Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy											Date: May 2017	
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604212N *I Other Helicopter Development*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	848.246	12.070	6.268	26.786	-	26.786	32.685	35.475	54.355	139.570	Continuing	Continuing
1109: *CH/MH-53*	50.818	2.630	4.922	17.500	-	17.500	16.841	16.500	9.415	2.752	Continuing	Continuing
2415: *H-60 Development*	766.272	6.161	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	772.433
2460: *VH-3/VH-60*	31.156	3.279	1.346	1.309	-	1.309	1.354	0.000	0.000	0.000	0.000	38.444
3406: *Attack and Utility Replacement Aircraft*	0.000	0.000	0.000	7.977	-	7.977	14.490	18.975	44.940	136.818	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 390, 282												

Note

Proj: 2415 H-60 Development Service Life Assessment Program (SLAP) commenced in this PE in FY 2015 but moves to PE 0702207N in FY 2017.

A. Mission Description and Budget Item Justification

This Program Element includes funding for the development support for improvements to current systems for CH/MH-53, MH-60 development, VH-3/VH-60, and new development of Future Vertical Lift (FVL) capability. The H-53 is the premier heavy lift helicopter for the Marine Corps and the only operational airborne mine sweeping platform for the Navy. H-53 RDT&E efforts focus on trade studies and risk reduction measures to identify candidate survivability, safety, avionics, cargo handling, cockpit and other airframe specific improvements to extend the service life. The MH-60S Helicopter has three primary mission areas; Combat Support, Armed Helo which includes the Fast Attack Craft/Fast Inshore Attack Craft (FAC/FIAC) threat response capabilities and Airborne Mine Countermeasures. The VH-3/VH-60 is required to provide safe and timely transportation for the President and Vice President of the United States, heads of state and others as directed by the White House Military Office. Future Vertical Lift (FVL) is a Joint Department initiative to address vertical lift capability requirements and determine feasible and affordable solutions in support of the Joint Warfighter.

Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy					Date: May 2017
Appropriation/Budget Activity 1319: *Research, Development, Test & Evaluation, Navy I* BA 5: *System Development & Demonstration (SDD)*			R-1 Program Element (Number/Name) PE 0604212N *I Other Helicopter Development*		
B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	11.101	6.268	10.104	-	10.104
Current President's Budget	12.070	6.268	26.786	-	26.786
Total Adjustments	0.969	0.000	16.682	-	16.682
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.030	0.000			
• SBIR/STTR Transfer	-0.060	0.000			
• Program Adjustments	0.000	0.000	16.997	-	16.997
• Rate/Misc Adjustments	-0.001	0.000	-0.315	-	-0.315

Change Summary Explanation

FY 2016 reprogramming increase in Project Unit 2415, H-60 Development by $1.030M was for Fixed Forward Firing Weapon (FFFW)/Rockets integration and testing for Digital Rocket Launcher with mixed loads, FFFW and Helmet Display Targeting System enhancements.

FY 2018 $9.0M increase to Project Unit 1109, CH/MH-53 for APR-39D(V)2; $7.971M increase to Project Unit 3406, Other Helo Development for Future Vertical Lift (FVL).

Technical:
2460 VH-3/VH-60: Not Applicable

Schedule:
1109 CH/MH-53: Not Applicable

2415 Fixed Forward Firing Weapon (FFFW): Updated FFFW System Integration and Developmental and Operational Testing on schedule.

2460 VH-3/VH-60: Not Applicable

3406: Not Applicable

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 1109 / *CH/MH-53*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
1109: *CH/MH-53*	50.818	2.630	4.922	17.500	-	17.500	16.841	16.500	9.415	2.752	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 390

A. Mission Description and Budget Item Justification

The H-53 helicopter is the premier heavy lift helicopter for the Marine Corps and the only operational airborne mine sweeping platform for the Navy. Through FY2021, H-53 efforts will continue to develop and qualify components, prior to production and approval decisions, in order to replace obsolete system components. Emphasis will be placed on supportability improvement modifications that will sustain the H-53 aircraft until the transition of the H-53K is complete. These efforts combined, will significantly improve the readiness of the H-53 fleet while reducing long term operational and supportability costs. Survivability efforts to address improved situational awareness to pilots will include improved Digital Interoperability and improve Degraded Visual Environment Awareness. Modeling and simulation will be used to the maximum practical extent throughout this effort. Manned Flight Simulator will be utilized to develop, install and test interim modifications to existing H-53 legacy avionics, while maintaining the original basic system footprint and functionality. As a part of this effort, a complete Electro Magnetic Vulnerability assessment will be required for the affected and/or modified systems.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: H-53 Avionics	0.768	1.847	2.848	0.000	2.848
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Integrated software applications for cockpit and avionics improvements, to include the development of new sensors. Investigated solutions to address the degraded visual environment. Developed flight control computer and test set design modifications to address anticipated obsolescence issues. Conducted Business Case Analyses to determine impact of high Operation and Support cost drivers and address alternatives to mitigate identified issues.					
FY 2017 Plans: Integrate software applications for cockpit and avionics improvements, to include the development of new sensors. Investigate solutions to address the degraded visual environment. Develop flight control computer and test set design modifications to address anticipated obsolescence issues. Conduct Business Case Analyses to determine impact of high Operation and Support cost drivers and address alternatives to mitigate identified issues. Initiate improved Degraded Visual Environmental Awareness to include coupled flight control capability.					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Integrate software applications for cockpit and avionics improvements, to include the development of new sensors. Investigate solutions to address the degraded visual environment. Develop flight control computer and test set design modifications to address anticipated obsolescence issues. Conduct Business Case Analyses to determine impact of high Operation and Support cost drivers and address alternatives to mitigate identified issues. Create basis for APR-39D(V)2 to improve digital interoperability and detection against radar guided threats. ***FY 2018 OCO Plans:*** N/A					
Title: H-53 Survivability ***Articles:*** ***FY 2016 Accomplishments:*** Performed trade studies, risk reduction, design, development, model, integration and test activities for H-53 survivability to include increased situational awareness via digital interoperability. ***FY 2017 Plans:*** Perform trade studies, risk reduction, design, development, model, integration and test activities for H-53 survivability to include increased situational awareness via digital interoperability. ***FY 2018 Base Plans:*** Perform trade studies, risk reduction, design, development, model, integration and test activities for H-53 survivability to include increased situational awareness via digital interoperability. ***FY 2018 OCO Plans:*** N/A	0.583 -	0.440 -	1.296 -	0.000 -	1.296 -
Title: H-53 Propulsion ***Articles:*** ***FY 2016 Accomplishments:*** Conducted Business Case Analyses to determine impact of high Operation and Support Propulsion cost drivers and address alternatives to mitigate. ***FY 2017 Plans:***	0.300 -	0.433 -	0.442 -	0.000 -	0.442 -

