

TITLE II—RESEARCH, DEVELOPMENT, TEST, AND EVALUATION

Subtitle A—Authorization of Appropriations

Authorization of appropriations (sec. 201)

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

Subtitle B—Program Requirements, Restrictions, and Limitations

Conventional Prompt Global Strike program (sec. 211)

The committee is supportive of the Conventional Prompt Global Strike (CPGS) program and realizes that efforts in developing intermediate- and long-range hypersonic boost-glide systems have the potential to provide significant military capability. However, the committee is concerned that the strategic policy issues regarding submarine-launched systems have not been considered adequately. The committee recommends a provision that would prohibit the Department of Defense (DOD) from executing any funds in PE 64165D8Z related to the development of a submarine-launched CPGS capability until 60 days after the Department delivers to the congressional defense committees a report that addresses the policy considerations concerning the ambiguity problems regarding the launch of CPGS missiles from submarine platforms.

The CPGS program is currently an event-driven technology development and demonstration program, and the committee recognizes that in the current budget environment, DOD needs to take a system-of-systems approach to develop an integrated strategic plan that addresses the cost-benefit analyses of various launch approaches. The Director of Cost Assessment and Program Evaluation (CAPE) shall conduct a study, to include the costs and benefits of maritime and ground surface versus sub-surface launched CPGS systems. While the committee recognizes that significant technical development remains, it is not too early to begin considering the fiscal implications of the various launch mechanisms, including integration costs. The committee notes that Section 1071 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239) required a report on the ability of national test and evaluation capabilities to support the maturation of hypersonic technologies for future defense systems development. This earlier report effort is synergistic with the CAPE report. The CAPE report shall be submitted to the congressional defense committees not later than 180 days after the enactment of this Act.

The committee directs the Under Secretary of Defense for Acquisition, Logistics and Technology to report to the congressional defense committees within 90 days after the enactment of this Act on whether the CPGS activity should be managed under the Joint Technology Office on Hypersonics under the Assistant Secretary of Defense for Research and Engineering. The committee feels that the synergies and efficiencies under this office could benefit the broader boost-glide and air-breathing hypersonics community.

Modification of requirements on biennial strategic plan for the Defense Advanced Research Projects Agency (sec. 212)

The committee recommends a provision that would make some modifications to the biennial strategic plan requirement for the Defense Advanced Research Projects Agency (DARPA). The modifications seek to make the plan more useful and assign responsibility to the Director of DARPA versus the Secretary of Defense.

Extension of authority for program to award prizes for advanced technology achievements (sec. 213)

The committee recommends a provision, based upon a Department of Defense legislative proposal, that would extend through September 30, 2017, the authority for the Secretary of Defense to carry out programs to award cash prizes in recognition of outstanding achievements in scientific and technical research and development.

Five-year extension of pilot program to include technology protection features during research and development of certain defense systems (sec. 214)

The committee recommends a provision, based upon a Department of Defense legislative proposal, that would extend for an additional 5 years, to October 1, 2020, the pilot program addressing Defense Exportability Features to be incorporated in export versions of major defense equipment.

Extension of mechanisms to provide funds for defense laboratories for research and development of technologies for military missions (sec. 215)

The committee recommends a provision that would extend the authority of section 219(c) of the Duncan Hunter National Defense Authorization Act for Fiscal Year 2009 (Public Law (110–417) until September 30, 2020. Section 219 allows the Department of Defense laboratories to use up to 3 percent of their funds for internal competitive research and development, workforce development, and limited laboratory revitalization activities.

Sustainment or replacement of Blue Devil Intelligence, Surveillance, and Reconnaissance System (sec. 216)

The committee recommends a provision that would require the Secretary of the Air Force to procure the currently deployed Blue Devil intelligence, surveillance, and reconnaissance (ISR) aircraft or to develop a plan to replace that system with a comparable or improved one.

The leases for the existing Blue Devil system aircraft, deployed in Afghanistan, will expire in the second quarter of fiscal year 2014. These manned aircraft are equipped with wide-area motion-imagery (WAMI) cameras, which work in conjunction with a ground-based signals intelligence (SIGINT) network that detects and locates specific targets with high precision. These SIGINT identifications and locations are used to cue analysts to spot and track the targets through the motion imagery sensor. Assessments of the performance of this system in theater have been outstanding, and an operations research study conducted by the Air Force demonstrated that a system based on a longer-endurance unmanned aerial vehicle (UAV) that carries both the imagery and SIGINT capabilities would be even more flexible and effective.

U.S. Special Operations Command (SOCOM), through the Air Force Big Safari program office, has already fielded a so-called near vertical direction finding (NVDF) SIGINT sensor on an airborne platform that replicates the capabilities of the ground-based SIGINT system used in Blue Devil. SOCOM is procuring a podded version of this sensor for deployment on Reaper UAVs. SOCOM has also already paired this NVDF system with a motion imagery camera, but that camera is a traditional full-motion video (FMV) camera with a narrow field of view rather than a WAMI system. NVDF systems can simultaneously detect and locate a very large number of emitters in its field of view. An FMV camera, however, can only track one target at a time because of its limited area coverage. A WAMI camera, in contrast, could track many targets simultaneously, which matches the capability of NVDF sensors.

SOCOM is in discussions with the Defense Advanced Research Projects Agency (DARPA) on partnering to transition DARPA's Wide Area Network Detection (WAND) technology, which combines NVDF and WAMI and provides technology to track targets automatically.

The Air Force has already fielded the DARPA-developed WAMI system on the Reaper UAV called Gorgon Stare Increment 2, and has funded the Massachusetts Institute of Technology Lincoln Laboratory to develop NVDF technology under the name Blue Moon. The Gorgon Stare pods are very large and weigh 1,500 pounds. However, the Blue Moon system has not been integrated with Gorgon Stare or the Reaper and has performance limitations compared to the SOCOM-fielded NVDF system.

The provision the committee recommends would require the Department of Defense to integrate and rationalize all these disparate activities to create an important capability for a recognized requirement.

The Air Force must work with SOCOM and DARPA to realize these objectives. The Air Force can procure more of the mature NVDF capability it has fielded for SOCOM, and integrate that with its fielded Gorgon Stare WAMI systems on the Reaper. DARPA's WAND technology can enhance the performance of this integrated capability. Likewise, the Blue Moon NVDF technology has important capabilities that are lacking in the SOCOM-fielded NVDF system that should be incorporated as soon as possible. This technology needs to be transitioned to industry broadly for future competitions to improve NVDF performance. For the future, NVDF

technology must be improved to deal with encryption-related target identification limitations and next-generation signal types. Likewise, WAMI systems need to be dramatically reduced in size, weight, and power requirements; industry has already developed multiple competitive solutions.

To implement this direction, the committee recommends an increase of \$15.0 million to the budget request of \$37.8 million in PE 35206F for Airborne Reconnaissance Systems. This increase is partially offset by a reduction of \$2.5 million to the request, which reflects the difference between the amount reflected in the budget tables provided to Congress and the amount contained in the Military Intelligence Program justification volume.

Subtitle C—Missile Defense Programs

Homeland ballistic missile defense (sec. 231)

The committee recommends a provision that would express the sense of Congress concerning homeland ballistic missile defense, and require the Secretary of Defense to evaluate the advantages and disadvantages of a range of potential future options for enhancing homeland ballistic missile defense, including the possible deployment of a missile defense interceptor site on the East Coast, and the possible deployment of an additional sensor on the East Coast. The provision would require the Secretary to submit a report on the evaluation, including such findings, conclusions, and recommendations as the Secretary considers appropriate, for potential future options for homeland ballistic missile defense.

The United States currently has an operational homeland ballistic missile defense system, the Ground-based Midcourse Defense (GMD) system, with 30 Ground-based Interceptors (GBIs) deployed in Alaska and California. In appearances before the committee during 2013, numerous senior military leaders testified that they are confident in the ability of the current GMD system to protect the entire United States, including the East Coast, from limited ballistic missile attacks from North Korea and Iran. The committee agrees with the Department of Defense that this homeland missile defense capability can and should be improved.

The committee notes that, on March 15, Secretary of Defense Chuck Hagel announced a series of steps planned to enhance homeland ballistic missile defense, as part of the homeland missile defense hedge strategy, to stay ahead of the evolving long-range missile threat from North Korea and Iran. These steps include: the deployment of an additional 14 GBIs at Fort Greely, Alaska—a nearly 50 percent increase—by 2017; the deployment of a second AN/TPY-2 missile defense radar in Japan; the evaluation of potential sites in the United States for possible future deployment of a missile defense interceptor site; and the establishment of a new common kill vehicle technology development program.

One element of the decision announced by Secretary Hagel was the cancellation of the previous plan to develop the Standard Missile-3 (SM-3) Block IIB interceptor missile for Phase 4 of the European Phased Adaptive Approach to missile defense. Twenty-four SM-3 IIB missiles had originally been intended for deployment at an Aegis Ashore interceptor site in Poland in 2020, to augment the

GMD system in defending the United States from possible future long-range Iranian missiles. However, congressional funding reductions and technical challenges had delayed the program beyond 2022, with significant uncertainties about its ability to accomplish the intended mission. Secretary Hagel made clear that the U.S. commitment to North Atlantic Treaty Organization (NATO) missile defense “remains ironclad,” including the planned Aegis Ashore interceptor site deployments in Romania in 2015 and Poland in 2018. According to Secretary Hagel, these deployments “will still be able to provide coverage of all European NATO territory as planned by 2018.”

As Secretary Hagel and other Department of Defense officials explained, deploying the additional 14 GBIs in Alaska would provide additional homeland defense at least 5 years sooner against both North Korea and Iran, and at far less cost than the SM-3 IIB program. Funds from the canceled SM-3 IIB program were redirected for the deployment of the additional 14 GBIs and for the new common kill vehicle technology development program. They also explained that, before the 14 additional GBIs are deployed, the GMD system would have to be tested and demonstrated successfully in an intercept test, to provide confidence that the system would work as intended.

