

Overview

The budget request contained \$17.7 billion for research, development, test, and evaluation, Defense-Wide. The committee recommends \$18.1 billion, an increase of \$472.1 million to the budget request.

The committee recommendations for the fiscal year 2014 research, development, test, and evaluation, Defense-Wide program are identified in division D of this Act.

Items of Special Interest

Advanced sensor application program

The committee is aware that the Department faces a number of irregular threats that are not well suited for the array of sensors developed and optimized for observing more conventional adversary threats. For example, narcotics trafficking and other smuggling in the U.S. Southern Command (USSOUTHCOM) area of responsibility poses a significant challenge for that combatant command, with global spillover effects. Recently, the Commander, U.S. Southern Command testified that through the efforts of USSOUTHCOM and regional partners, 152 metric tons of cocaine have been seized, representing over three billion dollars of potential revenue that could have supported transnational criminal organization, cartel violence in Mexico, and the destabilization of our Central American neighbors. The committee recognizes that such smuggling activities, fueled by the development of semi-submersible vehicles and safe havens in foreign sovereign territory unfriendly to the United States, can imperil the security of our homeland, as well as support global terrorism. The ability to counter these irregular threats, which require dedicated sensors, platforms and processing capability designed to counter those threats, is compounded by the effects of budget sequestration and fiscal austerity, which have reduced the deployment of aircraft to South America that would have been utilized to support counternarcotics missions in the region and train partner security forces. The committee believes that newly developed manned and unmanned air and surface platforms might be capable of employing innovative new intelligence, surveillance and reconnaissance sensor systems focused on these target sets. The committee encourages the Department of Defense to examine smaller, more affordable platforms that could host or launch such systems to improve detection, tracking, targeting and engage-

ment of irregular threats as part of the Advanced Sensor Application Program.

Aegis Ballistic Missile Defense System

The budget request contained \$937.5 million in PE 63892C for the Aegis Ballistic Missile Defense System (BMDS).

The Aegis BMDS is the world's most proven naval missile defense system and the sea-based element of the U.S. Ballistic Missile Defense System. Aegis BMD plays an active role in protecting the United States and U.S. deployed forces from enemy ballistic missile attack. The Aegis BMD system has been included in the Administration's Phased Adaptive Approach to European Defense and has undergone an extensive and successful testing regime. The budget request included funding to meet significant capability and test milestones related to the evolution of the Aegis Weapons System and the test and deployment of new missile defense capabilities, including Launch on Remote technology.

The committee recommends \$937.5 million, the full amount of the request, in PE 63892C for Aegis Ballistic Missile Defense.

Request for multi-year procurement authority for Standard Missile-3 Block IB beginning in FY15

The committee notes the successful FTM-19 flight test on May 16, 2013, which again demonstrated the robust design and performance of the Standard Missile-3 Block IB missile. With over \$4.0 billion programmed for this missile across the FYDP, the committee strongly encourages the Department to request multi-year procurement authority for SM-3 Block IB beginning in fiscal year 2015.

The committee notes there could be savings in a multi-year procurement, such a contractual arrangement for SM-3 Block IB could yield savings equivalent to an entire additional year of production at current planned rates. The Department is directed to report to the congressional defense committees by December 31, 2013, with a recommendation on whether SM-3 Block IB could use multi-year or advanced procurement authority beginning in fiscal year 2015. If such authorities are requested, an estimate of what cost savings would accrue shall be required.

Service Life Extension Program for Standard Missile-3 Block IA missile interceptor

The committee is aware that the United States has completed procurement of additional Standard Missile-3 block IA interceptors and is planning to begin procurement of the block IB interceptor, which has a more capable seeker than the IA interceptor.

The committee is also aware that the United States has acquired a substantial inventory of block IA interceptors, many of which will soon begin to reach the end-of-design-life. The committee is aware that the Missile Defense Agency (MDA) is currently studying whether and how to conduct a service life extension program (SLEP) of the block IA interceptor and such a program could extend the lifetime of this substantial inventory of block IA missiles by approximately fifty percent.

The committee believes such a SLEP should therefore be carefully studied and, if the results are promising, such a program should be promptly carried out. The committee believes that by carrying out this SLEP, MDA could come closer to meeting the requirements of the combatant commanders for missile interceptor inventory.

Standard Missile-3 Block IB ballistic missile interceptor

The committee is aware that the Standard Missile-3 (SM-3) block IB program will be transitioning from development to production in the next calendar year, after several delays. The committee is eager that the combatant commanders receive the block IB missile, which will be more capable than the IA missile that is presently the mainstay of the Aegis ballistic missile defense system fleet. Combatant commanders continue to state their demand for additional assets in theater to support ballistic missile defense mission requirements.

According to the Missile Defense Agency, it will procure 52 of these improved missile interceptors in fiscal year 2014, and 72 missiles per year each year through the fiscal year 2014 Future Years Defense Program. The committee supports this procurement.

The committee is aware of the challenges moving to procurement and the challenges of significantly increasing delivery quantities. The committee expects to be informed of any challenges meeting the increased production rate. The committee also expects to be informed of the progress of the FTM-19, 21, and 22 tests, which are required to get the IB missile certified for full rate production. The committee is eager to see full rate production when these maritime flight test events are successfully completed.

Airborne weapons layer

The committee is aware that the Missile Defense Agency and the U.S. Air Force have been conducting a cost benefit analysis to assess the feasibility of the airborne weapons layer concept, which would use modified missile interceptors or air-to-air missiles for certain missile defense missions early in a threat ballistic missile's flight profile.

The committee is also aware that, in the committee reports (S. Rept. 112-196 and S. Rept. 112-077), the Committee on Appropriations of the U.S. Senate directed the Missile Defense Agency and the Air Force to conduct this study, and its results are now well overdue. The committee urges the Missile Defense Agency and the Air Force to quickly complete this study and brief the congressional defense committees on the results.

The committee believes that an effective and affordable boost phase missile defense program would contribute to the goal of deploying an effective layered ballistic missile defense system. The committee notes the technical and cost challenges associated with boost phase missile defense, including those noted by the National Academy of Sciences in its study last year; the committee references the absence of a boost phase missile defense program of record elsewhere in this report.

Army Navy/Transportable Radar Surveillance Model 2 Radars

The budget request contained \$62.0 million in PE 63884C for Ballistic Missile Defense System (BMDS) AN/TPY-2 Radars. The budget request would fund the acquisition of initial spares for the current radar units.

The committee is aware that the AN/TPY-2 radar is among the most powerful sensors in the ballistic missile defense system sensor architecture. The radar is capable of being employed in a forward-based mode or as part of a Terminal High Altitude Area Defense (THAAD) system. AN/TPY-2 radars are deployed in the Republic of Turkey, the State of Israel, Japan, and elsewhere to support the warfighter and are providing significant sensor coverage that contributes to regional and homeland missile defense.

The committee is also aware that the fiscal year 2013 budget request reduced the procurement of the AN/TPY-2 radar from 17 to 11 units. However, in the National Defense Authorization Act for Fiscal Year 2013 and the Consolidated and Further Continuing Appropriations Act, 2013 (Public Law 113-6), funds were provided to procure a 12th AN/TPY-2 radar. The committee encourages the Missile Defense Agency to continue to examine the requirement from combatant commanders and the proper quantity of AN/TPY-2 radars that should be deployed in a forward-based mode and for THAAD battery deployments.

The committee recommends \$62.0 million, the full amount requested, in PE 63884C for BMDS AN/TPY-2 Radars.

*Ballistic Missile Defense Technology**Missile defense directed energy application development*

The budget request contained \$309.2 million in PE 63175C for Ballistic Missile Defense Technology; of this amount, \$43.5 million is for Weapons Technology, Laser Development.

The committee is aware that the budget request would support next-generation high-energy laser development, as well as would enable new kinetic interceptor technology. According to budget justification materials, the budget request would also enable the conduct of experiments using high-altitude, low-mach platforms, including the Phantom Eye unmanned aerial vehicle, to validate directed energy modeling. Further, the request would support laboratory concept development of Diode-Pumped Alkali Laser technology and other technologies.

The committee supports this work and its potential for significant breakthroughs in missile defense sensor and ballistic missile kill technology. The committee is concerned that the focus of the Missile Defense Agency's (MDA) work may have tilted too far from defeat and destruction of ballistic missiles, and recommends that the Missile Defense Agency not lose sight of these development options. The committee notes the recent test successes by the U.S. Army High Energy Laser Systems Test Facility at White Sands Missile Range, New Mexico, and the previous test successes of the Airborne Laser, while being aware of the technical and cost challenges of that system.

The committee further encourages the Director, Missile Defense Agency to provide more detail on the division between directed en-

ergy sensor work and directed energy ballistic missile defeat and destruction work as part of the fiscal year 2015 budget submission. Additionally, the Director is encouraged to evaluate moving directed energy work out of the Ballistic Missile Defense Technology office and into MDA program offices geared towards delivery of capabilities to the warfighter.

The committee recommends \$43.5 million, the amount of the request, in PE 63175C for Weapons Technology, Laser Development.

Solid Divert and Attitude Control System

The budget request contained \$309.2 million in PE 63175C for Ballistic Missile Defense Technology. Of this amount, \$24.0 million was requested for the continued development, post SM-3 IIB termination, of an enhanced Solid Divert and Attitude Control System (SDACS).

In the committee report (H. Rept. 112-479) accompanying the National Defense Authorization Act for Fiscal Year 2013, the committee expressed its concerns about the possibility of relying on a single provider of SDACS technology. The committee is pleased that, with the termination of the SM-3 IIB, the Missile Defense Agency is taking steps to ensure there is an additional opportunity for diversity in the industrial base for this critical technology.

The committee recommends \$24.0 million, the full amount requested, in PE 63175C for development of Solid Divert and Attitude Control System technology.

Ballistic missile threat analysis

The committee understands the global threat environment involving ballistic missiles is increasing, and the recent actions of the Democratic People's Republic of Korea, the Syrian Arab Republic, and the Islamic Republic of Iran demonstrate the continued need to fund ballistic missile intelligence. The National Air and Space Intelligence Center is the primary Department of Defense producer of foreign aerospace intelligence and is the Department's best resource on foreign long-range ballistic missiles. Likewise, the Missile and Space Intelligence Center is the primary intelligence component for the Department on the threat of short-range ballistic missiles to U.S. forces its allies, including the North Atlantic Treaty Organization.

The committee directs the Director, Defense Intelligence Agency, in coordination with the Director of National Intelligence, to submit a report to the congressional defense committees and the congressional intelligence committees within 180 days after the date of the enactment of this Act, that identifies the ballistic missile threats to the United States, its allies, and its deployed forces, as well as the gaps in our understanding of those threats. The committee further directs the Director to include an explanation for how the Defense Intelligence Agency intends to close the gaps identified in the report.

Common Kill Vehicle for missile defense

The budget request contained \$309.2 million in PE 63175C for Ballistic Missile Defense Technology. Of this amount, \$70.0 million

was requested for the Common Kill Vehicle Technology (CKVT) program.

The committee is aware that approximately \$20.0 million of the funds appropriated for the Standard Missile 3 block IIB program in fiscal year 2013 are to be redirected to the CKVT program by the Missile Defense Agency (MDA).

The committee understands that MDA's intention for the CKVT program is to: enable the consolidation of the development of kill vehicles; develop a modular, open kill vehicle architecture; transition a more capable kill vehicle to the Ground-based Interceptor and the Standard Missile 3; and evolve to a multiple kill vehicle payload. The committee supports these developmental goals.

