



## U.S. Defense Space-Based and -Related Systems Fiscal Year 2015 Budget Comparison

UPDATE 6

**Consolidated Appropriations Act, 2014 (P.L. 113-76); President's FY 2015 Department of Defense Budget Request; House passed FY 2015 National Defense Authorization Act (NDAA) (H.R. 4435); Senate Armed Services Committee (SASC) passed FY 2015 National Defense Authorization Act (NDAA) (S. 2410); House passed FY 2015 Department of Defense Appropriations Act (H.R. 4870); Senate Appropriations Committee passed FY 2015 Department of Defense Appropriations Act**

This document provides an overview of unclassified space-based and -related programs requested in the Department of Defense's (DoD) FY 2015 Budget in comparison with the FY 2015 NDAA and the FY 2015 Defense Appropriations Act. The first section provides a comparison of funding levels for major satellites, programs and launch service acquisitions, followed by a more detailed analysis of each program. An appendix at the end of the document provides a chart of unclassified DoD space and space-related programs organized by the various funding proposals.

### Satellites, Programs and Launch Services – FY 2015 Funding\*

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
<b>Satellites &amp; Programs</b>						
Mobile User Objective System (MUOS)	53.0	221.0	212.0	221.0	219.0	221.0
Advanced Extremely High Frequency (AEHF)	594.6	613.3	613.3	597.2	594.9	607.5
Global Positioning System (GPS)	1,220.4	1,028.2	1,028.2	1,028.2	1,056.1	1,051.6
Space Based Infrared System (SBIRS)	873.1	796.4	796.4	788.4	780.8	796.4
Wideband Global SATCOM (WGS)	45.9	70.4	67.4	70.4	58.9	67.5
Weather System Follow-on	0.000	39.9	5.0	39.9	39.9	39.9
Space Fence	292.4	214.1	214.1	214.1	200.1	154.1
JSPOC Mission Systems (JSPOC)	58.5	73.8	73.8	73.8	73.8	73.8
<b>Launch</b>						
Evolved Expendable Launch Vehicle (EELV)	1,512.8	1,381.0	1,516.0	1,481.0	1,346.0	1,428.7

\* Please note that the numbers used for this table reflect the numbers explicitly called out in the relevant document. In some cases, the sum of the budgets for each category does not match the total funding level given in the document.

## Mobile User Objective System

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
<b>RDT&amp;E</b>	35.952	12.300	12.300	12.300	12.300	12.300
Mobile User Objective System (MUOS)	35.952	12.300	12.300	12.300	12.300	12.300
<b>Procurement</b>	16.914	208.700	199.700	208.700	206.700	208.700
Fleet Satellite Comm Follow-On	16.914	208.700	199.700	208.700	206.700	208.700
<b>Total</b>	<b>52.866</b>	<b>221.000</b>	<b>212.000</b>	<b>221.000</b>	<b>219.000</b>	<b>221.000</b>

### Mission

The [Mobile User Object System \(MUOS\)](#) is a narrowband military satellite communications (MILSATCOM) system that supports a worldwide, multi-service population of mobile and fixed-site terminal users with narrowband beyond-line-of-sight satellite communications (SATCOM) services. Capabilities will include a considerable increase to current narrowband SATCOM capacity as well as significant improvement in availability for small terminals. MUOS will augment and replace the eight [Ultra High Frequency Follow-On \(UFO\)](#) system satellites that currently provide narrowband tactical communications. On February 24, 2012 the first Mobile User Objective System satellite was successfully launched.

### President's FY 2015 Department of Defense Budget Request

#### Research, Development, Test & Evaluation (RDT&E):

- \$12.300 million for MUOS;

#### Procurement:

- \$181.090 million for EELV launch vehicle;
- \$1.782 million for EELV launch vehicle production;
- \$7.130 million for satellite production;

### FY 2015 Congressional Action

#### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$212 million for the MUOS program in FY 2015, \$9 million below the President's FY 2015 request.
  - The \$9 million reduction comes out of the MUOS Procurement account. The bill cites "excess to need" as the rationale for the decrease.
- The Committee Report states that the Committee "supports the Department of the Navy's Mobile User Objective System (MUOS) space program." The Committee Report notes that the Committee is "aware that MUOS will provide a critical communication capability for the warfighter by enabling greater mobility, higher data rates, and improved operational availability." In addition, the Committee "is aware that MUOS has two payloads, one to continue the legacy narrowband communications capability and another with a modern adaptation of Wideband Code Division Multiple Access (WCDMA) cellular technology." With that said, the Committee "is concerned that the modern WCDMA payload, which represents the primary purpose of developing a MUOS system, is unavailable for use by the warfighter."
- The Committee Report goes on to note that the "current Navy schedule projects the MUOS space and ground system to be operational in the first quarter of fiscal year 2015, but that the user terminals will not be available until 21 months later." The Committee Report states that the Committee "is disappointed with this lack of synchronization in delivery of capability to the warfighter." Therefore, the Committee would direct the Secretary of the Navy, in coordination with the Under Secretary of Defense for Acquisition, Technology, and Logistics, "to provide a briefing to the House Committee on Armed Services by December 1, 2014, on a plan to accelerate the fielding of the user terminals in support of the MUOS program."

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SASC passed FY 2015 NDAA would authorize to appropriate \$221 million for MUOS to fully fund the President's FY 2015 request.
- Under the section titled "items of special interest", within the Committee Report (S. Report 113-176), there is a section that addresses "Mobile User Objective System Ground Terminals." The section notes that MUOS "is a satellite constellation that will replace the aging Ultra High Frequency Follow On (UFO) satellite constellation." With that said, "the Committee has a number of ongoing concerns" about the MUOS program. Those concerns include:
  - First, "whether the MUOS constellation becomes fully operational in time to replace the aging UFO fleet of satellites."
  - Second, "fielding of a valid terminal to fully utilize the MUOS waveform."
  - Third, "questions remain about the end-to-end system integration of the ground stations to satellites and the ground terminals, including associated costs."
- Therefore, the Committee would direct "the Secretary of the Navy to report, no later than October 31, 2014, on the status of launch the MUOS satellites in order to replace the UFO fleet, the end-to-end integration of the MUOS system, the ability to procure user terminals meeting the MUOS waveform, and whether existing software defined or other terminals can be upgraded to utilize the waveform at a lower or comparable cost."

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$219 million for MUOS in FY 2015, \$2 million below the President's FY 2015 request. Accounts affected include:
  - The \$2 million reduction comes out of the MUOS Procurement account. The Committee Report cites "support funding carryover" as the rationale for the decrease.
- The Committee Report notes that the "synchronization of ground terminals with the launch of satellites is a constant challenge for satellite communication systems." The Committee Report states that the Committee is concerned that "if the Department of Defense relies entirely upon acquisition of new terminals for the Mobile User Objective System (MUOS), the Department may not take advantage of the increased capability the MUOS constellation provides." Therefore, the Committee "encourages the Secretary of Defense to consider the upgrade of existing communications terminals to accelerate the fielding of full MUOS capability to as many users as possible."

SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$221 million for MUOS to fully fund the President's FY 2015 request.
- The Committee Report notes that the Committee "is aware that the Department of the Navy is investigating methodologies to decrease interference in satellite communication between the Mobile User Objective System [MUOS] satellite transmission and the terminals." With that said, the Committee "is concerned about problems associated with interference in ground terminals for wideband satellite communications systems and encourages further development of technologies that can effectively address this interference." Therefore, the Committee "fully funds the budget request for the satellite communication development program and encourages the Navy to work with small businesses to provide an affordable solution."

## Advanced Extremely High Frequency

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	HASC Proposed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
RDT&E	265.872	314.378	314.378	298.378	296.038	308.578
Advanced MILSATCOM	183.134	192.038	192.038	183.038	192.038	192.038
Evolved AEHF MILSATCOM	82.500	122.340	122.340	115.340	104.000	116.540
Procurement	328.736	298.890	298.890	298.890	298.890	298.890
Advanced EHF SVs 3 and 4	37.444	67.866	67.866	67.866	67.866	67.866
Advanced EHF SVs 5 and 6	290.906	231.024	231.024	231.024	231.024	231.024
<b>Total</b>	<b>593.984</b>	<b>613.268</b>	<b>613.268</b>	<b>597.268</b>	<b>594.928</b>	<b>607.468</b>

### Mission

The [Advanced Extremely High Frequency \(AEHF\)](#) system is a joint service satellite communications system that will provide survivable, anti-jam, worldwide secure communications for strategic and tactical users. AEHF is the follow on program to the existing extreme high frequency system [MILSTAR satellite](#), providing ten times the throughput and greater than five times the data rate of the current MILSAT II satellites. AEHF is also a cooperative program that includes International Partners: Canada, the United Kingdom, and the Netherlands. On May 4, 2012, the second Advanced EHF satellite was successfully launched.

### President's FY 2015 Department of Defense Budget Request

#### Research, Development, Test & Evaluation (RDT&E):

- \$125.172 million for AEHF Interim Contractor Support (ICS);
- \$66.866 million for AEHF Key Management Infrastructure (KMI) transition;
- \$20.000 million for AEHF SV 6 flight crypto and future AEHF parts obsolescence mitigation;
- \$46.710 million for AEHF Capabilities Insertion Program (CIP);
- \$21.325 million for protected MILSATCOM "design for affordability";
- \$23.795 million for protected tactical demonstration;
- \$10.510 million for evolved AEHF (E-AEHF) strategic only;

#### Procurement:

- \$39.906 million for checkout and launch for AEHF space vehicle (SV) 3 and 4;
- \$6.346 million for AEHF SV 3 and 4 technical support (FFRDC) to include obsolescence and DMS studies and analyses (PMA);
- \$4.641 million for AEHF SV 3 and 4 program office support (PMA);
- \$4.138 million for AEHF SV 3 and 4 enterprise systems engineering & integration (SE&I);
- \$12.835 million for GFP – ACF/IC2 interim contractor support (all labor);
- \$27.960 million for support – support cost element category;
- \$198.891 million for AEHF SV 5 and 6 block buy;
- \$1.840 million for command and control systems-consolidated (CCS-C) launch support for AEHF 5 and 6;
- \$12.712 million FOR AEHF SV 5 and 6 technical support (FFRDC) to include obsolescence/DMS studies and analyses (PMA);
- \$9.294 million for AEHF program office support (PMA);
- \$8.287 million for AEHF SV 5 and 6 enterprise systems engineering & Integration (SE&I);
- The Resilient Basis for SATCOM (RBS) in Joint Operations study directed an Analysis of Alternatives (AoA) to investigate how best to provision for protected MILSATCOM capabilities beyond SV-6. The Protected Satellite Communications Services (PSCS) AoA has begun and is expected to inform the FY 16 budget formulation. The validated 2012 Functional Availability Report (FAR) requires AEHF replenishment satellites beginning in 2024 and Advance Procurement for the AEHF Follow-on was funded in the FY 14 President's Budget beginning in FY 2016. However, current functional availability forecast indicates replenishment for a four satellite AEHF constellation is not required until 2027. Therefore, the AEHF

Follow-on funds have been removed but may be restored should the PSCS AoA propose additional AEHF satellites.

### **FY 2015 Congressional Action**

#### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$613 million to fully fund AEHF at the President's FY 2015 request.
- Section 218 states that "of the funds authorized to be appropriated by this Act or otherwise made available for Fiscal Year 2015 for research, development, test, and evaluation, Air Force, for the protected tactical demonstration and protected military satellite communications testbed of the Advanced Extremely High Frequency program, not more than 50 percent may be obligated or expended on alternative approaches to the program of record for such program until":
  - First, "the completion of the ongoing Analysis of Alternatives (AoA) for such program of record;" and
  - Second, "a period of 60 days has elapsed following the date on which the Secretary of the Air Force and the Commander of the United States Strategic Command jointly provide to the congressional defense committees a briefing on the findings and recommendations of the Secretary and Commander under such Analysis of Alternatives (AoA), including the cost evaluation of the Director of Cost Assessment and Program Evaluation (CAPE)."
- With that said, the limits in 218 would "not apply to efforts to examine and develop technology insertion opportunities for the program of record."

#### SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SACS passed FY 2015 NDAA would authorize to appropriate \$597 million for AEHF, \$16 million below the President's FY 2015 request. Accounts affected include:
  - A \$9 million reduction for "satellite contractor support" within the Advanced MILSATCOM project.
  - A \$7 million reduction for "protected tactical demonstration" within the Evolved AEHF MILSATCOM project.

#### House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$594 million for AEHF in FY 2015, \$18 million below the President's FY 2015 request. Accounts affected include:
  - The \$18 million reduction comes out of the Evolved AEHF MILSATCOM research and development account. The Committee Report cites "SMI excess growth" as the rationale for the decrease.

#### SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$607 million for AEHF in FY 2015, \$6 million below the President's FY 2015 request. Accounts affected include:
  - The \$5.8 million reduction comes out of the Evolved AEHF MILSATCOM research and development account. The Committee Report cites "excessive program management services" as the rationale for the decrease.
- The Committee Report notes that "recently, the Department of Defense has begun to shift its perspective of the architecture for space-based capabilities away from monolithic space platforms to creative distribution of payloads on national, civil, and commercial satellites." The Committee Report states that the Committee "firmly believes that movement away from large satellites, where possible, will result in significant cost savings and reduce the schedule to deliver payloads into orbit." Further, the Air Force "is entering into a pathfinder program with the commercial satellite communications industry that may provide enhanced coverage at a lower cost to both the Air Force and the commercial provider." The Committee "commends the Department of Defense and the Air Force for their unconventional approach to ensure viable space-based capability for years to come," and "encourages the Air Force to use funds appropriated for the space modernization initiative to further implement these new space-based capability strategies."

## Global Positioning System

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	HASC Proposed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
<b>RDT&amp;E</b>	702.009	668.990	668.990	668.990	668.990	668.990
GPS III Space Segment	201.276	212.571	212.571	212.571	212.571	212.571
GPS III - New Generation Operational Control Segment	373.500	299.760	299.760	299.760	299.760	299.760
NAVSTAR Global Positioning System (User Equipment)	127.233	156.659	156.659	156.659	156.659	156.659
<b>Procurement</b>	518.420	359.218	359.218	359.218	387.128	382.618
GPS IIIA Space Segment	398.431	235.397	235.397	235.397	235.397	228.797
GPS III Space Segment Advance Procurement	52.167	57.000	57.000	57.000	87.000	87.000
GPS IIF and launch support	55.997	52.090	52.090	52.090	50.000	52.090
OCS COTS Upgrade	9.774	12.656	12.656	12.656	12.656	12.656
NAVSTAR GPS Space	2.053	2.075	2.075	2.075	2.075	2.075
<b>Total</b>	<b>1,220.431</b>	<b>1,028.208</b>	<b>1,028.208</b>	<b>1,028.208</b>	<b>1,056.118</b>	<b>1,051.608</b>

### Mission

The [Navstar Global Positioning System \(GPS\)](#) provides for worldwide, accurate, common grid three-dimensional positioning/navigation for military aircraft, ships and ground personnel. The system also has applications for civil, scientific and commercial functions.

### President's FY 2015 Department of Defense Budget Request

#### Research, Development, Test & Evaluation (RDT&E):

- \$1.434 million for Search and Rescue GPS (SAR/GPS);
- \$162.955 million for GPS III SVs 1 and 2;
- \$32.900 million for Space Modernization Initiative (SMI);
- \$15.282 million for systems engineering/launch/on-orbit support and testing;
- \$220.736 million for GPS III next generation operational control system (OCX) development;
- \$15.872 million for GPS III next generation operational control system (OCX) technical support;
- \$63.152 million for GPS III Enterprise Integrator;
- \$132.944 million for Military Global Positioning System User Equipment (MGUE) increment 1 technology development;
- \$15.000 million for MGUE advanced technology;
- \$9.389 million for system/platform integration and performance certification;
- \$6.326 million for information assurance and test/evaluation;

#### Procurement:

- \$0.500 million for GPS III SV 3 through 6;
- \$3.500 million for GPS III SV 3 through 6;
- \$2.637 million for GPS SV 3 through 8 launch/on-orbit support;
- \$0.292 million for GPS III SV 3 through 8;
- \$12.181 million for GPS III SV 3 through 8 launch/on-orbit support;
- \$4.000 million for ICS Labor – GPS III SV 3 through 8 on-orbit incentive;
- \$257.492 million for GPS III SV 9+;
- \$3.072 million GPS III SV 9+ search and rescue (SAR) GPS;
- \$5.530 million A&AS – GPS III SV 9+ FFRDC;
- \$14.833 million A&AS – GPS III SV 9+ PMA;



- \$57.000 million GPS II SV 10 long lead items (e.g., atomic clocks, critical bus hardware items, and other long lead components);
- \$0.995 million for GPS IIF integration and checkout;
- \$24.975 million for GPS IIF launch services planning;
- \$6.959 million for GPS IIF storage reactivation and transport;
- \$1.414 million for GPS IIF ICS Labor – technical support;
- \$6.857 million for GPS IIF A&AS – program support;
- \$10.890 million for GPS IIF ICS labor – on-orbit planning support;
- \$2.975 million for Navstar GPS user equipment;

### **FY 2015 Congressional Action**

#### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$1,028 million to fully fund GPS programs at the President’s FY 2015 request.
- The Committee Report states that the Committee “fully supports investments in the Global Positioning System (GPS) to maintain U.S. military preeminence in positioning, navigation, and timing.” The Committee Report specifically points out that the “Department of Defense is working to field the military code (M-code), which is a capability designed to provide improved resistance to existing and emerging threats, to include jamming.” The Committee Report notes that “in the committee report (H. Rept. 113-102) accompanying the National Defense Authorization Act for Fiscal Year 2014,” the Committee indicated “its concern that the current schedule for GPS III spacecraft, Next Generation Operational Control System, and the user equipment is not aligned.” The Committee “believes that this is still a valid concern.” In addition, the Committee notes “the requirements stated in section 913 of the Ike Skelton National Defense Authorization Act for Fiscal Year 2011 ([Public Law 111-383](#)) requiring the Department to purchase M-code capable user equipment during the fiscal years after Fiscal Year 2017.”
- Therefore, the Committee would direct the “Comptroller General of the United States to provide a report to the congressional defense committees by March 15, 2015, on the progress the Department is making in deploying an M-code capability.” Further, the assessment would be required to include “current and planned investments; whether key milestones are being met; the projected ability to meet the requirements in section 913 of Public Law 111-383; and an identification of the challenges that GPS faces and possible recommendations on how to make the program more successful in delivering M-code capabilities.”
- The Committee Report states that the Committee “is aware of the Air Force’s most recent plan to delay the procurement and launch of GPS III constellation satellites.” In addition, “while the Committee is aware that the Air Force may have made some technical changes to enable better power management of on-orbit satellites, this does not affect the overall constellation fragility as characterized by factors such as satellite age and technical state of internal redundancy or lack thereof.” With that said, the Committee “is concerned with the revised Air Force plan and has not seen any detailed analysis to support the significant changes to the schedule.”
- Therefore, the Committee would direct the Secretary of the Air Force “to provide a report to the congressional defense committees, by November 1, 2014, on the GPS satellite constellation and replenishment plan.” The GPS plan would be required to include the following:
  - First, “current satellite and launch vehicle acquisition schedule;”
  - Second, “cost advantages and disadvantages of maintaining a satellite and launch vehicle acquisition schedule as planned in the Fiscal Year 2014 President’s budget, as compared to the current schedule;”
  - Third, “age, design life, and technical state of all on-orbit assets;”
  - Fourth, “calculated functional availability as identified with planned launches;”
  - Fifth, “risk assessment of not meeting the required functional availability;”
  - Sixth, “options to lower the risk assessment, to include faster replenishment of satellites;”

- Seventh, “national security impact if the necessary capability is not provided;” and
- Eighth, “risks of further schedule delays to the planned satellite and launch schedule.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SASC passed FY 2015 NDAA would authorize to appropriate \$1,028 million to fully fund GPS programs at the President’s FY 2015 request.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$1,056 million for GPS in FY 2015, \$28 million above the President’s FY 2015 request. Accounts affected include:
  - A \$2 million reduction comes out of the GPS IIF and launch support procurement account. The Committee Report cites “excess contract support” as the rationale for the decrease.
  - A \$30 million increase in the GPS III Space Segment Advance Procurement account. The Committee Report cites “additional funds for advance procurement” as the rationale for the increase. The Committee Report notes that “GPS III is an acquisition program based on efficiencies gained through larger, predictable buys with insertion of evolutionary capability improvements.” With that said, “the budget request reduces funding for future acquisitions to one satellite per year, increasing the overall life-cycle cost of the program.” Therefore, the Committee recommended a \$30 million increase to “restore funding for future acquisitions at the level of two satellites per year.”
- The Committee Report notes that the Committee’s recommendation “includes full funding for the GPS III SMI budget.” The Committee Report goes on to state that within the \$32 million for GPS III SMI, the Committee would direct “the Secretary of the Air Force to allocate \$20,000,000 to study technological maturation, including the use of alternative digital GPS payload, and risk reduction consistent with the GPS enterprise analysis of alternatives.”
- Finally, the Committee Report notes that the “Military GPS User Equipment (MGUE) program provides M-code GPS receivers with improved capability to counter emerging threats and interference with positioning, navigation, and timing capabilities.” Further, the “Department of Defense will field MGUE receivers across a broad range of Army, Air Force, Navy, and Marine Corps platforms. The Committee understands that the Department is accelerating the implementation of M-code and supports those efforts.” In addition, the Committee “supports the Air Force strategy of implementing a proactive, collaborative MGUE platform integration activity to mitigate risk, and encourages the Service Secretaries to procure MGUE receivers in fiscal year 2016.”

SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$1,051 million for GPS in FY 2015, \$23 million above the President’s FY 2015 request. Accounts affected include:
  - A \$6.6 million reduction comes out of the GPS III Space Segment procurement account. The Committee Report states the Committee is “restoring acquisition accountability” to “launch support and on-orbit check-out early to need” as the rationale for the decrease.
  - A \$30 million increase in the GPS III Space Segment Advance Procurement account. The Committee Report cites “additional funds for advance procurement” as the rationale for the increase.
- The Committee Report notes that the Committee is “aware of technical and cost challenges with the current analog navigation payload on GPS III.” With that said, the Committee “believes that early Air Force investment, when combined with industry investment, into the development of a digital navigation payload will significantly reduce cost and schedule risk for the future GPS constellation.” The Committee Report notes that the FY 2015 budget request includes \$32.9 million for GPS II Space Modernization Initiative [SMI]. Further, the Committee “fully supports the Air Force’s SMI request and directs that of the amount appropriated, not less than \$20,000,000 shall be used to mature an alternate GPS digital payload.”



## Space Based Infrared System

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
<b>RDT&amp;E</b>	322.832	319.501	319.501	311.501	309.501	319.501
SBIRS High Element EMD	266.975	230.893	230.893	235.893	230.893	230.893
Space Modernization Initiative (SMI)	55.424	88.608	88.608	75.608	78.608	88.608
<b>Procurement</b>	549.995	476.984	476.984	476.984	471.303	476.984
GEO SVs 3 and 4	115.284	95.189	95.189	95.189	93.396	95.189
GEO SVs 5 and 6	360.667	318.450	318.450	318.450	314.562	318.450
HEO hosted payloads 3 and 4	48.636	37.245	37.245	37.245	37.245	37.245
Space Based IR Sensor Program	25.408	26.100	26.100	26.100	26.100	26.100
<b>Total</b>	<b>872.394</b>	<b>796.485</b>	<b>796.485</b>	<b>788.485</b>	<b>780.804</b>	<b>796.485</b>

### Mission

The [Space Based Infrared Systems \(SBIRS\)](#) program will provide early warning for the United States and its allies in four mission areas: missile warning, missile defense, technical intelligence and battle-space awareness. SBIRS will augment and then replace the [Defense Support Program \(DSP\)](#) constellation. SBIRS will provide shorter revisit times and greater sensitivity than the current DSP constellation. SBIRS provides increased detection and tracking performance in order to meet requirements in U.S. Space Command's Capstone Requirements Document and Operational Requirements Document (ORD).

