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Exhibit R-2, RDT&E Budget Item Justification: PB 2011 Navy									DATE: February 2010		
APPROPRIATION/BUDGET ACTIVITY 1319: Research, Development, Test & Evaluation, Navy BA 5: Development & Demonstration (SDD)				R-1 ITEM NOMENCLATURE PE 0604610N: Lightweight Torpedo Development							
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
Total Program Element	44.848	23.407	25.282	0.000	25.282	33.700	33.583	21.311	21.753	Continuing	Continuing
2234: Lightweight Hybrid Torpedo	43.252	21.017	25.282	0.000	25.282	33.700	33.583	21.311	21.753	Continuing	Continuing
9999: Congressional Adds	1.596	2.390	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.986
A. Mission Description and Budget Item Justification											
A. MISSION DESCRIPTION: 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.											
FY09: Continue development of hardware/software improvements for MK54 Pre-Planned Product Improvement (P3I) program. Continue development of MK54 high altitude launch capability from Maritime Patrol Aircraft (MPA).											
FY10: Continue development of hardware/software improvements for P3I program. Continue development of MK54 high altitude launch capability from MPA.											
FY11: Continue development of hardware/software improvements for P3I program. Continue development of MK54 high altitude launch capability from MPA.											

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy								DATE: February 2010			
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>			
COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
2234: <i>Lightweight Hybrid Torpedo</i>	43.252	21.017	25.282	0.000	25.282	33.700	33.583	21.311	21.753	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification Lightweight Torpedo / 2234: 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. FY10 delivery includes four Proof of Design/Proof of Manufacturing (POD/POM) and four EDM units of the new array.											
B. Accomplishments/Planned Program (\$ in Millions)											
						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
MK54 Pre-Planned Product Improvement (incl.MK54 VLA Integr & HAAWC prog)						43.026	21.017	25.282	0.000	25.282	
<i>FY 2009 Accomplishments:</i> Continued development of hardware/software improvements for P3I program Block Upgrade (BUG)/ Classifier and Track (CAT) and Advanced Processor Build (APB) (\$16.344M). Continued development of P3I Program hardware/software for the new array (\$16.205M). Continued development of MK54 high altitude launch capability from MPA (\$10.127M). Conducted Operational Testing (OT) of VLA54 (\$0.350M).											
<i>FY 2010 Plans:</i> Continue development of hardware/software improvements for P3I program BUG/CAT and APB (\$5.206M). Continue development of P3I Program hardware/software for the new array (\$3.811M). Continue development of MK54 high altitude launch capability from MPA (\$12.000M).											

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Exhibit R-2A, RDT&E Project Justification: PB 2011 Navy							DATE: February 2010				
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B. Accomplishments/Planned Program (\$ in Millions)											
						FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	
FY 2011 Base Plans: Continue development of hardware/software improvements for P3I program BUG/CAT and APB (\$4.533M). Continue development of hardware/software for the new array (\$2.549M). Continue development of MK54 high altitude launch capability from MPA (\$18.200M).											
Acquisition Workforce Fund FY 2009 Accomplishments: Funded DoD Acquisition Workforce Fund						0.226	0.000	0.000	0.000	0.000	
Accomplishments/Planned Programs Subtotals						43.252	21.017	25.282	0.000	25.282	
C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2009	FY 2010	FY 2011 Base	FY 2011 OCO	FY 2011 Total	FY 2012	FY 2013	FY 2014	FY 2015	Cost To Complete	Total Cost
• WPN/3215: MK54 Torpedo Mods	27.008	89.985	42.144	0.000	42.144	91.508	100.979	153.699	203.089	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 2011 Navy											DATE: February 2010			
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					
Product Development (\$ in Millions)														
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 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	27.861	2.925	Oct 2009	3.017	Oct 2010	0.000		3.017	Continuing	Continuing	Continuing	
Hardware Development	C/CPAF	Raytheon Not Specified	3.530	0.000		0.000		0.000		0.000	0.000	3.530	Continuing	
Hardware Development	WR	NSWC Indian Head, MD	0.482	0.200	Oct 2009	0.211	Oct 2010	0.000		0.211	Continuing	Continuing	Continuing	
Systems Engineering	WR	NUWC Newport/Keyport	16.954	1.535	Oct 2009	0.231	Oct 2010	0.000		0.231	Continuing	Continuing	Continuing	
Systems Engineering	SS/FP	Lockheed Martin - VLA Akron, OH	2.501	0.000		0.000		0.000		0.000	0.000	2.501	Continuing	
Systems Engineering	WR	PEO-IWS 3, Dahlgren, VA	2.882	0.000		0.000		0.000		0.000	0.000	2.882	Continuing	
Systems Engineering	WR	PEO-IWS 5, Dahlgren, VA	2.223	0.000		0.000		0.000		0.000	0.000	2.223	Continuing	
Systems Engineering	WR	NSWC PMA 290 Not Specified	3.865	0.555	Oct 2009	1.769	Oct 2010	0.000		1.769	Continuing	Continuing	Continuing	
Systems Engineering	WR	NAWCWD China Lake	0.379	0.000		0.000		0.000		0.000	0.000	0.379	Continuing	
Systems Engineering	SS/FP	SPA Inc. Not Specified	0.640	0.000		0.000		0.000		0.000	0.000	0.640	Continuing	
Hardware Development	SS/FP	Progeny Systems Not Specified	24.394	0.000		1.275	Oct 2010	0.000		1.275	Continuing	Continuing	Continuing	
Hardware Development	SS/FP	Mikel Inc. Middleton, RI	0.000	2.390	Mar 2010	0.000		0.000		0.000	0.000	2.390	Continuing	

