



## Selected Acquisition Report (SAR)

RCS: DD-A&T(Q&A)823-180



### **DDG 51 Arleigh Burke Class Guided Missile Destroyer (DDG 51)**

As of FY 2017 President's Budget

Defense Acquisition Management  
Information Retrieval  
(DAMIR)

## Table of Contents

Common Acronyms and Abbreviations for MDAP Programs .....	3
Program Information .....	5
Responsible Office .....	5
References .....	5
Mission and Description .....	6
Executive Summary .....	7
Threshold Breaches .....	8
Schedule .....	9
Performance .....	12
Track to Budget .....	15
Cost and Funding .....	16
Low Rate Initial Production .....	30
Foreign Military Sales .....	31
Nuclear Costs .....	31
Unit Cost .....	32
Cost Variance .....	35
Contracts .....	38
Deliveries and Expenditures .....	46
Operating and Support Cost .....	47

## 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

DDG 51 Arleigh Burke Class Guided Missile Destroyer (DDG 51)

### DoD Component

Navy

## Responsible Office

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**Date Assigned:** May 23, 2011

## References

### SAR Baseline (Production Estimate)

Decision Coordinating Paper #1337 Revision 1, Change 1 of August 22, 1986

### Approved APB

Navy Acquisition Executive (NAE) Approved Acquisition Program Baseline (APB) dated May 10, 2011

## Mission and Description

The DDG 51 Arleigh Burke Class Guided Missile Destroyer (DDG 51) is a multi-mission guided missile destroyer designed to operate offensively and defensively, independently, or as units of Carrier Strike Groups, Expeditionary Strike Groups, and Missile Defense Action Groups in multi-threat environments that include air, surface, and subsurface threats. These ships will respond to Low Intensity Conflict/Coastal and Littoral Offshore Warfare scenarios as well as open ocean conflict providing or augmenting power projection, forward presence requirements, and escort operations at sea. Flight IIA ships have introduced new capabilities, Cooperative Engagement Capability (CEC) and a MK-45 Gun that will provide improved air and anti-missile defense and improved land attack.

The DDG 51 Class ships provide outstanding combat capability and survivability characteristics while considering procurement and lifetime support costs. They feature extraordinary seakeeping and low observability characteristics.

The DDG 51 features the AEGIS Weapon System (AWS), which has quick reaction time, high firepower, and improved Electronic Countermeasures capability in Anti-Air Warfare (AAW). The ships' Anti-Submarine Warfare (ASW) System provides superior long range multi-target detection and engagement capability with two embarked Light Airborne Multi-Purpose System MK-III helicopters (Flight IIA, DDG 79 and follow-on ships). DDG 91 and follow-on ships employ the littoral variant SPY-1D(V). The Advanced Tomahawk Weapon Control System (DDGs 79-95) and the Tactical Tomahawk Weapons Control System (DDG 96 and follow-on ships) allow employment of multiple variants of Tomahawk missiles for strike warfare. The MK-45 gun weapon system provides significant capability for surface warfare, land attack, and air defense. The CEC is being installed on DDG 51 Class Ships to promote Network Centric Warfare capability. The AWS is the heart of an integrated combat system that provides area coverage and command/control focus in all dimensions of Naval Warfighting and Joint Military Operations: AAW; ASW; Anti-Surface Warfare; Command, Control, Communications, Computers & Intelligence; and Strike Warfare. DDG 113 and follow ships will provide Integrated Air and Missile Defense and work with other Ballistic Missile Defense assets.

Structural features are an all steel hull and deckhouse with vital spaces protected and located within the hull. The ship employs a gas turbine propulsion system with Controllable Pitch Propellers similar to the CG 47 class.

The DDG 51 Destroyer is being produced to fulfill a surface combatant requirement to provide air dominance, integrated air and missile defense, maritime dominance and land attack capability.

## Executive Summary

The DDG 51 Program has successfully delivered 62 ships (DDG 51 – 112) since program inception in 1985. Subsequent to the restart of the program in 2009, annual, annual with option, or multi-year procurement contracts for 14 additional ships between FY 2010 – FY 2017 have been awarded.

The Navy has instituted several initiatives to reduce cost associated with FY 2010 and follow DDG 51 Class ships including the increased use of competitive contracts in lieu of sole source contracts. Other cost savings initiatives include the use of Multi-Year Procurements (MYP) with Profit Related to Offer (PRO) concept, refurbished assets from retiring Navy ships and leveraging Government Furnished Equipment (GFE) contracts across multiple ship classes to obtain better prices across the Navy.

The Navy is currently developing the next baseline upgrade referred to as Flight III which will provide enhanced surface combatant Integrated Air Missile Defense (IAMD) capability. The upgrade will primarily consist of the integration of the SPY-6 radar, being developed by Raytheon, along with the necessary electrical power and cooling and ship stability modifications. Flight III will be introduced on a FY 2016 ship. Congress provided an additional \$1B in FY 2016 to support incremental funding for an additional DDG 51 Class ship.

The FY 2017 PB submission requests \$3,211.3M Full Funding for two ships in FY 2017, and \$16M Cost to Complete for the Government responsible portion for the shipbuilding construction contract overrun for DDG 115.

The DDG 51 Class Program has achieved the following significant production milestones since the last report:

- DDG 119 (DELBERT BLACK) Start Fabrication completed on July 6, 2015 in Pascagoula, MS.
- DDG 118 (DANIEL INOUYE) Start Fabrication completed on August 2, 2015 in Bath, ME.
- DDG 113 (JOHN FINN) AEGIS Light Off conducted on September 7, 2015 in Pascagoula, MS.
- DDG 117 (PAUL IGNATIUS) Lay Keel completed on September 11, 2015 in Pascagoula, MS.
- DDG 115 (RAFAEL PERALTA) Launch completed on November 1, 2015 in Bath, ME.
- DDG 116 (THOMAS HUDNER) Lay Keel completed on November 6, 2015 in Bath, ME.
- DDG 114 (RALPH JOHNSON) Launch completed on December 12, 2015 in Pascagoula, MS.
- DDG 115 (RAFAEL PERALTA) AEGIS Light Off conducted on December 17, 2015 in Bath, ME.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for contracts included in this SAR are For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).

