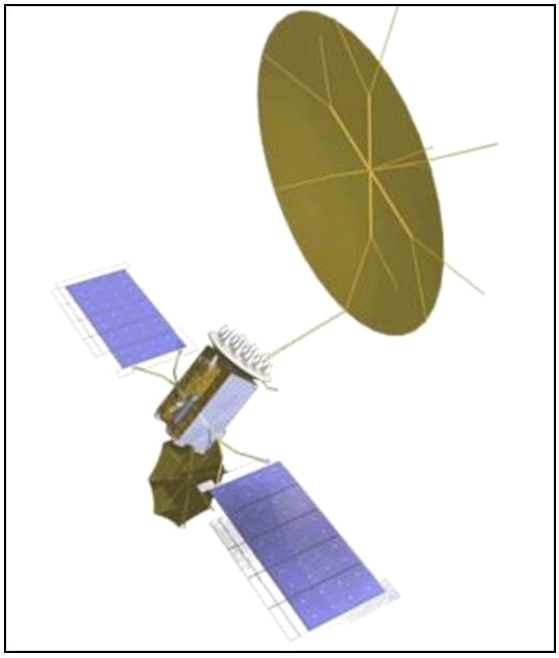
Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-345



MUOS

As of December 31, 2011

Defense Acquisition Management
Information Retrieval
(DAMIR)

Table of Contents

Program Information

Designation And Nomenclature (Popular Name)

Mobile User Objective System (MUOS)

DoD Component

Navy

Responsible Office

Responsible Office

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Date Assigned August 24, 2010

References

SAR Baseline (Production Estimate)

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 15, 2008

Approved APB

Defense Acquisition Executive (DAE) Approved Acquisition Program Baseline (APB) dated March 15, 2008

Mission and Description

Mobile User Objective System (MUOS) is a narrowband Military Satellite Communications (MILSATCOM) system that supports a worldwide, multi-Service population of mobile and fixed-site terminal users in the Ultra High Frequency (UHF) band, providing increased communications capabilities to smaller terminals while still supporting interoperability to legacy terminals.

MUOS adapts a commercial third generation Wideband Code Division Multiple Access (WCDMA) cellular phone network architecture and combines it with geosynchronous satellites (in place of cell towers) to provide a new and more capable UHF MILSATCOM system. The constellation of four operational satellites and ground network control will provide greater than 10 times the system capacity of the current UHF Follow-On (UFO) constellation.

MUOS includes the satellite constellation, a ground control and network management system, and a new waveform for user terminals. The space portion is comprised of a constellation of four geosynchronous satellites, plus one on-orbit spare. The ground system includes the transport, network management, satellite control, and associated infrastructure to both fly the satellites and manage the users' communications. MUOS is designed to support users that require greater mobility, higher data rates, and improved operational availability. The new waveform is termed the MUOS Common Air Interface (CAI), a Software Communications Architecture compliant modulation technique for the Joint Tactical Radio System (JTRS) terminals.

The flow of information between users when MUOS is operational will be much different than today's systems. Users will communicate with the satellite via UHF WCDMA links and the satellites will relay this to one of four interconnected ground sites located in Hawaii, Norfolk, Sicily, and Australia via a Ka-band feeder link. These facilities identify the destination of the communications, and route the information to the appropriate ground site for Ka-band uplink to the satellite and UHF WCDMA downlink to the correct users. The network management facility, located in Hawaii, will feature a government-controlled, priority-based resource management capability that will be adaptable and responsive to changing operational communications requirements. Additionally, MUOS will provide access to select Defense Information System Network services, a voice and data capability that has not been available to UHF MILSATCOM users on prior systems. For satellite telemetry, tracking, and commanding, MUOS will utilize existing control centers operated by the Naval Satellite Operations Center Headquarters at Point Mugu, California, and their detachment at Schriever Air Force Base, Colorado Springs, Colorado.

When MUOS is fielded, it will serve a mixed terminal population. Some users will have terminals only able to support the legacy waveforms while other users will have newer terminals able to support the MUOS CAI. In anticipation of this, each MUOS satellite carries a legacy payload similar to that flown on UFO-11. These legacy payloads will continue to support legacy terminals, allowing for a more gradual transition to the MUOS WCDMA waveform.

Executive Summary

The program completed its Build Approval (BA) review on February 22, 2008. The BA Acquisition Program Baseline (APB) was approved on March 15, 2008. The BA review authorized the MUOS program to enter Phase D (Build and Operations) and to procure Satellite #3, Long-Lead Material (LLM) for Satellite #4, the Launch Vehicle (LV) for the second satellite, and to continue to work toward production and launch of the first two satellites and deployment/activation of the supporting ground systems.

In September 2008, the Senate Appropriations Committee – Defense (SAC-D) reduced the Weapons Procurement, Navy (WPN) funding for the LV #2 by $163.5 million (M) in FY 2009 due to an assumption of a schedule slip. The MUOS program revised the plan by funding LV #2 with FY 2010 funding originally slated for LV #3. Funding in FY 2011 and FY 2012 will be used for subsequent LVs #3 and #4.

The Follow-on Buy Decision Review was conducted December 2, 2008. Full approval was not granted per the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD (AT&L)) memorandum dated May 11, 2009. The Overarching Integrated Product Team (OIPT) review on October 13, 2009, led to a “paper” Defense Acquisition Executive (DAE) review.

An Acquisition Decision Memorandum (ADM) was signed December 22, 2009 which granted the program approval to acquire Satellite #4, LV #2, and LLM necessary for Satellite #5.

The MUOS satellite production schedule has experienced delays due to several technical issues. Based on the findings from a National Review Team (NRT) and OIPT/DAE Reviews, the MUOS program was restructured in December 2009 to support a planned December 2011 On-Orbit Capability (OOC), a 21-month delay from the original contracted date of March 2010.

