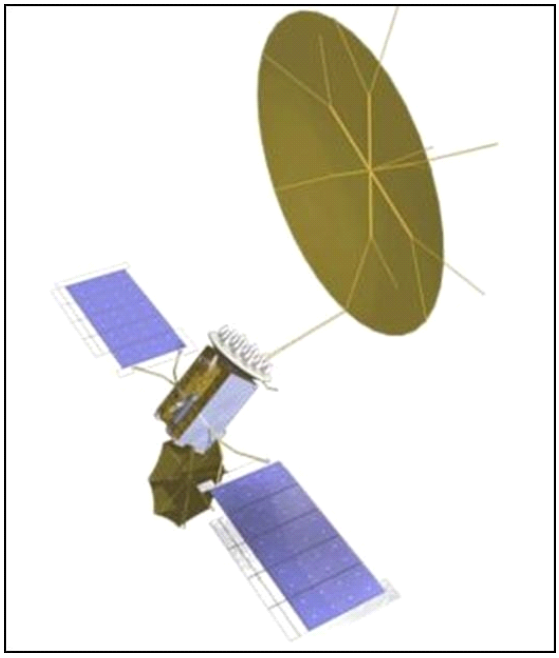
Selected Acquisition Report (SAR)

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



MUOS

As of December 31, 2010

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Designation And Nomenclature (Popular Name)

Mobile User Objective System (MUOS)

DoD Component

Navy

Responsible Office

Responsible Office

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References

SAR Baseline (Production Estimate)

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

Approved APB

Defense Acquisition Executive 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 feederlink. 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 $163.5M in Fiscal Year (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 Acquisition, Technology, and Logistics (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. Per the ADM, the Navy was directed to submit an Above Threshold Reprogramming (ATR) to fully fund Research, Development, Test & Evaluation, Navy (RDT&E,N) to the Director, Cost and Program Evaluation (D, CAPE) cost assessment of $433 million in FY 2010.

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 (2004) contracted date of March 2010.

The MUOS program returned to the OIPT for a program review 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.

Per an ADM of December 22, 2009, the Navy remains committed to funding to D, CAPE levels. Anticipate resolution based on Execution Review with Senior Navy Leadership in March 2011.

Additionally, a revised APB is in process as a result of the ADM signed December 22, 2009. This SAR reflects APB Threshold Breaches for Schedule and Cost.

There are no significant software-related issues for 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

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

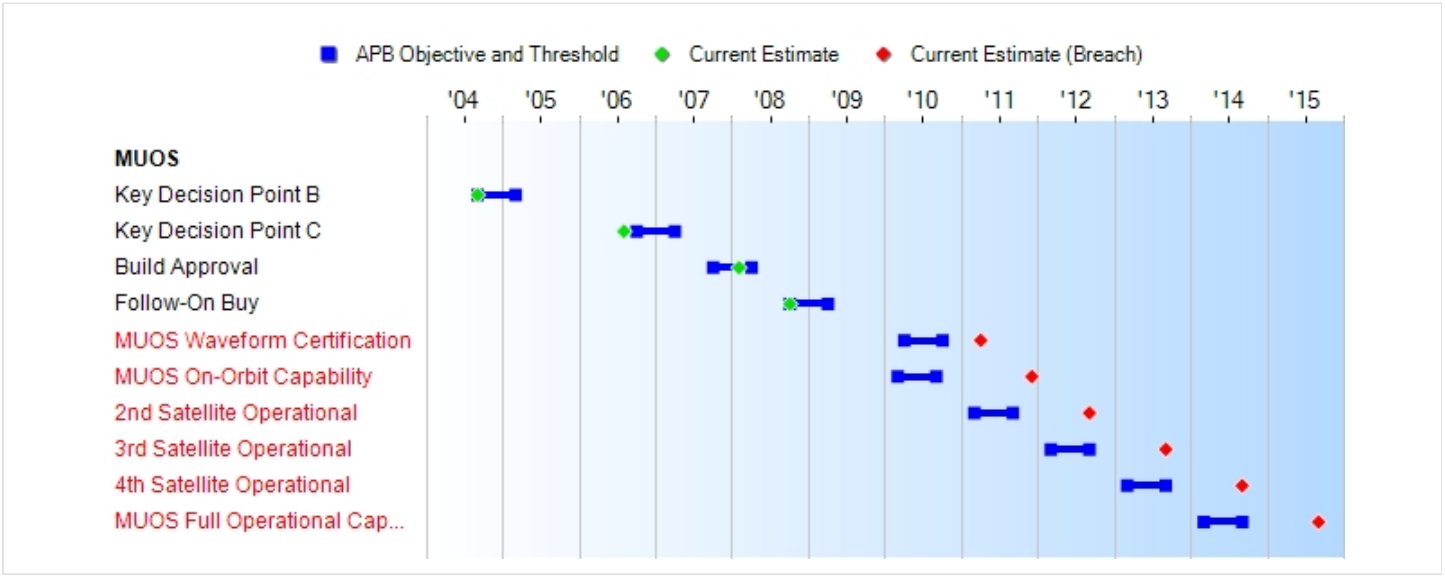
A schedule breach exists for the MUOS Waveform Certification due to development delays identified in the December 2009 SAR; however, in the current draft APB this milestone is removed as it is no longer required in the baseline MUOS program.