### President's FY 2015 Department of Defense Budget Request

#### Research, Development, Test & Evaluation (RDT&E):

- \$230.893 million for SBIRS EMD;
- \$11.597 million for Evolved SBIRS;
- \$23.159 million for data exploitation;
- \$21.612 million for hosted payloads;
- \$29.747 million for Wide Field of View (WFOV) testbeds;
- \$2.493 million for management services;

#### Procurement:

- \$11.471 million for Geostationary (GEO) Satellite Vehicles (SV) 3 and 4 hardware;
- \$42.370 million for GEO SVs 3 and 4 integration and assembly;
- \$7.875 million for GEO SVs 3 and 4 enterprise systems engineering and integration (SE&I);
- \$2.651 million for GEO SVs 3 and 4 launch vehicle and range integration;
- \$16.891 million for GEO SVs 3 and 4 launch operations and checkout;
- \$12.750 million for GEO SVs 3 and 4 advisory and assistance services (A&AS) (PMA);
- \$1.181 million for GEO SVs 3 and 4 program support (PMA: travel, supplies, etc.);
- \$207.248 million for GEO SVs 5 and 6 hardware;
- \$10.952 million for GEO SVs 5 and 6 integration and assembly;
- \$59.461 million for GEO SVs 5 and 6 obsolescence non-recurring;
- \$7.849 million for GEO SVs 5 and 6 other support;
- \$32.940 million for GEO SVs 5 and 6 FFRDC;
- \$6.827 million for HEO hosted payloads 3 and 4 enterprise systems engineering and integration (SE&I);
- \$2.299 million for HEO hosted payloads 3 and 4 launch vehicle and range integration;

- \$2.855 million for HEO hosted payloads 3 and 4 host accommodation;
- \$13.187 million for HEO hosted payloads 3 and 4 launch operations and checkout;
- \$11.054 million for HEO hosted payloads 3 and 4 advisory and assistance services (A&AS) (PMA);
- \$1.023 million for HEO hosted payloads 3 and 4 program support (PMA: Travel, supplies, etc.);

### **FY 2015 Congressional Action**

#### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$796 million to fully fund SBIRS programs at the President's FY 2015 request.
- Section 216 would limit the funds authorized to be appropriated for obligation and expenditure on the for data exploitation under the Space-Based Infrared System in FY 2015 to not more than 50 percent "until the date on which the Secretary of the Air Force submits to the congressional defense committees certification that":
  - First, "such funds will be used in support of data exploitation of the current Space-Based Infrared Systems program of record, including the scanning and staring sensor;" or
  - Second, "the data from such program of record, including such scanning and staring sensor, is being fully exploited and no further efforts are warranted."
- The Committee Report states that the Committee "is concerned that the Air Force is not focusing on developing the capabilities to fully exploit the data from the existing SBIRS program." The Committee Report notes that "during the Fiscal Year 2014 budget request hearing for national security space activities, the Commander of Air Force Space Command was asked about SBIRS exploitation and responded that, 'We have not even scratched the surface, I think, of the potential that's there. We have another sensor that we haven't fully exploited yet as part of that satellite. We're doing a good job on the scanning sensor. The staring sensor, which has much better fidelity, we really haven't fully wrung out yet, because we've been so focused on getting the scanning sensor calibrated and certified.'" The Committee Report goes on to state that the Committee "supports the Commander of the Air Force Space Command's stated comments, and encourages the Air Force to focus on achieving full performance and exploitation of SBIRS."
- Section 217 states that "of the funds authorized to be appropriated by this Act or otherwise made available for Fiscal Year 2015 for research, development, test, and evaluation, Air Force, for the hosted payload and wide field of view testbed of the Space-Based Infrared Systems program, not more than 50 percent may be obligated or expended on alternative approaches to the program of record of such program until":
  - First, "the completion of the ongoing Analysis of Alternatives (AoA) for such program of record;" and
  - Second, "a period of 60 days has elapsed following the date on which the Secretary of the Air Force and the Commander of the United States Strategic Command jointly provide to the appropriate congressional committees a briefing on the findings and recommendations of the Secretary and Commander under such Analysis of Alternatives, including the cost evaluation of the Director of Cost Assessment and Program Evaluation (CAPE)."
- With that said, the limits in 217 would "not apply to efforts to examine and develop technology insertion opportunities for the program of record."

#### SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SASC passed FY 2015 NDAA would authorize to appropriate \$788 million for SBIRS, \$8 million below the President's FY 2015 request. Accounts affected include:
  - A \$5 million reduction for "hosted payload demonstration" within the Space Modernization Initiative project.
  - A \$8 million reduction for "wide field of view test bed" within the Space Modernization Initiative project.
  - A \$5 million increase to "upgrade mobile ground units (STRATCOM unfunded priority)" within the SBIRS High Element EMD project.

#### House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$780 million for SBIRS in FY 2015, \$16 million below the President’s FY 2015 request. Accounts affected include:
  - A \$10 million reduction comes out of the Space Modernization Initiative (SMI) research and development account. The Committee Report cites “wide field of view test beds” for the decrease.
  - A \$6 million reduction comes out of the SBIRS procurement account. The Committee Report cites “unjustified support cost increase” as the rationale for the decrease.
- The Committee Report states that the “Committee supports the Air Force decision to review the overhead persistent infrared mission to lower costs, increase resilience, and achieve better mission performance.” Further, the Committee “understands that the Department of Defense is conducting an Analysis of Alternatives to mitigate obsolescence and ensure resilient options beyond the current program of record.” Therefore, the Committee “encourages quick completion of this review to ensure adequate time to start operational demonstrations as appropriate and directs the Secretary of the Air Force to brief the findings of the review to the congressional defense committees immediately upon completion.”

#### SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$796 million to fully fund SBIRS programs at the President’s FY 2015 request.
- The Committee Report notes that recently, “the Department of Defense has begun to shift its perspective of the architecture for space-based capabilities away from monolithic space platforms to creative distribution of payloads on national, civil, and commercial satellites.” The Committee Report states that the Committee “firmly believes that movement away from large satellites, where possible, will result in significant cost savings and reduce the schedule to deliver payloads into orbit.” The Committee “commends the Department of Defense and the Air Force for their unconventional approach to ensure viable space-based capability for years to come,” and “encourages the Air Force to use funds appropriated for the space modernization initiative to further implement these new space-based capability strategies.”

## Wideband Global SATCOM System

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
RDT&E	12.553	31.425	31.425	31.425	23.925	31.425
Command and Control Sys- Consolidated (CCS-C)	12.553	16.425	16.425	16.425	16.425	16.425
WGS Space Systems Resiliency Upgrade	0.000	15.000	15.000	15.000	7.500	15.000
Procurement	33.398	38.971	35.971	38.971	34.998	36.071
WGS block II follow-on (B2FO)	33.398	38.971	35.971	38.971	34.998	36.071
<b>Total</b>	<b>45.951</b>	<b>70.396</b>	<b>67.396</b>	<b>70.396</b>	<b>58.923</b>	<b>67.496</b>

### Mission

The [Wideband Global SATCOM \(WGS\)](#) satellites an international and joint service satellite communications system that will provide high-capacity communications. The WGS system allows the DoD robust and flexible execution of command and control, communications computers, intelligence, surveillance, and reconnaissance (C4ISR), as well as battle management and combat support information functions. The WGS system is the follow-on to the [Defense Satellite Communications Systems \(DSCS\)](#). Each WGS satellite will deliver the equivalent capacity of the entire existing DSCS constellation.

### President's FY 2015 Department of Defense Budget Request

#### Research, Development, Test & Evaluation (RDT&E):

- \$16.425 million for Command and Control System-Consolidated (CCS-C) development;
- \$15.000 million for WGS upgrade;

#### Procurement:

- \$12.230 million for WGS block II follow-on (B2FO) checkout & launch/launch readiness;
- \$5.896 million for WGS B2FO storage, reactivation and transport;
- \$5.609 million for command and control system-consolidated (CCS-C) WGS B2FO support;
- \$0.234 million WGS B2FO test support;
- \$0.990 million WGS B2FO technical analysis support;
- \$13.002 million for WGS B2FO program management administration;
- \$1.010 million for WGS B2FO A&AS;

### FY 2015 Congressional Action

#### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$67 million for the WGS program in FY 2015, \$3 million below the President's FY 2015 request.
  - The \$3 million reduction comes out of the WGS Procurement account. The bill cites "unjustified growth" as the rationale for the decrease.

#### SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SASC passed FY 2015 NDAA would authorize to appropriate \$70 million for WGS to fully fund the President's FY 2015 request.
- Under the section titled "items of special interest", within the Committee Report (S. Report 113-176), there is a section that addresses "projected workload at wide band satellite operations centers." The section notes the "Army is the designated scheduling agent for all Department of Defense owned wide band communications satellites whose workload continues to increase." Therefore, the Committee would direct the Secretary of the Army "to project the workload requirements for scheduling wideband

communication over the next 10 years consistent with the mix of media study.” The report would be due no later than February 28, 2015.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$58 million for WGS in FY 2015, \$12 million below the President’s FY 2015 request. Accounts affected include:
  - A \$3.9 million reduction comes out of the WGS block II follow-on (B2FO) procurement account. The Committee Report cites “excess launch support” as the rationale for the decrease.
  - A \$7.5 million reduction comes out of the WGS resiliency upgrade research and development account. The Committee Report cites “resiliency funding excess to need” as the rationale for the decrease.

SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$67 million for WGS in FY 2015, \$3 million below the President’s FY 2015 request. Accounts affected include:
  - A \$2.9 million reduction comes out of the WGS block II follow-on (B2FO) procurement account. The Committee Report cites “support cost growth” as the rationale for the decrease.

## Weather System Follow-on

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
RDT&E	0.000	39.901	5.001	39.901	39.901	39.901
Weather System Follow-on	0.000	39.901	5.001	39.901	39.901	39.901
<b>Total</b>	<b>0.000</b>	<b>39.901</b>	<b>5.001</b>	<b>39.901</b>	<b>39.901</b>	<b>39.901</b>

### Mission

The Weather System Follow-on (WSF) is the Department of Defense's follow-on to the [Defense Meteorological Satellite Program \(DMSP\)](#) and other DoD environmental monitoring satellites. WSF will be comprised of a group of systems to provide timely, reliable, and high quality space-based remote sensing capabilities that meet global environmental observations of atmospheric, terrestrial, oceanographic, solar-geophysical and other validated requirements.

### President's FY 2015 Department of Defense Budget Request

#### Research, Development, Test & Evaluation (RDT&E):

- \$39.901 million for WSF;

### FY 2015 Congressional Action

#### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$5 million for the Weather Satellite Follow-On program in FY 2015, \$34.9 million below the President's FY 2015 request.
  - The \$34.9 million reduction comes out of the Weather Satellite Follow-On RDT&D account. The \$34.9 million would be "realigned to DMSP-20 launch" under the EELV account.
- Section 215 would direct the Secretary of the Air Force to:
  - First, "place the last remaining satellite of the defense meteorological satellite program on the launch manifest for the Evolved Expendable Launch Vehicle programs;" and
  - Second, "establish an additional launch, for acquisition during Fiscal Year 2015, under the Evolved Expendable Launch Vehicle program using full and open competition among certified providers."
- In addition, section 215 would limit the funds authorized to be appropriated for obligation and expenditure on the weather satellite follow-on system in FY 2015 to not more than 25 percent "until the date on which the Secretary of the Air Force submits to the congressional defense committees" a "plan to meet the meteorological and oceanographic collection requirements of the Joint Requirements Oversight Council." The plan would be required to include the following:
  - First, "How the Secretary will launch and use existing assets of the defense meteorological satellite program;"
  - Second, "How the Secretary will use other sources of data, such as civil, commercial, satellite weather data and international partnerships, to meet such requirements;"
  - Third, "an explanation of the relevant costs and schedule;" and
  - Fourth, "the requirements of the weather satellite follow-on system."

#### SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SASC passed FY 2015 NDAA would authorize to appropriate \$39 million for Weather Satellite Follow-On program to fully fund the President's FY 2015 request.
- Under the section titled "items of special interest", within the Committee Report (S. Report 113-176), there is a section that addresses "Electro-optical infrared capabilities for the follow on weather satellite." The section states that the Committee would direct "the Secretary of the Air Force to brief the congressional defense committees on whether other technical capabilities, agencies, and/or countries can provide or fulfill the military requirements for electro-optical and infrared weather imaging."



Further, “this briefing should address the cost-effectiveness and performance record of the various options as well as how the Air Force intends to avoid reliance on non-allied foreign sources.” The briefing would be required to occur no later than September 30, 2014.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$39 million for Weather Satellite Follow-On program to fully fund the President’s FY 2015 request.

SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$39 million for Weather Satellite Follow-On program to fully fund the President’s FY 2015 request.

## Evolved Expendable Launch Vehicle

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
<b>RDT&amp;E</b>	24.963	0.000	0.000	100.000	0.000	7.000
Evolved Expendable Launch Vehicle	24.963	0.000	0.000	100.000	0.000	7.000
<b>Procurement</b>	1,487.900	1,381.046	1,516.046	1,381.046	1,346.046	1,421.746
Evolved Expendable Launch Vehicle (# of cores)	809.037 (5)	630.903 (3)	765.903 (4)	630.903 (3)	630.903 (3)	733.603 (4)
Space Expendable Launch Capability (SELC)	678.863 <sup>†</sup>	750.143	750.143	750.143	715.143	688.143
<b>Total</b>	<b>1,512.863*</b>	<b>1,381.046</b>	<b>1,516.046</b>	<b>1,481.046</b>	<b>1,346.046</b>	<b>1,428.746</b>

\*The House passed FY 2015 Defense Appropriations bill would rescind \$118.7 million of FY 2014 EELV funding.

\*The SAC passed FY 2015 Defense Appropriations bill would rescind \$118.7 million of FY 2014 EELV funding.

### Mission

The [Evolved Expendable Launch Vehicle \(EELV\)](#) program was designed to improve the United States' access to space by making space launch vehicles more affordable and reliable. The program satisfies the government's National Launch Forecast (NLF) requirements.