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

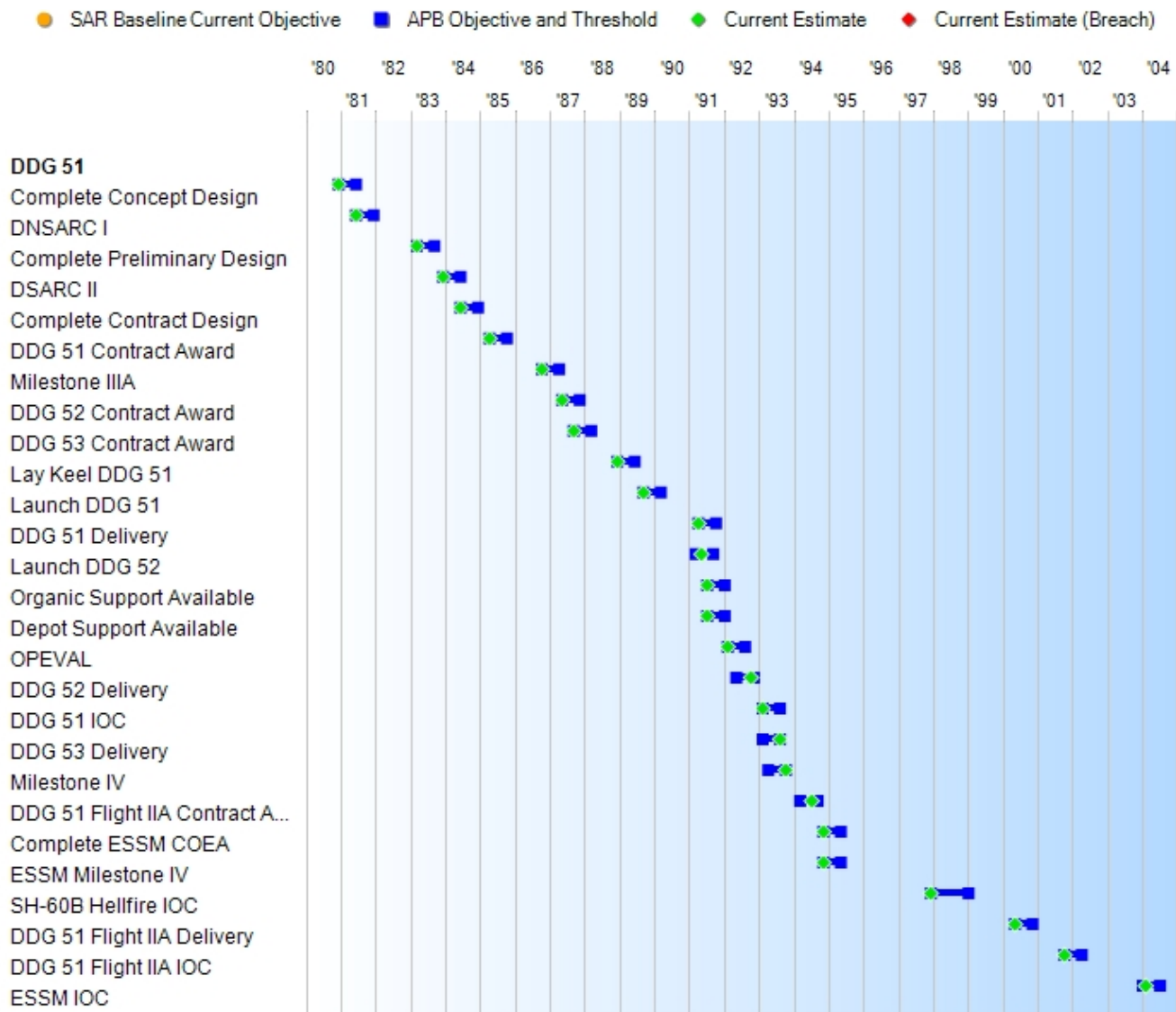
## Threshold Breaches

APB Breaches		Explanation of Breach
<b>Schedule</b>	<input type="checkbox"/>	RDT&E Cost Breach is due to increased development and integration costs associated with the introduction of new Standard Missile-6 Block (BLK) IA and Naval Integrated Fire Control - Counter Air (NIFCCA) 2019 warfighting capabilities into AEGIS Advanced Capability Build (ACB) 16, and development and integration of NIFCCA 2019, Ballistic Missile Defense improved threat set, Surface Electronic Warfare Improvement Program BLK II, and Combat ID warfighting capabilities into AEGIS ACB 20.
<b>Performance</b>	<input type="checkbox"/>	
<b>Cost</b>	<input checked="" type="checkbox"/>	
RDT&E	<input checked="" type="checkbox"/>	
Procurement	<input type="checkbox"/>	
MILCON	<input type="checkbox"/>	Procurement Cost Breach is due to the increase in ship quantities from approved APB to current estimate (86 ships vice 75 ships). The 2015 SAR adds 4 additional ships (2 in FY 2021 and 2 in FY 2022).
Acq O&M	<input checked="" type="checkbox"/>	
<b>O&amp;S Cost</b>	<input type="checkbox"/>	O&S Cost Breach due to increase in ship quantity from last approved APB to current estimate (86 vice 75 ships) and corrected service life per unit calculations for FLT IIA and FLT III (increase of 5 years from 35 to 40 for FLT IIA/FLT III ships). The 2012 SAR added 2 ships (FY 2018), the 2013 SAR added 3 ships (1 in FY 2016 and 2 in FY 2019), the 2014 SAR added 2 ships (FY 2020), and the 2015 SAR adds 4 additional ships (FY 2021 and FY 2022).
<b>Unit Cost</b>	<input type="checkbox"/>	
PAUC	<input type="checkbox"/>	Updated Program Deviation Report and APB are in process.
APUC	<input type="checkbox"/>	
Nunn-McCurdy Breaches		
<b>Current UCR Baseline</b>		
PAUC	None	
APUC	None	
<b>Original UCR Baseline</b>		
PAUC	None	
APUC	None	

Updated Program Deviation Report and APB are in process.



# Schedule



Schedule Events				
Events	SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Current Estimate
Complete Concept Design	N/A	Dec 1980	Jun 1981	Dec 1980
DNSARC I	Jun 1981	Jun 1981	Dec 1981	Jun 1981
Complete Preliminary Design	N/A	Mar 1983	Sep 1983	Mar 1983
DSARC II	Dec 1983	Dec 1983	Jun 1984	Dec 1983
Complete Contract Design	N/A	Jun 1984	Dec 1984	Jun 1984
DDG 51 Contract Award	Apr 1985	Apr 1985	Oct 1985	Apr 1985
Milestone IIIA	Oct 1986	Oct 1986	Apr 1987	Oct 1986
DDG 52 Contract Award	Jan 1987	May 1987	Nov 1987	May 1987
DDG 53 Contract Award	N/A	Sep 1987	Mar 1988	Sep 1987
Lay Keel DDG 51	N/A	Dec 1988	Jun 1989	Dec 1988
Launch DDG 51	N/A	Sep 1989	Mar 1990	Sep 1989
DDG 51 Delivery	N/A	Apr 1991	Oct 1991	Apr 1991
Launch DDG 52	N/A	Mar 1991	Sep 1991	May 1991
Organic Support Available	N/A	Jul 1991	Jan 1992	Jul 1991
Depot Support Available	N/A	Jul 1991	Jan 1992	Jul 1991
OPEVAL	N/A	Feb 1992	Aug 1992	Feb 1992
DDG 52 Delivery	N/A	May 1992	Nov 1992	Oct 1992
DDG 51 IOC	Oct 1990	Feb 1993	Aug 1993	Feb 1993
DDG 53 Delivery	N/A	Feb 1993	Aug 1993	Aug 1993
Milestone IV	N/A	Apr 1993	Oct 1993	Oct 1993
DDG 51 Flight IIA Contract Award	N/A	Mar 1994	Sep 1994	Jul 1994
Complete ESSM COEA	N/A	Nov 1994	May 1995	Nov 1994
ESSM Milestone IV	N/A	Nov 1994	May 1995	Nov 1994
SH-60B Hellfire IOC	N/A	Dec 1997	Jan 1999	Dec 1997
DDG 51 Flight IIA Delivery	N/A	May 2000	Nov 2000	May 2000
DDG 51 Flight IIA IOC	N/A	Oct 2001	Apr 2002	Oct 2001
ESSM IOC	N/A	Jan 2004	Jul 2004	Feb 2004

### Change Explanations

None

**Acronyms and Abbreviations**

COEA - Cost and Operational Effectiveness Analysis  
DNSARC - Department of the Navy System Acquisition Review Council  
DSARC - Defense System Acquisition Review Council  
ESSM - Evolved Sea Sparrow Missile  
OPEVAL - Operational Evaluation

