

**UNCLASSIFIED**

Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Navy										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604216N: Multi-Mssn Helicopter Upgrade Dev							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 <sup>#</sup>	FY 2014 Base	FY 2014 OCO <sup>##</sup>	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	1,502.149	16.876	6.866	17.565	-	17.565	10.831	9.992	0.000	0.000	0.000	1,564.279
1707: MH-60R Development	1,502.149	16.876	6.866	17.565	-	17.565	10.831	9.992	0.000	0.000	0.000	1,564.279
MDAP/MAIS Code(s): 191												
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note												
Advanced Precision Kill Weapon System (APKWS) is a new start in FY 2014.												
A. Mission Description and Budget Item Justification												
This Program Element includes funding for the development support for the improvements to current systems for the MH-60R. The MH-60R Multi-Mission Helicopter provides battle group protection and adds significant capability in coastal littorals and regional conflicts. The MH-60R represents a significant avionics improvement to the H-60 series helicopters by enhancing primary mission areas of Undersea Warfare and Surface Warfare. Secondary mission areas include Search and Rescue, Vertical Replenishment, Naval Surface Fire Support, logistics support, personnel transport and Medical Evacuation.												
FY14 budget request funds APKWS development and government engineering, logistics, and testing for APKWS, the gearbox corrosion upgrade and mission avionics.												
B. Program Change Summary (\$ in Millions)				FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total				
Previous President's Budget				17.654	6.866	3.570	-	3.570				
Current President's Budget				16.876	6.866	17.565	-	17.565				
Total Adjustments				-0.778	0.000	13.995	-	13.995				
• Congressional General Reductions				-	-							
• Congressional Directed Reductions				-	-							
• Congressional Rescissions				-	-							
• Congressional Adds				-	-							
• Congressional Directed Transfers				-	-							
• Reprogrammings				-0.268	0.000							
• SBIR/STTR Transfer				-0.510	0.000							
• Program Adjustments				0.000	0.000	10.100	-	10.100				
• Rate/Misc Adjustments				0.000	0.000	3.895	-	3.895				

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<p><b><u>Change Summary Explanation</u></b></p> <p>Technical: The aluminum gearbox development effort has been replaced by upgrading the current magnesium gearbox. Both efforts reduce gearbox corrosion and lower total ownership costs; however, the upgraded magnesium box provides a significant developmental cost savings.</p> <p>Schedule: APKWS testing efforts commence in FY 2014.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: System Development & Demonstration (SDD)					R-1 ITEM NOMENCLATURE PE 0604216N: Multi-Mssn Helicopter Upgrade Dev				PROJECT 1707: MH-60R Development			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 <sup>#</sup>	FY 2014 Base	FY 2014 OCO <sup>##</sup>	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
1707: MH-60R Development	1,502.149	16.876	6.866	17.565	-	17.565	10.831	9.992	0.000	0.000	0.000	1,564.279
Quantity of RDT&E Articles	0	0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
Note												
Advanced Precision Kill Weapon System (APKWS) is a new start in FY 2014.												
A. Mission Description and Budget Item Justification												
The primary mission areas of the MH-60R include Anti-Submarine Warfare and Surface Warfare. Secondary mission areas include Search and Rescue, Vertical Replenishment, Naval Surface Fire Support, logistics support, personnel transport and Medical Evacuation. The MH-60R provides direct support to the Carrier Strike Group and provides Link Communications Relay via VHF/UHF, Link-16, and Common Data Link (CDL) with the incorporation of Interface Design Specification (Ship Air Upgrade-07-000) full data exchange via CDL. Ku-Band will be provided to DDG-1000, CVN-78 Class and LCS platforms. Aircraft Ship Integrated Secure and Traverse reduces operational requirements aboard ships by eliminating the need for hauldown capability and providing automatic movements for aircraft on deck. The MH-60R is Post-Milestone III; executing Pre-Planned Product Improvements (P3I) to Air Vehicle and Mission systems. P3I includes upgrades to communication, navigation, Identification Friend or Foe (IFF), Multi-Spectral Targeting System/Forward Looking Infrared Radar, Automatic Radar Periscope Detection and Discrimination (ARPDD), weapons, data link, safety, maintenance, airframe and mission planning systems. IFF Mode 5 Interrogator capability is being embedded into the APS-147 Radar to provide positive determination of friendly combatants beyond visual range. The current magnesium gearbox is being upgraded to reduce corrosion and improve total ownership cost. APKWS integration will support Surface Warfare and Maritime Interdiction Operations by providing Forward Firing Weapons, which includes Rockets and Anti-swarm weapons, by addressing the Fast Attack Craft/Fast Inshore Attack Craft Threat.												
FY14 budget request funds APKWS development and government engineering, logistics, and testing for APKWS, the gearbox corrosion upgrade and mission avionics.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2012	FY 2013	FY 2014	
Title: Avionics H/W and S/W Development									0.700	3.000	12.500	
									0	0	0	
Description: Supports aircraft integration, problem investigation and resolution, lab management and upgrades, hardware investigations, and repairs in support of the test program. Provides for Integrated Logistics Support and Program Management Board Support and subvendor support. Avionics hardware and software development and integration to include: P3I, ARPDD, IFF Mode 5 interrogator, and APKWS. ARPDD provides an automated periscope detection, classification, and tracking capability to reliably detect periscopes and masts, and reliably discriminate periscopes from clutter and confusion targets. This capability is												

