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 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0101221N *I Strategic Sub & Wpns Sys Supt*							
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	966.226	96.078	136.556	135.219	-	135.219	88.170	56.005	45.522	24.976	Continuing	Continuing
0951: *Joint Warhead Fuze Sustainment Program*	298.817	93.440	111.857	109.730	-	109.730	64.610	32.348	21.473	0.000	0.000	732.275
2021: *Mk4A Shape Stable Nose Tip*	0.000	0.000	0.000	6.000	-	6.000	6.000	6.000	6.000	6.000	Continuing	Continuing
2228: *Technical Applications Programs*	643.469	0.000	22.123	16.695	-	16.695	14.716	14.771	15.097	15.964	Continuing	Continuing
3158: *Integrated Nuclear Weapons Security Sys Dev*	23.940	2.638	2.576	2.794	-	2.794	2.844	2.886	2.952	3.012	Continuing	Continuing
Program MDAP/MAIS Code: **Project MDAP/MAIS Code(s):** 178												

A. Mission Description and Budget Item Justification

The Joint Warhead Fuze Sustainment Program (0951) is an effort to develop advanced components to improve the reliability, safety, and security of Arming, Fuzing and Firing (AF&F) systems for nuclear reentry systems. The current effort is focused on supporting the alteration of the AF&F system for the MK5/W88 system which will be five years beyond its design life at the scheduled deployment of the AF&F alteration. This effort also supports future utilization of the developed components by the US Air Force and United Kingdom.

The Mk4A Shape Stable Nose Tip (SSNT) (2021) effort will convert reentry body (RB) forward shell assemblies (FSA's) from legacy carbon composite nose tips to SSNT's. This will require ground and flight testing of SSNT RBA's, updates and modifications to RB documentation (Weapon Specifications, Interface Control Drawings, product drawings etc), updated Fire Control software for fleet implementation, conversion of war reserve RB's to FSA's with SSNT, procurement/conversion of surveillance and flight test units, Strategic Weapons Facility (SWF) logistics implementation planning and execution, review and update Mk4A surveillance planning and the DoD share of NNSA Office of Secure Transportation (OST) for shipping.

The Technology Applications Program (2228) supports the TRIDENT II (D5) Submarine Launched Ballistic Missile (SLBM) that provides the U.S. a weapon system with greater accuracy and payload capability as compared to the TRIDENT I (C4) system. TRIDENT II enhances U.S. strategic deterrence providing a survivable, sea-based system capable of engaging the full spectrum of potential targets with fewer submarines. The MEP project leverages the capability of the D5 Life Extension Guidance (Mk6 Mod1) to sight two stars vice one combined with the interface updates to the Fire Control and Navigation subsystem, allowing for in-flight correction, the potential to operate in environments where GPS is denied, and may provide future relief to the strict tolerance requirements of the strategic navigator on the current OHIO class submarines and the OHIO Class Replacement program. The Systems Engineering Modeling and Simulation capability will consist of three elements: Model Based Design, Strategic Weapon System (SWS) Integrated Modeling and Simulation/Common Architecture & Framework, and SWS Enhancement Ground Test. This effort will provide the capability to comprehensively evaluate and test the integrated SWS within representative operational environments, providing unprecedented visibility across

the SWS and system performance characterization equivalent to flight testing. This capability will enable trade space analysis to identify technical margin, subsystem interactions, and lifecycle affordability opportunities to include other services and be able to identify the benefits and risks of commonality to the individual programs, requirements and CONOPs modifications that could facilitate commonality, potential common acquisition strategies between the services, and total life cycle cost implications.

The Integrated Nuclear Weapons Security System (INWSS) (3158) efforts support the Nuclear Weapons Security program and SSBN Escort mission. The policies and requirements regarding the safeguard of nuclear weapons within the Department of Defense is established by DoD S5210.41M. Within the Department of the Navy, nuclear weapons are limited to TRIDENT Fleet Ballistic Missiles (FBM), either deployed aboard TRIDENT submarines or located landside at Naval Submarine Base, Kings Bay, or Naval Submarine Base, Bangor where missiles are first assembled as well as repaired. The Chief of Naval Operations (CNO) has assigned the Strategic Systems Programs (SSP), the FBM program manager, with mission responsibility for the safeguard of FBM nuclear technologies. This budget supports efforts directed at improving the current technological baseline through a series of studies. These efforts will improve countermeasure technologies to address detection, delay and denial.

