



## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-290



### **Navy Multiband Terminal (NMT)**

As of FY 2011 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

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## Common Acronyms and Abbreviations for MDAP Programs

Acq O&M - Acquisition-Related Operations and Maintenance  
ACAT - Acquisition Category  
ADM - Acquisition Decision Memorandum  
APB - Acquisition Program Baseline  
APPN - Appropriation  
APUC - Average Procurement Unit Cost  
\$B - Billions of Dollars  
BA - Budget Authority/Budget Activity  
Blk - Block  
BY - Base Year  
CAPE - Cost Assessment and Program Evaluation  
CARD - Cost Analysis Requirements Description  
CDD - Capability Development Document  
CLIN - Contract Line Item Number  
CPD - Capability Production Document  
CY - Calendar Year  
DAB - Defense Acquisition Board  
DAE - Defense Acquisition Executive  
DAMIR - Defense Acquisition Management Information Retrieval  
DoD - Department of Defense  
DSN - Defense Switched Network  
EMD - Engineering and Manufacturing Development  
EVM - Earned Value Management  
FOC - Full Operational Capability  
FMS - Foreign Military Sales  
FRP - Full Rate Production  
FY - Fiscal Year  
FYDP - Future Years Defense Program  
ICE - Independent Cost Estimate  
IOC - Initial Operational Capability  
Inc - Increment  
JROC - Joint Requirements Oversight Council  
\$K - Thousands of Dollars  
KPP - Key Performance Parameter  
LRIP - Low Rate Initial Production  
\$M - Millions of Dollars  
MDA - Milestone Decision Authority  
MDAP - Major Defense Acquisition Program  
MILCON - Military Construction  
N/A - Not Applicable  
O&M - Operations and Maintenance  
ORD - Operational Requirements Document  
OSD - Office of the Secretary of Defense  
O&S - Operating and Support  
PAUC - Program Acquisition Unit Cost

PB - President's Budget  
PE - Program Element  
PEO - Program Executive Officer  
PM - Program Manager  
POE - Program Office Estimate  
RDT&E - Research, Development, Test, and Evaluation  
SAR - Selected Acquisition Report  
SCP - Service Cost Position  
TBD - To Be Determined  
TY - Then Year  
UCR - Unit Cost Reporting  
U.S. - United States  
USD(AT&L) - Under Secretary of Defense (Acquisition, Technology and Logistics)

## Program Information

**Program Name**

Navy Multiband Terminal (NMT)

**DoD Component**

Navy

## Responsible Office

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**Date Assigned:** June 17, 2009

## References

**SAR Baseline (Development Estimate)**

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated December 07, 2006

**Approved APB**

NAE Approved Acquisition Program Baseline (APB) dated December 7, 2006

## Mission and Description

The Navy Multiband Terminal (NMT) Program is the next generation maritime military satellite communications terminal. The NMT Program is the required Navy component to the Advanced Extremely High Frequency (AEHF) Program for enhancing protected and survivable satellite communications to Naval forces. NMT multiband communication capabilities will communicate via two way Ka-Band on Wideband Global SATCOM (WGS) and shipboard and submarine terminals to communicate with X-Band using the Defense Satellite Communications System (DSCS) and WGS. NMT is compatible with today's Navy Low Data Rate/Medium Data Rate (LDR/MDR) terminals, X-Band terminals and will sustain the Military Satellite Communication (MILSATCOM) architecture by providing connectivity across the spectrum of mission areas, to include land, air and naval warfare, special operations, strategic nuclear operations, strategic defense, theater missile defense, and space operations and intelligence. The NMT system will replenish and improve on the capabilities of both the Military Strategic and Tactical Relay System (MILSTAR) system and WGS system by equipping the warfighters with the assured, jam resistant, secure communications as described in the Operational Requirements Documents (ORDs) for the joint AEHF Satellite Communications (AFSPC ORD 004-99, Oct 2000) and WGS System (Wideband Gapfiller System ORD, May 3, 2000), and the NMT Capability Production Document (NMT CPD 769-6F-08, Nov 18, 2008). The AEHF system will provide crosslinks within the constellation as well as between AEHF satellites and MILSTAR satellites in the backwards-compatible mode. Mission requirements specific to Navy operations, including threat levels and scenarios, are contained in the AEHF ORD. The NMT Program consists of competitive prototype development, Engineering Development Model (EDM) development and environmental qualification, on-orbit testing, platform integration and test, software enhancements and regression testing throughout the life of the program. NMT will be a FORCEnet enabler by providing critical bandwidth for war fighter information services. The NMT Program Office intends to exercise NMT Low Rate Initial Production (LRIP) contract options in FY10.

## Executive Summary

The NMT program continues to move towards a July 2010 Milestone C, with the approval of major acquisition requirements documents, including the Capability Production Document (CPD) on November 18, 2008. NMT will be retaining a common hardware baseline between the U.S. NMT and NMT International Partner Variant (IPV). Since the last report, the NMT program has significantly increased its technical maturity by completing all major design reviews through a series of capability focused events. The Office of Naval Research (ONR) released its initial Technology Readiness Assessment (TRA) for NMT on June 17, 2008 and all Critical Technology Elements (CTEs) were assessed at a Technology Readiness Level (TRL) of 6 or higher. NMT anticipates all CTEs will be at TRL 7 prior to Milestone C. In addition, the program has had thirteen Engineering Development Models (EDMs) delivered and currently being tested.

