

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5					R-1 ITEM NOMENCLATURE 0604216N, MULTI-MISSION HELICOPTER UPGRADE			
COST (\$ in Millions)	FY 2008	FY 2009	FY 2010					
Total PE Cost	74.205	69.839	81.953					
1707 MMH UPGRADE DEV RDT&E	74.205	69.839	81.953					
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:								
<p>The MH-60R primary mission areas include Anti-Submarine Warfare (ASW) and Surface Warfare (SUW). Secondary mission areas include Search and Rescue (SAR), Vertical Replenishment (VERTREP), Naval Surface Fire Support (NSFS), logistics support, personnel transport and Medical Evacuation (MEDEVAC). The MH-60R provides direct support to the Carrier Strike Group and provides Link Communications Relay (COMREL) via VHF/UHF, Link-16, and Common Data Link (CDL) with the incorporation of Interface Design Specification (IDS) (SAU-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 (ASIST) reduces operational requirements aboard ships by eliminating need for hauldown capability and providing automatic movements and aircraft on deck. IFF Mode 5 Interrogator capability is being embedded in the APS-147 radar to provide positive determination of friendly combatants beyond visual range. The MH-60R is Post-Milestone III and 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 (MTS)/Forward Looking Infrared Radar (FLIR) to include 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 in the APS-147 Radar to provide positive determination of friendly combatants beyond visual range. ARPDD funding prior to FY2008 was in PE 0604261N/4017.</p>								

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<p>B. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Funding:</th> <th style="text-align: right;">FY08</th> <th style="text-align: right;">FY09</th> <th style="text-align: right;">FY10</th> </tr> </thead> <tbody> <tr> <td>FY09 President's Budget:</td> <td style="text-align: right;">76.482</td> <td style="text-align: right;">70.329</td> <td style="text-align: right;">45.649</td> </tr> <tr> <td>FY10 President's Budget:</td> <td style="text-align: right;">74.205</td> <td style="text-align: right;">69.839</td> <td style="text-align: right;">81.953</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-2.277</td> <td style="text-align: right; border-top: 1px solid black;">-0.490</td> <td style="text-align: right; border-top: 1px solid black;">36.304</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td style="padding-left: 20px;">Congressional Rescissions</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Congressional Adjustments</td> <td></td> <td style="text-align: right;">-0.300</td> <td></td> </tr> <tr> <td style="padding-left: 20px;">SBIR/STTR/FTT Assessments</td> <td style="text-align: right;">-0.121</td> <td></td> <td></td> </tr> <tr> <td style="padding-left: 20px;">Program Adjustments</td> <td style="text-align: right;">-2.156</td> <td></td> <td style="text-align: right;">36.313</td> </tr> <tr> <td style="padding-left: 20px;">Rate/Misc Adjustments</td> <td></td> <td style="text-align: right;">-0.190</td> <td style="text-align: right;">-0.009</td> </tr> <tr> <td style="padding-left: 20px;">Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-2.277</td> <td style="text-align: right; border-top: 1px solid black;">-0.490</td> <td style="text-align: right; border-top: 1px solid black;">36.304</td> </tr> </tbody> </table> <p style="margin-top: 10px;">Schedule:</p> <ul style="list-style-type: none"> Schedule added: ARPDD SDD Contract 3Q/08. Schedule added: ARPDD SDD 3Q/08 and beyond. Schedule change: Common Data Link (CDL) Integrated Test moved from 3Q/08-3Q/09 to 4Q/08-2Q/09 due to delayed NRE effort. Schedule added: ARPDD Preliminary Design Review (PDR) 1Q/09. Schedule change: Production Deliveries for Lots V-IX moved from 3Q/08 to 1Q/09 due to Lot IV moving to 4Q/08. Schedule added: ARPDD Critical Design Review (CDR) 3Q/09. Schedule added: SAU-07-000 Test begins 3Q/10 <p style="margin-top: 10px;">Technical: Not Applicable</p>			Funding:	FY08	FY09	FY10	FY09 President's Budget:	76.482	70.329	45.649	FY10 President's Budget:	74.205	69.839	81.953	Total Adjustments	-2.277	-0.490	36.304	Summary of Adjustments				Congressional Rescissions				Congressional Adjustments		-0.300		SBIR/STTR/FTT Assessments	-0.121			Program Adjustments	-2.156		36.313	Rate/Misc Adjustments		-0.190	-0.009	Subtotal	-2.277	-0.490	36.304
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604216N, MULTI-MISSION HELICOPTER UPGRADE			PROJECT NUMBER AND NAME 1707, MMH UPGRADE DEV RDT&E		
COST (\$ in Millions)	FY 2008	FY 2009	FY 2010				
1707 MMH UPGRADE DEV RDT&E	74.205	69.839	81.953				
RDT&E Articles Qty							
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>The MH-60R primary mission areas include Anti-Submarine Warfare (ASW) and Surface Warfare (SUW). Secondary mission areas include Search and Rescue (SAR), Vertical Replenishment (VERTREP), Naval Surface Fire Support (NSFS), logistics support, personnel transport and Medical Evacuation (MEDEVAC). The MH-60R provides direct support to the Carrier Strike Group and provides Link Communications Relay (COMREL) via VHF/UHF, Link-16, and Common Data Link (CDL) with the incorporation of Interface Design Specification (IDS) (SAU-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 (ASIST) reduces operational requirements aboard ships by eliminating need for hauldown capability and providing automatic movements and aircraft on deck. The MH-60R is Post-Milestone III and 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 (MTS)/Forward Looking Infrared Radar (FLIR) to include 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 in the APS-147 Radar to provide positive determination of friendly combatants beyond visual range. ARPDD funding prior to FY2008 was in PE 0604261N/4017.</p>							