### President's FY 2015 Department of Defense Budget Request

#### Research, Development, Test & Evaluation (RDT&E):

- N/A

#### Procurement:

- \$745.183 million for Space Expendable Launch Capability (SELC) launch capability;
- \$0.568 million for SELC program management administration – other government costs;
- \$4.392 million for SELC range, certification, and other direct government costs;
- \$466.671 million for launch services; 3 launch cores;
- \$5.991 million for program management administration – other government costs;
- \$7.210 million for program management administration – contractor services;
- \$19.938 million for systems engineering and integration
- \$31 million for range, certification, and other direct government costs;
- \$99.419 million for mission assurance;

#### Acquisition Strategy:

- The Air Force structured the EELV program with a new cost saving acquisition strategy that includes a quantity and rate commitment with the current provider and enables competition if one or more New Entrants are certified. This strategy stabilizes the industrial base, provides predictability to maintain mission success, and reduces costs. The Air Force, National Reconnaissance Office (NRO), and NASA agreed to a coordinated strategy for certification of New Entrants to launch payloads in support of national security space and other U.S. government requirements. The Air Force continues to actively evaluate the addition of New Entrants to reliably launch national security space requirements. Once a New Entrant demonstrates a successful launch the Air Force intends to award integration studies. The number of competitive launch opportunities from FY 2015-2017 changed from 14 to 7 due to launch manifest changes. If competition is not viable at the time of need, missions will be awarded to the incumbent. The Air Force plans to compete all launch service procurements beginning in FY 2018, if there is more than one certified provider.

<sup>†</sup> P.L. 113-76 appropriated \$678 million for Expendable Launch Capability in FY 2014, but in the FY 2015 budget request that number is lowered to \$559 million due to "Prior year funding buy-down of FY 2014 launch capability requirements contributed to meeting FY 2014 Bipartisan Budget Act (BBA) objectives. FY 2015 request fully funds launch capability requirements without prior-year adjustments."

- In 2013, the Air Force combined the Launch Services contract and Launch Capability contract into a single contract. The Launch Capability cost plus incentive fee contract line items provide launch infrastructure support which includes, but is not limited to, systems and factory engineering, program management, standard integration/testing, launch and range activities, infrastructure, parts obsolescence mitigation, post mission analysis, and studies and analysis. The contract features a Mission Success Incentive fee which incentivizes both mission success and cost control for cost plus contract line items.

#### **FY 2015 Congressional Action**

##### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$1,516 million for the EELV program in FY 2015, \$135 above the President's FY 2015 request.
  - The \$135 million increase would be applied to the EELV Procurement account. The \$135 million would pay for the "DMSP 20 launch," \$34.9 million of which was realigned from the Weather System Follow-On account. Further, the DMSP 20 launch would be an "additional competition launch" opportunity in FY 2015.
- Section 1602 would direct the Secretary of the Air Force to "provide to the appropriate congressional committees notice of each change to the Evolved Expendable Launch Vehicle acquisition plan and schedule from the plan and schedule included in the budget submitted by the President" for FY 2015. The notification would be required to include:
  - First, "an identification of the change;"
  - Second, "a national security rationale for the change;"
  - Third, "the impact of the change on the Evolved Expendable Launch Vehicle block buy contract;"
  - Fourth, "the impact of the change on the opportunities for competition for certified Evolved Expendable Launch Vehicle launch provides;" and
  - Fifth, "the costs or savings of the change."
- The required notification would be applied to "fiscal years 2015, 2016, and 2017."

##### SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SACS passed FY 2015 NDAA would authorize to appropriate \$1,481 million for the EELV program in FY 2015, \$100 above the President's FY 2015 request. The \$100 million increase would be applied to the EELV R&D account. The \$100 million would pay for a "liquid rocket engine." The liquid rocket engine would be funded under the direction of Section 1629.
- Section 1629 would direct the Secretary of Defense to "develop a plan for the production of a liquid rocket engine, by 2019, capable of supporting the requirements of the Department of Defense for a medium or heavy lift launch vehicle to support national security launch missions." The development would be required to "provide for the use of competitive procedures in accordance with section 2304 of title 10, United States Code." The plan would also be required to be submitted to Congress by no later than September 30, 2014.
  - Additionally, "to the extent provided in appropriations Acts, the Secretary of the Air Force may transfer from the funds" that were "authorized to be appropriated for fiscal year 2014 by section 201 of the National Defense Authorization Act for Fiscal Year 2014 (Public Law 113-66; 127 Stat. 703) and available for research, development, test, and evaluation, Air Force, for the dual launch capability (PE# 0604853F)" that "not more than \$20,000,000 to other, higher priority programs of the Air Force if the Secretary determines there is an urgent need to do so."
- Section 1623 would prohibit the Secretary of Defense from entering into or renewing "a contract, on or after the date of the enactment of this Act, for the procurement of property or services for space launch activities under the Evolved Expendable Launch Vehicle program from any person if that person purchases supplies critical for space launch activities covered by the contract from a Russian entity." However, the Secretary of Defense "may waive the prohibition" with "respect to a contract for the procurement of property or services for space launch activities if the Secretary determines, and certifies to the congressional defense committees not later than 30 days before the waiver takes effect," that:

- First, “the waiver is necessary for the national security interests of the United States;” and
- Second, “the space launch services and capabilities covered by the contract could not be obtained at a fair and reasonable price without the purchase of supplies critical for space launch activities from a Russian entity.”
- Section 1624 would direct the Comptroller General of the United States to “submit to the congressional defense committees a report on the Evolved Expendable Launch Vehicle program that includes an assessment of the advisability of the Secretary of Defense requiring, when selecting launch providers for the program using competitive procedures as described in section 2304 of title 10, United States Code, that new entrant launch providers or incumbent launch providers establish or maintain business systems that comply with the data requirements and cost accounting standards of the Department of Defense, including certified cost or price data.” The report would be required to be submitted to Congress no later than March 31, 2015.
- Section 1625 would direct the Comptroller General of the United States to submit to the congressional defense committees, not later than 180 days after the date of enactment of this Act, “a report on the risks to the Evolved Expendable Launch Vehicle program of reliance on foreign manufacturers that includes the following”:
  - First, “an assessment of the degree to which the Air Force, through its contractors and subcontractors, relies on foreign manufacturers for supplies necessary for any qualified or certified provider of the Evolved Expendable Launch Vehicle.”
  - Second, “an assessment of the extent to which such reliance subjects the Evolved Expendable Launch Vehicle program to: a supply chain disruption relating to geopolitical events or other reasons; introduction of counterfeit parts; limited price transparency; and other areas of risk identified by the Comptroller General.”
  - Third, “recommendations for measures the Air Force could take to mitigate the risks to the Evolved Expendable Launch Vehicle program of reliance on foreign manufacturers and a cost-benefit analysis for each such recommendation.”
- Section 1626 states that “relative to the number of rocket cores for which space launch providers may submit bids or competitive proposals under competitive procedures pursuant to the fiscal year 2015 National Security Space Launch Procurement Forecast, the Secretary of Defense” would be required to:
  - First, “in fiscal year 2015, increase by one the number of such cores for which such providers may submit bids or competitive proposals; and
  - Second, “for fiscal years 2015 through 2017, increase by one (in addition to the core [mentioned above]) the number of such cores for which such providers may submit bids or competitive proposals, unless the Secretary”:
    - “determines that there is no practical way to increase the number of such cores for which such providers may submit bids or competitive proposals and remain in compliance with the requirements of the firm fixed price contract for 36 rocket engine cores over the 5 fiscal years beginning with fiscal year 2013;” and
    - “not later than 45 days after making that determination, submits to the congressional defense committees: a certification that there is no practicable way to increase the number of such cores for which such providers may submit bids or competitive proposals and remain in compliance with the requirements of the firm fixed price contract for 36 rocket engine cores over the 5 fiscal years beginning with fiscal year 2013; and a description of the basis for the determination.”
- Under the section titled “items of special interest”, within the Committee Report (S. Report 113-176), there is a section that addresses “analysis of satellites available for open competition.” The section states that “for fiscal year 2015, the Air Force moved the launch vehicle for the Space-Based Infrared System (SBIRS) geostationary orbit (GEO) Satellite 4 from a phase 1A potential competitive launch opportunity to the 36 core block buy.” With that said, the Committee “understands that this satellite falls within the launch parameters that a new entrant is capable of launching.” Therefore, the Committee “encourages increased opportunities for competition and directs the Secretary of the Air Force to report to the Committee whether it is feasible to move the SBIRS GEO Satellite 4 back to the

phase 1A competitive opportunities within the future years defense program (FYDP) or any other satellite to help offset the decrease in the allotment of open competition satellites across the FYDP.”

- Under the section titled “items of special interest”, within the Committee Report (S. Report 113-176), there is a section that addresses “space launch.” The section states that to address the U.S. “critical national security space requirements,” the Chairman is “pleased that the bill includes language [Section 1629] that will end” U.S. “dependence—and eventually prohibit—the use of Russian rocket engines for National Security Space launch.” Further, “to begin the process of developing and procuring a new domestically sourced world class rocket engine, the bill authorizes \$20 million in funds already appropriated in FY14 and an additional \$100 million in FY15 to further expedite the development.” The Chairman goes on to state that “this effort, which quite frankly should have started years ago, is a national priority and will require a whole-of-government approach and sustained funding over the next six years.” “The provision recognizes that the need to develop a domestic engine should be pursued regardless of the viability of a Russian rocket engine and is consistent with the findings and recommendations of the Air Force chartered quick reaction review on the ‘RD-180 Availability Risk Mitigation Study Summary’ by Maj. Gen. (ret) H.J. ‘Mitch’ Mitchell.”

#### House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$1,346 million for EELV in FY 2015, \$35 million below the President’s FY 2015 request. Accounts affected include:
  - A \$35 million reduction comes out of the Space Expendable Launch Capability procurement account. The Committee Report cites “excess growth” as the rationale for the decrease.
- The Committee Report states that the “Committee is concerned with the continued changes in the Evolved Expendable Launch Vehicle (EELV) program.” Therefore, the Committee would direct the Secretary of the Air Force to “provide notification to the congressional defense committees of each change to the EELV acquisition plan and schedule as compared to the plan and schedule included in the budget submission for fiscal year 2015.” The notification would be required to include: “an identification of the change, a national security rationale for the change, the impact of the change on the EELV block buy contract and launch manifest, the impact of the change on the opportunities for competition for certified EELV launch providers, and the costs or savings associated with the change.”

#### SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$1,428 million for EELV in FY 2015, \$48 million above the President’s FY 2015 request. Accounts affected include:
  - A \$62 million reduction comes out of the Space Expendable Launch Capability procurement account. The Committee Report states that the Committee is “improving funds management” with “forward financing” as the rationale for the change.
  - A \$22 million reduction comes out of the Evolved Expendable Launch Vehicle procurement account. The Committee Report cites “unit cost growth” as the rationale for the decrease.
  - A \$135 million increase to the Evolved Expendable Launch Vehicle procurement account. The Committee Report cites “one competitive launch” as the rationale for the increase.
  - A \$7 million increase to the Evolved Expendable Launch Vehicle research and development account. The Committee Report cites “space launch range services and capability” as the rationale for the increase. In addition, the Committee Report notes that “a lack of competition for launch services over the past decade has resulted in significant launch costs and disincentives for industry to invest in development to improve launch capabilities.” With that said, the Committee “believes additional competition can be achieved by creating new opportunities within the United States launch infrastructure, including commercial and State-owned launch facilities.” Further, “increasing the capability and number of launch facilities helps to ensure” the United States’ “ability to launch priority space assets.” Therefore, “to promote competition at launch facilities,” \$7 million would be “provided to spaceports or launch and range complexes that are commercially licensed by the Federal Aviation Administration and receive funding from the local or State government.” The \$7 million would be required to “be used to develop the

capacity to provide mid-to-low inclination orbits or polar-to-high inclination orbits in support of the national security space program.”



## Space Fence

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
RDT&E	292.474	214.131	214.131	214.131	200.131	154.131
Space Fence	292.474	214.131	214.131	214.131	200.131	154.131
<b>Total</b>	<b>292.474</b>	<b>214.131</b>	<b>214.131</b>	<b>214.131</b>	<b>200.131</b>	<b>154.131</b>

### Mission

The Space Fence effort will develop a system of ground-based sensors to improve upon the former Air Force Space Surveillance System (AFSSS), a Very High Frequency (VHF) radar operational from 1961 to 2013. The Space Fence will provide a more accurate and timely detection capability of smaller orbiting objects, primarily in low-earth orbit (LEO). The system will use higher frequency S-band radars at globally dispersed sites. As a result, it will greatly expand the uncued detection and tracking capacity of the Space Surveillance Network, from around 20,000 to up to 100,000-plus objects, while working in concert with other network sensors.