The MUOS program returned to the OIPT for a program review on April 21, 2010. An ADM was signed August 27, 2010 granting approval to acquire LV #3 in FY 2011. A “paper” OIPT was initiated September 2010 to obtain final approval for procurement of Satellite #5, and LVs #4, and #5. An ADM was signed January 18, 2011 granting approval to procure Satellite #5, procurement of LV #4 to be exercised in FY 2012 to support a launch in FY 2014, and procurement of LV #5 to be exercised in FY 2013 to support a launch in FY 2015.

The ADM signed on January 18, 2011 also directed Director, Cost Assessment and Program Evaluation (D, CAPE) to reassess and update their MUOS cost estimate from the December 2009 ADM not later than April 15, 2011. D, CAPE presented their update to USD (AT&L) in April 2011, which resulted in a net $69M MUOS funding shortfall in FY 2011 through FY 2013 (relative to the FY 2012 President's Budget (PB 2012) submit). The Navy remains committed to funding MUOS to D, CAPE levels if needed.

MUOS met its statutory requirement to conduct an annual Configuration Steering Board (CSB) during a Gate 6 Sustainment Review held on October 31, 2011.

Satellite #1 was launched on February 24, 2012. On-orbit testing is being conducted and Satellite #1 is on track for handover to the Navy by May 25, 2012.

Additionally, a revised APB is in process as a result of the ADM signed December 22, 2009.

There are no significant software-related issues with this program at this time.

Threshold Breaches

APB Breaches		
Schedule		☑
Performance		☐
Cost	RDT&E	☑
	Procurement	☐
	MILCON	☐
	Acq O&M	☐
Unit Cost	PAUC	☐
	APUC	☐

Nunn-McCurdy Breaches		
Current UCR Baseline		
	PAUC	None
	APUC	None
Original UCR Baseline		
	PAUC	None
	APUC	None

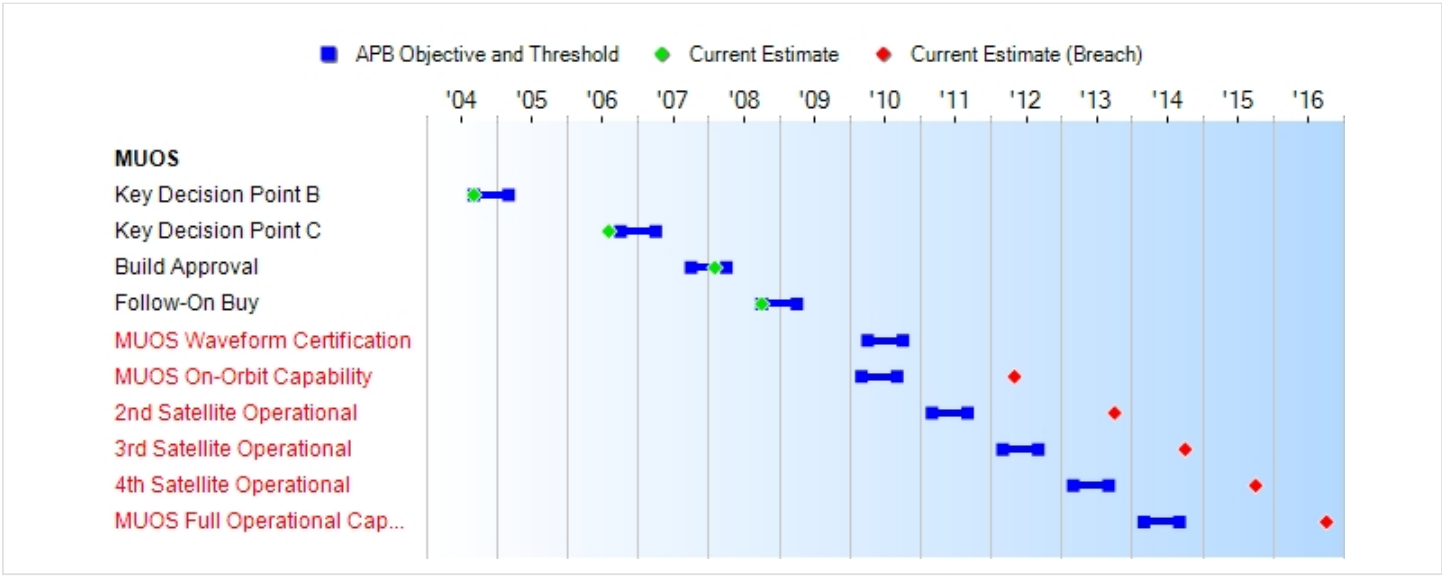
Explanation of Breach

The Schedule and Cost (Research, Development, Test and Evaluation) breaches were previously reported in the Decembr 31, 2010 SAR.

A revised Acquisition Program Baseline (APB) is in process as a result of the Acquisition Decision Memorandum (ADM) that was signed December 22, 2009.

In accordance with the ADM signed on January 18, 2011, the Navy remains committed to funding to the Director, Cost Assessment and Program Evaluation (D, CAPE) estimate levels.

