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**Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy** **Date:** May 2017

<b>Appropriation/Budget Activity</b> 1319: <i>Research, Development, Test &amp; Evaluation, Navy / BA 5: System Development &amp; Demonstration (SDD)</i>					<b>R-1 Program Element (Number/Name)</b> PE 0604373N / <i>Airborne Mine Countermeasures (AMCM)</i>							
<b>COST (\$ in Millions)</b>	<b>Prior Years</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
Total Program Element	385.192	9.399	45.622	15.734	-	15.734	11.031	11.107	11.094	11.270	Continuing	Continuing
2047: <i>ALMDS</i>	197.782	3.396	18.570	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	219.748
2473: <i>Airborne Mine Neutralization System</i>	149.872	4.403	13.903	3.481	-	3.481	0.000	0.000	0.000	0.000	0.000	171.659
4026: <i>Strat Into Medal, Tactics &amp; Trng Organic Force</i>	31.743	1.600	11.786	10.994	-	10.994	10.102	10.159	10.126	10.283	Continuing	Continuing
9179: <i>Surf Navy Integ Undersea Tactical Tech</i>	5.795	0.000	1.363	1.259	-	1.259	0.929	0.948	0.968	0.987	Continuing	Continuing

## **A. Mission Description and Budget Item Justification**

This program element provides resources to develop advanced mine countermeasures equipment systems to counter known and projected mine threats. The mine countermeasures systems provide mobile, quick reaction forces capable of land or sea-based minehunting and minesweeping operations worldwide. Resources are for developing and deploying advanced mine-hunting and minesweeping systems and the intelligence and oceanographic capabilities that will enable mine warfare superiority. Tactics and techniques used vary across a diversity of environments and threats, including both asymmetric and emerging. Resources provide for systems and support of mine warfare systems, maritime systems, and expeditionary systems to allow for continuous operations of the Navy's warships and support vessels, other military vessels, and commercial vessels. Core capabilities include forward presence, deterrence, sea control, power projection, maritime security, humanitarian assistance and disaster response to maintain freedom of the seas. Capability improvements include conducting minefield reconnaissance (mine density and location) at high area search rates, improving detection capability, decreasing sensor false alarm rates, reducing or eliminating post-mission analysis detect, classify, identify, decide time, improving neutralization time, improving network communications, automatic target recognition, and achieving in-stride detect-to-engage capability. Concept of operations includes development of cooperative, unmanned, modular systems; the establishment of capable networked command and control systems; and standing up an accurate and interactive environmental system with the ability to form and disseminate a Common Environmental Picture. Other areas of importance include search and rescue; surface fire support; ASW operations; protection/offense against small craft/vehicles; air to air operations; very shallow water MCM; swimmer defense and torpedo defense. Efforts benefit the MCM force by transforming the Navy from the platform-centered legacy set of systems to a capability-centered force that is distributed, networked, and able to provide unique maritime influence and access across the entire maritime domain.

The Airborne Mine Countermeasures (AMCM) programs will provide detection, classification, localization, identification, neutralization, and influence clearance capabilities. This capability will be of critical importance in littoral zones, confined straits, choke points, and the Amphibious Objective Area (AOA).

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Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 5: System Development & Demonstration (SDD)		R-1 Program Element (Number/Name) PE 0604373N / Airborne Mine Countermeasures (AMCM)			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	9.647	45.622	45.944	-	45.944
Current President's Budget	9.399	45.622	15.734	-	15.734
Total Adjustments	-0.248	0.000	-30.210	-	-30.210
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-0.248	0.000			
• Program Adjustments	0.000	0.000	-1.325	-	-1.325
• Rate/Misc Adjustments	0.000	0.000	-28.885	-	-28.885
Change Summary Explanation					
FY16 -\$248K Total Adjustments: -\$248K SBIR					
FY17 No Change					
FY18 -\$30,210k Total Adjustments: -\$1,325k other Program adjustments, -\$28,885k Barracuda funding realignment to Surface Mine Warfare PE 0603502N					

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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 0604373N / Airborne Mine Countermeasures (AMCM)				Project (Number/Name) 2047 / ALMDS			
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
2047: ALMDS	197.782	3.396	18.570	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	219.748
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Airborne Laser Mine Detection System (ALMDS), designation AN/AES-1, is a light detection and ranging (LIDAR) Airborne Mine Countermeasures (AMCM) high area coverage system that detects, classifies, and localizes near-surface moored sea mines. The system is deployed from the MH-60S helicopter and will provide Organic Airborne Mine Countermeasures (OAMCM) defense to the battle force. The system represents a capability that does not exist in the current Mine Countermeasures (MCM) inventory.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<b>Title:</b> Hardware and Software technology development and demonstration/Engineering Services:  <b>Articles:</b>  <b>Description:</b> Engineering, oversight, and support of engineering efforts to meet baseline performance and P3I performance.  <b>FY 2016 Accomplishments:</b> Continue to provide engineering services, pod repair, and maintenance.  <b>FY 2017 Plans:</b> Continue to provide engineering services, pod repair and maintenance for ALMDS Increment 1, IOC in 1QFY17 and in preparation for FY18 Deployment. Performance modifications in support of FY18 deployment configuration. Test planning and coordination of software build 6005 flight characterization test 1Q-2QFY17 (conduct of test addressed in Test and Evaluation Section). Characterization of software build 6005 will qualify the build for fleet use and provide a baseline. Revise tactics guide based on test results and update mission planning. Test planning and coordination for flight characterization of the new software build 6006 in 4QFY17 for flight qualification and continued characterization (conduct of test addressed in Test and Evaluation Section).  <b>FY 2018 Base Plans:</b> N/A  <b>FY 2018 OCO Plans:</b> N/A								1.616	9.839	0.000	0.000	0.000
								-	-	-	-	-
<b>Title:</b> Integrated Logistics Support:								0.595	1.035	0.000	0.000	0.000