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B. Accomplishments/Planned Program				
Avionics H/W and S/W Development	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	40.462	42.173	45.261	
RDT&E Articles Quantity				
<p>Supports aircraft integration, problem investigation and resolution, lab management and upgrades, hardware investigations, and repairs in support of the test program. Provides for ILS support and Program Management Board Support and subvendor support. Avionics hardware and software development and integration to include: P31/Link-16, Radar (ARPDD), IFF Mode 5 interrogator, Communications, GPS, Acoustics and post processing. Mission planning, MTS/FLIR, Weapons, Stores and self defense, Data fusion, and Logistics products including Integrated Electronic Technical Manuals (IETMS). ARPDD provides a fully 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 suitable for air and surface platforms</p>				
Engineering, Integration, and Testing	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.000	1.600		
RDT&E Articles Quantity				
<p>Airframe test articles, engineering support, GFE, and risk management board support. Integration and testing of P31. ASIST integration to support aircraft movement aboard ships.</p>				
Common Data Link	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	8.240	5.070	14.372	
RDT&E Articles Quantity				
<p>Avionics P31 Upgrade for the Common Data Link (CDL) and reversability between C-Band and KuBand software design interface (SAU-07-000) provides connectivity and full data exchange with DDG-1000, LCS and CVN-78 Class.</p>				

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B. Accomplishments/Planned Program (Cont.)															
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<div style="border: 1px solid black; min-height: 60px; padding: 5px;"> <p>Engineering specialists, integrated logistics support, Government Furnished Equipment (GFE), Systems Engineering, Program Management, Contractor Support Services, Travel as required to support the MH-60R development program and test activities.</p> </div>															
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; padding: 2px;">Avionics Testing and Evaluation</th> <th style="text-align: center; padding: 2px;">FY 08</th> <th style="text-align: center; padding: 2px;">FY 09</th> <th style="text-align: center; padding: 2px;">FY 10</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center; padding: 2px;">15.033</td> <td style="text-align: center; padding: 2px;">8.948</td> <td style="text-align: center; padding: 2px;">8.648</td> </tr> <tr> <td style="padding: 2px;">RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>				Avionics Testing and Evaluation	FY 08	FY 09	FY 10	Accomplishments/Effort/Subtotal Cost	15.033	8.948	8.648	RDT&E Articles Quantity			
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<div style="border: 1px solid black; min-height: 60px; padding: 5px;"> <p>MH-60R Mission Avionics testing, Avionics Mission P3I, ARPDD, and IFF Mode 5 Interrogator testing and evaluation efforts.</p> </div>															