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Conduct Business Case Analyses to determine impact of high Operation and Support Propulsion cost drivers and address alternatives to mitigate, as well as addressing proposed solutions to the risk associated with #2 engine fires. ***FY 2018 Base Plans:*** Conduct Business Case Analyses to determine impact of high Operation and Support Propulsion cost drivers and address alternatives to mitigate, as well as developing/integrating proposed solutions to the risk associated with #2 engine fires. ***FY 2018 OCO Plans:*** N/A					
Title: Project Management Support ***Articles:*** ***FY 2016 Accomplishments:*** Provided in-house, field activity, and contractor support of IPTs to allow for studies and analyses, preparation of acquisition documentation and examination of equipment and avionics for the H-53. Efforts included, but are not limited to, government development support, engineering support, product management support, system engineering and logistics support, and travel for the H-53 program. ***FY 2017 Plans:*** Provide in-house, field activity, and contractor support of IPTs to allow for studies and analyses, preparation of acquisition documentation and examination of equipment and avionics for the H-53. Efforts include, but are not limited to, government development support, engineering support, product management support, system engineering and logistics support, and travel for the H-53 program. ***FY 2018 Base Plans:*** Provide in-house, field activity, and contractor support of IPTs to allow for studies and analyses, preparation of acquisition documentation and examination of equipment and avionics for the H-53. Efforts include, but are not limited to, government development support, engineering support, product management support, system engineering and logistics support, and travel for the H-53 program. ***FY 2018 OCO Plans:*** N/A	0.697 -	0.726 -	1.620 -	0.000 -	1.620 -
Title: H-53 Airframe	0.282	1.476	2.175	0.000	2.175

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continued to develop and qualify components, prior to production and approval decisions, in order to replace obsolete system components. Performed trade studies, risk reduction, design, development, integration and test activities for the H-53 airframe to include, but not limited to, main rotor head, cowlings, aircraft structure, drive train, and various dynamic components. ***FY 2017 Plans:*** Develop software tool to support aircraft diagnostics, health monitoring and Fatigue Life Estimating (FLE) which will interface with Naval Enterprise Logistics Support Systems. Continue to develop tools to study/analyze and qualify components, prior to production and approval decisions, in order to replace obsolete system components. Perform trade studies, risk reduction, design, development, integration and test activities for the H-53 airframe to include, but not limited to, main rotor head, cowlings, aircraft structure, drive train, and various dynamic components. ***FY 2018 Base Plans:*** Develop software tool to support aircraft diagnostics, health monitoring and Fatigue Life Estimating (FLE) which will interface with Naval Enterprise Logistics Support Systems. The systems will provide a seamless environment for processing data, troubleshooting and documenting the technical updates required for the H-53 airframe. Continue to develop tools to study/analyze and qualify components, prior to production and approval decisions, in order to replace obsolete system components. Perform trade studies, risk reduction, design, development, integration and test activities for the H-53 airframe to include, but not limited to, main rotor head, cowlings, aircraft structure, drive train, and various dynamic components. ***FY 2018 OCO Plans:*** N/A					
Title: APR-39D(V)2	0.000	0.000	9.119	0.000	9.119
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A ***FY 2017 Plans:***					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 Base Plans:*** Provide ability for consolidating digital interoperability and improve the probability of detection against radar guided threats. Corrects deficiencies from previous receiver by enabling self protection from radar guided threats on the battlefield. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.630	4.922	17.500	0.000	17.500

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/0528: *H-53 Series*	35.655	59.095	38.712	0.950	39.662	53.966	70.421	63.943	74.318	144.849	2,042.824

Remarks

D. Acquisition Strategy

This is a non-ACAT program. H-53 RDT&E efforts will focus on trade studies and risk reduction measures to identify candidate survivability, interoperability, safety, avionics, cargo handling, cockpit and other airframe specific improvements to extend the service life.

