Selected Acquisition Report (SAR)

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

TACTICAL TOMAHAWK

As of December 31, 2011

Defense Acquisition Management
Information Retrieval
(DAMIR)

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Program Information

Designation And Nomenclature (Popular Name)

Tactical Tomahawk R/UGM-109E (TACTICAL TOMAHAWK)

DoD Component

Navy

Responsible Office

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 Tomahawk Missile 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 Block IV Tactical Tomahawk All-Up-Round (AUR) missile, the Tomahawk Command and Control System (TC2S), and the Tactical Tomahawk Weapons Control System (TTWCS). The AUR is an Acquisition Category (ACAT) IC program, TC2S is an ACAT II program, and TTWCS is an ACAT III program. Block IV Tactical Tomahawk provides major modernization to the existing Tomahawk technology by increasing responsiveness and flexibility at a more affordable production unit cost.

Key elements of the Block IV Tactical Tomahawk AUR design are an improved navigation and guidance computer, improved anti-jam Global Positioning System (GPS) 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 (BDII) of over-flown areas prior to impact. Modern manufacturing techniques and Commercial Off-the-Shelf/Government Off-the-Shelf (COTS/GOTS) hardware provide this improved capability. Additionally, the life cycle costs are significantly reduced by extending the re-certification interval from eight years for the currently fielded Block III to 15 years for the Block IV Tactical Tomahawk AUR. The Block IV Tactical Tomahawk AUR will maximize the use of existing TWS program and logistic support. There is no change to the system's overall support concept.

Executive Summary

The Assistant Secretary of the Navy (Research, Development, and Acquisition) (ASN(RD&A)) authorized approval of the Block IV Tactical Tomahawk All-Up-Round (AUR) for entry into the Production and Deployment Phase on August 3, 2004. A Multi-Year Procurement (MYP) contract (FY 2004 – FY 2008) was signed with Raytheon Missile Systems (RMS) on August 18, 2004. RMS, utilizing the MYP program, delivered 1,945 missiles to the United States Navy (USN). The follow-on production contract for Block IV Tactical Tomahawk AUR (FY 2009 – FY 2011) was approved for the procurement of up to 1,050 additional missiles. The FY 2009 procurement contract delivered all 207 missiles, and both options have been exercised for 196 missiles each, for a total of 599 AUR missiles. RMS is currently delivering missiles under the FY 2010 procurement contract. The Minimum Sustaining Rate (MSR) for Tactical Tomahawk is 196 missiles per year. To address rising unit costs, the program analyzed numerous Cost Reduction Initiatives (CRI). After successful implementation, the CRI resulted in $15M of cost avoidance benefits applicable to the FY 2009 – FY 2011 missile procurements.

Additional FY 2011 funding was received through OMNIBUS reprogramming action DOD Serial Number FY 11-21-R PA signed September 13, 2011 to replenish the 221 Tomahawk missile expenditures during Libyan Operations.

As of December 31, 2011, RMS has achieved thirty consecutive months of meeting or exceeding the contracted AUR missile delivery requirements. The current combined Block III and IV Fleet inventory is sufficient to satisfy projected 2012 USN operational load-outs.

