Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy

Date: March 2019

Appropriation/Budget Activity

R-1 Program Element (Number/Name)

1319: Research, Development, Test & Evaluation, Navy I BA 5: System

PE 0604216N / Multi-Mssn Helicopter Upgrade Dev

Development & Demonstration (SDD)

COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	1,577.792	5.313	16.611	19.196	-	19.196	21.244	21.415	21.988	21.987	Continuing	Continuing
1707: MH-60 Development	1,577.792	5.313	16.611	19.196	-	19.196	21.244	21.415	21.988	21.987	Continuing	Continuing

Program MDAP/MAIS Code:

Project MDAP/MAIS Code(s): 191

A. Mission Description and Budget Item Justification

This Program Element includes funding for the development and improvement of MH-60R/S systems. MH-60R/S Multi-Mission helicopters provide both carrier and own-ship defense, and greatly expand the capability of surface platforms through employment of onboard sensors and weapons systems. The MH-60R/S fleet is nearly 600 aircraft strong and serves as the world's premier multi-mission helicopter force. The MH-60R provides warfighting effectiveness in the primary mission areas of Anti-Submarine Warfare, Electronic Warfare, and Surface Warfare, including Fast Attack Craft/Fast In-shore Attack Craft (FAC/FIAC) threat response. Secondary MH-60R mission areas include search and rescue, vertical replenishment, naval surface fire support, logistics support, naval special warfare, strike warfare, personnel transport, and medical evacuation. The basic MH-60S conducts search and rescue, vertical replenishment, and logistics operations. Armed Helicopter and Airborne Mine Countermeasures (AMCM) have been added as primary mission areas for the MH-60S as block upgrades to the platform. Armed Helicopter upgrades provide Surface Warfare and Maritime Interdiction Operations capabilities to address FAC/FIAC threat, as well as Special Warfare Support and Combat Search and Rescue. AMCM provides the Littoral Combat Ship with the airborne portion of the Mine Countermeasures Mission Package. MH-60S secondary roles include torpedo and drone recovery, noncombatant evacuation operations, and SEAL team and Explosive Ordnance Disposal support.

B. Program Change Summary (\$ in Millions)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget	5.371	16.611	21.402	-	21.402
Current President's Budget	5.313	16.611	19.196	-	19.196
Total Adjustments	-0.058	0.000	-2.206	-	-2.206
 Congressional General Reductions 	-	-			
 Congressional Directed Reductions 	-	-			
 Congressional Rescissions 	-	-			
 Congressional Adds 	-	-			
 Congressional Directed Transfers 	-	-			
 Reprogrammings 	-	-			
SBIR/STTR Transfer	-0.058	0.000			
 Program Adjustments 	0.000	0.000	-2.151	=	-2.151
 Rate/Misc Adjustments 	0.000	0.000	-0.055	-	-0.055

Change Summary Explanation

Navy

The FY 2020 funding request was reduced by \$1.061 million to account for the availability of prior year execution balances.

PE 0604216N: Multi-Mssn Helicopter Upgrade Dev

Page 1 of 12

•	SNOLAGGII ILD	
Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy I BA 5: System Development & Demonstration (SDD)	R-1 Program Element (Number/Name) PE 0604216N / Multi-Mssn Helicopter Upgrade Dev	
FY 2020 funding was reduced due to refined cost estimate and sche	dule for the Network Enabled Weapons effort.	
Schedule: Added Minotaur development and ALFS and ESM obsole common ASE architecture and System Configuration (SC) 18. SC20 to 4QFY2021 due to SC18 completion and changes to the scope of	start date changed from 1QFY2019 to 3QFY2019 and er	
Technical: Not Applicable		

PE 0604216N: *Multi-Mssn Helicopter Upgrade Dev* Navy

UNCLASSIFIED Page 2 of 12

Exhibit R-2A, RDT&E Project Ju	stification:	PB 2020 N	lavy							Date: Marc	ch 2019	
Appropriation/Budget Activity 1319 / 5		R-1 Progra PE 060421 Upgrade D	6N / Multi-N	•	lumber/Name) -60 Development							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
1707: MH-60 Development	1,577.792	5.313	16.611	19.196	-	19.196	21.244	21.415	21.988	21.987	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-					