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2012	FY 2013	FY 2014
suitable for air and surface platforms. The current magnesium gearbox is being upgraded to reduce corrosion and improve total ownership cost.				
FY 2012 Accomplishments: Continue Automatic Radar Periscope Detection and Discrimination (ARPDD) System Design Development(SDD), Pre-Planned Product Improvements (P3I) integration testing, Identification Friend or Foe (IFF) Mode 5, and ARPDD integrated testing.				
FY 2013 Plans: Commence gearbox corrosion upgrade.				
FY 2014 Plans: Commence Advanced Precision Kill Weapon System (APKWS) development.				
Title: Engineering and Logistics		4.391	1.031	1.605
Articles:		0	0	0
FY 2012 Accomplishments: Continue to provide engineering specialists, Integrated Logistics Support, Government Furnished Equipment, Support Equipment, Program Management, Contract Support Services, and travel to support P3I integration testing, Ship Air Upgrade 07-000 testing, ARPDD SDD, and conduct ARPDD integrated testing.				
FY 2013 Plans: Continue to provide engineering specialists, Integrated Logistics Support, Government Furnished Equipment, Support Equipment, Program Management, Contract Support Services, and travel to support IFF Mode 5 Inerrogator development, the gearbox corrosion upgrade, and ARPDD testing.				
FY 2014 Plans: Continue to provide engineering specialists, Integrated Logistics Support, Government Furnished Equipment, Support Equipment, Program Management, Contract Support Services, and travel to support mission avionics P3I and gearbox corrosion upgrade. Commence APKWS engineering and logistics efforts.				
Title: Test and Evaluation		11.785	2.835	3.460
Articles:		0	0	0
FY 2012 Accomplishments: Continue to provide MH-60R Mission Avionics testing, Avionics Mission P3I, and ARPDD testing and evaluation efforts. Continue IFF Mode 5 Interrogator testing and evaluation efforts.				
FY 2013 Plans:				

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy										DATE: April 2013		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: System Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604216N: Multi-Mssn Helicopter Upgrade Dev				PROJECT 1707: MH-60R Development				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2012	FY 2013	FY 2014
Continue to provide ARPDD MH-60R Mission Avionics testing and Identification, Friend or Foe Mode 5 Interrogator testing and evaluation efforts.												
FY 2014 Plans: Continue to provide MH-60R Mission testing. Commence Advanced Precision Kill Weapon System and gearbox corrosion upgrade test and evaluation efforts.												
Accomplishments/Planned Programs Subtotals										16.876	6.866	17.565
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost	
• APN-1 BLI:018200: MH-60R	948.138	842.762	831.071		831.071	979.280	963.979	81.342	0.000	0.000	11,455.043	
• APN-6 BLI:060510: MH-60R spares	28.583	0.353	0.540		0.540	0.680	0.697	0.000	0.000	0.000	298.726	
• APN-5 BLI:053000: SH60 Series	34.403	46.848	66.653		66.653	60.710	59.573	71.779	73.054	Continuing	Continuing	
Remarks												
D. Acquisition Strategy												
Initial Operating Capability (IOC) was achieved in Dec 05 and the Milestone III, Full Rate Production decision occurred in March 2006. As the SH-60B and SH-60F reach the end of their service life, the MH-60R serves as the replacement weapon system. The MH-60R weapon system began fielding in FY2006. The mission systems include Common Cockpit, Airborne Low Frequency Sonar, sonobuoy launcher, Commercial-off-the-Shelf Acoustics Processor, Electronic Support Measure, Mission planning, Multi-Spectral Targeting System / Forward Looking Infrared Radar system, Multi Mission Radar, Automatic Radar Periscope Detection and Discrimination (ARPDD), Common Data Link Hawklink, Integrated Self Defense and weapons capability. Pre-Planned Product Improvement upgrades will be integrated, tested, and fielded to ensure increased capabilities are provided to the fleet user.												
E. Performance Metrics												
Successfully achieve IOC for the ARPDD upgrade to the MH-60R Multi-Mode Radar. Improve Electronic Support Measure (ESM)Data Load performance prior to next operational deployment and determine if any long term ESM software/hardware fixes are required. Determine solutions to the Automatic Video Tracking lock and Eye-safe Laser Range Finder labeling prior to next operational deployment.												

