contained in the Budget Control Act of 2011 (Public Law 112–25), the Department has not decreased its planned procurement of 2,443 aircraft. The committee strongly supports the requirement for fifth generation

fighter aircraft due to projected increases in the effectiveness and quantities of threat anti-aircraft ground systems and adversary aircraft and their associated air-to-air weapons. The committee believes that without advanced fifth generation aircraft, the United States may be significantly limited in its ability to project power in the future.

The F–35 program is approximately 50 percent through its flight test program which is planned to be completed in the first quarter of fiscal year 2018. At a hearing held by the House Committee on Armed Services' Subcommittee on Tactical Air and Land Forces on March 26, 2014, the F–35 program executive officer testified that the F–35 program is making slow but steady progress. The committee notes that the F–35 program executive officer has identified the software development for the final development software block, known as block 3F, as an area with some risk remaining, which could result in a 4- to 6-month delay in delivery of software block 3F. In the committee report (H. Rept. 113–102) accompanying the National Defense Authorization Act for Fiscal Year 2014, the committee expressed a concern about delayed software development and recommended a provision that would require the Under Secretary of Defense for Acquisition, Technology and Logistics to establish an independent team consisting of subject matter experts to review the development of F–35 software and to submit a report to the congressional defense committees. This provision was included in the National Defense Authorization Act for Fiscal Year 2014 (Public Law 113–66). The committee expects this report to be submitted by June 2014, and will consider future actions based on the recommendations submitted by the independent team of subject matter experts.

F–35 block 4 program

The budget request contained $71.8 million in PE 20714F, PE 64800N, and PE 64800M for development of the F–35 block 4.

The F–35 block 4 program is planned to provide follow-on F–35 capabilities after completion of the engineering and manufacturing development program, currently scheduled for October 2017, which would include the integration of additional U.S. and partner nation weapons into the F–35 aircraft. The block 4 program would also provide a dual-capable F–35A aircraft for the Air Force, allowing it to perform both conventional and nuclear strike missions. Currently, the dual-capable mission is performed by both F–16 and F–15E aircraft.

The committee supports the F–35 block 4 program, which is developing a streamlined approach to deliver capabilities as soon as feasible. The committee notes that the block 4 development program would be completed in two parts, a block 4A and block 4B, and further notes that the block 4B program is currently expected to achieve its initial operational capability in fiscal year 2024. The committee understands that the dual-capable F–35 aircraft would be included in block 4B, and to replace the aging F–16 fleet, the committee encourages the Department of the Air Force to accelerate the completion of block 4B with future budget requests.

Ground Moving Target Indicator Way Ahead

Combat Operations in the Islamic Republic of Afghanistan and the Republic of Iraq have highlighted a growing demand for airborne ground moving target indicator (GMTI) sensing as well as significant phenomenologically-driven performance limitations in counter-insurgency and counter-terrorism operation environments. The committee understands that the Department of the Air Force intends to recapitalize the E–8C joint surveillance and targeting radar attack system (JSTARS) fleet on a more efficient airframe with modern radar, avionics, and communication systems, and onboard battle management and command and control (BMC2) and Intelligence Surveillance and Reconnaissance capability. Well ahead of the initial operating capability (IOC) of any replacement platform, the Department of the Air Force intends to reduce the E–8C fleet by nearly one third, by reducing the E–8C JSTARS fleet from 16 to 11 aircraft, and to begin incrementally reducing associated E–8C JSTARS manpower.

At the same time, the committee notes that the Department of the Air Force continues to test and field Global Hawk Block 40 aircraft with the multi-platform radar technology insertion program (MP–RTIP) MTI radar, eventually fielding 11 high-altitude, long endurance aircraft. The committee also notes that the Department of the Air Force development efforts relating to the vehicle dismount and exploitation radar (VADER) transitioned to the Army with no apparent plan to field a capability on Department of the Air Force remotely piloted aircraft (RPA).

The committee is concerned that the volume and pace of change in the GMTI development and fielding may be indicative of a lack of precision in the underlying requirement set. Clearly, the need to recapitalize the current JSTARS aircraft is urgent, and the committee believes a rapid acquisition to achieve the required BMC2 and ISR capabilities is necessary. While the JSTARS recapitalization platform is planned to achieve far better performance in the areas of higher altitudes, superior sensing, increased operational availability and speed, the number of platforms to be fielded is identical to that of the current JSTARS fleet. However, the requirement for the number of JSTARS was established long before 11 long-endurance high altitude GMTI platforms were developed. Also, limitations in GMTI performance against dismounts that led to the development of the VADER have not been fully addressed as part of the JSTARS recapitalization plan.

Therefore, the committee directs the Secretary of the Air Force, in coordination with the Chairman of the Joint Chiefs of Staff, to provide a report to the congressional defense committees and the congressional intelligence committees by February 16, 2015, that captures the aggregate requirement for GMTI capability and capacity for the Department of Defense. The report should detail the current validated requirements for GMTI capabilities and capacities. Requirements should be expressed in terms of sensor fidelity using metrics such as ground radar coverage area, revisit rate, minimum detection velocity, target locating error, radar imaging, hours onstation per mission per month per year, sorties per month and per year, and anticipated targets types and density. The report should also highlight the degree to which the current Air Force plan, in-

cluding the near-term reductions in JSTARS capacity and the end-state aggregate of 27 MTI aircraft compare to the underlying requirements.

Metals Affordability Initiative

The budget request contained $32.2 million in PE 63112F for advanced materials for weapons systems. Of this amount, $5.4 million is estimated for the Metals Affordability Initiative (MAI).

The committee notes that the MAI is a public-private partnership that includes the entire domestic specialty aerospace metals industrial manufacturing base. Air Force participation with MAI has resulted in significant improvement in the manufacture of specialty metals for aerospace applications, including aluminum, beryllium, nickel-based superalloys and titanium. Due to the widespread use and need for the Department of Defense, the committee encourages the Air Force to engage with the other military departments and agencies to ensure they are able to leverage MAI for their specific needs. In addition, the committee encourages the Deputy Assistant Secretary of Defense for Manufacturing and Industrial Base Policy to examine the MAI partnership model to determine if it might be integrated into the work of the Lightweight and Modern Metals Manufacturing Innovation Institute in the advanced manufacturing initiative.

The committee recommends $42.2 million, an increase of $10.0 million, in PE 63112F for the MAI program.

Nuclear command and control for enduring tanker aircraft

As the Air Force recapitalizes its tanker fleet, the committee believes it is important that nuclear command and control requirements for tankers be revalidated and a long-term plan be developed to fulfill any unmet requirements. Therefore, the committee directs the Chairman of the Joint Chiefs of Staff, in consultation with the Secretary of the Air Force and the Commander, U.S. Strategic Command, to review, and if appropriate update, the requirements contained in Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6811.01C related to nuclear command, control, and communications for tanker aircraft. The committee further directs the Chairman to submit a report to the congressional defense committees by April 1, 2015, on the results of this review.

Additionally, in the event that, subsequent to the Chairman's update, there are any unmet requirements contained in the updated 6811.01C for enduring tanker aircraft, the committee directs the Secretary of the Air Force to submit a plan to the congressional defense committees by November 1, 2015, to ensure that enduring tanker aircraft meet all requirements contained in CJCSI 6811.01C, as updated, related to nuclear command, control, and communications. The plan should include a schedule for updating all enduring tanker aircraft to meet any unmet requirements as well as associated costs and program details for such a plan.

Presidential Aircraft Recapitalization program

The budget request contained $11.0 million in PE 41319F for the Presidential Aircraft Recapitalization (PAR) program.

The committee understands that the Air Force plans to develop the PAR acquisition strategy, complete milestone B documentation, continue market research, and develop the Systems Requirements Document in fiscal year 2014 and throughout fiscal year 2015. The committee is also concerned that the Air Force is planning to circumvent section 2366b of title 10, United States Code, regarding the requirement to complete a Preliminary Design Review prior to commencement of milestone B and contract award for the aircraft selection. As well, the Systems Requirements Review will not occur until at least 6 months after the aircraft selection. The committee also understands that the Secretary of the Air Force may attempt to assume the roles and responsibilities of PAR product support manager, system and subsystems integrator, and engineering systems and technical authority, which is a departure from past and current practices for those functions regarding presidential support aircraft. The committee believes this may increase risk to product development and execution of life-cycle sustainment activities of the PAR program.

Therefore, elsewhere in this Act, the committee includes a provision that would require the Secretary of the Air Force to complete a Preliminary Design Review for the PAR program prior to the Milestone Decision Authority awarding a milestone B and contract approval for the PAR program. Further, the committee encourages the Secretary of the Air Force to comprehensively reassess the risk in assuming the aforementioned product support and integration management responsibilities, that have otherwise been the responsibility of the Original Equipment Manufacturer, for presidential support airlift aircraft.

The committee recommends $11.0 million, the full amount requested, in PE 41319F for the PAR program.

Wide area surveillance

The budget request contained $20.6 million in PE 35206F for development of airborne reconnaissance systems, but contained no funding for development of wide area surveillance.

