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Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)					R-1 Program Element (Number/Name) PE 0603506N / Surface Ship Torpedo Defense							
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	609.863	69.803	87.066	14.974	-	14.974	8.570	21.461	23.761	22.082	Continuing	Continuing
0225: Surface Ship Torpedo Defense (SSTD)	609.863	69.803	87.066	14.974	-	14.974	8.570	21.461	23.761	22.082	Continuing	Continuing

A. Mission Description and Budget Item Justification

The Surface Ship Torpedo Defense (SSTD) program provides a detect-to-engage layered torpedo defense capability. The four major efforts that comprise SSTD are the AN/SLQ-25 (NIXIE) system, Torpedo Warning System (TWS), the Countermeasure Anti-Torpedo (CAT) and Acoustic Device Countermeasure (Surface ADC MK2). CAT and TWS are development programs. The CAT program develops a canisterized Anti-Torpedo Torpedo (ATT). The TWS program develops the required torpedo detection, classification and localization (TDCL) ship systems. The TWS and CAT systems make up the Anti-Torpedo Torpedo Defense System (ATTDS). The AN/SLQ-25 (NIXIE) is a towed acoustic and non-acoustic countermeasure system. The AN/SLQ-25 program develops countermeasure technologies and capabilities to improve ship survivability against future torpedo threats.

The program has developed and fielded five ATTDS Engineering Design Model (EDM) systems on CVNs. Each EDM system is one TWS with a CAT load out of a maximum of eight CATs. The systems were accelerated due to the lack of hard-kill torpedo defense on High Value Units (HVUs). The systems provide a hard-kill torpedo defense capability. The program delivered one hybrid prototype system in FY13 on USS GEORGE HW BUSH. The next prototype was delivered in FY14; this system was delivered in a roll-on/roll-off (RORO) configuration and installed on USS THEODORE ROOSEVELT. The next two installs were one additional RORO (USS EISENHOWER) and one EDM (USS HARRY S TRUMAN) in FY15. The fifth system was purchased in FY16 and has been installed on the USS NIMITZ. Both Roll-On/Roll-Off systems will be installed on the same CVN's as EDM Systems starting in FY17 and completed by the end of FY18.

Overall, the ATTDS program will continue SALVO EDM Development through FY17. Two independent testing events are planned in 1Q FY18. A Contractor Test (CT-5) is planned and a Quick Reaction Assessment (QRA) is planned for the same at sea event. The QRA is paramount to the program to gain approval to deploy the system with a SALVO Capability and then sustain the existing five CVN installed systems during FY18-FY22. Throughout the period of FY18-FY22, no program of record acquisition milestones will be pursued. Software upgrades, material engineering changes, and safety certifications will remain the program's top priorities to ensure the highest operational availability and performance of the deployed CVN systems.

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Appropriation/Budget Activity		R-1 Program Element (Number/Name)			
1319: Research, Development, Test & Evaluation, Navy / BA 4: Advanced Component Development & Prototypes (ACD&P)		PE 0603506N / Surface Ship Torpedo Defense			
B. Program Change Summary (\$ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	71.300	87.066	80.573	-	80.573
Current President's Budget	69.803	87.066	14.974	-	14.974
Total Adjustments	-1.497	0.000	-65.599	-	-65.599
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.497	0.000			
• Program Adjustments	0.000	0.000	-65.573	-	-65.573
• Rate/Misc Adjustments	0.000	0.000	-0.026	-	-0.026
Change Summary Explanation					
The FY 2016 funding reflects reduction of \$1.497 million for SBIR Assessment.					
The FY 2018 funding reflects removal of \$65.573 million for ATTDS while retaining development and support funding for the five torpedo defense systems currently delivered in the fleet.					

