



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

Update 7

President's FY 2015 Department of Defense Budget Request; FY 2015 National Defense Authorization Act [NDAA] Act (S. 1847); Defense appropriations in the Omnibus Appropriations bill (H.R. 83)

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 in the Omnibus Appropriations Bill. 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	President's FY 2015 DoD Budget Request	FY15 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
Satellites & Programs			
Mobile User Objective System (MUOS)	221.0	219.0	219.000
Advanced Extremely High Frequency (AEHF)	613.3	613.268	607.468
Global Positioning System (GPS)	1,028.2	1,028.208	1,049.518
Space Based Infrared System (SBIRS)	796.4	796.4	786.485
Wideband Global SATCOM (WGS)	70.4	67.496	67.496
Weather System Follow-on	39.9	39.9	39.901
Space Fence	214.1	200.131	200.131
JSPOC Mission Systems (JSPOC)	73.8	73.8	73.779
Launch			
Evolved Expendable Launch Vehicle (EELV)	1,381.0	1,601.046	1,647.746

* 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	President's FY 2015 DoD Budget Request	FY15 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
RDT&E	12.300	12.300	12.300
Satellite Communications - Mobile User Objective System (MUOS)	12.300	12.300	12.300
Procurement	208.700	206.700	206.700
Fleet Satellite Comm Follow- On	208.700	206.700	206.700
Total	221.000	219.000	219.000

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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA authorizes \$219 million for the MUOS program, \$2 million below the President's FY 2015 request. Accounts affected include:
 - A \$2 million reduction in the Satellite Communications account. The Joint Explanatory Statement only cites "Support funding carryover" as the rationale.

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Omnibus Appropriations bill appropriates \$219 million for the MUOS program, \$2 million below the President's FY 2015 request. Accounts affected include:
 - A \$2 million reduction in the Satellite Communications account. The report only cites "Support funding carryover" as the rationale.

Advanced Extremely High Frequency

Budget Authority, \$ in million	President's FY 2015 DoD Budget Request	FY15 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
RDT&E	314.378	314.378	308.378
Advanced MILSATCOM	192.038	192.038	192.038
Evolved AEHF MILSATCOM	122.340	122.340	116.540
Procurement	298.890	298.890	298.890
Advanced EHF SVs 3 and 4	67.866	67.866	67.866
Advanced EHF SVs 5 and 6	231.024	231.024	231.024
Total	613.268	613.268	607.268

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 (FFDRC) 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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA authorizes \$613 million to fully fund the Advanced EHF program at the President's FY 2015 request.

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 DoD Appropriations Act appropriates \$308.578 million to fund the Advanced EHF program, \$5.8 million below the President's FY 2015 request.
 - The report cites "Evolved AEHF excessive program management services" as the rationale for the decrease.

Global Positioning System

Budget Authority, \$ in million	President's FY 2015 DoD Budget Request	FY15 NDAA (S. 1847)	FY15 Omnibus Appropriations Bill (H.R. 83)
RDT&E	668.990	668.990	668.990
<i>GPS III Space Segment</i>	212.571	212.571	212.571
<i>GPS III - New Generation Operational Control Segment</i>	299.760	299.760	299.76
<i>NAVSTAR Global Positioning System (User Equipment)</i>	156.659	156.659	156.659
Procurement	359.218	359.218	380.528
<i>GPS IIIA Space Segment</i>	235.397	235.397	228.797
<i>GPS III Space Segment Advance Procurement</i>	57.000	57.000	87.000
<i>GPS IIF and launch support</i>	52.090	52.090	50.000
<i>OCS COTS Upgrade</i>	12.656	12.656	12.656
<i>NAVSTAR GPS Space</i>	2.075	2.075	2.075
Total	1,028.208	1,028.208	1,049.518

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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA authorizes \$1,028 million to fully fund GPS programs at the President’s FY 2015 request.

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The Omnibus Appropriations bill appropriates \$1,049 million for GPS programs in FY 2015, \$21 million above the President’s FY 2015 request. Accounts affected include:
 - A \$30 million increase to the GPS III Space Segment Advance Procurement account. The Committee Report cites “additional funds for advance procurement” as the rationale for the increase.
 - A \$6.6 million reduction comes out of the GPS III Space Segment procurement account. The Committee Report states “launch support and on-orbit check-out ahead of need” as the rationale for the decrease.
 - 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.