The committee notes that persistent day and night wide-area motion imagery (WAMI) capability is flying in the Islamic Republic of Afghanistan, and is considered by operational commanders to be a critical intelligence, surveillance, and reconnaissance program for combat units.

The committee also notes that Congress provided an increase of $10.0 million in fiscal year 2014 to begin integration of a near-vertical direction finding capability into an existing WAMI-equipped MQ–9 unmanned aerial system, which is resulting in a multi-intelligence capability. The committee understands that the Department of the Air Force plans to fund a WAMI system in fiscal year 2016 to begin a program of record. The committee is concerned that without funding in fiscal year 2015 to continue development of the multi-intelligence capable wide-area surveillance system, engineering teams will be reduced or disbanded, technical support to deployed systems will be impacted, and program improvement efforts will be reduced or terminated. The committee further notes that the Chief of Staff of the Air Force included an

increase of $10.0 million for a WAMI sensor program among his unfunded priorities for fiscal year 2015.

Accordingly, the committee recommends $30.6 million, an increase of $10.0 million, in PE 35206F for further development of WAMI.

RESEARCH, DEVELOPMENT, TEST, AND EVALUATION, DEFENSE-WIDE

Overview

The budget request contained $16.8 billion for research, development, test, and evaluation, Defense-Wide. The committee recommends $17.0 billion, an increase of $223.3 million to the budget request.

The committee recommendations for the fiscal year 2015 research, development, test, and evaluation, Defense-Wide program are identified in division D of this Act.

Items of Special Interest

Analysis of Alternatives for Undersea Clandestine Insertion of Special Operations Forces

The committee is aware of a recently completed Analysis of Alternatives (AOA) for Undersea Clandestine Insertion of Special Operations Forces and that the review provides alternatives for continued operational capability as well as future growth for Navy Sea, Air, Land undersea insertion capabilities. The committee understands that this AOA included representatives from U.S. Special Operations Command, the Department of the Navy (Program Executive Officer, Submarines), and the Joint Staff and was coordinated by a study director from the RAND Corporation, a Federally Funded Research and Development Center. The committee understands that the final publication of the AOA was to be made available to the congressional defense committees in March 2014.

Therefore, the committee directs the Secretary of Defense to provide a copy of the Analysis of Alternatives report in its entirety and a briefing on the report to the congressional defense committees by July 1, 2014. The report and briefing should be presented to the committees in unclassified and classified formats as determined by the Secretary of Defense.

Ballistic Missile Defense Midcourse Segment

The budget request includes $1.004 billion for the Ballistic Missile Defense Midcourse Defense Segment in PE 63882C for activities in research, development, test and evaluation, Defense-wide.

The committee observes that while this is an increase for this program element, also referred to as the Ground-based Midcourse Defense (GMD) segment, in the fiscal year 2015 budget request when compared to the fiscal year 2014 request, that this year's request also includes two new Missile Defense Agency (MDA) activities, "Improved Homeland Defense Interceptors" and "Discrimination Improvements for Homeland Defense", not found in the prior year's request. Thus, the basic GMD program funding has been cut in the proposed budget request for fiscal year 2015.

The request supports the MDA's top management focus areas: Capability Enhancement (CE) 2 Enhanced Kill Vehicle (EKV) return to intercept activities; interceptor reliability enhancements; sustainment of the weapons system; return to Ground-based Interceptor (GBI) deliveries; Missile Field 1 refurbishment. The committee is concerned that as the only operationally-deployed system for defense of the United States against growing intercontinental ballistic missile threats, additional investments are required to ensure GMD provides reliable capability with long-term sustainment and modernization of the Nation's most strategic defensive weapon system. The committee observes this system is approaching half of its life, 10 of 20 years, and additional funding may be required to conduct a robust reliability growth and testing program, and perform a modernization and technology refresh program.

The committee is aware that following two successive test failures of the CE–2 EKV (FTG–06 in January 2010 and FTG–06a in December 2010), MDA completed a successful non-intercept test on January 26, 2013. The next step for the CE–2 Return to Flight will be an intercept test scheduled for June of 2014. The committee is also aware that an attempted intercept test of the CE–1 EKV on July 5, 2013, which represents two-thirds of the operationally deployed GBI fleet but had not been tested since 2008, failed. The committee eagerly awaits the results of the Failure Review Board.

The committee recommends $1.044 billion, an increase of $40.0 million, in PE 63882C for the Ballistic Missile Defense Midcourse Defense Segment in research, development, test and evaluation, Defense-wide. The committee expects these additional funds to begin to correct the short-fall present in the fiscal year 2015 budget request for the reliability, refresh and modernization of the GMD system, including to upgrade the Capability Enhancement–2 kill vehicle software and batteries, the Command Launch Equipment Ground Fire Control architecture that was begun in fiscal year 2014, and stockpile reliability efforts.

Bioforensic threat detection

The committee is aware that detecting, deterring, and defeating biological and physical agents used by terrorists is of critical importance to national security. The committee is aware that bioforensic detection capabilities can be helpful by identifying molecular markers in human cells following exposure to threat agents, and using suitable biomarkers for subsequent detection using field deployable equipment. Such methods can be used to rapidly identify and understand human individuals; drug plant sourcing; plant-based geographic locations; and the distribution routes of terrorist agents. The committee encourages the Department of Defense to develop combined government, academic, and industrial partnerships to field small, deployable, and rapid bioforensic analysis capabilities for Department operational forces.

Biosecurity in Department of Defense research facilities

The committee is concerned about the potential threat posed to the United States by biological weapons. The threat of a biological attack may come from a number of sources, including state, non-state and even lone actors, as was believed to be the case in the

2001 Anthrax attacks. The Subcommittee on Intelligence, Emerging Threats and Capabilities held a hearing on October 11, 2013, that examined the state of U.S. efforts for biodefense. During that hearing, the panel of independent expert witnesses was critical of the biosafety and biosecurity procedures in medical research facilities, identifying a lapse of proper screening and consistent procedures as a potential risk with respect to lone actor threats. While the committee notes that the biological agents stored in medical research facilities are not the only source of weaponizable materials, the committee believes the Department of Defense should take all precautions possible to mitigate the risk of bioterrorism.

Therefore, the committee directs the Secretary of Defense to provide a briefing to the Committee on Armed Services of the House of Representatives not later than September 30, 2014, on biosecurity procedures within Department of Defense biological research facilities which handle or store Category A, B, or C priority pathogens. The briefing should include a discussion of personnel screening procedures, security procedures, and the means for training personnel on safety and security procedures. The briefing should also highlight any inconsistencies or variability in procedures across the facilities.

Capabilities to experimentally study militarily-relevant High Reynolds Numbers

In Department of Defense Directive 4180.01, issued on April 16, 2014, the Department provides policy and guidance on energy planning, use, and management, and establishes an energy policy to "enhance military capability, improve energy security, and mitigate costs in its use and management of energy." One of the means to achieve these ends will include "improv[ing] the energy performance of weapons systems, platforms, equipment, and products, and their modifications."

The committee notes that mitigating turbulent boundary layer drag, which forms along the surfaces of all aircraft and marine platforms and produces a shear force that opposes the motion of the vehicle, is central to the goals of reducing fuel consumption and optimizing performance of military platforms, such as ships, submarines, and transport and fighter aircraft. Despite the critical and pervasive impact of these so-called "High Reynolds Number" turbulent boundary layers, the committee is concerned that only limited domestic capability exists to experimentally study them, though such studies are critical to developing and applying advanced computational techniques and empirical models to enhance the energy efficiency and performance of military platforms.

Therefore, the committee directs the Assistant Secretary of Defense for Research and Engineering to provide a briefing to the House Armed Services Committee on the Department's technical capabilities to experimentally study military relevant High Reynolds Number turbulent boundary layers and any gaps in the capability to carry out such studies by February 1, 2015.

Chemical Biological Defense Program threat priorities

The committee is aware of significant efforts within the Chemical Biological Defense Program (CBDP) to develop medical counter-

measures to protect U.S. troops from chemical, biological, radiological and nuclear (CBRN) threats. The committee notes that the development of a drug or vaccine to treat or protect against a given threat in many cases will take up to a decade from the time of conception through the Food and Drug Administration approval process to be available for use. However, the committee recognizes that the CBRN threat space is constantly evolving in terms of the type and severity of threats U.S. troops are likely to encounter at any point in time. The committee is concerned about the mismatch in these timescales, and therefore directs the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs to brief the House Committee on Armed Services by September 30, 2014, on the approved process for establishing and validating the priorities for the threats for medical countermeasures research and development. The briefing should include a list of the current threats, and the frequency with which the priority list is updated.

Combat helmet test and evaluation protocols

The committee recognizes the National Academies, at the request of Director of Operational Test and Evaluation (DOT&E), has completed a study that reviewed current DOT&E test protocols for combat helmets.