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Exhibit R-2A, RDT&E Project Justification: FY 2018 Navy										Date: May 2017		
Appropriation/Budget Activity 1319 / 4					R-1 Program Element (Number/Name) PE 0603506N / Surface Ship Torpedo Defense				Project (Number/Name) 0225 / Surface Ship Torpedo Defense (SSTD)			
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
0225: Surface Ship Torpedo Defense (SSTD)	609.863	69.803	87.066	14.974	-	14.974	8.570	21.461	23.761	22.082	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		
A. Mission Description and Budget Item Justification												
The Surface Ship Torpedo Defense (SSTD) program provides a layered torpedo defense capability with four efforts; two of which are currently in development. The Countermeasure Anti- Torpedo (CAT) program develops a canisterized Anti-Torpedo Torpedo (ATT). The Torpedo Warning System (TWS) develops the required TDCL systems. The Countermeasure TWS and CAT systems make up the Anti-Torpedo Torpedo Defense System (ATTDS).												
The program will develop and field five ATTDS EDM systems on CVNs as part of the rapid fielding effort, two of which were initially delivered in a RORO configuration. The program delivered one hybrid prototype EDM system in FY13 on USS GHW BUSH. The next system was delivered in FY14; this system was delivered in a RORO configuration and installed on USS ROOSEVELT. The program installed one additional RORO (USS EISENHOWER) and one EDM (USS TRUMAN) in FY15. The program completed installation of the fifth ATTDS System on the USS NIMITZ in FY17. Crew training and System 5 operation verification tests will be completed in FY17 prior to the USS NIMITZ deployment. In addition, RORO to EDM conversions on the USS Roosevelt will complete in FY17 and start on the USS EISENHOWER.												
Overall, the ATTDS program will complete EDM development and then sustain the existing five CVN installed systems during FY18-FY22. Throughout the period of FY18-FY22, no program of record acquisition milestones will be pursued. Software upgrades, material engineering changes, and safety certifications will remain the programs top priorities to ensure the highest operational availability and performance of the deployed systems. The USS EISENHOWER RORO EDM conversion will complete in FY18.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Countermeasure Anti-Torpedo (CAT) Articles:								37.551	38.981	7.000	0.000	7.000
								-	24	-	-	-
FY 2016 Accomplishments: Completed land based software development and in-water testing of the EDM-2 thermal engine variant. Assembled and delivered CAT systems purchased in FY15. Completed follow-on software development and testing for ATT SALVO capability. Conducted one independent contractor integrated in-water test with TWS system for the development of the initial ATT SALVO Capability to include the build of 11 test assets (6 Thermal / 5 Electric ATTs).												
FY 2017 Plans: Assemble and deliver CATs for fleet use prior to CVN deployment.												

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Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603506N / Surface Ship Torpedo Defense	Project (Number/Name) 0225 / Surface Ship Torpedo Defense (SSTD)				
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
<p>Complete land based software development for EDM - 2 systems. Plan for a Quick Reaction Assessment (QRA) of the SALVO software in FY18. Conduct land based reliability testing on deployed ATTs. Develop the CAT EX-819 container. Conduct VERTREP qualification testing of the CAT EX-819 container. Conduct engineering changes on CAT materials and CAT software upgrades. Procure Long Lead Material for 24 ATT.</p> <p>FY 2018 Base Plans: Continue land based reliability testing on returning deployed ATTs. Continue engineering changes on CAT materials and CAT software upgrades. Perform Safety Certifications prior to two FY18 CVN deployments. Deliver Ready for Issue CATs for two FY18 CVN deployments. Support software maintenance through Program Trouble Reports (PTRs). Conduct quick reaction Assessment (QRA) of SALVO Software. Conduct CT.5 contractor test.</p> <p>FY 2018 OCO Plans: N/A</p>						
<p>Title: Torpedo Warning System (TWS)</p> <p>Articles:</p> <p>FY 2016 Accomplishments: Installed 2 EDM systems that were purchased in FY 15. Continued land based and in-water integration testing of the TWS and CAT systems. Continued TWS Towed Active Acoustic Source (TAAS) software and hardware development and testing. Accelerated TWS SALVO Capability. Conducted one independent contractor integrated in-water test with the CAT systems for the development of the TWS initial SALVO capability, and demonstration of TAAS performance and reliability. Commence RORO to EDM conversion on CVN71.</p> <p>FY 2017 Plans: Continue TWS SALVO software refinement. Continue TWS TAAS software, hardware development and refinement testing. Conduct one TWS independent in-water test.</p>		32.252 1	48.085 -	7.974 -	0.000 -	7.974 -

