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Exhibit R-2, RDT&E Budget Item Justification: PB 2019 Navy											Date: February 2018	
Appropriation/Budget Activity 1319: Research, Development, Test & Evaluation, Navy / BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP							
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
Total Program Element	300.636	48.507	68.553	94.155	-	94.155	87.224	109.208	111.359	113.767	Continuing	Continuing
0366: MK 48 ADCAP	295.326	38.835	68.553	94.155	-	94.155	87.224	109.208	111.359	113.767	Continuing	Continuing
9999: Congressional Adds	5.310	9.672	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.982

A. Mission Description and Budget Item Justification

MK-48 ADCAP (Advanced Capability) Research, Development, Test and Evaluation (RDT&E) program executes incremental development of weapon performance improvements in three development product areas: (1) Common Broadband Advanced Sonar System (CBASS), (2) Advanced Processor Builds (APBs), and (3) Torpedo Technology Insertion (TI). This Program Element (0205632N/0366) is tied to development programs that leverage a joint United States/Australia Armaments Cooperative Project (ACP) to develop MK-48 ADCAP CBASS; and Future Naval Capability (FNC) technologies developed by the Office of Naval Research (ONR).

Countermeasure (CM) sophistication and availability on the open market directly affects ADCAP kill proficiency and its ability to counter rapidly evolving threats. The focus of the MK-48 ADCAP Torpedo Research and Development (R&D) program beginning FY 2001 shifted from concentrating primarily on software block upgrade efforts towards coordinated hardware upgrades, rapid Commercial-Off-the-Shelf (COTS) insertion, and APBs, in order to rapidly upgrade the ADCAP to counter evolving threats and maintain robust performance. The CBASS program developed and fielded a broadband sonar capable of identifying CMs and discriminating them from the target. CBASS Phase I achieved IOC in FY 2006. The Royal Australian Navy (RAN) is jointly participating to develop CBASS Phase II to improve shallow water performance and signed a Memorandum of Agreement (MOA) extension November 2009. The Memorandum Of Agreement (MOA) extension expires November 2019.

The MK-48 ADCAP Torpedo R&D program focuses on two specific areas near term; Torpedo APBs and hardware tech insertions. The CNO continues to stress shallow water (less than 600 feet) as a critical operating area to counter third world diesel electric submarines. Torpedo testing in shallow water has demonstrated that in-service ADCAP has less than full capability in this difficult environment. However, this testing, in conjunction with laboratory simulation efforts, has shown that significant performance improvements can be made by implementing changes to weapon tactics and software algorithms. Development, implementation, and testing of these changes are being accomplished under the Torpedo APB program. The APB program also leverages the RAN joint torpedo program and FNC technologies developed by the ONR in the areas of torpedo broadband signal processing, tactics processing, and alertment. The Torpedo tech insertion program will leverage the MK-54 Lightweight torpedo algorithms.

The Torpedo Technology Insertion program will provide for evolutionary torpedo improvements and upgrades (including the transition and testing of advanced technologies from the R&D community). This approach will incorporate developmental testing of the FNC transitioning technologies for ADCAP upgrades in the areas of torpedo sensors, weapon/platform connectivity, improve fusing, and an alternate method of homing. These efforts will continue torpedo development investment at a lower cost and shorter term than traditional torpedo programs.

The MK 48 MOD 7 APB6/TI-1 Heavyweight Torpedo (HWT) program is an evolutionary upgrade to the MK 48 MOD 7 HWT; it will consist of an Operational Software (OPSW) upgrade referred to as APB 6 and a hardware upgrade referred to as TI-1. TI-1 will include a Guidance and Control (G&C) section upgrade, a redesigned