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Appropriation/Budget Activity 1319 / 5		R-1 Program Element (Number/Name) PE 0604373N / Airborne Mine Countermeasures (AMCM)		Project (Number/Name) 2047 / ALMDS		
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: Provided logistics support, depot analysis to LRIP units, IOCSR and preparation for 1QFY17 IOC.						
FY 2017 Plans: Provide logistics support, depot analysis to LRIP units and IOC in 1QFY17. Provide logistics support and documentation in preparation for FY18 deployment.						
FY 2018 Base Plans: N/A						
FY 2018 OCO Plans: N/A						
Title: Testing and Evaluation:		0.602	7.495	0.000	0.000	0.000
Articles:		-	-	-	-	-
FY 2016 Accomplishments: Conducted government acceptance testing of new computer processor and operating system.						
FY 2017 Plans: Conduct software build 6005 flight characterization test in 1QFY17, contractor support of test event and test support. Conduct software build 6006 flight characterization test and flight qualification in 4QFY17, contractor support of test event and test report. Planning for test addressed in HW/SW and Engineering Services. Conduct shipping container qualification testing.						
FY 2018 Base Plans: N/A						
FY 2018 OCO Plans: N/A						
Title: Project Management:		0.583	0.201	0.000	0.000	0.000
Articles:		-	-	-	-	-
Description: Completion of OA						
FY 2016 Accomplishments:						

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Appropriation/Budget Activity 1319 / 5				R-1 Program Element (Number/Name) PE 0604373N / Airborne Mine Countermeasures (AMCM)				Project (Number/Name) 2047 / ALMDS			
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	
Conducted program management, financial management and contractor support.											
FY 2017 Plans: Continue program management, financial management and contractor support.											
FY 2018 Base Plans: N/A											
FY 2018 OCO Plans: N/A											
Accomplishments/Planned Programs Subtotals						3.396	18.570	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
• OPN 4248: Aviation Mine Countermeasures	6.800	5.435	7.270	-	7.270	1.390	0.400	0.000	0.000	0.003	456.667
• OPN 1601: LCS MCM Mission Modules	10.028	0.000	10.228	-	10.228	5.291	5.450	6.721	6.856	1,002.735	1,129.293
Remarks											
D. Acquisition Strategy											
The program entered Production and Development Acquisition Phase following MS C in May 2005. August 2007 program authorized to meet full performance in two increments. The first LRIP lot was awarded as a new sole-source contract to the SD&D contractor in FY05. FRP will be based on Increment 1 performance. In FY14 a new competitive FFP production contract was awarded. This is a Fixed-Price Incentive (FPI) contract with cost and schedule incentives.											
E. Performance Metrics											
Conducted Operational Assessment (OA) Phase A in FY12. Conducted OA Phase B, Environmental Qualification Test (EQT), and Equipment Qualifications Test in FY14. Completed OA Phase B and DT phase 4 period 2 in FY14/15. Completed Mine Countermeasures Mission Package (MCM MP) TECHEVAL in FY15. Achieved IOC in FY17.											

**UNCLASSIFIED**

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 0604373N / Airborne Mine Countermeasures (AMCM)				Project (Number/Name) 2473 / Airborne Mine Neutralization System			
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
2473: Airborne Mine Neutralization System	149.872	4.403	13.903	3.481	-	3.481	0.000	0.000	0.000	0.000	0.000	171.659
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Airborne Mine Neutralization System (AMNS) is a mine neutralization system, deployed from the MH-60S, MH-53E helicopters and the Common Unmanned Surface Vehicle (CUSV) using an expendable mine neutralization device.												
The AMNS (Archerfish) will be deployed from the MH-60S helicopter with the capability to neutralize bottom and moored mines using an expendable mine neutralization device. These systems will provide organic airborne mine neutralization capability which will be of critical importance in littoral zones, confined straits, choke points and the Amphibious Objective Area (AOA). Barracuda provides an expendable, reacquisition, identification and neutralization capability against bottom, moored and Near Surface sea mines. Barracuda is deployed from both MH-60S multi mission helicopters and Unmanned Surface Vehicles (USV), or any craft of opportunity, using existing common communications, command & control and launching equipment. Barracuda will field a baseline capability derived from the single sortie detect to engage (SS-DTE) future naval capabilities (FNC) effort. Barracuda addresses unmet requirements in near surface neutralization created with the cancellation of the RAMICS program in FY13. With baseline upgrades the system is suitable for mine neutralization in the full water column.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: AMNS: Development/Engineering Support								3.016	5.488	3.181	0.000	3.181
								Articles: -	-	-	-	-
FY 2016 Accomplishments: Provided engineering support, including review for product development and integration. Developed logistics products, including training materials and interactive technical manuals. Prepared for Initial Operations Capability in 1QFY17.												
FY 2017 Plans: Provide engineering support, including review for product development and integration. Develop logistics products, including training materials and interactive technical manuals. Provide engineering support for upgrade development and develop associated logistics products.												
FY 2018 Base Plans:												