The committee understands the study undertaken by the National Academies evaluated the adequacy of the Army's Combat Helmet test protocol for both first article testing and lot acceptance testing, including its use of the metrics of probability of no penetration and the upper tolerance limit used to evaluate backface deformation. The study also evaluated the adequacy of the current helmet testing procedures to determine the level of protection provided by current helmet performance specifications. The committee notes there appears to be a lack of biomedical connection between either brain injury and performance metrics or penetration and backface deformation, and no scientific basis for the choice of backface deformation thresholds.

The committee encourages the Secretary of Defense to establish a research program to develop helmet test metrics that have a clear scientific link to the modes of human injury from ballistic impact, blast, and blunt trauma. The committee recommends the Secretary of Defense ensure that appropriate threats, in particular fragmentation threats, from current and emerging threat profiles are used in combat helmet testing. The committee also expects DOT&E to consider the findings and recommendations in the National Academies study and make a determination as to whether a new or modified first article test protocol for combat helmets is required.

Combatant commands and science and technology Communities of Interest

The committee is aware that the Department of Defense engages in a science and technology (S&T) planning process known as Reliance 21, which was established to coordinate and reduce unwarranted duplication in service and agency S&T efforts. The technical groups known as Communities of Interest (COI) are the heart of the Reliance 21 process, and they cover 17 technical areas. The

committee recognizes that the COIs represent a key mechanism to assess programs, share information, and, when needed, to develop long-term roadmaps for key technology thrusts. However, the committee does not believe that all of the combatant commands are included in this COI process. Since most combatant commands have scientific advisers, and some have funds and authorities to carry out S&T programs, it appears to be an oversight for them not to be integrated into relevant COIs. The committee urges the Department to actively engage with combatant commands, such as Transportation Command and Cyber Command, in the S&T COIs to ensure their perspectives are included in current and future roadmapping and assessment activities.

Combating Terrorism and Technology Support Office

The budget request included $69.7 million in PE 63122DZ8 for the Combating Terrorism and Technology Support Office (CTTSO).

The committee notes CTTSO's unique contributions in supporting the warfighter with the rapid acquisition of counterterrorism and irregular warfare technologies and capabilities. The committee supports CTTSO's unique business model that rapidly identifies and prioritizes Department of Defense requirements and conducts timely research, development, testing, and evaluation projects. The committee recognizes the important role CTTSO continues to play now and in the future given evolving threats from terrorism and irregular warfare challenges.

The committee recommends $89.7 million, an increase of $20 million, in 63122DZ8 for the Combating Terrorism and Technology Support Office.

Conference restrictions for scientists and engineers

The committee is aware that one of the areas where the Department of Defense has been trying to reduce its costs has been in conference travel. With recent advances in collaboration tools, video teleconferencing, and telepresence, such travel can be reasonably scaled back in some areas with little negative impact on the workforce.

However, the committee is concerned that blanket restrictions on conference travel are having an acute negative impact on the science and engineering workforce. The committee recognizes that such conferences are not just professional enrichment for this sector of the workforce, but are vital and mission-essential tools of the trade. For example, scientists and engineers use national and international sponsors of professional scientific societies to peer review their work, get exposed to the most recent advances in the international academic community, and better understand the technological advances of allies and adversaries alike. In addition, for many scientists and engineers, participation in these professional societies is essential for professional development in order to attain fellowships and recognition within their respective fields of endeavor. The committee is aware of anecdotal examples of these travel restrictions, coupled with furloughs and pay freezes, contributing to some members of the workforce leaving public service.

The committee applauds the Under Secretary of Defense for Acquisition, Technology and Logistics for recognizing the problem and

issuing a memo on February 14, 2014, to clarify the guidance for technical and industry conferences. The committee urges the Under Secretary to continue to highlight this issue within the Department and to find appropriate mechanisms for tracking compliance with this guidance, and find additional means to support travel for the science and engineering workforce to attend technical conferences.

Coordination of efforts for advanced manufacturing of medical countermeasures

The committee is aware of multiple efforts in biological defense within several Government departments and agencies, in particular in the area of medical countermeasures (MCM). The Chemical Biological Defense Program (CBDP) within the Department of Defense has begun construction on an advanced manufacturing center for MCM in order to address the unique needs of the Department of Defense for medical countermeasures. However, the committee is also aware that the Department of Health and Human Services has also made significant investments in constructing its own centers for advanced manufacturing. In general, these centers will be focused on addressing the requirements of the Department of Health and Human Services for MCM.

In testimony before the Subcommittee on Intelligence, Emerging Threats and Capabilities on October 11, 2013, the principal investigator for the Texas A&M Center for Innovation in Advanced Development and Manufacturing, one of the Department of Health and Human Services centers, testified that those centers were fully capable of meeting all Department of Defense requirements for MCM advanced manufacturing. This has raised questions regarding the need for the Department of Defense to fund what appears to be a duplicative effort. The committee notes that while there are differences in the capabilities between the Department of Defense and Department of Health and Human Services centers, there is also a significant amount of overlap.

The committee is aware that coordination on research and development of MCM is performed through the Public Health Emergency Medical Countermeasures Enterprise (PHEMCE), in which the Department of Defense is an active participant. These coordination efforts are laudable. However, the committee is aware that the PHEMCE is not directly managing the advanced manufacturing process and will instead rely on a separate governance board. In light of these facts, the committee is concerned that, although the Department of Defense center for advanced manufacturing is already designed and construction has begun, the ability to coordinate with and leverage the efforts of other Government agencies for advanced manufacturing does not yet appear to be fully established, and therefore, the possibility of inefficiency and unnecessary redundancy within the Department of Defense is still significant.

Therefore, the committee directs the Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs to provide a briefing to the congressional defense committees by October 30, 2014, on the status of the coordination process for the advanced manufacturing of medical countermeasures between the Department of Defense and the Department of Health and Human Services. This briefing should include the following:

(1) Details of the Department of Defense's role on the governance board which oversees the advanced manufacturing process, including frequency of meetings, level of interaction, etc.

(2) The degree to which the Department of Defense is able to utilize the Department of Health and Human Services advanced manufacturing centers, including a discussion of time and cost savings.

(3) Any application of best practices, lessons learned, etc. from past coordination efforts with the PHEMCE with respect to the current coordination efforts for advanced manufacturing.

(4) Any obstacles to the coordination process, including any issues which may prohibit or impede the Department of Defense's ability to utilize the Department of Health and Human Services advanced manufacturing centers.

Defense Advanced Research Projects Agency Spectrum Challenge

The committee is aware that the Defense Advanced Research Projects Agency (DARPA) conducted a competition in 2013 and 2014 to develop advanced radio techniques capable of communicating in congested and contested electromagnetic environments without direct coordination or spectrum preplanning. This DARPA Spectrum Challenge entailed head-to-head competitions between multiple industry and academic teams, including an opposing red team, in a structured testbed environment that required teams to compete against one another, as well as work cooperatively. The winning teams won prizes totaling $150,000, and provided valuable insight for the Department of Defense into possible technical solutions for remedying the future spectrum crunch.

The committee applauds the creativity of DARPA in using its prize authority to explore novel techniques for addressing spectrum-sharing problems. As noted elsewhere in this report, the committee is aware that spectrum is a vital national security resource which must be actively managed to ensure effective and efficient use that balances competing demands between the services, other Federal agencies, and the private sector. The committee sees this sort of competition as a useful tool to address broader national challenges related to spectrum. The committee encourages the Department of Defense, as well as other Federal agencies, to creatively use such prize and challenge authorities to find innovative solutions to growing problems like spectrum efficiency and sharing.

Development of antibiotics against biothreats

The committee is aware that Category A and B bacterial pathogens pose a significant risk to national security because they can be easily disseminated, result in high mortality rates, and require special action for public health preparedness. In addition to the Category A and B pathogens, the committee understands that there is a critical need for antibiotics against other highly resistant bacteria which also may pose a threat to the health and security of the Nation. These issues reinforce the committee's concern about the full spectrum of bacterial infectious diseases that pose significant threats to our military. The Defense Threat Reduction Agency (DTRA), together with the Chemical Biological Defense Program (CBDP), have the mission to safeguard the United States and its allies from chemical, biological, radiological, nuclear, and high-yield

explosive (CBRNE) weapons of mass destruction by providing capabilities to reduce, eliminate, and counter the threat and mitigate effects. The committee recognizes that there are ongoing efforts within DTRA and the CBDP to develop antibiotics to combat these pathogens. However, the committee is also aware that the current austere fiscal climate will require these organizations to make difficult decisions regarding funding and priorities for a number of efforts, which may result in funding cuts for important research and development. Given the threat posed by these Category A and B bacterial pathogens, the committee encourages DTRA and the CBDP to continue research on the development of antibiotics to combat these pathogens.

Development of innovative detection and threat identification technologies

The committee remains concerned about credible threats posed by state and non-state actors in their attempts to acquire and weaponize chemical, biological, radiological, nuclear and high-yield explosive (CBRNE) weapons of mass destruction (WMD) for use against the United States and its allies. The committee is aware that the Defense Threat Reduction Agency (DTRA) continues to develop and field technologies that reduce, counter, and eliminate the threat of CBRNE WMD. The committee is also aware that as part of these efforts, DTRA continues to invest in small lightweight, person-portable detection equipment to detect CBRNE materials. The committee recognizes the importance of this equipment as enabling a wide range of operations within CBRNE environments, and therefore encourages DTRA to continue the development, demonstration and deployment of innovative and emerging detection and threat identification technologies that are useful across the widest-spectrum of CBRNE threats. In addition, the committee directs the Director of DTRA to brief the House Committee on Armed Services by December 31, 2014, on their efforts to advance and make operational a light-weight, person-portable CBRNE detection and analysis device.