This “fly before you buy” commitment is needed to demonstrate the successful correction of the problem that caused a GMD flight test failure in December 2010 with the Capability Enhancement-II (CE-II) kill vehicle. The Government Accountability Office estimates that correcting this problem and demonstrating its success in flight tests will cost more than \$1.2 billion and has caused program delays of several years. The Missile Defense Agency (MDA) has halted all assembly, integration, manufacture, and refurbishment of GBIs with CE-II kill vehicles until the CE-II correction is successfully demonstrated in flight testing, including an intercept flight test planned for early 2014. The committee commends MDA for this “fly before you buy” approach, and notes that further procurement of GBIs, planned to replace the 14 GBIs that will be deployed by 2017, would also depend upon successful demonstration that the CE-II kill vehicle will work as intended. The committee expects the GBI industry team to show the same level of commitment to demonstrating success in correcting the CE-II problems.

In testimony before the committee, Vice Admiral James Syring, the Director of MDA, explained that improvements to the GMD “kill chain,” particularly in sensors, discrimination, and kill assessment, would provide an “absolutely needed benefit” that would be “equally important to interceptors” in staying ahead of the evolving threat from North Korea and Iran. The committee strongly supports Admiral Syring’s priority to improving the overall performance and effectiveness of the GMD system, and notes that these enhancements are intended to be cost-effective, timely, and affordable. Consequently, the committee directs the Director of MDA to provide a report to the congressional defense committees, not later than March 1, 2014, explaining the specific GMD kill chain enhancements that would be most beneficial to overall GMD effectiveness, including any improvements in GBI reliability and perform-

ance, and how and when MDA proposes to achieve those enhancements.

Regional ballistic missile defense (sec. 232)

The committee recommends a provision that would express the sense of Congress concerning the importance of regional ballistic missile defense and would require the Secretary of Defense to prepare a report on the status and progress of efforts to enhance regional ballistic missile defense capabilities.

The committee notes that regional ballistic missile defenses provide a critical force protection capability for forward deployed U.S. forces, as well as for allies and partners, against missile threats from countries such as North Korea and Iran. North Korea's public threats in the spring of 2013 to use ballistic missiles against South Korea, Japan, and Guam served as a stark reminder of the importance of regional missile defenses and the need to expand and improve U.S. regional missile defense capabilities.

Regional missile defenses are a high priority for geographic combatant commanders. Lieutenant General Richard P. Formica, USA, Commander of U.S. Army Space and Missile Defense Command, and Commander of the Joint Functional Component Command for Integrated Missile Defense, under U.S. Strategic Command, testified in May 2013 that the Global Ballistic Missile Defense Assessment for 2012 concluded that the operational risk for regional missile defenses is higher than the homeland missile defense risk. The Department of Defense is pursuing increased regional missile defense capabilities, such as the European Phased Adaptive Approach and similar approaches tailored to other regions, including cooperation with allies and partners.

The committee supports the continued development, testing, and deployment of regional missile defense capabilities such as the Aegis Ballistic Missile Defense system and its associated Standard Missile-3 interceptors, and the Terminal High Altitude Area Defense systems. The committee notes that missile defense tests over the last year have demonstrated increasing capability for these systems, including the capability to launch on remote sensor data.

Missile defense cooperation with Russia (sec. 233)

The committee recommends a provision that would express the sense of Congress that it is in the national security interest of the United States to pursue efforts at missile defense cooperation with Russia that would enhance the security of the United States, its North Atlantic Treaty Organization (NATO) allies, and Russia, particularly against missile threats from Iran.

The provision states that such cooperation should not "in any way limit United States" or NATO's missile defense capabilities," and that the United States should not provide Russia with sensitive information that would compromise United States national security, including hit-to-kill technology and interceptor telemetry. It also states that such cooperation should be pursued in a manner that ensures that classified U.S. information is appropriately safeguarded and protected from unauthorized disclosure.

In testimony to the committee on May 9, 2013, Madelyn Creedon, the Assistant Secretary of Defense for Global Strategic Affairs,

stated that the United States “continues to seek cooperation with Russia on missile defense, both bilaterally and with our allies, through the NATO-Russia Council. We are pursuing this cooperation because it would be in the security interest of all parties and could strengthen the defensive capabilities of both NATO and Russia.” She also testified that the “United States has pursued missile defense cooperation with Russia with the clear understanding that we will not accept constraints on our missile defense systems, we will implement the EPAA [European Phased Adaptive Approach], and Russia will not have command and control over NATO ballistic missile defense efforts.”

The committee notes that the NATO Chicago Summit statement of May 20, 2012, reiterates NATO’s commitment to missile defense cooperation with Russia, “such as the recent [NATO-Russia Council] Theatre Missile Defense Exercise,” in order to “enhance European security.” The statement also says, “we look forward to establishing the proposed joint NATO-Russia Missile Data Fusion Centre and the joint Planning Operations Centre to cooperate on missile defense. We propose to develop a transparency regime based upon a regular exchange of information about current respective missile defense capabilities of NATO and Russia.”

Additional missile defense radar for the protection of the United States homeland (sec. 234)

The committee recommends a provision that would require the Missile Defense Agency to deploy an X-band radar, or comparable sensor, at a location optimized to support the defense of the United States homeland against long-range ballistic missile threats. The provision would also authorize \$30.0 million for the Missile Defense Agency for the initial costs toward deployment of the radar.

The committee notes that the Director of the Missile Defense Agency and the Commander of the Joint Functional Component Command for Integrated Missile Defense have indicated that their highest future investment priority for homeland ballistic missile defense is the enhancement of sensor capabilities that will improve threat discrimination and kill assessment, and thus permit more effective defense. This provision would address that future investment priority.

The committee understands that the Missile Defense Agency has expressed the importance of enhanced sensor capabilities relative to both North Korea and Iran.

The committee believes that the additional sensor capability required by this provision should optimize the defense of the entire United States homeland against long-range ballistic missile threats from both North Korea and Iran.

Evaluation of options for future ballistic missile defense sensor architectures (sec. 235)

The committee recommends a provision that would require the Secretary of Defense to conduct an evaluation of options and alternatives for future ballistic missile defense sensor architectures in order to enhance U.S. ballistic missile defense capabilities in a cost-effective, operationally effective, timely, and affordable manner. The provision would also require the Secretary to submit a report

to Congress with the results of the evaluation, including such findings, conclusions, and recommendations as the Secretary considers appropriate.

The committee notes that the Department of Defense (DOD) terminated the program to develop the Precision Tracking Space System (PTSS) because it concluded the acquisition risk and the cost were too high and that it would not be affordable. PTSS was intended to provide persistent space-based tracking of regional and long-range ballistic missiles from nations such as North Korea and Iran, particularly to permit enhanced defense against large regional missile raids. The committee notes that the military still has a need for improved tracking and targeting of ballistic missiles. It is not yet clear how DOD intends to meet the need for enhanced sensor coverage in the absence of PTSS. The committee expects DOD to take advantage of the lessons learned from PTSS in its evaluation of options for future sensor architectures.

In testimony before this committee, a number of witnesses, including Vice Admiral James Syring, the Director of the Missile Defense Agency, testified that enhancing our missile defense sensor system is a key near-term priority for improving our homeland and regional missile defense capability, particularly for improving discrimination and kill assessment of missile threats.

Prohibition on the use of funds for the MEADS program (sec. 236)

The committee recommends a provision that would prohibit the obligation or expenditure of fiscal year 2014 Department of Defense funds for the Medium Extended Air Defense System.

Subtitle D—Reports and Other Matters

Annual Comptroller General of the United States report on the acquisition program for the VXX Presidential Helicopter (sec. 251)

The committee recommends a provision that would require the Comptroller General to produce an annual report on the VXX presidential helicopter program until the program enters full rate production or is cancelled, whichever comes first.

Budget Items

Army

Warrior Injury Assessment Manikin project

The budget request included \$23.3 million across a number of program elements for the development of a new blast test manikin that would respond in a biofidelic manner when exposed to underbody blast conditions experienced by mounted soldiers.

The committee notes that the development of such a test manikin would significantly improve the Department's ability to measure the projected injuries that could be caused by various blast events caused by improvised explosive devices. Such information would lead to improved survivability of ground combat vehicles. Due to various programmatic issues, the program is facing a budget shortfall that would lead to a schedule slip that would adversely

impact the timeliness of critical design data for ground combat vehicles.

The committee recommends an increase of \$10.0 million to PE 62618A for the Warrior Injury Assessment Manikin project.

Long endurance multi-intelligence vehicle

The budget request included \$29.0 million in PE 35205A for contract close-out for the now-terminated long endurance multi-intelligence vehicle. The committee notes that the amount required for termination costs has not been determined and should be covered by prior years' appropriations. The committee recommends no funding for this activity in fiscal year 2014.

General Fund Enterprise Business Systems

The budget request included \$17.3 million in PE 64882A for General Fund Enterprise Business Systems (GFEBS). The committee notes that funds for the development of a classified module for GFEBS were provided in a prior year. The committee recommends a decrease of \$17.1 million in PE 64882A for GFEBS.

Internet mapping

The budget request included \$33.9 million in PE 65803A for Technical Information Activities. Cyberspace is a vast new operational domain that has extensive and varied topography. As the committee emphasized in its report (S. Rept. 112–173) accompanying S. 3254, the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239), charting this new terrain is as fundamental to operations in cyberspace as maps of physical terrain have always been to military campaigns.

Despite the obvious need, attempts to map the Internet so far have been very modest. The Internet has appeared to be too complex, too large in scale, and experiencing changes too rapidly. However, the committee is persuaded that commercial technology and data sources are now available to capture the necessary detail at the required speed and volume.