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

## Threshold Breaches

### APB Breaches

<b>Schedule</b>		<input type="checkbox"/>
<b>Performance</b>		<input type="checkbox"/>
<b>Cost</b>	RDT&E	<input type="checkbox"/>
	Procurement	<input type="checkbox"/>
	MILCON	<input type="checkbox"/>
	Acq O&M	<input type="checkbox"/>
<b>O&amp;S Cost</b>		<input type="checkbox"/>
<b>Unit Cost</b>	PAUC	<input type="checkbox"/>
	APUC	<input type="checkbox"/>

### Nunn-McCurdy Breaches

#### Current UCR Baseline

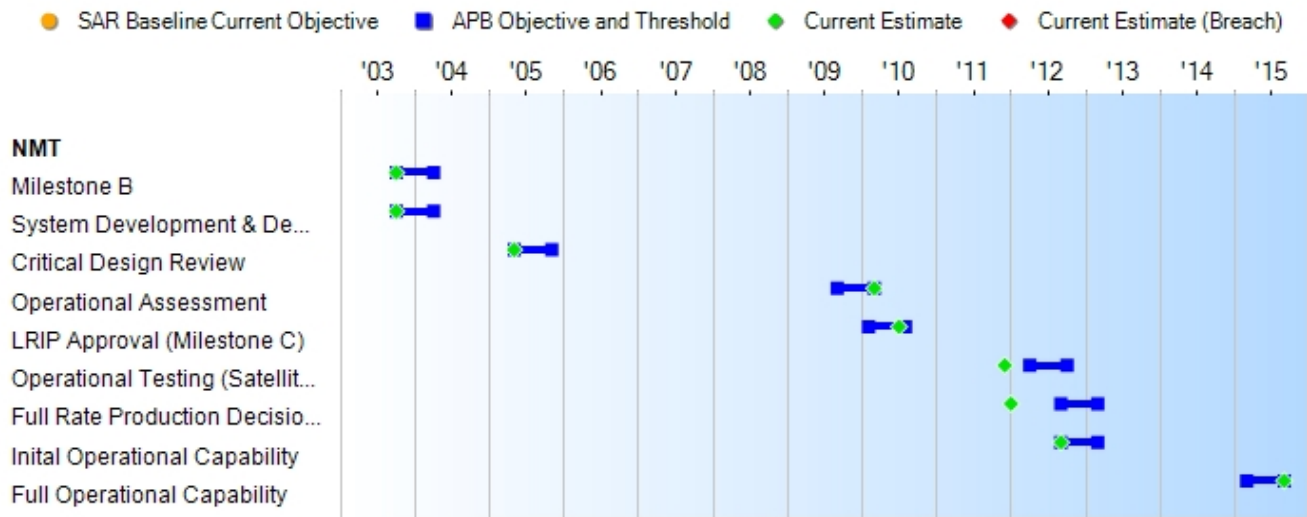
PAUC	None
APUC	None

#### Original UCR Baseline

PAUC	None
APUC	None



# Schedule



Schedule Events					
Events	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	
Milestone B	Oct 2003	Oct 2003	Apr 2004	Oct 2003	
System Development & Demonstration Contract Award	Oct 2003	Oct 2003	Apr 2004	Oct 2003	
Critical Design Review	May 2005	May 2005	Nov 2005	May 2005	
Operational Assessment	Sep 2009	Sep 2009	Mar 2010	Mar 2010	(Ch-1)
LRIP Approval (Milestone C)	Feb 2010	Feb 2010	Aug 2010	Jul 2010	(Ch-3)
Operational Testing (Satellite Dependent)	Apr 2012	Apr 2012	Oct 2012	Dec 2011	(Ch-2)
Full Rate Production Decision Review	Sep 2012	Sep 2012	Mar 2013	Jan 2012	(Ch-3)
Inital Operational Capability	Sep 2012	Sep 2012	Mar 2013	Sep 2012	
Full Operational Capability	Mar 2015	Mar 2015	Sep 2015	Sep 2015	(Ch-3)

## Change Explanations

(Ch-1) Operational Assessment changed from September 2009 to March 2010 to allow time for testing and results to achieve Milestone C.

(Ch-2) Operational Testing (Satellite Dependent) changed from April 2012 to December 2011 to align with Advanced Extremely High Frequency Satellite on-orbit.

(Ch-3) The following Milestones were changed to align with the fielding plan and Acquisition Strategy:

Low Rate Initial Production Approval (Milestone C) changed from April 2010 to July 2010