## Performance

Performance Characteristics				
SAR Baseline Production Estimate	Current APB Production Objective/Threshold		Demonstrated Performance	Current Estimate
<b>SHIP:</b>				
<b>Length (ft)</b>				
466	N/A	N/A	Baseline Dependent	Baseline Dependent
<b>Beam (ft)</b>				
59	N/A	N/A	59	59
<b>Navigational Draft (ft)</b>				
30.6	N/A	N/A	31.0	31.0
<b>Displacement (long tons)</b>				
8300	N/A	N/A	9300	9300
<b>Propulsion LM (Gas Turbine)</b>				
2500	N/A	N/A	2500	2500
<b>Accommodations</b>				
341	N/A	N/A	314	314
<b>MOBILITY:</b>				
<b>Speed (knots)</b>				
30	30	30	30	30
<b>Armament</b>				
<b>Anti-Submarine Warfare</b>				
<b>ASW System</b>				
AN/SQQ-89	N/A	N/A	AN/SQQ-89	AN/SQQ-89
<b>ASROC</b>				
VLA	N/A	N/A	VLA	VLA
<b>Helo</b>				
SEAHAWK; LAMPS	2 EMBARKEDHELOS	2 EMBARKEDHELOS	2 Embarked Helos	2 Embarked Helos
<b>Anti-Air Warfare</b>				
<b>Launchers</b>				
MK 41 VLS	N/A	N/A	MK 41 VLS	MK 41 VLS
<b>Missiles</b>				
SM-2 MR	N/A	N/A	SM-2 MR/SM-3/ESSM	SM-2 MR/SM-3/ESSM
<b>Missile Fire Control System</b>				
3 MK 99	N/A	N/A	3 MK 99	3 MK 99

(Ch-1)

<b>Guns</b>				
2 PHALANX	N/A	N/A	2 PHALANX	2 PHALANX
<b>Anti-Surface/Strike Warfare</b>				
<b>Guns</b>				
1 5"/54	N/A	N/A	1 5"/62	1 5"/62
<b>Gunfire Control System</b>				
MK 160	N/A	N/A	MK 160	MK 160
<b>Anti-Ship Cruise Missile</b>				
HARPOON	N/A	N/A	N/A	N/A
<b>Cruise Missile</b>				
TOMAHAWK	N/A	N/A	TOMAHAWK	TOMAHAWK
<b>Electronic Warfare</b>				
SLQ-32 SRBOC	N/A	N/A	SLQ-32, SRBOC, Combat DF	SLQ-32, SRBOC, Combat DF
<b>Radars</b>				
<b>Surface</b>				
SPS-67	N/A	N/A	SPS-67	SPS-67/SPQ-9B
<b>3D</b>				
SPY-1D	N/A	N/A	SPY-1D (V)	SPY-1D (V)/SPY-6
<b>MINE WARFARE:</b>				
<b>Detection Range of Moored/Floating Mine (YDS)</b>				
N/A	1000	800	1400	1400

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

#### Requirements Reference

ORD dated April 15, 1994

#### Change Explanations

(Ch-1) The current estimate for Length has changed from "see change explanations" to "Baseline Dependent". As noted in the 2014 SAR, the production estimate, demonstrated performance, and current estimate for length at waterline for FLT I and FLT II are 466. Demonstrated performance and current estimate for length at waterline for FLT IIA and FLT III is 471. Demonstrated performance and current estimate for FLT IIA length overall is 509. Current estimate for FLT III length overall is 509.

#### Notes

Demonstrated Performance and Current Estimate are for the FLT IIA configuration except for Radars that have inputs for FLT IIA and FLT III ships. Production Estimates are from the FLT II configuration. Demonstrated Performance characteristics reflect testing through the TEMP 801-OT-IIIH report dated July 20, 2006. SM-3 Block IA Demonstrated Performance is reflected in FTM-15, approved April 14, 2011.

**Acronyms and Abbreviations**

ASROC - Anti-Submarine Rocket  
ASW - Anti-Submarine Warfare  
DF - Direction Finding  
ESSM - Evolved Sea Sparrow Missile  
FLT - Flight  
ft - Feet  
FTM - Flight Test Mission  
HELO - Helicopter  
MK - Mark  
MR - Medium Range  
SM-2 - Standard Missile 2  
SM-3 - Standard Missile 3  
SRBOC - Super Rapid Blooming Off-Board Chaff  
TEMP - Test & Evaluation Master Plan  
VLA - Vertical Launching ASROC (Anti-Submarine Rocket)  
VLS - Vertical Launching System  
YDS - Yards

## Track to Budget

### RDT&E

Appn	BA	PE	
Navy	1319	04	0603564N
	<b>Project</b>	<b>Name</b>	
	0409	DDG-51 Flt III Concept Development	
Navy	1319	05	0604303N
	<b>Project</b>	<b>Name</b>	
	1776	AEGIS Weapon System Mods (Sunk)	
Navy	1319	05	0604307N
	<b>Project</b>	<b>Name</b>	
	1447	Surf Combatant Combat System Imp (Shared)	

### Procurement

Appn	BA	PE	
Navy	1611	02	0204222N
	<b>Line Item</b>	<b>Name</b>	
	2122	DDG-51	
Navy	1611	05	0204222N
	<b>Line Item</b>	<b>Name</b>	
	5110	Outfitting (Shared)	
	5300	Completion of PY Shipbuilding Programs (Shared)	

### MILCON

Appn	BA	PE	
Navy	1205		0204228N
	<b>Project</b>	<b>Name</b>	
	263	AEGIS Computer Center Building Addition (Sunk)	
Navy	1205		0605896N
	<b>Project</b>	<b>Name</b>	
	261	Battle Force Combatant Education Facility (Sunk)	

## Cost and Funding

### Cost Summary

Total Acquisition Cost							
Appropriation	BY 1987 \$M			BY 1987 \$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	979.8	3031.8	3335.0	3493.6 <sup>1</sup>	916.6	3954.6	4890.8
Procurement	15948.3	57095.5	62805.1	63309.7 <sup>1</sup>	19173.1	84417.5	101911.2
Flyaway	--	--	--	63309.7	--	--	101911.2
Recurring	--	--	--	61761.9	--	--	99362.0
Non Recurring	--	--	--	1547.8	--	--	2549.2
Support	--	--	--	0.0	--	--	0.0
Other Support	--	--	--	0.0	--	--	0.0
Initial Spares	--	--	--	0.0	--	--	0.0
MILCON	25.6	34.8	38.3	37.6	27.8	41.0	44.5
Acq O&M	0.0	0.0	--	0.0	0.0	0.0	0.0
Total	16953.7	60162.1	N/A	66840.9	20117.5	88413.1	106846.5

<sup>1</sup> APB Breach

#### Confidence Level

Confidence Level of cost estimate for current APB: 84%

Eighty One percent (81%) of the ships are complete with a confidence level of 100%. Remaining future ships are budgeted at a 50% confidence level as reflected in Navy cost estimating curves.