**UNCLASSIFIED**

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Appropriation/Budget Activity 1319 / 5		R-1 Program Element (Number/Name) PE 0604373N / Airborne Mine Countermeasures (AMCM)		Project (Number/Name) 2473 / Airborne Mine Neutralization System		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Continue to provide engineering support, including review for product development and integration. Develop logistics products, including training materials and interactive technical manuals. Provide engineering support for upgrade development and develop associated logistics products.  FY 2018 OCO Plans: N/A						
Title: AMNS: Test and Evaluation  Articles:		0.725 -	0.500 -	0.138 -	0.000 -	0.138 -
FY 2016 Accomplishments: Conducted FOT&E of LCS Mine Countermeasures (MCM) Mission Package (MP).  FY 2017 Plans: Conduct AMNS Alternate Fiber and Dash4 configuration testing as well as P3I/ECP upgrade tests.  FY 2018 Base Plans: Continue to conduct AMNS P3I/ECP upgrade tests.  FY 2018 OCO Plans: N/A						
Title: Barracuda: Product Development  Articles:		0.000 -	5.703 -	0.000 -	0.000 -	0.000 -
FY 2016 Accomplishments: N/A  FY 2017 Plans: Design and develop Barracuda specifications that provide near surface neutralization capability. Develop and release RFP and conduct source selection. Develop Milestone B documentation.  FY 2018 Base Plans: Funding realigned to 0603502N, project 2928 beginning in FY18.  FY 2018 OCO Plans: N/A						
Title: AMNS: Management Services  Articles:		0.662 -	0.305 -	0.162 -	0.000 -	0.162 -

## UNCLASSIFIED

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Appropriation/Budget Activity 1319 / 5		R-1 Program Element (Number/Name) PE 0604373N / Airborne Mine Countermeasures (AMCM)		Project (Number/Name) 2473 / Airborne Mine Neutralization System		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<b>FY 2016 Accomplishments:</b> Provided program management support, contract management and travel for AMNS.						
<b>FY 2017 Plans:</b> Provide program management support, contract management and travel for AMNS.						
<b>FY 2018 Base Plans:</b> Continue to provide program management support, contract management and travel for AMNS.						
<b>FY 2018 OCO Plans:</b> N/A						
<b>Title:</b> Barracuda: Engineering Support  <b>Articles:</b>		0.000 -	1.261 -	0.000 -	0.000 -	0.000 -
<b>FY 2016 Accomplishments:</b> N/A						
<b>FY 2017 Plans:</b> Develop Request for Proposal (RFP), conduct risk reduction prototyping, tactics analyses and general system engineering support in preparation for source selection.						
<b>FY 2018 Base Plans:</b> Funding realigned to 0603502N, project 2928 beginning in FY18.						
<b>FY 2018 OCO Plans:</b> N/A						
<b>Title:</b> Barracuda: Management Services  <b>Articles:</b>		0.000 -	0.646 -	0.000 -	0.000 -	0.000 -
<b>FY 2016 Accomplishments:</b> N/A						
<b>FY 2017 Plans:</b> Provide program management, financial management, and engineering support.						
<b>FY 2018 Base Plans:</b>						



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Appropriation/Budget Activity 1319 / 5				R-1 Program Element (Number/Name) PE 0604373N / Airborne Mine Countermeasures (AMCM)				Project (Number/Name) 2473 / Airborne Mine Neutralization System				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Funding realigned to 0603502N, project 2928 beginning in FY18.												
FY 2018 OCO Plans: N/A												
Accomplishments/Planned Programs Subtotals								4.403	13.903	3.481	0.000	3.481
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 4248: Aviation Mine Countermeasures	6.800	5.435	7.270	-	7.270	1.390	0.400	0.000	5.289	0.003	461.956	
• WPN 4225: Airborne Mine Neutralization Systems	7.766	12.927	12.927	-	12.927	12.893	10.137	10.337	10.428	0.001	198.924	
• OPN 1601: LCS MCM Mission Modules	10.028	0.000	10.228	-	10.228	5.291	5.450	6.721	6.856	860.567	987.125	
Remarks												
Other APPN/LI Funding lines are shared. Amounts shown reflect only AMNS funds.												
D. Acquisition Strategy												
AMNS: The Navy has successfully completed Developmental Testing (Inert) on MH-60S, and conducted TECHEVAL tests on LCS with the MH-60S. The Navy has awarded a sole source contract to BAE for neutralizer procurements (WPN) to accompany the Launch and Handling Systems (LHS).												
Barracuda: Field the baseline system to address near surface portion of water column. Develop block upgrades to follow for deeper parts of the water column and develop software upgrades to baseline system.												
E. Performance Metrics												
AMNS:Successful completion of Testing and IOC was achieved in November 2016.												
Barracuda: Successful fielding of the Barracuda system.												