The Office of the Under Secretary of Defense for Intelligence understands the need for a dynamic, comprehensive Internet mapping capability, and is working with the Air Force Research Laboratory to fund pilot projects to demonstrate the potential of commercial technology and data sources. The Army's Geospatial Center under the Engineer Research and Development Center has also initiated research and development to map this 21st century terrain.

The committee recommends authorization of an increase of \$5.0 million in PE 65803A for the Army Geospatial Enterprise project to enhance and expand its Internet mapping research.

Navy

Offensive anti-surface warfare weapon development

The budget request included \$136.0 million in PE 64786N for developing an offensive anti-surface warfare (OASuW) weapon. This follows on an enacted funding level of \$86.8 million in fiscal year 2013. The Navy hopes to use these funds to develop an OASuW weapon system or systems solution that can be launched from the

air or from surface vessels against hostile surface targets. These efforts were largely in response to an urgent operational need statement (UONS) seeking immediate capability.

In fiscal year 2013, the Navy had planned to release a request for proposal, award one or more competitive prototyping contracts, and establish a government program office team. The Navy also had planned to issue a contract for \$31.5 million for an accelerated development effort to field an interim OASuW capability in April 2013. That contract effort has since been suspended due to changing priorities within the Navy, and some disagreement about the validity of the UONS that initiated the effort. The budget exhibits indicate that the funds instead would be used to mature technologies applicable to an OASuW program.

In fiscal year 2014, the Navy planned to spend the year preparing for a milestone A acquisition decision that would not occur until at least the first quarter of fiscal year 2015. In fiscal year 2015, the Navy budget exhibits indicate that the Navy will be conducting competitive prototyping if required under new technology development contracts awarded in fiscal year 2015. It is clear to the committee that the Navy intends to conduct no such competitive prototyping, but will instead try to transition a developmental effort from the Defense Advanced Research Projects Agency (DARPA) into a program of record.

The committee fails to see the need to invest so much in a program for which the urgency of the UONS is now in doubt, and certainly not to down select prematurely to a single program responding to a near-term requirement that would not deliver capability in the near term.

Therefore, the committee recommends a decrease of \$100.0 million in PE 64786N. The committee believes it would be prudent to continue government support activities anticipating a successful milestone A graduation in fiscal year 2015, but that the Navy should be able to do this with \$36.0 million in fiscal year 2014, an increase of roughly 39 percent above the fiscal year 2013 effort that was not related to the cancelled accelerated development program.

The committee further expects the Navy to present a plan that: (1) pursues a more competitive approach; and (2) yields a program proceeding to a technology readiness level 6 before deciding on a particular technical solution.

LHA-8 design effort

The budget request included \$155.3 million in PE 64567N for various ship design and research and development efforts, including \$30.8 million for the next amphibious assault ship, LHA-8. Within the \$30.8 million, \$14.5 million is for LHA-8 ship design. Navy LHA-8 program development and design activities have involved two shipyards, among other contractors. The Navy intends to begin procurement funding for LHA-8 in fiscal year 2015.

Repeated Navy shipbuilding programs have shown that failing to complete a ship's design before starting construction inevitably leads to cost growth and schedule delays. The committee believes that the Navy should invest more than it is currently planning to invest in maturing the design of LHA-8 before starting construction activities.

Therefore, the committee recommends an increase of \$20.0 million in PE 64567N for maturing the LHA-8 design.

Marine personnel carrier

The budget request included \$20.9 million in PE 26623M for the Marine Personnel Carrier (MPC). The committee notes that the Marine Corps has deferred acquisition of the MPC until after it meets more urgent requirements for a new amphibious combat vehicle and the Joint Light Tactical Vehicle. The committee further notes that there are prior-year funds available to continue any MPC-related requirements analysis and determination or technology studies until a decision is made regarding the sequencing and availability of resources for this capability. Therefore, the committee recommends a decrease of \$20.9 million in PE 26623M for the MPC.

Air Force

Operationally Responsive Space

The fiscal year 2014 budget requested no funding for the Operationally Responsive Space (ORS) program. The National Defense Authorization Act for Fiscal Year 2013 (Public Law 112-239) rejected the proposed termination of the ORS Office and required its location be separate and distinct from the headquarters of the Air Force Space and Missile System Center while reporting to the Director of the Center. Congress awaits the reports required from the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112-239) on how the Department of Defense (DOD) will implement the legislation and move ORS concepts into space acquisition programs. Most if not all of the concepts championed by the ORS office such as low cost launch, disaggregation, and common bus structures are now being embraced by DOD in times of fiscal constraint. The committee recommends an increase of \$10.0 million to PE 64857F to continue the operations of the ORS office and work on a low cost weather satellite as was briefed to the congressional defense committees.

Tactical data networks enterprise

The budget request for tactical data networks enterprise included \$51.5 million in PE 64281F, including \$21.4 million for airborne networking enterprise.

Only \$6.2 million of the amount for airborne networking enterprise is explained anywhere in the unclassified or classified budget documentation. Therefore, the committee recommends a reduction of \$15.2 million in PE 64281F.

Tactical exploitation of national capabilities

The budget request included \$89.8 million in PE 27247F for the tactical exploitation of national capabilities (TENCAP) program. Included within this amount is \$48.0 million to develop a communications pod for F-15 fighters to enable 5th generation and 4th generation fighters to communicate with one another. The total also includes \$28.8 million to procure advanced sensors and components for installation on these communications pods.

The committee appreciates the fact that elements of the Air Force are finally responding to the serious and embarrassing problem that the 5th generation fighters (the F-22 and the F-35) cannot communicate with one another or with the 4th generation fighters. However, there are now multiple initiatives underway in the Air Force that are not coordinated or well-planned. In addition, there is no justification for pursuing fighter data link developments in the TENCAP program, especially since this initiative will not address the problem of relaying national-level intelligence information to the fighters or relaying tactical information from the fighters to national-level systems.

Therefore, the committee recommends a reduction of \$76.8 million.

Joint surveillance/target attack radar system

The budget request included \$57.5 million in Aircraft Procurement, Air Force (APAF), for the E-8 modifications program and \$13.2 million in PE 27581F within Research, Development, Test, and Evaluation (RDT&E), Air Force, for Joint Surveillance/Target Attack Radar Systems (JSTARS). The level of the RDT&E request reflects a reduction of \$11.0 million from the enacted level of \$24.2 million in fiscal year 2013, largely due to the planned retirement of the T-3 aircraft that has been a dedicated testing and development platform for the JSTARS program.

Although there have certainly been reductions in current development activities, that does not mean that all development and integration activities are over. Losing the dedicated testing platform is also troublesome because the Air Force has decided it cannot afford to modernize the JSTARS capability by fielding a new platform. That means that the Air Force will be relying on the 16 operational JSTARS aircraft and 11 Global Hawk Block 40 aircraft to provide all of the synthetic aperture radar (SAR) and ground moving target indicator (GMTI) support for ground force operations for the foreseeable future. Since the peacetime demand for these SAR and GMTI services is so high, retiring the T-3 aircraft will mean that operational aircraft would have to be diverted from other important tasks to support testing.

Therefore, to avoid this situation, the committee recommends an increase of \$9.9 million in PE 27581F for RDT&E to sustain T-3 operations during fiscal year 2014.

Air Force Applications Software Assurance Center of Excellence

The budget request included \$90.2 million in PE 33140F for the Information Systems Security Program.

The committee has stressed for several years that the cybersecurity problem is largely due to vulnerabilities in the software controlling computing devices. The Air Force established the Application Software Assurance Center of Excellence (ASACOE) in 2007 in response to a serious breach that illuminated the software vulnerability problem in the Air Force and across the whole Department of Defense (DOD). Despite the seriousness of the problem, however, the Air Force has failed to provide the ASACOE with adequate funding. While funding for the ASACOE's government personnel is

included in annual budget requests, funds for contractor support, bulk licenses for code analysis tools, and other expenses necessary to carry out the Center's mission are not budgeted, forcing the Center to live precariously on periodic fund transfers from other sources.

Nonetheless, despite this handicap, the ASACOE has earned a reputation for effectiveness and lasting impacts in improving the security of many applications and acquisition programs, in the Air Force and across DOD. In a report to Congress in July 2011, the Secretary of the Air Force stated that "the capabilities demonstrated by ASACOE are integral to the technical tool box" that DOD will use to implement its Supply Chain Risk Management strategy.

A report to Congress in October 2011 from the Secretary of Defense on a strategy for assuring the security of DOD software and software-based applications listed the ASACOE and the National Security Agency's Center for Assured Software as organizations that would be leveraged to implement DOD's Trusted Systems and Networks strategy. The report further stated that an internal DOD study concluded that software vulnerability detection should be "organized centrally" to assure "a consistent response, coherent direction, and comprehensive coverage" at least until software assurance expertise and resources are developed and diffused across the Department. The committee believes that the ASACOE could significantly contribute to the implementation of section 933 of the National Defense Authorization of Fiscal Year 2013 (Public Law 112-239).

The mission of ASACOE is to educate, train, equip, and assist program management offices to achieve security in software developments and acquisitions. It provides these services through its expertise in software assurance requirements, design, standards, best practices, technology and tools for code analysis, penetration testing, training, and remediation.

The committee recommends an additional \$10.0 million in PE 33140F to enable the ASACOE to fulfill this mission. These funds will allow ASACOE to exercise the option year on its current contract. The committee urges the Air Force to establish a regular funding line in future budget requests for contractor support and bulk license procurement, and a plan for assessment and remediation of critical software systems.

Defense-wide

National Defense Education Program

The budget request included \$84.3 million in PE 61120D8Z for the National Defense Education Program (NDEP) that funds three activities related to Science, Technology, Engineering, and Mathematics (STEM) education: (1) Science, Mathematics, and Research for Transformation (SMART) scholarship program; (2) National Security Science and Engineering Faculty Fellowship (NSSEFF); and (3) pre-kindergarten through 12th grade (PK-12) STEM.