B. Program Change Summary ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	96.404	136.556	128.286	-	128.286
Current President's Budget	96.078	136.556	135.219	-	135.219
Total Adjustments	-0.326	0.000	6.933	-	6.933
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.325	0.000			
• Program Adjustments	0.000	0.000	6.000	-	6.000
• Rate/Misc Adjustments	-0.001	0.000	0.933	-	0.933

Change Summary Explanation

Funding increased in FY 2018 for the Shape Stable Nose Tip (SSNT) ($6M) and rate adjustments.

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / *Strategic Sub & Wpns Sys Supt*	Project (Number/Name) 0951 / *Joint Warhead Fuze Sustainment Program*	

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
0951: *Joint Warhead Fuze Sustainment Program*	298.817	93.440	111.857	109.730	-	109.730	64.610	32.348	21.473	0.000	0.000	732.275
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 178

A. Mission Description and Budget Item Justification

The Joint Warhead Fuze Sustainment Program is an effort to develop advanced components to improve the reliability, safety, and security of AF&F systems for nuclear reentry systems. The current effort is focused on supporting the alteration of the AF&F system for the MK5/W88 system which will be five years beyond its design life at the scheduled deployment of the AF&F alteration. This effort also supports future utilization of the developed components by the US Air Force and United Kingdom.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: TRIDENT II	93.440	111.857	109.730	0.000	109.730
Articles:	-	-	-	-	-
Description: Identify, prioritize, develop, proof, and demonstrate advanced technologies that will be leveraged and incorporated into future AF&Fs.					
FY 2016 Accomplishments: Continue development, proofing, demonstration of identified advanced technologies for future AF&Fs Support engineer working groups and program reviews. Continue AF&F sub-assembly design demonstrations Continue development of advanced safety and surety architecture solutions. Continue detailed design Continue to develop and implement software changes due to AF&F Conduct performance assessment of tested designs Conduct production engineering Begin missile integration of the Mk5A Alt 370 fuze development, and perform pre-flight test and analysis Design, develop and qualify production tools and processes, testers, gauges, AF&F simulators and trainers					
FY 2017 Plans: Continue development, proofing, demonstration of identified advanced technologies for future AF&Fs Support engineer working groups and program reviews. Continue AF&F sub-assembly design demonstrations					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 0951 / *Joint Warhead Fuze Sustainment Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue development of advanced safety and surety architecture solutions. Continue detailed design Continue to develop and implement software changes due to AF&F Conduct performance assessment of tested designs Conduct production engineering Continue missile integration of the Mk5A Alt 370 fuze development, and perform pre-flight test and analysis Continue design, develop and qualify production tools and processes, testers, gauges, AF&F simulators and trainers Flight Test and integration Conduct FCET 53 flight experiment system test and integration, drawing & procedure updates, and SPALT proofing Begin Production Proof In (PPI) builds					
FY 2018 Base Plans: Continue development, proofing, demonstration of identified advanced technologies for future AF&Fs Support engineer working groups and program reviews. Continue AF&F sub-assembly design demonstrations Continue development of advanced safety and surety architecture solutions. Continue detailed design Continue to develop and implement software changes due to AF&F Conduct performance assessment of tested designs Conduct production engineering Continue missile integration of the Mk5A Alt 370 fuze development, and perform pre-flight test and analysis Continue design, develop and qualify production tools and processes, testers, gauges, AF&F simulators and trainers Flight Test and integration Continue Production Proof In (PPI) builds Conduct system vulnerability analysis Engineering support for Electromagnetic Environment testing and data analysis Conduct concept and design reviews Conduct telemetry analysis Conduct Thermal Battery Evaluations and Certifications Procurement of developmental hardware					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 0951 / *Joint Warhead Fuze Sustainment Program*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Qualification of developmental hardware					
FY 2018 OCO Plans: N/A					
Accomplishments/Planned Programs Subtotals	93.440	111.857	109.730	0.000	109.730

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
• RDTEN/3219: *SBSD Nuclear Technology Development*	419.273	390.326	265.462	-	265.462	190.107	114.010	80.088	60.144	Continuing	Continuing
• RDTEN/3220: *Advanced Submarine System Development*	947.783	700.811	776.157	-	776.157	514.520	447.447	326.007	208.311	Continuing	Continuing
• OPN/5358: *SWS Modernization Funds*	240.677	215.138	246.221	-	246.221	275.485	278.260	245.166	258.037	0.000	2,720.405
• WPN/1250: *TRIDENT II Mods*	1,089.064	1,103.086	1,143.595	-	1,143.595	1,110.469	1,210.406	1,253.015	1,247.250	4,009.553	24,493.593
• OMN/1D2D: *Fleet Ballistic Missile*	1,033.209	1,030.868	1,056.858	-	1,056.858	1,141.919	1,169.087	1,182.438	1,212.984	0.000	7,827.363
• SCN/1045: *OHIO Replacement Submarine*	0.000	773.138	867.853	-	867.853	2,999.236	1,473.898	4,237.852	4,260.920	95,064.200	109,677.097

