

U.S. Defense Space-Based and -Related Systems Fiscal Year 2016 Budget Comparison

Update 1

President's FY 2016 Department of Defense Budget Request; FY 2015 Consolidated Appropriations Act (P.L. 112-235)

This document provides an overview of unclassified space-based and related programs requested in the Department of Defense's (DoD) FY 2016 Budget in comparison with the FY 2015 Consolidated Appropriations Act (P.L. 112-235). 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.

Budget Authority, \$ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request
Satellites & Programs		
Mobile User Objective System (MUOS)	219.000	56.103
Advanced Extremely High Frequency (AEHF)	607.468	561.598
Global Positioning System (GPS)	875.518	952.686
Space Based Infrared System (SBIRS)	786.485	834.101
Wideband Global SATCOM (WGS)	67.496	109.819
Weather System Follow-on	39.901	76.108
Space Fence	200.131	243.909
JSPOC Mission Systems (JSPOC)	73.779	81.911
Launch		
Evolved Expendable Launch Vehicle		
(EELV)	1,647.746	1,455.915

Satellites, Programs and Launch Services – FY 2015 Funding^{*}

^{*}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	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request
RDT&E	12.300	16.171
Satellite Communications - Mobile		
User Objective System (MUOS)	12.300	16.171
Procurement	206.700	39.932
Fleet Satellite Comm Follow-On	206.700	39.932
Total	219.000	56.103

Mission

The <u>Mobile User Object System (MUOS)</u> 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 <u>Ultra High Frequency Follow-On (UFO)</u> system satellites that currently provide narrowband tactical communications. On February 24, 2012 the first Mobile User Objective System satellite was successfully launched.

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

• \$16.171 million for MUOS;

- \$14.449 million for Ground System Updates
 - Includes "on-site and depot replenishment and tech refresh equipment for the entire MUOS Ground system, which includes 4 remote access facilities (or ground stations) and 2 satellite control facilities. The unit cost fluctuations are driven by varying system configuration requirements (i.e. equipment type, cost, and quantity) and location of the particular sites. As a result of site-specific requirements, costs are not allocated evenly across all the sites per FY. The budget is scaled to provision the entire ground system with adequate replenishment equipment to mitigate parts obsolescence and availability issues. FY14-20 represents 4 ground stations and 2 satellite control facilities."
- \$21.500 million for Satellite Storage
- \$796 thousand for EELV Launch Vehicle Production
- \$3.187 million for Satellite Production



Advanced Extremely High Frequency

Budget Authority, S in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request
RDT&E	314.378	228.230
Advanced MILSATCOM	192.038	53.505
Evolved AEHF MILSATCOM	122.340	174.725
Procurement	298.890	333.366
Advanced EHF SVs 3 and 4	67.866	93.140
Advanced EHF SVs 5 and 6	231.024	240.226
Total	613.268	561.598

Mission

The <u>Advanced Extremely High Frequency (AEHF)</u> 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 <u>MILSTAR satellite</u>, 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 2016 Department of Defense Budget Request

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

- \$53.505 million for AEHF Key Management Infrastructure (KMI) transition;
- \$32.116 million for AEHF Capabilities Insertion Program (CIP);
- \$32.851 million for protected MILSATCOM "design for affordability";
- \$95.435 million for protected tactical demonstration;
- \$14.323 million for evolved AEHF (E-AEHF) strategic only;

- \$77.175 million for checkout and launch for AEHF space vehicle (SV) 3 and 4;
- \$7.563 million for AEHF SV 3 and 4 technical support (FFRDC) to include obsolescence and DMS studies and analyses (PMA);
- \$6.100 million for AEHF SV 3 and 4 program office support (PMA);
- \$2.302 million for AEHF SV 3 and 4 enterprise systems engineering & integration (SE&I);
- \$15.965 million for support support cost element category;
- \$186.859 million for AEHF SV 5 and 6 block buy;
- \$2.926 million for checkout and launch for AEHF space vehicle (SV) 5 and 6;
- \$1.890 million for command and control systems-consolidated (CCS-C) launch support for AEHF 5 and 6;
- \$12.031 million FOR AEHF SV 5 and 6 technical support (FFDRC) to include obsolescence/DMS studies and analyses (PMA);
- \$19.500 million for AEHF program office support (PMA);
- \$9.934 million for AEHF SV 5 and 6 enterprise systems engineering & Integration (SE&I);
- \$8.976 million for ACF/IC2 Test Asset Support