In the fiscal year 2014 President's budget request, the administration consolidated most STEM programs across the government, including the Department of Defense (DOD), to the Department of

Education, the National Science Foundation, and the Smithsonian Institution. While the consolidation was well-intended to eliminate unnecessary duplication of activities in this area across hundreds of programs, little analytical effort appeared to be expended to determine which exact programs should be transferred. In the case of DOD, the PK-12 program was terminated with much of the funding transferred to NSSEFF. Given that DOD has a vested interest in building a foundation with PK-12 activities to motivate and encourage children to pursue STEM careers for national security purposes, the committee directs that \$10.0 million in this PE be transferred from NSSEFF back to PK-12 activities that have participation by DOD laboratories and directly benefit the children of DOD families.

Additionally, the committee directs the Secretary of Defense to report to the congressional defense committees on DOD execution of the NDEP no later than 180 days after enactment of this Act. The report will include an overall assessment of the outcomes of the NDEP program; a historic and projected examination of SMART, NSSEFF, and PK-12 STEM funding levels; a comparison of NDEP to other federal government funded STEM education programs; and any recommendations on improving program execution.

Massachusetts Institute of Technology Lincoln Laboratory

The budget request included \$46.9 million in PE 62234D8Z for the Massachusetts Institute of Technology Lincoln Laboratory, an increase of \$10.0 million from the fiscal year 2013 budget request.

The committee believes the increase is unjustified and recommends a decrease of \$5.0 million.

Applied research for the advancement of science and technology priorities

The budget request included \$45.0 million in PE 62251D8Z for applied research for the advancement of science and technology (S&T) priorities. This program element was newly established to fund key research opportunities identified by the S&T Priority Steering Councils.

The committee believes that this funding is more appropriate in the services' S&T budgets and recommends a decrease of \$15.0 million.

Automated software code analysis tool development

The budget request included \$18.9 million in PE 62668D8Z for Cyber Security Research, and \$19.7 million in PE 63668D8Z for Cyber Security Advanced Research.

The Assuring Effective Missions projects in these two program elements duplicate research that the Defense Advanced Research Projects Agency is conducting under the Plan X program. Therefore, the committee recommends a decrease to the request of \$2.0 million and \$3.0 million in PE 62668D8Z and PE 63668D8Z, respectively.

In two National Defense Authorization Acts, the committee included provisions requiring the Department of Defense (DOD) to take concrete steps to improve the security of the software that is the target of the cyber attacks that DOD suffers relentlessly. In the

National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239), Congress established mandatory requirements for the use of automated code analysis tools in the development and testing of software for DOD systems. The committee’s understanding was that DOD officials agreed that the use of such tools is critically important to cybersecurity.

The most capable tools currently available are built by commercial companies with little to no government investment. These tools have progressed in performance, but the committee believes that DOD should be investing in improved tools to achieve fewer false positives and negatives in identifying defects and vulnerabilities. The committee also believes that DOD should be investing in so-called smart fuzzing tools to identify exploitable vulnerabilities in software. Such tools are used routinely and very effectively in the intelligence community, but not so far by the DOD acquisition community.

The committee recommends authorization of \$2.0 million and \$3.0 million in PE 62668D8Z and PE 63668D8Z, respectively, to develop automated code analysis tools, including fuzzing tools. The committee urges the Assistant Secretary of Defense for Research and Engineering to include funds for this purpose in future budget requests.

Counter terrorism, counter-insurgency, and the exploitation of human terrain in conflict

The budget request terminated the Human Social Culture Behavior (HSCB) program. The fiscal year 2013 budget request had \$6.8 million in PE 62670D8Z (HSCB Modeling Applied Research), \$8.2 million in PE 63670D8Z (HSCB Advanced Development), and \$5.1 million in PE 64670D8Z (HSCB Modeling Research and Engineering).

The committee notes that the list of priority missions of the U.S. armed forces released in the fiscal year 2014 budget request had counter terrorism and irregular warfare as the first mission. During the course of the last 12 years of conflicts, one key lesson that has emerged is the need for the Department of Defense (DOD) to develop a rigorous comprehensive understanding of the human terrain in which it is operating. A deep understanding of the cultural, social, religious, and ethnic factors on the ground are vital to successful operations. While the Department claims that each of the services are increasing their investments in these areas, eliminating the need for defense-wide funding, the committee has not seen any evidence to suggest that this is the case.

In 2008, DOD created the HSCB program to rapidly transition basic research to tools for military personnel to increase intelligence collection and integration, and provide our warfighters better situational awareness and capabilities on the battlefield. Since its establishment, the HSCB program has developed and transitioned operational tools to U.S. Special Operations Command, U.S. Africa Command, U.S. Pacific Command, U.S. Southern Command, the Army’s Training and Doctrine Command Analysis Center, and International Security Agency Forces Joint Command Headquarters in Afghanistan. HSCB fielded tools include: data ingestion, analysis and modeling capabilities; behavioral modeling ca-

pabilities; geospatial and social network analysis tools; and automated techniques to rapidly extract persons, events and sentiments.

In 2009, the Defense Science Board, in its report “Understanding Human Dynamics”, identified a number of key gaps in the DOD’s knowledge of human dynamics. The HSCB program addresses a majority of these gaps to include: multi-domain, multi-speaker spoken conversation, transcription and translation; technologies for extracting knowledge from both structured and unstructured human networks; automated assessments of the human terrain with an emphasis on attitudes, influence networks, and the effects of strategic communication; gaming for virtual training and mission rehearsal; automated sentiment, intention, and deception detection; and dynamic network analysis to understand influence, attitudes, and beliefs.

Given the overall importance of this area, the committee recommends an increase of \$5.0 million for each of the above program elements, for a total of \$15.0 million. Furthermore, the committee directs the Assistant Secretary of Defense for Research and Engineering to report to the congressional defense committees no later than 180 days after the enactment of this Act on the Department’s overall investment strategy in the field of human, social, cultural, and behavior research and engineering, an assessment of the operational utility of fielded HSCB tools, and a plan for transitioning funding for this area from defense-wide activities to those funded by the services.

Combating Terrorism Technology Support

The budget request included \$77.8 million in PE 63122D8Z for the Combating Terrorism Technical Support (CTTS) program, a modest increase from \$77.1 million in fiscal year 2013.

The committee supports the mission of the CTTS program to rapidly develop and transition a wide range of technologies to the joint, interagency, and international communities focused on combating terrorism. However, in the current budgetary environment, the committee observes—based upon an analysis of CTTS programs completed in fiscal year 2012 and ongoing in fiscal year 2013—that there is a significant amount of work conducted by this program that is more suited to be funded by the Special Operations Command and its associated components, as well as by the services. Hence, the committee recommends a decrease of \$17.0 million to PE 63122D8Z.

Ballistic missile defense technology programs

The budget request included \$309.2 million in PE 63175C for the Missile Defense Agency (MDA) for development of ballistic missile defense technology, including \$229.9 million for advanced technology development, and \$70.0 million for the Common Kill Vehicle technology development program, which is a new program described elsewhere in this report.

The committee notes that MDA has placed a number of previous technology development programs, which had been in separate program elements, into a single technology development program element. The committee is concerned that this consolidation of all

technology development projects into a single program element may degrade transparency and oversight, which would be contrary to the interests of the committee and to the MDA efforts to improve transparency and oversight.

The committee also notes that advanced technology development funding for fiscal year 2014, in addition to the \$70.0 million for the common kill vehicle technology development program, spikes at \$230.0 million, from a level of \$76.0 million in fiscal year 2013, and is planned to come down in fiscal year 2015 and beyond to a level of about \$138.0 million per year. The committee observes that a 1-year spike in technology development funding will not create sustainable progress, and is likely to lead to significant program management and execution challenges, as well as starting work that would not be continued in future years.

One of the previous MDA program elements that has been moved into the technology development program element in the budget request is the directed energy program within the Weapons Technology project, for which \$83.5 million is requested. The committee notes that the MDA-directed energy research and development program, along with other Department of Defense-directed energy programs, do not have an adequate level of common metrics for oversight and program evaluation, as described elsewhere in this report. Furthermore, one of MDA's directed energy projects, the Diode-Pumped Alkalai Laser System (DPALS) project, does not have the same level of coordination and oversight from an array of directed energy experts as the fiber-combining laser project, which includes the involvement of the Defense Advanced Research Projects Agency. Furthermore, the committee believes that MDA continues to place too much focus on high-energy laser lethality work for future boost-phase intercept missions, years before it is known whether the technology will ever permit such applications. Consequently, the committee recommends a reduction of \$5.0 million to the DPALS project in the directed energy portion of the weapons technology component of PE 633175C for Advanced Technology, and an undistributed reduction of \$25.0 million across other portions of PE 633175C for Advanced Technology as unsustainable growth. The committee also directs MDA to brief the congressional defense committees within 90 days of the enactment of this Act on a strategy for broadening the DPALS effort to encourage effective peer review, competition, and increased involvement of the high-energy laser expert community.

The committee notes that the new Common Kill Vehicle Technology research and development program is planned for consistent levels of funding across the future-years defense program, which will allow for a sustained research and development effort. The committee believes this stable funding approach program will permit sustainable efforts and results.

Rapid Fielding

The budget request included \$315.0 million in Rapid Fielding programs spread between Joint Capability Technology Demonstrations (\$174.4 million in PE 63648D8Z), Emerging Capabilities Technology Development (\$62.0 million in 63699D8Z), and Quick Reaction Special Projects (\$78.5 million in 63826D8Z).