Electronic warfare roadmap

The committee recognizes the importance of electronic warfare (EW) technologies, both for irregular warfare challenges such as defeating improvised explosive devices, as well as for peer competitors where anti-access and area denial threats are paramount. As the technologies for electronic warfare, signals intelligence, and cyber operations increasingly converge, the committee believes that it will be important to prioritize and coordinate science and technological investments to maintain technological superiority. The committee commends service research labs and the Defense Advanced Research Projects Agency for making important EW technology investments, and recognizes the critical role that the Department of Defense's Reliance 21 Communities of Interest (COI) play in identifying the critical technologies that will be key for the United States to maintain its global advantage in EW operations out to 2025. The committee understands that the EW COI is working on an electronic warfare roadmap, and looks forward to seeing that document

to better understand where the Department will be making key investments across the Future Years Defense Plan.

Expeditionary airfield technology

The committee understands that Expeditionary Airfields (EAF) are used by all the military services to support forward deployed air operations, and that EAFs have the capability to support all types of aircraft from all the military services in full spectrum operations. The committee understands the military services may require new EAF technology, an investment that could be critical to enhancing forward deployed military readiness in an expeditionary environment. Therefore, the committee directs the Under Secretary of Defense for Acquisition, Technology, and Logistics to provide a report to the congressional defense committees not later than February 15, 2015, on the following:

(1) The need for expeditionary airfields in the ongoing threat environment;

(2) The capacity of existing EAF technology to support additional air assets;

(3) The efficacy of expeditionary airfields in mobilization and demobilization in theater; and

(4) The status of development of new matting technology that can support additional weight and accommodate increased thermal load and engine blast from vertical lift aircraft.

Field-programmable gate arrays for defense

The committee recognizes the importance of utilizing field-programmable gated arrays (FPGAs) for defense application in order to allow for greater flexibility in the processing power of some defense applications. The committee is aware, though, that such capability can also introduce vulnerabilities into defense systems, and the Department of Defense is challenged to find means to mitigate those potential vulnerabilities and ensure a high level of trust for this class of microcircuits. Further, the committee notes that the prevalence of foreign FPGA providers makes trusted sourcing for these microcircuits an additional security challenge that the Department must address.

Therefore, the committee directs the Under Secretary of Defense for Acquisition, Technology, and Logistics to conduct an analysis of the Department's strategy for utilizing FPGAs and to provide a briefing to the House Committee on Armed Services by March 1, 2015 on the results of the analysis. The briefing should address the following issues:

(1) How FPGAs fit into both Department's microelectronics strategy, especially with regard to their use in both new and legacy systems;

(2) How trust and security vulnerability can be mitigated by the Trusted Defense Systems strategy;

(3) Any special budgeting, manpower, manufacturing or acquisition issues that may need to be addressed by the use and integration of FPGAs; and

(4) Recommendations for how to increase utilization of FPGAs, and if necessary, production capacity.

Future vertical lift

In the committee report (H. Rept. 112–479) accompanying the National Defense Authorization Act for Fiscal Year 2013, the committee directed the Under Secretary of Defense for Acquisition, Technology and Logistics to submit a report to the congressional defense committees providing the status of the Department's engagement with the Vertical Lift Consortium on related technology requirements and development strategies for next-generation vertical lift aircraft.

The committee notes that the required report was delivered to the congressional defense committees on May 13, 2013. The committee recognizes incremental improvements or upgrades to current Department rotorcraft will not fully meet future joint service operational requirements. The committee supports the development of future vertical lift aircraft and encourages the Department to expand the prototyping program to include vertical lift aircraft. The committee also understands that a key aspect of this program is the Joint Multi-Role (JMR) Aircraft Demonstrator. The program includes related research on next-generation rotors, drive trains, engines, sensors, and survivability. The committee encourages the Department to provide additional funding for this program in the fiscal year 2016 budget request.

Guidance on utilizing non-profit research institutes

The committee recognizes that independent, non-profit research institutions provide value to the research and development portfolios of the Department of Defense. The committee believes that non-profit research institutions have unique capabilities, experience, and infrastructure that are well suited to technology maturation, risk reduction, and transition to programs of record.

As noted in the committee report (H. Rept. 113–102) accompanying the National Defense Authorization Act for Fiscal Year 2014, the committee is aware the Department is examining ways to better utilize the unique capabilities and expertise of non-profit research institutions, especially in the area of transitioning innovation to commercialization. Furthermore, the committee understands that the Department has been evaluating how to better utilize the special authorities within the Defense Federal Acquisition Regulations in order to better leverage the capabilities of the non-profit research community. The committee is concerned that the Department has not clearly articulated that policy to the broader research and acquisition community to inform them of how they might best leverage those capabilities, and the special contracting authorities that might be used.

Therefore, the committee directs the Secretary of Defense to issue updated policy guidance related to the use of non-profit research institutions that clarifies their role in the research ecosystem, as well as the special provisions within the Defense Federal Acquisition Regulations that support their use. Additionally, the committee directs the Secretary to submit the updated policy guidance to the Committees on Armed Services of the Senate and House of Representatives by March 1, 2015.

Health of the research and development enterprise

The committee remains concerned about the long-term health of the Department of Defense research and development enterprise. There are currently 67 Department laboratories across 22 states, 10 federally funded research and development centers (FFRDCs), and 13 university affiliated research centers, as well as a workforce of 60,000 employees, of which approximately 36,400 are degreed scientists and engineers. The committee recognizes the pivotal role these facilities and people play in maintaining the technological edge of the Department of Defense and providing the necessary tools for the warfighter. The committee is concerned that the declining state of much of the Department of Defense lab infrastructure, especially compared to academic, industrial, and international counterparts, can also serve to dispel many of the technology workforce that the Department would most like to attract.

The committee is determined to ensure that Department research and development capabilities remain robust in order to assure a vibrant and agile research and development enterprise. The committee is concerned that declining budgets and increasing threats are placing pressures on the Department that may lead it to make short-term decisions with long-term ramifications. The committee is unsure if the Department is striking the appropriate balance between near- and long-term objectives, which may negatively affect the overall health of the research and development enterprise.

Therefore, the committee directs the Secretary of Defense to task the Defense Science Board to conduct an assessment of the organization, missions, authorities, and health of the defense research and development enterprise, and to submit a report on the findings of the assessment to the congressional defense committees by September 30, 2015. The assessment should include the following:

(1) How well do the defense laboratories respond to the needs of the Department?

(2) What mechanisms exist to refurbish and recapitalize Department of Defense labs, and how do those mechanisms compare with other Government, academic, international and industrial counterparts?

(3) How well does the Department attract, recruit, retain, and train its workforce to remain technically current and flexible to respond to emerging national requirements?

(4) Does the appropriate balance exist in each service between service control and laboratory director discretion so as to maximize laboratory mission effectiveness?

High-efficiency, conventional missile propulsion

The committee notes that munitions to support contingency plans in the various combatant command areas of responsibility may require long-range munitions to ensure adequate penetration of anti-access, area-denial environments. The committee is aware that technology for high-efficiency, conventional missile propulsion subsystems necessary for such strike requirements is limited and may require further research and development. Therefore, the committee encourages the Department of Defense to adequately resource efforts to mature high-efficiency conventional missile propul-

sion subsystems, and directs the Under Secretary of Defense for Acquisition, Technology, and Logistics to provide a briefing to the House Armed Services Committee by August 1, 2014 on current research and development efforts in this area.

Hypersonics research

The committee recognizes that hypersonics technology represents an important game-changing technology for the Department of Defense. The committee is aware that the Army successfully tested its Advanced Hypersonic Weapon in 2011 and plans additional tests this year. The Defense Advanced Research Projects Agency (DARPA) and the Air Force have cooperated on several hypersonics programs that have advanced the state of knowledge on materials and flight dynamics for such high-speed vehicles. Additionally, the committee understands that DARPA and the Air Force are beginning a new program to develop a high-speed strike weapon that will combine the characteristics of hypersonic flight with precision guidance to test a tactical weapon system. The committee believes that as such technology progresses, the Department will need to examine its test infrastructure to determine if additional investments and upgrades will be necessary.

The committee encourages the Department to continue to pursue advanced hypersonic technology to improve strike and reconnaissance capabilities, especially for denied areas. The committee believes that such investments are necessary to keep pace with foreign actors investing in similar capabilities, and should also examine methods for defending against hypersonic weapons as part of a balanced portfolio. The committee encourages the Department to closely monitor international hypersonics development efforts, as well as opportunities for cooperation with foreign allies. The committee applauds efforts such as the Hypersonic International Flight Research Experimentation program, which was a joint United States-Australian initiative to advance hypersonics technology, and utilized shared testing facilities like the Woomera Range in South Australia.