Space Based Infrared System

Budget Authority, \$ in million	President's FY 2015 DoD Budget Request	FY15 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
RDT&E	319.501	311.501	309.501
SBIRS High Element EMD	230.893	230.893	230.893
Space Modernization Initiative (SMI)	88.608	80.608	78.608
Procurement	476.984	476.984	476.984
GEO SVs 3 and 4	95.189	95.189	95.189
GEO SVs 5 and 6	318.450	318.450	318.450
HEO hosted payloads 3 and 4	37.245	37.245	37.245
Space Based IR Sensor Program	26.100	26.100	26.100
Total	796.485	788.485	786.485

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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA authorizes \$311.501 million for the SBIRS program in FY 2015, \$8 million below the President's FY 2015 request.
 - The \$8 million reduction comes out of the SBIRS Research & Development account. The Joint Explanatory Statement cites "Wide field of view test bed" as the rationale for the decrease.

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The Omnibus Appropriations bill appropriates authorizes \$309.501 million for the SBIRS program in FY 2015, \$10 million below the President's FY 2015 request.
 - The \$10 million reduction comes out of the SBIRS Research & Development account. The agreement cites "Wide field of view test bed" as the rationale for the decrease.

Wideband Global SATCOM System

Budget Authority, \$ in million	President's FY 2015 DoD Budget Request	FY 2015 NDAA (S. 1847)	FY15 Omnibus Appropriations Bill (H.R. 83)
RDT&E	31.425	31.425	31.425
Command and Control Sys- Consolidated (CCS-C)	16.425	16.425	16.425
WGS Space Systems Resiliency Upgrade	15.000	15.000	15.000
Procurement	38.971	36.071	36.071
WGS block II follow-on (B2FO)	38.971	36.071	36.071
Total	70.396	67.496	67.496

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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA appropriates \$67 million for the WGS program in FY 2015, \$2.9 million below the President's FY 2015 request.
 - The \$2.9 million reduction comes out of the WGS Procurement account. The Explanatory Statement cites "unjustified growth" as the rationale for the decrease.

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The Omnibus Appropriations bill appropriates \$67 million for WGS in FY 2015, \$3 million below the President's FY 2015 request.
 - The \$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	President's FY 2015 DoD Budget Request	FY 2015 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
RDT&E	39.901	39.901	39.901
Weather System Follow-on	39.901	39.901	39.901
Total	39.901	39.901	39.901

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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA authorizes \$39.901 million to fully fund the WSF program at the President's FY 2015 request.
- Section 1612 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 50 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 risks, costs, and schedule;" and
 - Fourth, "the requirements of the weather satellite follow-on system."

FY 2015 Defense Appropriations Bill (H.R. 83):

- 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.

Evolved Expendable Launch Vehicle

Budget Authority, \$ in million	President's FY 2015 DoD Budget Request	FY 2015 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
RDT&E	0.000	220.000	226.000
Evolved Expendable Launch Vehicle	0.000	220.000	226.000
Procurement	1,381.046	1,381.046	1,421.746
Evolved Expendable Launch Vehicle (# of cores)	630.903 (3)	630.903 (3)	733.603 (4)
Space Expendable Launch Capability (SELC)	750.143	750.143	688.143
Total	1,381.046	1,601.046	1,647.746