Remarks

D. Acquisition Strategy

Contracts will continue to be awarded to those sources who were engaged in the Mk4LE Reentry Body development program and are currently engaged in the production and/or operational support of the deployed Mk4LE Reentry Body on the basis of Other Than Full and Open Competition pursuant to the authority of 10 U.S.C. 2304 (c) (1) and (3) implemented by FAR 6.302.-1, 3, 4

E. Performance Metrics

Not applicable

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 0951 / *Joint Warhead Fuze Sustainment Program*

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
Joint Warhead Fuze Sustainment DOE	MIPR	DOE : NM	253.046	71.282	Nov 2015	91.257	Dec 2016	92.466	Nov 2017	-		92.466	0.000	508.051	Continuing
Joint Warhead Fuze Sustainment ITT	SS/CPFF	ITT : VA	10.907	4.000	Oct 2015	4.000	Nov 2016	4.265	Nov 2017	-		4.265	0.000	23.172	Continuing
Joint Warhead Fuze Sustainment LMMS	SS/CPFF	LMMS : CA	23.185	11.702	Nov 2015	11.930	Nov 2016	11.793	Nov 2017	-		11.793	0.000	58.610	Continuing
Joint Warhead Fuze Sustainment	WR	NSWC Dahlgren : VA	10.863	5.278	Dec 2015	2.465	Dec 2016	0.318	Oct 2017	-		0.318	0.000	18.924	Continuing
Joint Warhead Fuze Sustainment	SS/CPFF	BAE : MD	0.438	0.291	Nov 2015	0.505	Dec 2016	0.505	Dec 2017	-		0.505	0.000	1.739	Continuing
Joint Warhead Fuze Sustainment	SS/CPIF	APL : MD	0.348	0.437	Dec 2015	0.000		0.144	Dec 2017	-		0.144	0.000	0.929	Continuing
Joint Warhead Fuze Sustainment	C/BA	GDAIS : MA	0.030	0.150	Dec 2015	1.500	Dec 2016	0.000		-		0.000	0.000	1.680	Continuing
Joint Warhead Fuze Sustainment	WR	CNSW : ID	0.000	0.200	Nov 2015	0.200	Oct 2016	0.239	Oct 2017	-		0.239	0.000	0.639	Continuing
Joint Warhead Fuze Sustainment	WR	NCCC : Not Specified	0.000	0.100	Oct 2015	0.000		0.000		-		0.000	0.000	0.100	Continuing
		Subtotal	298.817	93.440		111.857		109.730		-		109.730	0.000	613.844	-

	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	298.817	93.440		111.857		109.730		-		109.730	0.000	613.844	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 0951 / *Joint Warhead Fuze Sustainment Program*