E. Performance Metrics

Successfully perform studies, analysis and develop software to address emergent H-53 issues. Successfully support developmental and operation test activities to qualify aircraft modifications/upgrades.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*	

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NAWC AD : Patuxent River, MD	4.292	0.661	Nov 2015	1.464	Nov 2016	1.618	Nov 2017	-		1.618	Continuing	Continuing	Continuing
Systems Engineering Contract	C/CPFF	Sikorsky : Stratford, CT	0.231	0.251	Feb 2016	0.981	Feb 2017	0.500	Feb 2018	-		0.500	0.000	1.963	1.963
Systems Engineering	WR	Various : Various	0.000	0.000		0.344	Nov 2016	0.600	Nov 2017	-		0.600	Continuing	Continuing	Continuing
Design and Development	TBD	TBD : TBD	0.000	0.000		0.000		4.995	Mar 2018	-		4.995	0.000	4.995	-
Prior Year Prod Dev no longer funded in the FYDP	TBD	TBD : TBD	19.475	0.000		0.000		0.000		-		0.000	0.000	19.475	-
		Subtotal	23.998	0.912		2.789		7.713		-		7.713	-	-	-

Remarks

Design and Development line item was added to fund the Prime Contract supporting the APR-39D(V)2 and DVE efforts

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Software Development	Various	Various : Various	3.257	0.628	Mar 2016	0.787	Mar 2017	4.876	Mar 2018	-		4.876	Continuing	Continuing	Continuing
GFE	Various	NAWC AD : Patuxent River, MD	3.131	0.450	Nov 2015	0.319	Nov 2016	0.137	Nov 2017	-		0.137	Continuing	Continuing	Continuing
		Subtotal	6.388	1.078		1.106		5.013		-		5.013	-	-	-

Remarks

Software Development line item increased in FY18 to fund the APR-39D(V)2 efforts and ALE tasks.

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various : Various	7.712	0.268	Mar 2016	0.407	Mar 2017	1.674	Mar 2018	-		1.674	Continuing	Continuing	Continuing

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	7.712	0.268		0.407		1.674		-		1.674	-	-	-

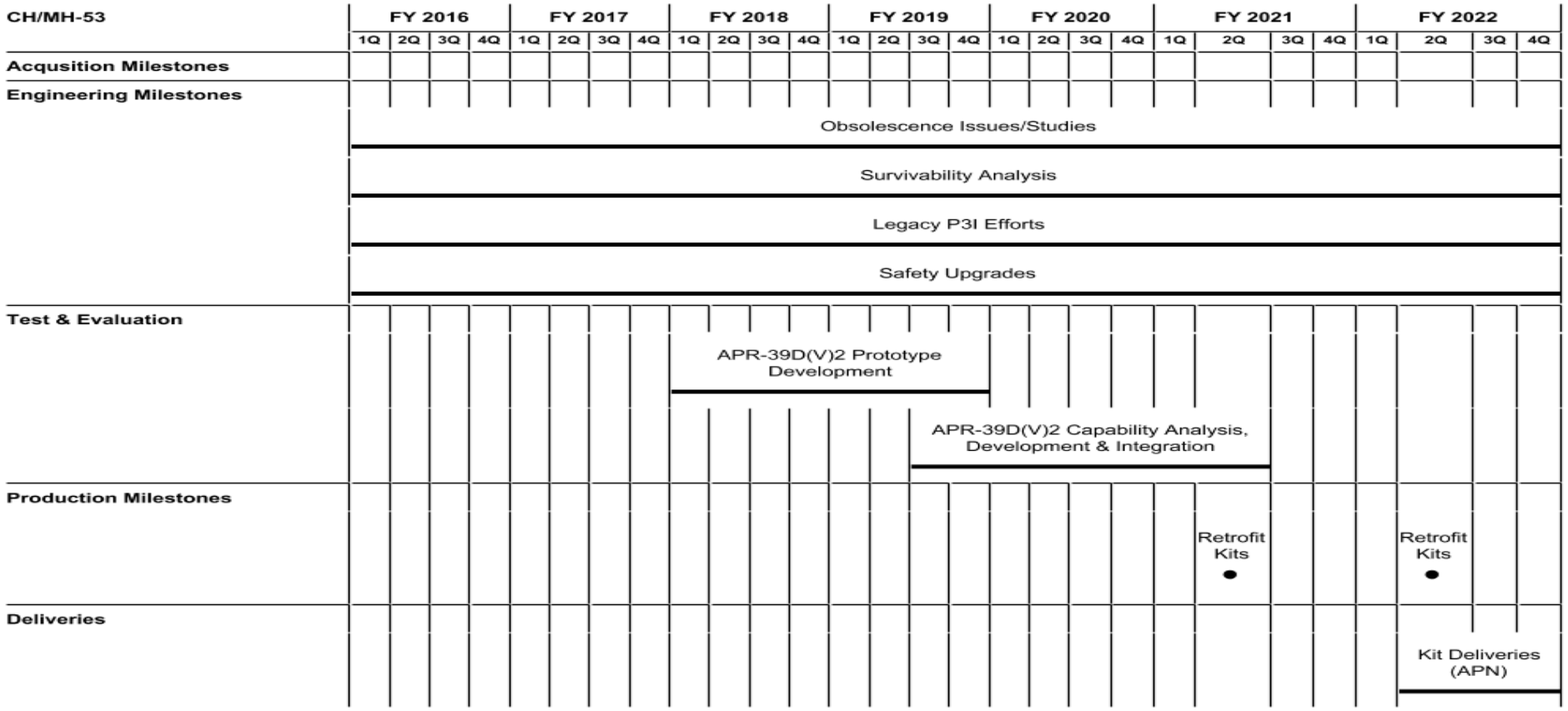
Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Government Engineering Support	WR	NAWC AD : Patuxent River, MD	6.189	0.325	Nov 2015	0.538	Nov 2016	2.950	Nov 2017	-		2.950	Continuing	Continuing	Continuing
Travel	Various	Various : Various	1.857	0.047	Oct 2015	0.082	Oct 2016	0.150	Oct 2017	-		0.150	Continuing	Continuing	Continuing
Prior Year Mgmt no longer funded in the FYDP	Various	Various : Various	4.674	0.000		0.000		0.000		-		0.000	0.000	4.674	-
		Subtotal	12.720	0.372		0.620		3.100		-		3.100	-	-	-