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.
- 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 lien items provide launch infrastructure support which includes, 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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA appropriates \$1,601 million for the EELV program in FY 2015, \$220 million above the President's FY 2015 request. The \$220 million increase would be applied to the EELV R&D account. The \$220 million would pay for a new rocket propulsion system, funded under the direction of Section 1604.
- Section 1602 directs 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 shall 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 providers;" and
 - Fifth, "the costs or savings of the change."
- Section 1604 directs the Secretary of the Air Force to "develop a next-generation rocket propulsion system that enables the effective, efficient, and expedient transition from the use of non-allied space launch engines to a domestic alternative for national security space launches." The system shall:
 - First, "be made in the United States"
 - Second, "meet the requirements of the national security space community"
 - Third, "be developed by not later than 2019"
 - Fourth, "be developed using full and open competition;" and
 - Fifth, "be available for purchase by all space launch providers of the United States."
- Section 1608 prohibits 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."
- The Secretary of Defense is prohibited from "awarding or renewing a contract for the procurement of property or services for space launch activities under the EELV program if the contract carries out such activities using rocket engines designed or manufactured in the Russian Federation," but includes the same waiver described above, which also exempts the "placement of orders or exercise of options under contract FA8811-13-C-0003 (December 18, 2013), or unless the Secretary, upon advice of the General Counsel of the Department of Defense, certifies to the congressional defense committees that the offeror of a contract has provided sufficient documentation to conclusively demonstrate that prior to February 1, 2014, the offeror had either fully paid for or entered into a legally binding commitment for rocket engines designed or manufactured in the Russian Federation."

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The Omnibus Appropriations bill appropriates \$1,647.7 million for EELV in FY 2015, \$266.7 million above the President's FY 2015 request. Accounts affected include:
 - \$6 million for "Space Launch Range services and capability"
 - \$220 million to pay for a new rocket propulsion system
 - \$125 million to pay for one additional competitive launch (a fourth core)
 - A \$62 reduction comes from "forward financing"

Space Fence

Budget Authority, \$ in million	President's FY 2015 DoD Budget Request	FY 2015 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
RDT&E	214.131	200.131	200.131
Space Fence	214.131	200.131	200.131
Total	214.131	200.131	200.131

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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA authorizes \$200.131 million to fund the Space Fence program, \$14,000 million below the President's FY 2015 request.
 - The Joint Explanatory Statement cites "program delay" as the rationale for the decrease.

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The Omnibus Appropriations bill appropriates \$200.131 million to fund the Space Fence program, \$14,000 million below the President's FY 2015 request.
 - The Joint Explanatory Statement cites "program delay" as the rationale for the decrease.

JSPOC Mission System (JMS)

Budget Authority, \$ in million	President's FY 2015 DoD Budget Request	FY 2015 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
RDT&E	73.779	73.779	73.779
Infrastructure	34.781	34.781	34.781
Mission Applications	38.998	38.998	38.998
Total	73.779	73.779	73.779

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

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA authorizes \$73.779 million for JMS program to fully fund the President's FY 2015 request.

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 NDAA appropriates \$73.779 million for JMS program to fully fund the President's FY 2015 request.

Satellite Communications Responsibilities of Executive Agent for Space

FY 2015 National Defense Authorization Act (S. 1847):

- The agreement directs the Secretary of Defense, not later than 180 days after the date of the enactment, 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 shall”
 - 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.”

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- No similar language.

Pilot Program for Acquisition of Commercial Satellite Communication Services

FY 2015 National Defense Authorization Act (S. 1847):

- 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 the act. 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.”

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- No similar language.

Department of Defense Space Security and Defense Program

FY 2015 National Defense Authorization Act (S. 1847):

- 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 the act, 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 the act.

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- No similar language.

Operationally Responsive Space

FY 2015 National Defense Authorization Act (S. 1847):

- The FY 2015 NDAA authorized \$20 million for ORS, \$20 million above the President’s FY 2015 request.
- Prior to contracting for the launch of a payload for the fifth ORS mission, the Secretary of the Air Force is 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.”

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 Department of Defense Appropriations Act appropriated \$20 million for ORS, \$20 million above the President's FY 2015 request.

Annual Report on Military and Security Developments Involving the Russian Federation

FY 2015 National Defense Authorization Act (S. 1847):

- The agreement requires 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 should "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 should 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."
- Congress further directs the Secretary of Defense to "consult closely with the Director of National Intelligence and the Secretary of State throughout the preparation of the report required under this section, including to avoid duplicative reporting."

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- No similar language.

Assessment of cost of Space Situational Awareness architecture

FY 2015 National Defense Authorization Act (S. 1847):

- The agreement includes a Senate provision which 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." According to the Senate Report, the study is 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 should be submitted to Congress no later than one year after the date of the enactment of this Act.
- The Joint Explanatory Statement additionally requires the report to have both an "unclassified summary and a classified appendix."

