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Exhibit R-2, RDT&E Budget Item Justification: PB 2014 Navy	DATE: April 2013
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APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>					R-1 ITEM NOMENCLATURE PE 0205632N: <i>MK-48 ADCAP</i>							
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
Total Program Element	164.443	45.130	28.717	12.806	-	12.806	24.116	23.598	21.130	21.339	Continuing	Continuing
0366: <i>MK 48 ADCAP</i>	164.443	37.630	28.717	12.806	-	12.806	24.116	23.598	21.130	21.339	Continuing	Continuing
9999: <i>Congressional Adds</i>	0.000	7.500	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.500

[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012

^{##} The FY 2014 OCO Request will be submitted at a later date

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. The budget enables Acquisition Category (ACAT) III development to address Chief of Naval Operations (CNO) defined capability-based requirements and mission needs. 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 from FY 2001 and out shifted from being primarily concentrated on Software Block Upgrade efforts towards coordinated hardware upgrades, rapid Commercial-Off-the-Shelf (COTS) insertion, and APBs 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 Commonwealth of Australia Royal Navy is jointly participating to develop CBASS Phase II to improve shallow water performance and signed a Memorandum of Agreement (MOA) extension November 2009. The MOA extension expires Nov 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 is 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. Further hardware investment involves development of Guidance & Control (G&C) replacement required to support production and development of Automated Test Equipment replacement to improve comprehensive system testing of full up CBASS Torpedoes.

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

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of torpedo sensors, weapon/platform connectivity, warhead lethality, speed and depth. These efforts will continue torpedo development investment at a lower cost and shorter term than traditional torpedo programs.

The MK-48 ADCAP torpedo program completed the OT phase of testing Spiral 4 on ACOT and CBASS units in 1st Qtr 2013 in support of IOC.

APB5 software upgrades are currently in process for MK-48 ADCAP torpedoes.

FNC technologies and MK-54 Lightweight torpedo 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)	<u>FY 2012</u>	<u>FY 2013</u>	<u>FY 2014 Base</u>	<u>FY 2014 OCO</u>	<u>FY 2014 Total</u>
Previous President's Budget	46.759	28.717	25.333	-	25.333
Current President's Budget	45.130	28.717	12.806	-	12.806
Total Adjustments	-1.629	0.000	-12.527	-	-12.527
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-0.750	0.000			
• SBIR/STTR Transfer	-0.879	0.000			
• Program Adjustments	0.000	0.000	-8.070	-	-8.070
• Rate/Misc Adjustments	0.000	0.000	-4.457	-	-4.457

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 9999: *Congressional Adds*

 Congressional Add: *Small Business Technology Insertion*

	<u>FY 2012</u>	<u>FY 2013</u>
	7.500	-
Congressional Add Subtotals for Project: 9999	7.500	0.000
Congressional Add Totals for all Projects	7.500	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2014 Navy									DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development					R-1 ITEM NOMENCLATURE PE 0205632N: MK-48 ADCAP				PROJECT 0366: MK 48 ADCAP			
COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013 [#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
0366: MK 48 ADCAP	164.443	37.630	28.717	12.806	-	12.806	24.116	23.598	21.130	21.339	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0		0	0	0	0	0		
# FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012												
## The FY 2014 OCO Request will be submitted at a later date												
A. Mission Description and Budget Item Justification												
Completed Spiral 4 OT testing with delivery of the final report in support of IOC in 2nd Qtr 2013												
MK-48 ADCAP RDT&E program executes incremental development of weapon performance improvements in two development product areas: (1) APBs, and (2) Torpedo Technology Insertion. The budget enables ACAT III development to address CNO defined capability-based requirements and mission needs. This Program Element (0205632N/0366) is tied to development programs that leverage a joint United States/Australia ACP to develop MK-48 ADCAP; and FNC technologies being developed by the ONR.												
APB Software upgrades will improve torpedo performance in challenging water, countered environments through incorporation of new algorithms designed to address broadband, multiband, classifications and tactics processing changes. Hardware technology insertions will improve weapon availability through development of a G&C replacement and an Automated Test Equipment replacement.												
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2012	FY 2013	FY 2014	
Title: TORPEDO APB									24.112	19.795	5.165	
									Articles: 0	0	0	
FY 2012 Accomplishments:												
-Continued APB 5 development and Spiral 4 OT.												
-Conducted development of the RDTE Guidance Control (G&C) initiative to support production restart efforts on G&C components so 50 G&Cs can be matched up with arrays and AB/TCs thus increasing inventory numbers.												
-Started development of Automated Test Equipment (ATE) replacement.												
FY 2013 Plans:												
-Continue APB 5 development.												
-Continue development of Automated Test Equipment (ATE) replacement.												
FY 2014 Plans:												

