



# Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-289



## **Tactical Tomahawk RGM-109E/UGM-109E Missile (TACTOM)**

As of FY 2016 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**

Tactical Tomahawk RGM-109E/UGM-109E Missile (TACTOM)

**DoD Component**

Navy

## Responsible Office

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**Date**

**Assigned:** July 29, 2011

## References

**SAR Baseline (Production Estimate)**

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated August 3, 2004

**Approved APB**

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated April 11, 2011

## Mission and Description

The Tactical Tomahawk RGM-109E/UGM-109E Missile (TACTOM) counters threats against United States Forces by destroying fixed and mobile targets, which include command, control and logistic systems, industrial and other high value targets, and fixed and mobile defense systems. The Tomahawk Weapons System (TWS) consists of the TACTOM missile, the Tomahawk Mission Planning Center (TMPC), and the Tactical Tomahawk Weapons Control System (TTWCS). TACTOM is an Acquisition Category (ACAT) IC program, TMPC is an ACAT II program, and TTWCS is an ACAT III program. TACTOM provides major modernization to the existing Tomahawk technology by increasing responsiveness and flexibility at a more affordable production unit cost.

Key elements of the TACTOM design are an improved navigation and guidance computer, improved anti-jam Global Positioning System capability, improved responsiveness and flexibility through two-way satellite communications for in-flight re-targeting, a loiter capability, and the ability to send a single-frame Battle Damage Indication Image of over-flown areas prior to impact. Modern manufacturing techniques and Commercial Off-the-Shelf/Government Off-the-Shelf hardware provide this improved capability. Additionally, the life cycle costs are significantly reduced by extending the recertification interval from eight years for the currently fielded Block III Tomahawk to 15 years for TACTOM. TACTOM will maximize the use of existing TWS program and logistic support.

## Executive Summary

TACTOM has exercised 11 full-rate production contracts to date; the most recent occurring in FY 2014. The FY 2014 TACTOM production contract was awarded on September 24, 2014 for 231 TACTOM missiles. The FY 2014 procurement includes 196 surface and subsurface launched All-Up-Rounds (AUR), 20 Torpedo Tube Launched AURs as part of the United Kingdom Foreign Military Sales (FMS) case, and 15 surface AURs (FY 2013 funded through Buy-to-Budget). The FY 2015 option is expected to be exercised second quarter FY 2015, which includes 196 surface AURs and ten surface AURs (FY 2014 funded through Buy-to-Budget).

As of January 31, 2015, a total of 3,433 TACTOM missiles have been delivered, which includes 65 FMS missiles for the United Kingdom.

During Operation Inherent Resolve in September 2014, the U.S. Navy fired 47 TACTOM missiles from aboard the USS Arleigh Burke and USS Philippine Sea. Additional FY 2015 supplemental funds (Overseas Contingency Operations) appropriated by Congress provides for the replenishment of those combat expenditures, and will be procured with the FY 2016 production contract (due to maximum quantity constraints on the FY 2015 contract).

TACTOM deliveries by Raytheon Missile Systems (RMS), Tucson, Arizona, are consistently ahead of contract delivery schedule. As of January 31, 2015, RMS has achieved 67 consecutive months of meeting or exceeding the contracted TACTOM missile delivery requirements. The current combined Block III Tomahawk and TACTOM fleet inventory is sufficient to satisfy projected calendar year 2015 U. S. Navy operational load-outs.

Procurement of new missiles has been suspended beginning in FY 2017, four years earlier than the APB dated April 11, 2011. The Department of the Navy will continue to reassess production throughout the FYDP.

The program continues to focus on hardware obsolescence, product improvement and modernization opportunities to meet existing requirements, ensure continued weapons system viability, and keep pace with evolving threats. Initial modernization efforts would be associated with communication upgrades to enable missile communications in non-permissive environments.

There are no significant software-related issues with 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