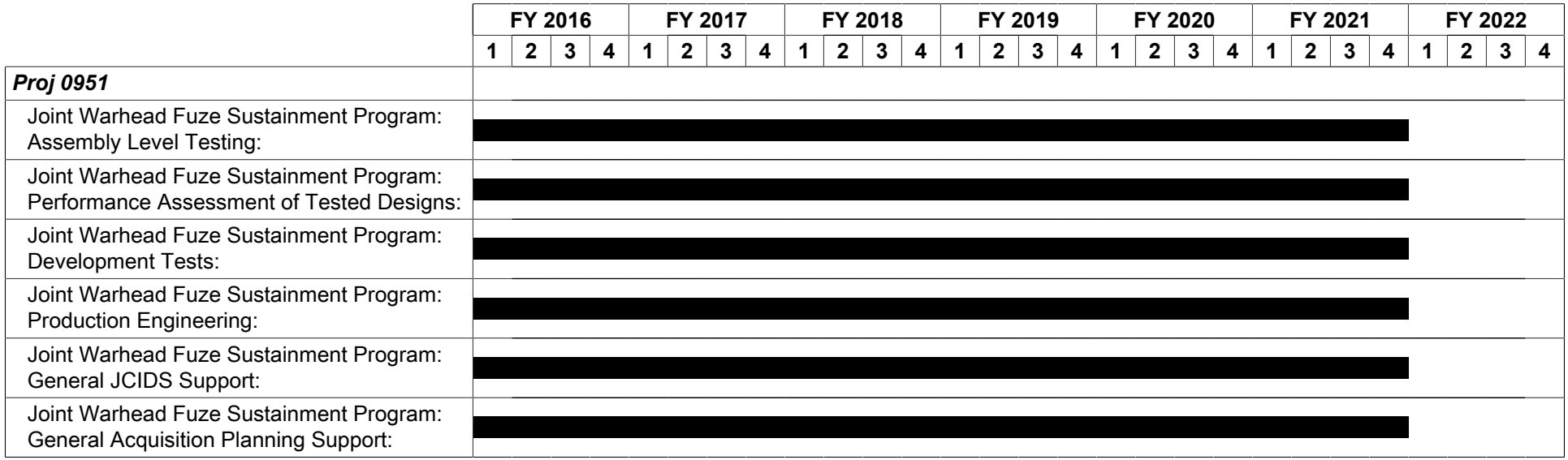

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 0951 / *Joint Warhead Fuze Sustainment Program*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 0951				
Joint Warhead Fuze Sustainment Program: Assembly Level Testing:	1	2016	4	2021
Joint Warhead Fuze Sustainment Program: Performance Assessment of Tested Designs:	1	2016	4	2021
Joint Warhead Fuze Sustainment Program: Development Tests:	1	2016	4	2021
Joint Warhead Fuze Sustainment Program: Production Engineering:	1	2016	4	2021
Joint Warhead Fuze Sustainment Program: General JCIDS Support:	1	2016	4	2021
Joint Warhead Fuze Sustainment Program: General Acquisition Planning Support:	1	2016	4	2021

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / *Strategic Sub & Wpns Sys Supt*	Project (Number/Name) 2021 / *Mk4A Shape Stable Nose Tip*	

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
2021: *Mk4A Shape Stable Nose Tip*	0.000	0.000	0.000	6.000	-	6.000	6.000	6.000	6.000	6.000	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

Project MDAP/MAIS Code: 178

A. Mission Description and Budget Item Justification

The Mk4A Shape Stable Nose Tip (SSNT) effort will convert reentry body (RB) forward shell assemblies (FSA's) from legacy carbon composite nose tips to SSNT's. This will require ground and flight testing of SSNT RBA's, updates and modifications to RB documentation (Weapon Specifications, Interface Control Drawings, product drawings etc), updated Fire Control software for fleet implementation, conversion of war reserve RB's to FSA's with SSNT, procurement/conversion of surveillance and flight test units, Strategic Weapons Facility (SWF) logistics implementation planning and execution, review and update Mk4A surveillance planning and the DoD share of NNSA Office of Secure Transportation (OST) for shipping.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Mk4A Shape Stable Nose Tip	0.000	0.000	6.000	0.000	6.000
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Not Applicable					
FY 2017 Plans: Not Applicable					
FY 2018 Base Plans: Strategic Systems Programs Alteration (SPALT) documentation Analyze & review reentry body (RB) aerodynamics data for future Fire Control updates Scaling laboratory conversion process of RB Forward Shell Assemblies (FSA's) to accept shape stable nose tips (SSNT's) in to a production environment Procure development nose tip billet material units to support material qualification testing					
FY 2018 OCO Plans: Not Applicable					
Accomplishments/Planned Programs Subtotals	0.000	0.000	6.000	0.000	6.000

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2021 / *Mk4A Shape Stable Nose Tip*

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Contracts will continue to be awarded to those sources who were engaged in the Mk4LE Reentry Body development program and are currently engaged in the production and/or operational support of the deployed Mk4LE Reentry Body on the basis of Other Than Full and Open Competition pursuant to the authority of 10 U.S.C. 2304 (c) (1) and (3) implemented by FAR 6.302.-1, 3, 4

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2021 / *Mk4A Shape Stable Nose Tip*

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
SSNT LMSS	TBD	LMSS : CA	0.000	0.000		0.000		5.000	Apr 2018	-		5.000	Continuing	Continuing	Continuing
SSNT NSWC	TBD	NSWC : VA	0.000	0.000		0.000		1.000	Apr 2018	-		1.000	Continuing	Continuing	Continuing
		Subtotal	0.000	0.000		0.000		6.000		-		6.000	-	-	-

	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	0.000	0.000		0.000		6.000		-		6.000	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2021 / *Mk4A Shape Stable Nose Tip*