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2012	FY 2013	FY 2014		
-Continue APB 5 development.											
Title: OPERATIONAL TEST SUPPORT							13.518	8.922	7.641		
Articles:							0	0	0		
FY 2012 Accomplishments: Completed Spiral 4 OT.											
FY 2013 Plans: Conduct APB 5 testing.											
FY 2014 Plans: Continue APB 5 testing.											
Accomplishments/Planned Programs Subtotals							37.630	28.717	12.806		
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2012	FY 2013	FY 2014 Base	FY 2014 OCO	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
• WPN/3225: <i>MK-48 Torpedo</i> <i>ADCAP Mods</i>	42.493	54.281	53.203		53.203	56.557	71.883	59.400	49.926	Continuing	Continuing
Remarks											
D. Acquisition Strategy											
Sole Source Production Contract awarded in FY 2004 for MK-48 ADCAP MODS, Lightweight MK-54, and Common Broadband Advanced Sonar System (CBASS) kits, including Royal Australian Navy (RAN) units. A full and competitive procurement for MK46 Mod 7 CBASS production kits was awarded in March 2011 with a FY 2010/2011 base year and four option years for FY 2012-2015.											
E. Performance Metrics											
Milestone Reviews.											

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development						R-1 ITEM NOMENCLATURE PE 0205632N: MK-48 ADCAP				PROJECT 0366: MK 48 ADCAP					
Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All 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	WR	NUWC NPT:Newport RI	24.015	3.147	Dec 2011	11.206	Oct 2012	1.947	Oct 2013	-		1.947	Continuing	Continuing	Continuing
Primary Hardware Development	WR	NUWC NPT:Newport RI	0.000	16.400	Jun 2012	4.900	Dec 2012	0.000		-		0.000	0.000	21.300	
Primary Hardware Development	C/CPFF	Progeny:Manassas VA	10.852	0.000		0.000		0.000		-		0.000	Continuing	Continuing	Continuing
Subtotal			34.867	19.547		16.106		1.947		0.000		1.947			
Support (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All 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	WR	NUWC NPT:Newport RI	15.096	3.218	Oct 2011	3.069	Oct 2012	2.035	Oct 2013	-		2.035	Continuing	Continuing	Continuing
Software 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	0.000	0.676	Dec 2011	0.000		0.673	Dec 2013	-		0.673	Continuing	Continuing	Continuing
Subtotal			71.406	3.894		3.069		2.708		0.000		2.708			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All 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	WR	NUWC NPT:Newport RI	10.586	5.798	Oct 2011	0.000		2.772	Nov 2013	-		2.772	Continuing	Continuing	Continuing