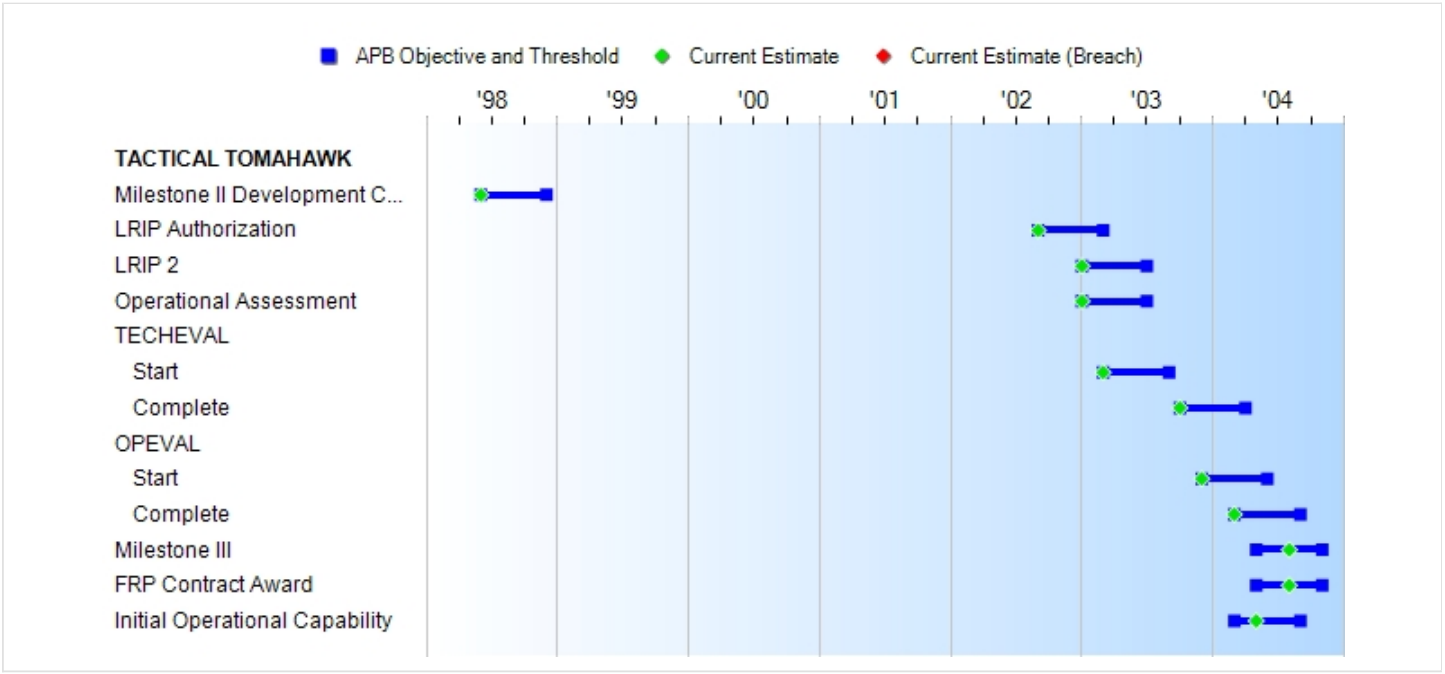
There are no significant software-related issues with this program at this time.

Threshold Breaches

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

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

Schedule



Milestones	SAR Baseline Prod Est	Current APB Production Objective/Threshold		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
Milestone III	MAY 2004	MAY 2004	NOV 2004	AUG 2004
FRP Contract Award	MAY 2004	MAY 2004	NOV 2004	AUG 2004
Initial Operational Capability	MAR 2004	MAR 2004	SEP 2004	MAY 2004

Acronyms And Abbreviations

FRP - Full Rate Production
LRIP - Low Rate Initial Production
OPEVAL - Operational Evaluation
TECHEVAL - Technical Evaluation

Change Explanations

None

Performance

Characteristics	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate	
MR (%)	.90	.90	.86	.96	.96	(Ch-1)
CR (%)	.96	.96	.94	1.0	1.0	

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

Acronyms And Abbreviations

CR - Cruise Reliability
MR - Mission Reliability

Change Explanations

(Ch-1) Mission Reliability increases from 0.95 to 0.96 as a result of ongoing success in the Operational Test Launch (OTL) program

Memo

Mission Reliability (MR) and Cruise Reliability (CR) use the definitions stated in the Tomahawk Weapon Systems Baseline IV Operational Requirements Document (ORD) of August 11, 2004 based upon credible test events. The data set includes operational test launches (OTLs), and combat expenditures and accounting for corrective actions in the missile inventory. Credible test events now include Operational Evaluation (OPEVAL), Technical Evaluation (TECHEVAL), Tactical Tomahawk 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.

There were six flight tests and four production assurance tests conducted in Calendar Year (CY) 2011. All of those events were assessed as being successful for both MR and CR. Upon completion of strike reconstruction, results of combat expenditures from Operation Odyssey Dawn will be incorporated into the reliability estimates.