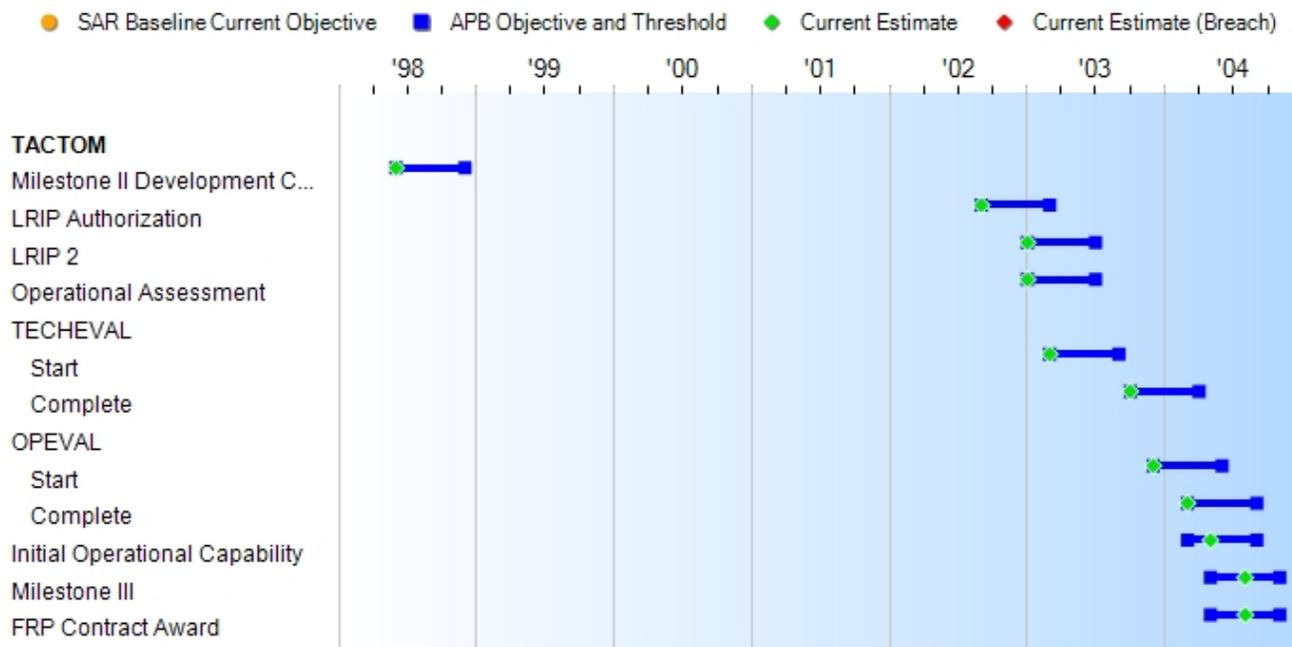
#### Current UCR Baseline

PAUC	None
APUC	None

#### Original UCR Baseline

PAUC	None
APUC	None

### Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold	Current Estimate	Current Estimate
Milestone II Development Contract Award	Jun 1998	Jun 1998	Dec 1998	Jun 1998
LRIP Authorization	Sep 2002	Sep 2002	Mar 2003	Sep 2002
LRIP 2	Jan 2003	Jan 2003	Jul 2003	Jan 2003
Operational Assessment	Jan 2003	Jan 2003	Jul 2003	Jan 2003
TECHEVAL				
Start	Mar 2003	Mar 2003	Sep 2003	Mar 2003
Complete	Oct 2003	Oct 2003	Apr 2004	Oct 2003
OPEVAL				
Start	Dec 2003	Dec 2003	Jun 2004	Dec 2003
Complete	Mar 2004	Mar 2004	Sep 2004	Mar 2004
Initial Operational Capability	Mar 2004	Mar 2004	Sep 2004	May 2004
Milestone III	May 2004	May 2004	Nov 2004	Aug 2004
FRP Contract Award	May 2004	May 2004	Nov 2004	Aug 2004

**Change Explanations**

None

**Acronyms and Abbreviations**

OPEVAL - Operational Evaluation  
TECHEVAL - Technical Evaluation

## Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
<b>MR (%)</b>				
.90	.90	.86	.93	.93
<b>CR (%)</b>				
.96	.96	.94	.99	.99

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

### Requirements Reference

Operational Requirements Document (ORD) #641-76-04 dated August 11, 2004

### Change Explanations

None

### Notes

The data set for CR and MR includes TACTOM Flight Tests, combat expenditures, and accounting for corrective actions in the missile inventory. Test events include Operational Evaluation, Technical Evaluation, TACTOM Penetrating Vehicle flights, contractor flights, ground tests, and combat expenditures. Corrected failures that meet all of the following criteria have been removed from the data set: root cause of a failure is known, the failure mode is eliminated by hardware or software modification, the modification has been appropriately verified by test, and the modification has been implemented throughout the entire missile population.

### Acronyms and Abbreviations

CR - Cruise Reliability  
MR - Mission Reliability

## Track to Budget

### RDT&E

Appn	BA	PE
------	----	----

Navy 1319 07 0204229N

Project	Name
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0545 TOMAHAWK (Shared)

**Notes:** Current Estimate includes RDT&E funding for modernization efforts in FY 2014 - FY 2020 to mitigate navigation and communication obsolescence.