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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
<p>Conduct one independent contractor integrated in-water test with CAT system for the development of the initial ATT SALVO Capability.</p> <p>Complete the installation on USS NIMITZ prior to FY17 deployment.</p> <p>Prepare for a Quick Reaction Assessment (QRA) of the SALVO and TAAS software.</p> <p>Commence RORO to EDM conversion on CVN69.</p> <p>Complete RORO to EDM conversion on CVN71.</p> <p>Implement Sympathetic Detonation Reaction mitigation on all CVN Launch Frame Assemblies.</p> <p>FY 2018 Base Plans:</p> <p>Continue land based reliability testing on returning deployed TWS systems.</p> <p>Continue engineering changes on TWS software upgrades.</p> <p>Perform Safety Certifications prior to two FY18 CVN deployments.</p> <p>Perform system operational verification testing prior to two FY18 CVN deployments.</p> <p>Support software maintenance through Program Trouble Reports (PTRs).</p> <p>Complete RORO to EDM conversion on CVN69.</p> <p>FY 2018 OCO Plans:</p> <p>N/A</p>					
Accomplishments/Planned Programs Subtotals	69.803	87.066	14.974	0.000	14.974

C. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2016</u>	<u>FY 2017</u>	<u>FY 2018 Base</u>	<u>FY 2018 OCO</u>	<u>FY 2018 Total</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPN/2213: SSTD	8.396	6.893	12.867	-	12.867	11.688	13.659	13.934	14.214	Continuing	Continuing
• WPN/3113: SSTD	5.580	5.910	5.240	-	5.240	6.578	6.317	5.926	6.047	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
<p>CAT Program: In FY09 and FY10, the CAT project completed a Systems Requirements Review (SRR) and Preliminary Design Review (PDR) on the second Engineering Development Model (EDM-2) design. ARL will fabricate test articles and 32 total EDM-2 CATs in support of the five rapid fielding systems. Integration testing began in FY13 and will continue through delivery of the prototype CATs. ARL has completed a Technical Data Package (TDP) that can be used in the future when the CAT program evolves into a Program of Record. Future year funding in FY18 to FY22 will be used to sustain the 32 warhead capable CATs to ensure they are ready for Fleet deployment.</p>											

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<p>TWS Program: In FY09 and FY10, a towed sensor system specification was developed and two sea tests were conducted on Navy destroyers that demonstrated the ability of three different active and passive sonar ranging techniques and demonstrated the benefit of new torpedo detection sonar waveforms. Data from these tests is being applied to the HVU application, and the sensor specification is being modified to meet the increased capability required for HVU ships. Development and production of the new sensors is being conducted by 3Phoenix. A complete sensor set was delivered in 2nd QTR FY12 to support an at sea test in the 3rd QTR FY12. At the same time, a ready-stowage rack, and fire control systems were being developed by Pacific Engineering Incorporated (PEI) and In-Depth Engineering, respectively. All of these components were brought together for integration in FY13. This integration supported fabrication and fielding of the prototype systems. Future year funding in FY18 to FY22 will be used to sustain TWS to ensure they are ready for Fleet deployment.</p> <p><u>E. Performance Metrics</u></p> <ul style="list-style-type: none"> Torpedo Effectiveness for the CAT Torpedo Reliability and Availability for the CAT Torpedo Detection Classification and Localization (TDCL) False Alert Rate TDCL probability of correct classification TWS System Reliability and Availability 		

