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 0604245N *I H-1 Upgrades*							
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	92.463	26.768	27.441	61.288	-	61.288	59.827	43.705	37.584	37.541	Continuing	Continuing
3359: *H-1 Improvements*	92.463	26.768	27.441	61.288	-	61.288	59.827	43.705	37.584	37.541	Continuing	Continuing

A. Mission Description and Budget Item Justification

The mission of the AH-1 attack helicopter is to provide rotary wing close air support, anti-armor, armed escort, armed/visual reconnaissance, survivability enhancements, and fire support coordination capabilities under day/night and adverse weather conditions. The mission of the UH-1 utility helicopter is to provide command and control and combat assault support under day/night and adverse weather conditions and special operations support; supporting arms coordination and aeromedical evacuation. Major modifications for both aircraft include 37 AH-1Ws converted to AH-1Zs, build 152 new AH-1Zs, remanufacture ten (10) H-1N helicopters and build 150 new UH-1Y models. AH-1Z and UH-1Y models include a 4-bladed, composite rotor system with semi-automatic bladefold, performance-matched transmissions, T700 Engine Digital Electronic Control Units, 4-bladed tail rotors and drive systems, more effective stabilizers, upgraded landing gear, and common, fully integrated cockpits and avionics systems. These upgrades add 10,000 flight hours to AH-1Z/UH-1Y airframes. The fully integrated cockpits reduce operator workload and improve situational awareness, thus increasing safety and reducing the rate of aircraft attrition. They provide considerable growth potential for future weapon systems and avionics to significantly increase mission effectiveness and survivability. The cockpits also include integration of onboard mission planning, communications, digital fire control, self-navigation, night navigation/targeting, air-to-ground missile and air-launched intercept missile weapon systems management in nearly identical crew stations, which significantly reduces training requirements. These upgrades maximize commonality between the two aircraft and provide needed improvements in crew and passenger survivability, payload, power available, endurance, range, airspeed, maneuverability and supportability.

This budget is required for follow-on improvements to H-1 aircraft via integration of sensors and weapons, avionics, and air vehicle components that will address deficiencies, systems safety, obsolescence, readiness, reliability, supportability, and relevance in the battlespace. Improvements will include all associated System Configuration Set (SCS) updates as well as integration and testing related to the aircraft platforms.

B. Program Change Summary ($ in Millions)	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**
Previous President's Budget	27.235	27.441	32.625	-	32.625
Current President's Budget	26.768	27.441	61.288	-	61.288
Total Adjustments	-0.467	0.000	28.663	-	28.663
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.467	0.000			
• Program Adjustments	0.000	0.000	29.231	-	29.231

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 0604245N *I H-1 Upgrades*			
• Rate/Misc Adjustments	0.000	0.000	-0.568	-	-0.568

Change Summary Explanation

Funding: FY2018 PB includes an increase of $17.6M in Primary Hardware Development over FY2017 PB. This increase is due to structural and electrical improvements. Beginning in FY2018, progress has been made to support current and future development of UH-1Y & AH-1Z aircraft structural & electrical systems, subsystems, and components, supporting the future power needs of systems such as the Hellfire suite, Intrepid Tiger-2 (V3), AIM-9X upgrades, and other future capabilities. In addition, structural upgrades to auxiliary fuel capability, UH-1Y cabin floor boards, and weapons enhancements will increase mission flexibility, increase aircraft range and/or loiter time, and weapons employment to the warfighter.

Technical: None

Schedule: System Configuration Sets (SCS) will be continuously developed and released in conjunction with required hardware obsolescence and capability improvements. Software development as a whole are accounted for separately on the R-3 and are apportioned into development efforts for Avionics and Sensors & Weapons on the R-2a. Software is no longer portrayed separately on the R-2a or R-4 since SCS builds are linked to the development of hardware. The Mission Description section for Avionics and Sensors and Weapons state that SCS is part of each of the projects.

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 0604245N / *H-1 Upgrades*				Project (Number/Name) 3359 / *H-1 Improvements*			
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**
3359: *H-1 Improvements*	92.463	26.768	27.441	61.288	-	61.288	59.827	43.705	37.584	37.541	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The objective of H-1 Improvements is to provide follow-on Research, Development, Test and Evaluation efforts in support of all H-1 aircraft.