The committee is also aware that, pursuant to section 225 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112-239), the Missile Defense Agency is developing a plan for a next generation exo-atmospheric kill vehicle. Section 225 also requires the Director, Missile Defense Agency to submit to the congressional defense committees a report on the plan.

The committee finds that the budget justification material regarding the CKVT program was insufficient, lacked necessary details, and should be further revised to include a date for initial operating capability, as well as a plan to transition to a development program based on full and open competition in time to support current and future interceptor procurement. The committee directs the Missile Defense Agency to provide a briefing to the congressional defense committees on such information by July 31, 2013, as well as for it to be included in the report required by section 225 of Public Law 112-239.

In addition, the committee directs the Director, Missile Defense Agency to determine an alternate program element (PE) in the fiscal year 2015 budget submission to fund the Common Kill Vehicle Technology and Capability Development program. It should balance the Ground-based Midcourse Defense system equities in a potential Common Kill Vehicle Technology and Capability Development program, as well as those possessed by the Aegis ballistic missile defense program. In addition, the committee recommends a new PE for fiscal year 2014.

The committee recommends no funds, a decrease of \$70.0 million, in PE 63175C for the Common Kill Vehicle Technology program. Further, the committee recommends \$70.0 million, an increase of \$70.0 million, in a new PE for the Common Kill Vehicle Technology and Capability Development program.

Conventional Prompt Global Strike

The budget request contained \$65.4 million in PE 64165D8Z for Conventional Prompt Global Strike Capability (CPGS) development.

The fiscal year 2014 budget request is \$45.0 million less than last year's budget request and nearly \$135.0 million less than the amount appropriated for fiscal year 2013 in the Consolidated and Further Continuing Appropriations Act, 2013 (Public Law 113-6).

The committee notes that in his statement before the committee on March 5, 2013, the Commander, U.S. Strategic Command (STRATCOM), testified that, "[t]oday, the only prompt global strike

capability to engage potentially time-sensitive, fleeting targets continues to be ballistic missile systems armed with nuclear weapons. We continue to require a deployed conventional prompt strike capability to provide the President a range of flexible military options to address a small number of highest-value targets, including in an anti-access and area denial environment.”

The committee is concerned that the budget request does not provide sufficient resources to develop and field a capability for which the combatant commander has testified there exists a requirement. The committee is aware that given sequestration, potential fiscal year 2013 reprogramming actions, and other matters, the department has yet to be able to fully determine budget impacts to many of its programs. The committee encourages the Department to provide a more detailed plan for the fiscal year 2014 request for PE 64165D8Z, including a plan for acquiring CPGS capability with a specific date of initial operating capability and the date at which there is a likely to be a Material Development Decision.

The committee notes that many of the technologies under consideration by the Department of Defense are dependent on acquisition decisions involving other programs that may not occur until the middle of the next decade or that depend on breakthroughs in low technology readiness level programs. The committee is aware, however, that there are near-term threats for which CPGS capabilities could be especially useful, especially with the proliferation of mobile ballistic missile capability, including involving regional actors, if it can be developed and deployed in an effective and affordable manner. The committee encourages the Department to consider what near-term CPGS capability should be considered to meet these near-term challenges and it expects to see that consideration reflected in the fiscal year 2015 budget request. The committee is interested to see the results of the upcoming second test of the Advanced Hypersonic Weapon, which was successfully tested in 2012.

The committee recommends \$65.4 million in PE 64165D8Z for the Prompt Global Strike Capability Development.

Defense Science Board recommendations on Deterrent Response Capabilities

The committee is aware that the Defense Science Board (DSB) completed its report “Resilient Military Systems and the Advanced Cyber Threat” in January 2013. As part of that review, the committee noted that the DSB made several observations relevant to U.S. deterrent response capabilities in the face of severe and/or catastrophic cyber attacks on the United States.

First, the committee is aware that the DSB concluded that the severity of certain types of cyber threats added further reason for a non-nuclear conventional strike capability. The committee continues to support expeditious development of conventional prompt global strike capabilities, as well as the supporting doctrinal and concept development to guide potential employment, and states its views on conventional prompt global strike in another section of this report.

In addition, the DSB observed that, “[p]resumably one would characterize a catastrophic Tier V–VI adversary cyber attack on the United States as ‘extreme circumstances’ in the public lan-

guage of the 2010 NPR, so that is not precluded in the stated policy, but it is not explicitly mentioned.” The committee encourages the Department to consider cyber in the Nation’s deterrence doctrine, including better articulation of what circumstances might fall within the “extreme circumstances” language of the 2010 Nuclear Posture Review.

Based on the findings of the DSB, the committee is concerned that the United States should make further progress in developing response options and capabilities to support a full-spectrum cyber deterrence strategy, including the potential leverage of both conventional and nuclear capabilities. Additionally, the committee awaits the response from the Department on their views of the DSB’s findings and recommendations, as promised during the March 13, 2013, hearing with the Department of Defense Chief Information Officer and the Commander, U.S. Cyber Command. The committee encourages the Department to consider all of these concerns as they draft their response.

Defense research in remote sensing

The committee supports domestic university research in remote sensing including remote sensing systems, cutting edge remote sensing data analysis methodologies, and techniques that use remotely sensed data for a wide variety of applications relevant to the Defense community. Consistent with the National Academies report, “Priorities for GEOINT Research at the National Geospatial-Intelligence Agency”, the committee encourages the Department of Defense to consider funding remote sensing research in areas such as sensor systems, phenomenology, analytical techniques, image processing, collection strategies or tasking, imagery science, polarimetry, and hyperspectral science.

Detection and threat identification technologies

The committee is aware that the Defense Threat Reduction Agency continues to have a strong partnership with each of the services as well as with U.S. Special Operations Command to develop and field technologies that reduce, counter and eliminate the threat of chemical, biological, radiological, nuclear and high-yield explosive materials (CBRNE). The committee remains concerned about credible threats posed by state and non-state actors in their attempts to acquire and weaponize CBRNE materials for use against the United States and its allies. Therefore, the committee encourages the Defense Threat Reduction Agency to continue the development, demonstration and deployment of innovative and emerging detection and threat identification technologies to ensure prompt transition of validated capabilities to address national security requirements.

The committee directs the Director, Defense Threat Reduction Agency to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives by December 31, 2013, on their efforts to advance and make operational a lightweight, person-portable CBRNE detection and analysis device.

Distributed Common Ground System enterprise

The committee is aware that the Distributed Common Ground System (DCGS) is a family of systems fielded across the military departments and other partners to provide an integrated architecture for all intelligence systems. DCGS is the current program of record for intelligence analytic, processing and dissemination capabilities for tactical and operational users. The committee is also aware that the “DCGS Enterprise,” as the family of systems is known, has been under development and deployment for a number of years, and the cost, schedule and requirements continue to grow without keeping pace with the demands of the users or the current state of the art in technology.

To better understand those challenges, the committee requested the Comptroller General of the United States to review the DCGS Enterprise. The review found that “unlike a traditional weapon system acquisition, the DCGS Enterprise by its very nature has no clear end point and relies on a complex governance structure under a ‘community of the willing’ approach. This governance structure has had some success . . . however, not all of the services have kept pace in developing their systems and implementing improved interoperability standards that are available.”

Therefore, the committee directs the Under Secretary of Defense for Acquisition, Technology, and Logistics, in coordination with the Under Secretary of Defense for Intelligence, to submit a report to the Committees on Armed Services of the Senate and the House of Representatives within 1-year after the date of the enactment of this Act on the information sharing framework and implementation plan for the DCGS Enterprise. The report should include:

- (1) The framework, including clearly defined criteria and metrics, to assess progress and outcomes pertaining to the level and quality of information sharing taking place across the DCGS Enterprise and its effect on intelligence operations;
- (2) The applicability of this framework to non-DCGS Enterprise systems;
- (3) An implementation plan that defines the way forward for getting to the desired end state for the DCGS Enterprise and articulates how the military services will be held accountable for doing their part in acquiring the systems necessary to achieve the end state. The plan should include the overall requirements, technologies, acquisition strategies, time frames, and investments needed by each of the military services to complete development and fielding of DCGS capabilities.

Electro Magnetic Rail Gun for Missile Defense

The committee notes that the U.S. Navy has been conducting long-term research into electromagnetic railgun technology to support naval surface fire support missions. The committee is aware that pursuant to section 243 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81), the Secretary of the Navy provided an unclassified and classified report on the development, future deployment, and operational challenges of this technology. The committee is also aware that the Assistant Secretary of the Navy for Research, Development, and Acquisition wrote in response to this reporting requirement that, “[p]reliminary analysis

shows that a tactical railgun . . . has the potential to provide lethal effectiveness . . . for antiship ballistic missile defense.” The committee acknowledges significant challenges ahead in developing, integrating, and deploying such technology, as with many technology development programs.

Additionally, the committee is aware that the Department has established a new effort within the Strategic Capabilities Office in the Office of the Secretary of Defense to leverage the Navy’s program to explore the development a land-based railgun. As noted in the committee report (H. Rept. 112–479) for the National Defense Authorization Act of Fiscal Year 2013, the committee is interested in the potential utility in accelerating some electromagnetic railgun efforts for land-based area defense.

The committee finds these developments encouraging, and urges the Director, Missile Defense Agency to examine these activities in order to determine their potential application, if they can provide additional capability, to broader ballistic missile defense missions of the Missile Defense Agency.

Enhancing participation at minority-serving universities and institutions

The budget request contained \$30.9 million in PE 61228D8Z for supporting the development of research and scientific capabilities, including scientific professionals, for Historically Black Colleges and Universities and Minority Serving Institutions.

The committee is encouraged to see that the Department of Defense (DOD) is firmly committed to vigorous efforts to enhance the capability of our nation’s Historically Black Colleges and Universities and Minority-Serving Institutions (HBCU/MI), as defined under title III and title V of the Higher Education Act of 1965 (Public Law 89–329), to perform leading edge research supporting national security requirements.

The committee is aware that the Assistant Secretary of Defense for Research and Engineering (ASD(R&E)) issued guidance on December 2, 2011, calling for the re-invigoration of the relationship between the Department and the HBCU/MIs. As part of that guidance, the ASD(R&E) called on the components of the Department to:

- (1) Maintain statistics on success rates for HBCU/MIs under competitive funding opportunities;
- (2) Increase awareness of these institutions for participation in all DOD-sponsored activities;
- (3) Encourage use of Intergovernmental Personnel Act agreements or other personnel-detail mechanisms with HBCU/MIs to more effectively connect with their talent base; and
- (4) Ensure HBCU/MI faculty are recruited to serve on scholarship, fellowship, and research review panels.

The committee encourages the Department to socialize this guidance across the enterprise, and to collect the necessary supporting data to ensure adherence to this policy.

The committee is also aware that there has been confusion over the current authorities related to the HBCU/MI program of the Department of Defense. The committee reiterates the current authority is intended to provide the basis for a program that recognizes

the unique status and attributes of “covered institutions,” as defined in section 2362(e), title 10, United States Code. The committee is concerned that some organizations within the Department have incorrectly interpreted the new statutory basis for the program in section 2362(e), title 10, United States Code. The committee believes that the Department’s approach to the HBCU/MI program should not include aspects of the program as it existed under any prior authority, including the use of any form of funding goal or required percentage of overall funding. In addition, the Department should not include HBCU/MIs when determining goals or accomplishments under the requirements of the Small Business Act (Public Law 95–507), as amended, regardless of any legacy coverage in regulations or local policies. The committee believes HBCUs/MIs should be treated as institutions of higher education and as a special subset of such institutions, not considered as small or small disadvantaged businesses.