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE				PROJECT					
1319: Research, Development, Test & Evaluation, Navy BA 7: Operational Systems Development						PE 0205632N: MK-48 ADCAP				0366: MK 48 ADCAP					
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Operational Test & Evaluation	WR	Operational Test Force:Norfolk VA	7.033	0.250	Nov 2011	0.450	Oct 2012	0.303	Oct 2013	-		0.303	Continuing	Continuing	Continuing
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	5.700	1.500	Dec 2011	1.988	Dec 2012	1.784	Dec 2013	-		1.784	Continuing	Continuing	Continuing
Test & Evaluation	WR	NUWC Keyport (KPT):Keyport WA	21.696	5.970	Oct 2011	6.484	Dec 2012	2.782	Oct 2013	-		2.782	Continuing	Continuing	Continuing
Subtotal			54.760	13.518		8.922		7.641		0.000		7.641			
Management Services (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All 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 Support	C/FFP	Alion Science:Mclean VA	2.680	0.488	Oct 2011	0.462	Oct 2012	0.476	Oct 2013	-		0.476	Continuing	Continuing	Continuing
Travel	WR	NAVSEA:Washington DC	0.730	0.183	Oct 2011	0.158	Oct 2012	0.034	Oct 2013	-		0.034	Continuing	Continuing	Continuing
Subtotal			3.410	0.671		0.620		0.510		0.000		0.510			
			All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			164.443	37.630		28.717		12.806		0.000		12.806			
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2014 Navy		DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0205632N: <i>MK-48 ADCAP</i>	PROJECT 0366: <i>MK 48 ADCAP</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2014 Navy			DATE: April 2013
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0205632N: <i>MK-48 ADCAP</i>	PROJECT 0366: <i>MK 48 ADCAP</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 0366				
Software Development: Spiral 4 Operational Test (OT)	1	2012	1	2013
Software Development: Spiral 4 IOC	2	2013	2	2013
Software Development: APB 5 Development	1	2012	2	2016
Software Development: APB 5 Developmental Test (DT)	3	2016	1	2018
Software Development: APB 5 Operation Test (OT)	2	2018	4	2018
Guidance and Production Restart Efforts: Guidance and Production Restart Efforts	1	2012	4	2013
Automated Test Equipment Production Restart Efforts: Automated Test Equipment Production Restart Efforts	1	2012	4	2013

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COST (\$ in Millions)	All Prior Years	FY 2012	FY 2013[#]	FY 2014 Base	FY 2014 OCO ^{##}	FY 2014 Total	FY 2015	FY 2016	FY 2017	FY 2018	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	0.000	7.500	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	7.500
Quantity of RDT&E Articles	0	0	0	0		0	0	0	0	0		
[#] FY 2013 Program is from the FY 2013 President's Budget, submitted February 2012 ^{##} The FY 2014 OCO Request will be submitted at a later date												
<u>A. Mission Description and Budget Item Justification</u>												
Congressional add for Small Business Technology Insertion.												
<u>B. Accomplishments/Planned Programs (\$ in Millions)</u>								FY 2012	FY 2013			
<i>Congressional Add:</i> Small Business Technology Insertion								7.500	-			
<i>FY 2012 Accomplishments:</i> FY12 Congressional Add used to develop array and array electronics upgrades.												
Congressional Adds Subtotals								7.500	0.000			
<u>C. Other Program Funding Summary (\$ in Millions)</u>												
N/A												
<u>Remarks</u>												
<u>D. Acquisition Strategy</u>												
Congressional Adds												
<u>E. Performance Metrics</u>												
Congressional Adds												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2014 Navy												DATE: April 2013			
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 7: <i>Operational Systems Development</i>							R-1 ITEM NOMENCLATURE PE 0205632N: <i>MK-48 ADCAP</i>					PROJECT 9999: <i>Congressional Adds</i>			

Product Development (\$ in Millions)				FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	All 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 Hardware Development	C/CPFF	Progeny:Manassas VA	0.000	7.500	Sep 2012	0.000		0.000		-		0.000	0.000	7.500	
Subtotal			0.000	7.500		0.000		0.000		0.000		0.000	0.000	7.500	

	All Prior Years	FY 2012		FY 2013		FY 2014 Base		FY 2014 OCO		FY 2014 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	0.000	7.500		0.000		0.000		0.000		0.000	0.000	7.500	

Remarks