Project MDAP/MAIS Code: 191

A. Mission Description and Budget Item Justification

The MH-60R/S program pursues upgrades and enhancements that pace the rapidly evolving threat and improve safety-of-flight for its pilots and aircrew. These efforts include improvements to existing sensors, avionics, communications, and navigation systems to include Identification Friend or Foe (IFF), the Multi-spectral Targeting System (MTS), the MH-60R radar equipped with Automatic Radar Periscope Detection and Discrimination (ARPDD), integration of the Joint Air-to-Ground Missile (obsolescence follow-on for Hellfire), the Sensor Operator Console, and MH-60R data-fusion capability. The program is also making incremental improvements to various airframe, flight safety, and mission-planning systems. Very High Frequency Omni Ranging (VOR)/Instrument Landing System (ILS), on schedule be installed on MH-60R aircraft commencing in FY 2019, adds precision approach and airways-navigation capability to the MH-60R, and it greatly expands crews' ability to navigate in adverse weather. MH-60R is the lead platform for integration of the Multifunctional Information Distribution System (MIDS) / Low Volume Terminal (LVT) Block Upgrade 2 (an FAA and NSA mandate). MH-60R/S research and development initiatives include the evaluation and validation of the platform's cybersecurity posture. The MH-60R/S program is pursuing capability studies on open hardware and software architectures, avionics, mission systems, and air-vehicle kinematic performance. The program is also pursuing efforts in support of the MH-60 Mid-Life Upgrade.

FY 2020 budget request funds the following:

- 1. System Configuration 20 capability increases, including fuel management and safety, Advanced Offboard Electronic Warfare, and Multifunctional Information Distribution System Block Upgrade 2.
- 2. Development of critical aircraft survivability equipment upgrades, including the platform design for the integration of Distributed Aperture Infrared Counter Measures (DAIRCM). DAIRCM substantially improves the survivability of MH-60 aircraft, significantly enhancing the defense of high value units and enabling operations in high threat scenarios.
- 3. Development of Network Enabled Weapons capability, including the integration of J11 and J12.6 series messages within the MH-60 Link-16 architecture. These messages enable over-the-horizon targeting, enhance target sorting, and serve as a force multiplier in network enabled weapon engagements.
- 4. Initial requirements and architecture development for the integration of Minotaur mission management software. Minotaur is designed to increase track accuracy and provide cuing and improved displays to decrease operator workload.
- 5. Diminishing Manufacturing Sources and Material Shortages (DMSMS) engineering, replacement part development, and qualification testing for known and forecasted Airborne Low Frequency Sonar (ALFS) obsolete parts. These DMSMS solutions will provide considerations for cost reduction and improvement in reliability and performance. The obsolescence solutions will align with the Future Capabilities Roadmap to minimize duplication and align the Mid-Life Upgrade configuration changes with the needed solutions.
- 6. Developmental activities including capability studies, interoperability studies, and open hardware and software architectures definition in support of MH-60 Mid-Life Upgrade.