Schedule



Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	
Key Decision Point B	SEP 2004	SEP 2004	MAR 2005	SEP 2004	
Key Decision Point C	OCT 2006	OCT 2006	APR 2007	AUG 2006	
Build Approval	OCT 2007	OCT 2007	APR 2008	FEB 2008	
Follow-On Buy	OCT 2008	OCT 2008	APR 2009	OCT 2008	
MUOS Waveform Certification	APR 2010	APR 2010	OCT 2010	**N/A** [1]	(Ch-1)
MUOS On-Orbit Capability	MAR 2010	MAR 2010	SEP 2010	**MAY 2012** [1]	(Ch-2)
2nd Satellite Operational	MAR 2011	MAR 2011	SEP 2011	**OCT 2013** [1]	(Ch-3)
3rd Satellite Operational	MAR 2012	MAR 2012	SEP 2012	**OCT 2014** [1]	(Ch-4)
4th Satellite Operational	MAR 2013	MAR 2013	SEP 2013	**OCT 2015** [1]	(Ch-4)
MUOS Full Operational Capability	MAR 2014	MAR 2014	SEP 2014	**OCT 2016** [1]	(Ch-5)

[1] *APB Breach*

Change Explanations

(Ch-1) The previously reported MUOS Waveform Certification Current Estimate was April 2011, and has been updated to Not Applicable (N/A). The MUOS program will remain continuously aware of the Joint Tactical Radio System (JTRS) program progress and assist with the Black waveform adjustments as appropriate in the development and integration of the combined Red/Black MUOS waveform in order to provide a MUOS End-to-End capability. As a key program, MUOS will remain involved in the process until a certified terminal is successfully achieved. However, since JTRS no longer certifies individual waveforms using a JTRS Test and Evaluation Laboratory (JTEL) development environment, the MUOS Certification milestone is no longer required in the baseline MUOS program.

(Ch-2) The previously reported MUOS On-Orbit Capability Current Estimate was December 2011, and has been updated to May 2012. MUOS On-Orbit Capability (OOC) refers to one operational satellite functioning with one satellite/network control ground station. MUOS initial OOC was delayed due to component-level technical issues and testing anomalies. MUOS Program's scope allows for control of satellite ship dates from the contractor, but does not control OOC dates since the launch manifest is outside program scope and control. The Air Force Current Launch Schedule Review Board (CLSRB) assigns missions to the launch manifest based on United States Strategic Command (STRATCOM) mission prioritization and satellite readiness. The MUOS Program coordinates all MUOS satellite delivery schedules in advance with the CLSRB. Currently CLSRB has provided launch dates for Satellites #1 and #2 only.

(Ch-3) The previously reported 2nd Satellite Operational Current Estimate was September 2012, and has been updated to October 2013. MUOS Satellite #2 operational milestone also includes installation of ground infrastructure capable of supporting the MUOS capability. MUOS Satellite #2 is delayed due to the same component-level testing issues as Satellite #1 and the constraint to maintain separation between satellite launches.

(Ch-4) The previously reported 3rd Satellite Operational Current Estimate was September 2013, and has been updated to October 2014. The previously reported 4th Satellite Operational Current Estimate was September 2014, and has been updated to October 2015. The Satellites #3, #4, and #5 milestones have been established to support launches with twelve-month separation. The MUOS Program coordinates all MUOS Satellite delivery schedules in advance with the CLSRB. MUOS #3, #4, and #5 are scheduled for delivery in FY 2013, FY 2014, and FY 2015, respectively, and will be available for launch on delivery.

(Ch-5) The previously reported MUOS Full Operational Capability Current Estimate was September 2015, and has been updated to October 2016. MUOS Full Operational Capability (FOC) is three months after Satellite #5 launches. The MUOS Capability Production Document (CPD) defines FOC as all satellites and a spare are on-orbit, their associated satellite control terminals and network management system are fully operational, support personnel are trained and in position, logistics support capability is in place to support MUOS CPD performance parameter threshold values, and Follow-On Operational Test and Evaluation (FOT&E) has been successfully completed. MUOS FOC is delayed as a direct result of the planned one-year separation between launches starting with the Satellite #2 launch. MUOS #2 has been assigned a primary launch slot in July 2013, which results in a planned July 2016 Satellite #5 launch. This deviation is beyond the Program Manager's control.

Memo

MUOS Program's scope allows for control of satellite ship dates from the contractor, but does not control On-Orbit Capability (OOC) dates since the launch manifest is outside program scope and control. The Air Force Current Launch Schedule Review Board (CLSRB) assigns missions to the launch manifest based on United States Strategic Command (STRATCOM) mission prioritization and satellite readiness.

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate	
Coverage	24 hours/day communicat-ions services at all latitudes and longitudes	24 hours/day communicat-ions services at all latitudes and longitudes	24 hours/day communicat-ions services from 65 degrees North to 65 degrees South latitude at all longitudes	Demonstra-ted via analysis that each MUOS satellite always has optical line of site to one MUOS RAF and there is at least one MUOS satellite accessible from any point within the coverage area from 65 degrees North to 65 degrees South measured at every 0.1 degree increments of longitude over the worst case 24 hour orbital period	24 hours/day communica-tions services from 65 degrees North to 65 degrees South latitude at all longitudes	
Capacity	300% worldwide simultaneous accesses (5,991 at 117.6 Mbps) associated with the CMTW scenario	300% worldwide simultaneous accesses (5,991 at 117.6 Mbps) associated with the CMTW scenario	1,997 worldwide simultaneous accesses (39.2 Mbps) with 502 simultaneous theater accesses (3 Mbps)	TBD	1,997 worldwide simultaneous accesses (39.2 Mbps) with 502 simultaneous theater accesses (3 Mbps)	
Access and Control	Resources planned, allocated, prioritized, and dynamically	Resources planned, allocated, prioritized, and dynamically	Resources planned, allocated, prioritized, and dynamically	Automated functionality for resource planning, allocation and	Resources planned, allocated, prioritized, and dynamically	(Ch-1)