### President's FY 2015 Department of Defense Budget Request

#### Research, Development, Test & Evaluation (RDT&E):

- \$214.131 million for Space Fence;

### FY 2015 Congressional Action

#### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$214 million to fully fund the Space Fence at the President's FY 2015 request.

#### SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SASC passed FY 2015 NDAA would authorize to appropriate \$214 million for Space Fence program to fully fund the President's FY 2015 request.

#### House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$200 million for the Space Fence in FY 2015, \$14 million below the President's FY 2015 request.
  - The \$14 million reduction comes out of the Space Fence research and development account. The Committee Report cites "program delay" as the rationale for the decrease.

#### SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$154 million for the Space Fence in FY 2015, \$60 million below the President's FY 2015 request.
  - The \$60 million reduction comes out of the Space Fence research and development account. The Committee Report cites "program delay" as the rationale for the decrease.

## JSPOC Mission System (JMS)

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4870)	SAC passed FY 2015 Approps
RDT&E	58.523	73.779	73.779	73.779	73.779	73.779
Infrastructure	20.281	34.781	34.781	34.781	34.781	34.781
Mission Applications	36.242	38.998	38.998	38.998	38.998	38.998
<b>Total</b>	<b>58.523</b>	<b>73.779</b>	<b>73.779</b>	<b>73.779</b>	<b>73.779</b>	<b>73.779</b>

### Mission

The JMS Program is a Space Command and Control (C2) capability for the Commander, Joint Functional Component Command for Space (CDR JFCC SPACE). The JMS program is predominately a software effort that will produce an integrated, net-centric Service Oriented Architecture (SOA) and the necessary software applications to accomplish required missions. The program will provide a collaborative environment that will enhance and modernize space situational awareness (SSA) capabilities; create decision-relevant views of the space environment; rapidly detect, track and characterize objects of interest; identify/exploit traditional and non-traditional sources; perform space threat analysis; and enable efficient distribution of data across the space surveillance network (SSN).

#### President's FY 2015 Department of Defense Budget Request

##### Research, Development, Test & Evaluation (RDT&E):

- \$34.781 million for JMS Infrastructure increment 2;
- \$38.998 million for JMS Mission Applications increment 2;

#### FY 2015 Congressional Action

##### House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$73 million to fully fund the JMS at the President's FY 2015 request.

##### SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SASC passed FY 2015 NDAA would authorize to appropriate \$73 million for JMS program to fully fund the President's FY 2015 request.

##### House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$73 million for JMS program to fully fund the President's FY 2015 request.

##### SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$73 million for JMS program to fully fund the President's FY 2015 request.

## Satellite Communications Responsibilities of Executive Agent for Space

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- Section 1603 would direct the Secretary of Defense, not later than 180 days after the date of the enactment of H.R. 4435, to “revise Department of Defense directives and guidance to require the Department of Defense Executive Agent for Space to ensure that in developing space strategies, architectures, and programs for satellite communications, the Executive Agent” would:
  - First, “conduct strategic planning to ensure that the Department of Defense is effectively and efficiently meeting the satellite communications requirements of the military departments and commanders of the combatant commands;”
  - Second, “coordinate with the secretaries of the military departments and the heads of Defense Agencies to eliminate duplication of effort and to ensure that resources are used to achieve the maximum effort in related satellite communication science and technology; research, development, test and evaluation; production; and operations and sustainment;”
  - Third, “coordinate with the Under Secretary of Defense for Acquisition, Technology, and Logistics and the Chief Information Officer of the Department to ensure that effective and efficient acquisition approaches are being used to acquire military and commercial satellite communications for the Department, including space, ground, and user terminal integration;” and
  - Fourth, “coordinate with the chairman of the Joint Requirements Oversight Council to develop a process to identify the current and projected satellite communications requirements of the Department.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- No similar language.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## Pilot Program for Acquisition of Commercial Satellite Communication Services

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- Section 1605 states that the Secretary of Defense “may develop and carry out a pilot program to determine the feasibility and advisability of expanding the use of working capital funds by the Secretary to effectively and efficiently acquire commercial satellite capabilities to meet the requirements of the military departments, Defense Agencies, and combatant commanders.” Further, “of the funds authorized to be appropriated for any of Fiscal Years 2015 through 2020 for the Department of Defense for the acquisition of commercial satellite communications, not more than \$50,000,000 may be obligated or expended for such pilot program during such a fiscal year.” In addition, section 1605 would prohibit the Secretary of Defense from using “the authorities provided in sections [2208\(k\)](#) and [2210\(b\)](#) of title 10, United States Code” in “carrying out the pilot program.”
- Section 1605 goes on to outline the goals for “developing and carrying out the pilot program” that the “Secretary [of Defense] shall ensure”:
  - First, providing “a cost effective and strategic method to acquire commercial satellite services;”
  - Second, incentivizes “private-sector participation and investment in technologies to meet future requirements of the Department of Defense with respect to commercial satellite services;”
  - Third, “takes into account the potential for a surge or other change in the demand of the Department for commercial satellite communications access in response to global or regional events;” and
  - Fourth, “ensures the ability of the Secretary to control and account for the cost of programs and work performed under the pilot program.”

- In addition, “if the Secretary commences the pilot program,” section 1605 would require the pilot program to be terminated “on October 1, 2020.”
- Finally, section 1605 would require the Secretary of Defense to provide Congress with an initial report and a final report on the pilot program.
- The initial report to Congress would be due not later than 150 days after the date of the enactment of H.R. 4435. The initial report would be required to include “a plan and schedule to carry out the pilot program.”
- The final report to Congress would be due not later than December 1, 2020. The final report would include:
  - First, “an assessment of expanding the use of working capital funds to effectively and efficiently acquire commercial satellite capabilities to meet the requirements of the military departments, Defense Agencies, and combatant commanders;” and
  - Second, “a description of: any contract entered into under the pilot program, the funding used under such contract, and the efficiencies realized under such contract; the advantages and challenges of using working capital funds” as described above; “any additional authorities the Secretary determines necessary to acquire commercial satellite capabilities” as described in section 1605; and “any recommendations of the Secretary with respect to improving or extending the pilot program.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- No similar language.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## **Department of Defense Space Security and Defense Program**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- Section 1601 states that it is the Sense of Congress that:
  - First, “critical United States national security space systems are facing a serious growing foreign threat;”
  - Second, “the People’s Republic of China and the Russian Federation are both developing capabilities to disrupt the use of space by the United States in a conflict, as recently outlined by the Director of National Intelligence in testimony before Congress;” and
  - Third, “a fully-developed multi-faceted space security and defense program is needed to deter and defeat any adversaries’ acts of space aggression.”
- Therefore, Section 1601 would require the Secretary of Defense to furnish a report, not later than 180 days after the enactment of H.R. 4435, to congressional defense committees, with “an assessment of the ability of the Department of Defense to deter and defeat any act of space aggression by an adversary.”
- In addition, Section 1601 would direct the Secretary of Defense, acting through the Office of Net Assessment, to “conduct a study of potential alternative defense and deterrent strategies in response to the existing and projected counterspace capabilities of China and Russia.” The report would be required to include “an assessment of the congruence of such strategies with the current United States defense strategy and defense programs of record, and the associated implications of pursuing such strategies.” The study’s results would be required to be submitted to the congressional defense committees not later than one year after the date of enactment of H.R. 4435.

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- Section 1621 would direct the Secretary of Defense, in consultation with the Director of National Intelligence, to “update the Space Posture Review conducted under section 913 of the Duncan Hunter National Defense Authorization Act for fiscal year 2009 to include a strategy relating to space control and space superiority for the protection of national security space assets.” The strategy would be required to include:

- First, “threats to national security space assets.”
- Second, “protection of national security space assets.”
- Third, “the role of offensive space operations.”
- Fourth, “countering offensive space operations.”
- Fifth, “operations to implement the strategy.”
- Sixth, “projected resources required over the period covered by the current future-years defense program under section 221 of title 10, United States Code.”
- Seventh, “the development of an effective deterrence posture.”
- In addition, the Secretary of Defense, in consultation with the Director of National Intelligence, would be directed to “ensure that the strategy relating to space control and space superiority required” above “is consistent with the Space Protection Strategy developed under section 911 of the National Defense Authorization Act for Fiscal Year 2008.” The report would be due to Congress no later than March 31, 2015.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## **Liquid Rocket Engine Development Program**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$220 million for the “RD-180 replacement”, \$197 million above the President’s FY 2015 request for Air Force RDT&E, Aerospace Propulsion program element. The \$23 million reduction from that account would come from two Rocket Propulsion Technology sub-project level programs:
  - First, \$6.196 million reduction from “Liquid Engine Combustion Technologies;” and
  - Second, a \$16.829 million reduction from “Advanced Liquid Engine Technologies.”
- Section 1604 states that it is the Sense of Congress that the Secretary of Defense “should develop a next-generation liquid rocket engine that”:
  - First, “is made in the United States;”
  - Second, “meets the requirements of the national security space community;”
  - Third, “is developed by no later than 2019;”
  - Fourth, “is developed using full and open competition;” and
  - Fifth, “is available for purchase by all space launch providers of the United States.”
- Therefore, the Secretary of Defense would be directed to “develop a next-generation liquid rocket engine that enables the effective, efficient, and expedient transition from the use of non-allied space launch engines to a domestic alternative for the National Security Space Launches program.” Further, “of the funds authorized to be appropriated by” H.R. 4435 for fiscal year 2015, \$220 million would “be available for the Secretary of Defense to develop a next-generation liquid rocket engine.” The Secretary of Defense would be required to coordinate with the NASA Administrator, “to the extent practicable, to ensure that the rocket engine developed” would meet “objectives that are common to both the national security space community and the space program of the United States.”
- In addition, Section 1604 would require the Secretary of Defense, in coordination with the NASA Administrator, to submit to Congress, not later than 180 days after the date of enactment of H.R. 4435, a report that includes:
  - First, “a plan to carry out the development of the rocket engine,” described above, “including analysis of the benefits of using public-private partnerships;”
  - Second, “the requirements of the program to develop such rocket engine;” and
  - Third, “the estimated cost of such rocket engine.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- See Section 1629 under the EELV program.

#### House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- The House passed FY 2015 Defense Appropriations bill would appropriate \$220 million for the Liquid Rocket Engine Development in FY 2015, \$220 million above the President's FY 2015 request.
- The Committee Report states that the "Committee believes that the United States should rely on domestically manufactured launch vehicles as the foundation for access to space and is concerned about the reliance of some national security space launches on rocket engines produced in Russia." Therefore, the Committee recommended \$220 "to begin risk reduction and development of a next-generation liquid rocket engine that is manufactured in the United States, meets the requirements of the national security space community, and is ready for launch not later than fiscal year 2022 using full and open competition." Further, the Committee would direct the Secretary of Defense, in coordination with the Administrator of NASA "as practicable, to the congressional defense and intelligence committees not later than 180 days after the enactment of this Act that includes a risk reduction and development plan for a next-generation liquid rocket engine program." The report would also be required to "analyze national security and civil space rocket engine development requirements, examine the costs and benefits of public-private partnerships for development of the engine, and estimate costs for development, procurement, and operations and maintenance for the life of the program."

#### SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$25 million for the Liquid Rocket Engine Development in FY 2015, \$25 million above the President's FY 2015 request. The Committee report notes that the "fiscal year 2015 science and technology budget request includes \$43,059,000 for liquid rocket engine technology development." However, the Committee "believes this level of funding falls short of the investment needed to create a viable new engine program" and therefore is why they added \$25 million.
- The Committee Report states the Committee "is concerned with the Air Force's reliance on the Russian RD-180 engine to power the first stage of the Atlas V launch vehicle for assured access to space." The Committee report notes that "when the Department originally decided to use the RD-180 engine, the Air Force committed to develop an advanced rocket engine that would eventually replace the RD-180." However, "the Air Force failed to make rocket engine develop a priority, so the program remains a science and technology project with no formal completion schedule that would deliver a new engine in this decade." Also, the Committee "recognizes that, in addition to assuring access to space for national payloads, civil space programs and the commercial launch industry would benefit from an affordable, domestically manufactured, advanced technology rocket engine that would be available to all launch providers." Therefore, the Committee would direct the Secretary of the Air Force "to develop an affordable, competitive rocket engine development strategy that delivers a rocket engine by 2019." The strategy would be required to include "an assessment of the potential benefits and challenges of using public-private partnerships and innovative teaming arrangements." The development strategy would be due to congressional defense committees no later than 180 days after the enactment of the act.

#### White House Statement of Administration Policy:

- The White House Statement of Administration Policy on the House passed Defense Appropriations Act (H.R. 4870) states that the Administration "objects to the unrequested \$220 million for a new rocket engine." The Administration Policy notes that an "independent study recently concluded that such a program would take eight years to field and could cost \$1.5 billion with another \$3 billion needed to develop a suitable launch vehicle." The Administration Policy states "this approach prematurely commits significant resources and would not reduce our reliance on Russian engines for at least a decade." However, "with a goal of promptly reducing" U.S. "reliance on Russian technology, the Administration is evaluating several cost-effective options including public-private partnerships with multiple awards that will drive down innovation, stimulate the industrial base, and reduce costs through competition." Therefore, the Administration "looks forward to working with the Congress on this issue once the analysis is complete."