Total Quantity			
Quantity	SAR Baseline Production Estimate	Current APB Production	Current Estimate
RDT&E		0	0
Procurement		23	75
Total		23	75



## Cost and Funding

### Funding Summary

Appropriation Summary									
FY 2017 President's Budget / December 2015 SAR (TY\$ M)									
Appropriation	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
RDT&E	3498.3	243.5	175.5	195.1	195.0	174.4	158.1	250.9	4890.8
Procurement	75249.4	4266.8	3348.9	3636.6	3633.2	3712.0	3784.0	4280.3	101911.2
MILCON	44.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.5
Acq O&M	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
PB 2017 Total	78792.2	4510.3	3524.4	3831.7	3828.2	3886.4	3942.1	4531.2	106846.5
PB 2016 Total	78789.7	3556.1	3686.4	3781.7	3827.2	3927.1	183.4	575.9	98327.5
Delta	2.5	954.2	-162.0	50.0	1.0	-40.7	3758.7	3955.3	8519.0

Quantity Summary										
FY 2017 President's Budget / December 2015 SAR (TY\$ M)										
Quantity	Undistributed	Prior	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020	FY 2021	To Complete	Total
Development	0	0	0	0	0	0	0	0	0	0
Production	0	72	2	2	2	2	2	2	2	86
PB 2017 Total	0	72	2	2	2	2	2	2	2	86
PB 2016 Total	0	72	2	2	2	2	2	0	0	82
Delta	0	0	0	0	0	0	0	2	2	4

## 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
1980	--	--	--	--	--	--	10.5
1981	--	--	--	--	--	--	35.3
1982	--	--	--	--	--	--	102.0
1983	--	--	--	--	--	--	150.7
1984	--	--	--	--	--	--	121.1
1985	--	--	--	--	--	--	138.8
1986	--	--	--	--	--	--	93.5
1987	--	--	--	--	--	--	100.4
1988	--	--	--	--	--	--	93.4
1989	--	--	--	--	--	--	52.3
1990	--	--	--	--	--	--	41.2
1991	--	--	--	--	--	--	87.5
1992	--	--	--	--	--	--	87.2
1993	--	--	--	--	--	--	110.6
1994	--	--	--	--	--	--	102.7
1995	--	--	--	--	--	--	89.6
1996	--	--	--	--	--	--	87.3
1997	--	--	--	--	--	--	82.5
1998	--	--	--	--	--	--	78.3
1999	--	--	--	--	--	--	155.4
2000	--	--	--	--	--	--	232.6
2001	--	--	--	--	--	--	143.5
2002	--	--	--	--	--	--	230.7
2003	--	--	--	--	--	--	199.0
2004	--	--	--	--	--	--	135.3
2005	--	--	--	--	--	--	126.0
2006	--	--	--	--	--	--	113.4
2007	--	--	--	--	--	--	69.2
2008	--	--	--	--	--	--	37.4
2009	--	--	--	--	--	--	8.7
2010	--	--	--	--	--	--	16.8
2011	--	--	--	--	--	--	42.5
2012	--	--	--	--	--	--	48.8
2013	--	--	--	--	--	--	62.1
2014	--	--	--	--	--	--	86.3

2015	--	--	--	--	--	--	125.7
2016	--	--	--	--	--	--	243.5
2017	--	--	--	--	--	--	175.5
2018	--	--	--	--	--	--	195.1
2019	--	--	--	--	--	--	195.0
2020	--	--	--	--	--	--	174.4
2021	--	--	--	--	--	--	158.1
2022	--	--	--	--	--	--	200.5
2023	--	--	--	--	--	--	44.6
2024	--	--	--	--	--	--	5.8
Subtotal	--	--	--	--	--	--	4890.8

Annual Funding 1319   RDT&E   Research, Development, Test, and Evaluation, Navy							
Fiscal Year	Quantity	BY 1987 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1980	--	--	--	--	--	--	14.0
1981	--	--	--	--	--	--	43.1
1982	--	--	--	--	--	--	118.3
1983	--	--	--	--	--	--	167.3
1984	--	--	--	--	--	--	129.8
1985	--	--	--	--	--	--	144.2
1986	--	--	--	--	--	--	94.4
1987	--	--	--	--	--	--	98.5
1988	--	--	--	--	--	--	88.7
1989	--	--	--	--	--	--	47.6
1990	--	--	--	--	--	--	36.1
1991	--	--	--	--	--	--	73.9
1992	--	--	--	--	--	--	71.6
1993	--	--	--	--	--	--	88.7
1994	--	--	--	--	--	--	80.9
1995	--	--	--	--	--	--	69.2
1996	--	--	--	--	--	--	66.3
1997	--	--	--	--	--	--	61.9
1998	--	--	--	--	--	--	58.3
1999	--	--	--	--	--	--	114.3
2000	--	--	--	--	--	--	168.7
2001	--	--	--	--	--	--	102.7
2002	--	--	--	--	--	--	163.4
2003	--	--	--	--	--	--	138.9
2004	--	--	--	--	--	--	91.9
2005	--	--	--	--	--	--	83.4
2006	--	--	--	--	--	--	72.8
2007	--	--	--	--	--	--	43.3
2008	--	--	--	--	--	--	23.0
2009	--	--	--	--	--	--	5.3
2010	--	--	--	--	--	--	10.1
2011	--	--	--	--	--	--	24.8
2012	--	--	--	--	--	--	28.1
2013	--	--	--	--	--	--	35.3
2014	--	--	--	--	--	--	48.4
2015	--	--	--	--	--	--	69.6
2016	--	--	--	--	--	--	132.7
2017	--	--	--	--	--	--	93.9
2018	--	--	--	--	--	--	102.4
2019	--	--	--	--	--	--	100.4

2020	--	--	--	--	--	--	88.0
2021	--	--	--	--	--	--	78.2
2022	--	--	--	--	--	--	97.3
2023	--	--	--	--	--	--	21.2
2024	--	--	--	--	--	--	2.7
Subtotal	--	--	--	--	--	--	3493.6

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	TY \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1984	--	78.5	--	--	78.5	--	78.5
1985	1	846.6	--	299.2	1145.8	--	1145.8
1986	--	98.1	--	--	98.1	--	98.1
1987	3	2326.7	--	158.2	2484.9	--	2484.9
1988	--	9.6	--	--	9.6	--	9.6
1989	4	2876.5	--	--	2876.5	--	2876.5
1990	5	3569.5	--	13.5	3583.0	--	3583.0
1991	4	3145.1	--	3.6	3148.7	--	3148.7
1992	5	3982.8	--	38.3	4021.1	--	4021.1
1993	4	3379.3	--	7.9	3387.2	--	3387.2
1994	3	2703.3	--	86.9	2790.2	--	2790.2
1995	3	2779.7	--	37.8	2817.5	--	2817.5
1996	2	2289.5	--	61.7	2351.2	--	2351.2
1997	4	3541.9	--	38.8	3580.7	--	3580.7
1998	4	3424.3	--	110.5	3534.8	--	3534.8
1999	3	2674.1	--	44.2	2718.3	--	2718.3
2000	3	2651.1	--	30.1	2681.2	--	2681.2
2001	3	3231.3	--	--	3231.3	--	3231.3
2002	3	3293.7	--	14.4	3308.1	--	3308.1
2003	2	2657.2	--	63.1	2720.3	--	2720.3
2004	3	3345.3	--	4.7	3350.0	--	3350.0
2005	3	3653.5	--	8.9	3662.4	--	3662.4
2006	--	508.6	--	--	508.6	--	508.6
2007	--	289.3	--	--	289.3	--	289.3
2008	--	94.9	--	--	94.9	--	94.9
2009	--	331.2	--	--	331.2	--	331.2
2010	1	2306.7	--	121.8	2428.5	--	2428.5
2011	2	2584.2	--	11.6	2595.8	--	2595.8
2012	1	1780.8	--	120.2	1901.0	--	1901.0
2013	3	4471.5	--	29.8	4501.3	--	4501.3
2014	1	2086.5	--	--	2086.5	--	2086.5
2015	2	2932.9	--	--	2932.9	--	2932.9
2016	2	3032.8	--	1234.0	4266.8	--	4266.8
2017	2	3338.9	--	10.0	3348.9	--	3348.9
2018	2	3636.6	--	--	3636.6	--	3636.6
2019	2	3633.2	--	--	3633.2	--	3633.2
2020	2	3712.0	--	--	3712.0	--	3712.0
2021	2	3784.0	--	--	3784.0	--	3784.0
2022	2	3950.0	--	--	3950.0	--	3950.0
2023	--	229.8	--	--	229.8	--	229.8