The schedule for MUOS On-Orbit Capability (OOC) and follow on satellite operational capabilities breach the current APB threshold based on the Program Manager's overall assessment of the contractor's ability to execute on schedule.

The Overarching Integrated Product Team (OIPT) review of the program in October 2009 and the ADM in December 2009 directed Navy leadership to fund to the Director, Cost Assessment and Program Estimation (D, CAPE) estimate. The current Research, Development, Test & Evaluation, Navy (RDT&E,N) cost estimate breaches the current APB threshold due to the D, CAPE independent estimate of August 2009 which reflected additional funding required in FY 2011, FY 2012 and FY 2013.

As referenced in the Executive Summary, in accordance with the ADM of December 22, 2009, the Navy remains committed to funding to D, CAPE levels. Anticipate resolution based on Execution Review with Senior Navy Leadership in March 2011.

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	**APR 2011**[1]
MUOS On-Orbit Capability	MAR 2010	MAR 2010	SEP 2010	**DEC 2011**[1]
2nd Satellite Operational	MAR 2011	MAR 2011	SEP 2011	**SEP 2012**[1]
3rd Satellite Operational	MAR 2012	MAR 2012	SEP 2012	**SEP 2013**[1]
4th Satellite Operational	MAR 2013	MAR 2013	SEP 2013	**SEP 2014**[1]
MUOS Full Operational Capability	MAR 2014	MAR 2014	SEP 2014	**SEP 2015**[1]

[1] *APB Breach*

Acronyms And Abbreviations

MUOS - Mobile User Objective System

Change Explanations

None

Memo

The Current Estimate milestone dates are carried over from the December 2009 Selected Acquisition Report (SAR), and therefore are not a change from the data previously provided.

In accordance with the current approved Acquisition Program Baseline (APB) (of March 2008), the Schedule Milestone definitions are as follows.

MUOS Waveform Certification. The current estimate date which indicates a breach condition is no longer relevant. Due to a restructuring of the MUOS Waveform development, this milestone is no longer required in the baseline MUOS program and has been removed from the draft APB that is currently in route for approval. The intent of this milestone was to address the National Security Agency (NSA) Information Assurance (IA) assessment, which is only required for the waveform as it is ported to Joint Tactical Radio System (JTRS) terminals. The MUOS program will deliver an operationally usable blackside waveform that does not require an NSA IA assessment. The MUOS redside waveform and its IA assessment by NSA will be a separate activity in coordination with the Joint Program Executive Office (JPEO) JTRS.