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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 0604373N / Airborne Mine Countermeasures (AMCM)				Project (Number/Name) 4026 / Strat Into Medal, Tactics & Trng Organic Force			
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
4026: Strat Into Medal, Tactics & Trng Organic Force	31.743	1.600	11.786	10.994	-	10.994	10.102	10.159	10.126	10.283	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**A. Mission Description and Budget Item Justification**

The C4I, Tactics, Mission Planning (CTMP), and Post Mission Analysis (PMA) program is an initiative that has evolved into both developing MEDAL modules for each Next Generation MCM system and developing Next Generation Tactics. Additionally CTMP provides threat data and system requirements and capabilities to the MEDAL software development effort. Finally CTMP develops Net-Centric Sensor Analysis for Mine Warfare (NSAM) as an Open Systems Architecture (OSA) compliant plug-in architecture of common post-mission analysis tools for PMA of Next Generation MCM sensor data.

NSAM analysis tools will provide the capability to perform tactical and environmental Post Mission Analysis (PMA) on data collected from various MCM sensor systems. The goal is to reduce the mission timeline and increase the mission effectiveness with respect to Mission Analysis. NSAM will have a training mode to maintain operator proficiency and PMA skill set. NSAM will be the replacement for Organic Post Missions Analysis (OPMA) in the Fleet, integrating ALMDS, AMNS, AN/AQS-20 Sensor PMA into the first delivered Fleet Build. Future incremental Builds, fielding on a 12-18 month cycle, will add support for AN/AQS-24B/C, COBRA, Knifefish, CUSV, and ExMCM UUV sensors.

NSAM provides Multi-Data Set, Multi-User, Tactical & Environmental PMA, Contact Management, and Change Detection.

OSA reduces cost for adding future MCM Systems.

The analysis results from PMA are provided to the Mine Warfare and Environmental Decisions Aid Library (MEDAL) reducing False Call reporting for tactical decision making.

NSAM will implement Cybersecurity Requirements using the new Risk Management Framework (RMF) Process.

**B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)**

	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>
<b>Title:</b> NSAM Product Development	0.731	8.924	5.305	0.000	5.305
<b>Articles:</b>	-	-	-	-	-
<b>FY 2016 Accomplishments:</b> Transitioned Legacy Organic Post Mission Analysis (OPMA) software to Windows 7 environment and corrected software deficiencies identified during LCS MCM MP Increment One TECHEVAL, in preparation for FY18 LCS Deployment. Continued NSAM Open Architecture software development for both Server and Client components. The scope of NSAM Build 1 work provides PMA support for ALMDS, AMNS, and AN/AQS-20A MCM Systems. Initiated new Risk Management Framework (RMF) processes to address Cybersecurity.					
<b>FY 2017 Plans:</b>					

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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
Complete NSAM Open Architecture software development Increment 1 Build 1 that includes PMA support for ALMDS, AMNS, and AN/AQS-20A MCM Systems. Complete Development of Requirements for Increment 1 Build 2. Continue applying Risk Management Framework (RMF) guidelines and strategy to stay on course for achieving an Authority to Operate (ATO). Continue tailoring and generating acquisition and logistics documents as required for supporting software intensive systems. Complete Requirements Definition Package (RDP) approvals for NSAM Increment 1 Build 2 finalizing the next series of additional MCM system support for AN/AQS-24B/C, COBRA, Knifefish, CUSV, and ExMCM UUV sensors. Continue work on NSAM Logistics Package and Training Material.						
FY 2018 Base Plans: Deliver final tested NSAM Increment 1 Build 1 to LCS Mission Package Application System (MPAS) and complete NSAM Logistics Package and Training Material. Continue NSAM Build 2 Open Architecture software development to address LCS capability gaps and additional MCM systems chosen in the RDP from the list above. Continue applying Risk Management Framework (RMF) guidelines and strategy to address all Cybersecurity protocols.						
FY 2018 OCO Plans: N/A						
Title: Engineering Services/ILS:		0.711	2.300	3.864	0.000	3.864
Articles:		-	-	-	-	-
FY 2016 Accomplishments: Provided dedicated tactical support for integrated operations using Mission Package Application Software (MPAS) and NSAM Engineering support. Continued working "Susceptibility of Ships to Threat Mines," Navy Tactical Reference Publication (NTRP) 3-15.2.2. Provided tactical support & Tools for contact management for the MCM Mission Package (MP). Investigated the current multi-pass tactics for several systems and develop common algorithm and metrics. Document processes and procedures as well as tactics executed at the MCM Commander (MCMC) Staff Level. Documented the tactics & guidance to employ Effects Based Application of Risk (EBAR) in a TACMEMO.						
FY 2017 Plans: Provide dedicated tactical support for integrated operations using Mission Package Application Software (MPAS) and NSAM Engineering support. Publish Susceptibility of Ships to Threat Mines, Navy Tactical Reference Publication (NTRP) 3-15.2.2. Validate tactics & guidance to employ Effects Based Application of Risk (EBAR) in a TACMEMO and provide an EBAR technical data package for future inclusion in the MEDAL TDA. Conduct						