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TI-1 Warhead Electronics System (WES), and an Improved Post Launch Communications System (IPLCS). TI-1 will also include features from three Future Naval Capabilities (FNC) programs: ASuW weapon upgrades, Extended Range Modular Undersea Heavyweight Vehicle (ER MUHV) and Torpedo Common Hybrid Fuzing System (Fuze).						
APB5 software upgrades are currently in process for MK-48 ADCAP torpedoes. APB5+ software upgrades are currently in process for MK-48 ADCAP torpedoes. APB5+ enhancements are required to address Combat Control System (CCS)/MK48 pre and post launch interface issues which limit crew full implementation of the weapon and provide numerous capability enhancements requested and endorsed by the Fleet.						
Both FNC technologies and MK-54 LWT developments will be transitioned into ADCAP through APBs and technology insertion packages. Priorities for APBs and technology insertion are: (1) improved torpedo effectiveness through advanced processing algorithms, (2) advanced counter-countermeasure capability, and (3) a new array to improve torpedo effectiveness.						
B. Program Change Summary (\$ in Millions)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Previous President's Budget		39.134	68.553	95.983	-	95.983
Current President's Budget		48.507	68.553	94.155	-	94.155
Total Adjustments		9.373	0.000	-1.828	-	-1.828
• Congressional General Reductions		-	-			
• Congressional Directed Reductions		-	-			
• Congressional Rescissions		-	-			
• Congressional Adds		-	-			
• Congressional Directed Transfers		-	-			
• Reprogrammings		-	-			
• SBIR/STTR Transfer		-0.621	0.000			
• Rate/Misc Adjustments		0.000	0.000	-1.828	-	-1.828
• Congressional General Reductions Adjustments		-0.006	-	-	-	-
• Congressional Add Adjustments		10.000	-	-	-	-
Congressional Add Details (\$ in Millions, and Includes General Reductions)						
Project: 9999: Congressional Adds						
Congressional Add: Program Increase						
Congressional Add Subtotals for Project: 9999						
Congressional Add Totals for all Projects						

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<p><u>Change Summary Explanation</u></p> <p>The FY 2019 funding request was reduced by \$0.375 million to reflect the Department of Navy's effort to support the Office of Management and Budget directed reforms for Efficiency and Effectiveness that include a lean, accountable, more efficient government.</p> <p>The FY 2019 decrease of \$1.453 in rate/miscellaneous adjustments were due to rate and purchase price inflation changes.</p> <p>FY 2019: Program increase is primarily due to the TI-1 Hardware development contract and APB 6 software development.</p>		

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Exhibit R-2A, RDT&E Project Justification: PB 2019 Navy										Date: February 2018		
Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP				Project (Number/Name) 0366 / MK 48 ADCAP			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
0366: MK 48 ADCAP	295.326	38.835	68.553	94.155	-	94.155	87.224	109.208	111.359	113.767	Continuing	Continuing
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

MK48 ADCAP program executes incremental development of weapon performance improvements in two development product areas: (1) APBs, and (2) torpedo technology insertion. This program is tied to development programs that leverage a joint United States/Australia ACP to develop MK48 ADCAP and FNC technologies being developed by the ONR.

APB software upgrades will improve torpedo performance in challenging shallow water and countered environments through incorporation of new algorithms designed to address broadband, multiband, classifications and tactics processing changes. Hardware technology insertions will improve weapon performance against slow/low doppler targets. It provides improved target detection at long and short ranges and improved counter measure rejection in countered and shallow water scenarios.

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

	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
Title: TORPEDO APB	26.412	47.567	77.432	0.000	77.432
Articles:	-	-	-	-	-
FY 2018 Plans: APB6/TI-1 - Continue APB 6 software development. APB6/TI-1 - Continue TI-1 hardware development. APB6/TI-1 - Continue Weapons Analysis Facility (WAF) upgrades and accreditation. APB6/TI-1 - Continue Fiber development. APB6/TI-1 - Conduct APB6/TI-1 Integrated Logistics Assessment. APB6/TI-1 - Conduct APB/TI-1 Milestone B Review. APB6/TI-1 - Award TI-1 Development Contract. APB5+ - System Requirements Review (SRR) APB5+ - Software System Safety Technical Review Panel (SSSTRP) Briefing APB5+ - Software - Build 1 (pre-launch)					
FY 2019 Base Plans: APB6/TI-1 - Continue APB 6 Software development. APB6/TI-1 - Conduct APB 6 System Functional Review (SFR) APB6/TI-1 - Continue TI-1 hardware development. APB6/TI-1 - Conduct TI-1 System Requirements Review. APB6/TI-1 - Conduct TI-1 System Functional Review.					