Full Rate Production Decision Rview changed from September 2012 to January 2012

Full Operational Capability (FOC) changed from March 2015 to September 2015

**Acronyms and Abbreviations**

LRIP - Low Rate Initial Production Decision

## Performance

Performance Characteristics				
SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Demonstrated Performance	Current Estimate
<b>Coverage AEHF</b>				
Provide Global coverage	Provide Global coverage	Worldwide continuous anywhere between 65 deg N to 65 deg S lat	TBD	Provide Global coverage
<b>Coverage WGS</b>				
Capable of providing communications connectivity anywhere between 70 deg N and 65 deg S lat w/i the satellites field of view, 24 hrs per day	Capable of providing communications connectivity anywhere between 70 deg N and 65 deg S lat w/i the satellites field of view, 24 hrs per day	Capable of providing communications connectivity anywhere between 65 deg N and 65 deg S lat w/i the satellites field of view, 24 hrs per day	TBD	Capable of providing communications connectivity anywhere between 70 deg N and 65 deg S lat w/i the satellites field of view, 24 hrs per day
<b>Capacity AEHF</b>				
Shall support at least 1.2 Gbps for the CMTW Scenario; at least 600 Mbps for the Strategic Scenario	Shall support at least 1.2 Gbps for the CMTW Scenario; at least 600 Mbps for the Strategic Scenario	At least 500 Mbps for the CMTW Scenario; at least 350 Mbps for the Strategic scenario	TBD	Shall support at least 1.2 Gbps for the CMTW Scenario; at least 600 Mbps for the Strategic Scenario
<b>Capacity WGS</b>				
Min of 3.6 Gbps	Min of 3.6 Gbps	Min of 1.2 Gbps	TBD	Min of 3.6 Gbps
<b>Protection AEHF -Electronic Jamming</b>				
Support tactical and strategic forces to counter the medium probability threat in the 2000 MILSAT-COM STAR	Support tactical and strategic forces to counter the medium probability threat in the 2000 MILSAT-COM STAR	Support tactical and strategic forces to counter the medium probability threat in the 2000 MILSAT-COM STAR	TBD	Support tactical and strategic forces to counter the medium probability threat in the 2000 MILSAT-COM STAR
<b>Protection AEHF -Nuclear</b>				
Provide assured communications to survivable nuclear forces exposed to the environment specified in the	Provide assured communications to survivable nuclear forces exposed to the environment specified in the NCGS89-06 and for those critical networks	Provide assured communications to survivable nuclear forces exposed to the environment specified in NCGS 89-06 and for those critical networks	TBD	Provide assured communications to survivable nuclear forces exposed to the environment specified in the NCGS89-06 and for those critical networks

NCGS89-06 and for those critical networks that support situation monitoring, decision making, force direction, force management and planning	that support situation monitoring, decision making, force direction, force management and planning	that support situation monitoring, decision making, force direction, force management and planning		that support situation monitoring, decision making, force direction, force management and planning
<b>Access and Control AEHF</b>				
Provide users the ability to plan, control, and reconfigure critical functions such as situation monitoring, decision making, force direction, force management and planning; capabilities shall not be disrupted by communications configuration changes to noncritical functions; as a minimum, threshold requirements in Par. 4.2.4.1. 3.1, 4.2.4.2. 3, and 4.2.4.6 (subpar. 1-4) shall be accomplished to support these functions. The KPP objective criterion is accomplishment of objective requirements in these paragraphs.	Provide users the ability to plan, control, and reconfigure critical functions such as situation monitoring, decision making, force direction, force management and planning; capabilities shall not be disrupted by communications configuration changes to noncritical functions; as a minimum, threshold requirements in Par. 4.2.4.1. 3.1, 4.2.4.2. 3, and 4.2.4.6 (subpar. 1-4) shall be accomplished to support these functions. The KPP objective criterion is accomplishment of objective requirements in these paragraphs.	Provide users the ability to plan, control, and reconfigure critical functions such as situation monitoring, decision making, force direction, force management and planning; capabilities shall not be disrupted by communications configuration changes to noncritical functions; as a minimum, threshold requirements in Par. 4.2.4.1. 3.1, 4.2.4.2. 3, and 4.2.4.6 (subpar. 1-4) shall be accomplished to support these functions. The KPP objective criterion is accomplishment of objective requirements in these paragraphs.	TBD	Provide users the ability to plan, control, and reconfigure critical functions such as situation monitoring, decision making, force direction, force management and planning; capabilities shall not be disrupted by communications configuration changes to noncritical functions; as a minimum, threshold requirements in Par. 4.2.4.1. 3.1, 4.2.4.2. 3, and 4.2.4.6 (subpar. 1-4) shall be accomplished to support these functions. The KPP objective criterion is accomplishment of objective requirements in these paragraphs.
<b>Access and Control WGS</b>				
Platform and Payload control capabilities to perform launch and early orbit, on-orbit operations, station-keeping,	Platform and Payload control capabilities to perform launch and early orbit, on-orbit operations, station-keeping, satellite repositioning, platform and payload	Platform and Payload control capabilities to perform launch and early orbit, on-orbit operations, station-keeping, satellite repositioning, platform and payload	TBD	Platform and Payload control capabilities to perform launch and early orbit, on-orbit operations, station-keeping, satellite repositioning, platform and payload

satellite repositioning, platform and payload maintenance, anomaly identification and resolution	maintenance, anomaly identification and resolution	maintenance, anomaly identification and resolution.		maintenance, anomaly identification and resolution
<b>Interoperability AEHF</b>				
The AEHF system shall support joint interoperable war-fighter communications among all military Services EHF terminals up to their max data rate (Threshold). The System shall operate with the Milstar system at all LDR and MDR terminal supported data rates and selected modes (Threshold). The AEHF System shall support the critical IERs in Table 4-19 (Threshold) and all IERs in Table 4-19 (Objective).	The AEHF system shall support joint interoperable war-fighter communications among all military Services EHF terminals up to their max data rate (Threshold). The System shall operate with the Milstar system at all LDR and MDR terminal supported data rates and selected modes (Threshold). The AEHF System shall support the critical IERs in Table 4-19 (Threshold) and all IERs in Table 4-19 (Objective).	The AEHF system shall support joint interoperable war-fighter communications among all military Services EHF terminals up to their max data rate (Threshold). The System shall operate with the Milstar system at all LDR and MDR terminal supported data rates and selected modes (Threshold). The AEHF System shall support the critical IERs in Table 4-19 (Threshold) and all IERs in Table 4-19 (Objective).	TBD	The AEHF system shall support joint interoperable war-fighter communications among all military Services EHF terminals up to their max data rate (Threshold). The System shall operate with the Milstar system at all LDR and MDR terminal supported data rates and selected modes (Threshold). The AEHF System shall support the critical IERs in Table 4-19 (Threshold) and all IERs in Table 4-19 (Objective).
<b>Interoperability WGS</b>				
Satellites fully interoperable with existing and programmed DSCS and GBS terminals	Satellites fully interoperable with existing and programmed DSCS and GBS terminals	Satellites fully interoperable with existing and programmed DSCS and GBS terminals	TBD	Satellites fully interoperable with existing and programmed DSCS and GBS terminals
<b>Coverage</b>				
Terminals capable of pointing and tracking satellites with elevation angles of 10 deg (20 deg for mast) above the horizon and 360 deg in azimuth with full platform motion	Terminals capable of pointing and tracking satellites with elevation angles of 10 deg (20 deg for mast) above the horizon and 360 deg in azimuth with full platform motion	Terminals capable of pointing and tracking satellites with elevation angles of 10 deg (20 deg for mast) above the horizon and 360 deg in azimuth with full platform motion	TBD	Terminals capable of pointing and tracking satellites with elevation angles of 10 deg (20 deg for mast) above the horizon and 360 deg in azimuth with full platform motion