## High Capacity Satellite Communications

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The Committee Report states that the Committee is “aware of the growing satellite communications needs of the Department of Defense.” The Subcommittee mark notes that “according to the fiscal year 2013 report from the Defense Business Board (DBB) titled, ‘Taking Advantage of Opportunities for Commercial Satellite Communications Services,’ the DBB states, ‘as the demand for service increases in the future, the cost of communications satellite services purchased by Defense Information Systems Agency is projected to grow to \$3B-\$5B over the next 15 years.’”
- With that said, the Committee “believes that the use of modern technologies, such as high capacity communications satellites, may provide cost-effective bandwidth options to meet the Department’s growing communications requirements.” Therefore, the Committee would direct the “Department of Defense Chief Information Officer to provide a briefing to the House Committee on Armed Services not later than October 15, 2014, on the potential use of modern technologies, such as high capacity communications satellites, to address the Department’s requirements, and whether existing satellite communications acquisition processes and authorities are conducive to acquiring such technologies.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- No similar language.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## Kestrel Eye Joint Capability Technology Demonstration

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The Committee Report states that the Committee “fully supports the U.S. Army Space and Missile Defense Command program called Kestrel Eye.” The Subcommittee mark states that “Kestrel Eye is a Joint Capability Technology Demonstration of a nanosatellite-class imagery satellite that is designed for tactical ground forces.” In addition, the Kestrel Eye satellite “will provide the warfighter, in the field, a capability to directly task and receive operational data from a space-based collection system,” which “will support rapid situational awareness.”
- The Committee Report states that the Committee is “aware that this is a technology demonstration in development and has not launched into orbit yet.” Therefore, the Committee would encourage “the Department of Defense to find a suitable space launch opportunity to enable the Army to complete a military utility assessment to evaluate the operational value of this capability.” Further, the Committee would direct the Secretary of the Army, in coordination with the Chairman of the Joint Chiefs of Staff, “to provide a briefing to the House Committee on Armed Services, within 180 days of initial operating capability, on the military utility assessment of Kestrel Eye.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- No similar language.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## Operationally Responsive Space

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The House passed FY 2015 NDAA would authorize to appropriate \$30 million to “continue the Operationally Responsive Space program and to fund a competitively procured launch vehicle for the ORS-5 mission”, \$30 million above the President’s FY 2015 request.

- The Committee Report states that the Committee “believes that the Operationally Responsive Space-1 (ORS-1) satellite has provided significant intelligence value to the U.S. Central Command and the Army’s 513<sup>th</sup> Military Intelligence Brigade.” The Committee Report notes that “when referring to this capability, the 513<sup>th</sup> stated ‘the ability to provide timely geospatial-intelligence (GEOINT) response to a real world mission during execution cannot be matched.’” Further, “U.S. Central Command provided similar feedback on the operational flexibility provided by this space reconnaissance asset to support urgent, short-notice requirements.”
- The Committee Report states that the Committee is “aware that ORS-1 is currently operating well beyond its design life, and there is no follow-on program planned.” With that said, the Committee “would like to understand the requirements of the commanders of the combatant commands for use of space reconnaissance assets.” Therefore, the Committee would direct the Chairman of the Joint Chiefs of Staff to “provide a report to the congressional defense and the congressional intelligence committees by January 15, 2015, on the feedback from each of the commanders of the combatant commands on the utility of space-based reconnaissance capabilities to meet their priority intelligence requirements and their current ability to utilize and control space-based reconnaissance to meet those requirements.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- The SASC passed FY 2015 NDAA would authorize to appropriate \$20 million for ORS, \$20 million above the President’s FY 2015 request.
- Section 1627 states that “before entering into a contract for the launch of the payload for mission number five of the Operationally Responsive Space Program, the Secretary of the Air Force” would be required to “follow competitive procedures described in section 2304 of title 10, United States Coded, and the policies of the Department of Defense concerning competitive space launch opportunities.”
- However, the Secretary of the Air Force would be allowed to waive the requirement if the Secretary:
  - First, “determines that the waiver is necessary for the national security interest of the United States;” and
  - Second, “not less than 15 days before waiving the requirement, submits a report to the congressional defense committees on the waiver.”

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- The SAC passed FY 2015 Defense Appropriations bill would appropriate \$20 million for ORS, \$20 million above the President’s FY 2015 request.

## **Report on Satellite Positioning Ground Monitoring Stations Near U.S. Overseas Military Installations**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- The Committee Report would require the Secretary of Defense, not later than June 30, 2015, in consultation with the Secretary of State and the Director of National Intelligence (DNI), to provide to Congress “a report on global navigation satellite system ground monitoring stations operated directly or indirectly by the Russian Federation located near any U.S. military installation overseas or located near allied military installation or any other installation deemed sensitive by the Secretary of Defense, the Secretary of State or Director of National Intelligence.” The report would be required to include:
  - First, “the name and location of any such stations located in geographic proximity to any U.S. military or sensitive installation located outside continental United States;”
  - Second, “an assessment of the threat posed to such installations;”
  - Third, “the significance of such threat;”
  - Fourth, “the plans to mitigate the impacts of covered stations;” and
  - Fifth, “any planned future locations of such Russian Federation ground monitoring stations, to the extent that the Secretaries or the DNI is aware.”
- In addition, the committee “understands from public reports, that this will be limited number of sites.” Further, the Secretary of Defense would be required to “submit such report in unclassified form, with a classified annex if necessary.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- No similar language.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## **Annual Report on Military and Security Developments Involving the Russian Federation**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- Section 1227 would direct the Secretary of Defense, not later than June 1 of each year, “submit to the appropriate committees a report, in both classified and unclassified form, on the current and future military power of the Russian Federation.” The report would be required to “address the current and probable future course of military-technological development of the Russian military, the tenets and probable development of Russian security strategy and military strategy, and military organizations and operational concepts, for the 20-year period following submission of such report.” The report would be required to include:
  - First, “an assessment of the security situation in regions neighboring Russia;”
  - Second, “the goals and factors shaping Russian security strategy and military strategy;”
  - Third, “trends in Russian security and military behavior that would be designed to achieve, or that are consistent with, the goals described” above;
  - Fourth, “an assessment of Russia’s global and regional security objectives, including objectives that would affect NATO, the Middle East, and the People’s Republic of China;”
  - Fifth, “a detailed assessment of the sizes, locations, and capabilities of Russian nuclear, special operations, land, sea, and air forces;”
  - Sixth, “developments in Russian military doctrine and training;”
  - Seventh, “an assessment of the proliferation activities of Russia and Russian entities, as a supplier of materials, technologies, or expertise relating to nuclear weapons or other weapons of mass destruction or missile system;”
  - Eighth, “developments in Russia’s asymmetric capabilities, including its strategy and efforts to develop and deploy cyber warfare and electronic warfare capabilities, details on the number of malicious cyber incidents originating from Russia against Department of Defense infrastructure, and associated activities originating or suspected of originating from Russia;”
  - Ninth, “the strategy and capabilities of Russian space and counterspace, including trends, global and regional activities, the involvement of military and civilian organizations, including state-owned enterprises, academic institutions, and commercial entities, and efforts to develop, acquire, or gain access to advanced technologies that would enhance Russian military capabilities;”
  - Tenth, “developments in Russia’s nuclear program, including the size and state of Russia’s stockpile, its nuclear strategy and associated doctrines, its civil and military production capacities, and projections of its future arsenals;”
  - Eleventh “a description of Russia’s anti-access and area denial capabilities;”
  - Twelfth, “a description of Russia’s command, control communications, computers, intelligence, surveillance, and reconnaissance modernization program and its applications for Russia’s precision guided weapons;”
  - Thirteenth, “in consultation with the Secretary of Energy and the Secretary of State, developments regarding United States-Russian engagement and cooperation on security matters;”

- Fourteenth, “the current state of United States military-to-military contacts with the Russian Federation armed forces, which shall include: a comprehensive and coordinated strategy for such military-to-military contacts and updates to the strategy; a summary of all such military-to-military contacts during the one-year period preceding the report, including a summary of topics discussed and questions asked by the Russian participants in those contacts; a description of such military-to-military contacts scheduled for the 12-month period following such report and the plan for future contacts; the Secretary’s assessment of the benefits the Russians expect to gain from such military-to-military contacts; the Secretary’s assessment of the benefits the Department of Defense expects to gain from such military-to-military contacts, and any concerns regarding such contacts; and the Secretary’s assessment of how such military-to-military contacts fit into the larger security relationship between the United States and the Russian Federation;”
- Fifteenth, “a description of Russian military-to-military relationships with other countries, including the size and activity of military attaché offices around the world and military education programs conducted in Russia for other countries or in other countries for the Russians;” and
- Sixteenth, “other military and security developments involving Russia that the Secretary of Defense considers relevant to United States national security.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- No similar language.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

### **Extend Space Protection Strategy**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- Section 1606 would amend [Section 911\(d\) of the National Defense Authorization Act for Fiscal Year 2008](#) (10 U.S.C. 2271) to include at the end of the following new paragraph: “(4) Fiscal years 2026 through 2030.”

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- No similar language.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

### **Assessment of cost of Space Situational Awareness system**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- No similar language.

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- Section 1630 states that the “Secretary of Defense shall direct the Defense Science Board to conduct a study of the effectiveness of the ground and space sensor system architecture for space situational awareness.” The study would be required to include:
  - First, “projected needs, based on current and future threats, for the ground and space sensor system during the five-, 10-, and 20-year periods beginning on the date of the enactment of this Act.”
  - Second, “capabilities of the ground and space sensor system to conduct defensive and offensive operations.”
  - Third, “integration of ground and space sensors with ground processing, control, and battle management systems.”
  - Fourth, “any other matters relating to space situational awareness the Secretary considers appropriate.”

- The report would be due to Congress no later than one year after the date of the enactment of this Act.
- Under the section titled “items of special interest”, within the Committee Report (S. Report 113-176), there is a section that addresses “assessment of cost of Space Situational Awareness system.” The section states that the Committee would direct “the Government Accountability Office to estimate the cost of the space situational awareness system over the current future years defense program.” The assessment would be required to be in the form of a briefing due no later than February 28, 2015.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## **Allocation of funds for the Space Security and Defense Program; Report on Space Control**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- No similar language.

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- Section 1622 would direct “the funds authorized to be appropriated by this Act or any other Act and made available for the Space Security and Defense Program, a preponderance of such funds” to “be allocated to the development of offensive space control and active defensive strategies.” In addition, the Secretary of Defense would be required to “include, in the budget justification materials submitted to Congress in support of the budget of the Department of Defense for a fiscal year, a statement with respect to whether the budget of the Department allocates funds for the Space Security and Defense Program as required” above. The report would be due not later than 180 days after the date of enactment of this Act, and would be required to include the following:
  - First, “an updated integrated capabilities document for offensive space control.”
  - Second, “a concept of operations for the defense of critical national security space assets in all orbital regimes.”
  - Third, “an assessment of the effectiveness of existing deterrence strategies.”

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## **Limitation on funding for storage of Defense Meteorological Satellite program satellites**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- No similar language.

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- Section 1628 states that “none of the funds authorized to be appropriated for fiscal year 2015 by this Act may be obligated or expended for storage of a satellite of the Defense Meteorological Satellite Program unless the Secretary of Defense certifies to the congressional defense committees that”:
  - First, “the Department of Defense intends to launch the satellite;”
  - Second, “sufficient funding is reflected in the current future-years defense program under section 221 of title 10, United States Code, to launch the satellite;” and
  - Third, “storing the satellite until a launch in 2020 is the most cost-effective approach to meeting the requirements of the Department.”

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- The Committee Report notes that the “budget request includes \$87,000,000 for storage, integration, test, launch, and early-orbit checkout of one Defense Meteorological Satellite Program [DMSP] satellite.” Further, “Air Force analysis indicates this satellite will not be needed on-orbit until 2020, costing an additional \$425,000,000 in storage during that period.” The Committee Report states that “this amount is excessive for a 1990s technology satellite originally costing approximately \$500,000,000.” The Committee Report notes that the Committee “is aware that only a few of the capabilities provided by this satellite cannot be met by other existing civil and commercial satellites.” As a result, the Committee “questions the Air Force’s current plan to launch this satellite in 2020 at a significant cost to the Government for a capability that may be met through other space-based assets.” Therefore, the Committee would direct the Air Force “to reassess its plan for the last DMSP and pursue a least cost approach for the disposition of this satellite.”