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total
APB6/TI-1 - Continue Weapons Analysis Facility (WAF) upgrades and accreditation. APB5+ - Preliminary Design Review (PDR) APB5+ - Software - Build 2 (post-launch) FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Increase of \$24.3M for TI-1 Hardware development contract. TI-1 hardware contractor estimate is based on a labor burn rate of \$3M/mo and estimated material requirement of \$12M in FY 2019. Increase of \$6M for NUWC APB 6 software development. As APB 5 shifts to OT in FY 2019, APB 6 software development is increased in order to meet software/hardware developmental testing.						
Title: TEST & EVALUATION Articles:		12.423 -	20.986 -	16.723 -	0.000 -	16.723 -
FY 2018 Plans: Begin APB 5 Operational Testing (OT) events OT-A and OT-B with analysis and reports for each event. Begin EC-WAF accreditation. FY 2019 Base Plans: APB 5 - Continue APB 5 Operational Test events (OT-C, OT-D, OT-E). APB 6 - Begin preliminary APB 6 Software Integration testing. Complete EC-WAF accreditation. APB5+ - Engineering test runs using EC-WAF / CSTL virtual shots FY 2019 OCO Plans: N/A FY 2018 to FY 2019 Increase/Decrease Statement: Funding decrease due to reduced in water test events in FY19 resulting in less test range time and support required and fewer torpedo builds needed. NUWC Newport support reduced by \$2.4M and NUWC Keyport support reduced \$1.6M.						
Accomplishments/Planned Programs Subtotals		38.835	68.553	94.155	0.000	94.155

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C. Other Program Funding Summary (\$ in Millions)

<u>Line Item</u>	<u>FY 2017</u>	<u>FY 2018</u>	<u>FY 2019</u> <u>Base</u>	<u>FY 2019</u> <u>OCO</u>	<u>FY 2019</u> <u>Total</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• WPN/3225: MK-48 Torpedo ADCAP Mods	46.139	38.954	40.005	-	40.005	40.173	57.079	58.181	59.408	0.000	1,479.646
• WPN/3117: MK-48 Torpedo	43.037	44.771	92.616	-	92.616	114.436	218.661	186.660	199.409	Continuing	Continuing

Remarks

D. Acquisition Strategy

In FY 2016, a competitive contract was awarded to procure additional warshot torpedoes and continue procurement of CBASS Kits. The Program will continue to execute competitive, build to print contracts, until inventory requirements are met and all Mod 6 torpedoes are converted. Throughout the contract the program will execute life of type buys to minimize the impact of obsolescence avoiding redesign and qualification during a contract cycle. The next competitive contract is planned for FY 2021 and will include fuel tank and warhead electronic sections.

Continue to incrementally develop technology to pace the threats to be integrated into the production baseline. A competitive award for TI-1 hardware development is planned for FY 2018.

E. Performance Metrics

Milestone reviews.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy **Date:** February 2018