MUOS On-Orbit Capability (OOC) refers to one satellite with satellite/network control ground station. MUOS initial OOC was delayed due to component-level technical issues and testing anomalies.

MUOS Satellite #2 operational milestone also includes installation of remaining ground infrastructure. MUOS Satellite #2 is delayed due to technical issues from Satellite #1 and the constraint to maintain separation between satellite launches.

Satellites #3 & #4 are delayed due to schedule and technical issues of the first two satellites.

MUOS Full Operational Capability (FOC) refers to Satellite #5 being launched and ready to support operations. MUOS FOC is delayed as a direct result of the planned one year separation between launches starting with Satellite #2.

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
Coverage	24 hours/day communications services at all latitudes and longitudes	24 hours/day communications services at all latitudes and longitudes	24 hours/day communications services from 65 degrees North to 65 degrees South latitude at all longitudes		24 hours/day communications 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)		1,997 worldwide simultaneous accesses (39.2 Mbps) with 502 simultaneous theater accesses (3 Mbps)
Access and Control	Resources planned, allocated, prioritized, and dynamically 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	Resources planned, allocated, prioritized, and dynamically 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	Resources planned, allocated, prioritized, and dynamically 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		Resources planned, allocated, prioritized, and dynamically 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

	99% of the time	99% of the time	seconds 90% of the time and 10 seconds 99% of the time		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 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, authenticatio n, confidentiality	Fully support execution of all 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, authenticatio n, confidentiality	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 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 availability, integrity, authenticatio n,		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 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 availability, integrity, authenticatio n,

	, and nonrepudiation, and issuance of an Approval to Operate (ATO) by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	, and nonrepudiation, and issuance of an Approval to Operate (ATO) by the DAA, and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views	confidentiality, and nonrepudiation, and issuance of an Interim Approval to Operate (IATO) by the Designated Approval Authority (DAA), and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views		confidentiality, and nonrepudiation, and issuance of an Interim Approval to Operate (IATO) by the Designated Approval Authority (DAA), and 5) Operationally effective information exchanges; and mission critical performance and information assurance attributes, data correctness, data availability, and consistent data processing specified in the applicable joint and system integrated architecture views
Types of Service	Threshold plus support an asymmetrical multicast communications topology	Threshold plus support an asymmetrical multicast communications topology	Support synchronous and asynchronous broadcast, point-to-point, and netted communications topologies		Support synchronous and asynchronous broadcast, point-to-point, and netted communications topologies
Communications on the Move	Support communicati	Support communicati	Support communicati		Support communicati

	ons on the move when and where needed in all environments while engaged in combat operations	ons on the move when and where needed in all environments while engaged in combat operations	ons on the move when and where needed in all environments while engaged in combat operations		ons on the move when and where needed in all environments while engaged in combat operations
Availability	Provide an operational link availability of at least 99% averaged over any year of operation and a constellation availability over the required length of service of at least 90%	Provide an operational link availability of at least 99% averaged over any year of operation and a constellation availability over the required length of service of at least 90%	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 70%		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 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
< - less than
ATO - Approval to Operate
CMTW - Combined Major Theater War
DAA - Designated Approval Authority
DISR - DOD Informational Technology Standards Region
DOD - Department of Defense
GIG - Global Information Grid
IATO - Interim Approval to Operate
IER - Information Exchange Requirement
IT - Information Technology
JTF - Joint Task Force
KIPs - Key Interface Profiles
lats - latitudes
longs - longitudes
Mbps - megabits per second
N/A - not applicable
NCOW RM - Net-Centric Operations and Warfare Reference Model
TV-1 - Technical View 1

Change Explanations

None

Track To Budget

General Memo
Current Estimates in this SAR submission differ from the corresponding amount in the FY 2012 President's Budget (PB12). The difference is explained by the fact that PB12, as submitted, reflects the MUOS, Ultra High Frequency (UHF) Augmentation (formerly Hosted Payload) and updates to the UHF Follow-On (UFO) Telemetry, Tracking and Control (TT&C). UHF Augmentation and the UFO TT&C amounts are not part of the MUOS program and therefore, are not reported in this SAR.

