

Considering the FY 2010 National Security Space Budget

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On May 7, 2009, President Barack Obama sent his proposed defense budget for Fiscal Year 2010 (FY 2010) to the Congress. The total Department of Defense (DoD) budget request is \$663.8 billion, including \$130 billion to support U.S. “overseas contingency operations” primarily in Iraq and Afghanistan. The proposed \$533.8 billion base budget represents a \$20.5 billion increase over Fiscal Year 2009 (FY 2009) appropriations equaling 2.1% real growth after adjusting for inflation.

The total request for “space-based and related systems” is \$11.1 billion: \$7 billion for satellites, \$2.7 billion for support services, and \$1.4 for launch services¹; the overall request amounts to 3% above FY 2009 appropriations.² The President’s proposal to cancel the Transformational Satellite Communications Satellite (TSAT) system is the most significant change within the national security space budget. Congress appropriated \$805 million and \$768 million for TSAT in FY 2008 and FY 2009, respectively.³ The President’s budget would use the savings from canceling TSAT to procure Advanced Extremely High Frequency (AEHF) satellites.

Changes in satellite procurement schedules account for other notable shifts in the budget request. Procurement of satellites and launch services are typically funded two years prior to launch. The President increases the AEHF budget to \$2.3 billion from \$552 million in FY 2009 appropriations by canceling TSAT and procuring two AEHF satellites. The Space Based Infrared System (SBIRS) satellite budget decreases from \$2.3 billion to around \$1 billion by procuring only one satellite instead of the two procured with FY 2009 funding.⁴

This memorandum briefly identifies the President’s requested budgets for major national security space programs and compares the FY 2010 request to FY 2009 and FY 2008 appropriations. It also includes information regarding the House and Senate Armed Services Committees (HASC and SASC) markups to the President’s request. The HASC and SASC reported the revised bills out of committee for consideration of the House and Senate on June 18 and July 2, respectively.

Transformational Satellite Communications (TSAT) Satellite System

As noted, the President requested the Congress cancel the Transformation Satellite Communications program. The program was designed to enhance the AEHF satellite constellation’s ability to provide warfighters with more

secure and effective communications and the first TSAT was scheduled for launch in 2016. Instead of funding the TSAT program, Congress appropriated \$805 million and \$768 million for the TSAT program in FY 2008 and FY 2009, respectively.⁵ DoD plans to use the savings to help fund AEHF and Wideband Global SATCOM (WGS) satellites.

Confidence in TSAT waned as the program encountered cost overruns and development delays. Congress and senior Pentagon officials expressed concern that the program was too technologically complex and expensive. In October 2008, the Pentagon cancelled a competition between defense contractors to develop the program. Gary Payton, deputy undersecretary of the Air Force, said that TSAT's mission remains "absolutely critical" despite its manifest failures.⁶ The Air Force spent \$2.5 billion on TSAT and intends to "harvest" the initial technologies developed for use in future satellite communications space programs.⁷

The HASC committee report said that canceling TSAT might leave the military without future high-bandwidth, jam-resistant, and protected satellite communications capabilities. The report said AEHF "will only be able of delivering a fraction of the protected communications bandwidth that was anticipated in the TSAT" and WGS "does not currently provide jam-resistant communications."⁸ It ordered the Secretary of Defense to submit a strategy for addressing this potential capabilities gap by October 14, 2009.

SASC also expressed concern that canceling TSAT might result in a capabilities gap. It recommended \$50

million to create a new program to "explore communications technologies that could be utilized on future blocks of current communications satellites or eventually next-generation communications satellites...similar in concept to the Third Generation Infrared Satellite Systems (3GIRS)."⁹

Wideband Global SATCOM (WGS)

Wideband Global SATCOM is designed provide a substantial bandwidth increase over the DoD's current systems. WGS consists of six satellites providing satellite bandwidth primarily for deployed forces and warfighter communications. The second WGS satellite was launched in April 2009. The system will eventually replace the Air Force's current satellite backbone, the Defense Satellite Communications System (DSCS), which it now augments. The President requested \$335 million, an increase of \$261.4 million above FY 2009 Congressional appropriations. The procurement budget jumps from \$21.6 million to \$264.1 million as production of satellites 4, 5, and 6 ramps up. Funding will also cover on-orbit testing of satellites 2 and 3.¹⁰