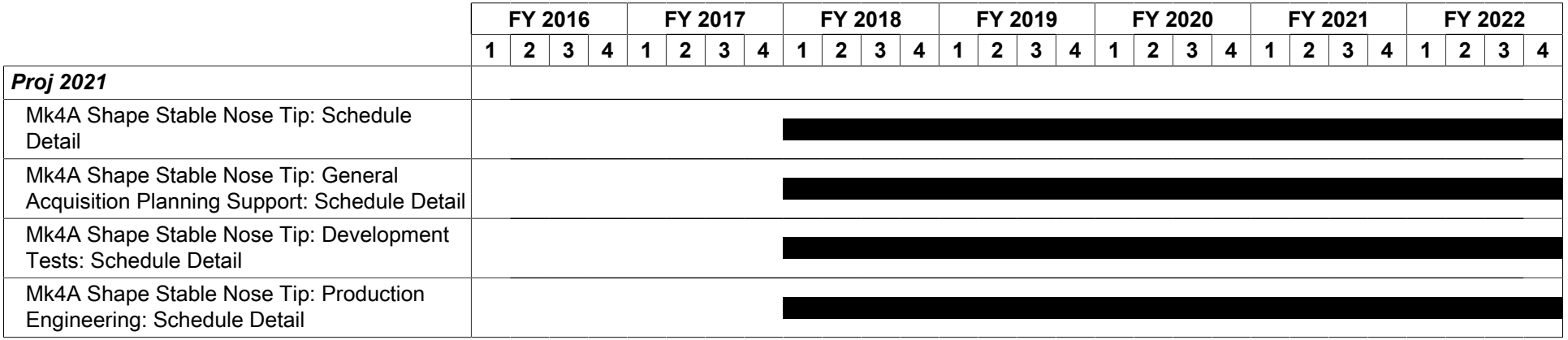

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2021 / *Mk4A Shape Stable Nose Tip*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2021				
Mk4A Shape Stable Nose Tip: Schedule Detail	1	2018	4	2022
Mk4A Shape Stable Nose Tip: General Acquisition Planning Support: Schedule Detail	1	2018	4	2022
Mk4A Shape Stable Nose Tip: Development Tests: Schedule Detail	1	2018	4	2022
Mk4A Shape Stable Nose Tip: Production Engineering: Schedule Detail	1	2018	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / *Strategic Sub & Wpns Sys Supt*	Project (Number/Name) 2228 / *Technical Applications Programs*	

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
2228: *Technical Applications Programs*	643.469	0.000	22.123	16.695	-	16.695	14.716	14.771	15.097	15.964	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Multi-Star Enhanced Prelaunch (MEP) project was originally scheduled to commence in FY 2016. The MEP project leverages the capability of the D5 Life Extension Guidance (Mk6 Mod1) to sight two stars vice one combined with the interface updates to the Fire Control and Navigation subsystem, allowing for in-flight correction, the potential to operate in environments where GPS is denied, and potential future relief to the strict tolerance requirements of the strategic navigator on the current OHIO class submarines and the OHIO Class Replacement program. The Systems Engineering Modeling and Simulation capability will consist of three elements: Model Based Design, Strategic Weapon System (SWS) Integrated Modeling and Simulation/Common Architecture & Framework, and SWS Enhancement Ground Test. This effort will provide the capability to comprehensively evaluate and test the integrated SWS within representative operational environments, providing unprecedented visibility across the SWS and system performance characterization equivalent to flight testing. This capability will enable trade space analysis to identify technical margin, subsystem interactions, and lifecycle affordability opportunities to include other services and be able to identify the benefits and risks of commonality to the individual programs, requirements and CONOPs modifications that could facilitate commonality, potential common acquisition strategies between the services, and total life cycle cost implications.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Multi-Star Enhanced Prelaunch (MEP)	0.000	8.757	13.030	0.000	13.030
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Began software engineering development Design Conformance Review Integration Testing Hardware in the Loop Testing Independent Verification and Validation Testing Guidance Demonstration and Shakedown Operation (DASO) Special Test Support Fire Control and Navigation DASO Software Development					
FY 2018 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2228 / *Technical Applications Programs*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
MEP DASO 30 Critical Design Review DASO 30 Hardware in the Loop Testing Fire Control DASO 30 Software Integrated Baseline Development Navigation DASO 30 Software Integration Build Development Guidance DASO 30 Software Independent Verification and Validation Testing DASO 30 SWS Subsystem Integrated Testing and Analysis DASO 30 Interface Coordination Documentation finalized ***FY 2018 OCO Plans:*** N/A					
Title: System Engineering Modeling and Simulation	0.000	13.366	3.665	0.000	3.665
Articles:	-	-	-	-	-
FY 2016 Accomplishments: N/A					
FY 2017 Plans: Begin to develop model based design integration plan. Begin modeling and simulation gap analysis. Begin assessment on RadHard avionics and electronics technology and affordability. Begin assessment on propellant technologies. Begin assessment on new Post Boost Control and Electro-Mechanical Thrust Vector Control (TVC) systems for improved mission flexibility and affordability. Begin assessment of common serial bus architectures for future flexibility and commonality between the Navy and other services. Begin assessment of common Fire Control/Ground architectures and software to support USSTRATCOM targeting requirements.					
FY 2018 Base Plans: Continue develop model based design integration plan. Continue modeling and simulation gap analysis. Continue assessment on RadHard avionics and electronics technology and affordability. Continue assessment on propellant technologies.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2228 / *Technical Applications Programs*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue assessment on new Post Boost Control and Electro-Mechanical Thrust Vector Control (TVC) systems for improved mission flexibility and affordability. ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	0.000	22.123	16.695	0.000	16.695