The committee is pleased that the Department of Defense is shifting its Rapid Fielding operational model from primarily near-term gaps to a renewed look at longer-term interest areas that are more strategic in nature. In addition, the committee supports the Department's move to fund more conceptual, developmental, and operational prototyping. The committee urges the Rapid Fielding program to spearhead efforts to find innovative integrated design teams that can develop capabilities at far less cost than traditional defense contractors. The committee notes the design of the 5th Generation Aerial Target as one example where such a design and management philosophy can potentially lead to significant gains in affordability for the Department.

To encourage greater quality versus quantity of its projects, the committee recommends a decrease of \$10.0 million in PE 63648D8Z and \$20.0 million in PE 63826D8Z from the Quick Reaction Fund and Rapid Reaction Fund.

Networked Communications Capability Program

The budget request included \$20.0 million for the Networked Communications Capability Program, PE 63662D8Z.

The committee understands the importance of the Department of Defense's needs in accelerating its wireless mobile networking capabilities through both greater leveraging of commercial capabilities, as well as pursuing solutions to defense unique requirements. However, the committee observes that there is significant investment across all the services and the Defense Advanced Research Projects Agency (DARPA) in this area, and questions the value of this program at the defense-wide level. Hence, the committee recommends a decrease of \$15.0 million and directs this activity to focus on coordinating wireless mobile networking capabilities across the services and DARPA, in coordination with the Defense Information Systems Agency and the Department's Chief Information Officer.

Defense industrial capacity innovation and sustainment

The budget request included \$34.0 million in PE 63680D8Z for defense-wide manufacturing science and technology and \$14.0 million in PE 67210D8Z for industrial base analysis and sustainment. The committee, along with other congressional defense committees, has been a strong supporter of programs that advance innovation in manufacturing and that sustain targeted sectors and capabilities of the defense industrial base. This view has also been expressed by prior studies of the Defense Science Board (DSB), as well as the most recent Quadrennial Defense Review. In the current budgetary environment with an increased focus on affordability, investments in advancing manufacturing technologies have shown significant overall reductions in production and life cycle costs.

Despite the critical importance of manufacturing technology, the Department of Defense's (DOD) overall manufacturing investment is only 0.3 percent of overall funding for Research, Development, Test and Evaluation—well short of the 1 percent goal recommended by the DSB. Last year, Congress provided an additional \$30.0 million to the Industrial Base Innovation Fund (IBIF) program for advanced manufacturing technologies. Recent examples of

IBIF projects include improved producibility of the electro-optical targeting system on the Joint Strike Fighter, improved transparent armor for soldier protection in ground combat vehicles, advanced high-energy batteries, and light weight cables and wires for weight reduction on aerospace systems. The new manufacturing techniques for the electro-optical targeting system have led to a return on investment in excess of a factor of 20. Given the demonstrated return on investment in innovative manufacturing technologies, the committee recommends an additional \$25.0 million to continue the IBIF program in the 63680D8Z program element line.

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

Furthermore, the committee strongly urges DOD to institutionalize this program with adequate resources in future years and consider it as an important component of its wider manufacturing and industrial base strategy, in part, informed by its ongoing “Sector-by-Sector, Tier-by-Tier” analyses.

CWMD Systems

Section 3166 of the National Defense Authorization Act for Fiscal Year 2013 established a “Congressional Advisory Panel on the Governance of the Nuclear Security Enterprise.” No funding was requested in the fiscal year 2014 budget request for the advisory panel. The panel ends on June 1, 2014. The committee recommends an increase of \$3.0 million to PE 0303310D8Z to carry out the functions of the advisory panel under a transfer to PE 0902198D8Z.

Advanced sensor applications program

The budget request included \$17.2 million in PE 63714D8Z for the Advanced Sensor Applications Program (ASAP). This represents a reduction from the level funded in fiscal year 2013 of \$19.0 million. This reduction reflects a general reduction applied to a number of budget line items in an across-the-board manner. The committee believes that this reduction, while modest by some standards, will cause the program to postpone important testing and experiments. The committee believes that these efforts are too important to postpone or cancel, and therefore, recommends an increase of \$2.0 million for ASAP.

U.S.-Israeli cooperative missile defense programs

The budget request included \$95.8 million in PE 63913C for the Missile Defense Agency (MDA) for U.S.-Israeli cooperative missile defense programs, including: \$10.7 million to improve the existing Arrow Weapon System; \$52.6 million for continued development of the Arrow-3 upper-tier interceptor missile; and \$32.5 million for co-development of a short-range missile defense system called David's Sling. These systems are part of Israel's layered defenses against missiles and rockets of varying ranges, from longer-range missiles from Iran or Syria, to short-range missiles and large caliber rockets fired from Lebanese territory in the summer of 2006, to the very short-range rockets and artillery fired from Gaza. The United States is co-managing and jointly developing these systems to ensure that they are compatible and interoperable with U.S. missile defense systems.

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

Therefore, the committee recommends an increase of \$150.0 million in PE 63913C for U.S.-Israeli cooperative missile defense programs, including: \$30.0 million to improve the Arrow Weapon System; \$20.0 million for the Arrow-3 upper-tier interceptor development program; and \$100.0 million for the David's Sling short-range missile defense system.

The budget request also included \$220.3 million in Procurement, Defense-wide, for MDA for Israel to procure additional Iron Dome batteries and missiles. This is the first year that funding for Iron Dome has been included in the budget request, and the committee commends the Department of Defense for making it part of the regular budget process.

The Iron Dome system, which was developed by Israel, was used to great effect to defend against short-range rocket attacks from Gaza in 2012, and had a reported operational success rate of 85 percent. The committee recognizes that the current situation in Syria has added to the risk of rocket and missile attacks against Israel, and that Iron Dome is an important component of Israel's ability to protect its population against such attacks.

Advanced Innovative Technologies

The budget request included \$130.0 million in PE 64250D8Z for Advanced Innovative Technologies.

The committee is concerned that this significant level of funding will not be able to be executed in fiscal year 2014 and recommends a decrease of \$30.0 million to this program element.

Defense research and development Rapid Innovation Program focus areas

The Rapid Innovation Program (RIP) is a competitive, merit-based program established by section 1073 of the Ike Skelton Na-

tional Defense Authorization Act for Fiscal Year 2011 (Public Law 111–383) that is designed to fund innovative technologies, reduce acquisition or life cycle costs, address technical risks, improve the timeliness of test and evaluation outcomes, and rapidly insert technologies needed to meet critical national security needs. The committee notes that \$250.0 million was appropriated for the RIP in the Department of Defense Appropriations Act for Fiscal Year 2013 (Public Law 113–6); however, no funds were requested in fiscal year 2014.

The RIP was first authorized and funded in 2011. Over 170 programs were selected by the Department of Defense (DOD) in 2011 to include: automated engine part inspection tools, compact anti-jam Global Positioning System antennas, enhanced ground vehicle protection, lightweight ground fire detection systems for combat outposts, ceramic based explosive ordnance detection tool kits, and improvements to mine roller wheel assemblies. All these programs are scheduled to be completed in November 2013. The overall response from the Services has been positive for the program, in particular, the fact that it has opened up more collaborative efforts with small businesses and non-traditional suppliers to DOD.

The committee recommends an increase of \$150.0 million in funding for the RIP to PE 64775D8Z focusing primarily on the following three broad areas:

- (1) delivering nearer-term emerging technologies to current military operations to enhance capabilities in areas such as: electronic warfare; cybersecurity tools; robotics and autonomous systems; spectrum management; intelligence, surveillance, and reconnaissance capabilities; reducing soldier load; improving fixed, mobile, and dismounted force protection; and detecting and defeating all forms of improvised explosive devices;

- (2) contributing to breakthrough technologies for future military capabilities in areas such as: countering weapons of mass destruction; space systems; hypersonics; highly autonomous systems; large-scale data management and manipulation for command and control; and enhancing human performance; and

- (3) improving the affordability of defense operations in areas such as: advanced manufacturing; reducing the cost and footprint of energy and other logistical items; interoperability across platforms and systems; and innovative prototyping approaches for new platforms and systems.

The committee reaffirms the requirement by law that all such funding be allocated on the basis of a merit-based selection, pursuant to a broad agency announcement or similar competitive process. To ensure the integrity of this competitive process, the committee directs the Government Accountability Office (GAO) to report on the execution of RIP. The report will include but not be limited to: an assessment of the RIP contract solicitation and award process; an assessment of RIP execution and monitoring of contracts; an overall assessment of how the RIP is meeting its goals and guidelines; and a complete list of all RIP awards since program inception to include funding organization, project, contractor, location, award amount, award date, description of project, confirmation that the contract award was competitive and merit-based, a

description of what Joint Urgent Operational Needs or other critical national security need each RIP award addressed, and the current status of each RIP award.

Developmental test and evaluation

The budget request included \$15.5 million in PE 65804D8Z for developmental test and evaluation and \$44.2 million in PE 605142D8Z for systems engineering.

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

While DOD has taken great strides in improving its acquisition process, the committee notes that the Fiscal Year 2012 Annual Report by the Director of Operational Test and Evaluation—dated December 2012—provided a list of 17 major defense acquisition programs—the same number as in 2011—that had discoveries of significant problems during operational test and evaluation that should have been detected and corrected during developmental test and evaluation.

Furthermore, the committee notes that the Department’s defense-wide systems engineering budget request is almost three times greater than the developmental test and evaluation budget request. In fiscal year 2013, the committee recommended an increase of \$5.0 million to developmental test and evaluation. The committee believes that DOD is continuing to underfund its developmental test and evaluation activities, as evidenced by the unacceptable number of problems being discovered in operational test and evaluation.

To bring more parity between the systems engineering and developmental test and evaluation activities, the committee recommends a transfer of \$5.0 million from PE 65142D8Z to PE 65804D8Z.

Defense Technical Information Center

The budget request included \$56.0 million in PE 65801KA for the Defense Technical Information Center (DTIC), a modest increase from \$55.5 million in fiscal year 2013.