The committee applauds the Department’s decision to move the HBCU/MI budget line into a basic research account. Such a move provides greater flexibility for the Department to carry out STEM activities across the continuum. The committee encourages the Department to evaluate and consider supporting established activities that foster the best and brightest underrepresented high school students into pursuing STEM fields that would support national security requirements.

The committee recommends \$35.9 million, an increase of \$5.0 million, in PE 61228D8Z for Historically Black Colleges and Universities and Minority Serving Institutions.

Foreign directed energy threats to U.S. military systems

The committee recognizes the importance of directed energy technology as a means to maintain an asymmetric operational and cost advantage over our adversaries. The committee, however, is aware that the United States is not the only nation which is pursuing this technology and is therefore concerned regarding the ability of the United States to maintain an advantage over potential adversaries should they employ similar technologies against U.S. forces.

Therefore, the committee directs the Secretary of Defense to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives within 180 days after the date of the enactment of this Act, on foreign directed energy threats and U.S. vulnerabilities to those threats. The briefing should consist of two sections. The first section should provide details regarding potential threats, current and projected, to U.S. military systems due to foreign directed energy weapons including high-energy lasers and high-power microwave systems. The Secretary of Defense should consult with the Director of National Intelligence regarding the information content of this section. The second section should discuss vulnerabilities of U.S. systems posed by foreign directed energy efforts, and the Department’s initiatives to mitigate these vulnerabilities. The briefing should include a description of science and technology development efforts for directed energy countermeasures, as well a description of any technologies which are currently in use. The briefing should also address both tactical and strategic assets as well as efforts to protect U.S. personnel against

directed energy attacks. The briefing should also identify any known technology gaps in directed energy countermeasures and any plans to address those gaps.

Future missile defense sensor architectures

The committee is aware of the decision by the Department of Defense to terminate the Precision Tracking Space System, which it addresses in another section of this report. The committee also discusses the terrestrial AN/TPY-2 radar system in another section of this report.

In the committee report (H. Rept. 112-479) to accompany the National Defense Authorization Act for Fiscal Year 2013, the committee also discussed the operational status of the Sea-based X-band radar as well as the employment of the Ground Based Radar Prototype (GBR-P) presently deployed at Kwajalein Atoll. The committee has been focused on the centrality of a robust missile defense sensor architecture in its oversight of budget requests for missile defense in previous fiscal years.

The committee is therefore pleased that the Missile Defense Agency and U.S. Strategic Command (USSTRATCOM), in consultation with U.S. Northern Command (USNORTHCOM), are engaged in a study to examine the near- and far-term direction of U.S. missile defense sensor architectures, including the role for terrestrial radar sensors, airborne sensors, and persistent overhead sensors. The committee believes consideration should be given for balancing the employment of scarce available resources, noting the availability of the SBX radar for potential stationary employment off the west coast and the GBR-P on the east coast. The committee welcomes the leadership of the Director, Missile Defense Agency, the Commanders of USSTRATCOM and USNORTHCOM in undertaking this study, especially as gaps have become clear against the North Korean and future Iranian ballistic missile threats. The committee expects to receive a briefing on the outcome of this study and to understand the implications for fiscal years 2013, 2014, 2015 and beyond. The committee expects to be supportive of closing the previously mentioned sensor gaps.

Ground-based midcourse defense system

The budget request contained \$1.0 billion in PE 63882C for the ground-based midcourse defense (GMD) system.

The budget request would provide for 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, which were suspended after the intercept test failure of Flight Test GMD (FTG) 06 and 06-a; and, Missile Field (MF) 1 refurbishment. The committee states its views and concerns about the plan for MF-1 refurbishment elsewhere in this report.

Elsewhere in this Act, the committee also recommends an increase of \$107.0 million to support advance procurement of long-lead items (specifically, 14 booster motor sets) in fiscal year 2014. The committee supports the decision by the Director, Missile Defense Agency to procure additional GBIs after a successful intercept flight. The committee is aware that Controlled Test Vehicle (CTV)

test 01—CTV-01—was successfully completed on January 26, 2013. The committee supports the CE-2 intercept test, FTG-06b, as a critical step after the two flight test failures in 2010, and notes that this test is currently scheduled for December 2013. The committee encourages the Director to take all appropriate steps to prevent a further slip in this test.

The committee commends the investigation of the 2010 test failures and the rigorous return to flight plan. The committee awaits FTG-07 planned to occur in May 2013, which will be the first intercept test of the CE-1 EKV since 2008. The committee notes the Director, Missile Defense Agency is planning to undertake a pace of at least one intercept test per year of the GMD system, and supports this planned increased rate of testing. The committee agrees with this goal and believes this is the minimum level of testing required for the GMD system to ensure full confidence, including by the Commander, U.S. Northern Command in the homeland missile defense capability.

The committee is also aware that in the March 15, 2013, announcement on the U.S. missile defense strategy, the Secretary of Defense stated the Department would procure 14 new GBIs at a rate of 2 per year starting in fiscal year 2016. The committee notes that this appears to be a low-rate procurement plan and unnecessarily expensive given a known quantity of missiles to be procured. The committee believes there is efficiency through long-lead procurement and other efficiencies of scale, especially in the event of a successful test of the CE-II interceptor in late calendar year 2013. The committee supports the Director's planned efforts to examine how to increase efficiencies of scale and reduce costs, and includes a provision elsewhere in this Act that would enable the Director to more cost-effectively procure these GBIs.

The committee encourages plans by the Director, Missile Defense Agency and the Commander, U.S. Northern Command to consult and examine the appropriate mix of two- and three-stage GBIs for the additional procurements as it understands there are different and complementary capabilities of these two GBI configurations.

The committee recommends \$1.0 billion, the amount of the request, in PE 63882C for the ground-based midcourse defense system.

East Coast missile defense site

The budget request contained no funds for the design, engineering, or construction of an East Coast missile defense site, including for the conduct of the Environmental Impact Statement (EIS) process as required by section 227 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112-239).

The committee believes such a site is critical to the defense of the United States. The committee is concerned that funding for the EIS process to implement section 227 is not included in the budget request, and notes that the Missile Defense Agency intends to treat it as an unfunded requirement. The committee also notes that section 227 does not require the Director, Missile Defense Agency to down-select to only a single site by the end of this year.

The committee recommends \$140.4 million in PE 63882C, for site activities related to the development and deployment of an East

Coast missile defense site, as follows: \$10.2 million for site activities; \$25.0 million for site planning and design related to site concept and master plan development for design work; and \$35.0 million for ground system development. The committee notes that remaining funds should be spent by the Director, Missile Defense Agency to accelerate site activities.

Fort Greely Missile Field 1

The budget request contained \$82.0 million in PE 63882C to initiate the refurbishment, upgrade, and for other improvements to Missile Field 1 at Fort Greely, Alaska.

The committee is pleased with the budget request, as it adheres to the recommendation made in the committee report (H. Rept. 112–479) to accompany the National Defense Authorization Act for Fiscal Year 2013. The committee is aware this refurbishment is required to fully implement the March 15, 2013, announcement by the Secretary of Defense to emplace an additional 14 Ground-based interceptors (GBIs) at Fort Greely.

The committee encourages the Director, Missile Defense Agency, when planning and undertaking the refurbishment of the missile field, to ensure that no action is taken that would prevent or complicate any additional emplacements of GBIs at Fort Greely in the future given the unique emplacement of interceptors at that field at the present time. The committee expects that if the Director determines that additional resources are required in fiscal years 2014–15, to refurbish the missile field that he will communicate the same to the congressional defense committees.

The committee recommends \$82.0 million, the full amount of the request, in PE 63882C for refurbishment, upgrade, and other improvements to Missile Field 1 at Fort Greely.

Two-stage Interceptor for Ground-based Midcourse Defense

In the Administration's 2009 Ballistic Missile Defense Review, the continued development of the two-stage GBI was considered a hedge against the advancing threat. The committee notes that a two-stage variant of the Ground-based interceptor provides significant additional homeland defense performance and robustness against emerging threat capabilities by improving the battle-space capability through shorter engagement times. The committee also understands the value of deploying a mixture of two-stage and three-stage GBIs to the existing GBI missile fields for enhanced homeland defense.

The committee is concerned that the planned two-stage intercept flight test in 2014, FTG–08, will test a two-stage missile that cannot be operationally deployed. The committee directs the Missile Defense Agency to provide a briefing to the committee prior to FTG–08 detailing the improvements necessary, cost and feasibility, to test a two-stage missile that can be operationally deployed.

High-powered microwave applications

The committee is aware the Department of Defense has been examining applications for use of high-powered microwave (HPM) systems to counter electronics and non-kinetically affect adversaries on the future battle ground. For example, the Air Force has

been demonstrating a Counter-Electronics High Power Microwave Advanced Missile Project through the Joint Capability Technology Demonstration, successfully completing that effort in fall of 2012. The committee is also aware that the Navy has explored applications for using high-powered microwave systems to combat the electronics in improvised explosive devices in order to pre-detonate those systems.

The committee encourages the Department to continue investing in the development of both the capabilities for attack tools using HPM, as well as the operational concepts for how those systems might be employed. The committee recommends that the Department examine more closely such issues as: possible effects of HPM weapons on targets such as integrated air defense systems, sensors, battle management networks, and other high-value, electronics-based military systems; assess the funding needs to transition existing developmental HPM technologies to a cruise missile-based weapon, as well as development of new approaches and delivery mechanisms; and, estimates of the time required for development and deployment of near-term and longer-term capabilities.

Highly integrated photonics

The committee recognizes the importance of highly integrated photonics (HIP) technology for Department of Defense applications. For example, modern military aircraft can have miles of heavily shielded copper wire cables that connect a multitude of components, resulting in both increased weight and limited bandwidth capability. The committee believes that HIP technology has the potential to provide for next-generation network architectures and processing capabilities, while dramatically reducing life cycle costs. The committee is aware that the Defense Advanced Research Projects Agency, in conjunction with the Naval Air Systems Command, has an initiative underway to further demonstrate HIP technology that facilitates building or upgrading military aircraft and other aerospace platforms with a fiber-optic networking infrastructure that will offer many capabilities well beyond those of currently used copper- and multi-mode-fiber-based technologies. The committee encourages the Department to continue pursuing sustained development of HIP across the future years defense plan.

Human-computer interaction

The committee understands that the application of emerging neuroscience techniques, such as the use of non-invasive brain measurement called functional near-infrared spectroscopy, are leading to a better understanding of human-computer interaction. The committee is aware that the use of such techniques to passively study the brain, coupled with new neuroergonomic and human factors research, have the potential to lead to better methods for training cyber operators that would reduce the human errors, improved input devices for machine control, and potential applications for using brain measurement as a means for future biometric identification. The committee encourages the Department of Defense to continue investing in basic research to further explore and expand the understanding of functional near-infrared spectroscopy techniques, and their applications for defense needs.

Improving military medical innovation

The committee commends the Department of Defense for its innovative medical research and development program, which supports a combination of private sector, academic and in-house initiatives. The committee believes that this foundation could be further improved by examining means to augment this base program with a self-sustaining, equity sharing mechanism to enable continued health care advancements despite decreasing federal budgets. Therefore, the committee directs the Secretary of Defense to provide a briefing to the Committee on Armed Services of the House of Representatives within 180 days after the enactment of this Act on the feasibility of establishing a federally supported, self-sustaining investment entity to support military medical innovation.