Evolved Expendable Launch Vehicle (EELV)

The EELV program provides government and commercial launch services with affordable, reliable access to space for medium to heavy payloads, replacing the Delta, Atlas, and Titan launch vehicle families. The program significantly reduces launch costs over current systems by redesigning launch hardware and ground processing facilities. As of December 2006, the United Launch Alliance joint venture is the sole provider of EELV launch services. The President

requested \$1.32 billion for FY 2010, a 4.5% decrease from congressional appropriations of \$1.39 billion in FY 2009. Funding will be directed towards procuring five launch vehicles and associated launch services and activities. These appropriations do not include EELVs for the Navy or the National Reconnaissance Office (NRO), which are funded in separate program budgets.¹¹

The HASC approved revisions to the President's request stripping \$88.1 million from the EELV. House Strategic Forces Subcommittee Chairwoman Ellen Tauscher explained the cut reflects the program's need for one fewer launch vehicle.¹²

SASC recommended adding \$12 million to the EELV budget to continue Global Positioning System (GPS)-based metric tracking. The committee said the program's long-term plan should have all launches utilize GPS to reduce the amount of radar support for launches.¹³

Space Based Infrared System (SBIRS)-High

SBIRS-High is a missile launch detection satellite constellation and layer of the U.S. Ballistic Missile Defense System (BMDS). The program will field a Geosynchronous Orbit (GEO) constellation and hosted payloads in Highly Elliptical Orbit (HEO). Congress acknowledged the current Defense Support Program's (DSP) satellite constellation needs replacement and endorsed SBIRS. The President requested slightly more than \$1 billion for FY 2010, a decrease of about \$1.3 billion from FY 2009 appropriations. DoD will procure one satellite instead of two under the previous budget.¹⁴ The FY 2010 request restores SBIRS funding to FY 2008 levels,

when only one satellite was procured.

DoD wants funding for the procurement of HEO-4's payload, host vehicle integration for HEO-3 and 4, and advance procurement of the GEO-4 satellite. The first GEO launch is planned for the late FY 2010.¹⁵

The SASC recommended adding \$15 million to the budget to support utilization of the HEO sensor and for ground control stations.¹⁶ SASC also noted GEO satellites suffer from schedule delays and cost overruns and wants the Air Force to procure future GEO satellites in a more cost-effective manner. The committee directed the Secretary of the Air Force to determine the number of GEO satellites necessary beyond GEO-4 and explore the possibility of buying these satellites at fixed prices.¹⁷

NAVSTAR Global Positioning System (NAVSTAR GPS)

GPS satellites provide important navigation, positioning, and timing information for the U.S. military and civilians. A fully operational GPS constellation consists of 24 satellites constantly in orbit. The next generation GPS III satellites are designed to withstand jamming and interference measures. Further RDT&E is allocated toward countering measures designed to blind vulnerable GPS satellites. The initial GPS III launch is planned for 2014. The President requested \$927.8 million for FY 2010 with almost all funding going toward RDT&E. This figure represents a small increase of \$3.4 million (0.34%) over 2009 Congressional appropriations. The money will fund satellite launches, integrations of replenishment satellites

and continued constellation development. RDT&E on the GPS III variant will remain at high levels.¹⁸

Advanced Extremely High Frequency (AEHF) Satellites

The Advanced Extremely High Frequency program is a constellation of communications satellites replenishing the MILSTAR Extremely High Frequency constellation with higher capacity and data rate capabilities. AEHF will provide survivable, anti-jam, worldwide secure communications for strategic and tactical users. The President favors expanding the AEHF program over funding TSAT, so the program will receive a large increase if Congress cancels TSAT.¹⁹ The FY 2010 request is \$2.3 billion with procurement appropriations around \$1.8 billion. The President plans to launch one AEHF in FY 2010 and fully fund procurement on an additional AEHF. Congress appropriated \$552 million for the program in FY 2009 with \$166 million in procurement costs. The FY 2010 funding not only supports the scheduled launch of satellite 1 and procurement of satellite 4, but also the assembly and testing of satellites 2 and 3.²⁰