Air Vehicle and Engine improvements include analysis of structural data to formulate Damage Limits and Tolerances for structural components to reduce life cycle costs and maintenance workload; and redesign of structural components and drive system components to minimize excessive and premature wear, increase reliability, and improve existing design deficiencies. Additional air vehicle upgrades include: redesign of the aircraft power-generating and electrical components (generators, inverters, wiring) to support power requirements for existing and future systems (Aircraft Survivability Equipment, emerging electronic warfare, and Degraded Visual Environment), redesign of the Environmental Control System /Thermal Redesign to support cooling of Technology Refresh Mission Computer and other avionics, redesign to add an auxiliary fuel capability, Intrepid Tiger, and upgrades the UH-1Y cabin floor panels.

Avionics improvements target digital inter-operability, integrated avionics, safety & survivability, and situational awareness for both the pilot and aircrew safety. This includes integrating Joint Battle Command-Platform (JBC-P), Full Motion Video (FMV), Degraded Visual Environment (DVE), Helmet Mounted Display improvements, cockpit displays, precision and GPS non-precision landing capability, Crash Survivable Flight Incident Recorder, collision avoidance, improved Embedded Global Positioning System (EGI), Inertial Navigation System (INS), targeting sensor systems and mission computer. H-1 capability improvements include improved Aircraft Survivability Equipment (ASE), digital operations & transfer of data, digital interoperability, digital video recording, video and data networking, and information integration with aviation combat elements and Marine Air Ground Task Force elements. Mandated capability efforts include CNS/ATM, Required Navigation Performance/Area Navigation (RNP/RNAV), GPS Selective Availability Anti-Spoofing Module (SAASM), Automatic Dependent Surveillance - Broadcast (ADS-B), Crash Survivable Flight Incident Recorder, development efforts required for Depot standup and incorporation of technology and information protection/Information Assurance in critical avionics and sensor systems. In addition, the goal is to reduce total ownership cost for H-1 aircraft and related support systems by improving reliability and maintainability of critical flight and avionics systems along with associated peculiar avionics support equipment and incorporating fact-of-life obsolescence solutions. All avionics improvements include related System Configuration Set (SCS) development updates and testing.

Sensors and Weapons improvements include hardware and software upgrades, reliability improvement initiatives, program security implementation and aircraft integration. Collectively, these improvements will provide additional capabilities to the warfighter improve reliability and allow for the interface between the sensors, helmet and precision guided munitions. Additionally, these enhancements will improve the overall design, produceability and maintainability of these systems. Specifically, the AN/ALQ-30 Target Sight System (TSS) will implement several block upgrade efforts with improvements to the IR Pointer, Laser and Cameras. The BRITE Star II will add additional capabilities for functionality, user improvement as well as Laser Spot Tracking. Both of these sensor improvements will be coupled with the Optomized TopOwl (OTO) improvements that include optics upgrades, reliability and human factors improvements to include Degraded Visual Environment (DVE), as well as advanced boresighting and mapping improvements that will aid in weapons accuracy. Improving and integrating weapon systems will align with these sensor and helmet upgrades to improve the overall accuracy and lethality of the H1 platform. Continued development, test and integration efforts with the Advanced Precision Kill Weapons (APKWS), M299 Launcher improvements, Digital Rocket Launcher (DRL), AIM-9X, the AN/ALQ-231 (V) Intrepid Tiger II Electronic Warfare Pod

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 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

and the Joint Air-to-Ground Missile (JAGM) Hellfire missile will follow in FY17. All sensors and weapons improvements include related System Configuration Set (SCS) development updates and testing.

These improvements will provide considerable growth potential for future weapon systems, air vehicle improvements, software improvements, and avionics upgrades, which will significantly increase mission effectiveness & survivability, while potentially reducing life cycle costs. The cockpits will also include integration of onboard mission planning, communications, digital fire control, self-navigation, night navigation/targeting, precision guided munitions, and air-launched intercept missile weapon systems management in nearly identical crew stations, which significantly reduce training requirements. These upgrades maximize commonality between all H-1 Type/Model/Series aircraft and provide needed improvements in crew and passenger reliability, survivability, payload, power available, endurance, range, airspeed, maneuverability and supportability.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: System Configuration Set Development	16.904	13.486	0.000	0.000	0.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: SCS 8.1 development completion. Continue SCS 8.2 with the design and development of Radar Warning Set AN/APR-39 D(V)2 (sensor/avionics) to correct obsolescence issue required to support Lot 14/FY 2017. Integrate the Advanced Data Transfer System (ADTS) needed for digital map data to meet Terrain Awareness Warning System (TAWS) mandate, and Airborne Network Switch (ANS) needed to switch multiple devices to communicate with the Tech Refresh Mission Computer (TRMC) via Ethernet. Integrate and test AN/ALE-47 Dispensing System software upgrades to increase the survivability of platforms against Infrared (IR) threats. Integrate Target Sight System (TSS) Laser Spot Tracker (LST) to increase platform target acquisition capability. Complete Developmental Test (DT) and Operation Testing (OT) for SCS 8.2. Commence SCS 8.3 ANS/ADTS software design, development, and integration.					
FY 2017 Plans: Continue SCS 8.3 ANS/ADTS software design, development, and integration. SCS 8.3 is completed with DT and OT planned for end of FY17 for digital map data to support follow on TAWS integration and multiple device communication within the platform to the TRMC. Commence SCS 8.4 software development for integration of JAGM and establish requirements for SCS 8.5 TAWS software development and integrations.					
FY 2018 Base Plans: N/A					
FY 2018 OCO Plans: N/A					
Title: Weapons and Sensors Testing and Integration	0.986	1.046	7.381	0.000	7.381