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 0366 / MK 48 ADCAP
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Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Primary Software Development - APB 5	WR	NUWC NPT : Newport RI	21.452	8.979	Oct 2016	5.552	Oct 2017	3.243	Oct 2018	-		3.243	Continuing	Continuing	Continuing
Primary Software Development - APB 6	WR	NUWC NPT : Newport RI	0.000	1.671	Jan 2017	6.554	Oct 2017	12.810	Oct 2018	-		12.810	0.000	21.035	-
Primary Hardware Development - TI-1	WR	NUWC NPT : Newport RI	14.880	5.328	Oct 2016	9.369	Oct 2017	11.211	Oct 2018	-		11.211	Continuing	Continuing	Continuing
Hardware Development - TI-1	C/CPIF	New - TBD : TBD	0.000	0.000		20.411	Jun 2018	44.679	Jul 2019	-		44.679	0.000	65.090	-
Primary Hardware Development - TI-1	C/CPFF	UARC : Multiple	0.000	0.300	Feb 2017	0.300	Mar 2018	0.100	Mar 2019	-		0.100	0.000	0.700	-
Primary Hardware Development - TI-1	WR	Indian Head : Indian Head	0.000	0.000		0.100	Oct 2017	0.100	Oct 2018	-		0.100	0.000	0.200	-
Primary Hardware Development - IM	WR	Indian Head : Indian Head	0.900	0.450	Oct 2016	0.450	Jan 2018	0.450	Jan 2019	-		0.450	Continuing	Continuing	Continuing
Primary Hardware Development - Spiral 4 / PY Development	WR	NUWC NPT : Newport RI	31.201	0.000		0.000		0.000		-		0.000	0.000	31.201	-
Primary Software Development - Sprial 4 / PY Development	WR	NUWC NPT : Newport RI	31.839	0.000		0.000		0.000		-		0.000	0.000	31.839	-
Subtotal			100.272	16.728		42.736		72.593		-		72.593	Continuing	Continuing	N/A

Remarks

Funding increase required for TI-1 hardware development contractor and APB 6 software development. TI-1 hardware contractor estimate is based on a labor burn rate of \$3M/ mo and estimated material requirement of \$12M in FY19.

As APB 5 shifts to OT in FY19, APB 6 software development is increased in order to meet software/hardware developmental testing.

Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Software Development - APB 5	WR	NUWC NPT : Newport RI	26.605	4.038	Oct 2016	3.368	Oct 2017	2.192	Oct 2018	-		2.192	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy												Date: February 2018			
Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP				Project (Number/Name) 0366 / MK 48 ADCAP					
Support (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Software Development - APB 6	WR	NUWC NPT : Newport RI	0.000	0.251	Jan 2017	0.917	Oct 2017	2.086	Oct 2018	-		2.086	0.000	3.254	-
Software Development / PY Development	Various	Various : Not Specified	36.317	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Integrated Logistics Support	WR	NUWC NPT : Newport RI	2.243	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering WCF	WR	NUWC NPT : Newport RI	17.750	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Systems Engineering	Various	NUWC NPT : Newport RI	0.676	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			83.591	4.289		4.285		4.278		-		4.278	Continuing	Continuing	N/A
Remarks															
Support funds are shifting from APB 5 support to APB 6 support in FY19.															
Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Test & Evaluation - APB 5	WR	NUWC NPT : Newport RI	9.336	6.468	Oct 2016	10.749	Oct 2017	7.995	Oct 2018	-		7.995	Continuing	Continuing	Continuing
Test & Evaluation - APB 5	WR	NUWC KPT : Keyport WA	17.347	8.448	Oct 2016	6.670	Oct 2017	5.114	Oct 2018	-		5.114	Continuing	Continuing	Continuing
Test & Evaluation - APB 5	WR	OPTEVFOR : Norfolk VA	9.815	0.550	Jul 2017	2.000	Jun 2018	2.000	May 2019	-		2.000	Continuing	Continuing	Continuing
Test & Evaluation - APB 6	C/CPFF	ARL / PSU : State College PA	0.000	0.298	Apr 2017	1.567	Apr 2018	1.614	Apr 2019	-		1.614	0.000	3.479	-
Modeling & Simulation	WR	NUWC NPT : Newport RI	9.745	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Modeling & Simulation	C/CPFF	ARL / PSU : State College PA	12.590	1.522	Apr 2017	0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Test & Evaluation - Spiral 4 / PY	WR	NUWC NPT : Newport RI	17.086	0.000		0.000		0.000		-		0.000	0.000	17.086	-

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2019 Navy **Date:** February 2018

Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 0366 / MK 48 ADCAP
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Test and Evaluation (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Test & Evaluation - Spiral 4 / PY	WR	NUWC KPT : Keyport WA	29.437	0.000		0.000		0.000		-		0.000	0.000	29.437	-
Subtotal			105.356	17.286		20.986		16.723		-		16.723	Continuing	Continuing	N/A

Remarks
 Decrease funding required due to less in water test events in FY19.
 Modeling and simulation is funded under EC-WAF within APB development T&E tasks.