National Polar-Orbiting Operational Environmental Satellite System (NPOESS)

The NPOESS satellite system is designed to monitor global environmental conditions through a highly technical collection and disseminating process. The four-satellite NPOESS constellation will replace Defense Meteorological Space Program (DMSP) satellites and NOAA's Polar-orbiting Operational Environmental Satellite (POES). NPOESS will provide the warfighter with the necessary weather and

atmospheric conditions in a timely, high-quality fashion. The President wants to increase funding from \$287.5 million to \$400.5 million (39%) in FY 2010. Funding provides for continued system development and design for risk mitigation involving ground and space systems. The first NPOESS launch capability is planned for the second quarter of FY 2014.²¹

The HASC report said the committee is not “confident that the tri-agency executive committee governing the program can remedy the chronic problems plaguing this national priority program” and ordered the DoD’s Executive Agent for Space to “submit [an] evaluation of options for restructuring the NPOESS program to the congressional defense committees by October 1, 2009.”²²

The SASC added \$80 million to the NPOESS budget during markups. Yet the SASC directed the Air Force to spend no more than half of the total appropriations until the tri-agency executive committee submits a program management and funding plan to Congress.²³ Following an independent review, the committee found NPOESS to be “a disjointed, barely functioning program with little chance of meeting its goals,” but a critically important national asset.²⁴ SASC said the program “is in such chaos that the President needs to assist the parties with the resolution of their differences.”²⁵

Mobile User Objective System (MUOS)

The MUOS is the next generation advanced narrow-band communications satellite constellation, replacing the existing UHF Follow-On (UFO) constellation and providing a much higher data rate

capability for mobile users. It consists of four satellites in GEO with one on-orbit spare. The MUOS provides the warfighter with point-to-point and netted communications services with a secure, “comm-on-the-move” capacity on a full-time basis. Congress appropriated \$858.2 million for the program in FY 2009; the President’s request is for \$903.6 million, a \$45.4 million (5.3%) increase. Additional funding is shifted toward procuring satellite 4, the launch vehicle for satellite 2, and long-lead time items for satellite 5 (the spare satellite). The initial launch capability for MUOS is projected for the fourth quarter of FY 2010.²⁶

Operationally Responsive Space (ORS)

Operationally Responsive Space (ORS) represents an effort to make space capabilities more dynamic and responsive under stressful situations. DoD has defined ORS as “assured space power focused on timely satisfaction of Joint Force Commanders’ needs.”²⁷ ORS aims to ensure affordable access to critical space-based capabilities to fulfill primarily military, but also diplomatic, information, and economic needs.

The ORS initiative will identify emerging needs, plan to meet those needs, develop and test new space assets, and prepare to deploy new assets. ORS might improve an existing military satellite by developing a complementary smaller and cheaper version. The President’s request significantly diminishes the ORS budget. The \$112.9 million request would reduce the FY 2009’s appropriations by \$83.7 million (42.5%).²⁸ HASC added \$23.4 million to the ORS budget to fund remaining development and launch costs of the ORS-1 satellite.²⁹ SASC

recommended an additional \$40 million for ORS-1.³⁰

While commending the ORS Office for many of its efforts, the SASC said the ORS Office “has not been able to take full advantage of various streamlined acquisition approaches.” It directed the Air Force to assist ORS in identifying areas of improvement and grant it the necessary authorities to make changes.³¹

SASC also recommended ORS assist DoD in acquiring a 1.5 meter commercial-class electro-optical imaging satellite and a 1.1 meter commercial imaging satellite. SASC said the imaging satellites are needed “to mitigate risks in the collection capabilities of the intelligence community, to enhance the availability and utility of unclassified imagery for the warfighter, to increase the frequency of satellite coverage, and also to enhance the survivability of space-based imaging in wartime.”³²

The committee also believes technology exists to produce very small (0.5 meter ground resolution) and inexpensive moderate-imagery satellites. SASC asked for \$227.9 million to initiate proof-of-concept demonstrations involving industry teams to produce on-orbit prototypes of these satellites within 36 months of awarding contracts.³³