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Exhibit R-3, RDT&E Project Cost Analysis: FY 2018 Navy												Date: May 2017			
Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603506N / Surface Ship Torpedo Defense				Project (Number/Name) 0225 / Surface Ship Torpedo Defense (SSTD)					
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
Systems Engineering	WR	NUWC : Newport, RI	42.170	2.141	Nov 2015	3.620	Nov 2016	2.400	Nov 2017	-		2.400	Continuing	Continuing	Continuing
Systems Engineering ATT Dev.	C/CPFF	PSU/ARL : State College, PA	259.869	21.147	Dec 2015	22.000	Dec 2016	4.000	Dec 2017	-		4.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	JHU/APL : Baltimore , MD	1.740	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering Warhead Dev.	WR	NSWC : Indian Head, MD	68.155	5.545	Nov 2015	5.512	Nov 2016	1.100	Nov 2017	-		1.100	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC : Keyport,WA	45.282	8.700	Nov 2015	5.770	Nov 2016	1.000	Nov 2017	-		1.000	Continuing	Continuing	Continuing
Systems Engineering TDCL	C/CPFF	Ultra : Braintree, MA	11.640	0.000		0.000		0.000		-		0.000	0.000	11.640	Continuing
Systems Engineering ATT	WR	ONR : Arlington, VA	1.680	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering TDCL	C/CPFF	AAC : Hauppauge, NY	4.480	0.000		0.000		0.000		-		0.000	0.000	4.480	Continuing
Systems Engineering	WR	OPTEVFOR : Norfolk, VA	1.713	0.377	Feb 2016	0.340	Feb 2017	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	ArgonST : Manassas, VA	0.800	0.000		0.000		0.000		-		0.000	0.000	0.800	Continuing
Systems Engineering TDCL	WR	NSWC : Dahlgren, VA	9.688	0.177	Nov 2015	0.167	Nov 2016	0.000		-		0.000	0.000	10.032	Continuing
Systems Engineering TDCL	WR	SPAWAR : San Diego, CA	8.987	1.161	Dec 2015	1.485	Dec 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	C/CPFF	UT/ARL : Arlington, TX	0.600	0.000		0.000		0.000		-		0.000	0.000	0.600	Continuing
Systems Engineering	C/CPFF	Alion : Bridgeport, CT	13.741	1.117	Dec 2015	0.000	Dec 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC DET : Norfolk, VA	26.023	7.158	Dec 2015	8.206	Dec 2016	0.000		-		0.000	Continuing	Continuing	Continuing
Systems Development	C/CPFF	3 Phoenix : Fairfax, VA	85.294	18.251	Dec 2015	19.400	Dec 2016	3.974	Dec 2017	-		3.974	Continuing	Continuing	Continuing
Integrated Logistic Spt	WR	NSWC Crane : Crane, IN	0.934	0.130	Dec 2015	0.049	Dec 2016	0.000		-		0.000	0.000	1.113	Continuing
Systems Engineering	C/CPFF	PEI : Roca, NE	2.894	0.851	Dec 2015	1.200	Dec 2016	0.000		-		0.000	0.000	4.945	-

UNCLASSIFIED

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Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603506N / Surface Ship Torpedo Defense				Project (Number/Name) 0225 / Surface Ship Torpedo Defense (SSTD)					
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
Systems Engineering	WR	CARDEROCK : Bethesda, MD	1.077	0.258	Dec 2015	0.285	Dec 2016	0.000		-		0.000	0.000	1.620	-
Systems Engineering	C/CPFF	CGI : Washington, DC	0.200	0.000		0.000		0.000		-		0.000	0.000	0.200	-
Systems Engineering	C/BA	Dam Neck : Virginia Beach, VA	0.022	0.000		0.000		0.000		-		0.000	0.000	0.022	-
Systems Engineering	C/BA	NSWC Panama City : Panama City, FL	0.255	0.000		0.000		0.000		-		0.000	0.000	0.255	-
Systems Engineering	C/BA	Devron 26 : Not Specified	0.139	0.000		0.000		0.000		-		0.000	0.000	0.139	-
CAT Proof of Manufacturing	C/CPFF	TBD : TBD	0.000	0.000		15.513	Mar 2017	0.000		-		0.000	0.000	15.513	-
Systems Engineering	WR	Puget Sounds : Norfolk, VA	0.200	0.000		0.000		0.000		-		0.000	0.000	0.200	-
Systems Engineering	WR	NAVAIR (NAWC WD) : Patuxent River, MD	0.000	0.000		0.140	Dec 2016	0.000		-		0.000	0.000	0.140	-
Systems Engineering	WR	NORFOLK SHIPYARD : Norfolk, VA	0.000	0.000		0.204	Dec 2016	0.000		-		0.000	0.000	0.204	-
Systems Engineering	WR	NORFOLK PLANNING YARD : Norfolk, VA	0.000	0.000		0.090	Dec 2016	0.000		-		0.000	0.000	0.090	-
Subtotal			587.583	67.013		83.981		12.474		-		12.474	-	-	-
Remarks															
The key events driving the funding request in FY18 are the sustainment of the five torpedo defense systems currently delivered to the fleet. Funding will support engineering changes needed to take corrective actions on failed operational systems.															