<b>Capacity</b>				
Terminal numbers assume the satellite meets its performance requirements contained in the AEHF Technical Requirements Document Revision 10	Terminal numbers assume the satellite meets its performance requirements contained in the AEHF Technical Requirements Document Revision 10	Terminal numbers assume the satellite meets its performance requirements contained in the AEHF Technical Requirements Document Revision 10	TBD	Terminal numbers assume the satellite meets its performance requirements contained in the AEHF Technical Requirements Document Revision 10
<b>AEHF Terminal Throughput</b>				
<b>Ship</b>				
2 Mbps	2 Mbps	2 Mbps	TBD	2 Mbps
<b>Shore</b>				
8 Mbps	8 Mbps	8 Mbps	TBD	8 Mbps
<b>Submarine Periscope</b>				
19.2 Kbps	19.2 Kbps	19.2 Kbps	TBD	19.2 Kbps
<b>Submarine Mast</b>				
512 Kbps	512 Kbps	512 Kbps	TBD	512 Kbps
<b>Ka Throughput</b>				
<b>Ship</b>				
8 Mbps	8 Mbps	2 Mbps	TBD	8 Mbps
<b>Access and Control</b>				
Functions shall include aspects of control required to gain access to satellite communications resources, initiate, maintain, modify, and terminate services; shall include the following access control protocols/messages, which are identified in SI-3135 Appendix A and B: -Terminal LOGON -Terminal LOG-OFF - Antenna Point	Functions shall include aspects of control required to gain access to satellite communications resources, initiate, maintain, modify, and terminate services; shall include the following access control protocols/messages, which are identified in SI-3135 Appendix A and B: - Terminal LOGON - Terminal LOG-OFF - Antenna Point	Functions shall include aspects of control required to gain access to satellite communications resources, initiate, maintain, modify, and terminate services; shall include the following access control protocols/messages, which are identified in SI-3135 Appendix A and B: - Terminal LOGON - Terminal LOG-OFF - Antenna Point	TBD	Functions shall include aspects of control required to gain access to satellite communications resources, initiate, maintain, modify, and terminate services; shall include the following access control protocols/messages, which are identified in SI-3135 Appendix A and B: - Terminal LOGON - Terminal LOG-OFF - Antenna Point
<b>Interoperability</b>				
Assuming	Assuming interoperable	Assuming interoperable	TBD	Assuming interoperable

interoperable cryptographic equipment, keying material, and baseband devices, the NMT shall support joint interoperable war-fighter communications with all other military branches EHF terminals up to the terminal's max data rate	cryptographic equipment, keying material, and baseband devices, the NMT shall support joint interop-erable war-fighter communications with all other military branches EHF terminals up to the terminal's max data rate	cryptographic equipment, keying material, and baseband devices, the NMT shall support joint interop-erable war-fighter communications with all other military branches EHF terminals up to the terminal's max data rate		cryptographic equipment, keying material, and baseband devices, the NMT shall support joint interop-erable war-fighter communications with all other military branches EHF terminals up to the terminal's max data rate
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**Backward Compatible (BC) w/ Existing EHF Systems**

NMT shall be backwards-compatible with legacy Navy AN/USC-38(V)1 - 12EHF terminals; in the most robust LDR mode (7.5 bps) and least robust LDR mode (2.4 kbps), the ship NMT shall operate with a legacy NESP ship terminal maintaining a bit error rate of 10E-5 or less; in the most robust MDR mode (4.8 kbps) and least robust MDR mode (512 kbps), the ship NMT shall operate with a legacy NESP ship terminal maintaining a bit error rate of 10E-5 or less	NMT shall be backwards-compatible with legacy Navy AN/USC-38(V)1-12EHF terminals; in the most robust LDR mode (75 bps) and least robust LDR mode (2.4 kbps), the ship NMT shall operate with a legacy NESP ship terminal maintaining a bit error rate of 10E-5 or less; in the most robust MDR mode (4.8 kbps) and least robust MDR mode (512 kbps), the ship NMT shall operate with a legacy NESP ship terminal maintaining a bit error rate of 10E-5 or less	NMT shall be backwards-compatible with legacy Navy AN/USC-38(V)1-12EHF terminals; in the most robust LDR mode (75 bps) and least robust LDR mode (2.4 kbps), the ship NMT shall operate with a legacy NESP ship terminal maintaining a bit error rate of 10E-5 or less; in the most robust MDR mode (4.8 kbps) and least robust MDR mode (512 kbps), the ship NMT shall operate with a legacy NESP ship terminal maintaining a bit error rate of 10E-5 or less	TBD	NMT shall be backwards-compatible with legacy Navy AN/USC-38(V)1-12EHF terminals; in the most robust LDR mode (75 bps) and least robust LDR mode (2.4 kbps), the ship NMT shall operate with a legacy NESP ship terminal maintaining a bit error rate of 10E-5 or less; in the most robust MDR mode (4.8 kbps) and least robust MDR mode (512 kbps), the ship NMT shall operate with a legacy NESP ship terminal maintaining a bit error rate of 10E-5 or less
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**Reliability AEHF**

