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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Navy	DATE: February 2012
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APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604610N: <i>Lightweight Torpedo Development</i>
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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	25.852	32.592	49.818	-	49.818	38.249	21.533	19.809	20.320	Continuing	Continuing
2234: <i>Lightweight Hybrid Torpedo</i>	25.852	32.592	49.818	-	49.818	38.249	21.533	19.809	20.320	Continuing	Continuing

A. Mission Description and Budget Item Justification

Lightweight Torpedo program designs, integrates and tests the Lightweight Torpedo (LWT, MK54). The LWT provides performance improvements in shallow water, counter-measure environments. The Engineering Development Model (EDM) contract was awarded to Raytheon Systems Company in June 1996. The EDM contract has delivered twenty-one EDM units to support the in-water test program. Initial Operating Capability (IOC) of the MK 54 Mod 0 achieved in 2004. IOC of the MK 54 equipped VLA was achieved in 2010.

Budget supports Pre-Planned Product Improvement (P3I) Program using an incremental developmental acquisition approach combining hardware and Advanced Processor Build (APB) software upgrades to enable rapid fielding of improvements to the Fleet. The P3I program will focus on common LWT and Heavyweight Torpedo (HWT) hardware and software architecture enhancements that will provide re-architecture, broadband array improvements, and Block Upgrade (BUG) and APB software improvements. Future APB software builds will utilize the common torpedo software to deliver software and tactics to both the MK 48 ADCAP and MK 54 Lightweight torpedoes. The P3I program will also support development of enhanced weapon delivery methods, including the high altitude launch of the MK 54 from Maritime Patrol Aircraft (MPA) with the High Altitude Anti-Submarine Warfare Weapon Capability (HAAWC).

FY 2011: Continue development of hardware/software improvements for P3I program. Continue development of MK54 high altitude launch capability from MPA.

A modification to the MK54 P3I program was directed by CNO to address a Fleet Urgent Operational Need (UON), which enables the early fielding of specific BUG capabilities. The development of these changes are being accomplished under the software program and are referred to as the Torpedo UON Rapid Fielding (TURF) effort. TURF development and testing, which will be accomplished through a Quick Reaction Assessment (QRA), will result in TURF fleet release in late FY11. A modification to the MK54 P3I program was directed to accomplish a technical feasibility demonstration of the MK 54 as an Anti-Torpedo (ATT). These efforts were initiated in FY11 and scheduled to conclude in FY12.

FY 2012: Continue development of hardware/software improvements for P3I program. Continue development of MK54 high altitude launch capability from MPA. Complete demonstration of the MK 54 as an Anti-Torpedo (ATT). Conduct Block Upgrade testing. Complete TURF efforts.

FY 2013: Continue development of hardware/software improvements for P3I program. Continue development of MK 54 high altitude launch capability from MPA. Achievement of Production Readiness Review (PRR) of hardware improvements (112 element array) on MK 54 Mod 0 in 2013. Complete Block Upgrade testing; and field BUG.

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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)		PE 0604610N: Lightweight Torpedo Development			
B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	25.282	32.592	32.546	-	32.546
Current President's Budget	25.852	32.592	49.818	-	49.818
Total Adjustments	0.570	-	17.272	-	17.272
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	1.037	-			
• SBIR/STTR Transfer	-0.338	-			
• Program Adjustments	-	-	17.438	-	17.438
• Rate/Misc Adjustments	-	-	-0.166	-	-0.166
• Congressional General Reductions Adjustments	-0.129	-	-	-	-
 Change Summary Explanation					
Technical:					
High Altitude ASW Weapon Capability to fund the AIR 4.2 cost estimate, fielding HAAWC in FY16. (+\$8.0)					
 MK54 Increment 1 & 2 Fielding to Provide multi-band capability with 112-element array and algorithms developed as part of the ONR Lightweight Torpedo (LTT) Future Naval Capability (FNC). (+\$9.9M)					
 Schedule:					