**Sense of the Senate on Resolution Limits on Commercial Space Imagery**

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- No similar language.

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- Section 1631 notes that Congress makes the following findings:
  - First, “the Department of Defense and the security of the United States depend on the United States commercial space imaging industry for mapping, intelligence, battle damage assessment, coalition warfare, and humanitarian relief.”
  - Second, “the Department of Defense could benefit from the relaxation of the current limits on the resolution of the imagery that the United States commercial space imaging industry is permitted to sell because the industry will respond to larger market opportunities by increasing the quantity of spacecraft and the quality and diversity of the imagery and imagery-derived products the industry provides.”
  - Third, “the Department of Defense has a need to protect some places and events from the collection and sale of high-resolution imagery. That need could be met through existing licensing and contractual authorities that either permit the government to exercise direct control of specific collection tasking and image dissemination or to restrict collection.”
  - Fourth, “instead of using the approach described in paragraph (3), the United States commercial space imagery industry has been prohibited from selling imagery over the vast majority of the planet where there are no national security sensitivities.”
  - Fifth, “limits on the resolution of commercial space imaging have been relaxed somewhat in the past, but only when the United States commercial space imaging industry has faced competition from foreign providers of such imaging.”
- Section 1631 goes on to states that it is the sense of the Senate that:
  - First, “the Secretary of Defense should support relaxation, as soon as practicable, of panchromatic, spectral, and infrared imagery resolution limits so that the United States commercial space imaging industry may promptly begin: to attract investment in new satellite capabilities; to design and build new satellites; and to create new processing capabilities, business strategies, and marketing capacity.”
  - Second, “the Under Secretary of Defense for Policy should provide a recommendation to Congress by April 1, 2015, on the design and development of a flexible and dynamic capability to control the collection and sale of commercial space imagery to protect national security.”

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- No similar language.

## Arctic Domain Awareness

House passed FY 2015 National Defense Authorization Act (H.R. 4435):

- No similar language.

SASC passed FY 2015 National Defense Authorization Act (S. 2410):

- No similar language.

House passed FY 2015 Defense Appropriations Bill (H.R. 4870):

- No similar language.

SAC passed FY 2015 Defense Appropriations Bill:

- The Committee Report states that the Committee is “concerned with the pace of needed development in the arctic region, particularly with respect to arctic domain awareness.” The Committee Report notes that the U.S. “currently has a limited weather satellite presence covering the region that will be further reduced by 2019.” Therefore, the Committee would direct the Secretary of Defense to “provide a report to the congressional defense committees, within 180 days, of enactment of this act, outlining a plan to ensure arctic domain awareness coverage for the foreseeable future, including an assessment of the potential to partner with Canada on the Canadian Weather Satellite mission.”

**Appendix: Summary of Unclassified Space-related Programs requested in FY 2015 budget\*\***

Budget Authority, \$ in million	Consolidated Approps, 2014 (P.L. 113-76)	President's FY 2015 DoD Budget Request	House passed FY 2015 NDAA (H.R. 4435)	SASC passed FY 2015 NDAA (S. 2410)	House passed FY 2015 Defense Approps (H.R. 4780)	SAC passed FY 2015 Approps
<b>PROCUREMENT</b>						
ARMY, Aircraft Procurement						
Communications, Navigation, and Surveillance	92.779	115.795	115.795	115.795	115.795	115.795
GATM Rotary Wing Aircraft (enhanced GPS capability)	25.754	18.209	18.209	18.209	18.209	18.209
MQ-1 UAV, SATCOM Airborne Data Terminal	11.022	14.227	14.227 <sup>‡</sup>	14.227	14.227	14.227
ARMY, Other Procurement						
Defense Enterprise Wideband SATCOM Systems (DEWSS)	57.275	118.085	118.085	118.085	118.085	118.085
Transportable Tactical Command Communications	0.598	13.999	13.999	13.999	13.999	1.999
Super High Frequency (SHF) Terminal	7.232	6.494	6.494	6.494	6.494	6.494
Navstar Global Positioning System	2.000	1.635	1.635	1.635	1.635	1.635
Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)	13.992	13.554	13.554	13.554	13.554	11.454
Global Broadcast Service (GBS)	10.206	18.899	18.899	18.899	18.899	18.899
Mod of In-Svc Equipment (TAC SAT)	2.778	2.849	2.849	2.849	2.849	2.849
Global Positioning System-Survey (GPS-S)	1.615	5.437	5.437	5.437	5.437	5.437
Joint Tactical Radio System	350.000	175.711	125.711	87.711	125.711	40.711
Joint Tactical Ground Stations (JTAGS)	9.899	5.286	5.286	5.286	5.286	5.286
Initial Spares – C&E, Defense SATCOM Sys Spares	5.323	5.774	5.774	5.774	5.774	5.774
NAVY, Aircraft Procurement						
Common Avionics Changes, Global Positioning System (GPS)	6.269	7.524	7.524	7.524	7.524	3.060
NAVY, Weapons Procurement						
Fleet Satellite Communications Follow-on	16.914	208.700	197.700	208.700	206.700	208.700
NAVY, Other Procurement						
Maritime Integrated Broadcast System, Joint Tactical Terminal – Maritime (JTT-M)	11.550	3.447	3.447	3.447	3.447	3.447
Shipboard Tactical Comms	0.000	14.410	14.410	14.410	14.410	14.410
Submarine Communication Equipment, Submarine High Data Rate Antenna	5.378	5.256	5.256	5.256		5.256
Satellite Communications Systems	27.381	13.218	13.268	13.268	11.453	13.268
Navy Multiband Terminal (NMT)	183.620	272.076	272.076	272.076	233.417	272.076
Navstar GPS Receivers (SPACE)	11.765	15.232	15.232	15.232	15.232	15.232
Marines CORPS, Procurement						
Intelligence Support Equipment, Commercial Satellite Communication Set	2.089	44.340	44.340	44.340	42.550	37.872
Radio Systems	64.218	64.494	64.494	64.494	64.494	64.394
AIR FORCE, Aircraft Procurement						
MQ-9, Predator Primary Satellite Link	1.919	1.186	1.186	1.186	1.186 <sup>§</sup>	1.186

<sup>‡</sup> The HASC proposed FY 2015 NDAA would authorize to appropriate an additional \$49 million for MQ-1 UAVs for “extended range modifications per army UFR.” It’s unclear if that would impact the “SATCOM Airborne Data Terminal” portion of the program.



(PPSL)						
Initial Spares/Repairs Parts, MILSATCOM Terminals	-	5.540	5.540	5.540	5.540	5.540
B-2A, EHF SATCOM and Computers	7.469	8.189	8.189	8.189	6.189	8.189
C-32A, Wideband SATCOM	-	4.000	4.000	4.000	0.000	4.000
C-37A, Wideband SATCOM	-	18.000	18.000	18.000	0.000	18.000
KC-10 Mods, UHF SATCOM Antenna	1.056	0.189	0.189	0.189	0.189	0.189
C-40, Wideband SATCOM	-	4.000	4.000	4.000	0.000	4.000
E-4	0.000	2.400	2.400	2.400	0.000	2.400
Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)	-	32.026	32.026	32.026	0.000	32.026
Other Aircraft, EHF SATCOM	1.920	21.784	21.784	21.784	21.784	21.784
<b>AIR FORCE, Missile Procurement</b>						
Advanced EHF	328.736	298.890	298.890	298.890	298.890	298.890
Wideband Gapfiller Satellites	33.998	38.971	35.971	38.971	34.998	36.071
GPS III Space Segment	398.431	235.397	235.397	235.397	235.397	228.797
GPS III Space Segment Advance Procurement	52.167	57.000	57.000	57.000	87.000	87.000
Spaceborne Equipment (COMSEC)	5.244	16.201	16.201	16.201	10.500	16.201
Global Positioning System (SPACE)	55.997	52.090	52.090	52.090	50.000	52.090
Defense Meteorological Satellite Program	80.673	87.000	87.000	0.000	78.000	30.000
Evolved Expendable Launch Vehicle Infrastructure	678.863	750.143	750.143	750.143	715.143	668.143
Evolved Expendable Launch Vehicle (# of launch vehicles)	809.037 (5)	630.903 (3)	765.903 (4)	630.903 (3)	630.903 (3)	733.603 (4)
Space Based Infrared System High	524.873	450.884	450.884	450.884	444.884	450.884
<b>AIR FORCE, Other Procurement</b>						
Air & Space Operations Center	26.880	25.772	25.772	25.772	25.772	25.772
Family of Beyond-Line-of-Sight Terminals	-	60.230	60.230	60.230	50.230	60.230
Space Based IR Sensor Program	25.408	26.100	26.100	26.100	26.100	26.100
Navstar GPS Space	2.061	2.075	2.075	2.075	2.075	2.075
NUDET Detection System Space	4.415	4.656	4.656	4.656	4.656	4.656
Air Force Satellite Control Network	20.013	54.630	54.630	54.630	54.630	54.630
Spacelift Range System Space	91.062	69.713	69.713	69.713	69.713	62.713
MILSATCOM Space	95.935	41.355	41.355	41.355	41.355	33.755
Space MODS Space	32.376	31.722	31.722	31.722	31.722	31.722
Counterspace System	7.171	61.603	61.603	61.603	39.203	59.603
Defense Space Reconnaissance Program	92.159	77.898	77.898	77.898	77.898	77.898
Spares and Repair Parts, Spacelift Range System	3.120	3.163	3.163	3.163	3.163	3.163
Spares and Repair Parts, NAVSTAR Global Positioning System	0.300	0.309	0.309	0.309	0.309	0.309
Spares and Repair Parts, MILSATCOM Terminals	-	12.267	12.267	12.267	12.267	12.267
<b>DEFENSE-WIDE, Procurement</b>						
Teleport Program, Base	66.075	80.622	80.622	80.622	80.622	80.622
Item Less Than \$5 Million, Transport	5.000	5.000	5.000	5.000	5.000	5.000
DISA, EPC/SECN	1.839	1.624	1.624	1.624	1.624	1.624
<b>USSOCOM, Procurement</b>						

<sup>9</sup> The HAC passed FY 2015 Defense Appropriations Act would double the number of buys for MQ-9s from 12 to 24. However, due to “unit savings from higher quantity” of \$22,000 on the additional 12 aircraft, so the MQ-9 PPSL funds do increase, but not by double.

Warrior Systems, Communications Equipment and Electronic SOF Deployable Node (SDN)	101.928	69.950	69.950	69.950	69.950	69.950
<b>RESEARCH, DEVELOPMENT, TEST, AND EVALUATION</b>						
ARMY, Applied Research						
Sensors and Electronic Survivability, Tactical Space Research	5.306	4.778	4.778	4.778	4.778	4.778
Electronics and Electronic Devices, Millimeter Wave Components and Architectures for Advanced Electronic Systems	4.207	5.357	5.357	5.357	5.357	5.357
Command, Control, Communications Technology, Communication Technology, Communications Technology, Antenna	6.700	3.948	3.948	3.948	3.948	3.948
Command, Control, Communications Technology, Command, Control and Platform Electronics Tech, Battle Space Awareness and Positioning	3.757	4.794	4.794	4.794	4.794	4.794
Military Engineering Technology, Topographical, Image Intel & Space	17.747	15.478	15.478	15.478	15.478	15.478
ARMY, Advanced Technology Development						
Command, Control, Communications Advanced Technology, Space Application Advanced Technology	10.866	6.883	6.883	6.883	6.883	6.883
Electronic Warfare Advanced Technology, TR1: TAC C4 Technology Int, Wireless Mobile Networking	8.316	29.802	29.802	29.802	29.802	29.802
ARMY, Advanced Component Development & Prototypes						
Army Missile Defense Systems Integration, TR5: Missile Defense Battlelab, Analysis, and Models and Simulations	6.195	12.797	12.797	12.797	12.797	12.797
Army Space Systems Integration	13.592	13.999	13.999	13.999	13.999	13.999
ARMY, System Development & Demonstration						
TROJAN-RH12-MIP, Development of SATCOM dishes and receivers	0.409	0.983	0.983	0.983	0.983	0.983
Joint Tactical Radio	5.606	9.832	9.832	9.832	9.832	9.832
Brigade Analysis, Integration and Evaluation, DY3: NIE Test & Evaluation, Non ATEC Support Cost	14.992	24.785	24.785	24.785	24.785	24.785
Joint Tactical Network Center (JTNC), MUOS Waveform	6.000	8.440	8.440	8.440	8.440	8.440
Joint Tactical Network (JTN)	-	17.999	17.999	17.999	17.999	17.999
ARMY, Management Support						
Army Kwajalien Atoll	193.555	176.041	176.041	187.041**	176.041	176.041
ARMY, Operational Systems Development						
Joint Tactical Ground System	7.108	10.209	10.209	10.209	10.209	10.209
SATCOM Ground Environment	18.197	11.011	11.011	11.011	11.011	11.011
NAVY, Basic Research						
Defense Research Sciences, Atmosphere and Space Sciences	25.225	25.053	25.053	25.053	25.053	25.053
NAVY, Applied Research						