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- No similar language.

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

FY 2015 National Defense Authorization Act (S. 1847):

- Congress includes a Senate provision which states that of "the funds authorized to be appropriated by this Act or any other Act and made available for the Space Security and Defense Program, a majority 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.”
- Congress further would “require the development of the capabilities in addition to strategies, require a review of the appropriate types of funding for the program, and sunset the provision in 5 years from the date of enactment of this Act.”

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- No similar language.

Limitation on funding for storage of Defense Meteorological Satellite program satellites

FY 2015 National Defense Authorization Act (S. 1847):

- The agreement fences off 50 percent of the funds for the weather satellite follow-on system “until the Secretary submits to the congressional defense committees the plan to meet the meteorological and oceanographic collection requirements validated by the Joint Requirements Oversight Council, including the requirements of the combatant commands, military departments and agencies of the DOD.” Additionally, “the Government Accountability Office (GAO) shall review the plan and the Analysis of Alternatives to determine if it meets best practices and fully addresses the concerns of the acquisition, operational and user communities, including how DOD assessed and dealt with cost, schedule and risks posed by each alternative considered.”
- Additionally, Congress will prohibit funds for storage of the last DMSP until the Secretary of Defense certifies to the congressional defense committees that:
 - First, “the Department of Defense intends to launch the satellite;”
 - Second, “storing the satellite until the anticipated launch is the most cost-effective approach to meeting the requirements of the DOD.”
- Finally, “If the Secretary of Defense decides not to launch the satellite, the Secretary of Defense must certify that the related requirements of the DOD will be met.”

FY 2015 Omnibus Appropriations Bill (H.R. 83):

- The FY 2015 DoD Appropriations Act appropriates \$78.9 million for the Defense Meteorological Satellite Program, \$9 million less than the President’s FY 2015 request. The agreement cites “excess growth” for the rationale in this decrease.
- The agreement also “prohibits the Secretary of the Air Force from obligating more than \$28 million until she certifies to the congressional defense committees that the DMSP-20 satellite will be launched by the end of calendar year 2016.” Alternatively, “if the decision is not to launch the DMSP-20 satellite by the end of calendar year 2016, it is expected that the program be brought to an orderly close during calendar year 2015.”

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

Budget Authority, \$ in million	President's FY 2015 DoD Budget Request	FY 2015 NDAA (S. 1847)	Omnibus Appropriations Bill (H.R. 83)
PROCUREMENT			
ARMY, Aircraft Procurement			
Communications, Navigation, and Surveillance	115.795	115.795	115.795
GATM Rotary Wing Aircraft (enhanced GPS capability)	18.209	18.209	18.209
MQ-1 UAV, SATCOM Airborne Data Terminal	14.227	14.227 [†]	14.227 [‡]
ARMY, Other Procurement			
Defense Enterprise Wideband SATCOM Systems (DEWSS)	118.085	118.085	118.085
Transportable Tactical Command Communications	13.999	13.999	13.999
Super High Frequency (SHF) Terminal	6.494	6.494	6.494
Navstar Global Positioning System	1.635	1.635	1.635
Secure Mobile Anti-Jam Reliable Tactical Terminal (SMART-T)	13.554	13.554	11.454
Global Broadcast Service (GBS)	18.899	18.899	18.899
Mod of In-Svc Equipment (TAC SAT)	2.849	2.849	2.849
Global Positioning System-Survey (GPS-S)	5.437	5.437	5.437
Joint Tactical Radio System	175.711	125.711	40.711
Joint Tactical Ground Stations (JTGS)	5.286	5.286	5.286
Initial Spares – C&E, Defense SATCOM Sys Spares	5.774	5.774	5.774 [§]
NAVY, Aircraft Procurement			
Common Avionics Changes, Global Positioning System (GPS)	7.524	7.524	3.060
NAVY, Weapons Procurement			
Fleet Satellite Communications Follow-on	208.700	206.700	206.700
NAVY, Other Procurement			
Maritime Integrated Broadcast System, Joint Tactical Terminal – Maritime (JTT-M)	3.447	3.447	3.447
Shipboard Tactical Comms	14.410	14.410	14.410
Submarine Communication Equipment, Submarine High Data Rate Antenna	5.256	5.256	3.282
Satellite Communications Systems	13.218	13.218	11.453
Navy Multiband Terminal (NMT)	272.076	272.076	247.817
Navstar GPS Receivers (SPACE)	15.232	15.232	15.232
Marines CORPS, Procurement			
Intelligence Support Equipment, Commercial Satellite Communication Set	44.340	42.550	38.340

[†] The FY 2015 NDAA appropriates 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.