The committee supports the innovation of DTIC to improve information technologies that enhance collaboration and research support and data repository services. However, the committee questions the role of all the web services and site hosting activities that DTIC provides as well as whether the size of the organization is commensurate with its mission. Hence, the committee recommends a decrease of \$10.0 million.

Conflict Records Research Center

The budget request included \$3.2 million in PE 35186D8Z for Policy Research and Development programs.

The committee notes that the Conflict Records Research Center (CRRC) was established to address the Secretary of Defense’s intent to enable research into captured records with complete openness and rigid adherence to academic freedom and integrity. The

mission of the CRRC is to facilitate the use of captured records to support research, both within and outside the government.

The CRRC has made significant contributions in translating and facilitating the analysis of important documents in its Saddam Hussein and al Qaeda collections. However, the CRRC is not funded in fiscal year 2014 and there appears to not be any plans for a transition of the CRRC's expertise or access to the documents. Hence, the committee recommends \$1.0 million to the above PE for the CRRC and directs the Under Secretary of Defense for Policy to report to the congressional defense committees no later than 180 days after the enactment of this Act on a plan to sustain the CRRC's capabilities.

MQ-9 Unmanned Aerial Vehicle

The budget request included \$1.3 million in Research, Development, Test, and Evaluation, Defense-wide, for the development, integration, and testing of special operations-unique mission kits for the MQ-9 Unmanned Aerial Vehicle (UAV). U.S. Special Operations Command (USSOCOM) is responsible for the development and acquisition of special operations capabilities to, among other things, effectively carry out operations against terrorist networks while avoiding collateral damage.

The committee approved an above threshold reprogramming of funds requested by the Department of Defense in January 2013 to provide for the development, integration, and testing of additional capabilities to address identified technology gaps on USSOCOM UAVs. The committee understands that this reprogramming only partially addressed such technology gaps. Therefore, the committee recommends an additional \$12.0 million in Research, Development, Test, and Evaluation, Defense-wide, for the MQ-9 UAV.

Combatant Craft Forward Looking Infrared Radar

The budget request included \$1.2 million in Procurement, Defense-wide for Combatant Craft Forward Looking Infrared Radar (CCFLIR). Due to parts obsolescence issues with the current CCFLIR systems, U.S. Special Operations Command has requested a transfer of this funding to Research, Development, Test, and Evaluation, Defense-wide, for design, development, and testing of the next-generation CCFLIR system. The committee recommends this transfer.

Defense Advanced Research Projects Agency programs

The budget request included \$2.87 billion for the research and management activities of the Defense Advanced Research Projects Agency (DARPA). Taking into account the current fiscal environment, and given some lingering questions about the agency's ability to fully execute all its funding in a timely fashion, as well as concerns over certain programs, the committee recommends a decrease of \$100.0 million from DARPA's overall budget.

The committee is pleased that DARPA has conducted an independent review of its Adaptive Vehicle Make ground vehicle manufacturing program, is refocusing the program, and is paying attention to how survivability considerations will be realistically taken into account.

DARPA is pursuing a Vertical Take-off and Landing (VTOL) X-Plane technology program to design, develop, and demonstrate improvements in speed, hover performance, cruise efficiency, and payload. While the committee notes that the program has identified challenging speed goals that are significant improvements over rotorcraft performance today, the committee believes that the target size of a vehicle in the 10,000 to 12,000 pounds class is too small to be of useful military utility. Furthermore, the committee strongly urges DARPA to anticipate more than a single performer to be selected for flight tests. Competition in this program is vital, and there should be at least two performers carried through flight testing. As one source for increased funding for this program, the committee recommends terminating the Transformer (X) Vehicle program due to questions about its military utility.

The committee expresses deep concern for how the Plan-X cyber-security program was given a disproportionate reduction due to sequestration in fiscal year 2013. Given the potential for significant contributions by this program to the Department's greater cyber-security efforts, the committee recommends an increase of \$5.0 million to PE 62303E for this program. The committee will continue to monitor this program to see how its schedule will be impacted.

Items of Special Interest

Army Occupant-Centric Survivability Program

The committee acknowledges the report that the Army provided to the congressional defense committees earlier this year about its Occupant-Centric Platform Technology Enabled Capability Demonstration research program and supports its objectives to produce military standards that inform future ground vehicle development to ensure that vehicle designs mitigate injuries due to underbody blasts and subsequent crash/rollover events. Noting that the program will take until the end of fiscal year 2015 to produce these standards, the committee encourages the Army to move as expeditiously on this program as possible and to leverage emerging technologies in the commercial sector, especially those related to vehicle restraints.

Chemical and biological defense medical countermeasures strategy

The Department of Defense (DOD) is pursuing an enhanced strategy for rapid and cost-effective development, approval, and manufacturing of medical countermeasures (MCM) against chemical and biological threats, both known and validated threats, and emerging threats. This strategy is part of an integrated national bio-defense MCM strategy to produce vaccines and therapeutics against such high-risk threats as Ebola and Marburg hemorrhagic fever viruses and pandemic disease outbreaks. Given the need to deploy U.S. forces in many parts of the world with endemic diseases and potential bio-threats, and the need to ensure our military can operate successfully in a chemically or biologically contaminated environment, the Department has a number of unique MCM requirements that cannot be met outside of the Department's programs.

The committee notes that this strategy is a coordinated and collaborative interagency effort, guided by updated national strategy and guidance documents, and involves particularly close cooperation between DOD, the Department of Health and Human Services, and the Food and Drug Administration (FDA). This coordination permits each agency to perform its assigned tasks in a complementary fashion, reduce costs, and avoid duplication of effort.

One key aspect of this DOD strategy is the development of an Advanced Development and Manufacturing (ADM) capability, formerly known as the Medical Countermeasures Initiative, which is intended to provide DOD an agile and flexible facility for rapid and affordable development and production of MCMs to protect military personnel, particularly prior to exposure to chemical and biological threats. This is a significant change from the traditional MCM development process, which is characterized by long development schedules, high risks, and high costs for single drugs for each validated threat.

In contrast to the previous “one-bug, one-drug” approach, the Department is emphasizing the rapid development and FDA approval of broad-spectrum vaccines and anti-viral products that are intended to protect against a range of bio threats. The committee commends this more cost-effective approach and encourages the Department to continue with accelerated efforts to develop and seek FDA approval of broad-spectrum medical countermeasures, including anti-viral products that would provide improved capability against such threats as existing filoviruses that pose a current threat to forward-deployed U.S. military forces, and which could be weaponized by terrorist groups.

The committee notes that the Department awarded a contract for the ADM facility in late 2012 and anticipates achieving full operational capability in 2015. The committee expects to be kept informed of progress with the ADM effort, including its results in meeting DOD objectives for cost reduction, flexibility, and agility in developing and producing MCMs against known and evolving threats, including emerging infectious diseases.

The committee notes that section 1601 of the National Defense Authorization Act for Fiscal Year 2004 (Public Law 108–136) directed the Secretary of Defense to “carry out a program of biomedical countermeasures, including but not limited to therapeutics and vaccines, for the protection of the Armed Forces. . . .”. The committee believes the Department’s enhanced MCM strategy, particularly its development of an ADM capability and its focus on cost reduction and affordability, is an important step to meet this requirement.

Combat casualty care research

In February 2013, the Government Accountability Office (GAO) issued a report titled, “Actions Needed to Help Ensure Combat Casualty Care Research Achieves Goals.” The GAO recommended that “the Secretary of Defense direct the Under Secretary of Defense for Acquisition, Technology, and Logistics to communicate to DOD’s nonmedical research organizations the importance of coordination with the JPC–6 chair on combat casualty care issues, and require this coordination early in the research process when these

organizations conduct research with implications for combat casualty care.” Furthermore, the GAO recommended that “the Assistant Secretary of Defense for Health Affairs develop and implement a plan to assess the extent to which combat casualty care research and development fills gaps in DOD’s capability to provide combat casualty care and achieves DOD’s other goals for this portfolio of research.”

The committee notes that DOD concurred with GAO’s recommendations and has taken positive steps to address them. The committee directs the Department to provide a comprehensive briefing to the committee, within 30 days of the enactment of this Act, on its progress in implementing GAO’s recommendations and any additional actions it plans to take to achieve combat casualty care research goals.

Common kill vehicle technology program

On March 15, 2013, Secretary of Defense Chuck Hagel announced a series of steps planned to enhance homeland ballistic missile defense, to stay ahead of the evolving long-range missile threat from North Korea and Iran. One of the steps announced is the creation of a new program proposed in the President’s budget request to develop advanced and common kill vehicle technologies for the Ground-Based Interceptor (GBI) and future variants of the Standard Missile–3 (SM–3) interceptor for the Navy’s Aegis Ballistic Missile Defense program.

The objectives of the program are to develop common technologies, subsystems, or components that could be used in either kill vehicle, and to advance the state-of-the-art kill vehicle capability, including propulsion, electronics, navigation, seeker optics, discrimination, and communications. Advances in these kill vehicle technologies could provide significant improvements in the effectiveness of the Ground-based Midcourse Defense (GMD) and Aegis Ballistic Missile Defense systems, and the overall Ballistic Missile Defense System, which are high priority objectives for the Missile Defense Agency (MDA) and the combatant commands that rely on these systems.

Given that the program was first announced in mid-March, the committee understands it is still at the beginning stage of program concept development, and does not yet have a well-defined long-term plan in place. This is understandable for a new research and development program, but the committee expects MDA to provide more definition and clarity on the long-term plan for the Common Kill Vehicle Technology Development program.

Section 225 of the National Defense Authorization Act for Fiscal Year 2013 (Public Law 112–239) requires the Director of MDA to develop a long-term plan to modify and upgrade the current GBI Exo-atmospheric Kill Vehicle, and the competitive development of a next-generation kill vehicle for the GBI. The provision also requires the Director to report to Congress on the plan by July 2013. The committee expects that the new Common Kill Vehicle Technology Development program will be compatible and consistent with the intent of Section 225.