Space Test Program (STP)

The Space Test Program provides space access for DoD’s space science and technology community. STP designs flight missions, acquires certain spacecraft, provides integration, launch and on-orbit operations, and manages all DoD payloads on the International Space Station. As of November 2006, the STP has successfully flown 443 experiments on 175

spaceflights.³⁴ The President's \$47.2 million request is virtually identical to FY 2009 appropriations.³⁵ The SASC said not enough attention has been focused on developing inexpensive next-generation launch vehicles. It recommended the STP "continue concept development and determine the technical validity"³⁶ of the radially segmented launch vehicle currently under development at the ORS Office.

Space Tracking and Surveillance System (STSS)

The Missile Defense Agency (MDA) is pursuing the Space Tracking and Surveillance System (STSS) program as a space-based sensor component of BMDS. The program uses sensors capable of detecting visible and infrared light and will become part of a constellation of land-, sea-, air-, and space-based BMDS sensors.³⁷ The President's \$180 million request continues a trend of declining budgets. In FY 2009, the STSS budget was \$209.6 billion, thus the President's request is a decrease of \$28.9 million (13.8%). In turn, the FY 2009 funding was \$21.9 million (9.4%) lower than 2008 figures.³⁸ The decrease may reflect lagging confidence in an STSS that has experienced development delays. MDA was supposed to have launched two experimental satellites in November 2007.³⁹ That launch, however, was pushed back to the spring of 2008 before finally taking off in May 2009.⁴⁰

MDA plans to launch LEO demonstration satellites in July 2009; the budget request will fund satellite checkout, operations, and testing against boosting missile targets. Following a six-month on-orbit period, MDA plans to demonstrate STSS'

precision track capabilities against targets of opportunity and dedicated targets. The results from these tests will guide decision making on developing a follow-up operational space sensor constellation.⁴¹

DARPA Space Programs and Technology

The Defense Advanced Research Projects Agency (DARPA) Space Programs and Technology division works to maintain the U.S. military's technical superiority in space and create technological surprise for U.S. adversaries. The President's \$200.6 million request decreases FY 2009 appropriations by \$25.8 million (11.4%). According to DARPA, the decrease reflects minor program re-pricing rather than outright cutting programs.⁴² In a statement accompanying FY 2009 appropriations, Congress noted that DARPA often provides little detail in justifying many of its projects' scope, notional schedule and overall funding needs. Also, Congress said DARPA often adjusts funding requests from year-to-year without any justification and directed the agency to provide greater detail in its future budget requests.⁴³

The Satellite Program for Instant Depletion of Energetic Radiation (SPIDER), formerly known as Sleight of Hand (SOH), will see its budget almost double from \$17 million to \$31 million in FY 2010. SPIDER is a proof-of-concept demonstration of technology that will release plasma-generating gases from satellites in the event of High Altitude Nuclear Detonations (HAND). These gases will generate plasma waves that push harmful particles from the radiation belt into the earth's neutralizing atmosphere. HAND explosions degrade satellites in LEO by creating an environment of intense radiation particles surrounding these

satellites. In FY 2010, DARPA plans to perform a risk reduction sounding rocket flight and develop system requirements for the SPIDER. Funding also will develop the preliminary design on the SPIDER satellite.⁴⁴

The President's request provides the System F6 program with its second consecutive cycle of greatly enhanced funding. The \$92.7 million request more than doubles FY 2009's \$44.7 million appropriations. In turn, FY 2009 funding represented a doubling of the \$21 million in FY 2008 appropriations. The goal of the System F6 program is to demonstrate a heterogeneous network of formation flying or loosely connected small satellites that will provide at least the same effective mission capability of a large satellite. DARPA plans continued refinement of the on-orbit demonstration design, more Hit-in-Loop (HIL) demonstrations, subsystem ground tests, and initiating the construction of a flight spacecraft.⁴⁵

National Security Space Office (NSSO)