	configured or reconfigured in less than 5 minutes for all networks; and priority-based access is provided or the request is queued and feedback provided to the user within 3 seconds 90% of the time and 6 seconds 99% of the time	configured or reconfigured in less than 5 minutes for all networks; and priority-based access is provided or the request is queued and feedback provided to the user within 3 seconds 90% of the time and 6 seconds 99% of the time	configured or reconfigured within 15 minutes and for selected high priority networks within 5 minutes; and priority-based access is provided or the request is queued and feedback provided to the user within 6 seconds 90% of the time and 10 seconds 99% of the time	prioritization have been demonstrated via test; network configuration/ reconfiguration was demonstrated via test and analysis to be accomplished in 4.7 seconds Priority-based access has been partially demonstrated via test during Ground System test events and will complete demonstration via analysis coincident with the Capacity KPP demonstration using MPM	configured or reconfigured in less than 5 minutes for all networks; and priority-based access is provided or the request is queued and feedback provided to the user within 6 seconds 90% of the time and 10 seconds 99% of the time
Net Ready	Fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical	Fully support execution of all operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical	Fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical	Letter from Joint Staff J-6, dated 30 October 2007, grants interoperability and supportability certification of the Net Ready Key Performance Parameter Interoperability test certification	Fully support execution of joint critical operational activities identified in the applicable joint and system integrated architectures and the system must satisfy the technical

	requirements for Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availability, integrity, authenticat-ion, confidential-ity, and nonrepudiat-ion, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability,	requirements for Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availabil-ity, integrity, authenticat-ion, confidential-ity, and nonrepudiat-ion, and issuance of an ATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability,	requirements for transition to Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availabil-ity, integrity, authenticat-ion, confidential-ity, and nonrepudiat-ion, and issuance of an IATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data	by DISA Joint Interoper-ability Test Command is will conclude following on-orbit testing of MUOS Satellite #2	requirements for transition to Net-Centric military operations to include 1) DISR mandated GIG IT standards and profiles identified in the TV-1, 2) DISR mandated GIG KIPs identified in the KIP declaration table, 3) NCOW RM Enterprise Services 4) Information assurance requirements including availabil-ity, integrity, authenticat-ion, confidential-ity, and nonrepudiat-ion, and issuance of an IATO by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data

	and consistent data processing specified in the applicable joint and system integrated architecture views	and consistent data processing specified in the applicable joint and system integrated architecture views	availability, and consistent data processing specified in the applicable joint and system integrated architecture views		availability, and consistent data processing specified in the applicable joint and system integrated architecture views
Types of Service	Support synchronous and asynchron-ous broadcast, point-to-point, and netted communicat-ions topologies plus support an asymmetrical multicast communicat-ions topology	Threshold plus support an asymmetrical multicast communicat-ions topology	Support synchronous and asynchron-ous broadcast, point-to-point, and netted communicat-ions topologies	TBD	Support synchronous and asynchron-ous broadcast, point-to-point, and netted communica-tions topologies
Communications on the Move	Support communicat-ions on the move when and where needed in all environments while engaged in combat operations	Support communicat-ions on the move when and where needed in all environments while engaged in combat operations	Support communicat-ions on the move when and where needed in all environments while engaged in combat operations	TBD	Support communicat-ions on the move when and where needed in all environments while engaged in combat operations
Availability	Provide an operational link availabil-ity of at least 99% averaged over any year of operation and a constellation	Provide an operational link availability of at least 99% averaged over any year of operation and a constellation	Provide an operational link availability of at least 97% averaged over any year of operation and a constellation	TBD	Provide an operational link availability of at least 97% averaged over any year of operation and a constellation

	availability over the required length of service of at least 90%	availability over the required length of service of at least 90%	availability over the required length of service of at least 70%		availability over the required length of service of at least 70%

Requirements Source: July 2001 Operational Requirement Document (ORD) as modified by the September 23, 2003 Joint Requirements Oversight Council-Memorandum (JROC-M, 187-03).

Acronyms And Abbreviations

% - percent
ATO - Approval to Operate
CMTW - Combined Major Theater War
CONOPS - Concept of Operations
DAA - Designated Approval Authority
DISA - Defense Information Systems Agency
DISR - DOD Informational Technology Standards Region
GIG - Global Information Grid
IATO - Interim Approval to Operate
IT - Information Technology
KIPs - Key Interface Profiles
KPP - Key Performance Parameter
Mbps - megabits per second
NCOW RM - Net-Centric Operations and Warfare Reference Model
RAF - Radio Access Facility
TBD - To Be Determined
TV-1 - Technical View 1

Change Explanations

(Ch-1) Current Estimate for Access and Control was updated to reflect that MUOS meets the objective for one aspect.

Track To Budget

General Memo

This SAR submission is for the MUOS program only.

RDT&E

APPN 1319	BA 07	PE 0303109N	(Navy)	
	Project X2472	Satellite Communications (SPACE)/Mobile User Objective System	(Shared)	

Procurement

APPN 1507	BA 02	PE 0303109N	(Navy)	
	ICN 243300	Fleet Satellite Communications Follow-On	(Shared)	

MILCON

APPN 1205	BA 01	PE 0301376N	(Navy)	
	Project P131	Facilities Restoration & Mod - Communication	(Shared)	(Sunk)

Acq O&M

APPN 1804	BA 04	PE 0303109N	(Navy)	
	Subactivity Group 6M	Satellite Communications (SPACE)	(Shared)	

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

Appropriation	BY2004 $M			BY2004 $M	TY $M		
	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	3245.2	3245.2	3569.7	**3644.0** [1]	3636.2	3636.2	4105.8
Procurement	2460.3	2460.3	2706.3	2301.6	3104.1	3104.1	2869.4
Flyaway	2460.3	--	--	2301.6	3104.1	--	2869.4
Recurring	2460.3	--	--	2301.6	3104.1	--	2869.4
Non Recurring	0.0	--	--	0.0	0.0	--	0.0
Support	0.0	--	--	0.0	0.0	--	0.0
Other Support	0.0	--	--	0.0	0.0	--	0.0
Initial Spares	0.0	--	--	0.0	0.0	--	0.0
MILCON	30.7	30.7	33.8	30.8	34.5	34.5	34.6
Acq O&M	32.7	32.7	36.0	25.2	35.8	35.8	26.8
Total	5768.9	5768.9	N/A	6001.6	6810.6	6810.6	7036.6

[1] ***APB Breach***

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	2	2	2
Procurement	4	4	4
Total	6	6	6

The units of measure for the MUOS program consist of 6 satellites, 6 launch vehicles, the entire ground system, and the associated support.