[‡] The FY 2015 Omnibus bill appropriates an additional \$47.500 million for MQ-1 UAVs. It’s unclear if that would impact the “SATCOM Airborne Data Terminal” portion of the program.

[§] The President requested \$50.032 million for Initial Spares – C&E in FY 2015. The Defense Appropriations Bill in the omnibus appropriates \$36.032 million. The \$14 million reduction is for “unobligated balances.” It is unclear what effect, if any, the reduction would have on a final appropriation for Defense SATCOM Sys Spares.

Radio Systems	64.494	64.494	64.494
AIR FORCE, Aircraft Procurement			
MQ-9, Predator Primary Satellite Link (PPSL)	1.186	1.186**	1.186**
Initial Spares/Repairs Parts, MILSATCOM Terminals	5.540	5.540	5.540
B-2A, EHF SATCOM and Computers	8.189	8.189	6.189
C-32A, Wideband SATCOM	4.000	4.000	4.000
C-37A, Wideband SATCOM	18.000	18.000	18.000
KC-10 Mods, UHF SATCOM Antenna	0.189	0.189	0.189
C-40, Wideband SATCOM	4.000	4.000	4.000
E-4	2.400	2.400	2.400
Family of Advanced Beyond Line-of-Sight Terminals (FAB-T)	32.026	32.026	27.026
Other Aircraft, EHF SATCOM	21.784	21.784	21.784
AIR FORCE, Missile Procurement			
Advanced EHF	298.890	298.890	298.890
Wideband Gapfiller Satellites	38.971	36.071	36.071
GPS III Space Segment	235.397	235.397	228.797
GPS III Space Segment Advance Procurement	57.000	57.000	87.000
Spaceborne Equipment (COMSEC)	16.201	16.201	13.401
Global Positioning System (SPACE)	52.090	52.090	50.000
Defense Meteorological Satellite Program	87.000	87.000	78.000
Evolved Expendable Launch Vehicle Infrastructure	750.143	715.143	668.143
Evolved Expendable Launch Vehicle (# of launch vehicles)	630.903 (3)	630.903 (3)	733.603 (4)
Space Based Infrared System High	450.884	450.884	444.884
AIR FORCE, Other Procurement			
Air & Space Operations Center	25.772	25.772	25.772
Family of Beyond-Line-of-Sight Terminals	60.230	60.230	57.230
Space Based IR Sensor Program	26.100	26.100	26.100
Navstar GPS Space	2.075	2.075	2.075
NUDET Detection System Space	4.656	4.656	4.656
Air Force Satellite Control Network	54.630	54.630	54.630
Spacelift Range System Space	69.713	69.713	62.713
MILSATCOM Space	41.355	41.355	41.355
Space MODS Space	31.722	31.722	31.722
Counterspace System	61.603	61.603	59.603
Defense Space Reconnaissance Program	77.898	77.898	77.898
Spares and Repair Parts, Spacelift Range System	3.136	3.136	3.136
Spares and Repair Parts, NAVSTAR Global Positioning System	0.309	0.309	0.309
Spares and Repair Parts, MILSATCOM Terminals	12.267	12.267	12.267
DEFENSE-WIDE, Procurement			
Teleport Program, Base	80.622	80.622	80.622
Item Less Than \$5 Million, Transport	5.000	5.000	5.000

** The FY 2015 NDAA authorizes an additional \$120,000 to purchase 8 additional MQ-9s. However, due to use of "available prior year funds for FY 15 requirements," the increase is \$98 million.