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

Contracts will continue to be awarded to those sources who were engaged in program and are currently engaged in the production and/or operational support on the basis of Other Than Full and Open Competition pursuant to the authority of 10 U.S.C. 2304 (c) (1) and (3) implemented by FAR 6.302.-1, 3, 4

E. Performance Metrics

Not applicable

Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2228 / *Technical Applications Programs*	

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
Technology Applications LMSS	SS/CPFF	LMSS : CA	160.450	0.000		3.822	May 2017	1.000	Oct 2017	-		1.000	Continuing	Continuing	Continuing
Technology Applications NSWC	WR	NSWC : VA	93.474	0.000		0.844	May 2017	0.300	Oct 2017	-		0.300	0.000	94.618	-
Technology Applications DOE	MIPR	DOE : NM	33.717	0.000		0.000		0.000		-		0.000	0.000	33.717	-
Technology Applications ITT	SS/CPFF	ITT : CO	12.194	0.000		0.000		0.000		-		0.000	0.000	12.194	-
Technology Applications CSDL	SS/CPFF	CSDL : MA	322.249	0.000		17.457	May 2017	13.750	Oct 2017	-		13.750	0.000	353.456	-
Technology Applications AERO	SS/CPFF	AERO : CA	3.068	0.000		0.000		0.000		-		0.000	0.000	3.068	-
Technology Applications VAR	Various	Various : Various	18.317	0.000		0.000		1.345	Oct 2017	-		1.345	0.000	19.662	-
Technology Applications GD-AIS	SS/CPFF	GDMS : MA	0.000	0.000		0.000		0.300	Oct 2017	-		0.300	0.000	0.300	-
		Subtotal	643.469	0.000		22.123		16.695		-		16.695	-	-	-

	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	643.469	0.000		22.123		16.695		-		16.695	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2228 / *Technical Applications Programs*