PE 0604216N: Multi-Mssn Helicopter Upgrade Dev UNCLASSIFIED

Navy Page 3 of 12 R-1 Line #101

UNC	CLASSIFIED					
Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy				Date: Marc	h 2019	
1319 / 5	R-1 Program Element (Number/ PE 0604216N <i>I Multi-Mssn Helico</i> Upgrade Dev		Project (No. 1707 / MH-	umber/Nan 60 Develop		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in	Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Title: Avionics H/W and S/W Development	Articles:	2.286 -	9.010 -	16.339 -	0.000	16.339 -
Description: Development efforts support aircraft integration, problem investigating upgrades, and repairs in support of the test program. Avionics hardware and so integration to include: Pre-planned Product Improvements, new system configuration VOR/ILS, solutions to address the FAC/FIAC threat, development of Network Entircludes the integration of J11 and J12.6 series messages into the MH-60R/S Liu of critical Aircraft Survivability Equipment (ASE) upgrades, cyber evaluations/valid Minotaur integration, and system configuration enhancements.	ftware development and ations, radar enhancements, nabled Weapons capability which nk-16 architecture, development					
FY 2019 Plans: Complete VOR/ILS and commence activities for System Configuration 20 develor improvements for fuel management and safety, Advanced Offboard Electronic William Information Distribution System Block Upgrade 2. Commence activities and away of J11 and J12.6 series messages for network enabled weapon support, ASE upvalidation activities and radar enhancements.	Varfare, and Multifunctional rd contract for the development					
FY 2020 Base Plans: Continue System Configuration 20 development which includes capability improvand safety, Advanced Offboard Electronic Warfare, and Multifunctional Information Upgrade 2. Continue development of J11 and J12.6 series messages and operate Enabled Messages. Commence activities for System Configuration 2X development of Distributed Aperture Infrared Countermeasures system to improve survivability management suite. Commence development efforts and define requirements for considering reliability improvement, loading factors, weight and cost reduction, comprovements, etc. Continue cyber evaluation and radar development efforts.	on Distribution System Block tor controls for Network nent which includes integration y, and Minotaur mission ALFS DMSMS solutions					
FY 2020 OCO Plans: N/A						
FY 2019 to FY 2020 Increase/Decrease Statement: Increase of \$7.329M from FY 2019 to FY 2020 for System Configuration 2X, Mindevelopment, and ALFS DMSMS solutions.	notaur development, radar					
Title: Engineering and Logistics		1.792	2.650	2.485	0.000	2.485

PE 0604216N: Multi-Mssn Helicopter Upgrade Dev Navy

UNCLASSIFIED Page 4 of 12

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy				Date: Marc	ch 2019		
1319 / 5	-1 Program Element (Number/№ E 0604216N <i>I Multi-Mssn Helicoµ</i> ograde Dev		Project (Number/Name) 1707 I MH-60 Development				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in E	ach)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	
	Articles:	-	-	-	-	-	
Continue to provide MH-60 engineering support, integrated logistics support, government, program management, contract support services, and travel to capability studies and initial open architectures, avionics, mission system, and air schedule planning estimates. This includes performing high-time aircraft teardowns and fatigue life research. Contract support services, and travel to support System Configuration 20, ASE Condevelopment and contract preparation, Network Enabled Weapons contract prepare enhancement efforts.	o support Mid-Life Upgrade vehicle development cost and ommence engineering support, program management, mmon Architecture						
FY 2020 Base Plans: Continue to provide MH-60 engineering support, integrated logistics support, government, program management, contract support services, and travel to 20, ASE Common Architecture development, Network Enabled Weapons integrated Mid-Life Upgrade capability studies and initial open architectures, avionics, mission development cost and schedule planning estimates. Commence engineering supsupport, government furnished equipment, support equipment, program manager and travel to support System Configuration 2X, Distributed Aperture Infrared Coucontract preparation, and Minotaur integration contract preparation and award. Cosupport to develop and define requirements for ALFS obsolescence solutions that	o support System Configuration on, radar development, in system, and air vehicle port, integrated logistics ment, contract support services, intermeasures development and immence DMSMS engineering						
FY 2020 OCO Plans: N/A							
FY 2019 to FY 2020 Increase/Decrease Statement: Decrease of \$.165M from FY 2019 to FY 2020 due to the completion of System C	onfiguration 18.						
Title: Test and Evaluation	Articles:	1.235 -	4.951 -	0.372	0.000	0.37	
FY 2019 Plans:							

PE 0604216N: *Multi-Mssn Helicopter Upgrade Dev* Navy

UNCLASSIFIED
Page 5 of 12

Exhibit R-2A, RDT&E Project Justification: PB 2020 Navy			Date: March 2019
1		-,	umber/Name) -60 Development

B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Complete System Configuration 18 and MH-60R VOR/ILS test and evaluation efforts. Commence System Configuration 20 test support.					
FY 2020 Base Plans: Continue System Configuration 20 test support. Commence System Configuration 2X.					
FY 2020 OCO Plans: N/A					
FY 2019 to FY 2020 Increase/Decrease Statement: Decrease of \$4.579M from FY 2019 to FY 2020 due to System Configuration 20 and 2X cost sharing agreements with International partners.					
Accomplishments/Planned Programs Subtotals	5.313	16.611	19.196	0.000	19.196