Demonstrated Performance and the Program Manager's Current Estimate are identical. These values will be revised once all reliability data has been analyzed from the 2011 Operation Odyssey Dawn missile expenditures.

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

Track To Budget

RDT&E				
APPN 1319	BA 07	PE 0204229N	(Navy)	
	Project A0545	TACTICAL TOMAHAWK/TACTICAL TOMAHAWK	(Shared)	(Sunk)
	Project A2658	TACTICAL TOMAHAWK/TACTICAL TOMAHAWK		(Sunk)
	Project A2659	TACTICAL TOMAHAWK/TACTICAL TOMAHAWK		(Sunk)

Procurement				
APPN 1507	BA 02	PE 0204229N	(Navy)	
	ICN 210100	TACTICAL TOMAHAWK		

Cost and Funding

Cost Summary

Total Acquisition Cost and Quantity

	BY1999 $M			BY1999 $M	TY $M		
Appropriation	SAR Baseline Prod Est	Current APB Production Objective/Threshold		Current Estimate	SAR Baseline Prod Est	Current APB Production Objective	Current Estimate
RDT&E	564.9	564.9	621.4	565.1	581.0	581.9	581.9
Procurement	2412.4	4962.6	5458.8	5157.0	2709.3	6303.5	6603.0
Flyaway	2378.8	--	--	5066.0	2671.3	--	6486.9
Recurring	2342.9	--	--	5030.7	2633.2	--	6449.2
Non Recurring	35.9	--	--	35.3	38.1	--	37.7
Support	33.6	--	--	91.0	38.0	--	116.1
Other Support	33.6	--	--	91.0	38.0	--	116.1
Initial Spares	0.0	--	--	0.0	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	5722.1	3290.3	6885.4	7184.9

The Acquisition Program Baseline was re-baselined in April 2011 resulting in additional missile procurements and funding. The cost estimate used in developing the updated funding profile was conducted by Naval Air Systems Command Air 4.2 Cost Department and was completed on January 5, 2010.

Quantity	SAR Baseline Prod Est	Current APB Production	Current Estimate
RDT&E	10	10	10
Procurement	2780	4730	4951
Total	2790	4740	4961

Cost and Funding

Funding Summary

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

Appropriation	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
RDT&E	581.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	581.9
Procurement	3494.5	297.6	309.0	323.0	329.2	336.6	342.6	1170.5	6603.0
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 2013 Total	4076.4	297.6	309.0	323.0	329.2	336.6	342.6	1170.5	7184.9
PB 2012 Total	3779.9	303.3	312.7	322.2	328.7	336.4	377.2	1113.4	6873.8
Delta	296.5	-5.7	-3.7	0.8	0.5	0.2	-34.6	57.1	311.1

Additional FY 2011 funding was received through omnibus reprogramming action DOD Serial Number FY 11-21-R PA signed September 13, 2011 to replenish the 221 Tomahawk missile expenditures during Libyan Operations.

Quantity	Undistributed	Prior	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	To Complete	Total
Development	10	0	0	0	0	0	0	0	0	10
Production	0	3102	196	196	196	196	196	196	673	4951
PB 2013 Total	10	3102	196	196	196	196	196	196	673	4961
PB 2012 Total	10	2881	196	196	196	196	196	230	639	4740
Delta	0	221	0	0	0	0	0	-34	34	221

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
1998	--	--	--	--	--	--	49.8
1999	--	--	--	--	--	--	122.4
2000	--	--	--	--	--	--	164.2
2001	--	--	--	--	--	--	105.4
2002	--	--	--	--	--	--	63.0
2003	--	--	--	--	--	--	57.3
2004	--	--	--	--	--	--	19.8
Subtotal	**10**	**--**	**--**	**--**	**--**	**--**	**581.9**