2658 TOMAHAWK (Sunk)

2659 TOMAHAWK (Sunk)

### Notes

RDT&E funding for TACTOM modernization is a subset of the total RDT&E funding within PE 0204229N.

### Procurement

Appn	BA	PE
------	----	----

Navy 1507 02 0204229N

Line Item	Name
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2101 TOMAHAWK

## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 1999 \$M			BY 1999 \$M	TY \$M		
	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Production Estimate	Current APB Production Objective	Current Estimate
RDT&E	564.9	564.9	621.4	617.2	581.0	581.9	654.6
Procurement	2412.4	4962.6	5458.8	4021.5	2709.3	6303.5	4960.1
Flyaway	--	--	--	3940.9	--	--	4859.7
Recurring	--	--	--	3905.7	--	--	4822.0
Non Recurring	--	--	--	35.2	--	--	37.7
Support	--	--	--	80.6	--	--	100.4
Other Support	--	--	--	80.6	--	--	100.4
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	2977.3	5527.5	N/A	4638.7	3290.3	6885.4	5614.7

#### Confidence Level

Confidence Level of cost estimate for current APB: 51%

The estimate to support this program, like most cost estimates, is built upon a product-oriented work breakdown structure based on historical actual cost information to the maximum extent possible, and, most importantly, based on conservative assumptions that are consistent with actual demonstrated contractor and government performance for a series of acquisition programs in which we have been successful.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E	10	10	10
Procurement	2780	4730	4058
Total	2790	4740	4068

## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2016 President's Budget / December 2014 SAR (TY\$ M)									
Appropriation	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
RDT&E	584.3	8.3	12.6	23.0	16.9	5.1	4.4	0.0	654.6
Procurement	4315.7	317.5	184.8	22.5	39.9	39.4	40.3	0.0	4960.1
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 2016 Total	4900.0	325.8	197.4	45.5	56.8	44.5	44.7	0.0	5614.7
PB 2015 Total	4905.7	202.6	104.0	37.5	20.1	7.0	0.0	0.0	5276.9
Delta	-5.7	123.2	93.4	8.0	36.7	37.5	44.7	0.0	337.8

Quantity Summary										
FY 2016 President's Budget / December 2014 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2015	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	To Complete	Total
Development	10	0	0	0	0	0	0	0	0	10
Production	0	3715	243	100	0	0	0	0	0	4058
PB 2016 Total	10	3715	243	100	0	0	0	0	0	4068
PB 2015 Total	10	3690	100	0	0	0	0	0	0	3800
Delta	0	25	143	100	0	0	0	0	0	268

## 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
1998	--	--	--	--	--	--	49.8
1999	--	--	--	--	--	--	122.4
2000	--	--	--	--	--	--	164.2
2001	--	--	--	--	--	--	105.4
2002	--	--	--	--	--	--	63.0
2003	--	--	--	--	--	--	57.3
2004	--	--	--	--	--	--	19.8
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	--
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	--
2011	--	--	--	--	--	--	--
2012	--	--	--	--	--	--	--
2013	--	--	--	--	--	--	--
2014	--	--	--	--	--	--	2.4
2015	--	--	--	--	--	--	8.3
2016	--	--	--	--	--	--	12.6
2017	--	--	--	--	--	--	23.0
2018	--	--	--	--	--	--	16.9
2019	--	--	--	--	--	--	5.1
2020	--	--	--	--	--	--	4.4
Subtotal	10	--	--	--	--	--	654.6

Annual Funding 1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 1999 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1998	--	--	--	--	--	--	49.9
1999	--	--	--	--	--	--	121.3
2000	--	--	--	--	--	--	160.3
2001	--	--	--	--	--	--	101.5
2002	--	--	--	--	--	--	60.1
2003	--	--	--	--	--	--	53.9
2004	--	--	--	--	--	--	18.1
2005	--	--	--	--	--	--	--
2006	--	--	--	--	--	--	--
2007	--	--	--	--	--	--	--
2008	--	--	--	--	--	--	--
2009	--	--	--	--	--	--	--
2010	--	--	--	--	--	--	--
2011	--	--	--	--	--	--	--
2012	--	--	--	--	--	--	--
2013	--	--	--	--	--	--	--
2014	--	--	--	--	--	--	1.8
2015	--	--	--	--	--	--	6.2
2016	--	--	--	--	--	--	9.2
2017	--	--	--	--	--	--	16.5
2018	--	--	--	--	--	--	11.9
2019	--	--	--	--	--	--	3.5
2020	--	--	--	--	--	--	3.0
Subtotal	10	--	--	--	--	--	617.2