2024	--	20.1	--	--	20.1	--	20.1
2025	--	20.1	--	--	20.1	--	20.1
2026	--	20.1	--	--	20.1	--	20.1
2027	--	20.1	--	--	20.1	--	20.1
2028	--	20.1	--	--	20.1	--	20.1
Subtotal	86	99362.0	--	2549.2	101911.2	--	101911.2

Annual Funding 1611   Procurement   Shipbuilding and Conversion, Navy							
Fiscal Year	Quantity	BY 1987 \$M					
		End Item Recurring Flyaway	Non End Item Recurring Flyaway	Non Recurring Flyaway	Total Flyaway	Total Support	Total Program
1984	--	78.5	--	--	78.5	--	78.5
1985	1	829.8	--	293.3	1123.1	--	1123.1
1986	--	94.0	--	--	94.0	--	94.0
1987	3	2179.7	--	148.2	2327.9	--	2327.9
1988	--	8.7	--	--	8.7	--	8.7
1989	4	2540.5	--	--	2540.5	--	2540.5
1990	5	3064.1	--	11.6	3075.7	--	3075.7
1991	4	2626.4	--	3.1	2629.5	--	2629.5
1992	5	3242.3	--	31.1	3273.4	--	3273.4
1993	4	2723.5	--	6.3	2729.8	--	2729.8
1994	3	2127.5	--	68.3	2195.8	--	2195.8
1995	3	2163.3	--	29.4	2192.7	--	2192.7
1996	2	1762.8	--	47.5	1810.3	--	1810.3
1997	4	2686.1	--	29.4	2715.5	--	2715.5
1998	4	2539.8	--	81.9	2621.7	--	2621.7
1999	3	1952.3	--	32.3	1984.6	--	1984.6
2000	3	1887.5	--	21.5	1909.0	--	1909.0
2001	3	2224.1	--	--	2224.1	--	2224.1
2002	3	2254.2	--	9.9	2264.1	--	2264.1
2003	2	1719.2	--	40.8	1760.0	--	1760.0
2004	3	2088.6	--	2.9	2091.5	--	2091.5
2005	3	2184.2	--	5.3	2189.5	--	2189.5
2006	--	293.7	--	--	293.7	--	293.7
2007	--	159.7	--	--	159.7	--	159.7
2008	--	50.7	--	--	50.7	--	50.7
2009	--	171.6	--	--	171.6	--	171.6
2010	1	1154.3	--	61.0	1215.3	--	1215.3
2011	2	1252.3	--	5.6	1257.9	--	1257.9
2012	1	843.9	--	57.0	900.9	--	900.9
2013	3	2077.4	--	13.9	2091.3	--	2091.3
2014	1	951.6	--	--	951.6	--	951.6
2015	2	1314.7	--	--	1314.7	--	1314.7
2016	2	1334.9	--	543.2	1878.1	--	1878.1
2017	2	1441.8	--	4.3	1446.1	--	1446.1
2018	2	1539.8	--	--	1539.8	--	1539.8
2019	2	1508.2	--	--	1508.2	--	1508.2
2020	2	1510.7	--	--	1510.7	--	1510.7
2021	2	1509.8	--	--	1509.8	--	1509.8
2022	2	1545.2	--	--	1545.2	--	1545.2
2023	--	88.1	--	--	88.1	--	88.1



2024	--	7.6	--	--	7.6	--	7.6
2025	--	7.4	--	--	7.4	--	7.4
2026	--	7.3	--	--	7.3	--	7.3
2027	--	7.1	--	--	7.1	--	7.1
2028	--	7.0	--	--	7.0	--	7.0
Subtotal	86	61761.9	--	1547.8	63309.7	--	63309.7

Cost Quantity Information 1611   Procurement   Shipbuilding and Conversion, Navy		
Fiscal Year	Quantity	End Item Recurring Flyaway (Aligned With Quantity) BY 1987 \$M
1984	--	--
1985	1	934.7
1986	--	--
1987	3	2344.3
1988	--	--
1989	4	2630.9
1990	5	3159.7
1991	4	2666.6
1992	5	3305.4
1993	4	2672.1
1994	3	2117.9
1995	3	2157.2
1996	2	1560.9
1997	4	2631.7
1998	4	2805.6
1999	3	2159.1
2000	3	2063.4
2001	3	2107.8
2002	3	2335.7
2003	2	1576.2
2004	3	2159.9
2005	3	2210.6
2006	--	--
2007	--	--
2008	--	--
2009	--	--
2010	1	1039.8
2011	2	1560.8
2012	1	866.4
2013	3	2056.1
2014	1	815.0
2015	2	1383.7
2016	2	1494.7
2017	2	1533.2
2018	2	1518.3
2019	2	1488.5
2020	2	1474.7
2021	2	1465.9
2022	2	1465.1

2023	--	--
2024	--	--
2025	--	--
2026	--	--
2027	--	--
2028	--	--
<hr/>		
Subtotal	86	61761.9

Annual Funding 1205   MILCON   Military Construction, Navy and Marine Corps	
Fiscal Year	TY \$M
	Total Program
1986	4.6
1987	--
1988	14.7
1989	8.5
1990	--
1991	--
1992	--
1993	--
1994	--
1995	--
1996	--
1997	--
1998	13.2
1999	--
2000	--
2001	3.5
Subtotal	44.5

Annual Funding 1205   MILCON   Military Construction, Navy and Marine Corps	
Fiscal Year	BY 1987 \$M
	Total Program
1986	4.5
1987	--
1988	13.4
1989	7.5
1990	--
1991	--
1992	--
1993	--
1994	--
1995	--
1996	--
1997	--
1998	9.7
1999	--
2000	--
2001	2.5
Subtotal	37.6

## Low Rate Initial Production

Item	Initial LRIP Decision	Current Total LRIP
<b>Approval Date</b>	10/30/1986	10/30/1986
<b>Approved Quantity</b>	9	9
<b>Reference</b>	Milestone IIIA Review Decision Memorandum	Milestone IIIA Review Decision Memorandum
<b>Start Year</b>	1985	1985
<b>End Year</b>	1989	1989

The Current Total LRIP Quantity is more than 10% of the total production quantity due to the Milestone IIIA Review Decision Memorandum dated October 30, 1986, approving 9 LRIP ships which is standard for ship building programs.

## Foreign Military Sales

Country	Date of Sale	Quantity	Total Cost \$M	Description
Japan	10/30/2015	121	5856.0	Date cited is date of last case sale.
South Korea	10/27/2015	14	2994.0	Date cited is date of last case sale.
Australia	5/22/2014	6	1225.0	Date cited is date of last case sale.
Norway	7/18/2012	10	344.0	Date cited is date of last case sale.
Spain	8/11/2006	7	1285.0	Date cited is date of last case sale.

### Notes

Quantity numbers above reflect FMS cases, rather than ships. Cases are agreements between the United States and an eligible foreign country to provide defense articles, training, and/or services for purchase. Cases can be related to procurements (e.g., Ordalt or standard missile), training (e.g., AEGIS shipboard training or replacement crew training), and program management support (e.g., Combat System Ship Qualification Test). Case quantity numbers reflect all cases; open and closed.