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)

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	**3601.2** [1]	3636.2	3636.2	4040.0
Procurement	2460.3	2460.3	2706.3	2300.1	3104.1	3104.1	2831.3
Flyaway	2460.3	--	--	2300.1	3104.1	--	2831.3
Recurring	2460.3	--	--	2300.1	3104.1	--	2831.3
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	5957.3	6810.6	6810.6	6932.7

[1] ***APB Breach***

Note: The Current Estimate for Procurement (TY$) includes the Cost-To-Complete (CTC) value of $788.5M. This value differs from the $779.5M CTC value reported in the FY 2012 President's Budget submit.

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

Cost and Funding

Funding Summary

Appropriation and Quantity Summary
FY2012 President's Budget / December 2010 SAR (TY$ M)

Appropriation	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
RDT&E	3139.3	405.7	244.2	120.0	0.0	0.0	0.0	130.8	4040.0
Procurement	1052.9	505.7	238.2	205.0	22.9	8.9	9.2	788.5	2831.3
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 2012 Total	4253.6	911.4	482.4	325.0	22.9	8.9	9.2	919.3	6932.7
PB 2011 Total	4238.2	911.4	453.9	332.1	25.7	11.7	5.2	910.3	6888.5
Delta	15.4	0.0	28.5	-7.1	-2.8	-2.8	4.0	9.0	44.2

Note: The Procurement Cost-To-Complete (CTC) value of $788.5M (TY$) differs from the CTC value of $779.M reported in the PB12 budget submit.

Quantity	Undistributed	Prior	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	To Complete	Total
Development	2	0	0	0	0	0	0	0	0	2
Production	0	2	1	0	0	0	0	0	1	4
PB 2012 Total	2	2	1	0	0	0	0	0	1	6
PB 2011 Total	2	2	1	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	--	--	--	--	--	--	497.3
2010	--	--	--	--	--	--	369.2
2011	--	--	--	--	--	--	405.7
2012	--	--	--	--	--	--	244.2
2013	--	--	--	--	--	--	120.0
2014	--	--	--	--	--	--	--
2015	--	--	--	--	--	--	--
2016	--	--	--	--	--	--	--
2017	--	--	--	--	--	--	5.2
2018	--	--	--	--	--	--	5.2
2019	--	--	--	--	--	--	18.8
2020	--	--	--	--	--	--	74.9
2021	--	--	--	--	--	--	5.2
2022	--	--	--	--	--	--	5.2
2023	--	--	--	--	--	--	5.2
2024	--	--	--	--	--	--	11.1
Subtotal	**2**	**--**	**--**	**--**	**--**	**--**	**4040.0**

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	--	--	--	--	--	--	576.1
2008	--	--	--	--	--	--	525.1
2009	--	--	--	--	--	--	436.3
2010	--	--	--	--	--	--	320.3
2011	--	--	--	--	--	--	347.1
2012	--	--	--	--	--	--	205.8
2013	--	--	--	--	--	--	99.5
2014	--	--	--	--	--	--	--
2015	--	--	--	--	--	--	--
2016	--	--	--	--	--	--	--
2017	--	--	--	--	--	--	4.0
2018	--	--	--	--	--	--	4.0
2019	--	--	--	--	--	--	14.1
2020	--	--	--	--	--	--	55.2
2021	--	--	--	--	--	--	3.8
2022	--	--	--	--	--	--	3.7
2023	--	--	--	--	--	--	3.6
2024	--	--	--	--	--	--	7.6
Subtotal	**2**	**--**	**--**	**--**	**--**	**--**	**3601.2**