Individual equipment for female servicemembers

The committee notes that in January 2013, the Secretary of Defense announced a new policy regarding the eligibility of female servicemembers to serve in certain combat positions in which they were previously prohibited. The committee is concerned that despite the reality of female servicemembers serving in combat for many years, the military services have been slow to field individual equipment that is properly sized, weighted, and designed for use by female servicemembers. The committee believes that it is important that the Department of Defense ensure that female servicemembers have the equipment and clothing tailored to the physical requirements of women in order to operate effectively and not be hampered by equipment that is ill-fitting, uncomfortable, and potentially harmful during operations in the field.

In the committee report (H. Rept. 112-479) accompanying the National Defense Authorization Act for Fiscal Year 2013, the committee noted that it is aware of the concerns expressed by female members of the Armed Forces deployed in support of Operation New Dawn and Operation Enduring Freedom that the current interceptor body armor system's design may not be as ergonomically effective for female soldiers. As a result, the committee directed the Secretary of the Army to conduct an assessment as to whether there is an operational need to tailor the interceptor body armor systems fielded to female servicemembers specifically for the physical requirements of women. The committee expects to receive this assessment in July 2013. The committee understands the Army has begun fielding improved outer tactical vests specifically designed for female servicemembers, and that the Army has created and tested 13 female-specific coat sizes and 13 female-specific trouser sizes through the Army Combat Uniform-Alternate program that it will begin fielding in May 2013. The committee commends the Army for taking these actions and expects similar actions by the other military services.

Similar to the report referenced above, the committee directs the Secretary of Defense to provide a report to the congressional defense committee by February 15, 2014, that details the Department's programs to develop and field individual equipment that is properly sized, weighted, and designed to accommodate its use by women across all of the military services. In particular, the report should include, but not be limited to, plans to provide a greater

range of clothing sizes for women servicemembers, the potential utility of rucksack frames and other carrying equipment designed specifically for women, as well as the advisability and feasibility of providing all female servicemembers with female urinary diversion devices as part of their standard issued set of personal equipment.

Inner-aural communications hearing protection capability development

The committee is concerned that hearing loss continues to remain one of the most prevalent long-term injuries for military personnel. As such, 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 provide a briefing to the congressional defense committees on the current efforts of the Department of Defense in developing technology to reduce military service-related hearing loss. The committee understands this briefing is still being developed and looks forward to receiving it in July 2013.

The committee believes that the military services should consider additional investment in such technology. The committee encourages the Secretary of Defense, in coordination with the service chiefs, to develop a comprehensive policy for hearing protection and hearing enhancement across the military services in order to: (1) ensure all members of the military services are equipped with communications equipment that does not interfere with or prohibit the use of hearing protection; (2) reduce impediments to operational readiness that derive from hearing loss; and (3) reduce the number of service-connected disabilities resulting from inadequate hearing protection.

Iron Dome short-range rocket defense

The budget request contained \$220.3 million in PE 28866C for the Iron Dome short-range rocket defense system.

The committee has supported the Iron Dome system since its inception. The committee is aware of the tremendous success of the Iron Dome system in defeating threat rockets fire at the State of Israel from the Gaza Strip in late 2012. The committee is aware that the Iron Dome system intercepted over 85 percent of the rockets launched from the Gaza Strip against defended areas in Israel, and is pleased with its success.

The committee associates itself with the remarks of former-Secretary of Defense Leon Panetta in December 2012 regarding the system: “Iron Dome performed, I think it’s fair to say, remarkably well during the recent escalation . . . Iron Dome does not start wars; it helps prevent wars.”

The committee recommends \$220.3 million, the full amount requested, in PE 28866C for the Iron Dome short-range rocket defense system. The committee believes the Director, Missile Defense Agency and the Under Secretary of Defense for Acquisition, Technology and Logistics, in consultation with the Israeli Missile Defense Organization, should use up to 50 percent of this amount for production of Iron Dome components by U.S. industry in the United States to meet Israel’s defense requirements consistent with

each Nation's laws, regulations, and procedures. The committee believes co-production of parts and components can and should be done in a manner that will maximize interceptor and battery deliveries for Israeli defense needs.

Israeli Cooperative Missile Defense Systems

The budget request contained \$95.7 million in PE 63913C for Israeli Cooperative Missile Defense Programs. Of this amount, \$52.6 million was requested for the Israeli Upper Tier program known as Arrow 3; \$10.6 million was requested for the Israeli Arrow Program; and, \$32.5 million was requested for the Short-range Ballistic Missile Defense Program, also known as the David's Sling Weapons System.

The committee is aware that the United States has no closer ally in the Middle East than the State of Israel. The committee is also aware that the threat of ballistic missile attack on Israel is rising. The committee believes this threat must be met with the unequivocal support of the United States.

The committee recommends \$268.7 million, an increase of \$173.0 million, in PE 63913C for Israeli Cooperative missile defense programs, the same level recommended in fiscal year 2013. The committee recommends this increase be provided as follows: \$117.2 million for the David's Sling; \$22.1 million for the Arrow 3 program; and \$33.7 million for the Israeli Arrow program. The committee recommends funding and policies regarding the Iron Dome system elsewhere in this report.

Medical research information sharing

The committee supports the breadth of medical research being conducted within the Department of Defense and the promising results of such research. However, the committee is concerned that compartmentalization of data, whether by military service or injury mechanism, may unnecessarily limit the efficacy of limited research dollars. History has shown that many medical breakthroughs, such as penicillin, are often the product of research in fields indirectly related to medicine. The committee believes that the emerging field of big data analytics could provide useful tools to support the development of new capabilities through greater exposure of data and research results. Therefore, the committee directs the Department to provide a briefing within 180 days after the date of enactment of the Act on how best to promote information sharing across the medical research community through the use of big data analytics, while preserving anonymity and privacy protection, and allowing patients, subjects, and researchers to opt-in or opt-out of specific research studies. The briefing should also address whether establishing a single Department-wide clearing house for medical research data would be an effective means for accomplishing this goal.

Microscale liquid plasmas

The committee recognizes the importance of systems to allow for the operation of defense electronics in harsh environmental conditions, which must be impervious to radiation or damaging electromagnetic pulses. The committee is encouraged with the advance-

ments the Defense Advanced Research Projects Agency (DARPA) has made in this area working with non-thermal microscale liquid plasmas (MLP) in demonstrating the ability of these electronics and signal processing devices to withstand damaging electromagnetic pulses and operate in extreme pressure and radiation environments. The committee recognizes that MLP may have application in other areas, such as the development of novel plasma actuators for aerodynamic control to improve performance of high-speed fixed-wing aircraft and rotorcraft. The committee encourages DARPA to continue this research to provide applications that can be used on various platforms to protect our military hardware against extreme pressure and radiation.

Missile defense cooperation with Japan

The committee is aware that the United States has more than 20 international missile defense partners, plus the North Atlantic Treaty Organization. Of these, few have undertaken a more cooperative missile defense program with the United States than the Government of Japan.

This cooperation includes hosting missile defense radars, deploying Aegis ballistic missile defense sensor and shooter ships, and sharing the multi-billion dollar development of the Standard Missile 3 (SM-3) IIA missile, which is planned to be deployed by 2018. Upon completion of this cooperative program, the SM-3 IIA will be the most sophisticated missile interceptor deployed on any country's ships, with the capability to engage many intermediate-range ballistic missile types.

The committee was pleased when the Secretary of Defense announced on March 15, 2013, that, "[w]ith the support of the Japanese Government, we are planning to deploy an additional radar in Japan." The committee is aware that this radar placement was in consideration for over a year.

The committee considers it a testament to the strength of the U.S.-Japan alliance that the Government of Japan has agreed to host this second radar on its territory. The committee expects that with the addition of the second Army Navy/Transportable Radar Surveillance-model 2 (AN/TPY-2) radar unit, the Missile Defense Agency and the Department of Defense will have an opportunity to examine how best to bore sight these two radars to ensure maximum support for the regional and homeland missile defense missions. The committee is encouraged by this virtually unparalleled cooperation and support from Japan. The committee would welcome more such U.S.-Japanese missile defense cooperation in the future.

Additionally, the committee encourages Japan to consider the proposal articulated by the Chairman, Joint Chiefs of Staff to seek a "collaborative, trilateral ballistic missile defense architecture." The committee believes such an architecture could redound to the benefit of the three allied states to provide additional defensive capabilities against shared regional threats, including the Democratic People's Republic of Korea.

Mitochondrial research

The committee is aware that the Department of Defense has an interest in research related to mitochondrial disease and mitochondrial function. For example, the U.S. Army Research Office's life sciences program includes support for efforts that focus on mitochondrial regulation and biogenesis, and biomolecular power generation. Similarly, as the committee has previously noted, there is a growing body of evidence indicating that traumatic brain injury-related impairments may be the result of damage to human cell mitochondria and that an enhanced understanding of the functioning of post-injury mitochondria may help drive the development of therapeutic interventions that could delay or prevent additional impairment. The committee continues to encourage the Department to support mitochondrial research through its medical research activities in the various services.

Modeling and simulation concurrency

The committee is aware that modeling and simulation tools can provide powerful planning and training capabilities to expose our forces to the complexities and uncertainties of combat before ever leaving home station. The use of simulation training has yielded a military that is better trained, more capable, and more confident as compared to units that do not have access to modern simulation training devices. The committee believes that simulation training can be a cost effective means by which units can improve combat readiness, tactical decision-making skills and ultimately save lives.

Furthermore, the committee believes that a key to the effectiveness of simulation training is ensuring that training devices maintain concurrency with the capabilities and features of their counterpart operational systems and platforms. The committee is aware that maintaining concurrency using traditional funding approaches remains challenging in the current fiscal environment and is likely to become more so in the future. To ensure the greatest efficiency and effectiveness in our military today, the committee encourages the Department of Defense to consider using its existing flexibility to utilize "training as service" contracting as one approach to support operational readiness and maintain system concurrency. The committee believes that the Department could meet the training challenges of the future in a fiscally austere environment by leveraging simulation training that is a combination of both Government owned and operated simulators, coupled with simulation training services provided by a academia and industry.

Modeling and simulation grand challenges

The committee recognizes the value of modeling and simulation (M&S) to a wide range of activities within the Department of Defense. The committee believes that the Department could do more to harness the entrepreneurial and innovative spirit of industry, academia, and the organic research and engineering resources of the Department to facilitate progress in the state of the art for M&S. The committee recognizes that the issuance of grand challenges have been effective in other areas, such as the Grand, Urban and Balloon Challenges of the Defense Advanced Research Projects Agency. The committee encourages the Department to de-

velop and promulgate a set of M&S Grand Challenges for the research community that would:

- (1) Support increased inter-agency coordination;
- (2) Improve efficiency and interoperability of specific M&S tools, as well as to replace, improve, or provide efficiencies to existing activities of the Department;
- (3) Reinvigorate use of simulation-based acquisition as an enterprise-wide strategy, including by using modeling and simulation for performing analyses of alternatives for major defense acquisition programs;
- (4) Lower the operations and support costs of the Department; and
- (5) Support risk mitigation activities.

National Defense Education Program

The budget request contained \$84.3 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, \$48.7 million was requested for the Science, Mathematics, and Research for Transformation (SMART) program, \$35.6 million was requested for the National Security Science and Engineering Faculty Fellowship (NSSEFF) program, but no funds were requested for pre-kindergarten-to-12th grade (PK-12) STEM educational 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 \$89.3 million, an increase of \$5.0 million, in PE 61120D8Z for the National Defense Education Program. Of these funds, the committee recommends \$48.7 million, the requested amount for the SMART; \$25.6 million for NSSEFF, a decrease of \$10.0 million; and \$15.0 million for PK-12 programs, an increase of \$15.0 million. Of the funds request 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.