## Nuclear Costs

None

## Unit Cost

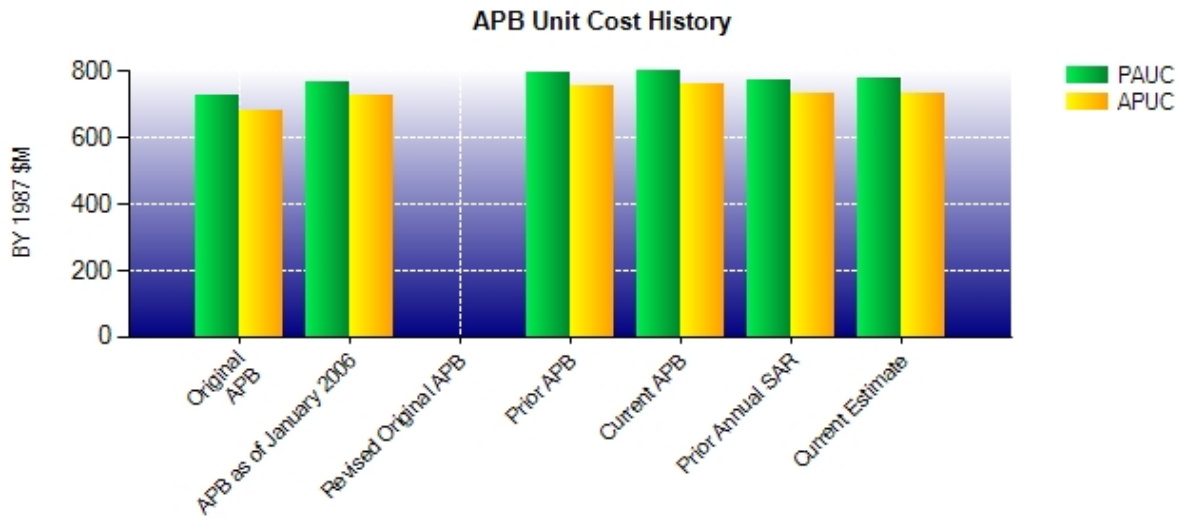
### Unit Cost Report

Item	BY 1987 \$M	BY 1987 \$M	% Change
	Current UCR Baseline (May 2011 APB)	Current Estimate (Dec 2015 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	60162.1	66840.9	
Quantity	75	86	
Unit Cost	802.161	777.220	-3.11
<b>Average Procurement Unit Cost</b>			
Cost	57095.5	63309.7	
Quantity	75	86	
Unit Cost	761.273	736.159	-3.30

Item	BY 1987 \$M	BY 1987 \$M	% Change
	Original UCR Baseline (Feb 1988 APB)	Current Estimate (Dec 2015 SAR)	
<b>Program Acquisition Unit Cost</b>			
Cost	16723.8	66840.9	
Quantity	23	86	
Unit Cost	727.122	777.220	+6.89
<b>Average Procurement Unit Cost</b>			
Cost	15745.3	63309.7	
Quantity	23	86	
Unit Cost	684.578	736.159	+7.53



## Unit Cost History



Item	Date	BY 1987 \$M		TY \$M	
		PAUC	APUC	PAUC	APUC
Original APB	Feb 1988	727.122	684.578	883.152	843.209
APB as of January 2006	Aug 2002	766.675	725.342	1031.612	981.022
Revised Original APB	N/A	N/A	N/A	N/A	N/A
Prior APB	Mar 2010	796.555	759.297	1131.565	1085.962
Current APB	May 2011	802.161	761.273	1178.841	1125.567
Prior Annual SAR	Dec 2014	773.601	732.151	1199.116	1142.216
Current Estimate	Dec 2015	777.220	736.159	1242.401	1185.014

## SAR Unit Cost History

Current SAR Baseline to Current Estimate (TY \$M)									
Initial PAUC Production Estimate	Changes								PAUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
874.674	-38.084	105.995	22.766	92.433	184.617	0.000	0.000	367.727	1242.401

Current SAR Baseline to Current Estimate (TY \$M)									
Initial APUC Production Estimate	Changes								APUC Current Estimate
	Econ	Qty	Sch	Eng	Est	Oth	Spt	Total	
833.613	-36.674	136.075	21.081	74.631	156.288	0.000	0.000	351.401	1185.014

<b>SAR Baseline History</b>				
<b>Item</b>	<b>SAR Planning Estimate</b>	<b>SAR Development Estimate</b>	<b>SAR Production Estimate</b>	<b>Current Estimate</b>
Milestone I	Jun 1981	Jun 1981	Jun 1981	Jun 1981
Milestone II	May 1983	Dec 1983	Dec 1983	Dec 1983
Milestone III	Aug 1986	Aug 1986	N/A	N/A
IOC	N/A	N/A	Oct 1990	Feb 1993
Total Cost (TY \$M)	10953.5	14910.6	20117.5	106846.5
Total Quantity	9	14	23	86
PAUC	1217.056	1065.043	874.674	1242.401

## Cost Variance

Summary TY \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	916.6	19173.1	27.8	20117.5
Previous Changes				
Economic	-113.3	-3219.4	+0.1	-3332.6
Quantity	--	+59210.0	--	+59210.0
Schedule	+144.9	+1605.4	--	+1750.3
Engineering	+1581.0	+5683.4	+16.7	+7281.1
Estimating	+2092.1	+11209.2	-0.1	+13301.2
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+3704.7	+74488.6	+16.7	+78210.0
Current Changes				
Economic	-8.0	+65.4	--	+57.4
Quantity	--	+5010.0	--	+5010.0
Schedule	--	+207.6	--	+207.6
Engineering	-66.8	+734.9	--	+668.1
Estimating	+344.3	+2231.6	--	+2575.9
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+269.5	+8249.5	--	+8519.0
Total Changes	+3974.2	+82738.1	+16.7	+86729.0
Current Estimate	4890.8	101911.2	44.5	106846.5

Summary BY 1987 \$M				
Item	RDT&E	Procurement	MILCON	Total
SAR Baseline (Production Estimate)	979.8	15948.3	25.6	16953.7
Previous Changes				
Economic	--	--	--	--
Quantity	--	+35040.3	--	+35040.3
Schedule	+89.1	+421.0	--	+510.1
Engineering	+883.1	+3028.1	+11.9	+3923.1
Estimating	+1409.3	+5598.7	+0.1	+7008.1
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+2381.5	+44088.1	+12.0	+46481.6
Current Changes				
Economic	--	--	--	--
Quantity	--	+1979.4	--	+1979.4
Schedule	--	+82.0	--	+82.0
Engineering	-35.3	+290.3	--	+255.0
Estimating	+167.6	+921.6	--	+1089.2
Other	--	--	--	--
Support	--	--	--	--
Subtotal	+132.3	+3273.3	--	+3405.6
Total Changes	+2513.8	+47361.4	+12.0	+49887.2
Current Estimate	3493.6	63309.7	37.6	66840.9

Previous Estimate: December 2014

RDT&E	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	-8.0
Adjustment for current and prior escalation. (Estimating)	+1.5	+2.8
Realignment of Cyber Security Task Force to another RDT&E Project Unit. (Engineering)	-35.3	-66.8
Revised estimates to reflect application of new outyear escalation indices. (Estimating)	+2.7	+5.2
Congressional Reduction associated with AEGIS Advanced Capability Build (ACB) 16. (Estimating)	-15.2	-28.0
Revised estimate to reflect refinement of AEGIS ACB 16/AEGIS ACB 20 development including ACB 20 certification, test, and evaluation. (Estimating)	+178.6	+364.3
<b>RDT&amp;E Subtotal</b>	<b>+132.3</b>	<b>+269.5</b>