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	339.3	--	--	339.3	--	339.3
2010	1	509.9	--	--	509.9	--	509.9
2011	1	505.7	--	--	505.7	--	505.7
2012	--	238.2	--	--	238.2	--	238.2
2013	--	205.0	--	--	205.0	--	205.0
2014	--	22.9	--	--	22.9	--	22.9
2015	--	8.9	--	--	8.9	--	8.9
2016	--	9.2	--	--	9.2	--	9.2
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--
2020	--	62.2	--	--	62.2	--	62.2
2021	1	463.6	--	--	463.6	--	463.6
2022	--	262.7	--	--	262.7	--	262.7
Subtotal	**4**	**2831.3**	**--**	**--**	**2831.3**	**--**	**2831.3**

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	--	179.2	--	--	179.2	--	179.2
2009	1	295.0	--	--	295.0	--	295.0
2010	1	437.7	--	--	437.7	--	437.7
2011	1	427.7	--	--	427.7	--	427.7
2012	--	198.3	--	--	198.3	--	198.3
2013	--	167.8	--	--	167.8	--	167.8
2014	--	18.4	--	--	18.4	--	18.4
2015	--	7.0	--	--	7.0	--	7.0
2016	--	7.2	--	--	7.2	--	7.2
2017	--	--	--	--	--	--	--
2018	--	--	--	--	--	--	--
2019	--	--	--	--	--	--	--
2020	--	45.3	--	--	45.3	--	45.3
2021	1	331.7	--	--	331.7	--	331.7
2022	--	184.8	--	--	184.8	--	184.8
Subtotal	**4**	**2300.1**	**--**	**--**	**2300.1**	**--**	**2300.1**

The Procurement Cost-To-Complete (CTC) value (FYs 2020-2022 in table above) differs from the CTC value of $779.M reported in the PB12 budget submit.

Cost Quantity Information
1507 | Procurement | Weapons Procurement, Navy

Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned with Quantity) BY 2004 $M
2008	--	--
2009	1	448.0
2010	1	436.7
2011	1	452.2
2012	--	--
2013	--	--
2014	--	--
2015	--	--
2016	--	--
2017	--	--
2018	--	--
2019	--	--
2020	--	--
2021	1	963.2
2022	--	--
Subtotal	**4**	**2300.1**

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 for this program.

Foreign Military Sales

There are no Foreign Military Sales for this program.

Nuclear Cost

There are no Nuclear Costs for this program.

Unit Cost

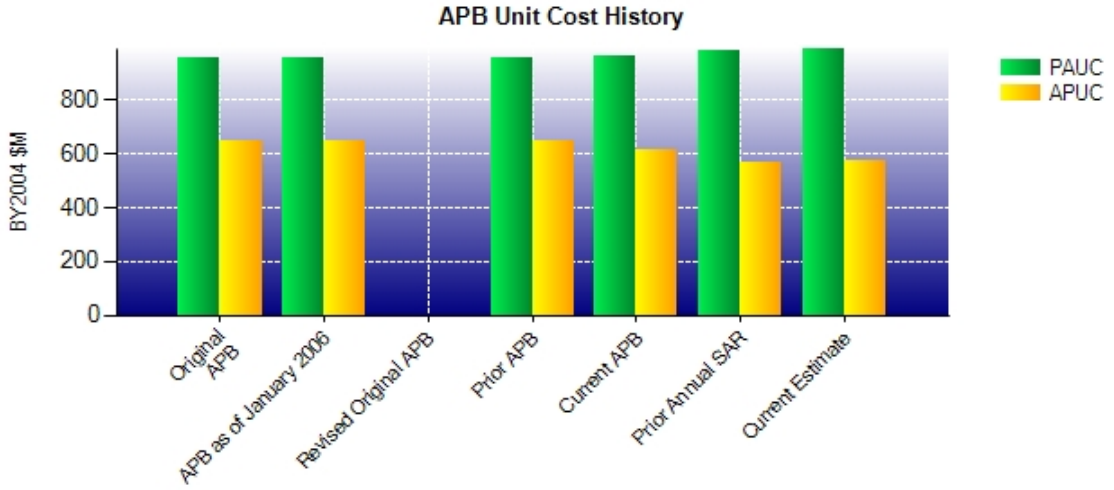
Unit Cost Report

Unit Cost	BY2004 $M Current UCR Baseline (MAR 2008 APB)	BY2004 $M Current Estimate (DEC 2010 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	5768.9	5957.3	
Quantity	6	6	
Unit Cost	961.483	992.883	+3.27
Average Procurement Unit Cost (APUC)			
Cost	2460.3	2300.1	
Quantity	4	4	
Unit Cost	615.075	575.025	-6.51