**UNCLASSIFIED**

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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
study on the impact of using kick-off velocity (KOV) versus keel shock factor (KSF) in computing damage width providing updated algorithms to Mine Warfare and Environmental Decisions Aid (MEDAL) planning system. Investigate and document implications to math and MCM theory assuming dependence in sonar/sensor observations and deliver results to NSAM team to better implement multi-passes tactics based on system dependence.  <b>FY 2018 Base Plans:</b> Continue updates for the Susceptibility of Ships to Threat Mines, Navy Tactical Reference Publication (NTRP) 3-15.2.2: Complete chapters for additional Mines for Fleet validated ship list. Support training needs for AMNS, ALMDS and AN/AQS-20 post IOT&E and for Increment 2 of the MCM MP. Develop Airborne Mine Countermeasures (AMCM) (U) Navy Tactics, Training and Procedure (NTTP) Volume II, 3.15.22. Investigate and document Intelligence Preparation of the Environment (IPOE) gaps in LCS Tactics.  <b>FY 2018 OCO Plans:</b> N/A						
<b>Title:</b> Test and Evaluation  <b>Articles:</b>		0.000 -	0.000 -	1.478 -	0.000 -	1.478 -
<b>FY 2016 Accomplishments:</b> N/A  <b>FY 2017 Plans:</b> N/A  <b>FY 2018 Base Plans:</b> Complete Testing NSAM Build 2 to include: Integration testing in the LCS Mission Package Integration Laboratory (MPIL) and an Independent Developers Test (DT).  <b>FY 2018 OCO Plans:</b> N/A						
<b>Title:</b> Management Support  <b>Articles:</b>		0.158 -	0.562 -	0.347 -	0.000 -	0.347 -
<b>FY 2016 Accomplishments:</b> Provided leadership, scheduling, monitoring and reporting status of the tasks:						

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy				<b>Date:</b> May 2017		
<b>Appropriation/Budget Activity</b> 1319 / 5		<b>R-1 Program Element (Number/Name)</b> PE 0604373N / Airborne Mine Countermeasures (AMCM)		<b>Project (Number/Name)</b> 4026 / Strat Into Medal, Tactics & Trng Organic Force		
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>						
		<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>
Plan, track and report personnel, funding, and execution status of tasks to the Assistant Program Manager (APM) for schedule, costs, risks, and deliverables for program execution tracking.  <b>FY 2017 Plans:</b> Provide leadership, scheduling, monitoring and reporting status of the tasks: Plan, track and report personnel, funding, and execution status of tasks to the Assistant Program Manager (APM) for schedule, costs, risks, and deliverables for program execution tracking.  <b>FY 2018 Base Plans:</b> Providing leadership, scheduling, monitoring and reporting status of the tasks: Plan, track and report personnel, funding, and execution status of tasks to the Assistant Program Manager (APM) for schedule, costs, risks, and deliverables for program execution tracking.  <b>FY 2018 OCO Plans:</b> N/A						
<b>Accomplishments/Planned Programs Subtotals</b>		1.600	11.786	10.994	0.000	10.994
<b>C. Other Program Funding Summary (\$ in Millions)</b>						
N/A						
<b>Remarks</b>						
<b>D. Acquisition Strategy</b>						
The Organic Post-Mission Analysis (OPMA) capability for the OAMCM systems was developed by NSWC PCD, Panama City, FL. OMN funding will be used to procure COTS ruggedized portable OPMA computers for LCS MCM Mission Package, ship of opportunity deployments, land basing, and training. NSWC-PCD has awarded contract for this Technical Refresh procurement with option years extending until FY18. NSAM will merge capabilities of OPMA and NAVO's Environmental PMA (EPMA) capabilities into an Open Architecture framework. Increment Build One will utilize government teams NSWC PCD and NRL-SSC to expedite fielding significant contact management improvements, data fusion techniques, and environmental PMA.  The tactics development, tactics training, and tactics algorithms/database efforts are performed by NSWC-PCD. These efforts will provide reach back support as the OAMCM systems begin to be fielded; will develop modifications to environmental databases necessary to support OAMCM mission planning; will update the MIW Tactics Continuum to address OAMCM; and will update the gear and mine database for threats addressed by the OAMCM systems.						