Management Services (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Program Management	C/CPFF	Alion Science : Mclean VA	4.858	0.482	Oct 2016	0.496	Nov 2017	0.511	Dec 2018	-		0.511	0.000	6.347	-
Travel	WR	NAVSEA : Washington DC	1.249	0.050	Oct 2016	0.050	Nov 2017	0.050	Dec 2018	-		0.050	0.000	1.399	-
Subtotal			6.107	0.532		0.546		0.561		-		0.561	0.000	7.746	N/A

			Prior Years	FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			295.326	38.835		68.553		94.155		-		94.155	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy

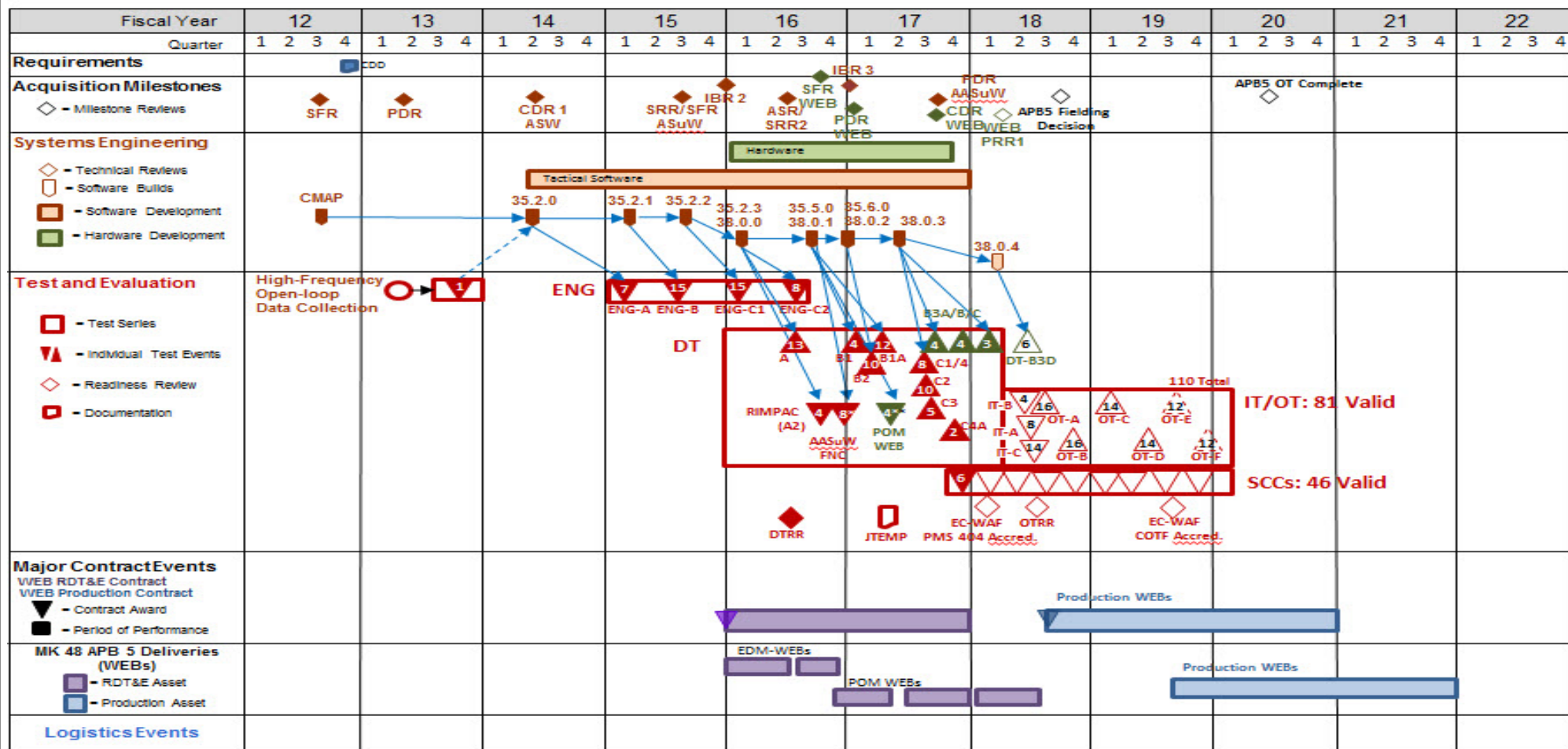
Date: February 2018

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Project (Number/Name)
0366 / MK 48 ADCAP

MK 48 MOD 7 APB5 Acquisition Schedule



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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy

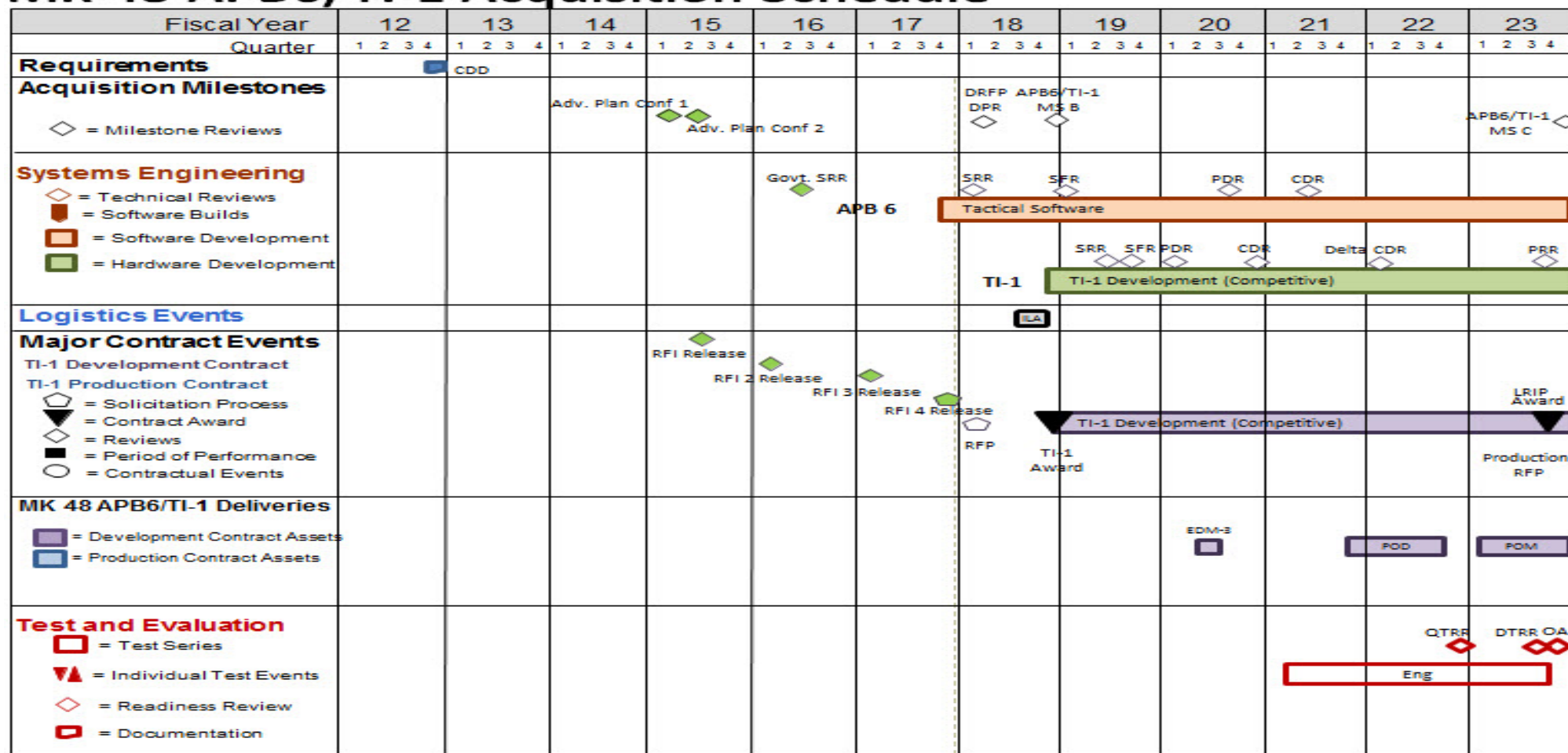
Date: February 2018

Appropriation/Budget Activity
1319 / 7

R-1 Program Element (Number/Name)
PE 0205632N / MK-48 ADCAP

Project (Number/Name)
0366 / MK 48 ADCAP

MK 48 APB6/TI-1 Acquisition Schedule



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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy			Date: February 2018
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Proj 0366</i>				
APB 5 Development: Continue APB 5 Developmental Test (DT)	1	2017	1	2018
APB 5 Development: APB 5 Operation Test (IT/OT)	2	2018	1	2020
APB 5 Development: APB 5 IOC	2	2020	2	2020
APB 6 Software / TI-1 Hardware Development: APB 6 Development	1	2017	4	2023
APB 6 Software / TI-1 Hardware Development: TI-1 Development	4	2018	4	2023
APB 6 Software / TI-1 Hardware Development: APB 6/TI-1 Developmental Test (DT)	4	2023	4	2023

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Appropriation/Budget Activity 1319 / 7					R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP				Project (Number/Name) 9999 / Congressional Adds			
COST (\$ in Millions)	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	FY 2020	FY 2021	FY 2022	FY 2023	Cost To Complete	Total Cost
9999: Congressional Adds	5.310	9.672	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	14.982
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Congressional add funding will be utilized to address obsolescence, manufacturability and product improvements to reduce assembly cost and address production issues.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2017	FY 2018
<i>Congressional Add:</i> Program Increase	9.672	0.000
<i>FY 2017 Accomplishments:</i> N/A		
<i>FY 2018 Plans:</i> (1) Contract and Technical Support of the Acoustic Transducer Manufacturing Automation System, (2) Improve battery life or improving pinger electronics to draw less power		
Congressional Adds Subtotals	9.672	0.000

C. Other Program Funding Summary (\$ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

E. Performance Metrics

Milestone review