C. Other Program Funding Summary (\$ in Millions)

			FY 2020	FY 2020	FY 2020					Cost To	
<u>Line Item</u>	FY 2018	FY 2019	Base	OCO	<u>Total</u>	FY 2021	FY 2022	FY 2023	FY 2024	Complete	Total Cost
 APN-5/0530: SH60 Series 	99.111	130.720	149.797	-	149.797	135.261	112.546	103.493	104.098	Continuing	Continuing

Remarks

D. Acquisition Strategy

MH-60 research and development efforts will be developed using cost plus incentive fee type contracts.

E. Performance Metrics

Successfully support developmental and operation test activities to qualify aircraft modifications/upgrades.

PE 0604216N: *Multi-Mssn Helicopter Upgrade Dev* Navy

UNCLASSIFIED
Page 6 of 12

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy

Appropriation/Budget Activity

1319 / 5

R-1 Program Element (Number/Name)
PE 0604216N / Multi-Mssn Helicopter

Upgrade Dev

Project (Number/Name)

1707 I MH-60 Development

Date: March 2019

Product Developmen	t (\$ in M	illions)		FY 2	2018	FY 2	2019	FY 2 Ba	2020 ise		2020 CO	FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To	Total Cost	Target Value of Contract
Primary SW Dev. Fast Attack Craft/Fast In-Shore Attack Craft (FAC/FIAC) demo	SS/BOA	Lockheed Martin : Owego, NY	5.593	0.049	Apr 2018	0.000		0.000		-		0.000	0.000	5.642	5.642
Primary Hdw/SW Dev, Instrument Landing System	SS/CPFF	Lockheed Martin : Owego, NY	1.249	0.627	Apr 2018	0.000		0.000		-		0.000	0.000	1.876	1.876
Primary Hdw/SW Dev, Instrument Landing System	SS/CPIF	Sikorsky : Stratford, CT	1.808	0.592	May 2018	0.000		0.000		-		0.000	0.000	2.400	2.400
Primary HDW/SW Dev, Usage Spectrum Update	SS/CPIF	Sikorsky : Stratford, CT	0.000	1.018	Dec 2017	0.000		0.000		-		0.000	0.000	1.018	1.018
Prior year Product Dev Cost no longer funded in the FYDP	Various	Various : Various	1,165.791	0.000		0.000		0.000		-		0.000	0.000	1,165.791	1,165.791
System Configuration 20	SS/CPFF	Lockheed Martin : Owego, NY	0.000	0.000		0.110	Dec 2018	0.100	Dec 2019	-		0.100	Continuing	Continuing	Continuing
Primary Hdw Dev, Avionics FFFW	MIPR	Army, DOTC : Picatinny, NJ	0.818	0.000		0.000		0.000		-		0.000	0.000	0.818	0.818
Network Enabled Weapons	SS/CPFF	Lockheed Martin : Owego, NY	0.000	0.000		5.000	Mar 2019	4.989	Mar 2020	-		4.989	6.011	16.000	16.000
Cyber Evaluation/ Validation	TBD	JHU/APL : Laurel, MD	0.000	0.000		0.600	Jan 2019	1.300	Jan 2020	-		1.300	0.000	1.900	1.900
Common ASE Architecture	SS/CPFF	Lockheed Martin : Owego, NY	0.000	0.000		3.000	Apr 2019	1.800	Apr 2020	-		1.800	3.200	8.000	8.000
Radar Development	TBD	JHU/APL : Laurel, MD	0.000	0.000		0.300	Jan 2019	2.000	Jan 2020	-		2.000	0.000	2.300	2.300
ALFS DMSMS Solutions	SS/IDDQ	Raytheon : Portsmouth, RI	0.000	0.000		0.000		3.150	Jan 2020	-		3.150	27.220	30.370	30.370
System Configuration 2X	SS/CPFF	Lockheed Martin : Owego, NY	0.000	0.000		0.000		0.900	Apr 2020	-		0.900	Continuing	Continuing	Continuing
Minotaur Development	SS/CPFF	Lockheed Martin : Owego, NY	0.000	0.000		0.000		2.100	Apr 2020	-		2.100	Continuing	Continuing	Continuing