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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 0604373N / Airborne Mine Countermeasures (AMCM)	Project (Number/Name) 4026 / Strat Into Medal, Tactics & Trng Organic Force
<b>E. Performance Metrics</b> Successfully integrate NSAM into LCS Mission Package and provide Training Material to AMCM Detachments. Deliver Mine Warfare Naval Tactical Publications and TACMEMOs to NWDC in near publication ready formats in support of MCM Staffs and LCS MCM MP Operators.		

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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 0604373N / Airborne Mine Countermeasures (AMCM)				Project (Number/Name) 4026 / Strat Into Medal, Tactics & Trng Organic Force					
Product Development (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Software Development	WR	NSWC PCD : Panama City FL	18.876	0.558	Nov 2015	5.609	Oct 2016	4.227	Oct 2017	-		4.227	Continuing	Continuing	Continuing
Hardware/Software Development	WR	NRL-SSC : Bay St. Louis, MS	0.950	0.173	Dec 2015	1.320	May 2017	1.078	Dec 2017	-		1.078	Continuing	Continuing	Continuing
Subtotal			19.826	0.731		6.929		5.305		-		5.305	-	-	-
Support (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Services	WR	SSC-PAC : Various	0.040	0.000		0.000		0.000		-		0.000	0.000	0.040	-
Engineering Services	WR	NSWC PCD : Panama City FL	8.231	0.459	Nov 2015	3.149	May 2017	2.845	Nov 2017	-		2.845	Continuing	Continuing	Continuing
Engineering Services	WR	NRL-SSC : Bay St. Louis, MS	0.462	0.132	Nov 2015	0.250	May 2017	0.238	Dec 2017	-		0.238	Continuing	Continuing	Continuing
ILS	WR	NSWC PC : Panama City FL	1.625	0.120	Nov 2015	0.413	May 2017	0.781	Nov 2017	-		0.781	Continuing	Continuing	Continuing
Subtotal			10.358	0.711		3.812		3.864		-		3.864	-	-	-
Test and Evaluation (\$ in Millions)				FY 2016		FY 2017		FY 2018 Base		FY 2018 OCO		FY 2018 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
NSAM Test and Evaluation	WR	NSWC PC : Panama City, FL	0.000	0.000		0.612	Oct 2016	1.054	Oct 2017	-		1.054	0.000	1.666	-
NSAM Test and Evaluation	WR	NRL-SSC : Bay St Louis, MS	0.000	0.000		0.128	Nov 2016	0.424	Nov 2017	-		0.424	0.000	0.552	-
Subtotal			0.000	0.000		0.740		1.478		-		1.478	0.000	2.218	-

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<b>Exhibit R-3, RDT&amp;E Project Cost Analysis: FY 2018 Navy</b>												<b>Date: May 2017</b>			
<b>Appropriation/Budget Activity</b> 1319 / 5						<b>R-1 Program Element (Number/Name)</b> PE 0604373N / Airborne Mine Countermeasures (AMCM)						<b>Project (Number/Name)</b> 4026 / Strat Into Medal, Tactics & Trng Organic Force			
<b>Management Services (\$ in Millions)</b>				<b>FY 2016</b>		<b>FY 2017</b>		<b>FY 2018 Base</b>		<b>FY 2018 OCO</b>		<b>FY 2018 Total</b>			
<b>Cost Category Item</b>	<b>Contract Method &amp; Type</b>	<b>Performing Activity &amp; Location</b>	<b>Prior Years</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Award Date</b>	<b>Cost</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
Management Support	WR	NSWC PC : Panama City FL	1.546	0.158	Oct 2015	0.305	May 2017	0.347	Nov 2017	-		0.347	Continuing	Continuing	Continuing
Acquisition Workforce Fund	Various	Various : Various	0.013	0.000		0.000		0.000		-		0.000	0.000	0.013	-
<b>Subtotal</b>			1.559	0.158		0.305		0.347		-		0.347	-	-	-
			<b>Prior Years</b>	<b>FY 2016</b>		<b>FY 2017</b>		<b>FY 2018 Base</b>		<b>FY 2018 OCO</b>		<b>FY 2018 Total</b>	<b>Cost To Complete</b>	<b>Total Cost</b>	<b>Target Value of Contract</b>
<b>Project Cost Totals</b>			31.743	1.600		11.786		10.994		-		10.994	-	-	-
<b>Remarks</b>															