Unit Cost	BY2004 $M Original UCR Baseline (DEC 2004 APB)	BY2004 $M Current Estimate (DEC 2010 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	5738.0	5957.3	
Quantity	6	6	
Unit Cost	956.333	992.883	+3.82
Average Procurement Unit Cost (APUC)			
Cost	2591.0	2300.1	
Quantity	4	4	
Unit Cost	647.750	575.025	-11.23

PAUC reflects the sum of six satellites, six launches, the entire ground segment, and the associated support, divided by the total quantity of six. APUC reflects the sum of four satellites and six launches, 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 2009	986.400	566.100	1148.083	697.475
Current Estimate	DEC 2010	992.883	575.025	1155.450	707.825

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	26.050	0.000	2.750	0.000	46.467	0.000	0.000	75.267	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	-22.950	0.000	0.000	0.000	43.300	0.000	0.000	20.350	1155.450

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	11.450	0.000	4.125	0.000	-83.775	0.000	0.000	-68.200	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	-27.650	0.000	0.000	0.000	-40.550	0.000	0.000	-68.200	707.825

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	6932.7
Total Quantity	N/A	6	6	6
Prog. Acq. Unit Cost (PAUC)	N/A	1080.183	1135.100	1155.450

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	-27.2	-107.3	+0.1	+0.1	-134.3
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	+427.6	-206.9	--	-8.5	+212.2
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+400.4	-314.2	+0.1	-8.4	+77.9
Current Changes					
Economic	-0.1	-3.3	--	--	-3.4
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	+3.5	+44.7	--	-0.6	+47.6
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+3.4	+41.4	--	-0.6	+44.2
Total Changes	+403.8	-272.8	+0.1	-9.0	+122.1
CE - Cost Variance	4040.0	2831.3	34.6	26.8	6932.7
CE - Cost & Funding	4040.0	2831.3	34.6	26.8	6932.7

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	+352.3	-195.9	+0.1	-7.0	+149.5
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+352.3	-195.9	+0.1	-7.0	+149.5
Current Changes					
Economic	--	--	--	--	--
Quantity	--	--	--	--	--
Schedule	--	--	--	--	--
Engineering	--	--	--	--	--
Estimating	+3.7	+35.7	--	-0.5	+38.9
Other	--	--	--	--	--
Support	--	--	--	--	--
Subtotal	+3.7	+35.7	--	-0.5	+38.9
Total Changes	+356.0	-160.2	+0.1	-7.5	+188.4
CE - Cost Variance	3601.2	2300.1	30.8	25.2	5957.3
CE - Cost & Funding	3601.2	2300.1	30.8	25.2	5957.3

Previous Estimate: December 2009

RDT&E	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.1
Adjustment for current and prior escalation. (Estimating)	-0.5	-0.5
FY 2010 Above Threshold Reprogramming (ATR) for cost increase for the MUOS Prime Contract Development effort. (Estimating)	+21.6	+24.8
Miscellaneous budget adjustments (Realignments, etc.) (Estimating)	-17.4	-20.8
RDT&E Subtotal	+3.7	+3.4

Procurement	$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-3.3
Adjustment for current and prior escalation. (Estimating)	+0.7	+0.8
Revised estimate for Evolved Expendable Launch Vehicle (EELV) due to increases in Air Force cost estimate for Launch Vehicle #4. (Estimating)	+25.8	+31.0
Miscellaneous budget adjustments (Realignments, etc.) (Estimating)	+9.2	+12.9
Procurement Subtotal	+35.7	+41.4