PE 0604216N: *Multi-Mssn Helicopter Upgrade Dev* Navy

UNCLASSIFIED
Page 7 of 12

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy

Appropriation/Budget Activity

R-1 Program Element (Number/Name)

PE 0604216N / Multi-Mssn Helicopter

Upgrade Dev

Project (Number/Name)

1707 I MH-60 Development

Date: March 2019

Product Developmen	ıt (\$ in Mi	llions)		FY 2	2018	FY 2	2019	FY 2 Ba			2020 CO	FY 2020 Total			
	Contract Method	Performing	Prior		Award		Award		Award		Award		Cost To	Total	Target Value of
Cost Category Item	& Type	Activity & Location	Years	Cost	Date	Cost	Date	Cost	Date	Cost	Date	Cost	Complete	Cost	Contract
		Subtotal	1,175.259	2.286		9.010		16.339		-		16.339	Continuing	Continuing	N/A

Remarks

1319 *l* 5

Increase from FY 2019 to FY 2020 to support ramp-up of Net Enabled Weapons, Cyber Evaluation/Validation and Radar development efforts and commencement of ALFS DMSMS, System Configuration 2X and Minotaur development activities.

Support (\$ in Millions	s)			FY 2	2018	FY 2	2019		2020 ise	FY 2	2020 CO	FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To	Total Cost	Target Value of Contract
Government eng spt, Very High Frequency Omni Ranging/Instrument Landing Sysem (VOR ILS)	Various	Various : Various	0.568	0.340	Nov 2017	0.000		0.000		-		0.000	0.000	0.908	-
Government eng spt, Usage Spectrum Update	C/BA	TBD : TBD	0.000	0.920	Nov 2017	0.000		0.000		-		0.000	0.000	0.920	-
Prior year support cost no longer funded in the FYDP	Various	Various : Various	163.344	0.000		0.000		0.000		-		0.000	0.000	163.344	-
MH-60S Forward Firing Weapons/Rockets Government Engineering Support	Various	Various : Various	0.319	0.225	Dec 2017	0.000		0.000		-		0.000	0.000	0.544	-
Government Eng Support , System Configuration 18	Various	Various : Various	0.000	0.057	Nov 2017	0.200	Nov 2018	0.000		-		0.000	0.000	0.257	-
Government Eng Support, Mid-Life Upgrade	Various	Various : Various	0.000	0.200	Nov 2017	0.600	Nov 2018	0.447	Nov 2019	-		0.447	0.000	1.247	-
Government Eng Support, System Configuration 20	Various	Various : Various	0.000	0.000		0.250	Nov 2018	0.070	Nov 2019	-		0.070	Continuing	Continuing	Continuing
Government Eng Support, Net Enabled Weapons	Various	Various : Various	0.000	0.000		0.500	Nov 2018	0.600	Nov 2019	-		0.600	0.150	1.250	-
Government Eng Support, Common ASE Architecture	Various	Various : Various	0.000	0.000		0.750	Nov 2018	0.750	Nov 2019	-		0.750	0.000	1.500	-

PE 0604216N: *Multi-Mssn Helicopter Upgrade Dev* Navy

UNCLASSIFIED
Page 8 of 12

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy

R-1 Program Element (Number/Name)

Project (Number/Name)

Appropriation/Budget Activity 1319 / 5

PE 0604216N / Multi-Mssn Helicopter

1707 I MH-60 Development

Date: March 2019

Upgrade Dev

Support (\$ in Millions	s)			FY 2	2018	FY 2	2019		2020 ise	FY 2		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To	Total Cost	Target Value of Contract
Government Eng Support, Radar Dev	Various	Various : Various	0.000	0.000		0.300	Nov 2018	0.300	Nov 2019	-		0.300	0.000	0.600	-
Government Eng Support, ALFS DMSMS	WR	NAWC AD : Patuxent River, MD	0.000	0.000		0.000		0.118	Nov 2019	-		0.118	Continuing	Continuing	Continuing
Government Eng Support, System Configuration 2X	Various	Various : Various	0.000	0.000		0.000		0.150	Nov 2019	-		0.150	0.000	0.150	-
		Subtotal	164.231	1.742		2.600		2.435		-		2.435	Continuing	Continuing	N/A

Remarks

Decrease from FY 2019 to FY 2020 due to the completion of System Configuration 18.