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	50.818	2.630		4.922		17.500		-		17.500	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*



2018PB - 0604212N - 1109

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 1109 / *CH/MH-53*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
CH/MH-53				
Engineering Milestones: - Obsolescence Issues/Studies	1	2016	4	2022
Engineering Milestones: - Survivability Analysis	1	2016	4	2022
Engineering Milestones: - Legacy P3I Efforts	1	2016	4	2022
Engineering Milestones: - Safety Upgrades	1	2016	4	2022
Test & Evaluation: APR-39D(V)2 Prototype Development	1	2018	4	2019
Test & Evaluation: APR-39D(V)2 Capability Analysis, Development & Integration	3	2019	2	2021
Production Milestones: Retrofit Kits-Base	2	2021	2	2021
Production Milestones: Retrofit Kits-Option	2	2022	2	2022
Deliveries: Kit Deliveries (APN)	2	2022	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 2415 / *H-60 Development*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2415: *H-60 Development*	766.272	6.161	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	772.433
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 282

A. Mission Description and Budget Item Justification

The Helicopter Combat Support mission provides organic fleet Armed Helo Fast Attack Craft/Fast Inshore Attack Craft (FAC/FIAC) threat response, maintains forward deployed fleet sustainability through rapid airborne delivery of materials and personnel and supports amphibious operations through search and rescue coverage. The aircraft conducts vertical replenishment, day/night ship-to-ship, ship-to-shore, and shore-to-ship external transfer of cargo; internal transport of passengers, mail and cargo, vertical on board delivery; airhead operations, and day/night search and rescue. Armed Helo and Airborne Mine Countermeasures (AMCM) were added as primary mission areas for the MH-60S as block upgrades to the platform. The MH-60S Operational Requirements Document (ORD) was modified in May 2000 to add AMCM as a primary mission for the MH-60S. ORD Change II was validated and approved by the Joint Requirements Oversight Council on 15 February 2008 updating key performance parameters. AMCM provides an organic capability for the Littoral Combat Ship Mine Countermeasures Mission Package. Armed Helo provides Special Warfare Support, Combat Search and Rescue, Surface Warfare and Maritime Interdiction Operations capability with Link 16 and Forward Firing Weapons which includes rockets and anti-swarm weapons to address the FAC/FIAC threat. Aircraft secondary roles include torpedo and drone recovery, noncombatant evacuation operations, and SEAL team and Explosive Ordnance Disposal support. Additionally, a Service Life Assessment Program (SLAP), trade studies, and analysis efforts to develop and qualify components to replace obsolete system components commences in FY 2015. These efforts will continue in PE 0702207N in FY 2017.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: MH-60S Airframe Development and Integration	1.603	0.000	0.000	0.000	0.000
Articles:	-	-	-	-	-
Description: The effort includes analysis, design, integration, test and support for Fixed Forward Firing Weapon (FFFW)/Rockets to include Digital Rocket Launcher (DRL) with enhanced targeting capability for Helmet Display Targeting System.					
FY 2016 Accomplishments: Complete integration and support on FFFW/Rockets capability to include DRL with mixed loads and training development of FFFW capability.					
FY 2017 Plans: N/A					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2018 OCO Plans:*** N/A					
Title: MH-60S Test, Engineering, Logistics, Management Support ***Articles:*** ***Description:*** Navy field activity systems engineering, logistics support, management and travel for the Forward Firing Weapons (FFW)/Rockets integration to include Advanced Precision Kill Weapon System, Digital Rocket Launcher (DRL) with mixed loads and Airborne Mine Countermeasures (AMCM) MH-60S Sensor/Weapon Systems Integration team for airframe and avionics. Support/conduct MH-60S aircraft integration testing for FFW/Rockets and enhanced targeting capability with the Helmet Display Targeting System (HDTS). AMCM sensor/weapon system integration testing and support. Additionally, provide support to a service life assessment program and trade studies and analysis efforts. ***FY 2016 Accomplishments:*** Complete FFW/Rockets integration/testing for DRL with mixed loads, FFW and HDTS enhancements. Commence support for a service life assessment program and trade studies and analysis efforts. ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** N/A ***FY 2018 OCO Plans:*** N/A	4.558 -	0.000 -	0.000 -	0.000 -	0.000 -
Accomplishments/Planned Programs Subtotals	6.161	0.000	0.000	0.000	0.000

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN1/017900: *MH-60S*	28.232	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	6,772.544
• APN5/053000: *H-60 MODS*	32.516	32.165	22.485	4.858	27.343	31.767	35.821	41.154	38.255	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost

Remarks

APN5/053000 reflects only MH-60S specific OSIPS 016-04 and 09-07 funding.