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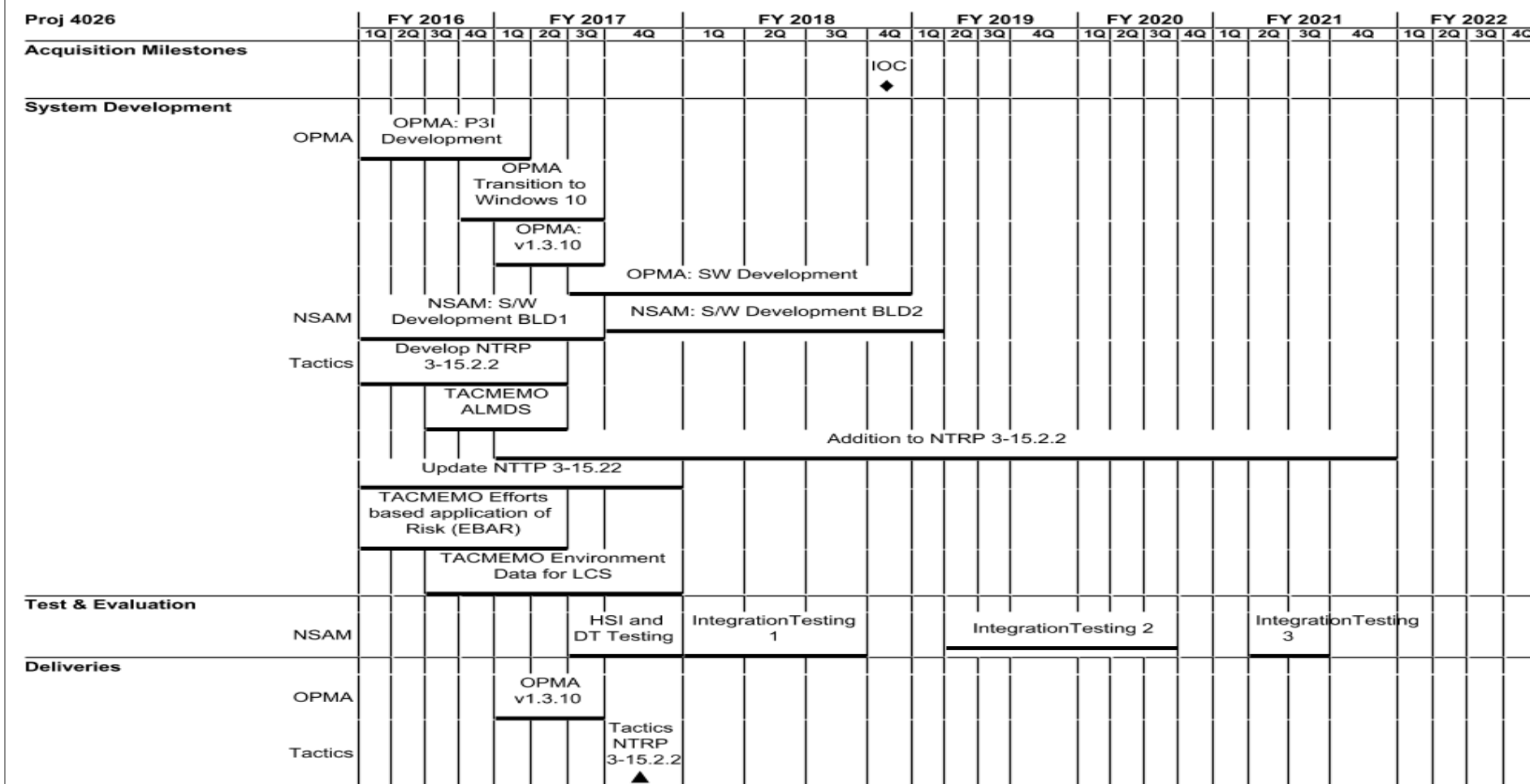
**Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy**

**Date:** May 2017

**Appropriation/Budget Activity**  
1319 / 5

**R-1 Program Element (Number/Name)**  
PE 0604373N / Airborne Mine  
Countermeasures (AMCM)

**Project (Number/Name)**  
4026 / Strat Into Medal, Tactics & Trng  
Organic Force



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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 0604373N / Airborne Mine Countermeasures (AMCM)										Project (Number/Name) 4026 / Strat Into Medal, Tactics & Trng Organic Force				
NSAM										NSAM Build 2 ▲										NSAM Build 3 ▲				
Design Reviews																								
NSAM										Build 2 RDP					Build 3 RDP									
2018DON - 0604373N - 4026																								

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<b>Exhibit R-4A, RDT&amp;E Schedule Details: FY 2018 Navy</b>			<b>Date: May 2017</b>
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604373N / Airborne Mine Countermeasures (AMCM)	<b>Project (Number/Name)</b> 4026 / Strat Into Medal, Tactics & Trng Organic Force	

**Schedule Details**

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>Proj 4026</b>				
Acquisition Milestones: NSAM: Initial Operational Capability	4	2018	4	2018
System Development: OPMA: OPMA: Ongoing Development for Sensor P3I; Software	1	2016	1	2017
System Development: OPMA: OPMA: Transition to Windows	4	2016	3	2017
System Development: OPMA: OPMA: Deliver OPMA v1.3.10 for FY18 LCS Deployment	1	2017	3	2017
System Development: OPMA: OPMA: Ongoing Development post Deployment; Software	3	2017	4	2018
System Development: NSAM: NSAM: S/W Development Increment 1 Build 1	1	2016	3	2017
System Development: NSAM: NSAM: S/W Development Increment 1 Build 2	4	2017	1	2019
System Development: NSAM: NSAM: S/W Development Increment 1 Build 3	2	2019	1	2021
System Development: Tactics: Develop NTRP 3-15.2.2	1	2016	2	2017
System Development: Tactics: TACMEMO ALMDS	3	2016	2	2017
System Development: Tactics: Add additional Mines to NTRP 3-15.2.2 Susceptibility of Ships to Threat Mines	1	2017	4	2021
System Development: Tactics: Update NTTP 3-15.22	1	2016	4	2017
System Development: Tactics: TACMEMO Efforts based application of Risk (EBAR)	1	2016	2	2017
System Development: Tactics: Tactics: TACMEMO Environment Data for LCS MCM Systems	3	2016	4	2017
Test & Evaluation: NSAM: NSAM: LCS MCMM MP MPCE Integration Testing 1	1	2018	3	2018
Test & Evaluation: NSAM: NSAM: LCS MCMM MP MPCE Integration Testing 2	2	2019	3	2020
Test & Evaluation: NSAM: NSAM: LCS MCMM MP MPCE Integration Testing 3	2	2021	3	2021
Test & Evaluation: NSAM: NSAM: Human Systems Integration (HSI) and DT Testing	3	2017	4	2017