Test and Evaluation	est and Evaluation (\$ in Millions)			FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation (DT&E), Projects commencing prior to FY16	WR	NAWC AD : Patuxent River, MD	169.863	0.000		0.000		0.000		-		0.000	0.000	169.863	-
Operation Test & Evaluation (OT&E),Projects commencing prior to FY16	WR	COMOPTEVFOR: Norfolk, VA	15.451	0.000		0.000		0.000		-		0.000	0.000	15.451	-
Developmental Test & Evaluation (DT&E), Very High Frequency Omni Ranging (VOR)/Instrument Landing System (ILS)	WR	NAWC AD : Patuxent River, MD	0.036	0.020	Nov 2017	0.000		0.000		-		0.000	0.000	0.056	-
Prior year T&E costs no longer funded in the FYDP	Various	various : various	12.280	0.000		0.000		0.000		-		0.000	0.000	12.280	-
DT&E, System Configuration 18	Various	Various : Various	0.000	1.165	Nov 2017	0.800	Nov 2018	0.000		-		0.000	0.000	1.965	-

PE 0604216N: *Multi-Mssn Helicopter Upgrade Dev* Navy

UNCLASSIFIED
Page 9 of 12

Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Navy

R-1 Program Element (Number/Name)

Project (Number/Name)

1319 / 5

Appropriation/Budget Activity

PE 0604216N / Multi-Mssn Helicopter

1707 I MH-60 Development

Date: March 2019

Upgrade Dev

Test and Evaluation	(\$ in Milli	ons)		FY 2	2018	FY 2	2019	FY 2 Ba	2020 ise	FY 2	2020 CO	FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To	Total Cost	Target Value of Contract
DT&E, MH-60S FFFW/ Rockets	Various	Various : Various	1.413	0.050	Nov 2017	0.000		0.000		-		0.000	0.000	1.463	-
DT&E, System Configuration 20	WR	NAWC AD : Patuxent River, MD	0.000	0.000		4.151	Nov 2018	0.200	Nov 2019	-		0.200	Continuing	Continuing	Continuing
DT&E, ALFS DMSMS	WR	NAWC AD : Patuxent River, MD	0.000	0.000		0.000		0.119	Nov 2019	-		0.119	Continuing	Continuing	Continuing
DT&E, System Configuration 2X	WR	NAWC AD : Patuxent River, MD	0.000	0.000		0.000		0.053	Nov 2019	-		0.053	0.000	0.053	-
		Subtotal	199.043	1.235		4.951		0.372		-		0.372	Continuing	Continuing	N/A

Remarks

NAWCAD decrease from FY 2019 to FY 2020 due to System Configuration 20 and 2X cost sharing agreements with International partners.