D. Acquisition Strategy

Armed Helo and Airborne Mine Countermeasures (AMCM) are elements of the existing MH-60S ACAT IC Program. MH-60S employed an evolutionary acquisition approach via the MH-60S Block Upgrades. This allowed for modification of systems still in early development. The block upgrades maximize commonality across all MH-60S missions and all Armed Helo/AMCM weapon systems, including logistics, training and maintenance. The MH-60S block upgrades are as follows:
-Block 1 - Combat Support Helicopter
-Block 2 - Organic AMCM
-Block 3 - Armed Helo

Block 2 aircraft are being upgraded to include Armed Helo Capability.

E. Performance Metrics

Successfully complete Forward Firing Weapons/Rockets Developmental/Operational Testing. Successfully achieve Initial Operational Capability for AMCM and Littoral Combat Ship Mine Countermeasures Mission Package.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Primary Hdw Dev - Airframe*	SS/CPIF	Sikorsky : Stratford, CT	170.465	0.000		0.000		0.000		-		0.000	0.000	170.465	170.465
Primary Hdw Dev - Airframe FFW	SS/CPFF	Sikorsky : Stratford, CT	11.901	0.000		0.000		0.000		-		0.000	0.000	11.901	11.901
Primary Hdw Dev - Avionics*	SS/CPIF	Lockheed Martin : Owego, NY	225.189	0.000		0.000		0.000		-		0.000	0.000	225.189	225.189
Primary Hdw Dev - Avionics*FFW	SS/CPIF	Lockheed Martin : Owego, NY	9.242	0.000		0.000		0.000		-		0.000	0.000	9.242	9.242
Primary Hdw Dev - Avionics*FFW	MIPR	Army, DOTC : Picatinny, NJ	15.369	1.603	Mar 2016	0.000		0.000		-		0.000	0.000	16.972	-
Primary Hdw Dev - CSTRS	WR	NSWC : Panama City, FL	23.022	0.000		0.000		0.000		-		0.000	0.000	23.022	-
Primary Hdw Dev - CSTRS	MIPR	CECOM : APG, MD	13.629	0.000		0.000		0.000		-		0.000	0.000	13.629	-
Prior year Product Dev cost no longer funded in the FYDP	Various	Various : Various	51.554	0.000		0.000		0.000		-		0.000	0.000	51.554	-
		Subtotal	520.371	1.603		0.000		0.000		-		0.000	0.000	521.974	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
ILS - MSS (Non FFRDC)	Various	Various : Various	3.784	0.372	Nov 2015	0.000		0.000		-		0.000	0.000	4.156	-
Integrated Logistics Support	WR	Various : Various	7.937	0.000		0.000		0.000		-		0.000	0.000	7.937	-
Prior year Support cost no longer funded in the FYDP	Various	Various : Various	8.589	0.000		0.000		0.000		-		0.000	0.000	8.589	-
		Subtotal	20.310	0.372		0.000		0.000		-		0.000	0.000	20.682	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Dev Test & Evaluation	WR	NAWCAD : Patuxent River, MD	57.270	2.084	Dec 2015	0.000		0.000		-		0.000	0.000	59.354	-
Dev Test & Evaluation	WR	Various : Various	26.803	0.375	Nov 2015	0.000		0.000		-		0.000	0.000	27.178	-
Operational Test & Evaluation	WR	OPTEVFOR : Norfolk, VA	5.927	0.200	Apr 2017	0.000		0.000		-		0.000	0.000	6.127	-
Prior year T&E cost no longer funded in the FYDP	Various	Various : Various	6.159	0.000		0.000		0.000		-		0.000	0.000	6.159	-
		Subtotal	96.159	2.659		0.000		0.000		-		0.000	0.000	98.818	-

Management Services ($ in Millions)