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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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: Flight testing of TSS Laser Spot Tracker/HDTV/1K Forward Looking Infra Red (FLIR) Software and Hardware improvements as well as begin conducting captive carriage and development testing of the Joint Air-to-Ground Missile as part of SCS 8.2 or later version. ***FY 2017 Plans:*** FY17 - Continue flight testing of TSS Laser Spot Tracker/HDTV/1K FLIR software and hardware improvements (including -80 turret) as well as TSS TEU re-design testing. Continue captive carriage testing of the JAGM. ***FY 2018 Base Plans:*** Develop, test and integrate hardware, software changes to address parts obsolescence and deficiencies identified in test for aircraft sensors; Target Sight Systems (TSS) TEU-VPX OFP. Define and initiate a Requirements Trade Study for a Block Upgrade to the TSS. Continue software integration of JAGM and test functionality and compatibility with aircraft software in support of missile developmental testing. Initiate requirements analysis and develop, test and integrate hardware, software changes for a redesigned Digital Rocket Launcher (DRL). Develop, test and integrate hardware changes to the OTO Helmet, to include Display Module improvements and defining Cockpit Mapping Robot requirements. Continue with development testing of JAGM and DRL. Conduct DT Assist for JAGM and Operational Assessments of BS II and Intrepid Tiger improvements. ***FY 2018 OCO Plans:*** N/A					
Title: Air Vehicle and Engines Improvements	5.426	9.250	32.575	0.000	32.575
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue redesign of structural components to minimize excessive and premature wear, increase reliability, and improve existing design deficiencies. Initiate redesign of the auxiliary fuel system, and initiate aerial refueling capability. Continue air vehicle and engine improvements upgrades to include redesign of the aircraft power-generating components (generator, inverters, wiring) to support power requirements for existing and future systems (avionics, sensors and weapons) and to reduce aircraft weight. Continue Environmental Control System/Thermal Redesign to support other avionics on the UH-1Y/AH-1Z. ***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 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue redesign of structural components to minimize excessive and premature wear, increase reliability, and improve existing design deficiencies. Continue redesign of the auxiliary fuel system. Continue air vehicle and engine improvements upgrades to include redesign of the aircraft power-generating components (generator, inverters, wiring) to support power requirements for existing and future systems (avionics, sensors and weapons) and to reduce aircraft weight. Continue Environmental Control System/Thermal Redesign to support other avionics on the UH-1Y/AH-1Z. Initiate survivability upgrades (canted forward chaff buckets, blast frag canopy, opaque armor, self-sealing fuel tanks, sump and backing board.) ***FY 2018 Base Plans:*** Continue redesign of structural components to minimize excessive and premature wear, increase reliability, increase aircraft load capabilities, and improve existing design deficiencies. Continue redesign of the fuel system, and aerial refueling capability. Continue AC/DC generator SBIR and initiate redesign of the aircraft electrical power-generating components and aircraft re-wiring to support power requirements for existing and future systems to include stores select-ability, future Avionics Survivability Equipment (ASE), emerging Electronic Warfare (EW), and Degraded Visual Environment (DVE) systems. Continue Environmental Control Systems/Thermal Redesign to support other avionics on the UH-1Y/AH-1Z. Continue redesign of the drive system components (rotor brake/slip ring/standpipe/gearboxes/drive shaft and couplers/chip detectors) to increase reliability and reduce high cost and/or failure rates. Continue upgrades and redesigns of main and tail rotor blades. Continue survivability upgrades (canted forward chaff buckets, blast frag canopy, opaque armor, self-sealing fuel tanks, sump and backing board). Initiate UH-1Y structural improvements to increase capability including Intrepid Tiger, auxiliary fuel, cabin floor boards to prevent corrosion, floor panel access, and other structural reinforcements. ***FY 2018 OCO Plans:*** N/A					