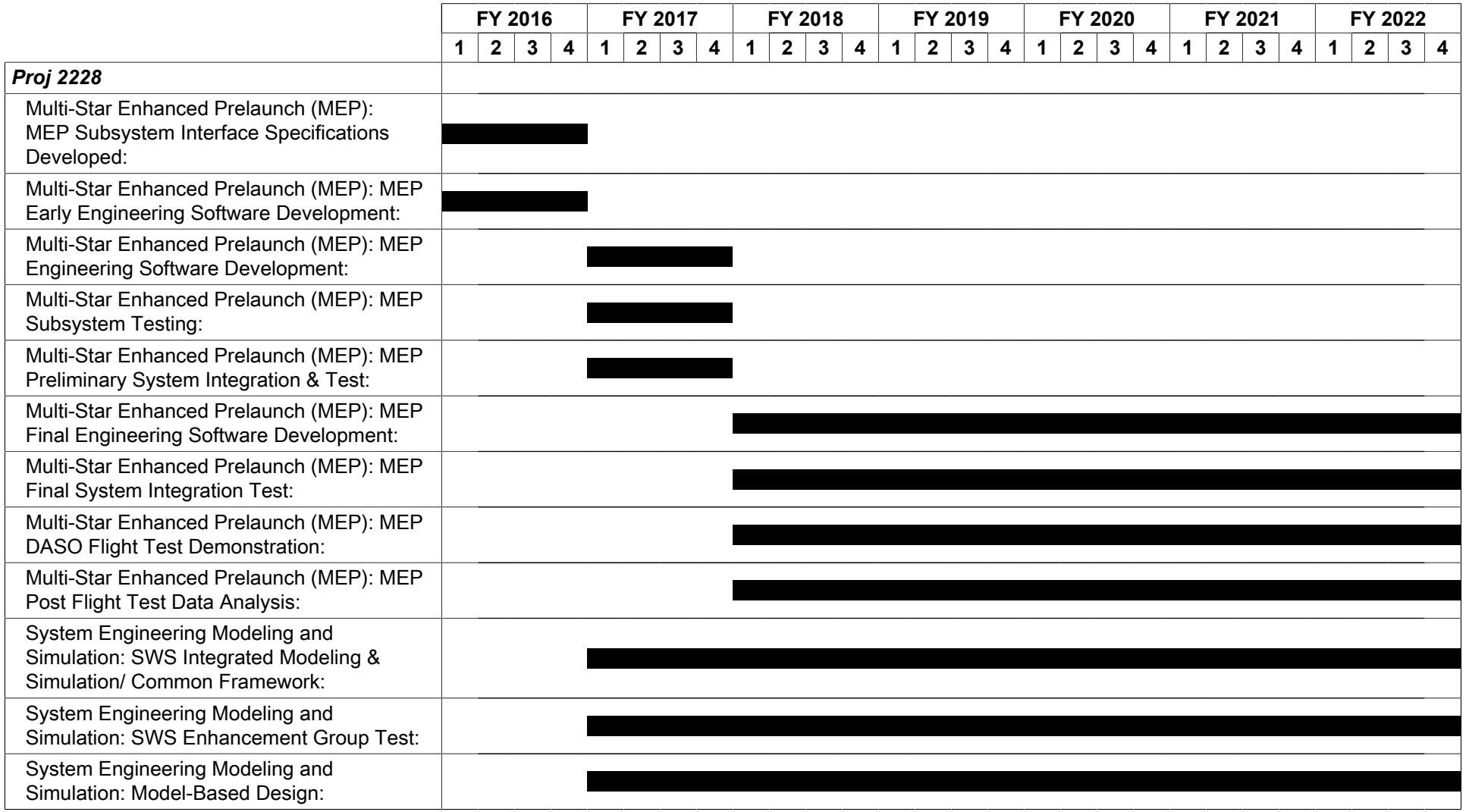

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 2228 / *Technical Applications Programs*

Schedule Details

	Start		End	
Events by Sub Project	**Quarter**	**Year**	**Quarter**	**Year**
Proj 2228				
Multi-Star Enhanced Prelaunch (MEP): MEP Subsystem Interface Specifications Developed:	1	2016	4	2016
Multi-Star Enhanced Prelaunch (MEP): MEP Early Engineering Software Development:	1	2016	4	2016
Multi-Star Enhanced Prelaunch (MEP): MEP Engineering Software Development:	1	2017	4	2017
Multi-Star Enhanced Prelaunch (MEP): MEP Subsystem Testing:	1	2017	4	2017
Multi-Star Enhanced Prelaunch (MEP): MEP Preliminary System Integration & Test:	1	2017	4	2017
Multi-Star Enhanced Prelaunch (MEP): MEP Final Engineering Software Development:	1	2018	4	2022
Multi-Star Enhanced Prelaunch (MEP): MEP Final System Integration Test:	1	2018	4	2022
Multi-Star Enhanced Prelaunch (MEP): MEP DASO Flight Test Demonstration:	1	2018	4	2022
Multi-Star Enhanced Prelaunch (MEP): MEP Post Flight Test Data Analysis:	1	2018	4	2022
System Engineering Modeling and Simulation: SWS Integrated Modeling & Simulation/ Common Framework:	1	2017	4	2022
System Engineering Modeling and Simulation: SWS Enhancement Group Test:	1	2017	4	2022
System Engineering Modeling and Simulation: Model-Based Design:	1	2017	4	2022

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0101221N / *Strategic Sub & Wpns Sys Supt*	Project (Number/Name) 3158 / *Integrated Nuclear Weapons Security Sys Dev*	