Annual Funding 1507   Procurement   Weapons 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
2002	25	45.7	--	24.0	69.7	2.4	72.1
2003	377	420.5	--	13.7	434.2	2.9	437.1
2004	322	344.5	--	--	344.5	7.4	351.9
2005	298	268.5	--	--	268.5	8.7	277.2
2006	409	362.7	--	--	362.7	9.9	372.6
2007	355	343.3	--	--	343.3	7.7	351.0
2008	496	469.1	--	--	469.1	5.0	474.1
2009	207	274.5	--	--	274.5	5.0	279.5
2010	196	268.0	--	--	268.0	6.3	274.3
2011	417	541.3	--	--	541.3	7.1	548.4
2012	196	266.5	--	--	266.5	9.9	276.4
2013	211	287.8	--	--	287.8	5.8	293.6
2014	206	301.4	--	--	301.4	6.1	307.5
2015	243	310.8	--	--	310.8	6.7	317.5
2016	100	184.3	--	--	184.3	0.5	184.8
2017	--	--	20.0	--	20.0	2.5	22.5
2018	--	--	38.6	--	38.6	1.3	39.9
2019	--	--	36.0	--	36.0	3.4	39.4
2020	--	--	38.5	--	38.5	1.8	40.3
Subtotal	4058	4688.9	133.1	37.7	4859.7	100.4	4960.1

Annual Funding 1507   Procurement   Weapons Procurement, Navy								
Fiscal Year	Quantity	BY 1999 \$M						
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program	
2002	25	43.0	--	22.6	65.6	2.3	67.9	
2003	377	388.1	--	12.6	400.7	2.7	403.4	
2004	322	308.8	--	--	308.8	6.6	315.4	
2005	298	234.2	--	--	234.2	7.6	241.8	
2006	409	308.6	--	--	308.6	8.4	317.0	
2007	355	285.9	--	--	285.9	6.4	292.3	
2008	496	384.5	--	--	384.5	4.1	388.6	
2009	207	221.8	--	--	221.8	4.0	225.8	
2010	196	212.9	--	--	212.9	5.0	217.9	
2011	417	421.8	--	--	421.8	5.5	427.3	
2012	196	204.4	--	--	204.4	7.6	212.0	
2013	211	217.4	--	--	217.4	4.4	221.8	
2014	206	224.1	--	--	224.1	4.5	228.6	
2015	243	227.2	--	--	227.2	4.9	232.1	
2016	100	132.3	--	--	132.3	0.4	132.7	
2017	--	--	14.0	--	14.0	1.8	15.8	
2018	--	--	26.7	--	26.7	0.9	27.6	
2019	--	--	24.4	--	24.4	2.3	26.7	
2020	--	--	25.6	--	25.6	1.2	26.8	
Subtotal	4058	3815.0	90.7	35.2	3940.9	80.6	4021.5	

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	4/12/2001	8/26/2003
<b>Approved Quantity</b>	25	402
<b>Reference</b>	LRIP ADM	LRIP III ASR/AP
<b>Start Year</b>	2002	2002
<b>End Year</b>	2005	2007

Authority to act on LRIP-3 was granted by the Assistant Secretary of the Navy for Research, Development, and Acquisition on August 26, 2003, by way of a signed Acquisition Strategy Report/Acquisition Plan (ASR/AP), vice an ADM. This ASR/AP served to support the FY 2003 Emergency Supplemental funding for 210 TACTOM All-Up-Round LRIP missiles to increase the total LRIP quantity to 402 missiles. Urgency was due to Operation Iraqi Freedom and the expenditure of a large number of Block III Tomahawk Missiles.

## Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost \$M	Description
United Kingdom	9/24/2014	20	26.6	Torpedo Tube Launch (TTL) TACTOM missiles were purchased in FY 2014; cost includes missiles and ancillary equipment.
United Kingdom	3/11/2013	4	5.7	TTL TACTOM missiles were purchased in FY 2013; cost includes missiles and ancillary equipment.
United Kingdom	2/10/2006	65	64.0	TTL TACTOM missiles were purchased in FY 2006; cost includes missiles and ancillary equipment. All United Kingdom missiles on contract have been delivered.