Internet access on Kwajalein Atoll

The committee is aware that the Department of Defense maintains a significant presence on Kwajalein Atoll, including contractors and families, to support Department of Defense activities there. Further, the committee understands that data access for those families is limited to low-bandwidth phone modems, which can negatively impact the welfare of personnel and their families stationed at a remote location, where electronic communications are useful in maintaining personal and family relationships.

Furthermore, the committee notes that the Defense Information Systems Agency (DISA) maintains high-bandwidth network connections to the Atoll, which were designed with additional capacity to allow for future expansions. The committee is also aware of instances in the past when DISA has provided additional networking capacity for morale, welfare and recreation applications through base exchanges. The committee believes that DISA could provide such capacity to families on the Atoll with minimal effort and cost. Therefore, the committee directs the Director, Defense Information

Systems Agency to submit a plan to the Committee on Armed Services of the House of Representatives by March 15, 2015, on providing internet access to families on Kwajalein Atoll.

Leveraging commercial technology for directed energy

The committee is aware of recent advances amongst the military services to field directed energy weapons, including the upcoming deployment of the Laser Weapon System onboard the USS *Ponce* by the Navy, as well as the recent testing of the High Energy Laser Mobile Demonstrator by the Army at White Sands Missile Range. The committee congratulates the services on this progress. The committee is also aware that the laser systems used in both of these cases are commercial off-the-shelf industrial lasers which were purchased and modified by each service to be suitable for their respective military application. In many cases, these lasers do not provide enough power to achieve mission objectives, and there are several research and development efforts underway to develop laser systems which will be capable of fulfilling all mission requirements. However, the committee recognizes that there are many critical system engineering and integration problems that may be solved using these lower power systems in the interim, which will reduce both the time and cost associated with the deployment of directed energy systems. Therefore the committee encourages the Department of Defense agencies which are working to develop directed energy weapons to continue to examine the industrial base for technologies which may be utilized for these systems, and to leverage such technologies whenever possible.

Military service coordination and transition efforts for the chemical biological defense program

The Chemical Biological Defense Program (CBDP) has the primary responsibility to develop technologies to protect U.S. troops from the threats posed by Chemical Biological Radiological Nuclear and Explosive (CBRNE) Weapons of Mass Destruction (WMD). The committee believes that frequent open communication between the CBDP and the military services is critical during all phases of the research, development, test, and evaluation (RDT&E) process for developing these technologies. Such communication is necessary to ensure not only that the warfighter requirements are being properly addressed in the early planning phases of the RDT&E process, but that the technology is transitioned to the military services on an adequate timescale to ensure the safety and protection of U.S. troops. Therefore, the committee encourages the CBDP to continue to improve its communication with the military services during all phases of the RDT&E process.

In addition, the committee remains concerned about the level of protection currently available to U.S. troops who are at risk of being exposed to CBRNE WMD, in particular with regards to mission-oriented protective posture (MOPP) gear. The committee is concerned that in many cases the equipment available to the military units may be outdated or inadequate to address current requirements. Therefore, the committee directs the Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs to provide a briefing to the House Committee on Armed

Services by November 30, 2014, on the coordination between the military services and the CBDP. The briefing should include details on the process by which the CBDP solicits and incorporates input from the military services into its planning and prioritization of RDT&E efforts, as well as the current plans and efforts to transition the resultant technology, including MOPP gear for CBRNE environments to the military services.

Minority science and technology programs

The committee recognizes that the Department of Defense has been working for many years to strengthen its role with Historically Black Colleges and Universities (HBCUs) and Minority Serving Institutions (MIs), which not only support a broad range of research, but also creates a diverse pool of talented scientists and engineers that can support academic, industrial, and federal research needs. The committee also commends the Department for expanding partnerships with non-profit organizations (NPO) that have a history of providing scholarship, mentoring, and career advancement support to minorities pursuing science and technology careers consistent with Department mission and needs. The committee applauds the former Assistant Secretary of Defense for Research and Engineering for issuing guidance in December 2011 to reinvigorate the Department's relationship with HBCU/MIs. In particular, this memo reiterated that "[t]hese institutions offer a talented science, technology, engineering, and mathematics (STEM) workforce that can benefit the research and educational efforts of the DoD and the nation." This memo focused on four areas of focus for action, including information collection to:

(1) Develop and maintain statistics on HBCU/MI success rates in response to competitive funding opportunities under broad agency announcements and other solicitations;

(2) Ensure that HBCU/MIs are made of aware of the opportunity for participation in all Department of Defense sponsored activities that invite participation of institutions of higher education;

(3) Encourage the use of Inter-governmental Personnel Act agreements or other personnel-detail mechanisms with HBCU/MIs;

(4) Ensure that emphasis is placed on recruiting and selecting HBCU/MI faculty to serve on Department of Defense STEM scholarship, fellowship, and research review panels and HBCU/MI students are informed of and encouraged to apply to STEM scholarship, fellowship, and internship programs.

The committee directs the Assistant Secretary of Defense for Research and Engineering to provide a briefing to the House Armed Services Committee by December 15, 2014 on the measures and metrics used by the Department to better understand how the Department is fulfilling the guidance from the December 2011 memo. In addition to demonstrating the Department's progress against the four goals above, this briefing should also examine what minority science and technology workforce, professional development, and technical assistance programs exist that could benefit from increased participation with HBCU/Mls, as well as what non-profit organizations exist that have a history of assisting minorities and HBCU/minority-serving institutions in expanding their participation in Department of Defense programs, including the leveraging

of both Defense and NPO scholarship funds to achieve these purposes.

Multi-aircraft control of unmanned aerial vehicles

The committee is aware of the enabling effects of employing large quantities of unmanned aerial vehicles on the battlefield. However, the availability of pilots, and the costs associated with training and employing pilots, has in some cases limited the ability of the Department of Defense to mass and capitalize on these capabilities.

Therefore the committee directs the Secretary of Defense to provide the congressional defense committees with a report by February 15, 2015 detailing the Department of Defense's plans to operationally test and deploy multi-aircraft control technology. This report shall include a breakdown of the efforts of each of the services along with the Department of Defense's plan to integrate those efforts between the services in order to minimize inefficiencies. The report shall also address advanced technology development and experimentation as well as the potential manpower savings of multi-aircraft control.

Multi-mission airborne radio frequency systems for unmanned aerial systems

The committee is aware that unmanned aerial systems (UAS) are increasingly important in intelligence, surveillance, and reconnaissance (ISR) missions. The committee also notes that while the use of multiple-input multiple-output systems is ubiquitous in commercial and some Department of Defense applications, it is largely absent in various Department of Defense airborne systems due to technological and operational challenges. The committee is aware that there is ongoing development of airborne radio frequency (RF) systems that could potentially improve the operation of airborne platforms, provide more robust anti-jamming capability, enable and enhance information collection and sensing of the operating environment, and incur minimum RF footprint to ensure a low probability of interception.

Therefore, the committee encourages the Department to leverage existing research and development to develop advanced, multi-mission, multi-antenna RF systems for UAS that will significantly enhance ISR capabilities in tactical networks resulting in improved mission success.

National Defense Education Program

The budget request contained $45.5 million in PE 61120D8Z for the National Defense Education Program (NDEP) for the purposes of attracting, engaging, and developing current and future generations of science, technology, engineering, and mathematics (STEM) talent to benefit the Department of Defense. Of this amount, no funds were requested for pre-kindergarten-to-12th grade (PK–12) STEM outreach programs.

The committee cannot stress enough that the recruitment, retention and development of an experienced, technical workforce is a critical national security requirement for the Department of Defense and that these efforts must start at the earliest stages of the STEM pipeline. The committee also stresses that growth in STEM

fields is important for the general economic health and competitiveness of the nation, but due to the special security requirements of Department of Defense employees, this need is especially acute.

The committee understands that as the demand for a diverse, highly skilled scientific and technical military and civilian defense workforce grows, the Department will need to continue to invest in strengthening local defense communities by enhancing student engagement in STEM initiatives that support the Department's research areas. The committee understands that NDEP K–12:

(1) Builds student interest in STEM fields and disciplines and in careers specific to the Department;

(2) Develops defense-relevant science, engineering, and mathematics skills; and

(3) Provides a future talent pool to fulfill the Department's demand for highly skilled STEM professionals by increasing access to authentic STEM experiences.

The committee recommends $55.5 million, an increase of $10.0 million, in PE 61120D8Z for the National Defense Education Program. Of these funds, the committee recommends $45.5 million, the requested amount for the SMART; and $10.0 million for PK–12 STEM outreach programs, an increase of $10.0 million. Of the funds requested for PK–12, the committee recommends the Department use some of the funds to carry out STEM activities that will support school districts with high concentrations of military dependent families. Such activities should include a focus on increasing teacher effectiveness as well as student achievement. The committee also believes that such outreach activities should look at opportunities to support the development of a cyber focused skill sets.