Procurement	\$M	
Current Change Explanations	Base Year	Then Year
Revised escalation indices. (Economic)	N/A	+65.4
Adjustment for current and prior escalation. (Estimating)	-17.6	-38.4
Total Quantity variance resulting from an increase of 4 ships from 82 to 86. (Subtotal)	+2967.4	+7511.4
Quantity variance resulting from an increase of 4 ships from 82 to 86. (Quantity)	(+2022.7)	(+5120.0)
Allocation to Schedule resulting from Quantity change. (Schedule) (QR)	(+82.0)	(+207.6)
Allocation to Engineering resulting from Quantity change. (Engineering) (QR)	(+290.3)	(+734.9)
Allocation to Estimating resulting from Quantity change. (Estimating) (QR)	(+572.4)	(+1448.9)
Additional Quantity variance reflects actual funding adjustments associated with the increase of 2 ships in FY 2021 and estimates for 2 additional ships in FY 2022. (Quantity)	-43.3	-110.0
Revised estimates to reflect application of new outyear escalation indices. (Estimating)	-11.2	-27.0
Congressional Reductions to FY 2016 for shipbuilder and SPQ-9B. (Estimating)	-7.5	-17.1
Congressional Plus-Up for an additional ship not in the SAR profile. (Estimating)	+440.1	+1000.0
Adjustment for impact of Congressional Plus-Up without increase to profile. (Estimating)	-40.1	-91.0
Revised estimate to reflect program efficiencies. (Estimating)	-54.2	-130.8
Revised estimate to reflect refinement of FY 2012, FY 2013, and FY 2015 shipbuilding estimates. (Estimating)	+44.2	+105.2
Revised estimate to reflect refinement of outfitting and post delivery estimates. (Estimating)	-4.5	-18.2
<b>Procurement Subtotal</b>	<b>+3273.3</b>	<b>+8249.5</b>

(QR) Quantity Related

## Contracts

### Contract Identification

**Appropriation:** Procurement  
**Contract Name:** DDG 113 Guided Missile Destroyer  
**Contractor:** Huntington Ingalls Industries (HII)  
**Contractor Location:** 1000 Access Road  
 Pascagoula, MS 39567  
**Contract Number:** N00024-11-C-2309/113  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** June 15, 2011  
**Definitization Date:** June 15, 2011

### Contract Price

Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
773.6	852.5	1			1		

### Target Price Change Explanation

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to negotiated changes to the contract.

### Contract Variance

Item	Cost Variance	Schedule Variance
------	---------------	-------------------

Cumulative Variances To Date (12/31/2015)

Previous Cumulative Variances

Net Change

### Cost and Schedule Variance Explanations

The unfavorable net change in the cost variance is due to an increase in manufacturing hours caused by a loss of learning from the production gap and new management in the hull shops. Hull shops are complete and cost performance continues to improve across the rest of the manufacturing pool. Performance has improved across manufacturing and is forecasted to continue until delivery.

The unfavorable net change in the schedule variance is due to hull shops loss of learning and additional re-work associated with coatings. DDG 113 has improved on its schedule overall and plans to deliver DDG 113 by the contract delivery date.

### Notes

DDG 113 (FY 2010 ship) was a sole source annual procurement awarded to HII on June 15, 2011.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for this contract is For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DDG 114 Guided Missile Destroyer  
**Contractor:** Huntington Ingalls Industries (HII)  
**Contractor Location:** 1000 Access Road  
 Pascagoula, MS 39567  
**Contract Number:** N00024-11-C-2307/114  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** September 26, 2011  
**Definitization Date:** September 26, 2011

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
687.6	787.6	1			1		

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to negotiated changes to the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)		
Previous Cumulative Variances		
Net Change		

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to an increase in manufacturing hours caused by a loss of learning from the production gap, new management in the hull shops, and a Performance Measurement Baseline (PMB) with a lower Target Cost than the previous DDG (DDG 113). Hull shops are now 100% complete and cost performance continues to improve across the rest of the manufacturing pool. Despite the poor cost performance, significant learning can be seen from DDG 113. Performance has improved across manufacturing and is forecasted to continue until delivery.

The unfavorable net change in the schedule variance is due to electrical hookup falling behind from pulling class-4 cable. HII plans to deliver DDG 114 one month before the contract delivery date.

**Notes**

The DDG 114 (one of two FY 2011 ships) was a competitively bid annual procurement awarded to Ingalls on September 26, 2011.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for this contract is For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DDG 115 Guided Missile Destroyer  
**Contractor:** General Dynamics (GD), Bath Iron Works (BIW)  
**Contractor Location:** 700 Washington Street  
 Bath, ME 04530  
**Contract Number:** N00024-11-C-2305/115  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** September 26, 2011  
**Definitization Date:** September 26, 2011

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
669.6	749.3	1			1		

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to negotiated changes to the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)		
Previous Cumulative Variances		
Net Change		

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to increased manufacturing hours due to a less experienced staff that was hired for the DDG 51 Program restart and the reassignment of experienced staff to the DDG 1000.

The unfavorable net change in the schedule variance is due to increased manufacturing hours due to a less experienced staff that was hired in response to the DDG 51 Program restart and the reassignment of experienced staff to the DDG 1000. All future contract and planning dates are under Navy review.

**Notes**

The DDG 115 (one of two FY 2011 ships) was a competitively bid annual procurement awarded to BIW on September 26, 2011.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for this contract is For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).



**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DDG 116 Guided Missile Destroyer  
**Contractor:** General Dynamics (GD), Bath Iron Works (BIW)  
**Contractor Location:** 700 Washington Street  
 Bath, ME 04530  
**Contract Number:** N00024-11-C-2305/116  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** February 28, 2012  
**Definitization Date:** September 26, 2011

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
655.0	718.6	1			1		

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to negotiated changes to the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)		
Previous Cumulative Variances		
Net Change		

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to increased manufacturing hours due to a less experienced staff that was hired the DDG 51 Program restart and the reassignment of experienced staff to the DDG 1000.

The favorable net change in the schedule variance is due to a schedule changes and over manning. All future contract and planning dates are under Navy review.

**Notes**

The DDG 116 (FY 2012 ship) was awarded as an option to BIW on September 26, 2011. Option was exercised on February 28, 2012.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for this contract is For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DDG 117 Guided Missile Destroyer  
**Contractor:** Huntington Ingalls Industries (HII)  
**Contractor Location:** 1000 Access Road  
Pascagoula, MS 39567  
**Contract Number:** N00024-13-C-2307  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** June 03, 2013  
**Definitization Date:** June 03, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
626.9	715.3	1			1		

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to negotiated changes to the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)		
Previous Cumulative Variances		
Net Change		

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to an increase in manufacturing hours caused by a loss of learning from the production gap and new management in the hull shops. DDG 117's cost performance continues to be better than DDG 114.

The unfavorable net change in the schedule variance is due to loss of learning causing late products affecting the schedule. DDG 117's planned Launch date is January 17, 2017. DDG 117 is planned to deliver before the contract date.

**Notes**

DDG 117 (one of three FY 2013 ships) is part of the FY 2013 - FY 2017 Multi Year Procurement awarded on June 3, 2013.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for this contract is For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DDG 118 Guided Missile Destroyer  
**Contractor:** General Dynamics (GD), Bath Iron Works (BIW)  
**Contractor Location:** 700 Washington Street  
 Bath, ME 04530  
**Contract Number:** N00024-13-C-2305  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** June 03, 2013  
**Definitization Date:** June 03, 2013

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
650.4	748.3	1			1		

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to negotiated changes to the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)		
Previous Cumulative Variances		
Net Change		

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to delayed products coming out of fabrication shops.

The unfavorable net change in the schedule variance is due to the late start of construction, more than 10 months beyond the Performance Measurement Baseline (PMB) date. The late start of construction is attributed to the impacts of yard-wide workload and manning.