### Notes

## Nuclear Costs

None

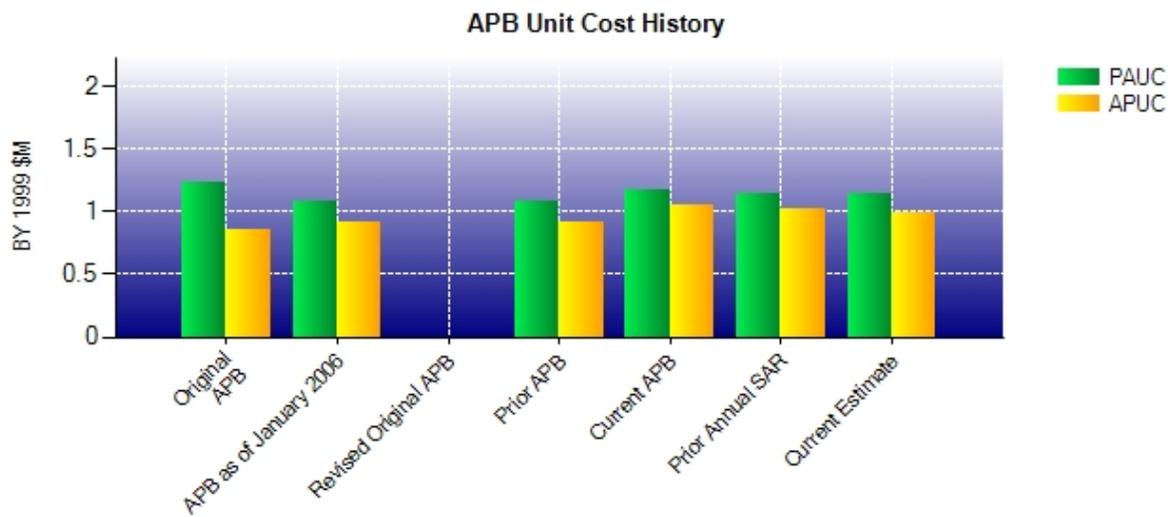
## Unit Cost

### Unit Cost Report

Item	BY 1999 \$M	BY 1999 \$M	% Change
	Current UCR Baseline (Apr 2011 APB)	Current Estimate (Dec 2014 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	5527.5	4638.7	
Quantity	4740	4068	
Item	1.166	1.140	-2.23
<b>Average Procurement Unit Cost</b>			
Cost	4962.6	4021.5	
Quantity	4730	4058	
Unit Cost	1.049	0.991	-5.53

Item	BY 1999 \$M	BY 1999 \$M	% Change
	Original UCR Baseline (Sep 1999 APB)	Current Estimate (Dec 2014 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	1683.7	4638.7	
Quantity	1365	4068	
Unit Cost	1.233	1.140	-7.54
<b>Average Procurement Unit Cost</b>			
Cost	1158.4	4021.5	
Quantity	1353	4058	
Unit Cost	0.856	0.991	+15.77

**Unit Cost History**



Item	Date	BY 1999 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Sep 1999	1.233	0.856	1.365	0.984
APB as of January 2006	Apr 2005	1.076	0.913	1.237	1.069
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Apr 2005	1.076	0.913	1.237	1.069
Current APB	Apr 2011	1.166	1.049	1.453	1.333
Prior Annual SAR	Dec 2012	1.136	1.024	1.433	1.318
Current Estimate	Dec 2014	1.140	0.991	1.380	1.222

**SAR Unit Cost History**

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial PAUC Development Estimate	Changes								PAUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.365	-0.015	0.324	0.117	0.000	-0.716	0.000	0.104	-0.186	1.179

Current SAR Baseline to Current Estimate (TY \$M)									
PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.179	0.028	-0.162	0.062	0.016	0.243	0.000	0.014	0.201	1.380

Initial SAR Baseline to Current SAR Baseline (TY \$M)									
Initial APUC Development Estimate	Changes								APUC Production Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.984	-0.015	0.325	0.097	0.000	-0.520	0.000	0.104	-0.009	0.975

Current SAR Baseline to Current Estimate (TY \$M)									
APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.975	0.028	-0.098	0.062	0.016	0.225	0.000	0.014	0.247	1.222

SAR Baseline History				
Item	SAR Planning Estimate	SAR Development Estimate	SAR Production Estimate	Current Estimate
Milestone I	N/A	N/A	N/A	N/A
Milestone II	N/A	Jun 1998	Jun 1998	Jun 1998
Milestone III	N/A	Jun 2003	May 2004	Aug 2004
IOC	N/A	Apr 2003	Mar 2004	May 2004
Total Cost (TY \$M)	N/A	1863.4	3290.3	5614.7
Total Quantity	N/A	1365	2790	4068
PAUC	N/A	1.365	1.179	1.380