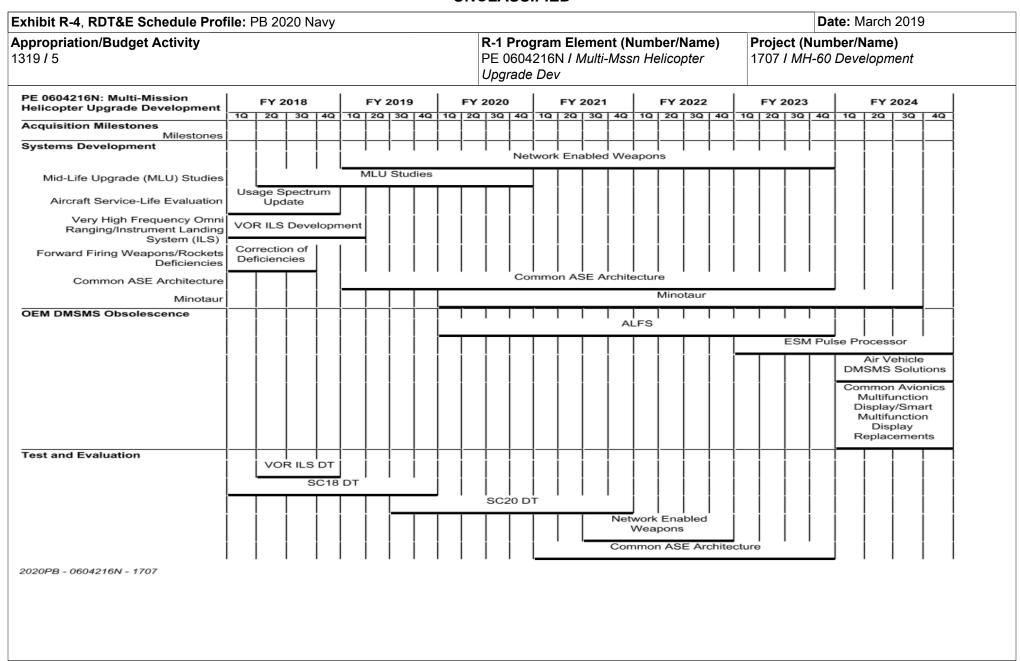
Management Service	s (\$ in M	illions)		FY 2	2018	FY 2	2019	FY 2 Ba		FY 2	2020 CO	FY 2020 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Travel	WR	NAWC AD : Patuxent River, MD	5.003	0.050	Nov 2017	0.050	Oct 2018	0.050	Oct 2019	-		0.050	0.174	5.327	-
Prior year Mgmt Serv cost no longer funded in the FYDP	Various	Various : Various	34.256	0.000		0.000		0.000		-		0.000	0.000	34.256	-
		Subtotal	39.259	0.050		0.050		0.050		-		0.050	0.174	39.583	N/A

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									Target
	Prior			FY 2020	FY 2020	FY 2020	Cost To	Total	Value of
	Years	FY 2018	FY 2019	Base	oco	Total	Complete	Cost	Contract
Project Cost Totals	1,577.792	5.313	16.611	19.196	-	19.196	Continuing	Continuing	N/A

Remarks

PE 0604216N: Multi-Mssn Helicopter Upgrade Dev Navy

Page 10 of 12



PE 0604216N: *Multi-Mssn Helicopter Upgrade Dev* Navy

UNCLASSIFIED
Page 11 of 12

Exhibit R-4A, RDT&E Schedule Details: PB 2020 Navy		Date: March 2019
Appropriation/Budget Activity 1319 / 5	- , \	umber/Name) -60 Development

Schedule Details

	Sta	art	End		
Events by Sub Project	Quarter	Year	Quarter	Year	
PE 0604216N: Multi-Mission Helicopter Upgrade Development					
Systems Development: Network Enabled Weapons	1	2019	4	2023	
Systems Development: Mid-Life Upgrade (MLU) Studies: MLU Studies	2	2018	4	2020	
Systems Development: Aircraft Service-Life Evaluation: Usage Spectrum Update	1	2018	4	2018	
Systems Development: Very High Frequency Omni Ranging/Instrument Landing System (ILS): ILS integration	1	2018	1	2019	
Systems Development: Forward Firing Weapons/Rockets Deficiencies: Correction of Deficiencies	1	2018	3	2018	
Systems Development: Common ASE Architecture: Common ASE Architecture	1	2019	4	2023	
Systems Development: Minotaur: Minotaur	1	2020	3	2024	
OEM DMSMS Obsolescence: ALFS	1	2020	4	2023	
OEM DMSMS Obsolescence: ESM Pulse Processor	1	2023	4	2024	
OEM DMSMS Obsolescence: Air Vehicle DMSMS Solutions	1	2024	4	2024	
OEM DMSMS Obsolescence: Common Avionics Multifunction Display/Smart Multifunction Display Replacements	1	2024	4	2024	
Test and Evaluation: VOR ILS DT	2	2018	4	2018	
Test and Evaluation: System Configuration 18 (SC18)	1	2018	4	2019	
Test and Evaluation: System Configuration 20 (SC20)	3	2019	4	2021	
Test and Evaluation: Integration and Testing of Network Enabled Weapons	3	2021	4	2022	
Test and Evaluation: Integration and Testing of Common ASE Architecture	1	2021	4	2023	