**MTBF**

4400 hrs	4400 hrs	300 hrs	TBD	4400 hrs
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**MTTR**

4 hrs	4 hrs	5 hrs	TBD	4 hrs
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**Availability AEHF**

<b>Ai for Ship</b>				
0.999	0.999	0.983	TBD	0.999
<b>Ai for Shore</b>				
0.999	0.999	0.983	TBD	0.999
<b>Ai for Submarine</b>				
0.999	0.999	0.983	TBD	0.999
<b>Ao for Ship</b>				
0.999	0.999	0.900	TBD	0.999
<b>Ao for Shore</b>				
0.999	0.999	0.900	TBD	0.999
<b>Ao for Submarine</b>				
0.999	0.999	0.940	TBD	0.999
<b>Effective Isotropic Radiated Power (EIRP)</b>				
<b>Ka Ship</b>				
67.0 dBW	67.0 dBW	67.0 dBW	TBD	67.0 dBW
<b>Gain/Noise Temperature (G/T)</b>				
<b>Ka Ship</b>				
21 dB/K	21 dB/K	21 dB/K	TBD	21 dB/K
<b>High Altitude Electromagnetic Pulse (HEMP) Protection</b>				
<b>AEHF- All Platforms</b>				
Survive HEMP in accordance with DoD-STD-2169B	Survive HEMP in accordance with DoD-STD-2169B	Survive HEMP in accordance with DoD-STD-2169B	TBD	Survive HEMP in accordance with DoD-STD-2169B

Classified Performance information is provided in the classified annex to this submission.

**Requirements Reference**

See Performance Section.

**Change Explanations**

None



## Track to Budget

### RDT&E

Appn	BA	PE
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Navy 1319 07 0303109N

Project	Name
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X0728 Navy Multiband Terminal

### Procurement

Appn	BA	PE
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Navy 1810 02 0303109N

Line Item	Name
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321600 Navy Multiband Terminal

## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 2002 \$M			BY 2002 \$M	TY \$M		
	SAR Baseline Development Estimate	Current APB Development Objective/Threshold		Current Estimate	SAR Baseline Development Estimate	Current APB Development Objective	Current Estimate
RDT&E	577.8	577.8	635.6	571.8	630.2	630.2	651.1
Procurement	1345.6	1345.6	1480.2	1114.3	1690.9	1690.9	1419.3
Flyaway	--	--	--	1114.3	--	--	1419.3
Recurring	--	--	--	741.4	--	--	938.1
Non Recurring	--	--	--	372.9	--	--	481.2
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	0.0	0.0	--	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	1923.4	1923.4	N/A	1686.1	2321.1	2321.1	2070.4

Total Quantity			
Quantity	SAR Baseline Development Estimate	Current APB Development	Current Estimate
RDT&E		28	28
Procurement		305	276
Total		333	304

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2011 President's Budget / December 2009 SAR (TY\$ M)									
Appropriation	Prior	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	To Complete	Total
RDT&E	489.8	82.5	16.1	20.8	28.3	6.6	7.0	0.0	651.1
Procurement	0.0	63.0	161.1	195.6	200.7	253.9	271.9	273.1	1419.3
MILCON	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2011 Total	489.8	145.5	177.2	216.4	229.0	260.5	278.9	273.1	2070.4
PB 2009 Total	511.7	168.9	199.9	204.6	208.5	318.6	308.3	182.8	2103.3
Delta	-21.9	-23.4	-22.7	11.8	20.5	-58.1	-29.4	90.3	-32.9

Quantity Summary										
FY 2011 President's Budget / December 2009 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	To Complete	Total
Development	28	0	0	0	0	0	0	0	0	28
Production	0	0	28	36	48	40	52	37	35	276
PB 2011 Total	28	0	28	36	48	40	52	37	35	304
PB 2009 Total	28	0	30	49	42	53	55	48	0	305
Delta	0	0	-2	-13	6	-13	-3	-11	35	-1

## Cost and Funding

### Annual Funding By Appropriation

Annual Funding							
1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	--	3.4
2002	--	--	--	--	--	--	6.6
2003	--	--	--	--	--	--	29.4
2004	--	--	--	--	--	--	64.1
2005	--	--	--	--	--	--	58.1
2006	--	--	--	--	--	--	53.5
2007	--	--	--	--	--	--	77.7
2008	--	--	--	--	--	--	87.7
2009	--	--	--	--	--	--	109.3
2010	--	--	--	--	--	--	82.5
2011	--	--	--	--	--	--	16.1
2012	--	--	--	--	--	--	20.8
2013	--	--	--	--	--	--	28.3
2014	--	--	--	--	--	--	6.6
2015	--	--	--	--	--	--	7.0
Subtotal	28	--	--	--	--	--	651.1