Neuroplasticity research partnerships

The committee is aware of advancements in neuroplasticity research made by university and non-governmental rehabilitation hospitals that have collaborated to maximize what can be learned regarding the brain's ability to develop and recover when it has become damaged. The committee encourages the Department of Defense's medical research and development organizations to establish research programs with university systems and non-governmental rehabilitation hospitals that have partnered in order to develop rapid and innovative outcomes in the treatment of service members with traumatic brain injury that may lead to efficiencies in restoring brain recovery and neurological function.

Optics and photonics for defense applications

The committee is aware of and recognizes the unique roles optics and photonics play in our Nation's security, including everything from information technology and communications to medicine and advanced manufacturing. The committee understands the United States has been the world pioneer in transitioning optics and photonics research to national security applications. Department of Defense contributions have been pivotal in laying the foundation of those capabilities, from early investments in lasers to the development of medical free electronic lasers for military photomedicine applications.

The committee also understands that increased competition has put America's leadership position at risk. Further, the committee is aware that the administration is attempting to address some of these competitiveness issues by creating a number of advanced manufacturing centers, and has expressed the intent in the fiscal year 2015 budget request to fund three to five additional centers.

The committee recognizes that the National Academy of Sciences report, "Optics and Photonics: Essential Technologies for Our Nation," emphasizes these findings. For example, among its other findings, it noted:

(1) The federal government should develop an integrated initiative in photonics that seeks to bring together academic, industrial, and government researchers, managers, and policy makers to develop a more integrated approach to managing industrial and government photonics research and development spending and related investments;

(2) "The U.S. government, and specifically the Department of Defense, should strive toward harmonizing optics with silicon-based electronics to provide a new, readily accessible and usable, integrated electronics and optics platform";

(3) The U.S. defense and intelligence agencies should fund the development of optical technologies to support future optical systems capable of wide-area surveillance, exquisite long-range object identification, high-bandwidth free-space laser communication, "speed-of-light" laser strike, and defense against both missile seekers and ballistic missiles; and

(4) "The United States should aggressively develop additive manufacturing technology and implementation."

Recognizing these imperatives, the committee encourages the Department to consider the establishment of a National Center for Optics and Photonics within its manufacturing mandate. The committee believes that doing so would allow the Department to create new opportunities for innovation, which will benefit the Department on multiple fronts. Specifically, the committee is interested in technological and manufacturing advances that a National Center for Optics and Photonics could make in critical defense applications such as advanced lasers, advanced optical materials, data storage, communication technologies, and sensors.

Prosthesis research

The committee is aware that the Department of Defense has made significant investments in research for next generation prostheses, particularly for upper and lower extremities. With operations in the Islamic Republic of Afghanistan winding down and current fiscal constraints on the defense budget, the committee is concerned that the Department will begin to move away from this area of research in favor of new topics for a new security environment, leaving a void in this area. The committee notes that while medical advances have dramatically increased the survival rates of the warfighter, it has also dramatically increased the number of wounded warriors requiring intense, long-term therapeutic care. The committee urges the Department of Defense to continue pushing the technical bounds of regenerative medicine and prostheses, including the development and refinement of new modalities for

control of neurological implants, in order to maintain its commitment to the care and welfare of the wounded warrior community and their families.

Redesigned Kill Vehicle for Homeland Missile Defense

The budget request contained $1.0 billion in PE 63882C for the Ballistic Missile Defense Midcourse Defense Segment. Of this amount, $99.5 million was requested for Improved Homeland Defense (HLD) Interceptors development, which the committee will refer to as the Redesigned Kill Vehicle.

The committee notes that the Missile Defense Agency's (MDA) fiscal year 2015 budget overview documents state that the budget request supports the initiation of the "redesign of the Exoatmospheric Kill Vehicle (EKV) for GMD [Ground-based Midcourse Defense]. The redesigned EKV will be built with a modular, open architecture and designed with common interfaces and standards, making upgrades easier and broadening our vendor and supplier base. The redesigned EKV will increase performance to address the evolving threat; improve reliability, availability, maintainability, testability and producibility; and increase in-flight communications to improve usage of off-board sensors information and situational awareness to combatant commanders for enabling new tactics such as shoot-assess-shoot." The committee expects the redesign will also maintain the capability for the future modernization path for the common kill vehicle phase II efforts that should achieve the long-sought "volume kill" capability.

The committee has long believed that a new kill vehicle is required for the homeland missile defense system, mindful of the termination of one such modernization program in 2009, the Multiple Kill Vehicle. For example, the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239) directed the Director, MDA to develop a long-term plan for the exo-atmospheric kill vehicle. And, again, the National Defense Authorization Act for Fiscal Year 2014 (Public Law 113–66) directed a plan, and authorized funding, for the development of an upgraded, enhanced exo-atmospheric kill vehicle for the GMD system that, "is capable of being deployed during fiscal year 2018." The committee expects the Director to proceed with the development, test, acquisition, and deployment of the redesigned kill vehicle as directed in that Act.

The committee recommends $99.5 million, the full amount of the budget request, in PE 63882C for the Redesigned Kill Vehicle.

Space weather events research

The committee notes the value of the advice to the Department of Defense, including the Department of the Air Force and the Department of the Navy, for the pursuit of space weather research and is aware of space weather impacts to the electric power grid, global satellite communications, global positioning system positioning and timing, space situational awareness, and potential loss or degradation of these capabilities. The committee is aware of the importance of observations and research of space weather phenomena to monitor and predict potential damage to the U.S. military and to protect national technological infrastructure. The committee is also aware that insufficient coordination and sharing

among the agencies could lead to duplication of effort and less effective allocation of limited resources for this critical research. The committee recommends that the Secretary of Defense coordinate with the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, and the National Science Foundation to provide necessary observations and support for research that will lead to reliable forecasts of significant space weather events.

Special Operations developmental efforts for Tactical Assault Light Operator Suit

The budget request included $10.0 million in PE 1160402BB, Special Operations Technology Development, and $7.5 million in PE 1160402BB, Special Operations Special Technology, to support ongoing developmental efforts for the U.S. Special Operations Command (USSOCOM) Tactical Assault Light Operator Suit (TALOS), designed to improve operator survivability in direct action or kinetic environments.

The committee notes that more than $4.5 million of fiscal year 2013 and fiscal year 2014 Major Force Program–11 funding has been put towards TALOS efforts thus far. The committee also notes that despite aggressive marketing efforts by USSOCOM, TALOS is not a program of record, but rather "an overarching vision" that provides "a coordinating focus for many of USSOCOM's science and technology efforts spanning multiple capability areas." The committee understands that present efforts are being used to survey current technologies and to better inform future requirements documents, and that USSOCOM intends to deliver a fully functional prototype assault suit by August 2018.

The committee is concerned that these requirements are not being properly coordinated with related or complementary efforts at the Defense Advanced Research Projects Agency (DARPA) and the U.S. Army Natick Soldier Systems Command. While USSOCOM is the proper authority to define Special Operations Forces peculiar requirements, it may not be the appropriate entity to lead such developmental technology efforts, like TALOS. While the committee understands that Natick Soldier Systems Command is currently developing and partially funding one of the two Generation I prototypes for USSOCOM, the committee is concerned that USSOCOM is also funding outside private sector research, and that overall efforts lack proper coordination and oversight, systems integration and collaboration, and prototype evaluation.

Therefore, the committee directs the Secretary of Defense to brief the congressional defense committees by August 1, 2014, on the TALOS project and similar efforts to include: (1) the overall TALOS requirement for U.S. Special Operations Forces, including requirements validation; (2) a list of funded activities for fiscal years 2013–14, as well as planned activities for fiscal year 2015 and beyond, including efforts through DARPA, Natick Soldier Systems Command, the other military services, the Rapid Innovation Fund, and industry; (3) coordination efforts undertaken with USSOCOM, DARPA, Natick Soldier Systems Command and other similar ongoing research and development activities; (4) project timelines including the development of prototypes and anticipated funding; (5)

any other developmental efforts underway that could satisfy USSOCOM TALOS-like requirements, and (6) any other items the Secretary of Defense deems appropriate.

Special Operations Forces Survival, Support, and Equipment Systems Program Management Office

The committee is aware of the research and development (R&D) contributions of the Special Operations Forces Survival, Support and Equipment Systems (SOF–SSES) Program Management Office. These R&D efforts focus on improving personal protective and individual support equipment as well as life support and tactical combat casualty care for the warfighter within the U.S. Special Operations Forces. The committee recognizes the importance of these efforts for the sustainment of the readiness and superiority of the Special Operations Forces (SOF), as well as for the continued successful completion of SOF missions. The committee encourages the U.S. Special Operations Command to continue to maintain the appropriate level of funding in order to sustain these important efforts within the SOF–SSES Program Management Office.