The National Security Space Office provides strategic focus and unity of effort across the National Space Security (NSS) enterprise and reports to the Undersecretary of the Air Force/ DoD Executive Agent for Space and the Director of the National Reconnaissance Office (NRO). NSSO conducts long-range strategic planning; develops mid- to long-term space architectures, assesses defense and intelligence space programs for conformity with policies, planning guidance, and architectural decision, and conducts analyses to help guide the activities of NSS organizations, among other tasks. The President's \$10.6 million

request would add \$3 million (39%) to the FY 2009 appropriations.⁴⁶ This request reflects new confidence in NSSO. In 2008, Congress said that NSSO lost the support of the NRO among other DoD organizations working with the agency.⁴⁷

Maui Space Surveillance System (MSSS)

The MSSS is a sophisticated electro-optical facility combining operational satellite tracking facilities with a research and development facility, the only one of its kind in the world. The MSSS houses the largest telescope in DoD, the 3.67-meter Advanced Electro Optical System (AEOS).⁴⁸ The President's \$5.8 million request would dramatically cut the MSSS budget by \$30.6 million (86%). Congress has resisted cutting the MSSS budget. In FY 2009, the President issued a similar \$5 million request only to watch Congress restore \$31 million in funding.⁴⁹

Nuclear Detection System (NUDET) – Space Component

The comprehensive Nuclear Detonation (NUDET) Detection System consists of space, control, and user equipment segments designed to identify and local nuclear explosions. The space segment consists of NUDET detection sensors on the GPS satellites. DoD and the Department of Energy (DoE) possess a full constellation of 24 GPS satellites in 10,900-nautical-mile orbits capable of detecting and locating nuclear detonations worldwide, 24 hours a day.⁵⁰ The President's \$99.4 million request represents the latest stage in a trend of higher NUDET budgets. Congress appropriated \$69.8 million and \$54.1 million in FY 2009 and FY 2008, respectively. The President's request more than doubles the RDT&E funding, while

procurement monies slightly decline.⁵¹

Spacelift Range System (SLRS)

The Spacelift Range System (SLRS) consists of ground based surveillance, navigation, flight operations and analysis, communications and weather assets located at Patrick AFB, Florida, and Vandenberg AFB, California, used to support space missions. The mission is to provide DoD, NASA and commercial customers a highly reliable, integrated system to support spacecraft launch, ballistic missile and aeronautical testing.⁵² The President's \$110.3 million request represents a small \$3.3 million (3%) decrease from FY 2009 appropriations of \$113.6 million. Similar to previous budgets, the vast majority of spending (90%) will go toward RDT&E.⁵³

Space Situational Awareness (SSA)

Space Situational Awareness (SSA) refers to programs that aid space assets in examining and assuring a safe operating environment. SSA systems seek to understand "what objects are in space and what capabilities they have; accurate SSA is required to know for certain if a satellite's operations have been intentionally affected by an adversary."⁵⁴ The President's \$362.7 million request greatly enlarges the SSA budget, which received Congressional appropriations of \$224.9 million in FY 2009. This appropriation will provide RDT&E funds for sensor network programs.⁵⁵ In April 2008, the Air Force announced it will spend \$824 to launch the Space Based Space Surveillance system (SBSS) in early 2009. SBSS is regarded as SSA's most promising satellite program, but missed its scheduled launch in 2008. SBSS will allow airmen to monitor orbiting satellites

24 hours a day; currently the Air Force's Space Command can only monitor satellite movement from the ground when the sun reflects on targeted satellites.⁵⁶

The SASC report noted that the President's budget request contained no funds to integrate data from the Missile Defense X-band radar into the space surveillance network. The committee recommended an additional \$6 million to develop a prototype to integrate the X-band sensor capabilities into the space network.⁵⁷

Endnotes

¹ Department of Defense FY 2010 Budget Request Summary Justification, May 2009, p. 3-52, <http://www.defenselink.mil/comptroller/Budget.html>.

² Ibid.

³ Ibid., p. 1-17.

⁴ Ibid., p. 3-52.

⁵ Ibid., p. 1-17.

⁶ Andrea Shalal-Esa, "US 'harvesting' cancelled satellites for future uses," Reuters, May 11, 2009, www.reuters.com/article/scienceNews/idUSTRE54A6HY20090511.