Acq O&M	$M	
Current Change Explanations	Base Year	Then Year
Miscellaneous budget adjustments (Realignments, etc.) (Estimating)	-0.5	-0.6
Acq O&M Subtotal	-0.5	-0.6

Contracts

Appropriation: RDT&E

Contract Name	**MUOS RRDD AOS Contract - Contract Line Item Number (CLIN) 1**
Contractor	Lockheed Martin (LMSSC)
Contractor Location	Sunnyvale, CA 94089
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	3151.0	N/A	2	3271.8	3491.4

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	-103.3	-14.6
Previous Cumulative Variances	-15.7	0.0
Net Change	-87.6	-14.6

Cost And Schedule Variance Explanations

The net unfavorable cost and schedule variances reflect the completion of two Over-Target-Baseline (OTB)/Over-Target-Schedule (OTS) events. The unfavorable cost variance continues to be driven by schedule degradation in the Space Payload segment, and technical issues primarily in the Ground Segment.

Contract Comments

The change in Target Price from $2,097.9M to $3,151.0M is due to Engineering Change Proposals (ECP), Undefinitized Contract Action (UCA) funding, and the implementation of a major rebaseline to incorporate National Review Team (NRT) recommendations.

Appropriation: Procurement

Contract Name	**MUOS RRDD AOS Contract - Contract Line Item Number (CLIN) 3**
Contractor	Lockheed Martin (LMSSC)
Contractor Location	Sunnyvale, CA 94088
Contract Number, Type	N00039-04-C-2009/3, FPIF
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
279.0	298.5	1	292.4	332.5	1	332.5	332.5

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	+2.5	-8.7
Previous Cumulative Variances	+4.4	-1.3
Net Change	-1.9	-7.4

Cost And Schedule Variance Explanations

The favorable cost variance is due to current underruns in the Space Program Management element and the Space Payload Legacy Subsystem element. Thecumulative unfavorableschedule variance is driven by legacy payload technical issues, and is expected to burn down through lessons learned and efficiencies in CLIN 0001 work, and the current cost under run position.

Contract Comments

This is not a new contract but a previous contract line item that was exercised on the MUOS contract N00039-04-C-2009. The change in Target Price from $279.0M to $292.4M is due to an Engineering Change Proposal (ECP).

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

Appropriation: Procurement

Contract Name	**MUOS RRDD AOS Contract – Contract Line Item Number (CLIN) 5**
Contractor	Lockheed Martin (LMSSC)
Contractor Location	Sunnyvale, CA 94088
Contract Number, Type	N00039-04-C-2009/5, FPIF
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
287.7	307.7	1	287.7	324.7	1	324.7	324.7

Variance	Cost Variance	Schedule Variance
Cumulative Variances To Date	+5.3	+27.2
Previous Cumulative Variances	--	--
Net Change	+5.3	+27.2

Cost And Schedule Variance Explanations

Cost drivers include the Space Program Management element and the Space Payload Legacy Subsystem element. Drivers for the favorable schedule variance include the Space Bus Segment and legacy Space Payload efficiencies.

Contract Comments

MUOS is reporting this contract line item for the first time in the SAR. This is not a new contract but a previous contract line item that was exercised on the MUOS contract N00039-04-C-2009.

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

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	1	0	2	0.00%
Production	0	0	4	0.00%
Total Program Quantities Delivered	1	0	6	0.00%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	6932.7	Years Appropriated	12
Expenditures To Date	3804.5	Percent Years Appropriated	48.00%
Percent Expended	54.88%	Appropriated to Date	5165.0
Total Funding Years	25	Percent Appropriated	74.50%

Operating and Support Cost

Assumptions And Ground Rules

The MUOS Operations and Support (O&S) date of estimate is October 2009.

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.

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	--
Then Year	224.4	--