Title: Avionics Improvements	3.452	3.659	21.332	0.000	21.332
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Continue avionics development & testing on Digital Map and data storage capabilities, digital video recording, avionics components obsolescence and regression testing; continue development efforts on Terrain Awareness Warning System (TAWS). Continue enhanced digital capability efforts, Aircraft Survivability Equipment (ASE) improvements, Helmet Mounted Display improvements, avionics systems obsolescence mitigation efforts, development of peculiar avionics support equipment, and development of automatic test equipment. Continue Full Motion Video (FMV) design/development and digital interoperability efforts. Initiate development efforts					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
on Wireless Intercommunication Systems (WICS), Joint Battlefield Command - Platform (JBC-P), Mobile User Objective System (MUOS) for over the horizon communication, Degraded Visual Environment and collision avoidance capability. Initiate Embedded Global Positioning System/Inertial Navigation System (EGI) upgrade for Aircraft Dependent Surveillance Broadcast (ADS-B), Selective Availability Anti- Spoofing Module (SAASM), GPS non-precision approach capability and Navigation Warfare (NAVWAR) GPS signal protection efforts. Also initiate UH-1Y aft cabin display for situational awareness and portable tablet Marine Air-Ground Task Force (MAGTF) digital interoperability coordination capability along with digital helmet mounted display capabilities. Initiate integration of Crash Survivable Flight Incident Recorder and Improved Vehicle Health and Monitoring System.					
FY 2017 Plans: Initiate avionics development & testing on ASE ALE-47 Electronic Warfare and APR-39D(V)2; Aircraft Network Switch (ANS)/Advanced Data Transfer System and Satellite Communications. Continue avionics development & testing on Digital Map and data storage capabilities, digital video recording, avionics components obsolescence and regression testing; continue development efforts on TAWS; enhanced digital capability efforts, other ASE improvements, Helmet Mounted Display improvements, avionics systems obsolescence mitigation efforts, development of peculiar avionics support equipment, and development of automatic test equipment; digital interoperability efforts, development efforts on WICS, JBC-P, MUOS for over the horizon communication, Degraded Visual Environment and collision avoidance capability, EGI upgrade for ADS-B, SAASM, GPS non-precision approach capability and NAVWAR GPS signal protection efforts; UH-1Y aft cabin display for situational awareness and portable tablet MAGTF digital interoperability coordination capability; additional waveform functionality; along with digital helmet mounted display capabilities, and integration of Crash Survivable Flight Incident Recorder and Improved Vehicle Health and Monitoring System.					
FY 2018 Base Plans: Continue design and development for digital interoperability improvements, avionics systems obsolescence mitigation efforts, and peculiar avionics support equipment, automatic test equipment, mission computer SCS improvements, satellite communication improvement, digital interoperability application of Variable Message Formatting (VMF), Aircraft Dependent Surveillance Broadcast (ADS-B), Selective Availability Anti-Spoofing Module (SAASM), GPS non-precision approach capability and Navigation Warfare (NAVWAR) GPS signal protection efforts; UH-1Y aft cabin display for situational awareness and portable tablet Marine Air-Ground Task Force (MAGTF) improvements; Continue development and testing for digital interoperability improvements, additional waveform functionality, and avionics systems obsolescence mitigation efforts, and peculiar avionics support equipment, automatic test equipment and mission computer SCS improvements, ASE, EW, Satellite Communications Full Motion Video, UH-1Y Aft Cabin Display and additional waveform					