Global Positioning System

Budget Authority,	FY 2015 Consolidated Appropriations	President's FY 2016 DoD Budget
\$ in million	Act (P.L. 112-235)	Request
RDT&E	668.990	673.422
GPS III Space Segment	212.571	180.902
GPS III - Operational Control Segment	299.76	350.232
NAVSTAR Global Positioning System		
(User Equipment)	156.659	142.288
Procurement	206.528	279.264
GPS IIIA Space Segment	141.797	199.218
GPS IIF and launch support	50.000	66.135
OCS COTS Upgrade	12.656	11.882
NAVSTAR GPS Space	2.075	2.029
Total	875.518	952.686

Mission

The <u>Navstar Global Positioning System (GPS)</u> 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.

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

- \$1.290 million for Search and Rescue GPS (SAR/GPS);
- \$129.449 million for GPS III SVs 1 and 2;
- \$41.900 million for production readiness
- \$8.263 million for systems engineering/launch/on-orbit support and testing;
- \$288.992 million for operational control segment OCX development;
- \$23.300 for Technical Support/development of the Standardized Space Trainer (SST), Enterprise Mission Planning Systems
- \$611.240 million for GPS Enterprise Integrator
- \$68.744 million for Military Global Positioning System User Equipment (MGUE) increment 1 technology development;
- \$4.800 million for MGUE advanced technology;
- \$54.938 million for system/platform integration and performance certification;
- \$13.806 million for information assurance and test/evaluation;

- \$3.308 million for GPS III SV 11+ SAR;
- \$247.310 million for GPS II SV 3 through 10 space vehicle
- \$1.700 million for GPS II SV 3 through 10 launch services
- \$15.400 million for A&AS GPS III SV 3-10 FFRDC
- \$18.500 million for A&AS GPS III SV 3-10 PMA



Space Based Infrared System

Budget Authority, \$ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request
RDT&E	309.501	292.235
SBIRS High Element EMD	230.893	203.540
Space Modernization Initiative (SMI)	78.608	88.695
Procurement	476.984	541.866
GEO SVs 3 and 4	95.189	62.501
GEO SVs 5 and 6	318.450	379.814
HEO hosted payloads 3 and 4	37.245	10.361
Space Based IR Sensor Program	26.100	90.190
Total	786.485	834.101

Mission

The <u>Space Based Infrared Systems (SBIRS)</u> 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 <u>Defense Support Program (DSP)</u> 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 2016 Department of Defense Budget Request

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

- \$203.540 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;

- \$10.768 million for Geostationary (GEO) Satellite Vehicles (SV) 3 and 4 integration and assembly;
- \$8.317 million for GEO SVs 3 and 4 launch vehicle and range integration;
- \$20.963 million for GEO SVs 3 and 4 launch operations and checkout;
- \$22.000 million for Interim Contractor Support (ICS);
- \$0.453 million for GEO SVs 3 and 4 advisory and assistance services (A&AS) (PMA);
- \$228.712 million for GEO SVs 5 and 6 hardware;
- \$46.308 million for GEO SVs 5 and 6 integration and assembly;
- \$25.508 million for GEO SVs 5 and 6 obsolescence non-recurring;
- \$11.922 million for GEO SVs 5 and 6 launch vehicle and range integration;
- \$8.124 million for GEO SVs 5 and 6 other support;
- \$33.966 million for GEO SVs 5 and 6 FFRDC;
- \$22.981 million for GEO SVs 5 and 6 advisory and assistance services (A&AS) (PMA);
- \$2.293 million for GEO SVs 5 and 6 program support;
- \$2.928 million for HEO hosted payloads 3 and 4 host accommodation;
- \$7.542 million for HEO hosted payloads 3 and 4 launch operations and checkout;
- \$7.633 million for SBIRS Mobile System and Fixed Comm Electronics Upgrades;
- \$82.557 million for (2) SBIRS Survivable Endurable Evolution (S2E2)