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy** **DATE:** April 2013

<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: Research, Development, Test & Evaluation, Navy BA 5: System Development & Demonstration (SDD)				<b>R-1 ITEM NOMENCLATURE</b> PE 0604216N: Multi-Mssn Helicopter Upgrade Dev				<b>PROJECT</b> 1707: MH-60R Development			
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Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev, Airframe (SAC)	SS/FFP	Sikorsky:Stratford, CT	0.000	0.000		2.400	Jun 2013	0.000		-		0.000	0.000	2.400	2.400
Primary Hdw Dev, Avionics (LMSI)	SS/CPFF	Lockheed Martin:Owego, NY	871.890	0.700	Jan 2012	0.600	Apr 2013	0.000		-		0.000	0.000	873.190	873.190
Primary Hdw/SW Dev, Advanced Precision Kill Weapon System (APKWS)	TBD	Lockheed Martin:Owego, NY	0.000	0.000		0.000		5.700	Jun 2014	-		5.700	2.000	7.700	7.700
Primary Hdw Dev. APKWS	TBD	Sikorsky:Stratford, CT	0.000	0.000		0.000		6.800	Jun 2014	-		6.800	4.650	11.450	11.450
Primary Hdw Dev, APKWS	WR	NSWC Crane:Crane, IN	0.000	0.000		0.000		0.000		-		0.000	2.500	2.500	
Prior year Product Dev Cost no longer funded in the FYDP	Various	Various:Various	280.389	0.000		0.000		0.000		-		0.000	0.000	280.389	
<b>Subtotal</b>			1,152.279	0.700		3.000		12.500		0.000		12.500	9.150	1,177.629	

**Remarks**

The aluminum gearbox development effort originally planned to start in FY 2012 has been delayed until FY 2013 and replaced by upgrading the current magnesium gearbox. Both efforts reduce gearbox corrosion and lower total ownership costs; however, the upgraded magnesium box provides a significant developmental cost savings.

Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	NAWC AD:Patuxent River, MD	5.582	4.291	Nov 2011	0.975	Nov 2012	0.809	Nov 2013	-		0.809	1.793	13.450	
Government Eng Spt	WR	NAWC WD:China Lake	0.000	0.000		0.000		0.100	Nov 2013	-		0.100	0.150	0.250	
Government Eng Spt	Various	Various:Various	0.000	0.000		0.000		0.650	Nov 2013	-		0.650	0.600	1.250	
Prior year support cost no longer funded in the FYDP	Various	Various:Various	146.088	0.000		0.000		0.000		-		0.000	0.000	146.088	
<b>Subtotal</b>			151.670	4.291		0.975		1.559		0.000		1.559	2.543	161.038	