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Navy								DATE: February 2012			
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604610N: Lightweight Torpedo Development				PROJECT 2234: Lightweight Hybrid Torpedo			
COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
2234: Lightweight Hybrid Torpedo	25.852	32.592	49.818	-	49.818	38.249	21.533	19.809	20.320	Continuing	Continuing
Quantity of RDT&E Articles	17	16	20	0	20	0	0	0	0		
A. Mission Description and Budget Item Justification											
The program designs, integrates and tests the LWT, MK54. The LWT provides performance improvements in shallow water, counter-measure environments. The Engineering Development Model (EDM) contract was awarded to Raytheon Systems Company in June 1996. The EDM contract has delivered twenty-one EDM units to support the in-water test program. Initial Operating Capability (IOC) of the MK54 Mod 0 achieved in 2004. IOC of MK 54 equipped VLA MK 54 MOD 1 achieved in 2010.											
FY 2011 delivery includes 17 POD units. FY 2012 delivery includes 8 TI-1 POM units. FY 2012 achievement of BUG/TURF IOC. FY 2012 achievement of Anti-Torpedo Demo. FY 2013 delivery includes 20 HAAWC POD units.											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2011	FY 2012	FY 2013	
Title: MK54 Pre-Planned Product Improvement (incl.MK54 VLA Integr & HAAWC prog)								25.852	32.592	49.818	
								Articles: 17	16	20	
FY 2011 Accomplishments: Continue development of hardware/software improvements for P3I program BUG and APB (\$13.846M) Continue development of hardware/software for the new array (\$5.267M) Continue development of MK 54 high altitude launch capability from MPA (\$2.439M) Initiate demonstration of the MK 54 as an Anti-Torpedo Torpedo (ATT) (\$4.300M) APB 5 and new array will be developed concurrently. BUG and APB improvements include UON execution.											
FY 2012 Plans: Continue development of hardware/software improvements for P3I program and BUG/CAT and APB (\$3.228M) Continue development of hardware/software for the new array (\$3.237M) Continue development of MK 54 high altitude launch capability from MPA (\$26.127M) Complete demonstration of the MK 54 as an Anti-Torpedo (ATT).											
FY 2013 Plans: Continue development of hardware/software improvements for P3I program and APB (\$9.286M) Continue development of hardware/software for the new array (\$8.044M)											

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)										FY 2011	FY 2012	FY 2013
Continue development of MK 54 high altitude launch capability from MPA (\$32.488M)												
Accomplishments/Planned Programs Subtotals										25.852	32.592	49.818
C. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost	
• WPN/3215: MK54 Torpedo Mods	41.921	76.605	74.487	0.000	74.487	126.710	141.494	198.227	201.852	Continuing	Continuing	
D. Acquisition Strategy												
The EDM contract is held by Raytheon Systems Company. The contract was awarded as a Cost-Plus-Award Fee in June 1996 and was converted to Cost-Plus-Incentive Fee in December 1998. Sole Source Production Contract awarded in FY 2004 for MK48 ADCAP MODS/CBASS and MK54 Lightweight Torpedoes. P3I spiral acquisition strategy is to award EDM contracts among qualified producers.												
E. Performance Metrics												
Milestone Reviews. System Engineering Technical Review. Earned Value Management Reviews.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Navy											DATE: February 2012		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604610N: <i>Lightweight Torpedo Development</i>				PROJECT 2234: <i>Lightweight Hybrid Torpedo</i>					
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development	WR	NUWC:Newport/ Keyport	37.948	11.210	Oct 2011	11.618	Oct 2012	-		11.618	Continuing	Continuing	Continuing
Hardware Development	C/CPAF	Raytheon:Not Specified	3.530	-		-		-		-	0.000	3.530	
Hardware Development	WR	NSWC:Indian Head, MD	0.882	0.200	Oct 2011	0.200	Oct 2012	-		0.200	Continuing	Continuing	Continuing
Systems Engineering	WR	NUWC:Newport/ Keyport	18.489	-		-		-		-	Continuing	Continuing	Continuing
Systems Engineering	SS/FP	Lockheed Martin - VLA:Akron, OH	2.501	-		-		-		-	0.000	2.501	
Systems Engineering	WR	PEO-IWS 3,:Dahlgren, VA	2.882	-		-		-		-	0.000	2.882	
Systems Engineering	WR	PEO-IWS 5,:Dahlgren, VA	2.223	-		-		-		-	0.000	2.223	
Systems Engineering	WR	NSWC PMA 290:Paxtuxent, MD	5.167	2.500	Oct 2011	2.500	Oct 2012	-		2.500	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCWD:China Lake	1.173	-		-		-		-	0.000	1.173	
Systems Engineering	SS/FP	SPA Inc.:Not Specified	0.640	-		-		-		-	0.000	0.640	
Hardware Development	SS/FP	Progeny Systems:Not Specified	24.394	-		-		-		-	0.000	24.394	
Hardware Development	C/CPAF	TBD for HAAWC:Not Specified	22.278	15.524	Oct 2011	23.941	Feb 2013	-		23.941	Continuing	Continuing	Continuing
Software Development	WR	NUWC:Newport/ Keyport	18.313	1.669	Oct 2011	5.943	Oct 2012	-		5.943	Continuing	Continuing	Continuing
Systems Engineering	WR	Naval Operational Logistics Support Center (NOLSC):Not Specified	0.025	-		0.309	Mar 2013	-		0.309	0.000	0.334	
Systems Enginnering	C/CPFF	John Hopkins University:Baltimore, MD	0.050	-		-		-		-	0.000	0.050	
Software Development	C/CPFF	MIT:Boston, MA	-	0.300	Oct 2011	-		-		-	0.000	0.300	
Subtotal			140.495	31.403		44.511		-		44.511			