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Appropriation/Budget Activity 1319 / 4						R-1 Program Element (Number/Name) PE 0603506N / Surface Ship Torpedo Defense				Project (Number/Name) 0225 / Surface Ship Torpedo Defense (SSTD)					
Management Services (\$ 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
Earned Value Mgmt Spt	C/CPAF	Pioneer : Virigina	0.050	0.000		0.000		0.000		-		0.000	0.000	0.050	-
Program Management Support	C/FFP	EG&G : Gaithersburg, Md.	2.846	0.000		0.000		0.000		-		0.000	0.000	2.846	Continuing
DAWDF	Various	Not Specified : Not Specified	0.237	0.000		0.000		0.000		-		0.000	0.000	0.237	Continuing
Program Management Support	C/CPAF	Tech-Marine : Washington, DC	9.930	0.000		0.000		0.000		-		0.000	0.000	9.930	Continuing
Travel	Various	PMS 415 : Not Specified	0.944	0.100	Nov 2015	0.100	Nov 2016	0.100	Nov 2017	-		0.100	Continuing	Continuing	Continuing
Program Management Support	C/CPFF	SPA : Alexandria, VA	0.575	0.000		0.000		0.000		-		0.000	0.000	0.575	Continuing
Program Management Support	C/CPAF	Booz Allen : Washington, DC	7.298	2.690	Feb 2016	2.985	Feb 2017	2.400	Feb 2018	-		2.400	Continuing	Continuing	Continuing
Program Management Support	C/CPAF	Alion : Washington, DC	0.400	0.000		0.000		0.000		-		0.000	0.000	0.400	-
Subtotal			22.280	2.790		3.085		2.500		-		2.500	-	-	-
Remarks															
FY18 travel to support the five torpedo defense systems currently in the fleet. FY18 program management support includes FY18 costs to continue subject matter expert support throughout the FY as the program transitions to retaining development for the five torpedo defense systems in the fleet.															
			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			609.863	69.803		87.066		14.974		-		14.974	-	-	-
Remarks															

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PE 0603506N: *Surface Ship Torpedo Defense*
Navy

R-1 Line #38

R-1 Program Element (Number/Name)	Program Element Description	Program Element Type	Program Element Status	Program Element Location	Program Element Contact	Program Element Date	Program Element Comments

PE 0603506N / Surface Ship Torpedo Defense

0225 / Surface Ship Torpedo Defense
(SSTD)

UNCLASSIFIED

Exhibit R-4, RDT&E Schedule Profile: FY 2018 Navy															Date: May 2017				
Appropriation/Budget Activity										R-1 Program Element (Number/Name)					Project (Number/Name)				
1319 / 4										PE 0603506N / Surface Ship Torpedo Defense					0225 / Surface Ship Torpedo Defense (SSTD)				
2018OSD - 0603506N - 0225																			

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: FY 2018 Navy			Date: May 2017
Appropriation/Budget Activity 1319 / 4	R-1 Program Element (Number/Name) PE 0603506N / Surface Ship Torpedo Defense	Project (Number/Name) 0225 / Surface Ship Torpedo Defense (SSTD)	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0225				
Countermeasure Anti-Torpedo (CAT) - In Water Test	1	2016	1	2017
CAT - SALVO At-Sea Integration Test	1	2016	2	2016
Torpedo Warning System (TWS) - (EDM) 5	2	2016	2	2017
EX-819 CONTAINER	2	2017	4	2017
RORO to EDM USS CVN 69	4	2017	3	2018
TWS - TAAS In Water Test	1	2017	1	2017
RORO to EDM USS CVN 71	2	2016	2	2017
CAT - SALVO At-Sea Integration Test 2	1	2018	2	2018
CAT - Integration ECP	1	2018	4	2018
CAT - PCA	2	2017	4	2017
TWS - Integration ECP	1	2018	4	2018
TWS - ECP	1	2019	4	2019
TWS - ECP 2	1	2020	4	2020
TWS - ECP 3	1	2021	4	2021
TWS - ECP 4	1	2022	4	2022
TWS SOFTWARE UPGRADE	3	2019	4	2019
TWS SOFTWARE UPGRADE 2	3	2020	4	2020
TWS SOFTWARE UPGRADE 3	3	2021	4	2021
TWS SOFTWARE UPGRADE 4	3	2022	4	2022
CAT - ECP	1	2019	4	2019
CAT - ECP 2	1	2020	4	2020

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		Start		End	
Events by Sub Project		Quarter	Year	Quarter	Year
CAT - ECP 3		1	2021	4	2021
CAT - ECP 4		1	2022	4	2022
CAT SOFTWARE UPGRADE		4	2019	2	2020
CAT SOFTWARE UPGRADE 2		4	2020	2	2021
CAT SOFTWARE UPGRADE 3		4	2021	2	2022
CAT SOFTWARE UPGRADE 4		4	2022	4	2022