\*\* \$11 million proposed increase for “additional SSA operations (STRATCOM unfunded priority)

Common Picture Applied Research, Tactical Space Exploitation	4.332	6.265	6.265	6.265	6.265	6.265
Electromagnetic Systems Applied Research, Navigation Technology	4.952	5.014	5.014	5.014	5.014	5.014
NAVY, Advanced Technology Development						
Electromagnetic Systems Applied Technology, Global Positioning System (GPS) & Navigation Technology	2.263	64.623	64.623	64.623	64.623	64.623
NAVY, Advanced Component Development & Prototypes						
Air/Ocean Tactical Applications, METOC Data Assimilation and Mod, Meteorological and Oceanic Space-Based Sensing Capabilities	2.170	0.642	0.642	0.642	0.642	0.642
Air/Ocean Tactical Applications, Precise Timing and Astronomy	5.914	8.954	8.954	8.954	8.954	8.954
Space and Electronic Warfare (SEW) Architecture/Engineering Support	31.327	22.393	22.393	22.393	22.393	18.798
NAVY, System Development & Demonstration						
Air/Ocean Equipment Engineering, Fleet METOC Equipment, Environmental Satellite Receiver Processor (ESRP)	0.302	0.240	0.240	0.240	0.240	0.240
Navigation/Id System, NAVSTAR GPS Equipment	16.601	18.011	18.011	18.011	18.011	18.011
NAVY, Management Support						
Navy Space & Electronic Warfare (SEW) Support, Base	3.265	2.505	2.505	2.505	2.505	2.505
Space & Electronic Warfare Surveillance/Reconnaissance Support, TAC SAT Recon Office	7.134	8.325	8.325	8.325	8.325	8.325
NAVY, Operation Systems Development						
Marine Corps Communications System, Joint Tactical Radio System	21.923	4.036	4.036	4.036	4.036	4.036
Satellite Communications	66.231	41.829	41.829	41.829	41.829	41.829
Navy Meteorological & Ocean Sensors-Space (METOC)	0.742	0.359	0.359	0.359	0.359	0.359
RD TEN 3, Other Satellite Program	0.723	0.000	0.000	0.000	0.000	0.000
AIR FORCE, Basic Research						
Defense Research Sciences, Physics and Electronics (Major Thrust 2)	18.450	18.492	18.492	18.492	18.492	18.492
Defense Research Sciences, Aerospace, Chemical and Material Sciences (Major Thrust 3)	46.382	35.935	35.935	35.935	35.935	35.935
AIR FORCE, Applied Research						
Aerospace Propulsion, Advanced Propulsion Technology	22.304	17.646	17.646	17.646	17.646	17.646
Aerospace Propulsion, Rocket Propulsion Technology	52.651	51.287	248.287	51.287	51.287	76.287
Aerospace Sensors, EO Component Technology, Antennas	6.305	4.763	4.763	4.763	4.763	4.763
Aerospace Sensors, EO Sensors & Countermeasures Tech, Trusted Systems for ISR and Avionics Systems	6.215	5.250	5.250	5.250	5.250	5.250

Aerospace Sensors, RF Sensors & Countermeasures Tech, Hybrid Sensor Technologies	7.893	7.939	7.939	7.939	7.939	7.939
Space Technology	104.063	98.229	98.229	98.229	91.229	98.229
Directed Energy Technology, Lasers & Imaging Technology, Optical Space Situational Awareness and Satellite Vulnerability	27.554	25.127	25.127	25.127	25.127	25.127
AIR FORCE, Advanced Technology Development						
Advanced Aerospace Sensors, Advanced Aerospace Sensors Technology, Integrated Navigation Technologies	4.500	4.910	4.910	4.910	4.910	4.910
Aerospace Propulsion & Power Technology, Space & Missile Rocket Propulsion	24.061	26.552	26.552	26.552	26.552	26.552
Advance Spacecraft Technology	68.071	69.026	69.026	69.026	63.026	69.026
Maui Space Surveillance System (MSSS)	26.299	14.031	14.031	14.031	14.031	14.031
AIR FORCE, Advanced Component Development & Prototypes						
NAVSTAR Global Positioning System (User Equipment)	127.233	156.659	156.659	156.659	156.659	156.659
Space Control Technology	23.024	6.075	6.075	6.075	6.075	6.075
International Space Cooperative R&D	0.379	0.833	0.833	0.833	0.833	0.833
Space Security & Defense Program	24.764	32.313	32.313	32.313	30.955	32.313
Weather System Follow-on	0.000	39.901	5.001	39.901	39.901	39.901
Operationally Responsive Space	10.000	0.000	30.000	-	0.000	20.000
AIR FORCE, System Development & Demonstration						
Counterspace Systems	22.730	23.746	23.746	23.746	23.476	23.746
Space Situation Awareness Systems	22.558	9.462	19.462	9.462	9.462	9.462
Space Fence	292.474	214.131	214.131	214.131	200.131	154.131
Spaced Based Infrared Systems High	322.832	319.501	319.501	311.501	309.501	319.501
Rocket Engine Development	-	-	-	-	220.000	-
Evolved Expendable Launch Vehicle Program	24.963	0.000	0.000	100.000	0.000	7.000
Joint Tactical Network Center (JTNC)	-	.078	.078	.078	.078	0.000
Advanced EHF MILSATCOM	265.872	314.378	314.378	298.378	296.038	308.578
Polar MILSATCOM	104.805	103.552	103.552	103.552	103.552	103.552
Wideband Global SATCOM	12.553	31.425	31.425	31.425	23.925	31.425
Air & Space Ops Center	58.806	85.938	85.938	85.938	85.938	85.938
AIR FORCE, Management Support						
Rocket Systems Launch Program	12.763	34.364	34.364	34.364	34.364	34.364
Space Test Program	11.700	21.161	21.161	21.161	21.161	21.161
Space Test and Training Range Development	-	19.512	19.512	19.512	19.512	19.512
Space and Missile Center (SMC) Civilian Workforce	172.975	181.727	181.727	181.727	177.800	176.727
Operationally Responsive Space	-	0.000	-	20.000	0.000	-
AIR FORCE, Operational Systems Development						
Service Support to STRATCOM-Space Activities, Joint NavWar Center	2.799	3.134	3.134	3.134	3.134	3.134
Air & Space Operations Center	22.820	41.066	41.066	41.066	41.066	26.666
Space Superiority Intelligence	10.697	12.218	12.218	12.218	10.697	12.218
Information Systems Security Program, Cryptographic Modernization, Space	4.325	8.156	8.156	8.156	8.156	8.156

Telemetry Tracking & Commanding (TT&C)						
Information Systems Security Program, Cryptographic Modernization, Space Modular Common Crypto (SMCC)	13.591	28.107	28.107	28.107	28.107	28.107
MILSATCOM Terminals	130.170	55.208	55.208	55.208	49.950	55.208
Satellite Control Network	35.698	20.806	20.806	20.806	20.806	20.806
Space & Missile Test & Evaluation Center	3.696	3.674	3.674	3.674	3.326	3.674
Space Warfare Center	2.469	2.480	2.480	2.480	2.071	2.480
Spacelift Range System (SPACE)	12.345	13.462	13.462	13.462	13.462	13.462
GPS III Space Segment	201.276	212.571	212.571	212.571	212.571	212.571
JSPOC Mission System	58.523	73.779	73.779	73.779	73.779	73.779
NUDET Detection System (SPACE)	42.547	20.468	20.468	20.468	20.468	20.468
Space Situation Awareness Operations	12.807	11.596	11.596	11.596	11.596	11.596
Global Positioning System III-Operational Control Segment	373.500	299.760	299.760	299.760	299.760	299.760
DARPA, Applied Research						
DARPA, Tactical Technology, International Space Station SPHERES Integrated Research Experiments	4.500	3.200	3.200	3.200	3.200	3.200
DARPA, Advanced Technology Development						
DARPA, Space Programs & Technology	142.546	179.883	179.883	179.883	179.883	179.883
MDA, Advanced Component Development & Prototypes						
Space Tracking & Surveillance System	40.447	31.346	31.346	31.346	31.346	31.346
Ballistic Missile Defense System Space Programs	6.515	6.389	6.389	6.389	6.389	6.389
DISA, Operations Systems Development						
Long-Haul Communications, Presidential and National Voice Conferencing, National Emergency Action Decision Network	14.439	5.866	5.866	5.866	5.866	5.866
Teleport	5.147	2.697	2.697	2.697	2.697	2.697
<b>OPERATION &amp; MAINTENANCE</b>						
Army Space Activities, Operation & Maintenance						
Security Programs, Air Defense Contracts and Space Support	0.690	0.660	0.660	0.660	0.660	0.660
Servicewide Communications, Air Defense Contracts and Space Support	0.792	0.708	0.708	0.708	0.708	0.708
NAVY, Operating Forces						
Space Systems & Surveillance	172.330	207.038	206.538	207.038	206.977	207.038
NAVY, Administration & Servicewide Activities						
Space and Electronic Warfare Systems	75.728	73.159	72.659	73.159	73.047	73.159
AIR FORCE, Operating Forces						
Launch Facilities	291.275	282.710	282.710	282.710	282.710	282.710
Space Control Systems	433.658	397.818	397.318	397.818	397.818	397.818
Defense-Wide, Defense Information Systems Agency (DISA)						
Standardized Tactical Entry Point (STEP)	1.205	1.108	1.108	1.108	1.108	1.108
DoD Teleport Program	18.045	14.097	14.097	14.097	14.097	14.097
Defense Information Systems Network Enterprise Activities	78.368	110.812	110.812	110.812	110.812	110.812
<b>DEFENSE WORKING CAPITAL FUND</b>						



Defense-Wide Working Capital Fund (DWWCF) Capital Fund						
Commercial Satellite Services	489.5	498.3	498.3	498.3	498.3	498.3
Enhanced Mobile Satellite Services (Iridium)	100.3	117.6	117.6	117.6	117.6	117.6
Overseas Contingency Operations (OCO)	9.6	0.000	0.000	0.000	0.000	0.000
Mobile Satellite – Broadband Global Area Network (BGAN)	45.7	47.000	47.000	47.000	47.000	47.000
<b>Overseas Contingency Operations</b>						
AIR FORCE, Other Procurement						
Space Programs, MILSATCOM Space	5.695	19.547	19.547	-	19.547	19.547
Special Support Projects, Defense Space Reconnaissance Program	58.250	6.100	6.100	-	6.100	6.100
AIR FORCE, Operations and Maintenance						
Operating Forces, Global C3I & Early Warning, 3.0 Operating Support	14.720	90.526	90.526	-	90.526	90.526
Operating Forces, Space Control Systems	8.353	4.942	4.942	-	4.942	4.942
Operating Forces, Launch Facilities	0.857	0.852	0.852	-	0.852	0.852
DISA, Major Equipment, Procurement						
Teleport	4.760	4.330	4.330	-	4.330	4.330
USSOCOM, Procurement						
Warrior Systems, Communications Equipment and Electronic SOF Deployable Node (SDN)	0.000	17.918	17.918	-	17.918	17.918
<b>Total</b>	<b>9,867.301</b>	<b>9,978.552</b>	<b>10,250.200</b>	<b>9,766.387</b>	<b>9,896.388</b>	<b>9,749.197</b>

\*An asterisk by funds requested in the above appendix chart indicates that the program provides significant benefits for BOTH space and aerospace programs.

### About the Space Foundation

The foremost advocate for all sectors of the space industry and an expert in all aspects of space, the Space Foundation is a global, nonprofit leader in space awareness activities, educational programs that bring space into the classroom and major industry events, including the [Space Symposium](#), all in support of its mission "to advance space-related endeavors to inspire, enable and propel humanity." The Space Foundation publishes [The Space Report: The Authoritative Guide to Global Space Activity](#) and provides three [indexes](#) that track daily U.S. stock market performance of the space industry. Through its [Space Certification](#)<sup>™</sup> and [Space Technology Hall of Fame](#)<sup>®</sup> programs, the Space Foundation recognizes space-based technologies and innovations that have been adapted to improve life on Earth. The Space Foundation was founded in 1983 and is based in Colorado Springs, Colo. Its world headquarters features a public [Visitors Center](#) with two main areas - the El Pomar Space Gallery and the Northrop Grumman Science Center featuring Science On a Sphere<sup>®</sup>. The Space Foundation also conducts research and analysis and government affairs activities from its Washington, D.C., office and has a field office in Houston, Texas. For more information, visit [www.SpaceFoundation.org](http://www.SpaceFoundation.org). Follow us on [Facebook](#), [LinkedIn](#) and [Twitter](#), and read about the latest space news and Space Foundation activities in [Space Watch](#).

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