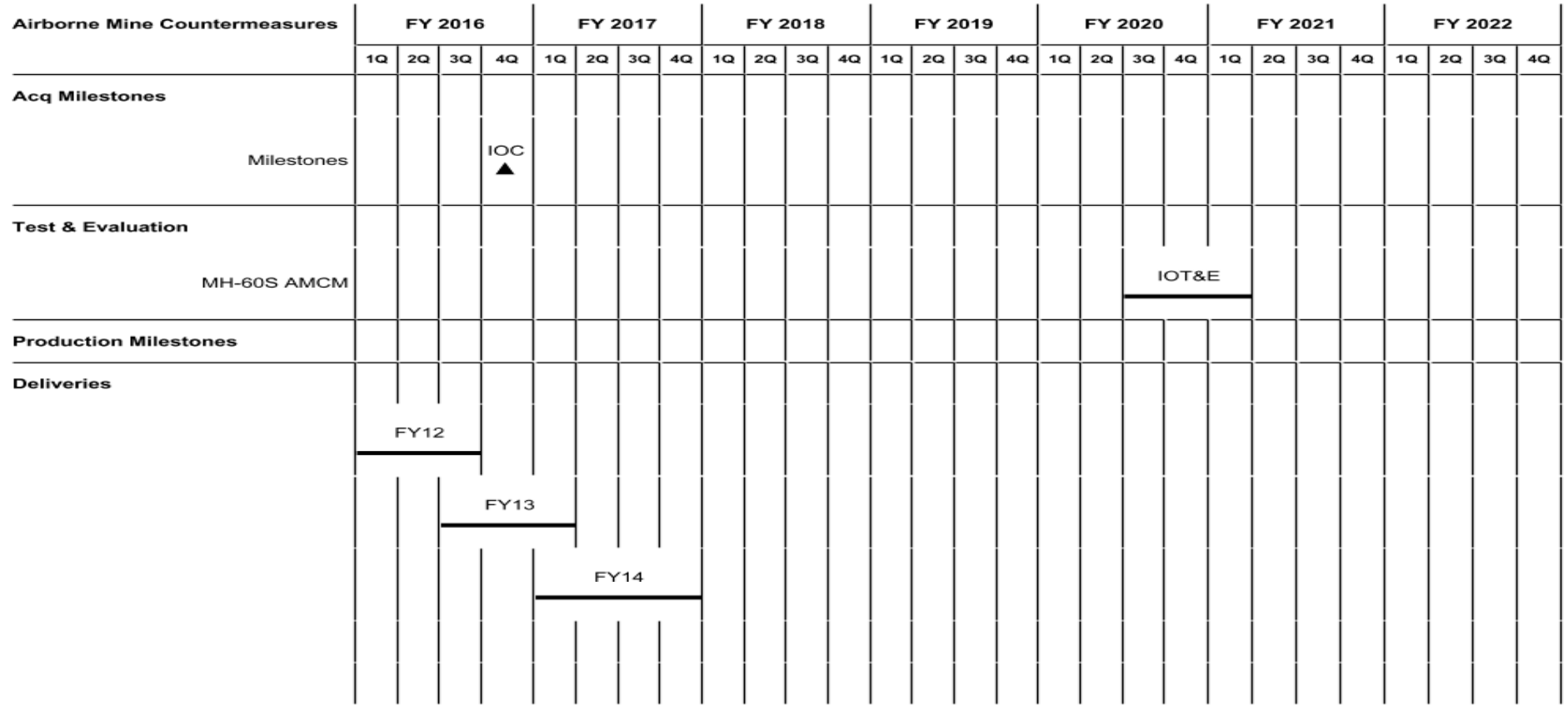
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2016 Cost	FY 2016 Award Date	FY 2017 Cost	FY 2017 Award Date	FY 2018 Base Cost	FY 2018 Base Award Date	FY 2018 OCO Cost	FY 2018 OCO Award Date	FY 2018 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Eng & Tech Srvc (Non FFRDC)	Various	Various : Various	23.057	0.149	Feb 2016	0.000		0.000		-		0.000	0.000	23.206	-
Government Engineering Support	WR	NAWCAD : Patuxent River, MD	18.842	0.845	Dec 2015	0.000		0.000		-		0.000	0.000	19.687	-
Government Engineering Support	WR	NSWC : Panama City, FL	34.307	0.000		0.000		0.000		-		0.000	0.000	34.307	-
Government Engineering Support	WR	Various : Various	27.606	0.517	Dec 2015	0.000		0.000		-		0.000	0.000	28.123	-
Program Mgmt Support CSS	WR	Various : Various	6.345	0.000		0.000		0.000		-		0.000	0.000	6.345	-
Program Mgmt Support	WR	Various : Various	15.040	0.000		0.000		0.000		-		0.000	0.000	15.040	-
Travel	WR	Various : Various	3.251	0.016	Oct 2015	0.000		0.000		-		0.000	0.000	3.267	-
Prior year Mgmt cost no longer funded in the FYDP	Various	Various : Various	0.984	0.000		0.000		0.000		-		0.000	0.000	0.984	-
		Subtotal	129.432	1.527		0.000		0.000		-		0.000	0.000	130.959	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 2415 / *H-60 Development*	

	Prior Years	FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	766.272	6.161		0.000		0.000		-		0.000	0.000	772.433	-