One key element of any future kill vehicle program will be advanced propulsion for the Divert and Attitude Control System

(DACS) that steer the kill vehicle into the target warhead, including solid-fueled DACS that are currently used on all SM-3 variants. The committee notes that MDA plans to rely on the industrial base for innovation and competition for this Common Kill Vehicle Technology Development program. However, with the termination of the SM-3 IIB program, one of the two industry contractors with solid DACS expertise is at risk of ending their work and their ability to contribute to this program.

With these concerns in mind, the committee directs MDA to provide a report to the congressional defense committees, not later than March 1, 2014, setting forth the long-term plan and objectives for the Common Kill Vehicle Technology Development program, including an explanation of how it intends to maintain a competitive industrial base to implement the program.

The committee supports the efforts of MDA to develop technology for a next generation high performance, high reliability, and highly producible kill vehicle, which MDA says could be ready before the end of the decade. A next generation kill vehicle would have enhanced discrimination capabilities and the potential for volume kill capability. The committee encourages the MDA to move the program as expeditiously as possible from research and development into product development, based on demonstrated technical progress and consistent with sound acquisition practices, and to transfer this effort from the Ballistic Missile Defense Technology Development program element into a new program element dedicated to the development of a next generation kill vehicle for the Ground-Based Interceptor and future variants of the Standard Missile-3 interceptor. The committee expects MDA to fully incorporate the lessons learned from the previously terminated Multiple Kill Vehicle program to avoid the problems encountered in that program.

High energy laser weapons

The committee notes that in the fiscal year 2014 budget request, the Department requested \$364.0 million for high energy laser research and development. One of the key challenges in comparing the performance and maturity levels of the various laser systems across the services, the Defense Advanced Research Projects Agency (DARPA), and the Missile Defense Agency, is the lack of common performance metrics and the criteria that can be used for down-selection, further development, and eventual deployment. To address this deficiency, the Assistant Secretary of Defense for Research and Engineering shall develop a set of common high energy laser metrics that characterize the operational performance of a high energy laser to include a measurement of power deposited on a given area over a given amount of time at a given distance, dependent upon atmospheric conditions, as a function of the size, weight, and power of the complete laser weapon system, including power and thermal management sub-systems, the laser source, the beam control and optical sub-systems, and the command and control sub-systems. These metrics, as well as an evaluation according to these metrics that will be used for decisions on further development and eventual deployment of all current high energy laser systems the Department is currently developing, shall be reported to

the congressional defense committees no later than 180 days after the enactment of this Act.

Furthermore, the committee notes that the Department is pursuing multiple programs with solid state fiber lasers and strongly urges the Department to develop an integrated strategy that will lead to a rational down-selection process towards those systems that are most effective and mature in order to accelerate their testing in relevant operational environments and ultimately deployment.

Lastly, the committee notes that the majority of DOD's laser directed energy programs are focused on the development and demonstration of high-average-power continuous wave lasers, which have the goal of delivering sufficient thermal energy to damage or destroy targets. Insufficient attention is being given to ultra-short-pulse very-high-peak-power lasers which can produce unique non-thermal effects on materials, components, and systems—effects which cannot be produced by deposition of thermal energy. The committee notes that other countries are exploring the applications for these non-thermal effects, and are advancing the development of ultra-short-pulse high-peak power lasers and associated technologies. The committee directs the Department, in particular DARPA, to begin considering these systems to determine what military utility they can provide.

Future Ground-Based Interceptor acquisition

The committee notes that on March 15, 2013, Secretary of Defense Chuck Hagel announced plans to deploy 14 additional operational Ground-Based Interceptors (GBIs) at Fort Greely Alaska by 2017, and to procure 14 GBIs in the future to replace the deployed ones. The budget request, which was submitted less than one month after Secretary Hagel's announcement, indicates that the Department of Defense intends to procure the 14 replacement GBIs at a rate of 2 per year for seven years, with funding starting in fiscal year 2016 and deliveries continuing until at least 2024.

The committee observes that there are a number of issues facing the Department with respect to future acquisition of GBIs stretching more than a decade into the future. These issues include: (1) the need to correct and demonstrate the problems experienced with the Capability Enhancement-II exo-atmospheric kill vehicle (EKV), and to have alternative options available in case the correction is not successfully demonstrated in an intercept flight test in 2014; (2) planned development efforts for significant EKV upgrades and new capabilities and designs, some of which may be available for deployment before 2020; (3) planned GBI reliability improvements and upgrades, some of which may be available for deployment before 2020; (4) procurement of 2 interceptors per year does not appear to be the most cost-effective acquisition approach; and (5) the possibility of producing a mix of 3-stage and 2-stage GBIs as part of the 14 additional GBIs to be procured. The committee notes that, given current plans, the GBI production line will remain operational for at least the next decade, thus enabling the option of procuring additional GBIs in the future, if needed. However, it is not yet clear what the best acquisition options are for procuring the 14 additional GBIs.

Given these issues, the committee directs the Director of the Missile Defense Agency to provide a report to the congressional defense committees not later than 180 days after the date of enactment of this Act, describing the issues and options under consideration for future GBI acquisition, including a cost-benefit assessment of multi-year procurement authority. The report should include any recommendations for congressional action to support future GBI acquisition.

Hybrid Airships

Over the last several years, the Department of Defense (DOD) has pursued a number of airship vehicles to span a range of missions from long duration Intelligence, Surveillance, and Reconnaissance (ISR) to heavy lift. Many of these programs have been terminated or concluded due to either budgetary issues, technical challenges, changed requirements, or declining interest. Nevertheless, in testimony before the committee, General William M. Fraser, III, USAF, the Commander of U.S. Transportation Command said, “hybrid airships represent a transformational capability, bridging the longstanding gap between high-speed, lower-capacity airlift, and low-speed, higher-capacity sealift. Across the range of military operations, this capability can be leveraged from strategic to tactical distances... We encourage development of commercial technologies that may lead to enhanced mobility capabilities in the future.”

One class of airships—hybrid airships—has been investigated under DOD’s Pelican program and the Army’s Long Endurance Multi-intelligence Vehicle (LEMV). The Pelican airship uses a system to control its buoyancy, while the LEMV is a standard hybrid airship with fixed buoyancy. While the Pelican program recently demonstrated a limited capability of the underlying technology for controlled variable buoyancy, there are still significant advances that are needed to be made in order to develop a robust flight vehicle that would have a cargo capacity with any military utility. The committee understands that there is some degree of interest in the commercial sector for the transportation capabilities of a heavy-lift hybrid airship. If such a capability were developed in the private sector, there is the potential opportunity for DOD to leverage this capability for its needs. The committee directs U.S. Transportation Command and the Air Force Mobility Command to monitor progress in this area and report to the congressional defense committees no later than 180 days after the enactment of this Act on the status of developments in the commercial sector regarding hybrid airships that could be used to provide the capability identified by General Fraser, and to what extent the DOD could benefit from them.

Implementation of Air Force Strategic Weather Modernization Plan Recommendations

The December 2012 U.S. Air Force Report to Congress titled, “Air Force Strategic Weather Modernization Plan” states, “Air Force Weather Agency products, processes, and organizations must continue to improve while using technology and training as enablers to assist Airmen to achieve increased efficiency and effectiveness. To accomplish this goal, Air Force Weather must remain

at the cutting edge of science and technology. At the same time, to successfully operate in the current high-technology, yet fiscally constrained environment, it is imperative to partner with other Department of Defense (DOD), civil, research and development, and international agencies to develop, access, and transition needed capabilities to operations. Air Force Weather will focus modernization efforts on those capabilities required to collect, analyze, predict, tailor, and integrate accurate, timely, and relevant weather data for the warfighter.”

The committee is concerned that the Air Force currently lacks a comprehensive meteorological and weather analysis training program that relies on the most up to date technology. Therefore, the committee recommends that the Air Force brief this committee on its plan to implement the recommendations of its weather modernization report to include an incremental improvement strategy that ultimately creates a meteorological and weather analysis training program for the Air Force in coordination and cooperation with other DOD, civil, research and development, and international agencies.

Importance of preserving and maintaining mission critical information technology services

The committee supports the Air Force’s ongoing efforts to acquire information technology (IT) products and services at lower costs and increased efficiencies. These efforts include standardizing configurations, maintaining strict adherence to Air Force and Department of Defense technical standards, leveraging \$24.0 billion in IT buying power, and maximizing small business participation. The committee also supports additional efforts being taken by the Air Force to achieve cost-savings and improved efficiencies by instituting better business practices.

However, the committee is concerned about a potential disconnect between broader IT modernization efforts and those efforts focused on the Air Force’s mission critical, high consequence networks, such as those related to its nuclear and space missions. Hence, the committee directs the Air Force to take all steps required to preserve and sustain the high consequence, mission critical IT services to ensure there are no adverse mission impacts.

Improved turbine engine program

The committee supports research and development for the Improved Turbine Engine Program that would increase the operational capability and fuel efficiency of Army helicopters. The committee is aware that the Army has achieved a Material Development Decision and that under the current acquisition strategy will fund competitive prototyping through Milestone-B.

The committee encourages the Army to take competitive prototyping as far as resources will permit to mitigate technical risk and prove out performance. For example, there may be an opportunity to continue competition into and through a preliminary flight rating test milestone, or through a flight demonstration of each competing engine. This investment in continuing competition could help control costs, reduce programmatic risk, and mitigate modeling and simulation shortfalls. Selecting the appropriate point at

which to down select to a single engine contractor is a crucial step to ensure the taxpayers and Department of Defense get the best value in investment and performance.

Independent assessment of Army Distributed Common Ground System analyst tool integration

The budget request included \$27.6 in PE 35208A for development of the Army's Distributed Common Ground System (DCGS). The committee directs the Deputy Secretary of Defense to task the National Assessment Group (NAG) to conduct the following activities with respect to the Army's DCGS:

(1) Identify the software tools and capabilities in DCGS that provide the human-machine interface for manipulating DCGS, querying data stores, and displaying results.