Wideband Global SATCOM System

Budget Authority, \$ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request
RDT&E	31.425	56.343
Command and Control Sys-		
Consolidated (CCS-C)	16.425	8.660
WGS Space Systems Resiliency		
Upgrade	15.000	47.683
Procurement	36.071	53.476
WGS block II follow-on (B2FO)	36.071	53.476
Total	67.496	109.819

Mission

The <u>Wideband Global SATCOM (WGS)</u> 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 <u>Defense Satellite Communications Systems (DSCS)</u>. Each WGS satellite will deliver the equivalent capacity of the entire existing DSCS constellation.

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

- \$8.660 million for Command and Control System-Consolidated (CCS-C) development;
- \$47.683 million for WGS upgrade;

- \$39.336 million for WGS block II follow-on (B2FO) checkout & launch/launch readiness;
- \$2.083 million for command and control system-consolidated (CCS-C) WGS B2FO support;
- \$0.242 million WGS B2FO test support;
- \$1.042 million WGS B2FO technical analysis support;
- \$9.734 million for WGS B2FO program management administration;
- \$1.039 million for WGS B2FO A&AS;



Weather System Follow-on

Budget Authority, \$ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request
RDT&E	39.901	76.108
Weather System Follow-on	39.901	76.108
Total	39.901	76.108

Mission

The Weather System Follow-on (WSF) is the Department of Defense's follow-on to the <u>Defense Meteorological</u> <u>Satellite Program (DMSP)</u> 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.

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

• \$76.108 million for WSF



Evolved Expendable Launch Vehicle

Budget Authority, \$ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request
RDT&E	226.000	84.438
Evolved Expendable Launch Vehicle	226.000	84.438
Procurement	1,421.746	1,371.477
Evolved Expendable Launch Vehicle (#		
of cores)	733.603 (4)	800.201 (5)
Space Expendable Launch Capability		
(SELC)	688.143	571.276
Total	1,647.746	1,455.915

Mission

The <u>Evolved Expendable Launch Vehicle (EELV)</u> 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.

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

• \$84.438 million for Domestic Launch Service Providers, to invest in two or more launch service providers' new launch system development and/or upgrades to existing launch systems to provide two or more domestic, commercially-viable launch providers that also meet NSS requirement available by the end of FY 2022.

Procurement:

- \$556.233 million for Space Expendable Launch Capability (SELC) launch capability;
- \$0.555 million for SELC program management administration other government costs;
- \$14.488 million for SELC range, certification, and other direct government costs;
- \$632.981 million for launch services (5 launch cores);
- \$2.732 million for program management administration other government costs;
- \$10.668 million for program management administration contractor services;
- \$19.516 million for systems engineering and integration
- \$32.562 million for range, certification, and other direct government costs;
- \$101.742 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 stabilized the industrial base, provided predictability to maintain mission success, and reduced costs. The Air Force, National Reconnaissance Office (NRO), and the National Aeronautics and Space Administration (NASA) agreed to a coordinated strategy for certification of New Entrants to launch payloads in support of NSS and other USG requirements. The Air Force continues to actively evaluate the addition of New Entrants to reliably launch NSS requirements. Once a New Entrant demonstrates a successful launch the Air Force intends to award integration studies. If competition is not viable at the time of need, missions will be awarded to the incumbent. The Air Force plans to compete launch service procurements beginning in FY18, if there is more than one certified provider for some or all reference orbits. The implementation of this new strategy enables the DoD to reliably place NSS space vehicles into earth orbit.



- 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 are annual options and 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.
- In 2015, Congress added an additional competitive "mission" that will be fully funded in this EELV P-1 line item (i.e., no Capability funds).
- The FY2016 funding request was reduced by \$168 million to account for the availability of prior year funds to forward finance launch infrastructure, services, and range activities.



Space Fence

Budget Authority, \$ in million	FY 2015 Consolidated Appropriations Act (P.L. 112-235)	President's FY 2016 DoD Budget Request
RDT&E	200.131	243.909
Space Fence	200.131	243.909
Total	200.131	243.909

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.