** The FY 2015 Defense Appropriations Bill in the omnibus appropriates an additional \$45,000 to purchase additional MQ-9s.



DISA, EPC/SECN	1.624	1.624	1.624
USSOCOM, Procurement			
Warrior Systems, Communications Equipment and Electronic SOF Deployable Node (SDN)	69.950	69.950	69.950
<u>RESEARCH, DEVELOPMENT, TEST, AND EVALUATION</u>			
ARMY, Applied Research			
Sensors and Electronic Survivability, Tactical Space Research	4.778	4.778	4.778 ^{**}
Electronics and Electronic Devices, Millimeter Wave Components and Architectures for Advanced Electronic Systems	5.357	5.357	5.357 ^{**}
As Command, Control, Communications Technology, Communication Technology, Communications Technology, Antenna	3.948	3.948	3.948
Command, Control, Communications Technology, Command, Control and Platform Electronics Tech, Battle Space Awareness and Positioning	4.794	4.794	4.794
Military Engineering Technology, Topographical, Image Intel & Space	15.478	15.478	15.478
ARMY, Advanced Technology Development			
Command, Control, Communications Advanced Technology, Space Application Advanced Technology	6.883	6.883	6.883
Electronic Warfare Advanced Technology, TR1: TAC C4 Technology Int, Wireless Mobile Networking	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	12.797	12.797	12.797
Army Space Systems Integration	13.999	13.999	13.999
ARMY, System Development & Demonstration			
TROJAN-RH12-MIP, Development of SATCOM dishes and receivers	0.983	0.983	0.983
Joint Tactical Radio	9.832	9.832	9.832
Brigade Analysis, Integration and Evaluation, DY3: NIE Test & Evaluation, Non ATEC Support Cost	24.785	24.785	24.785
Joint Tactical Network Center (JTNC), MUOS Waveform	8.440	8.440	8.440
Joint Tactical Network (JTN)	17.999	17.999	17.999
ARMY, Management Support			
Army Kwajalein Atoll	176.041	176.041	176.041
ARMY, Operational Systems Development			
Joint Tactical Ground System	10.209	10.209	10.209

^{**} The President requested \$33.515 million for Sensors and Electronic Survivability in FY 2015. The Defense Appropriations Bill in the omnibus appropriates an additional \$7.750 million for “cyberspace security training” and an additional \$5 million for “force protection radar development.” It is unclear what effect, if any, the additional appropriation would have on Tactical Space Research.

^{**} The President requested \$56.435 million for Electronics and Electronics Devices in FY 2015. The Defense Appropriations Bill in the omnibus appropriates an additional \$12 million for “silicon carbide research” and an additional \$5 million as a “program increase.” It is unclear what effect, if any, the additional appropriation would have on Millimeter Wave Components and Architectures for Advanced Electronic Systems.

SATCOM Ground Environment	11.011	11.011	11.011
NAVY, Basic Research			
Defense Research Sciences, Atmosphere and Space Sciences	25.053	25.053	25.053 ^{***}
NAVY, Applied Research			
Common Picture Applied Research, Tactical Space Exploitation	6.265	6.265	6.265
Electromagnetic Systems Applied Research, Navigation Technology	5.014	5.014	5.014
NAVY, Advanced Technology Development			
Electromagnetic Systems Applied Technology, Global Positioning System (GPS) & Navigation Technology	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	0.642	0.642	0.642
Air/Ocean Tactical Applications, Precise Timing and Astronomy	8.954	8.954	8.954
Space and Electronic Warfare (SEW) Architecture/Engineering Support	22.393	22.393	18.798
NAVY, System Development & Demonstration			
Air/Ocean Equipment Engineering, Fleet METOC Equipment, Environmental Satellite Receiver Processor (ESRP)	0.240	0.240	0.240
Navigation/Id System, NAVSTAR GPS Equipment	18.011	18.011	18.011
NAVY, Management Support			
Navy Space & Electronic Warfare (SEW) Support, Base	2.505	2.505	2.505
Space & Electronic Warfare Surveillance/Reconnaissance Support, TAC SAT Recon Office	8.325	8.325	8.325
NAVY, Operation Systems Development			
Marine Corps Communications System, Joint Tactical Radio System	4.036	4.036	4.036 ⁺⁺⁺
Satellite Communications	41.829	41.829	41.829
Navy Meteorological & Ocean Sensors-Space (METOC)	0.359	0.359	0.359
RDTEN 3, Other Satellite Program	0.000	0.000	0.000
AIR FORCE, Basic Research			
Defense Research Sciences, Physics and Electronics (Major Thrust 2)	18.492	18.492	18.492
Defense Research Sciences, Aerospace, Chemical and Material Sciences (Major Thrust 3)	35.935	35.935	35.935
AIR FORCE, Applied Research			