(2) Characterize the Application Programming Interfaces (APIs) and other technical interface specifications used by DCGS human-machine interface tools and capabilities.

(3) Determine whether DCGS interfaces are adequate to support successful integration of existing DCGS human-machine interface tools and capabilities or similar tools that perform the same or similar functions.

(4) Create an inventory of such tools and capabilities within DCGS and identify which of them are licensed products developed by a private corporation, were developed with government funding, or are open source products, and at what cost.

(5) For each tool and capability, determine whether it was integrated into DCGS by government or private sector funding, by government or contractor personnel, and where data is available, at what cost.

(6) Select a representative sample of advanced commercially licensed analyst tools that perform the same or similar functions as tools currently used in DCGS.

(7) With the permission of the owners of those tools, characterize the technical interface specifications that would have to be satisfied for the tools to be successfully integrated into DCGS.

(8) Compare the interface specifications necessary for successful integration of commercial tools to DCGS existing specification and identify any obstacles to the successful integration of commercially licensed analyst tools.

The committee directs the NAG, in characterizing the tool integration interfaces within DCGS and commercial products, to assume that the tools would need to be able to ingest and manipulate data created or acquired locally as well as data already resident in the DCGS system. The NAG shall evaluate the DCGS Release 1, 2, and 3 versions.

The committee directs the NAG to provide the results of this analysis to the Secretary of the Army and the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)) within 180 days of the enactment of this Act, and the USD(AT&L) to forward the NAG assessment, together with any comments and recommendations, to the congressional defense committees and the congressional intelligence committees within 210 days of the enactment of this Act. The committee directs that not more than 65 percent of the funds authorized to be appropriated for Army DCGS de-

velopment in fiscal year 2014 may be obligated or expended prior to delivery of the required report.

Joint Land-Attack Cruise Missile Elevated Netted Sensor (JLENS) system

The Joint Land-Attack Cruise Missile Elevated Netted Sensor (JLENS) system is a paired aerostat system intended to provide persistent elevated sensor data needed to detect, track, and defeat airborne threats, including cruise missiles, manned and unmanned aircraft, and surface moving targets, including swarming boats. Based on a recently restructured engineering and manufacturing development (EMD) program, JLENS is nearing the completion of the EMD phase of the acquisition cycle, and is planned to demonstrate its potential capability and assess future options. As a joint system managed by the Army, it has demonstrated interoperability with a number of Army and Navy weapon systems. The Army plans to conduct an operational exercise with JLENS at Aberdeen Proving Ground, Maryland, to demonstrate its capabilities in support of the North American Aerospace Defense Command and U.S. Northern Command for their National Capital Region homeland defense mission, starting in October 2014.

The committee supports the planned JLENS demonstration in this operational exercise and believes it will provide critical information for the Department of Defense to assess the ability of JLENS to support other combatant commander sensor requirements in the future. The committee directs the Secretary of Defense to provide a report to the congressional defense committees, not later than 90 days after the initiation of the JLENS demonstration, identifying the data and analyses that it plans to use from the demonstration to guide future acquisition decisions for JLENS. The report shall also include a discussion of how the Department intends to support validated requirements of combatant commanders for persistent elevated surveillance of cruise missile and surface moving threats.

Metrics for evaluating Commercial Solutions for Classified

The budget request included \$181.6 million in PE 33140G for the Information Systems Security Program at the National Security Agency (NSA). NSA's Commercial Solutions for Classified (CSfC) program aims to shift the protection of classified information from reliance on government-engineered solutions toward publicly available commercial technologies. The program's technical approach is to layer commercial devices into a system for the protection of classified information, relying on the redundancy and mutual support of multiple commercial products to mitigate the risk of security flaws in any one layer. The committee strongly supports NSA's initiative to provide rapid and affordable security solutions for commercial products to enable the Department of Defense (DOD) to exploit advanced commercial technology.

However, the committee is concerned that the program's metrics of success focus on breadth and speed of deployment and user acceptance, not actual measurements of the level of security achieved. Commercial technologies potentially offer lower cost and advanced

capability, but NSA must ensure that it detects any degradation in security should it arise due to the use of CSfC architectures.

Therefore, the committee directs that NSA develop a plan to collect data on deployments of CSfC solutions and products and compare their security performance to systems engineered by traditional methods. In building the plan, NSA should consider options from the full range of potential sources of data on security, such as security analyses, testing, blue- and red-team events, cyber exercises, and field performance, such as intrusion rates, speed with which intrusions are detected, and effort required for remediation. The committee further directs that the DOD Chief Information Officer review and approve the plan and transmit the plan to the congressional defense committees and the congressional intelligence committees within 120 days of enactment of this Act.

The committee also directs the program manager for the CSfC program to examine the problem of detecting and remediating vulnerabilities in the software that controls the power conditioning for mobile devices that could allow attackers to rapidly deplete limited power sources. In today's mobile communications world, power sources are the key limiting factor for mission success and optimization of battery performance and longevity are largely software controlled.

Military Scientists and Engineers

The committee has been a strong supporter of the Department of Defense's (DOD) science, technology, engineering, and mathematics (STEM) education and outreach programs. The DOD needs to be able to attract and retain the best and brightest scientists and engineers for both its civilian and military personnel. The committee acknowledges that there has been greater emphasis on the civilian STEM sector and that the number of military STEM officers has experienced a steeper decline than the total number of officers over the last two-plus decades. The broader question that needs to be addressed is how well DOD is managing its uniformed STEM workforce to ensure that it will keep pace with its own evolving needs and high technology developments around the world.

Hence, to better understand the current situation with DOD uniformed STEM personnel, the committee directs the Under Secretary of Defense for Personnel and Readiness, in coordination with the services, to report to the congressional defense committees no later than 180 days after the enactment of this Act on the following:

- (1) the current and future requirements for uniformed STEM personnel, including requirements for types of degrees and scientific and technical fields;
- (2) how uniformed STEM personnel are used and integrated into the total force (by service), including how the balance between officer leadership and technical competence is addressed;
- (3) what differences, if any, exist between the data DOD collects on its civilian workforce and uniformed personnel in STEM fields to include:
 - (a) the educational degree discipline;
 - (b) the granting school of all baccalaureate, graduate, and professional degrees; and

- (c) the non-military occupation of Reserve component members; and
- (4) how the Defense Manpower Data Center is used for managing both civilian and military STEM personnel.

Scientific and technical conferences

As a result of some unfortunate recent events in other government agencies, the Office of Management and Budget released Memorandum M-12-12 last year that provided guidance to departments and agencies on government travel and conference attendance. The Department of Defense (DOD) issued further implementing guidance later in the year that established a tiered approval structure for conference oversight responsibilities. The committee understands that the implementing guidance has led to the oversight and approval of science and technology (S&T)-funded travel and conference sponsoring and attendance by very senior service and department levels that requires additional time and resources.

An unintended consequence of this guidance has been a significant reduction in the DOD's participation in S&T-funded travel to major scientific facilities or experimental sites for research projects, grantee and contractor site visits, program reviews and technical evaluations, science board and advisory group meetings, international S&T engagements, standards-setting committees, scientific society-sponsored conferences, and events and competitions authorized under section 2192 of Title 10, United States Code, for educational outreach initiatives. Reductions in travel and conferences pose a special threat to science and engineering activities because of the collaborative nature of the work and the importance of extensive interchange among researchers to remain cognizant of and extend the current state of knowledge. The committee is concerned that decreased participation may be jeopardizing the ability of DOD S&T to successfully complete their S&T missions.

In order to quantify the impact that these policies are having on the DOD S&T enterprise, the committee directs the Government Accountability Office to undertake a study of the impact of the above mentioned policies on the DOD S&T enterprise, including the National Nuclear Security Administration, and report to the congressional defense committees its findings no later than 6 months after the date of enactment of this Act. Furthermore, in order to streamline approval timelines and reduce attendant delays, the committee directs the Office of the Deputy Chief Management Officer and the Under Secretary of Defense for Acquisition, Technology, and Logistics to establish procedures to allow the services and agency heads to exercise more local control and decision making authority over travel and conference oversight and approval, consistent with applicable laws and regulations and the need to ensure the appropriate use of taxpayer funds.

Tactical power grids

The committee is aware that the U.S. Army Research, Development, and Engineering Command and the Office of Naval Research are each pursuing the development of tactical power grids and advanced mobile electric power distribution systems to assist the

Army and Marine Corps respectively, to meet the need for the efficient distribution of mobile electric power in a stable tactical grid environment. While the committee encourages these efforts to improve safety, reliability, reduce fuel consumption, and maximize energy efficiency, the committee urges the services to closely coordinate to avoid unnecessary duplication and to continue these efforts to determine whether these objectives can be met.

Trusted microelectronics

The committee recognizes the vital importance of supply chain risk management for Department of Defense (DOD) systems, especially for microelectronics components and software, in order to maintain mission assurance of its weapons systems. A key component of microelectronics manufacturing for critical DOD systems is the Trusted Foundry program as well as the Defense Microelectronics Activity (DMEA). Given the rapid pace of microelectronics obsolescence, the committee supports the continued improvement of DMEA's capabilities as a foundry of last resort when commercial entities in the Trusted Foundry program are not able to manufacture a given component.

In addition to supporting the Trusted Foundry program and DMEA, the committee urges DOD to ensure that an enterprise-wide approach to microelectronics trust is taken, to include the security of photomask design and inspection tools given their criticality in the integrated circuit manufacturing process. The committee urges DOD to continue to work with the private sector in ongoing partnership programs to reduce supply chain vulnerabilities and to ensure that technologies and products developed are transitioned to the manufacturing processes used for DOD microelectronics components.