Technologies to improve spectrum efficiency

The committee is aware that spectrum is a vital national security resource which must be actively managed to ensure effective and efficient use that balances competing demands between the military services, other Federal agencies and the private sector. In the committee report accompanying the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (H. Rept. 110–652), the committee noted its concern over the availability of spectrum for defense applications and the increasing scarcity imposed by additional spectrum auctions and competition with commercial wireless providers. For this reason, the committee is pleased that the Department of Defense has recently issued an Electromagnetic Spectrum Strategy to provide more strategic guidance to shape the future of the Department's spectrum operations. As noted in the new strategy, "[the Department of Defense] must act now to ensure access to the congested and contested electromagnetic environment of the future. Specifically, the Department must adapt how it acquires and uses spectrum resources. Our approach must include acquiring more efficient, flexible, and adaptable systems while developing more agile and opportunistic spectrum operations to ensure that our forces can complete their missions."

The committee is also aware that this strategy is the first step in a longer process to develop a roadmap and action plan to inform future actions and resourcing. In addition, the committee believes that the Department needs to identify opportunities where it should focus research and development efforts to address any technological gaps, or where additional testing for commercial technologies may be needed to integrate into defense systems.

Therefore, the committee directs the Chief Information Officer of the Department of Defense to brief the House Committee on Armed Services by January 15, 2015, on the status of the associated Spectrum Roadmap and Action Plan, as well as a science and technology roadmap for technologies that are needed to improve spectrum efficiency.

Three-dimensional integrated circuits

The committee is aware that the changing market dynamics of the microelectronics industry have led the Department of Defense from being a market driver to a market follower. Except in some highly advanced sectors requiring especially high levels of trust, the Department will most likely be highly dependent on outside market forces to supply its microelectronics needs. For example, newly emerging technology like three-dimensional (3D) integrated circuits (IC) are an important technology that the Department will need to understand and monitor in the future. Such complex, multi-layer chips will provide new useful functionality, but also make detection of supply chain vulnerabilities more difficult to detect than traditional ICs.

In a report provided to the committee, the Department indicated that there was a highly competitive supplier network and sufficient domestic capacity for 3D ICs, but that there were also "impressive capabilities for 3D ICs being developed and implemented overseas . . . largely through the support of foreign government investments." The report also stated that, "While there does not appear to be an immediate need for creating any new domestic 3D IC manufacturing capabilities for defense applications, making better use of the existing domestic capability could be very beneficial for maintaining DOD [Department of Defense] technology leadership and to avoid surprises from potential adversaries." The committee urges the Department to closely monitor developments with 3D ICs, not only to leverage rapidly evolving commercial capabilities for its own uses, but also to understand how potential adversaries use these technologies.

U.S.-Israel missile defense cooperation

The budget request contained $96.8 million in PE 63913C for Israeli Cooperative Programs in missile defense for fiscal year 2015. Of this amount, $10.7 million was requested for the Israeli Arrow program, $54.4 million for the Israeli Upper Tier program (also known as Arrow III), and $31.7 million for the Israeli Short Range Ballistic Missile Defense program (also known as David's Sling Weapons System (DSWS)).

The committee supports these cooperative programs and is pleased with the record of success seen over the past year. For example, on January 3, 2014, the Missile Defense Agency (MDA) and the Israeli Missile Defense Organization (IMDO) successfully completed a flight test of the Arrow 3 Interceptor missile over the Mediterranean Sea. This test was an important step towards fielding an additional layer of defense, with exo-atmospheric capability, against ballistic missile threats to the State of Israel. Additionally, on November 20, 2013, MDA and IMDO successfully conducted an intercept test using the DSWS. This second intercept test of DSWS continues to prove out the lower-tier capability Israel and the United States have cooperatively developed for the defense of Israel.

The committee continues to support these cooperative programs being mindful of the January 29, 2014, Annual Threat Assessment testimony of the Director of National Intelligence before the Senate

Select Committee on Intelligence that, "Iran already has the largest inventory of ballistic missiles in the Middle East."

The committee is also mindful of section 8070 of the Department of Defense Appropriations Act, 2014 (division C of Public Law 113–76), which noted that of the $149.7 million provided for the DSWS, $15.0 million was provided for production of its interceptors in the United States and in Israel. Given the significant ongoing U.S. taxpayer investment, the committee supports co-production of these programs, and the committee expects to be regularly updated on the implementation of these appropriated funds.

Elsewhere in this report, the committee addresses the Iron Dome system.

The committee recommends $268.8 million, an increase of $172.0 million, in PE 63913C for Israeli Cooperative Programs.

Vaccine research for equine encephalitis

The committee is aware that equine encephalitis is a serious health hazard with potentially fatal consequences that is prevalent in North, Central and South America, as well as the Caribbean. Because equine encephalitis is naturally occurring, but has also been investigated as a potential biological weapon, the Department of Defense is developing a vaccine for equine encephalitis that remains in Investigational New Drug Status. The committee also notes that while equine encephalitis is a high priority for the development of medical countermeasures for the Department of Defense, it has not been a priority for the Department of Health and Human Services due to the relatively small number of occurrences within the continental United States. The committee acknowledges that such an investigational new drug might have application for the civilian population, but the process for making a determination to use these vaccines in cases of civilian emergency is not well defined.

Therefore, the committee directs the Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs to provide a briefing to the House Committee on Armed Services by December 31, 2014, on the coordination between the Department of Defense and the Department of Health and Human Services through the Public Health Emergency Medical Countermeasures Enterprise (PHEMCE). This briefing should discuss the mechanisms by which medical countermeasures, which are developed by the Department of Defense could be made available to the civilian population should the need arise, with emphasis on vaccines that may only exist in the Department of Defense stockpile. The briefing should also include any obstacles to employing such a process.

Validation of near-term counter-electronics capability

The committee is aware that the Air Force and the Department of Defense completed a Joint Concept Technology Demonstration (JCTD) for a high-powered microwave cruise missile in 2012. The Counter-electronics High power microwave Missile Project (CHAMP) JCTD demonstrated a multi-shot and multi-pulse high power microwave warhead integrated into an existing cruise missile which is capable of delivering low-collateral damage attacks against electronic systems in facilities. The committee understands

that such systems still require development to provide capabilities in a small form-factor and in a reusable platform, as well as additional modeling and simulation to better characterize effects and battle damage assessment.

Furthermore, the committee is aware that the Air Force is conducting an analysis of alternatives to determine if there is a need to develop a program of record for an enduring capability that would refine the technology demonstrated during the CHAMP JCTD, or look at other technologies to provide non-kinetic counter-electronic effects. As noted in Section 267 of the National Defense Authorization Act for Fiscal Year 2014 (Public Law 113–66), CHAMP (or a variant thereof) "should be considered among the options for a possible materiel solution in response to any near-term joint urgent operational need, joint emerging operational need, or combatant command integrated priority for a non-kinetic counter-electronic system."

Therefore, the committee directs the Chairman of the Joint Chiefs of Staff, in coordination with the combatant commanders, to provide a briefing to the House Armed Services Committee by February 15, 2015 on the need for a near-term counter-electronics capability. This briefing should examine the combatant command integrated priority lists for each of the geographic and functional combatant commands to determine if there is an urgent or emerging need for CHAMP or a similar system that should be addressed within the next two to three years. If such needs exist, the briefing should also include a determination of whether or not a joint urgent operational need statement, or a joint emerging operational need statement, will be submitted by the affected combatant commands.

Vapor compression cooling systems technology

The committee notes that the majority of Department of Defense electronic systems intended for field use in harsh environments use thermoelectric cooling technology and that this method of cooling is often required in Department of Defense requests for proposals. The committee also notes that vapor compression electronic cooling technology may provide cooling systems that are smaller, more energy efficient, cost effective and reliable than the legacy systems.

Therefore, the committee directs the Secretary of Defense to provide a report to the Committees on Armed Services of the Senate and the House of Representatives not later than June 1, 2015, addressing where vapor compression thermal management systems may best be used in remote or mobile applications to cool electronics. The report should include, at a minimum, the process used to identify specific programs where these thermal management systems could be appropriate and examples of programs using deployed electronics that have effectively used vapor compression thermal management systems.

OPERATIONAL TEST AND EVALUATION, DEFENSE

Overview

The budget request contained $167.7 million for operational test and evaluation, Defense. The committee recommends $172.7 million, an increase of $5.0 million to the budget request.

The committee recommendations for the fiscal year 2015 operational test and evaluation, Defense program are identified in division D of this Act.

Items of Special Interest

Information Assurance and Interoperability Program

The committee is aware that the Director for Operational Test and Evaluation (DOT&E) is responsible for the Information Assurance (IA) and Interoperability Program (IOP), which provides assessments of services and combatant command systems, networks, and procedures during training and exercise venues. The committee believes cyber-range capabilities which are beginning to be used in such assessments may also be employed to assess the cybersecurity and interoperability of acquisition systems during development and prior to fielding. The committee further believes that for many acquisition programs, having low-cost access to cyber-range environments that can replicate the characteristics of systems and their operational network could provide a safe and repeatable means to conduct more rigorous IA/IOP testing during development than is currently being done.

The committee encourages the Department of Defense Chief Information Officer and the Under Secretary of Defense for Acquisition, Technology and Logistics to work closely with major program offices, cyber ranges, and the DOT&E to identify such environments and develop opportunities to conduct early IA/IOP testing of those systems during development. The committee believes that earlier and closer cooperation can go a long way to better position programs for successful IA/IOP performance in operational tests and in the field.