^{***} The President requested \$443.697 million for Navy Defense Research Sciences in FY 2015. The Defense Appropriations Bill in the omnibus appropriates an additional \$53.448 million. It is unclear what effect, if any, the additional appropriation would have on Atmosphere and Space Sciences.

⁺⁺⁺ The President requested \$77.398 million for Marine Corps Communications Systems in FY 2015. The Defense Appropriations Bill in the omnibus appropriates \$74.258 million. It is unclear what effect, if any, the \$3.14 million reduction would have on the Joint Tactical Radio System.

Aerospace Propulsion, Advanced Propulsion Technology	17.646	17.646	17.646
Aerospace Propulsion, Rocket Propulsion Technology	51.287	51.287	51.287
Aerospace Sensors, EO Component Technology, Antennas	4.763	4.763	4.763
Aerospace Sensors, EO Sensors & Countermeasures Tech, Trusted Systems for ISR and Avionics Systems	5.250	5.250	5.250
Aerospace Sensors, RF Sensors & Countermeasures Tech, Hybrid Sensor Technologies	7.939	7.939	7.939
Space Technology	98.229	98.229	98.229
Directed Energy Technology, Lasers & Imaging Technology, Optical Space Situational Awareness and Satellite Vulnerability	25.127	25.127	25.127
AIR FORCE, Advanced Technology Development			
Advanced Aerospace Sensors, Advanced Aerospace Sensors Technology, Integrated Navigation Technologies	4.910	4.910	4.910
Aerospace Propulsion & Power Technology, Space & Missile Rocket Propulsion	26.552	26.552	26.552 ⁺⁺⁺
Advance Spacecraft Technology	69.026	69.026	69.026
Maui Space Surveillance System (MSSS)	14.031	14.031	14.031
AIR FORCE, Advanced Component Development & Prototypes			
NAVSTAR Global Positioning System (User Equipment)	156.659	156.659	156.659
Space Control Technology	6.075	6.075	6.075
International Space Cooperative R&D	0.833	0.833	0.833
Space Security & Defense Program	32.313	32.313	31.613
Weather System Follow-on	39.901	39.901	39.901
Operationally Responsive Space	0.000	20,000	20.000
AIR FORCE, System Development & Demonstration			
Counterspace Systems	23.746	23.746	23.476
Space Situation Awareness Systems	9.462	9.462	9.462
Space Fence	214.131	200.131	200.131
Spaced Based Infrared Systems High	319.501	311.501	309.501
Rocket Engine Development	-	220.000	220.000
Evolved Expendable Launch Vehicle Program	0.000	220.000	226.000
Joint Tactical Network Center (JTNC)	.078	.078	0.000
Advanced EHF MILSATCOM	314.378	314.378	308.578
Polar MILSATCOM	103.552	103.552	103.552
Wideband Global SATCOM	31.425	31.425	31.425
Air & Space Ops Center	85.938	85.938	85.938
AIR FORCE, Management Support			
Rocket Systems Launch Program	34.364	34.364	34.364
Space Test Program	21.161	21.161	21.161
Space Test and Training Range	19.512	19.512	19.512

⁺⁺⁺ The President requested \$124.236 million for Aerospace Propulsion & Power Technology in FY 2015. The Defense Appropriations Bill in the omnibus appropriates an additional \$8.5 million for "silicon carbide research." It is unclear what effect, if any, the additional appropriation would have on Space & Missile Rocket Propulsion.