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

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1999 $M	Non End Item Recurring Flyaway BY 1999 $M	Non Recurring Flyaway BY 1999 $M	Total Flyaway BY 1999 $M	Total Support BY 1999 $M	Total Program BY 1999 $M
1998	--	--	--	--	--	--	49.9
1999	--	--	--	--	--	--	121.3
2000	--	--	--	--	--	--	160.3
2001	--	--	--	--	--	--	101.5
2002	--	--	--	--	--	--	60.1
2003	--	--	--	--	--	--	53.9
2004	--	--	--	--	--	--	18.1
Subtotal	**10**	**--**	**--**	**--**	**--**	**--**	**565.1**

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
2002	25	46.2	--	24.0	70.2	2.4	72.6
2003	377	420.9	--	13.7	434.6	2.9	437.5
2004	322	344.6	--	--	344.6	7.4	352.0
2005	298	268.5	--	--	268.5	8.7	277.2
2006	409	363.1	--	--	363.1	9.9	373.0
2007	355	345.3	--	--	345.3	7.7	353.0
2008	496	470.8	--	--	470.8	5.0	475.8
2009	207	275.2	--	--	275.2	5.0	280.2
2010	196	270.2	--	--	270.2	6.3	276.5
2011	417	591.2	--	--	591.2	5.5	596.7
2012	196	292.0	--	--	292.0	5.6	297.6
2013	196	303.2	--	--	303.2	5.8	309.0
2014	196	317.1	--	--	317.1	5.9	323.0
2015	196	323.2	--	--	323.2	6.0	329.2
2016	196	330.4	--	--	330.4	6.2	336.6
2017	196	336.3	--	--	336.3	6.3	342.6
2018	225	378.1	--	--	378.1	6.4	384.5
2019	225	384.5	--	--	384.5	6.5	391.0
2020	223	388.4	--	--	388.4	6.6	395.0
Subtotal	**4951**	**6449.2**	**--**	**37.7**	**6486.9**	**116.1**	**6603.0**

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

Fiscal Year	Quantity	End Item Recurring Flyaway BY 1999 $M	Non End Item Recurring Flyaway BY 1999 $M	Non Recurring Flyaway BY 1999 $M	Total Flyaway BY 1999 $M	Total Support BY 1999 $M	Total Program BY 1999 $M
2002	25	43.5	--	22.6	66.1	2.3	68.4
2003	377	388.4	--	12.7	401.1	2.7	403.8
2004	322	308.8	--	--	308.8	6.7	315.5
2005	298	234.2	--	--	234.2	7.6	241.8
2006	409	308.9	--	--	308.9	8.4	317.3
2007	355	287.5	--	--	287.5	6.4	293.9
2008	496	385.9	--	--	385.9	4.1	390.0
2009	207	222.3	--	--	222.3	4.0	226.3
2010	196	214.7	--	--	214.7	5.0	219.7
2011	417	461.3	--	--	461.3	4.3	465.6
2012	196	223.9	--	--	223.9	4.3	228.2
2013	196	228.6	--	--	228.6	4.4	233.0
2014	196	235.0	--	--	235.0	4.3	239.3
2015	196	235.2	--	--	235.2	4.4	239.6
2016	196	236.2	--	--	236.2	4.5	240.7
2017	196	236.2	--	--	236.2	4.4	240.6
2018	225	260.9	--	--	260.9	4.4	265.3
2019	225	260.6	--	--	260.6	4.4	265.0
2020	223	258.6	--	--	258.6	4.4	263.0
Subtotal	**4951**	**5030.7**	**--**	**35.3**	**5066.0**	**91.0**	**5157.0**

Low Rate Initial Production

	Initial LRIP Decision	Current Total LRIP
Approval Date	4/12/2001	8/26/2003
Approved Quantity	192	402
Reference	Tactical Tomahawk AUR LRIP ADM dated 12 April 2001.	Tactical Tomahawk AUR LRIP III ASR/AP signed by ASN(RD&A) 26 Aug 2003.
Start Year	2002	2002
End Year	2007	2007

Low Rate Initial Production (LRIP-1) was initiated in October 2002 with a contract for 25 Block IV Tactical Tomahawk All-Up-Round (AUR) missiles. The LRIP-2 contract option was exercised for an additional 167 Block IV Tactical Tomahawk AUR missiles in January 2003. Due to Operation Iraqi Freedom and the expenditure of a large number of Block III Tomahawk Missiles, FY 2003 Emergency Supplemental funding was provided for 210 additional Block IV Tactical Tomahawk AUR LRIP missiles (LRIP-3) to increase the total LRIP quantity to 402 missiles.

Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost $M	Memo
United Kingdom	2/10/2006	65	64.0	Torpedo Tube Launch (TTL) Block IV missiles were purchased in FY 2006; cost includes missiles and ancillary equipment. All United Kingdom missiles on contract have been delivered.

Nuclear Cost

None

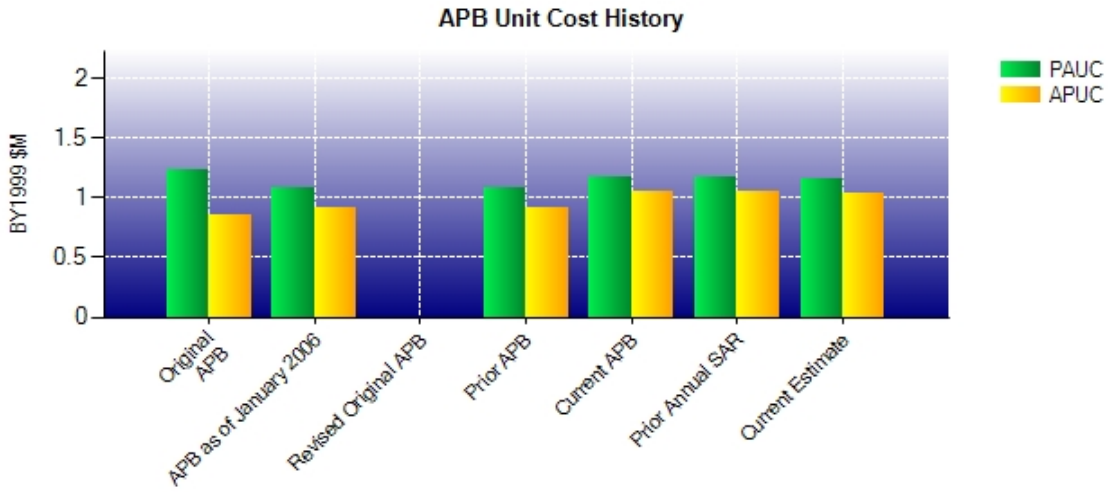
Unit Cost

Unit Cost Report

Unit Cost	BY1999 $M Current UCR Baseline (APR 2011 APB)	BY1999 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	5527.5	5722.1	
Quantity	4740	4961	
Unit Cost	1.166	1.153	-1.11
Average Procurement Unit Cost (APUC)			
Cost	4962.6	5157.0	
Quantity	4730	4951	
Unit Cost	1.049	1.042	-0.67

Unit Cost	BY1999 $M Original UCR Baseline (SEP 1999 APB)	BY1999 $M Current Estimate (DEC 2011 SAR)	BY % Change
Program Acquisition Unit Cost (PAUC)			
Cost	1683.7	5722.1	
Quantity	1365	4961	
Unit Cost	1.233	1.153	-6.49
Average Procurement Unit Cost (APUC)			
Cost	1158.4	5157.0	
Quantity	1353	4951	
Unit Cost	0.856	1.042	+21.73

Unit Cost History



		BY1999 $M		TY $M	
	Date	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 2010	1.165	1.048	1.450	1.330
Current Estimate	DEC 2011	1.153	1.042	1.448	1.334

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	
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 Prod Est	Changes								PAUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
1.179	0.020	-0.129	0.071	0.009	0.283	0.000	0.015	0.269	1.448

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	
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 Prod Est	Changes								APUC Current Est
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
0.975	0.020	-0.040	0.071	0.009	0.283	0.000	0.015	0.359	1.334