Next generation Aegis missile—Standard Missile 3 block IIB

The committee is aware that on March 15, 2013, the Secretary of Defense announced that the Administration would propose to restructure the Standard Missile (SM) 3 block IIB program in the budget request for fiscal year 2014. The Missile Defense Agency has made it clear that this decision was driven by congressional reductions in technology development in fiscal years 2012–13, as well as technical challenges related to the projected capability of the missile and related to sea-basing the prospective missile interceptor.

The committee is also aware that the Government and its industry partners both made significant investments in the development of the SM–3 IIB missile. The committee believes that it would be imprudent and short-sighted to walk away from these investments and to leave no program of record for the continued improvement of the SM–3 system. The committee encourages the Missile Defense Agency to use these investments as much as possible to improve and inform the development of the Aegis ballistic missile defense system SM–3 IIA interceptor, planned to be fielded in fiscal year 2018, as well as a follow-on system. Therefore, the committee directs the Director, Missile Defense Agency to provide a briefing to the congressional defense committees by November 15, 2013, on the potential for a concept development program for leveraging the investments made in the SM–3 IIB program by the United States and industry to continue to improve the SM–3 IIA missile through an evolved or iterative variant, for example an SM–3 IIA+.

Non-Lethal directed energy applications

The committee reiterates its support for the expeditious development and fielding of non-lethal technologies and capabilities, which can not only limit civilian casualties in irregular warfare and contingency operations but have applicability across the full range of military operations. In particular, active denial technologies offer numerous opportunities for defusing crisis situations in volatile environments. The committee supports the findings of the Accountability Review Board, which concluded that “the lack of non-lethal crowd control options . . . precluded a more vigorous defense” of the U.S. consulate in Benghazi, Libya and which recommended that the State Department “rapidly and routinely” identify and procure “additional options for non-lethal deterrents in high-risk, high-threats posts.”

However, the committee notes that the lack of a clearly defined policy regarding the deployment of directed energy technologies has been a contributing factor to the decision not to deploy systems such as the Active Denial System. Interim guidance issued by the Under Secretary of Defense for Policy regarding the operational employment of directed energy weapons acknowledges the benefits of directed energy technology and supports its continued development, but stops short of authorizing the use of new directed energy weapons without undergoing a comprehensive review and approval

process intended to ensure an acceptable risk of collateral damage and inadvertent casualties to personnel. The committee recognizes the importance of a thorough examination of these issues, however it is concerned that the acceptance criteria imposed in this process still appears to be ambiguous and ill-defined, and therefore may stifle the development of, and support for, promising technologies. Accordingly, the committee directs the Secretary of Defense to provide a briefing to the Committees on Armed Services of the Senate and the House of Representatives within 90 days of the enactment of this Act which identifies the policy, technology, and acquisition issues that have impeded the development, fielding, and employment of active denial systems in operational theaters where U.S. forces are currently engaged; and clarifies the specific policy requirements that must be met before directed energy weapons may be employed in both counter-materiel and counter-personnel applications.

Non-profit research institutions

The committee is aware that non-profit research institutions are critical components of the research ecosystem, and offer tremendous capabilities to the research and development portfolios of the Department of Defense and other Federal agencies. The committee is aware the Department is examining ways to better utilize their unique capabilities and expertise, especially in the area of transitioning innovation to commercialization. Additionally, the committee understands that the Department is 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 believes this is especially important in a time of fiscal austerity and uncertainty, and encourages the continued discussion between the Department and the non-profit research community.

Open architecture systems

The committee notes that under the direction of the Under Secretary of Defense for Acquisition, Technology and Logistics (USD/ATL) in 2009, the Unmanned Aircraft Systems (UAS) Task Force chartered the UAS Common Segment (UCS) Working Group, which has developed a common, open and scalable reference architecture for control of unmanned aircraft systems. Despite this effort and past encouragement from Congress, the services have continued, in some cases, to procure proprietary and closed architecture unmanned systems and ground control segments resulting in higher costs, fragmented and disjointed operations, and reduced operational effectiveness. Therefore, the committee encourages the Secretary of Defense, in consultation with the Joint Chiefs of Staff, and coordinating with the services to require all future UAS groups two through five ground control stations be compliant with the most recent Office of the Secretary of Defense UCS reference architecture.

The committee also notes that both the Government Accountability Office (GAO) and USD/ATL have identified an open systems approach as a potential enabler for increasing competition and reducing costs on major weapons system acquisition programs. GAO

recently reported that an open systems approach is characterized as having a modular design with open standards for key interfaces. While the Department would reap the most benefits from adopting an open systems approach at the start of development, the committee further notes that both the GAO and USD/ATL believe that in certain circumstances, where appropriate, it may be more cost effective and efficient to convert proprietary systems to open systems even after they have been fielded. The committee believes that the Department of Defense has the potential to benefit from the use of an open systems approach for weapons systems acquisition programs. Accordingly, the committee directs that the Under Secretary of Defense for Acquisition, Technology and Logistics provide a report to the congressional defense committees by March 3, 2014, that:

- (1) Assesses the costs and benefits of using an open systems approach for manned and unmanned aircraft acquisition programs;
- (2) Identifies the specific plan the Department of Defense will use for implementing an open systems approach for new manned and unmanned aircraft acquisition programs;
- (3) Assesses the costs and benefits of converting existing proprietary manned and unmanned systems to open systems; and
- (4) Recommends any implementing legislation for congressional consideration.

The committee also directs the Comptroller General to study the use of best practices for using open systems in product development. The study should identify better ways of incorporating an open systems approach from the start of new acquisition programs, analyze challenges that the Department of Defense may have in implementing these practices in its weapons acquisition programs, and provide potential solutions to these challenges, including potential policy changes. The Comptroller General should provide a briefing to the House Committee on Armed Services on the findings by February 3, 2014.

Potential missile defense cooperation with the Republic of Korea

The committee is aware that the Missile Defense Agency (MDA) and the Republic of Korea are conducting phased studies of ballistic missile defense architecture options for that country. The committee is encouraged by this effort as it represents an additional example of cooperation in missile defense development between the United States and its allies.

As the phased studies come to a conclusion, the committee encourages the Government of South Korea to consider purchasing U.S. missile defense technology that could provide proven solutions to the ballistic missile challenges that it is confronting and allow interoperability between South Korea and the United States. Additionally, the committee encourages South Korea to think about the proposal of the Chairman, Joint Chiefs of Staff to seek a “collaborative, trilateral ballistic missile defense architecture.” The committee believes such an architecture could redound to the benefit of the three allied states to provide additional defensive capabilities

against shared regional threats, including the Democratic People's Republic of Korea.

Precision Tracking Space System

The committee is aware that the Missile Defense Agency (MDA) has proposed terminating the Precision Tracking Space System (PTSS) in the fiscal year 2014 budget request. The committee agrees with the Department's judgment that the termination is the appropriate action in view of the rising cost and acquisition uncertainties of this system, both prominent explanations for the committee's actions in the committee reports (H. Rept. 112-78 and H. Rept. 112-479) as well as in section 224 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112-239).

The committee views the termination of PTSS as an opportunity for the Department of Defense. The committee is aware that PTSS follows on the heels of the Space Tracking and Surveillance System (STSS) as a missile defense space sensor architecture that hasn't been operationally deployed. The committee believes that a persistent overhead sensor system is a must for the ballistic missile defense system.

The committee notes the priority of improving discrimination, and is encouraged by the MDA plan for an Integrated Space Layer Study and the joint MDA-Strategic Command "vision study" initiated by the Commander, U.S. Strategic Command, on which the committee provides further views elsewhere in this report. The committee expects to be briefed this summer upon the conclusion of the post-PTSS scoping study as well as to be kept informed of the progress and interim findings and conclusions of the Integrated Space Layer Study.

The committee expects the Director to ensure that the taxpayer investments made in the PTSS system will not be lost or wasted and that the cutting edge sensor work being done on this system will be leveraged into a follow-on program that could be recommended by the aforementioned space sensor study. Elsewhere in this Act, the committee includes a provision that would require an analysis of alternatives on the Integrated Space Layer Study in order to ensure that future MDA plans do not follow PTSS and STSS into failure.

Quantum information science

The committee is aware that research into quantum scale effects offer great potential for the storage, processing and communication of information, including for a wide range of applications that include weak-signal sensing and imaging to quantum computing and cryptography. The committee recognizes that quantum information science offers potentially disruptive new technologies for national security needs, but that recent advances in quantum communications have resulted in some early commercial products.

In the committee report (H. Rept. 111-166) accompanying the National Defense Authorization Act for Fiscal Year 2010, the committee directed a review of quantum computing research within the Department of Defense. This report indicated that in fiscal year 2010, the Department had an investment between \$50.0 and 55.0 million per year, which represented 30-40 percent of the Federal

investment in this area. Most of these projects were funded as single university investigator projects, but also included some Multidisciplinary University Research Initiatives.

The committee encourages the Department to sustain its investment in quantum information science research, especially in such areas as the development of novel quantum devices superconducting circuit technology for the purpose of quantum measurement and improving understanding of issues that are fundamental to quantum sensing and quantum computing. The committee believes that such efforts are needed to maintain the Nation's technological leadership internationally.

Report on boost phase missile defense options

Elsewhere in this report, the committee notes that it is aware that there is presently no boost phase missile defense program of record in the Ballistic Missile Defense System architecture planned by the Missile Defense Agency (MDA). The committee is aware that the Kinetic Energy Interceptor and the Airborne Laser were terminated in fiscal year 2009, though there were notable successes, as well as challenges, by both developmental programs. The committee notes that such an absence means the United States is currently not pursuing one of the three central layers of missile defense architecture.

The committee is also aware of the findings of the National Academy of Sciences in its report, "Making Sense of Ballistic Missile Defense: An Assessment of Concepts and Systems for U.S. Boost-Phase Missile Defense in Comparison to Other Alternatives," which concludes, by relying on its own "notional data," that boost-phase defense "could be technically possible in some instances but operationally and economically impractical for almost all missions." The committee is aware of the significant advantages, and the difficulties of intercepting a threat ballistic missile in the boost phase, including those articulated by the National Academy of Sciences report.

Therefore, the committee directs the Director, Missile Defense Agency to provide a report to the the congressional defense committees by October 15, 2013, that assess the findings of the National Academy of Sciences study and the options that the Director believes the Missile Defense Agency should consider in an analysis of alternatives or other study that could inform a boost phase missile defense program as part of the budget request for fiscal year 2015.

Report on HALT/HASS Testing of Ballistic Missile Defense Systems and Components

The committee continues to be concerned by issues of reliability in the design and development of critical ballistic missile defense (BMD) system components and subcomponents as well as the potential for counterfeit parts to enter into the missile defense supply chain.

Effective utilization of modern methods and equipment for highly accelerated life testing and highly accelerated stress screening (HALT/HASS) during early design stages has been demonstrated to yield significant improvements in reliability and more effective product designs, as well as cost savings. Through modern HALT/

BASS testing, key components and subcomponents are subjected to overstresses, revealing latent design flaws (including those based on the use of faulty or counterfeit parts) that can go undetected with legacy testing approaches.