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2013 President's Budget / December 2011 SAR (TY$ M)

Appropriation	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
RDT&E	3559.5	243.9	145.9	25.7	0.0	0.0	0.0	130.8	4105.8
Procurement	1556.2	238.2	21.5	248.0	9.1	9.4	8.1	778.9	2869.4
MILCON	34.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.6
Acq O&M	26.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.8
PB 2013 Total	5177.1	482.1	167.4	273.7	9.1	9.4	8.1	909.7	7036.6
PB 2012 Total	5165.0	482.4	325.0	22.9	8.9	9.2	5.2	914.1	6932.7
Delta	12.1	-0.3	-157.6	250.8	0.2	0.2	2.9	-4.4	103.9

Quantity	Undistributed	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	3	0	0	0	0	0	0	1	4
PB 2013 Total	2	3	0	0	0	0	0	0	1	6
PB 2012 Total	2	3	0	0	0	0	0	0	1	6
Delta	0	0	0	0	0	0	0	0	0	0

Cost and Funding

Annual Funding By Appropriation

Annual Funding TY$
1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2000	--	--	--	--	--	--	8.6
2001	--	--	--	--	--	--	27.1
2002	--	--	--	--	--	--	32.5
2003	--	--	--	--	--	--	67.0
2004	--	--	--	--	--	--	84.4
2005	--	--	--	--	--	--	375.2
2006	--	--	--	--	--	--	449.5
2007	--	--	--	--	--	--	637.2
2008	--	--	--	--	--	--	591.3
2009	--	--	--	--	--	--	497.0
2010	--	--	--	--	--	--	398.3
2011	--	--	--	--	--	--	391.4
2012	--	--	--	--	--	--	243.9
2013	--	--	--	--	--	--	145.9
2014	--	--	--	--	--	--	25.7
2015	--	--	--	--	--	--	--
2016	--	--	--	--	--	--	--
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	5.2
2019	--	--	--	--	--	--	18.8
2020	--	--	--	--	--	--	74.9
2021	--	--	--	--	--	--	5.2
2022	--	--	--	--	--	--	5.2
2023	--	--	--	--	--	--	10.4
2024	--	--	--	--	--	--	11.1
Subtotal	**2**	**--**	**--**	**--**	**--**	**--**	**4105.8**

Annual Funding BY$
1319 | RDT&E | Research, Development, Test, and Evaluation, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2004 $M	Non End Item Recurring Flyaway BY 2004 $M	Non Recurring Flyaway BY 2004 $M	Total Flyaway BY 2004 $M	Total Support BY 2004 $M	Total Program BY 2004 $M
2000	--	--	--	--	--	--	9.0
2001	--	--	--	--	--	--	28.0
2002	--	--	--	--	--	--	33.2
2003	--	--	--	--	--	--	67.5
2004	--	--	--	--	--	--	82.7
2005	--	--	--	--	--	--	358.3
2006	--	--	--	--	--	--	416.3
2007	--	--	--	--	--	--	576.0
2008	--	--	--	--	--	--	524.9
2009	--	--	--	--	--	--	435.6
2010	--	--	--	--	--	--	343.9
2011	--	--	--	--	--	--	331.6
2012	--	--	--	--	--	--	203.0
2013	--	--	--	--	--	--	119.5
2014	--	--	--	--	--	--	20.7
2015	--	--	--	--	--	--	--
2016	--	--	--	--	--	--	--
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	3.9
2019	--	--	--	--	--	--	13.8
2020	--	--	--	--	--	--	54.2
2021	--	--	--	--	--	--	3.7
2022	--	--	--	--	--	--	3.6
2023	--	--	--	--	--	--	7.1
2024	--	--	--	--	--	--	7.5
Subtotal	**2**	**--**	**--**	**--**	**--**	**--**	**3644.0**

Annual Funding TY$
1507 | Procurement | Weapons Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway TY $M	Non End Item Recurring Flyaway TY $M	Non Recurring Flyaway TY $M	Total Flyaway TY $M	Total Support TY $M	Total Program TY $M
2008	--	203.7	--	--	203.7	--	203.7
2009	1	339.5	--	--	339.5	--	339.5
2010	1	509.9	--	--	509.9	--	509.9
2011	1	503.1	--	--	503.1	--	503.1
2012	--	238.2	--	--	238.2	--	238.2
2013	--	21.5	--	--	21.5	--	21.5
2014	--	248.0	--	--	248.0	--	248.0
2015	--	9.1	--	--	9.1	--	9.1
2016	--	9.4	--	--	9.4	--	9.4
2017	--	8.1	--	--	8.1	--	8.1
2018	--	5.9	--	--	5.9	--	5.9
2019	--	8.1	--	--	8.1	--	8.1
2020	--	57.4	--	--	57.4	--	57.4
2021	1	432.8	--	--	432.8	--	432.8
2022	--	248.5	--	--	248.5	--	248.5
2023	--	8.0	--	--	8.0	--	8.0
2024	--	8.2	--	--	8.2	--	8.2
2025	--	7.0	--	--	7.0	--	7.0
2026	--	3.0	--	--	3.0	--	3.0
Subtotal	**4**	**2869.4**	**--**	**--**	**2869.4**	**--**	**2869.4**