SAR Baseline History

Item/Event	SAR Planning Estimate (PE)	SAR Development Estimate (DE)	SAR Production Estimate (PdE)	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	7184.9
Total Quantity	N/A	1365	2790	4961
Prog. Acq. Unit Cost (PAUC)	N/A	1.365	1.179	1.448

Cost Variance

Cost Variance Summary

Summary Then Year $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	581.0	2709.3	--	3290.3
Previous Changes				
Economic	+0.9	+43.0	--	+43.9
Quantity	--	+1703.4	--	+1703.4
Schedule	--	+374.6	--	+374.6
Engineering	--	+40.0	--	+40.0
Estimating	--	+1345.9	--	+1345.9
Other	--	--	--	--
Support	--	+75.7	--	+75.7
Subtotal	+0.9	+3582.6	--	+3583.5
Current Changes				
Economic	--	+57.0	--	+57.0
Quantity	--	+217.5	--	+217.5
Schedule	--	-21.8	--	-21.8
Engineering	--	+3.0	--	+3.0
Estimating	--	+57.5	--	+57.5
Other	--	--	--	--
Support	--	-2.1	--	-2.1
Subtotal	--	+311.1	--	+311.1
Total Changes	+0.9	+3893.7	--	+3894.6
CE - Cost Variance	581.9	6603.0	--	7184.9
CE - Cost & Funding	581.9	6603.0	--	7184.9

Summary Base Year 1999 $M				
	RDT&E	Proc	MILCON	Total
SAR Baseline (Prod Est)	564.9	2412.4	--	2977.3
Previous Changes				
Economic	--	--	--	--
Quantity	--	+1212.6	--	+1212.6
Schedule	--	+255.9	--	+255.9
Engineering	--	+30.6	--	+30.6
Estimating	+0.2	+988.1	--	+988.3
Other	--	--	--	--
Support	--	+59.0	--	+59.0
Subtotal	+0.2	+2546.2	--	+2546.4
Current Changes				
Economic	--	--	--	--
Quantity	--	+144.8	--	+144.8
Schedule	--	+18.4	--	+18.4
Engineering	--	+2.0	--	+2.0
Estimating	--	+34.8	--	+34.8
Other	--	--	--	--
Support	--	-1.6	--	-1.6
Subtotal	--	+198.4	--	+198.4
Total Changes	+0.2	+2744.6	--	+2744.8
CE - Cost Variance	565.1	5157.0	--	5722.1
CE - Cost & Funding	565.1	5157.0	--	5722.1

Previous Estimate: December 2010

Procurement	$M	
Current Change Explanations	**Base Year**	**Then Year**
Revised escalation indices. (Economic)	N/A	+57.0
Quantity variance resulting from an increase of 221 missiles from 4730 to 4951. (Subtotal)	+231.2	+347.3
Quantity variance resulting from an increase of 221 missiles from 4730 to 4951. (Quantity)	(+144.8)	(+217.5)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+18.4)	(+27.6)
Allocation to Engineering resulting from Quantity change. (Engineering) (QR)	(+2.0)	(+3.0)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+66.0)	(+99.2)
Increase in weapons procurement in FY 2011 from 196 missiles to 417 missiles. (Schedule)	0.0	-49.4
Adjustment for current and prior escalation. (Estimating)	-8.9	-11.3
Adjustment to reflect the appropriation of new outyear escalation indices. (Estimating)	-22.3	-30.4
Adjustment for current and prior escalation. (Support) (QR)	-0.3	-0.2
Decrease in total estimated Contractor Services Support. (Support)	-1.3	-1.9
Procurement Subtotal	+198.4	+311.1

(QR) Quantity Related

Contracts

Appropriation: Procurement

Contract Name	**BLK IV TOM FRP FY09-11**
Contractor	Raytheon Missile Systems
Contractor Location	Tucson, AZ 85747
Contract Number, Type	N00019-09-C-0007, FFP
Award Date	March 31, 2009
Definitization Date	March 31, 2009

Initial Contract Price ($M)			Current Contract Price ($M)			Estimated Price At Completion ($M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
207.3	N/A	207	693.0	N/A	599	693.0	693.0

Cost And Schedule Variance Explanations

Cost and Schedule variance reporting is not required on this FFP contract.