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	581.0	2709.3	--	3290.3
Previous Changes				
Economic	+0.9	+117.1	--	+118.0
Quantity	--	+671.7	--	+671.7
Schedule	--	+229.8	--	+229.8
Engineering	--	+80.4	--	+80.4
Estimating	+61.4	+759.8	--	+821.2
Other	--	--	--	--
Support	--	+65.5	--	+65.5
Subtotal	+62.3	+1924.3	--	+1986.6
Current Changes				
Economic	-0.9	-4.8	--	-5.7
Quantity	--	+181.4	--	+181.4
Schedule	--	+21.3	--	+21.3
Engineering	--	-17.2	--	-17.2
Estimating	+12.2	+153.9	--	+166.1
Other	--	--	--	--
Support	--	-8.1	--	-8.1
Subtotal	+11.3	+326.5	--	+337.8
Total Changes	+73.6	+2250.8	--	+2324.4
CE - Cost Variance	654.6	4960.1	--	5614.7
CE - Cost & Funding	654.6	4960.1	--	5614.7

Summary BY 1999 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	564.9	2412.4	--	2977.3
Previous Changes				
Economic	--	--	--	--
Quantity	--	+499.9	--	+499.9
Schedule	--	+189.1	--	+189.1
Engineering	--	+59.4	--	+59.4
Estimating	+43.8	+574.0	--	+617.8
Other	--	--	--	--
Support	--	+52.2	--	+52.2
Subtotal	+43.8	+1374.6	--	+1418.4
Current Changes				
Economic	--	--	--	--
Quantity	--	+130.9	--	+130.9
Schedule	--	+16.0	--	+16.0
Engineering	--	-13.3	--	-13.3
Estimating	+8.5	+106.1	--	+114.6
Other	--	--	--	--
Support	--	-5.2	--	-5.2
Subtotal	+8.5	+234.5	--	+243.0
Total Changes	+52.3	+1609.1	--	+1661.4
CE - Cost Variance	617.2	4021.5	--	4638.7
CE - Cost & Funding	617.2	4021.5	--	4638.7

Previous Estimate: December 2013

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-0.9
Revised estimate to reflect system integration of Anti-Access/Area Denial improvements to the TACTOM (FY 2016 - FY 2020) (Estimating)	+8.4	+12.1
Adjustment for current and prior escalation. (Estimating)	+0.1	+0.1
<b>RDT&amp;E Subtotal</b>	<b>+8.5</b>	<b>+11.3</b>

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-4.8
Total Quantity Variance resulting from an increase of 268 TACTOM missiles from 3,790 to 4,058. (Subtotal)	+255.6	+352.0
Quantity Variance resulting from an increase of 268 TACTOM missiles from 3,790 to 4,058. (Quantity)	(+181.4)	(+249.8)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+16.0)	(+22.1)
Allocation to Engineering resulting from Quantity change. (Engineering) (QR)	(+5.6)	(+7.7)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+52.6)	(+72.4)
Additional Quantity Variance resulting from an increase of 268 TACTOM missiles from 3,790 to 4,058. (Quantity)	-50.5	-68.4
Schedule Variance resulting from an increase of 15 TACTOM missiles in FY 2013 and 10 TACTOM missiles in FY 2014 added through Buy-to-Budget authority. (Schedule)	0.0	-0.8
Engineering variance resulting from revised obsolescence activities due to production suspension. (Engineering)	-18.9	-24.9
Revised estimate to reflect actual cost data for procurement of FY 2014 MK14 canisters. (Estimating)	-3.9	-5.2
Increase attributed to revised cost estimate of MK14 canisters associated with additional TACTOM missiles in FY 2015 and FY 2016. (Estimating)	+10.3	+14.2
Revised estimate to reflect actual cost data for procurement of FY 2014 MK 45 capsules. (Estimating)	-2.5	-3.3
Revised estimate to reflect prior year support cost actuals. (Estimating)	+2.1	+2.8
Decrease attributed to reduction in support costs associated with production suspension. (Estimating)	-3.0	-4.3
Increase attributed to production support costs associated with production of TACTOM missiles. (Estimating)	+4.8	+6.6
Increase attributed to the inclusion of modernization kits FY 2018 - FY 2020. (Estimating)	+67.4	+99.6
Revised estimate of shutdown costs FY 2016 - FY 2018. (Estimating)	-23.9	-32.0
Realignment of cancelled/expired account liability funding and other miscellaneous adjustments (Estimating)	-0.6	-0.6
Adjustment for current and prior escalation. (Estimating)	+2.8	+3.7
Decrease in Other Support due to the removal of Range Safety System kits from Support Costs. (Support)	-5.2	-8.2
Adjustment for current and prior escalation. (Support)	0.0	+0.1
<b>Procurement Subtotal</b>	<b>+234.5</b>	<b>+326.5</b>