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APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-5	0604216N, MULTI-MISSION HELICOPTER UPGRADE	1707, MMH UPGRADE DEV RDT&E	
C. OTHER PROGRAM FUNDING SUMMARY:			
<u>Line Item No. & Name</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
APN-1 BLI: 018200	1,069.637	1,190.243	943.285
APN-6 BLI: 060510	9.135		1.841
APN-5 OSIPs 001-06, & 009-09	22.395	25.413	34.260
Related RDT&E			
0604507N Enhanced Modular Signal Processor			
0604212N Other Helo Development			
0604261N Acoustics Search Sensors			
D. ACQUISITION STRATEGY:			
<p>Initial Operating Capability (IOC) was achieved in Dec 05 and the MSIII, Full Rate Production (FRP) 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, ALFS, sonobuoy launcher, COTS AP, ESM, MTS/FLIR system, MMR, ARPDD, CDL Hawklink, ISD and weapons capability. Pre-Planned Product Improvement (P3I) upgrades will be integrated, tested, and fielded to ensure increased capabilities are provided to the Fleet User.</p>			

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Exhibit R-3 Cost Analysis (page 1)							DATE: May 2009						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RDT&E, N / BA-5			0604216N, MULTI-MISSION HELICOPTER UPGRADE			1707, MMH UPGRADE DEV RDT&E							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date						
PRODUCT DEVELOPMENT													
GFE	VARIOUS	VARIOUS	4.688										
Primary Hdw Dev, Airframe (SAC)	SS-CPAF	SIKORSKY, STRATFORD CT	79.577	1.600	03/09								
Primary Hdw Dev, Avionics (LMSI)	SS-CPFF	LOCKHEED MARTIN, OWEGO,	725.057	42.173	11/08	45.261	Various						
Primary Hdw Dev, Avionics CDL	SS-CPAF	HARRIS, MELBOURNE, FL	43.374	2.070	11/08								
Primary Hdw Dev, Avionics SAU	SS-CPIF	LOCKHEED MARTIN, OWEGO		3.000	02/09	2.000	02/10						
Primary Hdw Dev, Avionics CDL	TBD	TBD				12.372	03/10						
All Product Dev Cost from FY93-FY08	VARIOUS	VARIOUS	149.181										
Subtotal Product Development			1,001.877	48.843		59.633							
Remarks:													
SUPPORT													
Government Eng Technical Ser	WX	NAWCAD, PAX RIVER MD	2.832	3.022	11/08	5.285	11/09						
Government Eng Technical Ser	WX	NAWCWD, CHINA LAKE CA	4.716	5.097	11/08	3.745	11/09						
Government Eng Technical Ser	WX	PACIFIC MISSILE RANGE,	0.063	1.000	11/08	1.487	11/09						
Government Eng Technical Ser	VARIOUS	VARIOUS	0.839	1.369	11/08	1.545	11/09						
All Product Dev Cost from FY93-FY08	VARIOUS	VARIOUS	123.294										
Subtotal Support			131.744	10.488		12.062							
Remarks:													

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Exhibit R-3 Cost Analysis (page 2)							DATE: May 2009					
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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
TEST & EVALUATION												
Developmental Test & Evaluation	WX	NAWCAD, PAX RIVER MD	114.358	7.448	11/08	8.398	11/09					
Operational Test & Evaluation	WX	COMOPTEVFOR	9.522	1.500	11/08	0.250	11/09					
All T&E Cost from FY93-FY08	VARIOUS	VARIOUS	11.688									
Subtotal T&E			135.568	8.948		8.648						
Remarks:												
MANAGEMENT												
Contractor Eng Support-ETS (NON-FFRDC)	VARIOUS	VARIOUS	24.266	0.910	11/08	0.910	11/09					
Travel	WX	NAWCAD, PAX RIVER MD	3.398	0.650	11/08	0.700	11/09					
All Management Cost from FY93-FY08	VARIOUS	VARIOUS	9.667									
Subtotal Management			37.331	1.560		1.610						
Remarks:												
Total Cost			1,306.520	69.839		81.953						
Remarks:												

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EXHIBIT R4, Schedule Profile																								DATE: May 2009												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5								PROGRAM ELEMENT NUMBER AND NAME 0604216N, MULTI-MISSION HELICOPTER UPGRADE								PROJECT NUMBER AND NAME 1707, MMH UPGRADE DEV RDT&E																				
Fiscal Year	2008				2009				2010				2011				2012				2013				2014				2015							
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Acquisition Milestones																																				
ARPDD Contract and Engineering Milestones																																				