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 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
functionality, Aircraft Dependent Surveillance Broadcast (ADS-B), digital map and data storage capabilities, digital video recording, avionics components obsolescence mitigation and regression testing; Continue enhancement efforts digital capability efforts, digital map and data storage capability, digital video recording, avionics components obsolescence and regression testing, display systems, digital interoperability, satellite communication, digital systems upgrades, avionics components obsolescence mitigation and regression testing, enhanced digital capability efforts, other ASE improvements, avionics systems obsolescence mitigation efforts, development of peculiar avionics support equipment, and development of automatic test equipment; Initiate design and development on TAWS, Wireless Intercommunication Systems (WICS), Joint Battlefield Command - Platform (JBC-P), Mobile User Objective System (MUOS) for over the horizon communication, Degraded Visual Environment and collision avoidance capability, Embedded Global Positioning System/Inertial Navigation System (EGI) upgrade for Selective Availability Anti-Spoofing Module (SAASM), GPS non-precision approach capability and Navigation Warfare (NAVWAR) GPS signal protection efforts, CSFIR, and Link tactical data exchange. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	26.768	27.441	61.288	0.000	61.288

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/0178: *UH-1Y/AH-1Z APN1*	847.308	815.946	735.661	-	735.661	644.605	64.583	9.012	9.188	11.415	10,223.435
• APN/0178C: *UH-1Y/AH-1Z APN1 Advance Procurement*	56.168	57.232	42.082	-	42.082	0.000	0.000	0.000	0.000	0.000	508.516

Remarks

D. Acquisition Strategy

Follow-on H-1 Improvements will be developed using cost plus fixed fee type contracts.

E. Performance Metrics

Continue hardware and software development and test for follow-on H-1 Improvements.

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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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 Hardware Development	SS/CPFF	BHTI : Amarillo, TX	15.772	1.237	Jan 2016	5.140	Jan 2017	22.748	Jan 2018	-		22.748	36.870	81.767	81.767
Primary Hardware Development	SS/CPFF	Northrup Grumman : Woodland Hills, CA	2.066	0.648	Nov 2015	0.000		0.000		-		0.000	0.000	2.714	2.714
Systems Engineering	WR	NAWCAD : Patuxent River, MD	1.913	0.516	Nov 2015	0.525	Nov 2016	0.677	Nov 2017	-		0.677	2.790	6.421	-
		Subtotal	19.751	2.401		5.665		23.425		-		23.425	39.660	90.902	-

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	SS/CPFF	BHTI : Amarillo, TX	20.198	0.000	Feb 2016	5.061	Feb 2017	9.131	Feb 2018	-		9.131	14.983	49.373	49.373
Software Development	SS/FP	Northrup Grumman : Woodland Hills, CA	3.201	3.139	Nov 2015	1.664	Nov 2016	1.882	Nov 2017	-		1.882	19.446	29.332	29.332
Software Development	WR	NAWCWD : China Lake, CA	21.645	1.707	Nov 2015	6.761	Nov 2016	3.523	Nov 2017	-		3.523	14.519	48.155	-
		Subtotal	45.044	4.846		13.486		14.536		-		14.536	48.948	126.860	-

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
Operational Test and Evaluation	WR	COMOPTEVFOR : Norfolk, VA	4.352	2.238	Nov 2015	0.810	Nov 2016	2.953	Nov 2017	-		2.953	7.616	17.969	-
Development Test and Evaluation	WR	NAWCAD : Patuxent River, MD	20.702	15.782	Nov 2015	6.225	Nov 2016	19.105	Nov 2017	-		19.105	77.216	139.030	-
		Subtotal	25.054	18.020		7.035		22.058		-		22.058	84.832	156.999	-

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
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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
Contractor Engineering Support	Various	Various : Various	0.640	0.326	Nov 2015	0.330	Nov 2016	0.334	Nov 2017	-		0.334	1.376	3.006	3.006
Program Management Support	Various	Various : Various	1.565	0.940	Nov 2015	0.687	Nov 2016	0.695	Nov 2017	-		0.695	2.860	6.747	-
Travel	WR	NAVAIR : Patuxent River, MD	0.409	0.235	Oct 2015	0.238	Oct 2016	0.240	Oct 2017	-		0.240	Continuing	Continuing	Continuing
		Subtotal	2.614	1.501		1.255		1.269		-		1.269	-	-	-

	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	92.463	26.768		27.441		61.288		-		61.288	-	-	-

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 0604245N / *H-1 Upgrades*	**Project (Number/Name)** 3359 / *H-1 Improvements*