(QR) Quantity Related

## Contracts

### Contract Identification

**Appropriation:** Procurement  
**Contract Name:** BLK IV TACTOM FRP FY12-13  
**Contractor:** Raytheon Missile Systems  
**Contractor Location:** 1151 East Hermans Road  
 Tucson, AZ 85747  
**Contract Number:** N00019-12-C-2000  
**Contract Type:** Firm Fixed Price (FFP)  
**Award Date:** June 07, 2012  
**Definitization Date:** June 07, 2012

### Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
337.8	N/A	361	705.4	N/A	617	710.0	710.0

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the FY 2013 procurement option being exercised for an additional 252 United States Navy (USN) missiles and four United Kingdom missiles.

### Cost and Schedule Variance Explanations

Cost and Schedule Variance reporting is not required on this (FFP) contract.

### Notes

The FY 2012 base contract was awarded for the procurement of 361 missiles at a price of \$337.8M (the previously listed value of \$377.8M was in error). The FY 2013 contract option for USN missiles was exercised in December 2012. An additional option was also exercised in March 2013 to procure four FMS missiles resulting in an increase of the total contract procurement quantity to 617 missiles (USN and FMS). The total contract price is currently \$705.4M (as of January 31, 2015).

FRP (FY 2012 - FY 2013) includes a base contract plus one option year. Contract was signed on June 7, 2012 to procure up to 740 TACTOM missiles.

Current contract price includes USN missiles, subsurface variant capsules, production support, and ancillary equipment, in addition to \$5.7M FMS Torpedo Tube Launch procurement dollars.

Additional FY 2011 funding was received through OMNIBUS reprogramming action to replenish the 221 TACTOM missile expenditures during Libyan Operations.

Libyan Operations replenishment missiles were procured utilizing the FY 2012 procurement contract.

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** BLK IV TACTOM FRP FY14-15  
**Contractor:** Raytheon Missile Systems  
**Contractor Location:** 1151 East Hermans Road  
 Tucson, AZ 85747  
**Contract Number:** N00019-14-C-0075  
**Contract Type:** Firm Fixed Price (FFP)  
**Award Date:** September 24, 2014  
**Definitization Date:** September 24, 2014

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
251.1	N/A	231	416.4	N/A	331	539.0	539.0

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to the award of the Composite Capsule Launching System (CCLS), and an option exercise for 100 surface launched All-Up-Rounds.

**Cost and Schedule Variance Explanations**

Cost and Schedule Variance reporting is not required on this (FFP) contract.

**Notes**

This is the first time this contract is being reported.

The FY 2014 base contract was awarded for the procurement of 231 missiles at a price of \$251.1M. The FY 2014 procurement includes 196 surface and subsurface launched All-Up-Rounds (AUR), 20 torpedo tube launched AURs as part of the United Kingdom Foreign Military Sales case, and 15 surface AURs (FY 2013 funded through Buy-to-Budget).

The FY 2015 option exercise for 100 surface AURs was awarded on January 29, 2015. A second option is expected to be exercised in February, 2015, which includes 96 surface AURs and 10 surface AURs (FY 2014 funded through Buy-to-Budget).

Current contract price includes USN missiles and subsurface variant capsules.

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	10	10	10	100.00%
Production	3412	3433	4058	84.60%
Total Program Quantity Delivered	3422	3443	4068	84.64%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	5614.7	Years Appropriated	18
Expended to Date	4386.8	Percent Years Appropriated	78.26%
Percent Expended	78.13%	Appropriated to Date	5225.8
Total Funding Years	23	Percent Appropriated	93.07%

The above data is current as of January 31, 2015.

As of January 31, 2015, a total of 3,433 TACTOM missiles have been delivered, which includes 65 FMS missiles for the United Kingdom.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	January 23, 2015
<b>Source of Estimate:</b>	POE
<b>Quantity to Sustain:</b>	3740
<b>Unit of Measure:</b>	Total Quantity
<b>Service Life per Unit:</b>	30.00 Years
<b>Fiscal Years in Service:</b>	FY 2004 - FY 2048

The current TACTOM Operating and Support (O&S) cost estimate includes actual and projected cost for operation and sustainment of all 4,058 procured missiles, beginning in FY 2004, with cost estimate projections extending to FY 2048. Actual O&S costs were utilized from FY 2004 through FY 2014, and revised budget estimate covers FY 2015 through FY 2048. The "Quantity to Sustain" (3,740 shown above) is the forecasted inventory, which includes reductions across the life-cycle for actual and projected missile expenditures. The total O&S cost estimate as of January 2015 is increased from the prior estimate to add recertification costs for an additional 268 missiles added to FY 2016 PB. The increase in quantity includes missile hardware and support approved through congressional add Buy-to-Budget authority.