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Appropriation/Budget Activity 1319 / 7						R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP				Project (Number/Name) 9999 / Congressional Adds					

Product Development (\$ in Millions)				FY 2017		FY 2018		FY 2019 Base		FY 2019 OCO		FY 2019 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
Primarily Software Development	WR	NUWC NPT : Newport RI	5.310	9.672	Sep 2017	0.000		0.000		-		0.000	0.000	14.982	-
Subtotal			5.310	9.672		0.000		0.000		-		0.000	0.000	14.982	N/A

	Prior Years	FY 2017	FY 2018	FY 2019 Base	FY 2019 OCO	FY 2019 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	5.310	9.672	0.000	0.000	-	0.000	0.000	14.982	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2019 Navy	Date: February 2018
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Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 9999 / Congressional Adds
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	FY 2017				FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Proj 9999																												
Updated Interface Design Specification																												
Future Torpedo Studies																												
Advanced Weapon Performance Model																												
Contract and Technical Support of the Acoustic Transducer Manufacturing Automation System																												
Improve battery life or improving pinger electronics to draw less power																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2019 Navy		Date: February 2018
Appropriation/Budget Activity 1319 / 7	R-1 Program Element (Number/Name) PE 0205632N / MK-48 ADCAP	Project (Number/Name) 9999 / Congressional Adds

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 9999				
Updated Interface Design Specification	4	2017	4	2018
Future Torpedo Studies	4	2017	4	2018
Advanced Weapon Performance Model	4	2017	4	2018
Contract and Technical Support of the Acoustic Transducer Manufacturing Automation System	4	2018	4	2019
Improve battery life or improving pinger electronics to draw less power	4	2018	4	2019