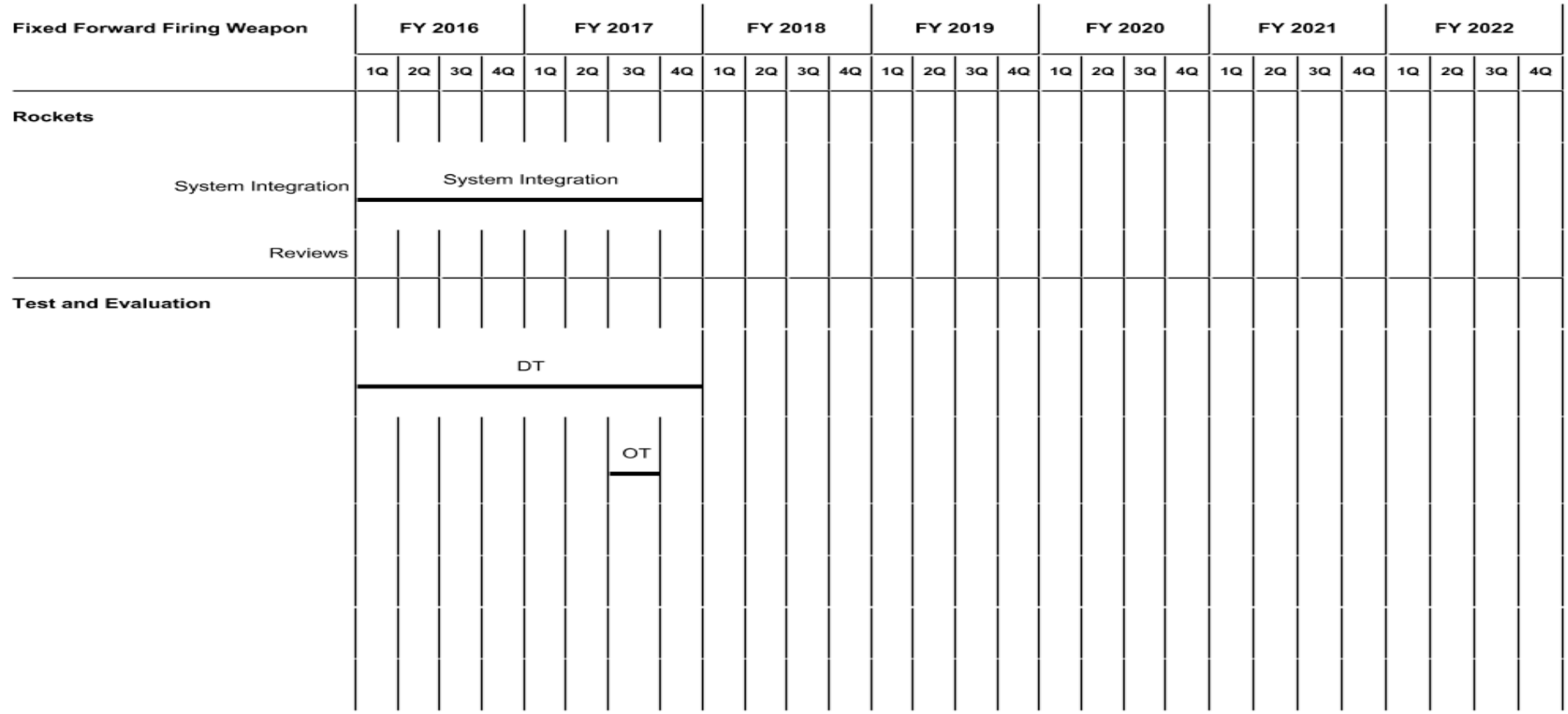
Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*



2018OSD - 0604212N - 2415

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*



2018OSD - 0604212N - 2415

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2415 / *H-60 Development*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Airborne Mine Countermeasures				
Acq Milestones: Milestones: - Initial Operational Capability-AMCM	4	2016	4	2016
Deliveries: - Production Delivery (AMCM Ancillary Kits-FY12)	1	2016	3	2016
Deliveries: - Production Delivery (AMCM Ancillary Kits-FY13)	3	2016	1	2017
Deliveries: - Production Delivery (AMCM Ancillary Kits-FY14)	1	2017	4	2017
Fixed Forward Firing Weapon				
Rockets: System Integration: System Integration	1	2016	4	2017
Test and Evaluation: Developmental Testing (DT) (FFFW)	1	2016	4	2017
Test and Evaluation: Operational Testing (OT) (FFFW)	3	2017	3	2017

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 2460 / *VH-3/VH-60*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
2460: *VH-3/VH-60*	31.156	3.279	1.346	1.309	-	1.309	1.354	0.000	0.000	0.000	0.000	38.444
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Marine Helicopter Squadron One (HMX-1) is required to provide safe and timely transportation for the President and Vice President of the United States, heads of state and others as directed by the White House Military Office. Currently two Type, Model, Series aircraft are used by HMX-1 for the Presidential support mission - the VH-3D and the VH-60N. This project currently funds the VH Executive Helicopter's Aircraft Life Management Program.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: VH Executive Helicopter Aircraft Life Management Program	3.279	1.346	1.309	0.000	1.309
Articles:	-	-	-	-	-
Description: VH Executive Helicopter Aircraft Life Management Program: Provides for management and improvement of all Executive Helicopter systems readiness including safety, operational weight, mission availability, structural integrity, component reliability, maintainability, software, and obsolescence issues as they arise.					
FY 2016 Accomplishments: Provided initial capability for Phase II of Wide-Band Line of Sight (WBLoS) into first VH-3D Executive helicopter that included installation, testing, and verification actions associated with performance, drawings, and schematics. Supported software development and testing of first VH60N aircraft Operation Flight Program (OFP) as well as initial aircraft installation design efforts. Completed software testing for Phase II of WBLoS software OFP.					
FY 2017 Plans: Provide government program management and engineering support for efforts associated with the Aircraft Life and Management Program ensuring aircraft availability and mission readiness to the VH Executive Helicopters.					
FY 2018 Base Plans: Provide government program management and engineering support for efforts associated with the Aircraft Life Management Program ensuring aircraft availability and mission readiness to the VH Executive Helicopters.					
FY 2018 OCO Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 2460 / *VH-3/VH-60*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A					
Accomplishments/Planned Programs Subtotals	3.279	1.346	1.309	0.000	1.309

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• APN/056600: *Executive Helicopters Series*	66.624	66.835	38.787	-	38.787	35.457	9.407	18.295	46.653	Continuing	Continuing

Remarks

Results of the Aircraft Life Management Program trade studies and risk reduction efforts will lead to modifications to be addressed through the program's Obsolescence Management Program and VH Comm Suite Upgrade Operational Safety and Improvement Programs as directed by the Deputy Secretary of Defense.