Annual Funding 1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 2002 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2001	--	--	--	--	--	--	3.4
2002	--	--	--	--	--	--	6.5
2003	--	--	--	--	--	--	28.8
2004	--	--	--	--	--	--	61.0
2005	--	--	--	--	--	--	53.9
2006	--	--	--	--	--	--	48.1
2007	--	--	--	--	--	--	68.2
2008	--	--	--	--	--	--	75.6
2009	--	--	--	--	--	--	93.1
2010	--	--	--	--	--	--	69.5
2011	--	--	--	--	--	--	13.4
2012	--	--	--	--	--	--	17.0
2013	--	--	--	--	--	--	22.7
2014	--	--	--	--	--	--	5.2
2015	--	--	--	--	--	--	5.4
Subtotal	28	--	--	--	--	--	571.8

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2010	28	57.7	--	5.3	63.0	--	63.0
2011	36	125.9	--	35.2	161.1	--	161.1
2012	48	146.0	--	49.6	195.6	--	195.6
2013	40	135.7	--	65.0	200.7	--	200.7
2014	52	190.4	--	63.5	253.9	--	253.9
2015	37	162.3	--	109.6	271.9	--	271.9
2016	35	120.1	--	73.6	193.7	--	193.7
2017	--	--	--	74.0	74.0	--	74.0
2018	--	--	--	0.3	0.3	--	0.3
2019	--	--	--	0.3	0.3	--	0.3
2020	--	--	--	0.3	0.3	--	0.3
2021	--	--	--	0.3	0.3	--	0.3
2022	--	--	--	0.3	0.3	--	0.3
2023	--	--	--	0.3	0.3	--	0.3
2024	--	--	--	0.4	0.4	--	0.4
2025	--	--	--	0.4	0.4	--	0.4
2026	--	--	--	0.4	0.4	--	0.4
2027	--	--	--	0.4	0.4	--	0.4
2028	--	--	--	0.4	0.4	--	0.4
2029	--	--	--	0.4	0.4	--	0.4
2030	--	--	--	0.4	0.4	--	0.4
2031	--	--	--	0.4	0.4	--	0.4
2032	--	--	--	0.4	0.4	--	0.4
Subtotal	276	938.1	--	481.2	1419.3	--	1419.3

Annual Funding 1810   Procurement   Other Procurement, Navy							
Fiscal Year	Quantity	BY 2002 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
2010	28	48.1	--	4.4	52.5	--	52.5
2011	36	103.4	--	29.0	132.4	--	132.4
2012	48	118.0	--	40.0	158.0	--	158.0
2013	40	107.8	--	51.7	159.5	--	159.5
2014	52	148.7	--	49.6	198.3	--	198.3
2015	37	124.7	--	84.2	208.9	--	208.9
2016	35	90.7	--	55.6	146.3	--	146.3
2017	--	--	--	55.0	55.0	--	55.0
2018	--	--	--	0.2	0.2	--	0.2
2019	--	--	--	0.2	0.2	--	0.2
2020	--	--	--	0.2	0.2	--	0.2
2021	--	--	--	0.2	0.2	--	0.2
2022	--	--	--	0.2	0.2	--	0.2
2023	--	--	--	0.2	0.2	--	0.2
2024	--	--	--	0.3	0.3	--	0.3
2025	--	--	--	0.3	0.3	--	0.3
2026	--	--	--	0.3	0.3	--	0.3
2027	--	--	--	0.3	0.3	--	0.3
2028	--	--	--	0.2	0.2	--	0.2
2029	--	--	--	0.2	0.2	--	0.2
2030	--	--	--	0.2	0.2	--	0.2
2031	--	--	--	0.2	0.2	--	0.2
2032	--	--	--	0.2	0.2	--	0.2
Subtotal	276	741.4	--	372.9	1114.3	--	1114.3

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	7/21/2003	7/21/2003
<b>Approved Quantity</b>	90	90
<b>Reference</b>	Acquisition Strategy, June 20, 2003	Acquisition Strategy, June 20, 2003
<b>Start Year</b>	2010	2010
<b>End Year</b>	2011	2011

Low Rate Initial Production Decision (LRIP) quantity was identified in the Navy Advanced Extremely High Frequency (AEHF) Navy Multiband Terminal (NMT) Acquisition Strategy signed June 20, 2003 by Assistant Secretary of the Navy (ASN) Research, Development and Acquisition (RDA). At Milestone (MS) B the overall Acquisition Strategy was presented, which included discussion of an LRIP quantity of 90. Following the MS B review with ASN(RDA), NMT was approved for entry into the MS B / System Development and Demonstration (SDD) Phase on October 21, 2003. The terminal synchronization requirement and Battle Group (BG)/Amphibious Ready Group (ARG) deployment schedules require increased LRIP quantities.



## Foreign Military Sales

### Notes

PMW/A 170 has a current requirement for the development/procurement of 42 NMT - International Partner Variant terminals, to satisfy signed FMS cases for Canada, The Netherlands and the United Kingdom.