Development			
Space and Missile Center (SMC) Civilian Workforce	181.727	177.800	176.727
Operationally Responsive Space	0.000	20.000	20.000
AIR FORCE, Operational Systems Development			
Service Support to STRATCOM-Space Activities, Joint NavWar Center	3.134	3.134	3.134
Air & Space Operations Center	41.066	41.066	26.666
Space Superiority Intelligence	12.218	12.218	12.218
Information Systems Security Program, Cryptographic Modernization, Space Telemetry Tracking & Commanding (TT&C)	8.156	8.156	8.156
Information Systems Security Program, Cryptographic Modernization, Space Modular Common Crypto (SMCC)	28.107	28.107	28.107
MILSATCOM Terminals	55.208	55.208	55.208
Satellite Control Network	20.806	20.806	20.806
Space & Missile Test & Evaluation Center	3.674	3.674	3.674
Space Warfare Center (Space Innovation, Integration and Rapid Technology Development)	2.480	2.480	2.071
Spacelift Range System (SPACE)	13.462	13.462	13.462
GPS III Space Segment	212.571	212.571	212.571
JSPOC Mission System	73.779	73.779	73.779
NUDET Detection System (SPACE)	20.468	20.468	20.468
Space Situation Awareness Operations	11.596	11.596	11.596
Global Positioning System III-Operational Control Segment	299.760	299.760	299.760
DARPA, Applied Research			
DARPA, Tactical Technology, International Space Station SPHERES Integrated Research Experiments	3.200	3.200	3.200
DARPA, Advanced Technology Development			
DARPA, Space Programs & Technology	179.883	179.883	179.883
MDA, Advanced Component Development & Prototypes			
Space Tracking & Surveillance System	31.346	31.346	31.346
Ballistic Missile Defense System Space Programs	6.389	6.389	6.389
DISA, Operations Systems Development			
Long-Haul Communications, Presidential and National Voice Conferencing, National Emergency Action Decision Network	5.866	5.866	5.866
Teleport	2.697	2.697	2.697
OPERATION & MAINTENANCE			
Army Space Activities, Operation & Maintenance			
Security Programs, Air Defense Contracts	0.660		

and Space Support			
Servicewide Communications, Air Defense Contracts and Space Support	0.708		
NAVY, Operating Forces			
Space Systems & Surveillance	207.038	207.038	207.038
NAVY, Administration & Servicewide Activities			
Space and Electronic Warfare Systems	73.159	73.159	73.159
AIR FORCE, Operating Forces 1			
Launch Facilities	282.710	282.710	282.710
Space Control Systems	397.818	397.818	397.818
Defense-Wide, Defense Information Systems Agency (DISA)			
Standardized Tactical Entry Point (STEP)	1.108		1.108
DoD Teleport Program	14.097	14.097	14.097
Defense Information Systems Network Enterprise Activities	110.812		110.812
<u>DEFENSE WORKING CAPITAL FUND</u>			
Defense-Wide Working Capital Fund (DWWCF) Capital Fund			
Commercial Satellite Services	498.3	498.3	522.6
Enhanced Mobile Satellite Services (Iridium)	117.6	117.6	120.8
Overseas Contingency Operations (OCO)	0.000	0.000	0.000
Mobile Satellite – Broadband Global Area Network (BGAN)	47.000	47.000	
<u>Overseas Contingency Operations</u>			
AIR FORCE, Other Procurement			
Space Programs, MILSATCOM Space	19.547	19.547	19.547
Special Support Projects, Defense Space Reconnaissance Program	6.100	6.100	6.100
AIR FORCE, Operations and Maintenance			
Operating Forces, Global C3I & Early Warning, 3.0 Operating Support	90.526	90.526	90.526
Operating Forces, Space Control Systems	4.942	4.942	4.942
Operating Forces, Launch Facilities	0.852	0.852	0.852
DISA, Major Equipment, Procurement			
Teleport	4.330	4.330	4.330
USSOCOM, Procurement			
Warrior Systems, Communications Equipment and Electronic SOF Deployable Node (SDN)	17.918	17.918	17.918

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™](#) and [Space Technology Hall of Fame®](#) 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®. The Space Foundation also conducts research and analysis and government affairs activities from its Washington, D.C., office and has a field

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