**Notes**

DDG 118 (one of three FY 2013 ships) is part of the FY 2013 - FY 2017 Multi Year Procurement awarded on June 3, 2013.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for this contract is For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DDG 119 Guided Missile Destroyer  
**Contractor:** Huntington Ingalls Industries (HII)  
**Contractor Location:** 1000 Access Road  
Pascagoula, MS  
**Contract Number:** N00024-13-C-2307/119  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** June 03, 2013  
**Definitization Date:** June 03, 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
643.6	706.1	1			1		

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to negotiated changes to the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)		
Previous Cumulative Variances		
Net Change		

**Cost and Schedule Variance Explanations**

The unfavorable net change in the cost variance is due to hull shop performance not meeting planned targets, though trends show improvement from previous hulls under construction.

The favorable net change in the schedule variance is due to material budget time-phasing at this early stage of production. DDG 119's planned Lay Keel date of May 6, 2016 is achievable and DDG 119 is expected to deliver prior to contract delivery date.

**Notes**

DDG 119 (FY 2014 ship) is part of the FY 2013 - 2017 Multiyear Procurement awarded on June 3, 2013.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for this contract is For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).

**Contract Identification**

**Appropriation:** Procurement  
**Contract Name:** DDG 121 Guided Missile Destroyer  
**Contractor:** Huntington Ingalls Industries (HII)  
**Contractor Location:** 1000 Access Road  
 Pascagoula, MS  
**Contract Number:** N00024-13-C-2307/121  
**Contract Type:** Fixed Price Incentive(Firm Target) (FPIF)  
**Award Date:** June 03, 2013  
**Definitization Date:** March 27, 2015

Contract Price							
Initial Contract Price (\$M)			Current Contract Price (\$M)			Estimated Price At Completion (\$M)	
Target	Ceiling	Qty	Target	Ceiling	Qty	Contractor	Program Manager
657.1	749.8	1			1		

**Target Price Change Explanation**

The difference between the Initial Contract Price Target and the Current Contract Price Target is due to negotiated changes to the contract.

Contract Variance		
Item	Cost Variance	Schedule Variance
Cumulative Variances To Date (12/31/2015)		
Previous Cumulative Variances		
Net Change		

**Cost and Schedule Variance Explanations**

The unfavorable cumulative cost variance is due to material budget time-phasing at this early stage of production.

The unfavorable cumulative schedule variance is due to material budget time-phasing at this early stage of production.

**Notes**

DDG 121 (FY 2015 ship) is part of the FY 2013 - 2017 Multiyear Procurement awarded on June 3, 2013.

Current Contract Price (\$M), Estimated Price at Completion (\$M) and Cost and Schedule Variance for this contract is For Official Use Only - Exempt from FOIA release under 5 U.S.C. 552(b)(4).

## Deliveries and Expenditures

Deliveries				
Delivered to Date	Planned to Date	Actual to Date	Total Quantity	Percent Delivered
Development	0	0	0	--
Production	62	62	86	72.09%
Total Program Quantity Delivered	62	62	86	72.09%

Expended and Appropriated (TY \$M)			
Total Acquisition Cost	106846.5	Years Appropriated	37
Expended to Date	65832.6	Percent Years Appropriated	75.51%
Percent Expended	61.61%	Appropriated to Date	83302.5
Total Funding Years	49	Percent Appropriated	77.96%

The above data is current as of February 09, 2016.

## Operating and Support Cost

### Cost Estimate Details

<b>Date of Estimate:</b>	February 03, 2016
<b>Source of Estimate:</b>	POE
<b>Quantity to Sustain:</b>	86
<b>Unit of Measure:</b>	Ship
<b>Service Life per Unit:</b>	40.00 Years
<b>Fiscal Years in Service:</b>	FY 1992 - FY 2068

The total ship quantity is 86 ships. Estimates are based on a service life of 35 years for the 28 Flight I and Flight II ships and 40 years for the 58 Flight IIA and Flight III ships.

### Sustainment Strategy

DDG 51 Hull, Mechanical & Electrical equipment sustainment approach is by use of Multi Ship/Multi Option contracting strategy for repairs and overhauls. The program provides Integrated Logistics Support oversight and guidance to Participating Acquisition Resource Managers that develop various sustainment approaches for combat systems and Communications, Command, Control, Computers, and Intelligence.

Manpower optimization initiatives have been sought to leverage new technology and reduce costs. Reductions have been achieved across all DDG 51 Class Flights. For example, initial Flight IIA Billet Allotment was 333 officers and enlisted personnel. Policies have been implemented and new technologies deployed to reduce billets by 35 to 298, as reflected in the Ship Manpower Document, dated September 2011, for Flight IIA (DDG 103-110).

### Antecedent Information

The Antecedent System is the CG 47 class of ships. The CG 47 class was used since it is the only other ship class with the AEGIS Weapon System installed. The CG 47 estimates were derived using the Naval Visibility And Management of Operating and Support Costs (VAMOSOC) database. CG 47 estimates are based on 27 ships, 22 with a service life of 35 years and five with service life between 18-21 years. The years of data used for the CG 47 class are FY 2010 - FY 2015.

Cost Element	Annual O&S Costs BY1987 \$M	
	DDG 51 Average Annual Cost Per Ship	CG 47 (Antecedent) Average Annual Cost Per Ship
Unit-Level Manpower	12.896	11.480
Unit Operations	7.016	4.747
Maintenance	3.491	11.686
Sustaining Support	0.930	0.945
Continuing System Improvements	2.870	3.248
Indirect Support	5.844	9.778
Other	0.000	0.000
<b>Total</b>	<b>33.047</b>	<b>41.884</b>

Item	Total O&S Cost \$M			
	DDG 51			CG 47 (Antecedent)
	Current Production APB Objective/Threshold		Current Estimate	
Base Year	84945.0	93439.5	109032.0 <sup>1</sup>	34865.8
Then Year	177651.0	N/A	314558.3	N/A

<sup>1</sup> APB O&S Cost Breach

O&S Cost Breach is due to the increase in ship quantity from last approved APB to current estimate (75 ships vice 86 ships) and corrected service life per unit calculations for Flight IIA and Flight III (increase of 5 years from 35 to 40 for Flight IIA/Flight III ships). Change from last APB is a total of 11 ships (2 ships added in 2012 SAR, 3 ships in 2013 SAR, 2 ships in 2014 SAR, and 4 new ships in 2015 SAR).

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

DDG 51

$(\$33.047M \times 28 \text{ ships} \times 35 \text{ years}) + (\$33.047M \times 58 \text{ ships} \times 40 \text{ years}) = \$109,032M$

CG 47

$(\$41.884M \times 22 \text{ ships} \times 35 \text{ years}) + (\$41.884M \times 1 \text{ ship} \times 21 \text{ years}) + (\$41.884M \times 2 \text{ ships} \times 20 \text{ years}) + (\$41.884M \times 1 \text{ ship} \times 19 \text{ years}) + (\$41.884M \times 1 \text{ ship} \times 18 \text{ years}) = \$34,865.8M$

O&S Cost Variance		
Category	BY 1987 \$M	Change Explanations
Prior SAR Total O&S Estimates - Dec 2015 SAR	98162.7	
Programmatic/Planning Factors	5286.4	Addition of four ships
Cost Estimating Methodology	0.0	
Cost Data Update	5582.9	Additional costs from updated data within VAMOSC
Labor Rate	0.0	
Energy Rate	0.0	
Technical Input	0.0	
Other	0.0	
Total Changes	10869.3	
Current Estimate	109032.0	

#### Disposal Estimate Details

**Date of Estimate:** February 03, 2016  
**Source of Estimate:** NAVSEA 05C  
**Disposal/Demilitarization Total Cost (BY 1987 \$M):** Total costs for disposal of all Ship are 452.4

The DDG 51 Class remains in full rate production and continues to be upgraded in new construction. The oldest of the class are approaching mid service life now and many are being upgraded with newer technologies which will inevitably change the cost of inactivation and disposal for the class.