Program reporting and metrics on penetration testing

The committee is aware that programs with significant software components often conduct a variety of red teaming and penetration testing to determine if there are cyber vulnerabilities that might be exploited by sophisticated adversaries. The committee is also aware that the Under Secretary of Defense for Acquisition, Technology and Logistics and the Director for Operational Test and Evaluation are revising policies to ensure that such testing becomes a mandatory best practice. However, the committee is also aware that no mechanism exists to provide periodic follow-up to revisit testing to determine if the program has made any effort at remediation. The committee encourages the Department of Defense's acquisition and cyber authorities to develop some sort of report card for programs to track their progress when it comes to penetration testing and remediation to ensure security requirements are not being ignored or given short shrift when the pressures of budget, schedule, and performance come into conflict. The committee believes that such

measures could be incorporated into existing reporting requirements, such as the Selected Acquisition Reports.

LEGISLATIVE PROVISIONS

SUBTITLE A—AUTHORIZATION OF APPROPRIATIONS

Section 201—Authorization of Appropriations

This section would authorize appropriations for research, development, test, and evaluation at the levels identified in section 4201 of division D of this Act.

SUBTITLE B—PROGRAM REQUIREMENTS, RESTRICTIONS, AND LIMITATIONS

Section 211—Preliminary Design Review of Presidential Aircraft Recapitalization Program

This section would require the Secretary of the Air Force to complete a preliminary design review of the Presidential Aircraft Recapitalization program prior to receiving a milestone B approval from the Milestone Decision Authority.

Section 212—Limitation on Availability of Funds for Armored Multi-Purpose Vehicle Program

This section would limit obligation or expenditure of funds to not more than 80 percent for the Armored Multi-Purpose Vehicle (AMPV) program until the Secretary of the Army submits a report to the congressional defense committees on the Army's plan to eventually replace all M–113 Armored Personal Carriers (APC) within Echelons-Above-Brigade (EAB) formations.

The committee notes that in 2007, the Army identified the M–113 APC for replacement due to its inadequate survivability and force protection. The committee further notes that in the committee report (H. Rept. 112–78) accompanying the National Defense Authorization Act for Fiscal Year 2012 and in the committee report (H. Rept. 112–479) accompanying the National Defense Authorization Act for Fiscal Year 2013, the committee provided numerous options for consideration by the Army to accelerate the AMPV program. The committee understands that the Army has released a Request for Proposal for the Echelons-Below-Brigade (EBB) requirement which is focused on survivability shortfalls within the Armor Brigade Combat Team. The committee continues to support the AMPV program and expects the Army to conduct the competition in accordance with Federal Acquisition Regulations.

However, the committee is concerned that although the Army's current plan addresses a critical shortfall within EBB formations, there is currently no plan to address the survivability shortfalls within Echelons-Above-Brigade formations. The committee understands that there are approximately 2,000 M–113's within existing EAB formations.

In addition, the committee notes that on at least one occasion, an Armor Brigade Combat Team (ABCT) deployed to the Republic of Iraq with Stryker Medical Evacuation Vehicles. Therefore, this sec-

tion would also require the Secretary of the Army to include as part of the report, an assessment for the feasibility of incorporating medical wheeled variants within the ABCT.

Section 213—Limitation on Availability of Funds for Unmanned Carrier-Launched Airborne Surveillance and Strike System

This section would prohibit the Secretary of the Navy from awarding a contract for the Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) system air vehicle segment until the Secretary of Defense completes a UCLASS requirements review and provides the results of that review to the congressional defense committees.

Section 214—Limitation on Availability of Funds for Airborne Reconnaissance Systems

This section would limit the obligation or expenditure of funds to not more than 25 percent for the imaging and targeting support of airborne reconnaissance systems, until the Secretary of the Air Force delivers a report to the congressional defense committees and the Permanent Select Committee on Intelligence of the House of Representatives and the Select Committee on Intelligence of the Senate. The elements of the report would include a detailed plan regarding using such funds for fiscal year 2015, and a strategic plan for the funding of advanced airborne reconnaissance technologies supporting manned and unmanned systems.

The committee notes that the Air Force did not provide substantive information for the proposed use of these funds, aside from the general area of imaging and targeting support.

Section 215—Limitation on Availability of Funds for Weather Satellite Follow-On System

This section would direct the Secretary of the Air Force to place the last remaining satellite of the Defense Meteorological Satellite Program (DMSP) on the launch manifest for the Evolved Expendable Launch Vehicle program. Additionally, this section would direct the Secretary to establish an additional launch, for acquisition in fiscal year 2015, under the Evolved Expendable Launch Vehicle program using full and open competition among certified providers. The Secretary would have the flexibility to determine the appropriate satellite launch to be competed.

This section would also limit 75 percent of the funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2015 for the weather satellite follow-on system until the Secretary submits to the congressional defense committees the plan to meet the meteorological and oceanographic collection requirements validated by the Joint Requirements Oversight Council. The plan must include how the Secretary will launch and use existing assets of the DMSP; how the Secretary will use other sources of data, such as civil, commercial satellite weather data, and international partnerships, to meet such requirements; an explanation of the relevant costs and schedule; and the requirements of the weather satellite follow-on system.

Section 216—Limitation on Availability of Funds for Space-Based Infrared Systems Space Data Exploitation

This section would limit obligation or expenditure of funds to not more than 50 percent for the data exploitation under the Space-Based Infrared Systems (SBIRS) space modernization initiative, which funds modernization and evolution of technologies to meet the SBIRS mission, until the Secretary of the Air Force delivers a certification to the congressional defense committees. The Secretary would be required to certify that the limited funds available for this effort will be used in support of data exploitation of the current SBIRS program of record, including the scanning and staring sensor; or that the data from the current SBIRS program of record, including the scanning and starring sensor, is being fully exploited and no further efforts are warranted.

The committee is concerned that the Air Force is not focusing on developing the capabilities to fully exploit the data from the existing SBIRS program. During the fiscal year 2014 budget request hearing for national security space activities, the Commander of Air Force Space Command was asked about SBIRS exploitation and responded that, "We have not even scratched the surface, I think, of the potential that's there. We have another sensor that we haven't fully exploited yet as part of that satellite. We're doing a good job on the scanning sensor. The staring sensor, which has much better fidelity, we really haven't fully wrung out yet, because we've been so focused on getting the scanning sensor calibrated and certified." The committee supports the Commander of the Air Force Space Command's stated comments, and encourages the Air Force to focus on achieving full performance and exploitation of SBIRS.

Section 217—Limitation on Availability of Funds for Hosted Payload and Wide Field of View Testbed of the Space-Based Infrared Systems

This section would limit 50 percent of the funds authorized to be appropriated by this Act for hosted payloads and wide field of view testbed alternative approaches to the Space-Based Infrared Systems program of record until completion of the ongoing analysis of alternatives (AOA). The funding would also be limited until 60 days following a briefing to the congressional defense committees and congressional intelligence committees on the AOA findings and recommendations of the Secretary of the Air Force and the Commander, U.S. Strategic Command, including a cost evaluation of the Director of Cost Assessment and Program Evaluation. The limitation would not apply to efforts to examine and develop technology insertion opportunities for the program of record.

Section 218—Limitation on Availability of Funds for Protected Tactical Demonstration and Protected Military Satellite Communications Testbed of the Advanced Extremely High Frequency Program

This section would limit 50 percent of the funds authorized to be appropriated by this Act for protected tactical demonstration and protected military satellite communications testbed alternative approaches to the Advanced Extremely High Frequency program of

record until completion of the ongoing analysis of alternatives (AOA). The funding would also be limited until 60 days following a briefing to the congressional defense committees on the AOA findings and recommendations of the Secretary of the Air Force and the Commander, U.S. Strategic Command, including a cost evaluation of the Director of Cost Assessment and Program Evaluation. The limitation would not apply to efforts to examine and develop technology insertion opportunities for the program of record.

SUBTITLE C—OTHER MATTERS

Section 221—Revision to the Service Requirement under the Science, Mathematics, and Research for Transformation Defense Education Program

This section would amend subparagraph (B) of section 2192a(c)(1) of title 10, United States Code, by modifying the service obligation requirement to also include employment with a public or private sector entity or organization outside the Department of Defense if the Secretary of Defense determines that employment of the person with such entity or organization for the purpose of such obligated service would provide a benefit to the Department of Defense.

Section 222—Revision of Requirement for Acquisition Programs to Maintain Defense Research Facility Records

This section would modify the requirements of subsection (b) of section 2364 of title 10, United States Code, to eliminate the need for acquisition programs to maintain a record of all issue papers from a defense research facility related to said acquisition programs.

Section 223—Modification to Cost-sharing Requirement for Pilot Program to Include Technology Protection Features during Research and Development of Certain Defense Systems

This section would amend Section 243(b) of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111–383) by striking "at least one half of the cost of such activities' and inserting "an appropriate share of the cost of such activities, as determined by the Secretary".