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
3158: *Integrated Nuclear Weapons Security Sys Dev*	23.940	2.638	2.576	2.794	-	2.794	2.844	2.886	2.952	3.012	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Enhanced Special Weapons effort supports the Nuclear Weapons Security (NWS) program and SSBN Escort mission. The policies and requirements regarding the safeguard of nuclear weapons within the Department of Defense is established by DoD S5210.41M. Within the Department of the Navy, nuclear weapons are limited to TRIDENT Fleet Ballistic Missiles (FBM), either deployed aboard TRIDENT submarines or located landside at Naval Submarine Base, Kings Bay or Naval Submarine Base, Bangor where missiles are first assembled as well as repaired. The CNO has assigned SSP, the FBM program manager, with mission responsibility for the safeguard of FBM nuclear assets. More specifically, the mission includes landside and pier operations as well as transits to and from the dive point, each of which present challenges to personnel as well as existing technologies. This budget supports efforts directed at improving the current technological baseline through a series of studies focusing on land and in transit requirements. Collectively, these efforts will improve countermeasure technologies addressing detection, delay and denial.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Integrated Nuclear Weapons Security Sys Dev	2.638	2.576	2.794	0.000	2.794
Articles:	-	-	-	-	-
FY 2016 Accomplishments: Waterside Detection System (WDS) Upstream Data Fusion: Development of software and hardware to fuse low level sensor data from multiple WDS sensors to increase capability for tracking and classification of current sensors. NWS Technology Refresh: Development of technologies for refresh of electronic security systems for the Limited Area and Electronic Harbor Security System in the Waterfront Restricted Area (WRA). This includes electronic hardware and algorithms. Continue Wide Area/Extended Detection: Development of technologies to increase detection, localization, classification, and tracking capabilities beyond the perimeter of the limited area, waterfront restricted area, along the convoy route and transit route. This effort includes technologies to detect intruders in difficult environments such as dense foliage, marsh, fog and heavy rain. FOPEN Sensor Transition: OSD(NM) is funding evaluation and demonstration of a variety of FOPEN Sensors. This effort will fund on site demonstration as well as necessary transition planning and development to facilitate transition of down selected sensors for incorporation into NWS POR.					

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 3158 / *Integrated Nuclear Weapons Security Sys Dev*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue research and development efforts towards the improvement of countermeasures technologies addressing detection, delay and denial. ***FY 2017 Plans:*** Continue Wide Area/Extended Detection: Development of technologies to increase detection, localization, classification, and tracking capabilities beyond the perimeter of the limited area, waterfront restricted area, along the convoy route and transit route. This effort includes technologies to detect intruders in difficult environments such as dense foliage, marsh, fog and heavy rain. Continue research and development efforts towards the improvement of countermeasures technologies addressing detection, delay and denial. Conduct Analysis of Alternatives on WQX-2 follow on Sensor Selection & Transition ***FY 2018 Base Plans:*** Continue Wide Area/Extended Detection: Development of technologies to increase detection, localization, classification, and tracking capabilities beyond the perimeter of the limited area, waterfront restricted area, along the convoy route and transit route. This effort includes technologies to detect intruders in difficult environments such as dense foliage, marsh, fog and heavy rain. Continue research and development efforts towards the improvement of countermeasures technologies addressing detection, delay and denial. Continue Analysis of Alternatives on WQX-2 follow on Sensor Selection & Transition ***FY 2018 OCO Plans:*** N/A					
Accomplishments/Planned Programs Subtotals	2.638	2.576	2.794	0.000	2.794

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
• OPN/Various-2: *OPN (Nuclear Weapons Security)*	33.253	38.410	28.513	-	28.513	30.259	42.457	34.878	35.575	Continuing	Continuing
• OMN/11D2D-3: *Fleet Ballistic Missile (Nuclear Weapons Security)*	75.017	76.415	89.091	-	89.091	82.253	83.621	85.257	86.931	Continuing	Continuing
• OMN/11D2D-5: *Fleet Ballistic Missile (Transit/Escort)*	95.387	110.770	90.689	-	90.689	91.389	93.396	95.200	97.147	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy		Date: May 2017
Appropriation/Budget Activity 1319 / 7	**R-1 Program Element (Number/Name)** PE 0101221N / *Strategic Sub & Wpns Sys Supt*	**Project (Number/Name)** 3158 / *Integrated Nuclear Weapons Security Sys Dev*

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
• MCN/Various-1: *MILCON (CNI) (Nuclear Weapons Security)*	77.709	47.119	0.000	-	0.000	89.393	19.327	72.160	21.766	0.000	391.954
• WPN/4129/0101228N: *Small Arms*	2.300	7.007	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	9.307

Remarks

D. Acquisition Strategy

Procurements are being executed through a combination of private contractors (large and small business), government Centers of Excellence (COEs), other government agencies and the Naval Submarine Bases, Kitsap and Kings Bay. Contract awards are based upon "best value" determinations, and where practical will be performance based or include incentive provisions.

E. Performance Metrics

Not applicable