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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Navy **DATE:** February 2011

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 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	18.962	25.282	32.592	-	32.592	32.546	20.149	20.594	20.966	Continuing	Continuing
2234: <i>Lightweight Hybrid Torpedo</i>	18.962	25.282	32.592	-	32.592	32.546	20.149	20.594	20.966	Continuing	Continuing

A. Mission Description and Budget Item Justification

Lightweight Torpedo program designs, integrates and tests the Lightweight Torpedo (LWT, MK54). The Lightweight Torpedo 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) achieved in 2004.

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 Lightweight Torpedo (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 2010: Developed hardware/software improvements for P3I program. Developed of MK54 high altitude launch capability from MPA.

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 Operation 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, pushing BUG IOC from the 4th qtr FY12 to 4th qtr FY15.

FY 2012: Continue development of hardware/software improvements for P3I program. Continue development of MK54 high altitude launch capability from MPA.

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B. Program Change Summary (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	23.407	25.282	33.700	-	33.700
Current President's Budget	18.962	25.282	32.592	-	32.592
Total Adjustments	-4.445	-	-1.108	-	-1.108
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-0.694	-			
• SBIR/STTR Transfer	-0.724	-			
• Program Adjustments	-	-	-0.523	-	-0.523
• Section 219 Reprogramming	-0.637	-	-	-	-
• Rate/Misc Adjustments	-	-	-0.585	-	-0.585
• Congressional General Reductions	0.010	-	-	-	-
Adjustments					
• Congressional Add Adjustments	-2.400	-	-	-	-

Change Summary Explanation

Technical: Not Applicable
Schedule: Not applicable.

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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
2234: <i>Lightweight Hybrid Torpedo</i>	18.962	25.282	32.592	-	32.592	32.546	20.149	20.594	20.966	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		

A. Mission Description and Budget Item Justification

The program designs, integrates and tests the Lightweight Torpedo (LWT, MK54). The Lightweight Torpedo 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) achieved in 2004.

- FY 2010 delivery included 6 EDM/POD arrays and 4 TI-1 EDM units.
- FY 2011 delivery includes 12 POD/POM arrays and 6 TI-1 POD/POM.
- FY 2012 delivery includes 8 TI-1 POM units.
- FY 2013 delivery includes 20 HAAWC POM units.
- FY14 delivery includes 20 HAAWC POM units.

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

	FY 2010	FY 2011	FY 2012
Title: MK54 Pre-Planned Product Improvement (incl.MK54 VLA Integr & HAAWC prog)	18.962	25.282	32.592
Articles:	10	18	8
FY 2010 Accomplishments:			
Continued development of hardware/software improvements for P3I program BUG/CAT and APB (\$12.961M).			
Continued development of P3I Program hardware/software for the new array (\$3.810M).			
Continued development of MK 54 high altitude launch capability from MPA (\$2.191M).			
Funding in FY 2010 reallocated from HAAWC to software development, primarily BUG, as result of delays in awarding HAAWC contract.			
FY 2011 Plans:			
Continue development of hardware/software improvements for P3I program BUG/CAT and APB (\$2.036M).			
Continue development of hardware/software for the new array (\$5.226M).			
Continue development of MK 54 high altitude launch capability from MPA (\$18.020M).			
APB 5 and new array will be developed concurrently. BUG/CAT and APB improvements include UON execution.			
FY 2012 Plans:			
Continue development of hardware/software improvements for P3I program BUG/CAT and APB (\$3.176M)			
Continue development of hardware/software for the new array (\$3.243M)			

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Continue development of MK 54 high altitude launch capability from MPA (\$26.173M)			
Accomplishments/Planned Programs Subtotals	18.962	25.282	32.592

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

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• WPN/3215: <i>MK54 Torpedo Mods</i>	37.621	42.144	78.045	0.000	78.045	99.511	151.399	200.424	203.439	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.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Navy **DATE:** February 2011