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: PB 2014 Navy</b>												<b>DATE:</b> April 2013			
<b>APPROPRIATION/BUDGET ACTIVITY</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy</i> BA 5: <i>System Development &amp; Demonstration (SDD)</i>						<b>R-1 ITEM NOMENCLATURE</b> PE 0604216N: <i>Multi-Mssn Helicopter Upgrade Dev</i>						<b>PROJECT</b> 1707: <i>MH-60R Development</i>			
<b>Test and Evaluation (\$ in Millions)</b>				<b>FY 2012</b>		<b>FY 2013</b>		<b>FY 2014 Base</b>		<b>FY 2014 OCO</b>		<b>FY 2014 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>All Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Developmental Test & Evaluation	WR	NAWC AD:Patuxent River, MD	135.503	9.831	Nov 2011	2.280	Nov 2012	2.263	Nov 2013	-		2.263	5.400	155.277	
Operation Test & Evaluation	WR	COMOPTEVFOR:Norfolk, VA	12.132	1.954	Nov 2011	0.555	Nov 2012	1.197	Nov 2013	-		1.197	3.650	19.488	
Prior year T&E costs no longer funded in the FYDP	Various	various:various	11.688	0.000		0.000		0.000		-		0.000	0.000	11.688	
<b>Subtotal</b>			159.323	11.785		2.835		3.460		0.000		3.460	9.050	186.453	
<b>Remarks</b> FY 2012 and FY 2013 funding increased for Automatic Radar Periscope Detection and Discrimination, mission avionics and Identification, Friend or Foe Mode 5 interrogator testing.															
<b>Management Services (\$ in Millions)</b>				<b>FY 2012</b>		<b>FY 2013</b>		<b>FY 2014 Base</b>		<b>FY 2014 OCO</b>		<b>FY 2014 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>All Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Travel	WR	NAWC AD:Patuxent River, MD	4.621	0.100	Nov 2011	0.056	Nov 2012	0.046	Nov 2013	-		0.046	0.080	4.903	
Prior year Mangement cost no longer funded in the FYDP	Various	Various:Various	34.256	0.000		0.000		0.000		-		0.000	0.000	34.256	
<b>Subtotal</b>			38.877	0.100		0.056		0.046		0.000		0.046	0.080	39.159	
			<b>All Prior Years</b>	<b>FY 2012</b>		<b>FY 2013</b>		<b>FY 2014 Base</b>		<b>FY 2014 OCO</b>		<b>FY 2014 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			1,502.149	16.876		6.866		17.565		0.000		17.565	20.823	1,564.279	
<b>Remarks</b>															

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Navy

DATE: April 2013

## APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy  
BA 5: System Development & Demonstration (SDD)

## R-1 ITEM NOMENCLATURE

PE 0604216N: Multi-Mssn Helicopter  
Upgrade Dev

## PROJECT

1707: MH-60R Development

PE 0604216N: Multi-Mission Helicopter Upgrade Development	FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017				FY 2018			
	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q	1Q	2Q	3Q	4Q
<b>Acquisition Milestones</b>																												
Milestones								ARPDD IOC ▲																				
<b>Systems Development</b>																												
HW/SW ARPDD	ARPDD IT																											
HW/SW Ship Air Upgrade ((SAU)-07-000)	SAU Test																											
Gearbox Corrosion Improvement								Gearbox Corrosion Improvement																				
HW/SW Advanced Precision Kill Weapon System (APKWS)													APKWS integration development															
ARPDD				ARPDD OT																								
<b>Production Milestones</b>																												
ARPDD System Development & Demonstration (SDD) Contract	ARPDD SDD																											
ARPDD																												
Deliveries							ARPDD Production Incorp ▼																					
<b>Test and Evaluation</b>																												
													APKWS DT															
																	APKWS OT											

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Navy

DATE: April 2013

## APPROPRIATION/BUDGET ACTIVITY

1319: Research, Development, Test & Evaluation, Navy  
BA 5: System Development & Demonstration (SDD)

## R-1 ITEM NOMENCLATURE

PE 0604216N: Multi-Mssn Helicopter  
Upgrade Dev

## PROJECT

1707: MH-60R Development

## Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>PE 0604216N: Multi-Mission Helicopter Upgrade Development</b>				
Acquisition Milestones: Milestones: Automatic Radar Periscope Detection and Discrimination (ARPDD) IOC	4	2013	4	2013
Systems Development: HW/SW ARPDD: ARPDD Integration Test (IT)	1	2012	2	2012
Systems Development: HW/SW Ship Air Upgrade ((SAU)-07-000): SAU-07-000 Test	1	2012	1	2012
Systems Development: Gearbox Corrosion Improvement: Gearbox Corrosion Improvement	3	2013	2	2014
Systems Development: HW/SW Advanced Precision Kill Weapon System (APKWS): APKWS integration development	3	2014	4	2016
Systems Development: ARPDD: ARPDD OT	4	2012	1	2013
Production Milestones: ARPDD System Development & Demonstration (SDD) Contract: ARPDD SDD contract	1	2012	1	2013
Production Milestones: Deliveries: ARPDD Production Incorporation	2	2013	2	2013
Test and Evaluation: Test & Evaluation: APKWS DT	3	2014	2	2016
Test and Evaluation: Test & Evaluation: APKWS OT	2	2016	4	2016