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

• \$243.909 million for Space Fence;



JSPOC Mission System (JMS)

Budget Authority,	FY 2015 Consolidated Appropriations	President's FY 2016 DoD Budget
\$ in million	Act (P.L. 112-235)	Request
RDT&E	73.779	81.911
Infrastructure	34.781	31.112
Mission Applications	38.998	38.390
Increment 3	-	12.419
Total	73.779	81.911

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).

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

- \$31.112 million for JMS Infrastructure increment 2;
- \$38.390 million for JMS Mission Applications increment 2;
- \$12.419 million for newly-created Increment 3, which includes new start efforts to include pre-Milestone A requirements development, systems engineering and program planning



Appendix: Summary	v of Unclassified S	pace-related Prog	grams requeste	ed in FY 2015	budget**

Budget Authority,	FY 2015 Consolidated Appropriations Act (Enacted)	President's FY 2016
\$ in million	(P.L. 112-235)	DoD Budget Request
PROCUREMENT		
ARMY, Aircraft Procurement		
Communications, Navigation, and		
Surveillance	115.795	82.904
GATM Rotary Wing Aircraft (enhanced GPS		
capability)	18.209	12.612
MQ-1 UAV, SATCOM Airborne Data		
Terminal (SADT) (and number)	36.059 (19)	28.533 (15)
ARMY, Other Procurement		
Defense Enterprise Wideband SATCOM		
Systems (DEWSS)	118.085	196.306
Transportable Tactical Command		
Communications	13.999	50.722
Super High Frequency Terminal (SHF Term)	6.494	7.629
Navstar Global Positioning System	1.635	14.027
Secure Mobile Anti-Jam Reliable Tactical		
Terminal (SMART-T)	11.454	13.453
Global Broadcast Service (GBS)	18.899	6.265
Mod of In-Svc Equipment (TAC SAT)	2.849	1.042
Global Positioning System-Survey (GPS-S)	5.437	4.242
Joint Tactical Radio System	40.711	64.640
Joint Tactical Ground Station (JTAGS)	5.286	3.906
NAVY, Aircraft Procurement		
Common Avionics Changes, Global		
Positioning System (GPS)	3.060	7.849
NAVY, Weapons Procurement		
Fleet Satellite Communications Follow-on	206.700	39.932
NAVY, Other Procurement		
Maritime Integrated Broadcast System,		
Joint Tactical Terminal – Maritime (JTT-M)	3.447	-
Shipboard Tactical Comms	14.410	8.722
Submarine Communication Equipment,		
Submarine High Data Rate Antenna	3.282	6.071
Satellite Communications Systems	11.453	30.892
Navy Multiband Terminal (NMT)	247.817	118.113
Navstar GPS Receivers (SPACE)	15.232	12.359
Marines CORPS, Procurement		
Intelligence Support Equipment,		
Commercial Satellite Communication Set	39.790	29.936
Radio Systems	64.494	80.584
AIR FORCE, Aircraft Procurement		
Initial Spares/Repairs Parts, MILSATCOM		
Terminals	5.540	-
B-2A, EHF SATCOM and Computers	6.189	-
C-32A, Wideband SATCOM	4.000	35.634