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Product Development (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	30.786	7.162	Oct 2010	8.245	Oct 2011	-		8.245	Continuing	Continuing	Continuing
Hardware Development	C/CPAF	Raytheon:Not Specified	3.530	-		0.200	Oct 2011	-		0.200	0.000	3.730	
Hardware Development	WR	NSWC:Indian Head, MD	0.682	0.200	Mar 2011	-		-		-	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	4.420	0.747	Nov 2010	2.500	Oct 2011	-		2.500	Continuing	Continuing	Continuing
Systems Engineering	WR	NAWCWD:China Lake	0.379	0.794	Nov 2011	-		-		-	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	11.592	10.686	Jul 2011	15.524	Oct 2011	-		15.524	Continuing	Continuing	Continuing
Software Development	WR	NUWC:Newport/Keyport	17.122	1.191	Oct 2010	1.669	Oct 2011	-		1.669	Continuing	Continuing	Continuing
Systems Engineering	WR	Naval Operational Logistics Support Center (NOLSC):Not Specified	0.025	-		-		-		-	0.000	0.025	
Systems Engineering	C/CPFF	John Hopkins University:Baltimore, MD	-	0.050	Apr 2011	-		-		-	0.000	0.050	
Software Development	C/CPFF	MIT:Boston, MA	-	-		0.300	Oct 2011	-		0.300	0.000	0.300	
Subtotal			119.665	20.830		28.438		-		28.438			

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Support (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	17.467	3.380	Oct 2010	3.150	Oct 2011	-		3.150	Continuing	Continuing	Continuing
Subtotal			17.467	3.380		3.150		-		3.150			

Test and Evaluation (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	-		-		-		-	Continuing	Continuing	Continuing
System Test and Evaluation	WR	NUWC:Newport/Keyport	13.231	0.601	Oct 2010	0.400	Oct 2011	-		0.400	Continuing	Continuing	Continuing
Subtotal			14.593	0.601		0.400		-		0.400			

Management Services (\$ in Millions)				FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 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	1.585	0.320	Oct 2010	0.320	Oct 2011	-		0.320	Continuing	Continuing	Continuing
Travel	WR	NAVSEA:Not Specified	0.250	0.058	Oct 2010	0.058	Oct 2011	-		0.058	Continuing	Continuing	Continuing
Acquisition Workforce Fund	Various	Various:Various	0.226	-		-		-		-	0.000	0.226	
Program Management Support	Various	ARL/PSU:Philadelphia, PA	-	-		0.161	Oct 2011	-		0.161	0.000	0.161	
Program Management Support	Various	NAVSEA:Not Specified	-	0.093	Feb 2011	0.065	Oct 2011	-		0.065	0.000	0.158	
Subtotal			2.061	0.471		0.604		-		0.604			

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Navy		DATE: February 2011
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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Navy		DATE: February 2011
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
Proj 2234				
Hardware Spirals MK54 VLA IOC	2	2010	2	2010
Tech Insertion 1 (TI-1) /New Array Production Readiness Review (PRR)	1	2013	1	2013
Tech Insertion 1 (TI-1) /New Array Developmental Testing (DT)	1	2013	4	2013
Tech Insertion 1 (TI-1) /New Array OT	1	2014	1	2015
Tech Insertion 1 (TI-1) /New Array IOC	4	2015	4	2015
Software Spirals BUG/CAT DT	3	2010	2	2011
Urgent Operational Need (UON)	1	2011	4	2011
Urgent Operational Need (UON) IOC	1	2012	1	2012
APB 5	2	2010	4	2015
APB 6	1	2015	4	2016
HAAWC Design/Development/Qualification	1	2010	2	2013
HAAWC Production Readiness Review (PRR)	2	2013	2	2013
HAAWC DT	4	2013	3	2014
HAAWC OT	4	2014	2	2015
HAAWC IOC	1	2016	2	2016