⁷ Ibid.

⁸ House Armed Services Committee (HASC), *Report on National Defense Authorization Act for Fiscal Year 2010*, June 18, 2009, p. 205.

⁹ Senate Armed Services Committee (SASC), *Report on National Defense Authorization Act for Fiscal 2010*, July 2, 2009, p. 81.

¹⁰ *FY 2010 Budget Justification*, p. 3-56.

¹¹ Ibid., p. 3-56.

¹² "Statement of Chairwoman Ellen Tauscher, Strategic Forces Subcommittee Markup, H.R. 2647, National Defense Authorization Act for FY 2010," June 11, 2009, http://armedservices.house.gov/hearing_information.shtm.

¹³ SASC, p. 82-83.

¹⁴ *FY 2010 Budget Justification*, p. 3-55

¹⁵ Ibid.

¹⁶ SASC, p. 81-82.

¹⁷ Ibid., p. 82.

¹⁸ *FY 2010 Budget Justification*, p. 3-54.

¹⁹ Ibid., p. 1-16.

²⁰ Ibid., p. 3-53.

- 21 Ibid., p. 3-55.
- 22 HASC, p. 204.
- 23 SASC, p. 162.
- 24 SASC, p. 163.
- 25 SASC, p. 164.
- 26 *FY 2010 Budget Justification.*, p. 3-53.
- 27 DoD, *Plan for Operationally Responsive Space: A Report to Congressional Defense Committees*, April 2007, p. 2.
- 28 *Department of Defense (DoD) Budget Fiscal Year 2010 – RDT&E Programs (R-1)*, May 2009, p. F-5.
- 29 HASC, p. 204.
- 30 SASC, p. 79.
- 31 Ibid.
- 32 Ibid., p. 80.
- 33 Ibid.
- 34 Department of the Air Force, *U.S. Air Force Fact Sheet: Space Test Program*, <http://www.kirtland.af.mil/library/factsheets/factsheet.aspx?id=6878>.
- 35 *DoD Budget FY 2010 – RDT&E*, p. F-7.
- 36 SASC, p. 79.
- 37 Missile Defense Agency (MDA), *MDA Fact Sheet: Space Tracking and Surveillance System (STSS)*, July 2008, <http://www.mda.mil/mdalink/html/sensors.html>.
- 38 *DoD FY 2010 – RDT&E*, p. D-7 and *Department of Defense Budget Fiscal Year 2010 – Procurement Programs (P-1)*, May 2009, p. A-20.
- 39 Jeremy Singer, “MDA Delays Launch of Missile Tracking Satellites to 2008,” *Space News*, June 18, 2007, http://www.space.com/spacenews/070618_businessmond_ay.html.
- 40 “Delta II Launch Successful,” *Defence-Aerospace.com*, May 7, 2009, www.defence-aerospace.com/article-view/release/105054/delta-ii-launches-missile-defense-satellite.html.
- 41 *Department of Defense Fiscal Year (FY) 2010 Budget Estimates: Missile Defense Agency*, May 2009, p. 12, http://www.defenselink.mil/comptroller/defbudget/fy2010/budget_justification/index.html.
- 42 *Defense Advanced Research Projects Agency (DARPA) Fiscal Year 2010 Budget Item Justification – RDT&E*, May 2009, pp. 275-276.
- 43 “Department of Defense Appropriations Act, 2009,” *Public Law 110-329*, p. 411.
- 44 DARPA FY 2010 Budget Justification, pp. 283-284.
- 45 Ibid., pp. 286-287.
- 46 *DoD FY 2010 – RDT&E*, p. F-12.
- 47 “Department of Defense Appropriations Act, 2009,” *Public Law 110-329*, p. 389.
- 48 Program description provided by Air Force Maui Optical and Supercomputing (AMOS) website. <http://www.maui.afmc.af.mil/>.
- 49 *DoD FY 2010 – RDT&E*, F-3.
- 50 Defense Technical Information Center (DTIC), “Nuclear Detection System,” May 2009, www.dtic.mil/descriptivesum/Y2010/AirForce/0305913F.pdf.
- 51 *DoD FY 2010 – RDT&E*, p. F-12 & *DoD FY 2010 – Procurement*, p. F-12.
- 52 Description of SLRS provided by Air Force Satellite Control Network (AFSCN), <http://space.au.af.mil/factsheets/afscn.htm>
- 53 *DoD FY 2010 – RDT&E*, p. F-11 & *DoD FY 2010 – Procurement*, p. F-20.
- 54 Amy Butler, “Bush memo orders space situational awareness,” *Aviation Week*, October 12, 2007, http://www.aviationweek.com/aw/generic/story_channel.jsp?channel=space&id=news/MEMO10127.xml
- 55 *DoD FY 2010 – RDT&E*, p. F-11 & *DoD FY 2010 – Procurement*, p. F-13.
- 56 Michael Hoffman, “Air Force to Launch Space Based Space Surveillance System,” *Defense News*, April 10, 2008, http://www.defensenews.com/osd_story.php?sh=VSDR&i=3474508