Annual Funding BY$
1507 | Procurement | Weapons Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway BY 2004 $M	Non End Item Recurring Flyaway BY 2004 $M	Non Recurring Flyaway BY 2004 $M	Total Flyaway BY 2004 $M	Total Support BY 2004 $M	Total Program BY 2004 $M
2008	--	179.0	--	--	179.0	--	179.0
2009	1	293.9	--	--	293.9	--	293.9
2010	1	434.2	--	--	434.2	--	434.2
2011	1	420.8	--	--	420.8	--	420.8
2012	--	195.8	--	--	195.8	--	195.8
2013	--	17.4	--	--	17.4	--	17.4
2014	--	197.0	--	--	197.0	--	197.0
2015	--	7.1	--	--	7.1	--	7.1
2016	--	7.2	--	--	7.2	--	7.2
2017	--	6.1	--	--	6.1	--	6.1
2018	--	4.4	--	--	4.4	--	4.4
2019	--	5.9	--	--	5.9	--	5.9
2020	--	41.0	--	--	41.0	--	41.0
2021	1	303.4	--	--	303.4	--	303.4
2022	--	171.1	--	--	171.1	--	171.1
2023	--	5.4	--	--	5.4	--	5.4
2024	--	5.4	--	--	5.4	--	5.4
2025	--	4.6	--	--	4.6	--	4.6
2026	--	1.9	--	--	1.9	--	1.9
Subtotal	**4**	**2301.6**	**--**	**--**	**2301.6**	**--**	**2301.6**

Cost Quantity Information
1507 | Procurement | Weapons Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 2004 $M
2008	--	--
2009	1	446.3
2010	1	433.3
2011	1	444.9
2012	--	--
2013	--	--
2014	--	--
2015	--	--
2016	--	--
2017	--	--
2018	--	--
2019	--	--
2020	--	--
2021	1	977.1
2022	--	--
2023	--	--
2024	--	--
2025	--	--
2026	--	--
Subtotal	**4**	**2301.6**

Annual Funding TY$
1205 | MILCON | Military Construction, Navy and Marine Corps

Fiscal Year	Total Program TY $M
2007	26.1
2008	8.5
Subtotal	**34.6**

Annual Funding BY$
1205 | MILCON | Military Construction, Navy and Marine Corps

Fiscal Year	Total Program BY 2004 $M
2007	23.3
2008	7.5
Subtotal	**30.8**

Annual Funding TY$
1804 | Acq O&M | Operation and Maintenance, Navy

Fiscal Year	Total Program TY $M
2002	4.2
2003	4.6
2004	4.5
2005	--
2006	--
2007	--
2008	4.6
2009	5.0
2010	3.9
Subtotal	**26.8**

Annual Funding BY$
1804 | Acq O&M | Operation and Maintenance, Navy

Fiscal Year	Total Program BY 2004 $M
2002	4.3
2003	4.6
2004	4.4
2005	--
2006	--
2007	--
2008	4.1
2009	4.4
2010	3.4
Subtotal	**25.2**

Low Rate Initial Production

There is no Low Rate Initial Production (LRIP) for this program.

Foreign Military Sales

None

Nuclear Cost

None

Unit Cost

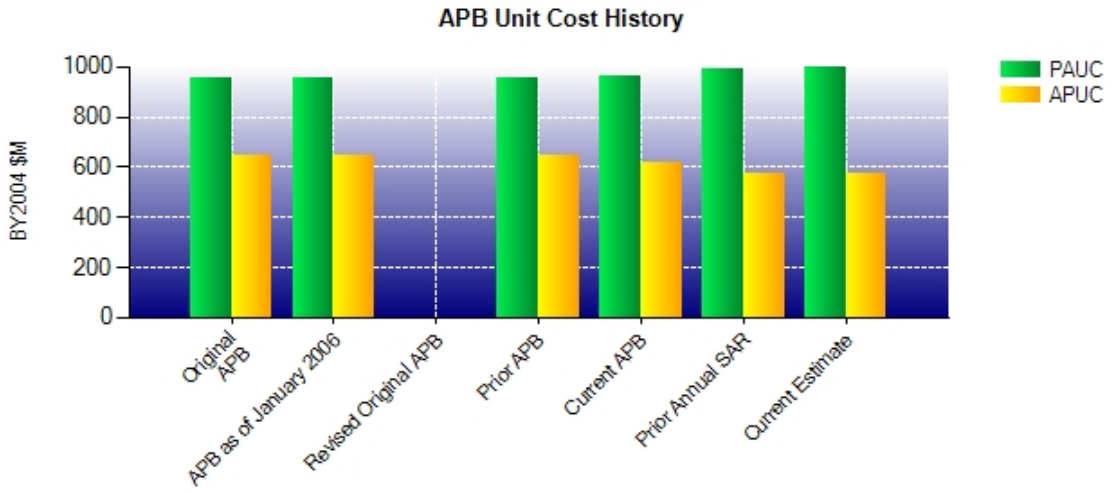
Unit Cost Report

Unit Cost	BY2004 $M Current UCR Baseline (MAR 2008 APB)	BY2004 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	5768.9	6001.6	
Quantity	6	6	
Unit Cost	961.483	1000.267	+4.03
Average Procurement Unit Cost (APUC)			
Cost	2460.3	2301.6	
Quantity	4	4	
Unit Cost	615.075	575.400	-6.45

Unit Cost	BY2004 $M Original UCR Baseline (DEC 2004 APB)	BY2004 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	5738.0	6001.6	
Quantity	6	6	
Unit Cost	956.333	1000.267	+4.59
Average Procurement Unit Cost (APUC)			
Cost	2591.0	2301.6	
Quantity	4	4	
Unit Cost	647.750	575.400	-11.17

PAUC reflects the sum of six satellites, six launch vehicles, the entire ground segment, and the associated support, divided by the total quantity of six. APUC reflects the sum of four satellites and six launch vehicles, divided by a procurement quantity of four.