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Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
System Test and Evaluation	WR	NUWC:Newport/Keyport	20.847	-	Oct 2011	-		-		-	Continuing	Continuing	Continuing
Subtotal			20.847	-		-		-		-			
Test and Evaluation (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Systems Engineering	WR	NSWC:NSWC Carderock	0.090	-		-		-		-	0.000	0.090	
System Test and Evaluation	WR	OPTEVFOR:Not Specified	1.272	0.043	Oct 2011	1.000	Oct 2012	-		1.000	Continuing	Continuing	Continuing
System Test and Evaluation	WR	NUWC:Newport/Keyport	13.832	0.400	Oct 2011	3.583	Oct 2012	-		3.583	Continuing	Continuing	Continuing
Subtotal			15.194	0.443		4.583		-		4.583			
Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management Support	Various	Alion Science:Not Specified	1.905	0.462	Dec 2011	0.462	Feb 2013	-		0.462	Continuing	Continuing	Continuing
Travel	WR	NAVSEA:Not Specified	0.308	0.058	Nov 2011	0.058	Feb 2013	-		0.058	Continuing	Continuing	Continuing
Acquisition Workforce Fund	Various	Various:Various	0.226	-		-		-		-	0.000	0.226	
Program Management Support	Various	ARL/PSU:Philadephia, PA	-	0.161	Jan 2012	0.166	Feb 2013	-		0.166	0.000	0.327	
Program Management Support	Various	NAVSEA:Not Specified	0.093	0.065	Oct 2011	0.038	Oct 2012	-		0.038	0.000	0.196	
Subtotal			2.532	0.746		0.724		-		0.724			

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	Total Prior Years Cost	FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	179.068	32.592		49.818		-		49.818			

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Navy		DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604610N: <i>Lightweight Torpedo Development</i>	PROJECT 2234: <i>Lightweight Hybrid Torpedo</i>

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Exhibit R-4A, RDT&E Schedule Details: PB 2013 Navy			DATE: February 2012
APPROPRIATION/BUDGET ACTIVITY 1319: <i>Research, Development, Test & Evaluation, Navy</i> BA 5: <i>Development & Demonstration (SDD)</i>	R-1 ITEM NOMENCLATURE PE 0604610N: <i>Lightweight Torpedo Development</i>	PROJECT 2234: <i>Lightweight Hybrid Torpedo</i>	

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2234				
Tech Insertion 1 (TI-1) /New Array Production Readiness Review (PRR):	2	2013	2	2013
Tech Insertion 1 (TI-1)/New Array Developmental Testing (DT):	2	2013	4	2014
Tech Insertion 1 (TI-1) /New Array OT:	1	2015	4	2015
Tech Insertion 1 (TI-1) /New Array IOC:	1	2016	1	2016
Software Spirals BUG/CAT DT:	1	2011	1	2011
Software Spirals BUG/CAT OT:	2	2012	1	2013
Software Spirals BUG/CAT OT: Software Spirals BUG/CAT IOC: Schedule Detail	1	2013	1	2013
Software Spirals BUG/CAT OT: Torpedo UON Rapid Fielding (TURF): Schedule Detail	1	2011	1	2012
Software Spirals BUG/CAT OT: Torpedo UON Rapid Fielding IOC:	1	2012	1	2012
Software Spirals BUG/CAT OT: Anti-Torpedo Torpedo (ATT) Demonstration: Schedule Detail	4	2011	4	2012
Software Spirals BUG/CAT OT: APB 5:	1	2011	1	2015
Software Spirals BUG/CAT OT: APB 6:	1	2015	4	2017
Software Spirals BUG/CAT OT: HAAWC Design/Development/Qualification:	1	2011	2	2014
Software Spirals BUG/CAT OT: HAAWC Production Readiness Review (PRR):	2	2014	2	2014
Software Spirals BUG/CAT OT: HAAWC DT:	2	2014	1	2015
Software Spirals BUG/CAT OT: HAAWC OT:	1	2015	2	2015
Software Spirals BUG/CAT OT: HAAWC IOC:	1	2016	1	2016