**National Security Space Budget by Program
FY08-10**

Program	Appropriations, FY08			Appropriations, FY09			Presidential Request, FY10		
	Procurement	R&D	Total	Procurement	R&D	Total	Procurement	R&D	Total
Transformational SATCOM	- , -	804.7	804.7	- , -	768.0	768.0	* * *	*	*
Wideband Global SATCOM (WGS)	(1), 312.3	21.0	333.3	- , 21.6	52.1	73.7	(-), 264.1	71.0	335.1
Evolved Expendable Launch Vehicle (EELV)	(4),1091.8	6.5	1098.3	(2), 350.3	33.6	1383.9	(5), 295.3	26.5	1321.8
Space Based Infrared System (SBIRS)	(-), 399.3	583.3	982.6	(2), 793.1	542.4	2335.5	(1), 500.9	512.6	1013.5
NAVSTAR GPS	(-), 248.9	556.4	805.3	(-), 134.9	789.5	924.4	(-), 60.7	867.1	927.8
Advanced Extremely High Frequency (AEHF)	(-), 149.9	612.3	762.2	(-), 165.6	386.4	552.0	(1), 843.5	464.3	2307.8
NPOESS	- , -	331.0	331.0	- , -	287.5	287.5	(-), 3.9	396.6	400.5
Mobile User Objective System (MUOS)	(-), 214.4	593.4	807.8	(1), 342.9	515.3	858.2	(1), 516.1	387.5	903.6
Operationally Responsive Space†	- , -	87.0	87.0	- , -	196.6	196.6	- , -	112.9	112.9
Space Tracking and Surveillance System (STSS)	- , -	226.5	226.5	- , -	208.9	208.9	- , -	180.0	180.0
Space Test Program (STP)	- , -	50.0	50.0	- , -	47.7	47.7	- , -	47.2	47.2
DARPA Space Programs and Technology	- , -	146.5	146.5	- , -	226.4	226.4	- , -	200.6	200.6
National Security Space Office (NSSO)	- , -	15.1	15.1	- , -	7.6	7.6	- , -	10.6	10.6
Maui Space Surveillance System (MSSS)	- , -	41.4	41.4	- , -	36.4	36.4	- , -	5.8	5.8
NUDET Detection System	(-), 15.8	38.3	54.1	(-), 28.7	41.1	69.8	(-), 15.4	84.0	99.4
Spacelift Range System (SLRS)	(-), 130.5	25.1	155.6	(-), 101.3	12.3	113.6	(-), 100.3	10.0	110.3
Space Situation Awareness Systems (SSAS)	- , -	245.1	245.1	- , -	224.9	224.9	- , -	362.7	362.7

Source: All figures found in Department of Defense FY 2010 Budget Request Summary Justification, Department of Defense (DoD) Budget Fiscal Year 2010 – RDT&E Programs (R-1), and Department of Defense Budget Fiscal Year 2010 – Procurement Programs (P-1); Defense Advanced Research Projects Agency (DARPA) Fiscal Year 2010 Budget Item

Justification – RDT&E; * = Cancelled