C-37A, Wideband SATCOM	18.000	10.00
KC-10 Mods, UHF SATCOM Antenna	0.189	-
C-40. Wideband SATCOM	4.000	9.900
E-4. AEHF Compatible Terminal/PNVC	2.400	3.965
Family of Advanced Beyond Line-of-Sight		
Terminals (FAB-T)	27.026	44.163
Other Aircraft, EHF SATCOM	21.784	0.001
AIR FORCE. Space Procurement		
Advanced FHF	298.890	333,366
Wideband Gapfiller Satellites	36 071	53 476
GPS III Space Segment	228 797	286 218
GPS III Space Segment Advance	2201737	200.210
Procurement	87 000	87 000
Spaceborne Equipment (COMSEC)	13 401	18 362
Global Positioning System (SPACE)	50,000	66 135
	70.000	00.155
Defense Meteorological Satellite Program	/8.000	89.351
Evolved Expendable Launch Venicle	CC0 1 12	574.076
Capability	668.143	5/1.2/6
Evolved Expendable Launch Vehicle (# of	722 (02 (4)	000 201 (5)
launch vehicles)	/33.603 (4)	800.201 (5)
Space Based Infrared System High (SBIR		150 656
High)	444.884	452.676
AIR FORCE, Other Procurement	05 330	10.040
Air & Space Operations Center	25.772	12.043
Family of Beyond-Line-of-Sight Terminals	57.230	79.592
Space Based IR Sensor Program	26.100	90.190
Navstar GPS Space	2.075	2.029
NUDET Detection System Space	4.656	5.095
Air Force Satellite Control Network	54.630	76.673
Spacelift Range System Space	62.713	113.275
MILSATCOM Space	41.355	35.495
Space MODS Space	31.722	23.435
Counterspace System	59.603	43.065
Defense Space Reconnaissance Program	77.898	100.663
Spares and Repair Parts, Spacelift Range		
System	3.136	-
Spares and Repair Parts, NAVSTAR Global		
Positioning System	0.309	0.533
Spares and Repair Parts, MILSATCOM		
Terminals	12.267	0.054
DEFENSE-WIDE, Procurement		
Teleport Program, Base	80.622	62.789
Item Less Than \$5 Million, Transport	5.000	5.000
DISA, EPC/SECN	1.624	1.624
USSOCOM, Procurement		
Warrior Systems, Communications		
Equipment and Electronic SOF Deployable		
Node (SDN)	69.950	56.363
RESEARCH, DEVELOPMENT, TEST, AND		
EVALUATION		
ARMY, Applied Research		



Sensors and Electronic Survivability,		
Tactical Space Research	4.778 [†]	5.808
Electronics and Electronic Devices,		
Millimeter Wave Components and		
Architectures for Advanced Electronic		
Systems	5.357 [‡]	5.267
As Command, Control, Communications		
Technology, Communication Technology,		
Antenna and Hardware Technologies		
(formerly named Antenna Technologies)	3.948	2.787
Command, Control, Communications		
Technology, Command, Control and		
Platform Electronics Tech, Battle Space		
Awareness and Positioning	4.794	3.870
Military Engineering Technology,		
Topographical, Image Intel & Space	15.478	16.116
ARMY, Advanced Technology Development		
Command, Control, Communications		
Advanced Technology, Space Application		
Advanced Technology	6.883	5.554
Electronic Warfare Advanced Technology,		
TR1: TAC C4 Technology Int,		
Communication Networking Technologies		
(formerly Wireless Mobile Networking)	29.802	-
ARMY, Advanced Component		
Development & Prototypes		
Army Missile Defense Systems Integration,		
TR5: Missile Defense Battlelab, Analysis,		
and Models and Simulations	12.797	10.347
Army Space Systems Integration	13.999	25.061
ARMY, System Development &		
Demonstration		
TROJAN-RH12-MIP, Development of		
SATCOM dishes and receivers	0.983	5.022
Joint Tactical Radio	9.832	9.861
Brigade Analysis, Integration and		
Evaluation, DY3: NIE Test & Evaluation,		
Non ATEC Support Cost	24.785	12.215
Joint Tactical Network Center (JTNC),		
MUOS Waveform	8.440	13.357
Joint Tactical Network (JTN)	17.999	18.055
ARMY, Management Support		
Army Kwajalein Atoll	176.041	205.145
ARMY, Operational Systems Development		
Joint Tactical Ground System	10.209	20.515
SATCOM Ground Environment	11.011	9.355
NAVY, Basic Research		
Defense Research Sciences, Atmosphere		24.867

[†] 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.