## Nuclear Costs

None

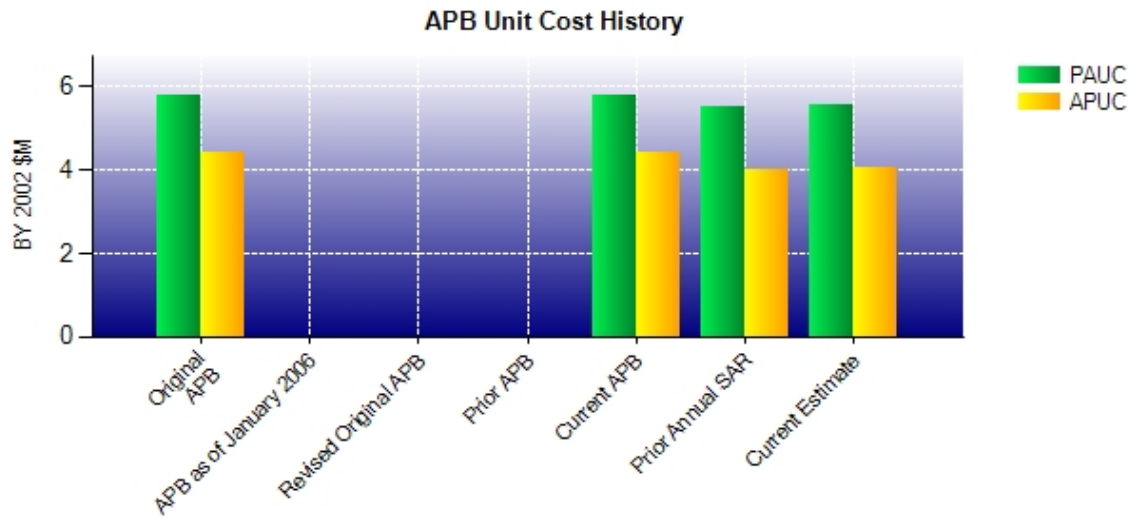
## Unit Cost

### Unit Cost Report

Item	BY 2002 \$M	BY 2002 \$M	% Change
	Current UCR Baseline (Dec 2006 APB)	Current Estimate (Dec 2009 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	1923.4	1686.1	
Quantity	333	304	
Unit Cost	5.776	5.546	-3.98
<b>Average Procurement Unit Cost</b>			
Cost	1345.6	1114.3	
Quantity	305	276	
Unit Cost	4.412	4.037	-8.50

Item	BY 2002 \$M	BY 2002 \$M	% Change
	Original UCR Baseline (Dec 2006 APB)	Current Estimate (Dec 2009 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	1923.4	1686.1	
Quantity	333	304	
Unit Cost	5.776	5.546	-3.98
<b>Average Procurement Unit Cost</b>			
Cost	1345.6	1114.3	
Quantity	305	276	
Unit Cost	4.412	4.037	-8.50

**Unit Cost History**



Item	Date	BY 2002 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Dec 2006	5.776	4.412	6.970	5.544
APB as of January 2006	N/A	N/A	N/A	N/A	N/A
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	N/A	N/A	N/A	N/A	N/A
Current APB	Dec 2006	5.776	4.412	6.970	5.544
Prior Annual SAR	Dec 2007	5.498	4.001	6.896	5.251
Current Estimate	Dec 2009	5.546	4.037	6.811	5.142

**SAR Unit Cost History**

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
6.970	0.082	0.638	0.034	0.000	-0.495	0.000	-0.418	-0.159	6.811

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
5.544	0.049	0.552	0.038	0.000	-0.580	0.000	-0.461	-0.402	5.142

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone A	N/A	N/A	N/A	N/A
Milestone B	N/A	Oct 2003	N/A	Oct 2003
Milestone C	N/A	Feb 2010	N/A	Jul 2010
IOC	N/A	Sep 2012	N/A	Sep 2012
Total Cost (TY \$M)	N/A	2321.1	N/A	2070.4
Total Quantity	N/A	333	N/A	304
PAUC	N/A	6.970	N/A	6.811

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	630.2	1690.9	--	2321.1
Previous Changes				
Economic	+15.1	+59.9	--	+75.0
Quantity	--	-4.5	--	-4.5
Schedule	--	+5.3	--	+5.3
Engineering	--	--	--	--
Estimating	+3.6	-216.1	--	-212.5
Other	--	--	--	--
Support	--	-81.1	--	-81.1
Subtotal	+18.7	-236.5	--	-217.8
Current Changes				
Economic	-3.8	-46.3	--	-50.1
Quantity	--	-3.8	--	-3.8
Schedule	--	+5.1	--	+5.1
Engineering	--	--	--	--
Estimating	+6.0	+55.9	--	+61.9
Other	--	--	--	--
Support	--	-46.0	--	-46.0
Subtotal	+2.2	-35.1	--	-32.9
Total Changes	+20.9	-271.6	--	-250.7
Current Estimate	651.1	1419.3	--	2070.4

Summary BY 2002 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Development Estimate)	577.8	1345.6	--	1923.4
Previous Changes				
Economic	--	--	--	--
Quantity	--	+0.6	--	+0.6
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	-9.2	-172.6	--	-181.8
Other	--	--	--	--
Support	--	-65.4	--	-65.4
Subtotal	-9.2	-237.4	--	-246.6
Current Changes				
Economic	--	--	--	--
Quantity	--	-2.9	--	-2.9
Schedule	--	--	--	--
Engineering	--	--	--	--
Estimating	+3.2	+44.6	--	+47.8
Other	--	--	--	--
Support	--	-35.6	--	-35.6
Subtotal	+3.2	+6.1	--	+9.3
Total Changes	-6.0	-231.3	--	-237.3
Current Estimate	571.8	1114.3	--	1686.1

Previous Estimate: December 2007

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-3.8
Revised Estimate due to FY 2011 President's Budget (PB11) and sunk cost updates (Estimating)	+1.2	+3.7
Adjustment for current and prior escalation. (Estimating)	+2.0	+2.3
<b>RDT&amp;E Subtotal</b>	<b>+3.2</b>	<b>+2.2</b>