### Sustainment Strategy

The sustainment strategy includes maintenance and recertification costs of the All-Up-Round (AUR); an Operational flight test program to track Tomahawk Weapon System performance. TACTOM Sustainment Strategy is based on the original Tomahawk Program "Wooden Round" concept, which relies upon a 15 year missile warranty, and features limited missile maintenance outside of that provided by the Original Equipment Manufacturer (OEM). The total service life of a TACTOM is anticipated to be 30 years, which includes the initial 15 years of warranty coverage after delivery, and an additional 15 years of service life following recertification. The OEM operates TACTOM depot activity and is responsible for conducting the majority of the maintenance for TACTOM, of which efforts are largely covered by the 15 year warranty. The TACTOM recertification program is scheduled to begin inducting missiles in FY 2019 (per FY 2016 PB submission). The TACTOM recertification program will continue until 3,740 missiles are recertified or expended. Organizational level maintenance is limited to visual inspections, missile inventory checks (surface only), Mode 7 alignment confidence checks (submarine only) and minor unscheduled maintenance (i.e. corrosion control). Intermediate level maintenance is limited to missile identification checks, receipt and transfer inspections, electrical continuity, and nitrogen pressure checks.

### Antecedent Information

Block III Tomahawk is the antecedent system of TACTOM. Antecedent costs were derived from average annual actual cost spanning 24 years. The source of this data is the Block III Tomahawk budget. Peak inventory for Block III was 1,296 missiles. The Block III Tomahawk service life was also 30 years.

Annual O&S Costs BY1999 \$M			
Cost Element	TACTOM		Tomahawk Block III (Antecedent)
	Average Annual Cost Per Total Quantity		Average Annual Cost Per Total Quantity
Unit-Level Manpower	0.000		0.000
Unit Operations	0.000		0.000
Maintenance	0.000		0.000
Sustaining Support	38.487		36.600
Continuing System Improvements	0.000		0.000
Indirect Support	0.000		0.000
Other	18.851		65.400
<b>Total</b>	<b>57.338</b>		<b>102.000</b>

Missile recertification cost (shown as "other" in the unitized cost summary above) is the estimated contract cost for the OEM to recertify the inventory, divided by 44 years. The recertification program, however, is only scheduled to last for approximately 15 of the 44 years, so the unitized recertification cost ("other") understates the expected annual cost to recertify TACTOM missiles. The estimated cost for TACTOM annual recertification program is based on a Block III recertification cost, plus inflation. Additionally, the actual number of recertifications per year may not match the procurement profile. While missiles should be returned for recertification not later than 15 years following delivery, the estimate recognizes historical budget constraints. Therefore the estimate caps recertification cost at \$40M per year in FY 2012 dollars, plus inflation. This anticipated annual limit will cause schedule variances between optimal recertification dates and actual recertification dates, resulting in a total recertification program that will extend beyond 15 years.

Item	Total O&S Cost \$M			
	TACTOM			Tomahawk Block III (Antecedent)
	Current Production APB Objective/Threshold	Current Estimate		
<b>Base Year</b>	N/A	N/A	2522.9	3058.4
<b>Then Year</b>	N/A	N/A	3599.6	N/A

#### Equation to Translate Annual Cost to Total Cost

Average Annual Cost Per Total Quantity = Total O&S Cost / Inventory Service Life  
 \$57.338M = \$2,522.9M / 44

O&S Cost Variance		
Category	BY 1999 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2013 SAR	2439.4	
Programmatic/Planning Factors	83.5	TACTOM FY 2016 PB submission, program production profile (quantity) was increased. To reflect these changes, we calculated the cost of support for the additional missiles.

Cost Estimating Methodology	0.0
Cost Data Update	0.0
Labor Rate	0.0
Energy Rate	0.0
Technical Input	0.0
Other	0.0
Total Changes	83.5
Current Estimate	2522.9

#### Disposal Estimate Details

**Date of Estimate:** January 23, 2015  
**Source of Estimate:** POE  
**Disposal/Demilitarization Total Cost (BY 1999 \$M):** Total costs for disposal of all Total Quantity are 41.4

The U.S. Army has responsibility for disposal of all ordnance.