Therefore, the committee directs the Director, Missile Defense Agency, to conduct an assessment of the value, feasibility, and cost of greater utilization of modern HALT /HASS testing equipment and processes to shorten design and development timelines, reduce system and component testing and lifecycle costs, and enhance reliability of critical missile defense systems and components. In addition, the assessment should consider whether and to what extent greater utilization of modern HALT/HASS testing equipment and processes could help address the growing problem of detecting and preventing the introduction of counterfeit parts into critical missile defense systems, components, and subcomponents. Additionally, based on the findings of this assessment, the Director should provide the committees his recommendations regarding use of HALT/HAS. The committee directs that the results of this assessment be briefed to the congressional defense committees by not later than January 15, 2014.

Ribonucleic acid technology research

The committee recognizes that the Department of Defense faces a significant challenge with infectious diseases, which hospitalize more service members each year than are wounded in combat. The committee is aware that the Defense Advanced Research Projects Agency (DARPA) has initiated a program to address treatment for infectious diseases based on techniques utilizing ribonucleic acid (RNA). That program focuses on encoding an element of an antigen or antibody on an RNA molecule to initiate the desired immune response. The committee encourages the Department to continue this and similar research, and to look at opportunities to expand this research into new areas such as equipment that enable RNA target characterization, software development for in silico screening of molecule libraries against RNA targets, and assay development for in vitro high throughput screening and validation.

Soft biometrics for non-cooperative identification of personnel

The committee notes that the Department of Defense has developed and acquired biometric capabilities that rely primarily on fingerprint and iris recognition, but are increasingly including additional modalities such as facial recognition or identification of latent deoxyribonucleic acid material. The current generation of biometric identification devices is also primarily focused on cooperative sampling of target populations, which require samples to be taken by service members deployed in potentially dangerous environments. The committee understands that there are also additional “soft” biometrics, such as gait, keystroke, or analysis of body markings, which could also be useful in identifying specific individuals, and could be done from greater stand-off distances. The committee notes that some research has been conducted by the Air Force Research Laboratory, as well as other civilian research agencies to better characterize the utility and operational challenges of such modalities, but that the current biometrics architecture does

not yet integrate any of these capabilities. The committee encourages the Department to examine all biometric modalities as it develops its future biometrics architecture.

Special operations technology development

The Special Operations Technology Development program enables U.S. Special Operations Command (USSOCOM) to conduct studies and develop laboratory prototypes for applied research and advanced technology development, as well as leverage other organizations' technology projects. Similarly, the Special Operations Advanced Technology Development program delivers emerging technologies into the hands of Special Operations Forces, through the rapid prototyping and advanced demonstrations of these new technologies in realistic operational environments. The committee believes that these programs are vital tools that develop and rapidly deliver special operations specific technology to support special operations forces (SOF) in emerging as well as existing requirements. The committee believes that these programs would benefit from a formalized collaboration between USSOCOM and trusted academia, which in turn would serve as a catalyst to advance the introduction of new technologies that would contribute to SOF mission areas.

Standardization of directed energy weapon systems characterization

The committee is aware of several research, development, test, and evaluation (RDT&E) programs which pursue the development and eventual deployment of directed energy weapon systems. The committee understands the importance of the services and defense agencies' ability to leverage RDT&E investments whenever possible to maximize the mutual benefit of these investments. Therefore, the committee encourages the services and defense agencies to continue to work synergistically in the development of these systems whenever possible. However, the committee is concerned about the inconsistency of definition of system performance among the different programs which make comparison of technologies and identification of leveraging opportunities between programs difficult. System descriptors such as "beam quality" for laser systems have multiple definitions within the directed energy community at large, and are not directly comparable between different systems. Some descriptors may only be applicable to a limited subset of missions and therefore inhibit the extrapolation of system performance to other missions. The ability to perform such comparisons is vital in the assessment of the different laser technologies applicability for missions of national interest.

Therefore, the committee directs the Secretary of Defense to develop a common set of parameters to describe directed energy weapon system performance with standardized definitions to be employed on all Department of Defense directed energy programs. The committee further directs the Secretary of Defense to submit a report to the Committees on Armed Services of the Senate and the House of Representatives within 12 months after the date of the enactment of this Act, which provides the rationale behind directed energy weapon system performance definitions.

Synthetic protein development

The committee is aware that the U.S. Army's Walter Reed Institute of Research (WRAIR) has established a collaborative research and development agreement (CRADA) to examine a new biochemical process that would prevent bacteria from responding to their environment and becoming harmful. This new process relies upon use of a protein molecule as a roadblock or 'switch' to disrupt the behaviors bacteria use to become virulent. The committee believes that this new discovery could have widespread implications to help reduce combat wound casualties caused by infection. The antimicrobial process has an added advantage over traditional antibiotics currently in use in that the switch mechanism makes it extremely difficult for bacteria to do an "end run" around the process as can happen with some traditional antibiotic-resistant microbes. The committee applauds WRAIR's efforts with this potentially life-saving research and expects the Secretary of Defense and the Department's medical research enterprise to fully support this important new therapeutic approach.

Technology harvesting of the Medium Extended Air Defense System

The committee is aware that one of the frequent justifications for completion of the Medium Extended Air Defense System (MEADS) Proof of Concept (PoC) was the harvesting of specific technologies for the modernization of the Patriot air and missile defense system. For example, in a letter to the congressional defense committees from then-Secretary of Defense, Leon Panetta, on November 30, 2012, the Secretary stated, "[t]he U.S. Army is already considering ways to link the knowledge gained from the tri-national MEADS PoC program to its future air and missile development plans." With the final funding of the MEADS PoC, the committee is anxious to learn what technologies will be harvested for Patriot modernization, at what date in the modernization program, and at what cost to take advantage of the significant U.S. taxpayer investment in PoC.

The committee was disappointed to learn that the Army would not include this information in the report required by section 226 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112-239). The committee understands the Army is interested in evaluating potential technology harvesting as part of the assessment of the results of the upcoming FT-2 test, but it believes such evaluation is central to the intent of the requirement under section 226. Therefore, the committee directs the Secretary of the Army to provide an evaluation to the congressional defense committees within 180 days after the completion of FT-2, or February 15, 2014, whichever comes later, of MEADS technology harvesting opportunities based on the report directed by section 226 of Public Law 112-239. This report should also include: 1) A review of current Army and joint requirements to which MEADS technology might be applied; 2) The Army's timeline for completion of an Analysis of Alternatives to these technologies; and 3) An overview of the Army's planned competitive milestones in the acquisition strategy.

Tele-medicine applications for ophthalmic injury

The committee is aware that the Department of Defense is developing capabilities that would provide telemedicine and remote physiological monitoring for casualty care of deployed forces. The committee recognizes that such telemedicine capabilities can provide useful reach-back support for complex injuries, especially for sensitive organs where combat medics and surgeons may not have in-depth specialty training, such as ophthalmic injuries. The committee encourages the Department to experiment with and examine ways to utilize emerging telemedicine capabilities to allow for consultation with outside experts or specialty institutions to provide soldiers on the battlefield with access to high quality, tertiary ophthalmic care for complex and difficult eye injuries. The committee believes that partnering with subject matter experts could provide direct, real-time consultation between geographically-dispersed military and civilian ophthalmologists for urgent, complex ophthalmic diagnostic and surgical problems, as well as allow conferencing for complicated but less urgent patient management decisions.

Terminal High Altitude Area Defense System

The committee is aware that the Department of Defense has deployed the first operational Terminal High Altitude Area Defense (THAAD) system battery to Guam for its defense from the North Korean threat. The committee is gratified to see this capability operationally deployed providing missile defense protection to U.S. warfighters and U.S. territory.

The committee is also aware that the fiscal year 2013 budget request reduced the procurement of THAAD batteries from nine to six. The committee is not aware of any diminution of warfighter requirement for this capability. The committee encourages the Missile Defense Agency and the Missile Defense Executive Board to continually reexamine the availability of resources and the warfighter requirement for the THAAD system and to ensure future budget requests in future fiscal years seek to increase the number of THAAD batteries that will be procured by the United States. The committee also encourages the Missile Defense Agency, subject to the availability of resources, to ensure that THAAD interceptor procurement is matched and paced to the procurement and availability of THAAD batteries. The committee noted both of these concerns in 2012 as part of the committee report (H. Rept. 112-479) to accompany the National Defense Authorization Act for Fiscal Year 2013.

The committee commends the Department of Defense for its robust missile defense cooperation with the United Arab Emirates. The committee is aware that ongoing and prospective foreign military sales with the United Arab Emirates, including the THAAD system, will greatly expand the U.S.-allied interoperable missile defense architecture to deal with regional threats. At the same time, the sales will produce significant cost-savings to the United States for its THAAD program.

Three dimensional integrated circuits

The committee is aware that the pressure to place more functionality on increasingly smaller integrated circuits is a challenge the Department of Defense is faced with as it tried to place more processing power on smaller platforms, such as unmanned systems and signal new sensors. The committee is also aware that the development of three dimensional integrated circuits (3D ICs), which allow for functionality to be stacked onto circuits and provide both horizontal and vertical functionality, holds promise for defense applications. The committee is concerned that recent microelectronics strategies from the Department have not addressed the role 3D ICs might fill, nor the gaps that might exist in commercially developed 3D ICs and where Department of Defense investment may be needed. The committee encourages the Department to comprehensively evaluate the place 3D ICs might fit in the Department's overall microelectronics strategy to understand how they might best be used to the benefit of defense systems.

U.S. Special Operations Command undersea systems strategy

The undersea systems strategy of the U.S. Special Operations Command (USSOCOM) has been a subject of focus by the committee over the past several national defense authorization acts. The committee believes that the research and development phase has reached a point of stability, which validates the progress of USSOCOM and their communication with Congress in a joint endeavor to provide warfighters with unmatched clandestine maneuverability in denied maritime areas.

Increased authorization from the congressional defense committees for fiscal year 2013 afforded additional resources for dry combat submersible development of a near-term prototype that will give USSOCOM new capability. The dry variant will afford increased range and alleviate the human factors that are unavoidable while operating wet submersibles in cold environments on a long-distance commute to an objective. It is the intent of this committee to continue supporting and tracking with great interest the progress of a dry variant capable of deploying from multiple platforms to include a submarine.

Additionally, section 156 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112-239) mandated reporting requirements for the Shallow Water Combat Submersible Program and continued coordination between USSOCOM and the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict. The committee looks forward to receiving these mandated reports and reaffirms the need for continued communication with the congressional defense committees to ensure programmatic success across the undersea systems enterprise and program.

Vertical Lift Consortium

The committee understands that the Vertical Lift Consortium (VLC) is an open and competitive forum that leverages all sectors of the vertical lift aircraft community to encourage teaming of innovative small business and non-traditional contractors with major defense firms and academia. In the committee report (H. Rept. 112-479) to accompany 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 VLC 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 agrees with the Department's assessment that the VLC is an integral part of the future vertical lift initiative and supports VLC members continued opportunities to compete and participate in prototype technology projects for next generation vertical lift aircraft. 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.

OPERATIONAL TEST AND EVALUATION, DEFENSE

Overview

The budget request contained \$186.3 million for operational test and evaluation, Defense. The committee recommends \$186.3 million, no change to the budget request, for fiscal year 2014.

The committee recommendations for the fiscal year 2014 operational test and evaluation, Defense program are identified in division D of this Act.

Items of Special Interest

Assessment of the Army Distributed Common Ground System

The committee shares numerous concerns related to the performance and program management of the Distributed Common Ground System-Army (DCGS-A) program. The committee has endeavored to better understand those concerns and find ways to integrate lessons learned to improve the DCGS-A program as it moves forward. The committee awaits the report required by section 923 of the National Defense Authorization Act of Fiscal Year 2013 (Public Law 112-239), as well as a review by the General Accountability Office. Elsewhere in this bill, the committee directs further actions to improve visibility into the DCGS enterprise, and updates in key areas of performance.