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.



and Space Sciences	25.053 [§]	
NAVY, Applied Research		
Common Picture Applied Research, Tactical		
Space Exploitation	6.265	5.782
Electromagnetic Systems Applied		
Research, Navigation Technology	5.014	4.451
NAVY, Advanced Technology Development		
Electromagnetic Systems Applied		
Technology, Global Positioning System		
(GPS) & Navigation Technology	64.623	34.899
NAVY, Advanced Component Development		
& Prototypes		
Air/Ocean Tactical Applications, METOC		
Data Assimilation and Mod, Meteorological		
and Oceanic Space-Based Sensing		
Capabilities	0.642	2.278
Air/Ocean Tactical Applications, Precise		
Time and Astronomy	8.954	4.977
Space and Electronic Warfare (SEW)		
Architecture/Engineering Support	18.798	29.581
NAVY, System Development &		
Demonstration		
Air/Ocean Equipment Engineering, Fleet		
METOC Equipment, Environmental Satellite		
Receiver Processor (ESRP)	0.240	0.290
Navigation/Id System, NAVSTAR GPS	10.014	17.150
Equipment	18.011	17.159
NAVY, Management Support		
Navy Space & Electronic Warfare (SEW)	2 505	F 246
Support, Base	2.505	5.316
Space & Electronic Warrare		
SAT Pagen Office	0 225	6 510
NAVY Operation Systems Development	0.325	0.519
Maving Corns Communications System		
Joint Tactical Radio System	1 036**	2 284
Satellite Communications	4.050	52 220
Navy Meteorological & Ocean Sensors	41.029	55.255
Space (METOC)	0 359	0 599
AIR FORCE Basic Research	0.555	0.335
Defense Research Sciences, Physics and		
Flectronics	18 492	19 321
Defense Research Sciences Aerospace	10.452	19.521
Chemical and Material Sciences	35,935	37,916
AIR FORCE Applied Research		071010
Aerospace Propulsion Advanced		
Propulsion Technology	17.646	19.670
Aerospace Propulsion, Rocket Propulsion	17.040	10.070
Technology	51.287	54.232
Aerospace Sensors, EO Component	4.763	5.417
Aerospace Sensors, EO Component	4.763	54.232

⁵ 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.

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.



Technology Antennas		
Aerospace Sensors EO Sensors &		
Countermoscures Tech Trusted Systems		
for ISP and Avianics Systems	5 250	6 100
Acrospace Sensors BE Sensors &	5.250	0.190
Aerospace Sensors, RF Sensors &		
Taska ala sias	7 0 2 0	12.002
	7.939	12.082
Space Technology	98.229	116.122
Directed Energy Technology, Lasers &		
Imaging Technology, Optical Space		
Situational Awareness and Satellite		
Vulnerability	25.127	24.400
AIR FORCE, Advanced Technology		
Development		
Advanced Aerospace Sensors, Advanced		
Aerospace Sensors Technology, Integrated		
Navigation Technologies	4.910	4.484
Aerospace Propulsion & Power		
Technology, Space & Missile Rocket		
Propulsion	26.552 ''	31.280
Advanced Spacecraft Technology	69.026	54.897
Maui Space Surveillance System (MSSS)	14.031	12.853
AIR FORCE, Advanced Component		
Development & Prototypes		
NAVSTAR Global Positioning System (User		
Equipment)	156.659	142.288
Space Control Technology	6.075	4.070
Space Security & Defense Program	31.613	30.771
Weather System Follow-on	39.901	76.108
Operationally Responsive Space	20.000	6.457
AIR FORCE, System Development &		
Demonstration		
Counterspace Systems	23.476	24.208
Space Situation Awareness Systems	9.462	32.374
Space Fence	200.131	243.909
Spaced Based Infrared Systems High (SBIRS		
High FMD)	309.501	292,235
Next Generation Liquid Rocket Engine		
Development	220.000	84 438
	308 578	228 230
	103 552	72 084
Wideband Global SATCOM	21 / 25	56 2/2
Air & Space One Contor	95 029	47.620
	05.930	47.029
Aik FORCE, Management Support	24.264	24.050
Rocket Systems Launch Program	34.364	21.858
Space Test Program	21.161	28.228
Space Test and Training Range		
Development	19.512	18.997
Space and Missile Center (SMC) Civilian		
Workforce	176.727	185.305
Operationally Responsive Space	20.000	6.457

⁺⁺ 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 carbine research." It is unclear what effect, if any, the additional appropriation would have on Space & Missile Rocket Propulsion.