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-46.3
Stretch-out of procurement buy profile reflects additional year of production, FY16 (Schedule)	0.0	+5.1
Total Quantity variance resulting from a decrease of 1 system from 277 to 276. (Subtotal)	-2.4	-3.1
Quantity variance resulting from a decrease of 1 system from 277 to 276. (Quantity)	(-2.9)	(-3.8)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+0.5)	(+0.7)
Revised Estimate due to update of President's Budget from PB09 to PB11, which includes 2 additional FYDP years in the budget, and refined program estimate (Estimating)	+47.7	+61.2
Adjustment for current and prior escalation. (Estimating)	+1.4	+1.7
Revised Estimate based on updated Cost Estimate, including refined program data and basis of estimates (Estimating)	-5.0	-7.7
Decrease in Other Support resulted from updated Cost Estimate (Support)	-22.5	-29.1
Decrease in Initial Spares resulted from updated Cost Estimate (Support)	-13.1	-16.9
<b>Procurement Subtotal</b>	<b>+6.1</b>	<b>-35.1</b>

(QR) Quantity Related

## Contracts

### Contract Identification

**Appropriation:** RDT&E  
**Contract Name:** NMT SDD EDM  
**Contractor:** Raytheon  
**Contractor Location:** Marlboro, MA 01752  
**Contract Number:** N00039-04-C-0012/2  
**Contract Type:** Cost Plus Award Fee (CPAF)  
**Award Date:** October 01, 2007  
**Definitization Date:** October 01, 2007

### Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
162.3	N/A	20	162.3	N/A	20	187.2	197.7

### Contract Variance

Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2009)	-25.3	-16.4
Previous Cumulative Variances	+0.4	-2.1
Net Change	-25.7	-14.3

### Cost and Schedule Variance Explanations

#### General Contract Variance Explanation

The net change in both the Cost and Schedule Variances resulted primarily from prime contractor schedule concurrency, change notices, material rework, and EDM system delivery delays. The primary program variances reside in material and subcontract tasks, which are the tasks responsible for the change notices and rework on the program. Not only have these variances driven up program costs, but delayed the assembly and delivery of the EDM units. However, thirteen EDMs have been delivered to date, which includes the Government test system that will be used to perform DT/Operational Evaluation.

The Government team has engaged with the contractor and continues to work closely to understand and control contract cost performance. Through this process, the Government and contractor seek to reduce the risk of further cost growth and discover cost efficiencies. Over the two years since the last report, the program has made significant progress towards reaching Milestone C. Engineering Development Model (EDM) terminals have been developed and are in test at contractor facilities, Government labs and onboard operational US Navy sites. The cost performance is not the result of unplanned design iterations in development

The above variances reflect two years worth of data comparisons (2009 vs. 2007).



**Notes**

Contract funding numbers above include \$33.1M of FMS funding. The EDM phase of the program is now 83% complete.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	21	13	28	46.43%
Production	0	0	276	0.00%
Total Program Quantity Delivered	21	13	304	4.28%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	2070.4	Years Appropriated	10
Expended to Date	489.8	Percent Years Appropriated	31.25%
Percent Expended	23.66%	Appropriated to Date	635.3
Total Funding Years	32	Percent Appropriated	30.68%

Of the 28 total development units, 8 are prototypes and 20 are EDMs. All 8 prototypes have been delivered, and 13 of the 20 planned EDM units were delivered in 2009.

## Operating and Support Cost

### Assumptions and Ground Rules

Operating and Support (O&S) costs are the sum of all costs resulting from the operation, maintenance, and support of the terminals after acceptance into the Navy Inventory. The operating costs are the sum of the cost of operational personnel and facilities, and energy and software maintenance. The projected life cycle support for all Navy Multiband Terminals (NMT) systems is 23 years. The prime equipment inventory at FOC will consist of 146 Ships, 77 Submarines, 42 Shores, 6 Trainers and 5 Test systems.

Support costs include the following: (1) corrective maintenance labor and material at organizational/Intermediate (O/I) and depot levels, (2) packaging and shipping costs incurred as a result of shipping failed and repaired items between organizational depot level maintenance facilities, (3) preventive maintenance and material costs, (4) Support and Test equipment costs, (5) O/I and depot level inventory storage costs, (6) supply system management costs and (7), the cost of training operators and O/I and depot level maintenance personnel.

The unit of measure is Total BY02\$ O&S from FY 2010 to FY 2032 divided by the total years (23). This total was further divided by the total number of NMT systems (276).

The NMT program, in conjunction with NCCA, is in the process of updating the PLCCE for Milestone C in July 2010. Therefore the below per system data represents the total cost to the Navy in the Sustainment phase from the previously approved 2006 cost estimate. In addition, the total cost represents the 2006 signed APB for NMT only. Following the NMT program Service Cost Position (SCP), expected in late June 2010, these costs will be updated in the next report.

The NMT program is not an Antecedent program.

#### Cost Estimate Reference:

None

#### Sustainment Strategy:

None

#### Antecedent Information:

None

Unitized O&S Costs BY2002 \$K		
Cost Element	NMT Avg. Annual Cost Per System	No Antecedent (Antecedent) N/A
Mission Pay & Allowance	33.035	--
Unit Level Consumption	0.000	--
Intermediate Maintenance	0.000	--
Depot Maintenance	1.153	--
Contractor Support	9.708	--
Sustaining Support	24.548	--
Indirect	78.192	--
Other	--	--
Total	146.636	--

#### Unitized Cost Comments:

None

Item	Total O&S Cost \$M				
	NMT			No Antecedent (Antecedent)	
	Current Development APB Objective/Threshold		Current Estimate		
<b>Base Year</b>	293.1	322.4	293.1		N/A
<b>Then Year</b>	361.2	N/A	361.2		N/A

Total O&S Cost Comment

None

**Disposal Estimate Details**

**Date of Estimate:**

**Source of Estimate:**

**Disposal/Demilitarization Total Cost (BY 2002 \$M):**