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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 0604373N / Airborne Mine Countermeasures (AMCM)		Project (Number/Name) 4026 / Strat Into Medal, Tactics & Trng Organic Force
		Start		End
Events by Sub Project		Quarter	Year	Quarter Year
Deliveries: OPMA: OPMA: Deliver OPMA v1.3.10 for FY18 LCS Deployment		1	2017	3 2017
Deliveries: Tactics: Tactics: Publish NTRP 3-15.2.2 Susceptibility of Ships to Threat Mines		4	2017	4 2017
Deliveries: NSAM: NSAM: Capability Drop Build 2		4	2019	4 2019
Deliveries: NSAM: NSAM: Capability Drop Build 3		4	2021	4 2021
Design Reviews: NSAM: NSAM: Build 2 Requirements Design Package (RDP)		2	2017	3 2017
Design Reviews: NSAM: NSAM: Build 3 Requirements Design Package (RDP)		4	2018	1 2019

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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 0604373N / Airborne Mine Countermeasures (AMCM)				Project (Number/Name) 9179 / Surf Navy Integ Undersea Tactical Tech			
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
9179: Surf Navy Integ Undersea Tactical Tech	5.795	0.000	1.363	1.259	-	1.259	0.929	0.948	0.968	0.987	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
Surface Navy Integrated Undersea Tactical Technology (SNIUTT) will be used to develop an AN/SQQ-32, AN/AQS-24 and AN/AQS-20A sensor training modules and future Organic Airborne Mine Countermeasures (OAMCM) Sensor Training Modules for systems such as AMNS, ALMDS, and COBRA.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Engineering and Integration and Logistics Services  Articles:  FY 2016 Accomplishments: N/A  FY 2017 Plans: N/A  FY 2018 Base Plans: Continue to provide SNIUTT In Service Engineering Agent (ISEA) and development support.  FY 2018 OCO Plans: N/A								0.000	0.000	0.245	0.000	0.245
								-	-	-	-	-
Title: Hardware and Software Development  Articles:  FY 2016 Accomplishments: N/A  FY 2017 Plans: Update the AN/AQS-24, AN/AQS-20A sonar training module. Continue development of a Scenario Generator software system for COBRA for mine field recognition training and ALMDS training modules.  FY 2018 Base Plans:								0.000	1.363	1.014	0.000	1.014
								-	-	-	-	-

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> FY 2018 Navy				<b>Date:</b> May 2017	
<b>Appropriation/Budget Activity</b> 1319 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0604373N / Airborne Mine Countermeasures (AMCM)	<b>Project (Number/Name)</b> 9179 / Surf Navy Integ Undersea Tactical Tech			
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>					
	<b>FY 2016</b>	<b>FY 2017</b>	<b>FY 2018 Base</b>	<b>FY 2018 OCO</b>	<b>FY 2018 Total</b>
Continue to update the AN/AQS-24, AN/AQS-20A sonar training module. Continue development of a Scenario Generator software system for COBRA for mine field recognition training and ALMDS training modules.					
<b>FY 2018 OCO Plans:</b> N/A					
<b>Accomplishments/Planned Programs Subtotals</b>	0.000	1.363	1.259	0.000	1.259
<b>C. Other Program Funding Summary (\$ in Millions)</b> N/A					
<b>Remarks</b>					
<b>D. Acquisition Strategy</b> Surface Navy Integrated Undersea Tactical Training (SNIUTT) has been used to develop AN/SQQ-32, AN/AQS-24 and AN/AQS-20A sensor training modules. Funds will continue to support training for these sonar systems, as well as training for the REMUS sonar systems and other OAMCM systems such as AMNS, ALMDS and COBRA in the same format as previous training. The SNIUTT sensor training modules will be developed by NSWC PCD, Panama City, FL,. Funds are being provided for development and delivery of refresher scenario based contact recognition training, and the update and modification of contact recognition training (interactive web based training and proficiency focused stand-alone training) in support of the SNIUTT program.					
<b>E. Performance Metrics</b> Successfully integrate SNIUTT into the school house training facility and provide to AMCM detachments for refresher training.					