Unit Cost History



		BY2004 $M		TY $M	
	Date	PAUC	APUC	PAUC	APUC
Original APB	DEC 2004	956.333	647.750	1080.183	776.025
APB as of January 2006	DEC 2004	956.333	647.750	1080.183	776.025
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	JAN 2007	956.333	647.750	1080.183	776.025
Current APB	MAR 2008	961.483	615.075	1135.100	776.025
Prior Annual SAR	DEC 2010	992.883	575.025	1155.450	707.825
Current Estimate	DEC 2011	1000.267	575.400	1172.767	717.350

SAR Unit Cost History

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial PAUC Dev Est	Changes								PAUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1080.183	49.000	0.000	2.750	0.000	3.167	0.000	0.000	54.917	1135.100

Current SAR Baseline to Current Estimate (TY $M)

PAUC Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1135.100	-15.017	0.000	1.167	0.000	51.517	0.000	0.000	37.667	1172.767

Initial SAR Baseline to Current SAR Baseline (TY $M)

Initial APUC Dev Est	Changes								APUC Prod Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
776.025	39.100	0.000	4.125	0.000	-43.225	0.000	0.000	0.000	776.025

Current SAR Baseline to Current Estimate (TY $M)

APUC Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
776.025	-19.075	0.000	1.750	0.000	-41.350	0.000	0.000	-58.675	717.350

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	SEP 2004	SEP 2004	SEP 2004
Milestone C	N/A	OCT 2006	OCT 2006	AUG 2006
IOC	N/A	N/A	N/A	N/A
Total Cost (TY $M)	N/A	6481.1	6810.6	7036.6
Total Quantity	N/A	6	6	6
Prog. Acq. Unit Cost (PAUC)	N/A	1080.183	1135.100	1172.767

Milestone (MS) B and C dates reflect National Security Space Acquisition Policy (NSSAP) 03-01 dates for Key Decision Point B and C, not MS B and C as specified in DoD 5000.

Initial Operational Capability (IOC) is synonymous with the term On-Orbit Capability, which is referenced by the MUOS Program.

Cost Variance

Cost Variance Summary

Summary Then Year $M					
	RDT&E	Proc	MILCON	Acq O&M	Total
SAR Baseline (Prod Est)	3636.2	3104.1	34.5	35.8	6810.6
Previous Changes					
Economic	-27.3	-110.6	+0.1	+0.1	-137.7
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	+431.1	-162.2	--	-9.1	+259.8
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+403.8	-272.8	+0.1	-9.0	+122.1
Current Changes					
Economic	+13.3	+34.3	--	--	+47.6
Quantity	--	--	--	--	--
Schedule	--	+7.0	--	--	+7.0
Engineering	--	--	--	--	--
Estimating	+52.5	-3.2	--	--	+49.3
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+65.8	+38.1	--	--	+103.9
Total Changes	+469.6	-234.7	+0.1	-9.0	+226.0
CE - Cost Variance	4105.8	2869.4	34.6	26.8	7036.6
CE - Cost & Funding	4105.8	2869.4	34.6	26.8	7036.6

Summary Base Year 2004 $M					
	RDT&E	Proc	MILCON	Acq O&M	Total
SAR Baseline (Prod Est)	3245.2	2460.3	30.7	32.7	5768.9
Previous Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	+356.0	-160.2	+0.1	-7.5	+188.4
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+356.0	-160.2	+0.1	-7.5	+188.4
Current Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	--	+2.5	--	--	+2.5
Engineering	--	--	--	--	--
Estimating	+42.8	-1.0	--	--	+41.8
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+42.8	+1.5	--	--	+44.3
Total Changes	+398.8	-158.7	+0.1	-7.5	+232.7
CE - Cost Variance	3644.0	2301.6	30.8	25.2	6001.6
CE - Cost & Funding	3644.0	2301.6	30.8	25.2	6001.6

Previous Estimate: December 2010

RDT&E	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+13.3
Cost increases associated with technical issues for the MUOS Prime Contract development effort. (Estimating)	+51.7	+61.9
Cost increases associated with the DoD mandate to upgrade Public Key Infrastructure (PKI). (Estimating)	+15.2	+18.8
Miscellaneous budget adjustments (e.g. Small Business Innovation Research, Small Business Technology Transfer, etc.) (Estimating)	-16.0	-18.7
Adjustment for current and prior escalation. (Estimating)	-8.1	-9.5
RDT&E Subtotal	+42.8	+65.8

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+34.3
Revised schedule estimate for Evolved Expendable Launch Vehicle (EELV) #5 from FY 2013 to FY 2014. (Schedule)	+2.5	+7.0
Revised estimate for EELV #5 due to increases in Air Force cost estimate. (Estimating)	+29.3	+36.0
Miscellaneous budget adjustments (e.g. Strategic Sourcing initiative, Working Capital Fund, etc.) (Estimating)	-18.1	-24.8
Adjustment for current and prior escalation. (Estimating)	-12.2	-14.4
Procurement Subtotal	+1.5	+38.1

Contracts

Appropriation: RDT&E

Contract Name	**MUOS RRDD AOS Contract - Contract Line Item Number (CLIN) 1**
Contractor	Lockheed Martin (LMSSC)
Contractor Location	1111 Lockheed Martin Way Sunnyvale, CA 94089-1212
Contract Number, Type	N00039-04-C-2009, CPAF/CPIF
Award Date	September 24, 2004
Definitization Date	September 24, 2004

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
2097.9	N/A	2	2280.1	N/A	2	3356.4	3457.2

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/25/2011)	-171.5	-14.5
Previous Cumulative Variances	-103.3	-14.6
Net Change	-68.2	+0.1

Cost And Schedule Variance Explanations

The unfavorable net change in the cost variance is due to schedule degradation in the Space Payload segment as well as technical issues primarily in the Ground Segment (User Entry) and Satellite Assembly, Integration, and Test Segment.

The favorable net change in the schedule variance is due to the implementation of replanning based on revised launch dates assigned by the Air Force Current Launch Schedule Review Board.

Contract Comments

This contract is more than 90% complete; therefore, this is the final report for this contract.