The committee strives to continue improving its understanding and assessment of key attributes of DCGS-A, and therefore directs the Director of Operational Test and Evaluation (DOT&E) to review the DCGS-A program and submit a report to the congressional defense committees by September 27, 2013. That report shall include the following:

- (1) An assessment of the ability of the system to synchronize data across separate locations around the world in disconnected, interrupted or low-bandwidth data environments, including use of cloud edge nodes, and to manage and enrich

data collaboratively across the enterprise into a fused common operational picture;

(2) An analysis of how the Tactical Entity Databases (TED) are synchronized;

(3) An assessment of the system to meet the data interoperability standards set by the intelligence community.

Furthermore, the committee directs the Under Secretary of Defense for Intelligence, in coordination with Performance Assessment and Root Cause Analysis office, to provide a briefing by October 18, 2013 providing an additional assessment of the DOT&E report. This report shall include an assessment of the results of the DOT&E report, including comments on any recommendations made; and an analysis of how the lessons learned from the Republic of Iraq and the Islamic Republic of Afghanistan were incorporated into DCGS–A, including the ability of the system to respond to joint urgent operational needs.

Test and evaluation capabilities for electromagnetic pulse vulnerabilities

The committee is aware that an electromagnetic pulse (EMP), both man-made and naturally occurring, as well as high-powered microwave (HPM) systems poses a significant challenge to the assurance of critical Department of Defense missions and assets. The committee recognizes that adequate test and evaluation facilities and capabilities are needed to maintain the standards for individual systems, as well as the networking of systems and infrastructure of the Department.

The committee is concerned that the Department has not adequately invested in the underlying infrastructure needed to support these test and evaluation capabilities, as well as the modeling and simulation tools required to support combatant commanders, war games, military exercises and other assessments. Therefore, the committee directs the Director, Test Resource Management Center to provide a briefing to the Committee on Armed Services of the House of Representatives within 90 days after the date of the enactment of this Act, on the test and evaluation capabilities to support identification and mitigation of EMP and HPM vulnerabilities to the Department. The briefing should include identification of the existing capabilities and their sustainment levels, as well as identification of any gaps in those capabilities.

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—Limitation on Availability of Funds for Ground
Combat Vehicle Engineering and Manufacturing Phase

This section would prohibit the Army from obligating post-Milestone B funds for the Ground Combat Vehicle (GCV) program until the Secretary of the Army submits a report to the congressional defense committees.

The committee supports the Army's need to modernize its ground forces equipment. The GCV is one of the Army's top priorities and will eventually replace the Bradley Fighting Vehicle. The committee expects the Army to execute an acquisition strategy that meets the needs of the warfighter and minimizes the risk to the Government. The Army's recent acquisition strategy is to down select to one contractor at the beginning of the Engineering, Manufacturing, and Development (EMD) phase instead of funding two contractors until the end of the EMD. The committee notes that officials from the Government Accountability Office have testified before the committee on numerous occasions that weapon system programs that enter EMD too early without enough "knowledge" can pose a significant risk to the Government. "Knowledge" is defined as the combination of technology maturity, a thorough understand of requirements, and realistic cost estimates. The committee expects the Army to ensure that it has enough "knowledge" before it down selects to one contractor in order to minimize the cost, schedule, and performance risk to the Government and the taxpayer.

Section 212—Limitation on Milestone A Activities for Unmanned
Carrier-Launched Airborne Surveillance and Strike System Program

This section would prohibit the Under Secretary of Defense for Acquisition, Technology, and Logistics from approving a Milestone A technology development contract award for the Unmanned Carrier-Launched Airborne Surveillance and Strike (UCLASS) program until 30 days after the Under Secretary certifies to the congressional defense committees that the software and system engineering designs for the control system and connectivity segment and the aircraft carrier segment of the UCLASS system can achieve, at a low level of integration risk, successful compatibility and operability with the air vehicle segment planned for selection at Milestone A contract award.

Section 213—Limitation on Availability of Funds for Air Force
Logistics Transformation

This section would restrict the obligation and expenditure of Air Force procurement and research, development, test, and evaluation funds for logistics information technology programs until 30 days after the date on which the Secretary of the Air Force submits to the congressional defense committees a report on the modernization and update of Air Force logistics information technology systems following the cancellation of the expeditionary combat support system.

Section 214—Limitation on Availability of Funds for Defensive
Cyberspace Operations of the Air Force

This section would limit the funds the Air Force may obligate or expend for Defensive Cyberspace Operations in Program Element 0202088F to not more than 90 percent until a period of 30 days after the date on which the Secretary of the Air Force submits a report to the congressional defense committees detailing the Air Force's plan for sustainment of the Application Software Assurance Center of Excellence across the Future Years Defense Program.

Section 215—Limitation on Availability of Funds for Precision
Extended Range Munition Program

This section would limit obligation of 50 percent of fiscal year 2014 funds for the precision extended range munition (PERM) program. This section would include a waiver for the Under Secretary of Defense for Acquisition, Technology, and Logistics pending written certification to the congressional defense committees.

Section 216—Limitation on the Availability of Funds for the
Program Manager for Biometrics of the Department of Defense

This section would restrict the obligation or expenditure of funds for fiscal year 2014 for research, development, test, and evaluation by the Department of Defense program manager for biometrics for future biometric architectures or systems to not more than 75 percent for a period of 30 days after the date on which the Secretary of Defense submits a report to the congressional defense committees assessing the future program structure for biometrics oversight and execution and architectural requirements for biometrics enabling capability.

Section 217—Unmanned Combat Air System Demonstration
Testing Requirement

This section would require the Secretary of the Navy to demonstrate unmanned, autonomous aerial refueling testing and evaluation with the X-47B aircraft.

Section 218—Long-Range Standoff Weapon Requirement

This section would require the Secretary of the Air Force to develop a follow-on air-launched cruise missile to the AGM-86 that achieves initial operating capability for both conventional and nuclear missions by not later than 2030 and is certified for internal carriage and employment for both conventional and nuclear missions on the next-generation long-range strike bomber by not later than 2034.

Section 219—Review of Software Development for F-35 Aircraft

This section 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 software for the F-35 aircraft program, and to submit a report to the congressional defense committees by March 3, 2014.

The committee continues to support the F-35 development and procurement program, and believes a software development review by the Department will ensure that the F-35 program remains on schedule to provide a fifth generation capability in support of our national security strategy.

Section 220—Evaluation and Assessment of the Distributed Common Ground Station

This section would require that beginning in fiscal year 2015, future budget submissions include separate project codes for each capability component within each program element for each service version of the distributed common ground station. Furthermore, this section would require the Under Secretary of Defense for Acquisition, Technology, and Logistics to conduct an analysis of commercial link analysis tools that could be used to meet the requirements of each of the service versions of the Distributed Common Ground Station program; and if one or more commercial link analysis tools are found to meet the requirements of the program, the responsible service secretary shall initiate a request for proposals.

Section 221—Requirement to Complete Individual Carbine Testing

This section would require the Secretary of the Army to complete all required tests, user evaluations, and business case assessments for the individual carbine program and report those results to the congressional defense committees upon completion.

Section 222—Establishment of Funding Line and Fielding Plan for Navy Laser Weapon System

This section would ensure that future defense budgets submitted to Congress for fiscal years 2018–28 include a funding line and fielding plan for a Navy laser weapon system. In the event that the state of the technology does not warrant a program of record, the Secretary of the Navy can waive the requirements of this section by providing written justification for that decision.

Section 223—Sense of Congress on Importance of Aligning Common Missile Compartment of Ohio-Class Replacement Program with the United Kingdom’s Vanguard Successor Program

This section would make a series of findings and express the sense of Congress regarding the importance of aligning the common missile compartment of the Ohio-class ballistic missile submarine program with the Vanguard-class successor program of the United Kingdom of Great Britain and Northern Ireland.

The Polaris Sales Agreement of 1963 has been a cornerstone of the U.S. alliance with the United Kingdom for 50 years and has brought significant benefits to both parties. Under a 1982 extension of the agreement, the United Kingdom purchases the Trident missile system from the United States for use in its submarines. Both Nations will field the Trident II/D5 strategic weapon system in their respective next generation of submarines. These new submarines will share a common missile compartment that is currently being developing through a cost-shared program conducted

by the Navy. In fiscal year 2013, the Navy delayed the Ohio-class replacement program by 2 years due to fiscal constraints, but decided to keep the common missile program on the original schedule to meet its obligation to provide the compartment to the United Kingdom in time for insertion into the Vanguard-class successor. The committee applauds this decision and encourages the Secretary of Defense and the Secretary of the Navy to continue to prioritize the common missile compartment such that it stays aligned with the Vanguard-successor program. The committee believes that keeping this common missile compartment program aligned with the Vanguard-successor program is critical to ensuring the United States fulfills its longstanding obligation to a crucial ally.

Section 224—Sense of Congress on Counter-electronics High Power Microwave Missile Project

This section would express the sense of Congress that the results of the counter-electronics high power microwave missile project should be considered as part of any analysis of alternatives for development of a high power microwave weapon, but could also be used as a near-term capability for combatant commanders should a requirement emerge.

SUBTITLE C—MISSILE DEFENSE PROGRAMS

Section 231—Prohibition on Use of Funds For MEADS Program

This section would provide that none of the funds authorized to be appropriated by this Act or otherwise made available for fiscal year 2014 for the Department of Defense may be obligated or expended for the Medium Extended Air Defense System (MEADS).

This section would also provide that the Secretary of Defense may not carry out technology harvesting from the MEADS system until 120 days after the Secretary of the Army provides the congressional defense committees a report on matters related to Army requirements for MEADS technologies, and other matters.

Section 232—Additional Missile Defense Site in the United States for Optimized Protection of the Homeland

This section would require the Missile Defense Agency to construct and make operational in fiscal year 2018 an additional homeland missile defense site capable of protecting the homeland to deal more effectively with the long-range ballistic missile threat from the Middle East. This section would be carried out while continuing to meet the requirement to prepare environmental impact statements and a contingency plan under section 227 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239) for the missile defense sites in that section. This section would require the Director, Missile Defense Agency to submit a report to Congress on such missile defense site, including an estimate of the funding to be required for construction and deployment.

Section 233—Limitation on Removal of Missile Defense Equipment from East Asia

This section would state that it is the policy of the United States that the missile defenses of the United States defend the United States, its allies, and deployed forces against a multitude of threats, including multiple regional actors. This section would also limit the use of funds to remove U.S. missile defense capabilities from East Asia until 180 days after the date that the President has certified that nuclear weapons and ballistic missile threats to U.S. allies have been verifiably eliminated, and, the President has consulted such allies. This section would provide that the President may waive such certification if he determines that it is in the national security interest of the United States and he provides an unclassified explanation, in writing, detailing the basis for his determination. This section would exclude Aegis ballistic missile defense equipped cruisers and destroyers from this requirement.

Section 234—Improvements to Acquisition Accountability Reports on Ballistic Missile Defense System

This section would amend section 225 of title 10, United States Code, to include a requirement that the Director, Missile Defense Agency include in the annual Ballistic Missile Defense System Accountability Report certain operation and support costs, and statements as to the quality estimate level of each cost estimate as well as the steps the Director will take to ensure these estimates reach the “high-quality estimate” level established by the Comptroller General of the United States.

Section 235—Analysis of Alternatives for Successor to Precision Tracking Space System

The section would strike section 224 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239) and replace it with an updated analysis of alternatives requirement to reflect the termination of the Precision Tracking Space System in the President’s request for fiscal year 2014.