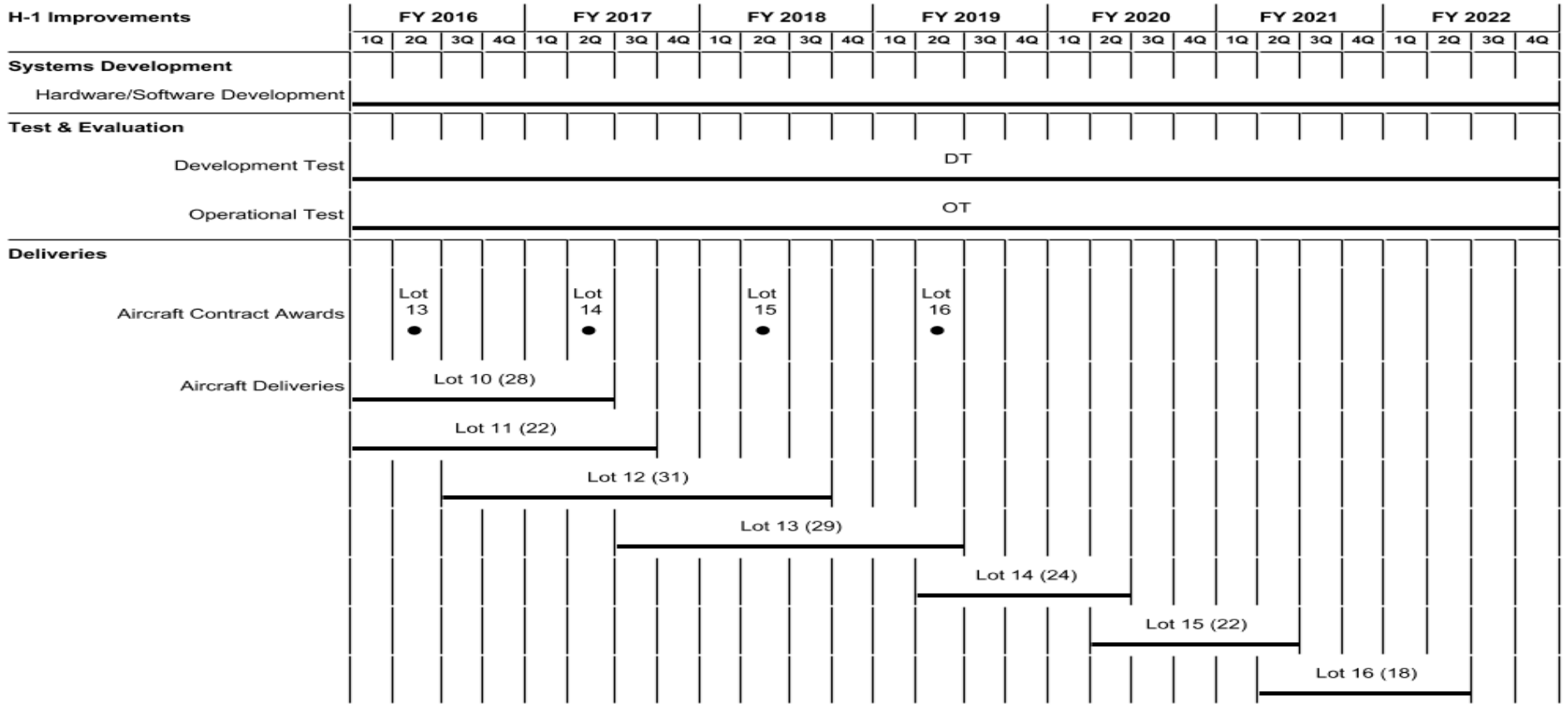

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Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
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Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
H-1 Improvements				
Systems Development: Hardware/Software Development: Schedule Detail	1	2016	4	2022
Test & Evaluation: Development Test: H-1 Improvements DT	1	2016	4	2022
Test & Evaluation: Operational Test: H-1 Improvements OT	1	2016	4	2022
Deliveries: Aircraft Contract Awards: Lot 13	2	2016	2	2016
Deliveries: Aircraft Contract Awards: Lot 14	2	2017	2	2017
Deliveries: Aircraft Contract Awards: Lot 15	2	2018	2	2018
Deliveries: Aircraft Contract Awards: Lot 16	2	2019	2	2019
Deliveries: Aircraft Deliveries: Lot 10 FRP Y + Z	1	2016	2	2017
Deliveries: Aircraft Deliveries: Lot 11 FRP Y + Z	1	2016	3	2017
Deliveries: Aircraft Deliveries: Lot 12 FRP Y + Z	3	2016	3	2018
Deliveries: Aircraft Deliveries: Lot 13 FRP Y + Z	3	2017	2	2019
Deliveries: Aircraft Deliveries: Lot 14 FRP Z	2	2019	2	2020
Deliveries: Aircraft Deliveries: Lot 15 FRP Z	2	2020	2	2021
Deliveries: Aircraft Deliveries: Lot 16 FRP Z	2	2021	2	2022