The difference between the initial contract price target and the current contract price target is due to the incorporation of the Secure Communications Engineering Change Proposal (ECP), and the Enhanced Digital Receiver Unit ECP.

The difference between the Contract Price and both the Contractor's Estimated Price at Completion, and the Program Manager's Price at Completion, is driven by adjustments made for Over Target Baseline (OTB) #1 and OTB #2.

Appropriation: Procurement

Contract Name	**MUOS RRDD AOS Contract - Contract Line Item Number (CLIN) 3**
Contractor	Lockheed Martin (LMSSC)
Contractor Location	1111 Lockheed Martin Way Sunnyvale, CA 94089-1212
Contract Number, Type	N00039-04-C-2009/3, FPIF
Award Date	September 24, 2004
Definitization Date	September 24, 2009

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
279.0	298.5	1	282.5	332.5	1	332.5	332.5

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/25/2011)	+5.9	-8.8
Previous Cumulative Variances	+2.5	-8.7
Net Change	+3.4	-0.1

Cost And Schedule Variance Explanations

The favorable net change in the cost variance is due to efficiencies realized in the Satellite System Engineering Segment, Satellite Assembly, Integration, and Test Segment, and Payload Design Integration Segment.

The unfavorable net change in the schedule variance is due to late subcontractor hardware deliveries.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to the inclusion of a contract Engineering Change Proposal (ECP).

The Program Manager’s Estimated Price at Completion is equal to the current Contract Ceiling Price of $332.5M.

This is not a new contract, but a previous contract line item that was exercised on the MUOS contract N00039-04-C-2009.

Appropriation: Procurement

Contract Name	**MUOS RRDD AOS Contract – Contract Line Item Number (CLIN) 5**
Contractor	Lockheed Martin (LMSSC)
Contractor Location	1111 Lockheed Martin Way Sunnyvale, CA 94089-1212
Contract Number, Type	N00039-04-C-2009/5, FPIF
Award Date	September 24, 2004
Definitization Date	January 25, 2010

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
287.7	307.7	1	277.8	324.7	1	324.7	324.7

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/25/2011)	+14.9	-2.4
Previous Cumulative Variances	+5.3	+27.2
Net Change	+9.6	-29.6

Cost And Schedule Variance Explanations

The favorable net change in the cost variance is due to cost efficiencies in the Program Management Segment. The favorable net change is also attributable to labor efficiencies realized in the Payload Segment.

The unfavorable net change in the schedule variance is due to offsets to performance taken in earlier periods for efforts completed ahead of schedule in several Work Breakdown Structure elements (primarily Space Bus and Payload Segments), and minor delays in subcontract milestones.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to the change in methodology to align the target price to the Cost Performance Reporting data reported by the Prime Contractor, which excludes $9.9M Mission Success Fee. In previous SAR submissions, the Mission Success Fee was included in the target price. In accordance with guidance, the Original Target Price remains unchanged, and continues to include the $9.9M of Fee.

The Program Manager’s Estimated Price at Completion is equal to the current Contract Ceiling Price of $324.7M.

This is not a new contract, but a previous contract line item that was exercised on the MUOS contract N00039-04-C-2009.

Appropriation: Procurement

Contract Name	**MUOS RRDD AOS Contract – Contract Line Item Number (CLIN) 7**
Contractor	Lockheed Martin (LMSSC)
Contractor Location	1111 Lockheed Martin Way Sunnyvale, CA 94089-1212
Contract Number, Type	N00039-04-C-2009/7, FPIF
Award Date	September 24, 2004
Definitization Date	January 25, 2011

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
288.5	339.6	1	288.5	339.6	1	329.6	339.6

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/25/2011)	+6.3	+27.0
Previous Cumulative Variances	--	--
Net Change	+6.3	+27.0

Cost And Schedule Variance Explanations

The favorable cumulative cost variance is due to subcontract manufacturing labor efficiencies.

The favorable cumulative schedule variance is due to material and subcontract efforts finishing early to the baseline plan in the Space Bus and Payload Segments.

Contract Comments

This is the first time this contract is being reported.

It should be noted that this is not a new contract, but a previous contract line item that was exercised on the MUOS contract N00039-04-C-2009.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	2	0	2	0.00%
Production	0	0	4	0.00%
Total Program Quantities Delivered	2	0	6	0.00%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	7036.6	Years Appropriated	13
Expenditures To Date	4347.9	Percent Years Appropriated	48.15%
Percent Expended	61.79%	Appropriated to Date	5659.2
Total Funding Years	27	Percent Appropriated	80.43%

Operating and Support Cost

Assumptions And Ground Rules

The MUOS Operations and Support (O&S) date of estimate is as of March 15, 2008, the date of the current approved Acquisition Program Baseline (APB).

MUOS O&S costs are equivalent to the program's Operations and Maintenance-funded costs for FY 2011 through FY 2024 (14 years of service-life) for six satellites.

The previous system to MUOS is the Ultra High Frequency (UHF) Follow-On (UFO) satellite communications program. Comparisons of O&S costs for UFO are not provided as the two systems did not use the same cost elements for calculation of their respective O&S costs and the scope of support is entirely different.

Disposal costs for the MUOS program are nominal and are excluded from this O&S estimate.

Costs BY2004 $M		
Cost Element	MUOS Cost Per Satellite Per Year	UFO Cost Per Satellite Per Year
Unit-Level Manpower	0.000	0.000
Unit Operations	0.000	0.000
Maintenance	0.024	0.000
Sustaining Support	2.054	0.000
Continuing System Improvements	0.000	0.000
Indirect Support	0.000	0.000
Other	0.002	0.000
Total Unitized Cost (Base Year 2004 $)	2.080	--

Total O&S Costs $M	MUOS	UFO
Base Year	174.8	0.0
Then Year	229.1	0.0