AIR FORCE, Operational Systems		
Development		
Service Support to STRATCOM-Space		
Activities, Joint NavWar Center	3.134	2.527
Air & Space Operations Center	26.666	21.193
Space Superiority Intelligence	12.218	13.815
Information Systems Security Program,		
Cryptographic Modernization, Space		
Telemetry Tracking & Commanding (TT&C)	8.156	5.321
Information Systems Security Program,		
Cryptographic Modernization, Space		
Modular Common Crypto (SMCC)	28.107	5.328
MILSATCOM Terminals	55.208	3.933
Satellite Control Network	20.806	7.879
Space & Missile Test & Evaluation Center	3.674	3.162
Space Warfare Center (Space Innovation,		
Integration and Rapid Technology	2.074	4 5 4 2
Development)	2.0/1	1.543
Spacelift Range System (SPACE)	13.462	6.902
GPS III Space Segment	212.5/1	180.902
JSPOC Mission System	/3.//9	81.911
NUDET Detection System (SPACE)	20.468	14.447
Space Situation Awareness Operations	11.596	20.077
Global Positioning System III-Operational	200 700	250 222
Control Segment	299.760	350.232
DARPA, Applied Research		
Space Station SDHERES Integrated		
Research Experiments	3 200	_
	5.200	-
Development		
DARPA Space Programs & Technology	179 883	126 692
MDA. Advanced Component Development	1751005	1201032
& Prototypes		
Space Tracking & Surveillance System	31.346	31.632
Ballistic Missile Defense System Space		
Programs	6.389	23.289
DISA, Operations Systems Development		
Long-Haul Communications, Presidential		
and National Voice Conferencing, National		
Emergency Action Decision Network	5.866	22.630
Teleport	2.697	1.736
OPERATION & MAINTENANCE		
Army Space Activities, Operation &		
Maintenance		
Servicewide Communications, Air Defense		
Contracts and Space Support	0.827	0.840
NAVY, Operating Forces		
Space Systems & Surveillance	207.038	192.198
NAVY, Administration & Servicewide		



Activities		
Space and Electronic Warfare Systems	73.159	72.768
AIR FORCE, Operating Forces		
Launch Operations	282.710	271.177
Space Control Systems	397.818	382.824
Defense-Wide, Defense Information		
Systems Agency (DISA)		
Standardized Tactical Entry Point (STEP)	1.108	1.064
DoD Teleport Program	14.097	19.628
Defense Information Systems Network		
(DISN) Enterprise Activities (EA)	110.812	19.337
DEFENSE WORKING CAPITAL FUND		
Defense-Wide Working Capital Fund		
(DWWCF) Capital Fund		
Commercial Satellite Services	522.6	535.0
Enhanced Mobile Satellite Services		
(Iridium)	120.8	138.1
Overseas Contingency Operations (OCO)	0.000	0.000
Overseas Contingency Operations		
AIR FORCE, Other Procurement		
Space Programs, MILSATCOM Space	19.547	35.495
Special Support Projects, Defense Space		
Reconnaissance Program	6.100	28.070
AIR FORCE, Operations and Maintenance		
Operating Forces, Space Control Systems	4.942	5.008
Operating Forces, Launch Facilities	0.852	0.869
DISA, Major Equipment, Procurement		
Teleport	4.330	1.940

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 <u>Space Symposium</u>, all in support of its mission "to advance space-related endeavors to inspire, enable and propel humanity." The Space Foundation publishes <u>The</u> <u>Space Report: The Authoritative Guide to Global Space Activity</u> and provides three <u>indexes</u> that track daily U.S. stock market performance of the space industry. Through its <u>Space Certification</u>[™] and <u>Space Technology Hall of</u> <u>Fame</u>[®] 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 <u>Visitors Center</u> 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 office in Houston, Texas. For more information, visit <u>www.SpaceFoundation.org</u>. Follow us on <u>Facebook</u>, <u>LinkedIn</u> and <u>Twitter</u>, and read about the latest space news and Space Foundation activities in <u>Space Watch</u>.

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