D. Acquisition Strategy

VH Executive Helicopter ALMP will include trade studies and risk reduction efforts necessary to address safety, operational weight, mission availability, structural integrity, component reliability, maintainability, software, and obsolescence issues as they arise.

E. Performance Metrics

Completion of VH Executive Helicopter Aircraft Life Management Program efforts.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 5	R-1 Program Element (Number/Name) PE 0604212N / *Other Helicopter Development*	Project (Number/Name) 3406 / *Attack and Utility Replacement Aircraft*	

COST ($ in Millions)	Prior Years	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
3406: *Attack and Utility Replacement Aircraft*	0.000	0.000	0.000	7.977	-	7.977	14.490	18.975	44.940	136.818	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Future Vertical Lift (FVL) is a Joint Department initiative to address vertical lift capability requirements and determine feasible and affordable solutions in support of the Joint Warfighter. The FVL Capability Set 3 (CS3) program, led by the Department of the Army, will develop and field a replacement for US Army and USMC aircraft with a more capable, maintainable, and reliable rotorcraft to meet the needs of the services. FVL will provide unmatched strategic, operational, and tactical agility to perform a multitude of missions currently unachievable by any conventionally configured rotorcraft. FVL will be a force multiplier with superior performance, payload, survivability, agility, endurance, and reliability that enables warfighters to win in a complex world. FVL offers revolutionary operational opportunities over current Vertical Take Off Landing (VTOL) aircraft and will field by 2031.

The Marine Corps FVL requirements emphasize range and speed similar to the MV-22. FVL will increase the MAGTFs' capacity of long-range fires. FVL will utilize DOTmLPF-P that will include all facets of a program with particular focus on life-cycle cost reductions through common processes, support equipment, logistic support and component commonality utilizing non-materiel solutions, such as maintenance strategies, training solutions, and infrastructure requirements. The air vehicle will include primary mechanical, electrical, pneumatic, and structural components such as drivetrain, generators, landing gear, pumps, controls, seats, etc. The mission subsystems will include all on- and off-board components with embedded control software for those components that provide all mission functionality, cockpit displays, cockpit hardware subsystem controllers, and interfaces. The architecture will include the fundamental organization of the complete system, the processing method/ component(s), the system level software, the operating environment, and the on-aircraft infrastructure to facilitate integration of all subsystems and platform.

The Defense Authorization Act of 2009 mandated that the services address critical technologies for future development to include development of a detailed S&T plan and the development of a strategic plan that establishes Joint requirements and emphasizes development of common services requirements. In Sep 2012, the Deputy Secretary of Defense signed the FVL Strategic Plan that established oversight groups to develop a roadmap for vertical lift air vehicles and common system development.

FVL is a new start in FY2018.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Future Vertical Lift	0.000	0.000	7.977	0.000	7.977
Articles:	-	-	-	-	-
FY 2016 Accomplishments:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 3406 / *Attack and Utility Replacement Aircraft*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Provide initial support for Future Vertical Lift (FVL) Analysis of Alternatives (AoA) to assess the technical feasibility, technical risk, and affordability of potential strategic solutions with the intent to develop the next generation of rotary wing aircraft supporting new Vertical Take Off Landing capabilities common with the US Army. Tasks to be performed include but are not limited to: AoA support, Acquisition Program Management functions, Engineering modeling and analysis, TEMP development, System Specification and Draft Capability Development Document development, and design trade studies and prototyping on the Air Vehicle and all associated systems. These efforts will include but not be limited to studies, virtual simulation, conceptual design, prototyping of Air Vehicle, Avionics, Propulsion and Dynamics, Communications and Navigation, Weapons and Fire Control, Human Systems Integration, Survivability and Vulnerability, Missions and Missions Systems Management, Reliability and Maintainability, Training, Logistics, Sensor, Pilotage and Targeting Systems, VMS/Flight Control, and Software/Hardware architecture. Support for these efforts will come from government, industry and academia such as Naval Research Labs, DARPA, John Hopkins APL, and various industry partners. Initial FVL contract awards for FY18 could be contract support services, academia, or industry quick turn studies. All contract actions will be smaller scale efforts to support the overall initial AoA effort. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	0.000	7.977	0.000	7.977

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

The Army plans to initiate an Analysis of Alternatives (AoA) in the 3rd Quarter FY 2017 to begin the assessment of the technical feasibility, operational feasibility, technical risk, and affordability of potential solutions. The AoA will take advantage of previous studies, ongoing Advanced Technology Development S&T projects, and

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 5	**R-1 Program Element (Number/Name)** PE 0604212N / *Other Helicopter Development*	**Project (Number/Name)** 3406 / *Attack and Utility Replacement Aircraft*

input from Government, Industry and Academia. The results of the AoA and Technology Readiness Assessments will be used to assist in determining if a Milestone A or Milestone B entry is appropriate. Once the appropriate Milestone entry point has been determined, the program will enter at the appropriate Milestone with an appropriate RFP Release. The program will complete development and testing of the most cost effective system before entering the Production and Deployment phase in the FY2031 timeframe.

E. Performance Metrics

A studies and analysis contract will be awarded 2Q FY 2018.