Contract Comments

The difference between the initial contract price target and the current contract price target is due to each of the two procurement options being exercised for 196 missiles a piece.

Full Rate Production (FY 2009 - FY 2011) includes base year plus two option years. Contract was signed on March 31, 2009 for up to 1050 Block IV Tactical Tomahawk All-Up-Round (AUR) missiles.

Current contract price includes United States Navy missiles, subsurface variant capsules, production support and ancillary equipment.

The FY 2009 base year contract was awarded in January 2009 for the procurement of 207 missiles at a contract price of $207.3M. Both the FY 2010 and FY 2011 missile and capsule options have been exercised, increasing the total contract procurement quantity to 599 missiles and the total contract price to $693.03M.

Deliveries and Expenditures

Deliveries To Date	Plan To Date	Actual To Date	Total Quantity	Percent Delivered
Development	10	10	10	100.00%
Production	2562	2620	4951	52.92%
Total Program Quantities Delivered	2572	2630	4961	53.01%

Expenditures and Appropriations (TY $M)			
Total Acquisition Cost	7184.9	Years Appropriated	15
Expenditures To Date	3379.1	Percent Years Appropriated	65.22%
Percent Expended	47.03%	Appropriated to Date	4374.0
Total Funding Years	23	Percent Appropriated	60.88%

Operating and Support Cost

Assumptions And Ground Rules

The operational concept is a "wooden round," which does not undergo maintenance except at the depot level. The maintenance cycle is known as a recertification and includes examination and replacement of time-limited components. Block IV Tomahawk depot maintenance is significantly less than Block III due to the 15 year recertification interval.

An Operational Test Launch (OTL) program is conducted to determine operational readiness and the aging effects of the deployed system and to provide Fleet training. The Block III OTL program generally averaged eight launches per year, while the Block IV Tomahawk program was estimated at three launches per year.

The software support activity includes hardware and software maintenance for the operational flight system and the weapons fire control system and independent validation and verification of the software.

Technical and Operations costs include life cycle management training, Naval Weapons station operations, integrated logistic support and contractor engineering technical services.

Theater Mission Planning Center (TMPC) provides for the programming of Tomahawk missions and the maintenance of hardware and software systems. This was a cost element of Tomahawk Block III because those costs were reported at a total weapons system level. However, it is not a cost element of the Block IV Tomahawk All-Up-Round (AUR) because the Block IV Tomahawk costs are reported at the AUR only level.

Platform maintenance was included for Tomahawk Block III launch platforms at an approximate level of 134 platforms per year. This was a cost element of Tomahawk Block III because those costs were reported at a total weapons system level. However, it is not a cost element of Block IV Tomahawk because the Block IV Tomahawk costs are reported at the AUR only level.

The Block IV Tomahawk will be maintained using the same maintenance philosophy and infrastructure as the current Tomahawk Block III. Tomahawk Block III is the antecedent system. Due to differences in the estimation of Operating & Support (O&S) cost elements for the Tomahawk Block III and the Block IV Tomahawk, the comparison of total O&S costs is not meaningful.

Total O&S costs for both systems have been normalized to both a 30-year period and FY 1999 Base Year Dollars.

Estimate of Block IV Tomahawk O&S Costs is current as of December 2011.

Costs BY1999 $M		
Cost Element	**TACTICAL TOMAHAWK Average Annual Cost of 3282 Missiles**	**TOMAHAWK BLOCK III Average Annual Cost of 1296 Missiles**
Unit-Level Manpower	--	--
Unit Operations	--	--
Maintenance	--	--
Sustaining Support	29.3	36.6
Continuing System Improvements	--	--
Indirect Support	--	--
Other	57.2	65.4
Total Unitized Cost (Base Year 1999 $)	86.5	102.0

Total O&S Costs $M	TACTICAL TOMAHAWK	TOMAHAWK BLOCK III
Base Year	2597.2	3058.4
Then Year	3922.2	--

Disposal costs will be provided in the next SAR submission.