The committee notes that this section would require the Director of the Missile Defense Agency to consider the opinions of private industry in carrying out the analysis of alternatives. The committee considers this requirement to necessitate only listening to the input of industry members that have long-standing and proven experience in the often difficult world of space acquisitions.

Section 236—Plan To Improve Organic Kill Assessment Capability of the Ground-Based Midcourse Defense System

This section would require the Director, Missile Defense Agency and the Commander, U.S. Northern Command, in consultation with the Commander, U.S. Strategic Command, to jointly develop options to achieve an organic kill assessment capability for the Ground-based Midcourse Defense (GMD) system by December 31, 2019, and a plan to deploy such capability in at least some of the upcoming acquisition of new Ground-based Interceptor missiles.

This section would also require the Director and the Commander, U.S. Northern Command, in consultation with the Commander, U.S. Strategic Command, to jointly develop a plan for an interim capability for improved hit assessment for the GMD system that can be integrated into near-term Enhanced Kill Vehicle upgrades and refurbishments.

This section would require these plans be submitted to the congressional defense committees by March 15, 2014.

Section 237—Availability of Funds for Iron Dome Short-Range Rocket Defense Program

This section would authorize the obligation of \$15.0 million for enhancing the capability for producing the Iron Dome short-range rocket defense system in the United States, including for infrastructure, tooling, transferring data, special test equipment, and related components.

Section 238—NATO and the Phased, Adaptive Approach to Missile Defense in Europe

This section would require, not later than 60 days after the date of enactment of this Act, that the President shall consult with the North Atlantic Council and the Secretary General of the North Atlantic Treaty Organization (NATO) on the funding of the Phased, Adaptive Approach to missile defense in Europe to establish a plan for NATO to provide at least 50 percent of the costs of operations and maintenance, and infrastructure, of Phase I of that system.

This section would further require the President to use the NATO Military Common-Funded Resources process to seek at least 50 percent funding support of the costs for Phases II and III of that missile defense system. This section would also require the Secretary of Defense, if he determines it useful, to seek establishment by NATO of a common pool of Aegis Standard Missile 3 missile interceptors.

Section 239—Sense of Congress on Procurement of Capability Enhancement II Exoatmospheric Kill Vehicle

This section would state the sense of Congress that the Department of Defense should not procure a Capability Enhancement II exoatmospheric kill vehicle for deployment until after the date on which a successful operational flight test has occurred, unless such procurement is for test assets or to maintain a warm line for the industrial base.

Section 240—Sense of Congress on 30th Anniversary of the Strategic Defense Initiative

This section would express the Sense of the Congress on the 30th Anniversary of the Strategic Defense Initiative.

SUBTITLE D—REPORTS

Section 251—Annual Comptroller General Report on the Amphibious Combat Vehicle Acquisition Program

This section would require the Comptroller General of the United States to conduct an annual review of the Amphibious Combat Vehicle acquisition program and provide the results of the review to the congressional defense committees by March 1, 2014, and annually thereafter through 2018.

Section 252—Report on Strategy To Improve Body Armor

This section would require the Secretary of Defense to submit a comprehensive research and development (R&D) strategy for achieving significant weight reductions for both hard and soft body armor components to the congressional defense committees within 180 days after the date of the enactment of this Act.

Section 125 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111–383) required a federally funded research and development center (FFRDC) to generate a technical report on ways to lighten current body armor systems. The report and FFRDC analysis found that the only way to achieve significant reductions, 20 percent and higher, without sacrificing safety and survivability would be through robust, sustained R&D funding over a number of years that focuses on developing new materials, as well as pursuing a modular, tailorable approach to body armor systems.

The committee expects the Secretary’s strategy to include but not be limited to: (1) costs, schedules, and performance requirements for all solutions currently under development for body armor weight reduction, R&D funding profiles for these solutions; (2) solutions and materials currently under evaluation by the Department, the feasibility and technology readiness levels of these materials and solutions, resourcing strategy for future initiatives; (3) how the Department is considering a “systems of system” approach to include modular and tailorable solutions for weight reduction efforts; and (4) all courses of action being considered to coordinate weight reduction initiatives for body armor among the military services.

Section 253—Report on Main Battle Tank Fuel Efficiency Initiative

This section would require the Secretary of the Army to submit a report to the congressional defense committees on an investment strategy to accelerate fuel efficiency improvements to the engine and transmission of the M1 Abrams tank.

Section 254—Report on Powered Rail System

This section would require the Secretary of Defense to provide a report to the congressional defense committees within 90 days after the date of the enactment of this Act that comprehensively reviews and compares powered rail systems for the M4 Carbine program.

SUBTITLE E—OTHER MATTERS

Section 261—Establishment of Cryptographic Modernization Review and Advisory Board

This section would require the Secretary of Defense to establish a senior-level body, to be known as the Cryptographic Modernization Review and Advisory Board, to assess and advise the cryptographic modernization activities of the Department of Defense.

Section 262—Clarification of Eligibility of a State to Participate in Defense Experimental Program to Stimulate Competitive Research

This section would modify the eligibility requirements for the Defense Experimental Program to Stimulate Competitive Research to include states that are also eligible under section 113 of the National Science Foundation Authorization Act of 1988 (42 U.S.C. 1862g).

Section 263—Extension and Expansion of Mechanisms to Provide Funds for Defense Laboratories for Research and Development of Technologies for Military Missions

This section would modify section 219 of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (10 U.S.C. 2358 note) by allowing funds for infrastructure revitalization projects to be available until expended. Use of such authority must be reported to the congressional defense committees with the total cost of the project before it commenced. Total cost of individual projects may not exceed \$4,000,000. Funds under this authority may be accumulated only after the date of enactment of this Act and may be accumulated for not more than five years. This section would extend section 219 authority to September 2020.

Section 264—Extension of Authority to Award Prizes for Advanced Technology Achievements

This section would extend the authority of the Department of Defense to award prizes for advanced technology achievements until September 30, 2018.

Section 265—Five-Year Extension of Pilot Program to Include Technology Protection Features During Research and Development of Certain Defense Systems

The section would extend the pilot program established by section 243 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 (Public Law 111–383), as amended by section 252 of the National Defense Authorization Act for Fiscal Year 2012 (Public Law 112–81), from October 1, 2015, to October 1, 2020.

Section 266—Briefing on Power and Energy Research Conducted at University Affiliated Research Centers

This section would require the Secretary of Defense to brief the Committees on Armed Services of the Senate and the House of Representatives on power and energy research conducted at university affiliated research centers.

TITLE III—OPERATION AND MAINTENANCE

OVERVIEW

At a time when Air Force combat-coded squadrons are grounded; when Navy carrier strike group presence in the Middle East has been reduced; when Army collective training rotations above the company level have been cancelled; when depot-level and field-level maintenance have been deferred and reduced in all the military services; and when base operating services and facilities sustainment have been reduced, all due to the impacts of sequestration, the bill would authorize \$174.6 billion for operation and maintenance, including additional funding for operational tempo, flying hour programs, facilities sustainment, corrosion prevention, control, and mitigation, depot maintenance, and joint and coalition exercises. Additionally, the bill would authorize \$67.1 billion in operation and maintenance funding for Overseas Contingency Operations, with \$4.2 billion in additional funding for depot-level maintenance, fuel costs, and equipment spares and reset.

During the past 12 years, the Army—Active, Guard, and Reserve—has deployed more than 1.1 million soldiers to combat with more than 4,500 soldiers making the ultimate sacrifice. Another 32,000 soldiers have been wounded, 9,000 of whom require long-term care. In that time, soldiers have earned more than 14,000 awards for valor to include seven Medals of Honor and 22 Distinguished Service Crosses. After more than a decade of protracted counterinsurgency operations and cyclic combat operations in the Middle East, the Army must find a way to return to full-spectrum operations, reset and reconstitute the force, responsibly draw down operations in the Islamic Republic of Afghanistan, and fully develop its role under the new Defense Strategic Guidance despite tighter budgets and the compounding challenges of sequestration, and with a smaller force structure.

The Navy faced a \$4.5 billion shortfall in its fiscal year 2013 operation and maintenance accounts which was further exacerbated by unanticipated bills resulting from rising fuel prices. In February, the Navy deferred deployment of the nuclear aircraft carrier the USS Truman to the Persian Gulf and reduced its carrier presence to 1.0. In March, the Navy cancelled five ship deployments and next-to-deploy forces are also being affected in that two carrier air wings have reduced monthly training to the “tactical hard deck,” the minimum level of training required to maintain basic air proficiency and the ability to safely operate the aircraft. As ship and aircraft maintenance availabilities are reduced or outright cancelled, the Navy will be challenged to reconstitute requirements in the very near future due to lack of capacity at its shipyards. Ultimately, this results in significantly shorter service life for the assets, particularly when coupled with the impacts of the sustained surge in recent years which has taxed both equipment and personnel at rates significantly higher than anticipated. The tenuous progress the Navy has made over the past two years to reverse degraded surface fleet material readiness threatens to be undone by sequestration.

Despite slight improvements in Marine Corps readiness levels following the drawdown of forces in the Republic of Iraq and the ongoing drawdown from Afghanistan, the Marine Corps will be challenged to meet global commitments, reconstitute its force and equipment, and sustain high operational tempo as it downsizes to 182,000 personnel and faces a nearly \$1.0 billion funding cut. The challenges will be compounded by the need to support new, important missions such as the forward deployment of a special Marine Air Ground Task Force in Spain to support U.S. Africa Command and the expansion of critical legacy missions such as the Marine Security Guard program slated to grow to protect an increasing number of embassies in high-risk areas around the globe.

Air Force officials told the committee that “allowing the Air Force to slip to a lower state of readiness, [thus] requiring a long buildup to regain full combat effectiveness, negates the essential strategic advantages of airpower and puts joint forces at risk.” One-third of Air Force fighter and bomber forces are currently standing down, and more and more pilots are not ready or trained and qualified to meet operational mission requirements such as those on the Korean peninsula where the Air Force and Army work as critical partners to assure peace and stability.

The operation and maintenance funding authorized by this title seeks to address many areas of concern for depleted force readiness levels and related high levels of assumed risk, and makes several requests of the Department of Defense to report on plans to achieve full-spectrum readiness. The bill attempts to address the readiness shortfalls exacerbated by sequestration and choices driven by what Secretary of Defense Chuck Hagel described during the Department of Defense’s fiscal year budget rollout as a necessary component of a “comprehensive deficit reduction plan.”

ITEMS OF SPECIAL INTEREST

BUDGET REQUEST ADJUSTMENTS

Office of Economic Adjustment

The budget request includes \$371.6 million for the Office of Economic Adjustment (OEA) to provide assistance to states and communities that are affected by Department of Defense changes, including the Department’s Base Closure and Realignment (BRAC) actions. Of these amounts, \$273.3 million was requested for Guam civilian water and wastewater infrastructure improvements. The committee remains supportive of the Department of Defense requirements to provide support for civilian infrastructure funding on Guam. The infrastructure is needed to support and sustain the current and future military growth on Guam. The budget request includes \$246.0 million for upgrades to the Northern District Wastewater Treatment Plant and the Hagatna Wastewater Treatment Plant to full secondary treatment, as well as \$19.8 million to address critical wastewater collection system deficiencies and \$7.5 million for technical support and project development.

The committee notes that the Fiscal Year 2013 Consolidated Appropriations Act (Public Law 113–6) eliminated authorization for transfer of \$119.3 million in OEA funding, making the funding for