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Product Development (\$ in Millions)													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 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	C/CPAF	TBD for HAAWC Not Specified	4.692	6.900	Oct 2009	13.269	Dec 2010	0.000		13.269	Continuing	Continuing	Continuing
Software Development	WR	NUWC Newport/Keyport	13.543	3.579	Oct 2009	4.239	Oct 2010	0.000		4.239	Continuing	Continuing	Continuing
Systems Engineering	WR	Naval Operational Logistics Support Center (NOLSC) Not Specified	0.025	0.000		0.000		0.000		0.000	0.000	0.025	Continuing
Subtotal			103.971	18.084		24.011		0.000		24.011			
Remarks													
Support (\$ in Millions)													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 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	15.143	2.324	Oct 2009	0.000		0.000		0.000	Continuing	Continuing	Continuing
Subtotal			15.143	2.324		0.000		0.000		0.000			
Remarks													

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2011 Navy											DATE: February 2010		
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Test and Evaluation (\$ in Millions)													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 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	OPTEVFOR Not Specified	1.122	0.150	Oct 2009	0.287	Oct 2010	0.000		0.287	Continuing	Continuing	Continuing
System Test and Evaluation	WR	NUWC Newport/Keyport	13.231	0.000		0.600	Oct 2010	0.000		0.600	Continuing	Continuing	Continuing
Subtotal			14.353	0.150		0.887		0.000		0.887			
Remarks													
Management Services (\$ in Millions)													
				FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 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	C/Various	Alion Science Not Specified	1.184	0.401	Oct 2009	0.326	Oct 2010	0.000		0.326	0.000	1.911	Continuing
Travel	WR	NAVSEA Not Specified	0.192	0.058	Oct 2009	0.058	Oct 2010	0.000		0.058	0.000	0.308	Continuing
Acquisition Workforce Fund	Various/ Various	Various Various	0.226	0.000		0.000		0.000		0.000	0.000	0.226	Continuing
Subtotal			1.602	0.459		0.384		0.000		0.384	0.000	2.445	
Remarks													

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	Total Prior Years Cost	FY 2010		FY 2011 Base		FY 2011 OCO		FY 2011 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	135.069	21.017		25.282		0.000		25.282			
Remarks											

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Exhibit R-4, RDT&E Schedule Profile: PB 2011 Navy

DATE: February 2010

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*

	FY09				FY10				FY11				FY12				FY13				FY14				FY15			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
HARDWARE SPIRALS																												
MK54 VLA		OT ▲				IOC △																						
Tech Insertion 1 (TI-1) / New Array															PRR △ DT △						△	△ OT			△		△ IOC	
SOFTWARE SPIRALS																												
BUG / CAT						△		DT		△		△		OT	△	△ IOC												
Advanced Processor Build (APB)			△																					△				
																						△						
HIGH ALTITUDE ASW CAPABILITY (HAAWC)																												
DESIGN DEVELOPMENT AND QUALIFICATION	△																							△ PRR				
Production Readiness Review (PRR)																								△ DT		△	△	→ OT

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Exhibit R-4A, RDT&E Schedule Details: PB 2011 Navy			DATE: February 2010
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

Event	Start		End	
	Quarter	Year	Quarter	Year
Hardware Spirals MK54 OT	2	2009	2	2009
Hardware Spirals MK54 IOC	2	2010	2	2010
Tech Insertion 1 (TI-1) /New Array Production Readiness Review (PRR)	3	2012	3	2012
Tech Insertion 1 (TI-1) /New Array Developmental Testing (DT)	3	2012	4	2013
Tech Insertion 1 (TI-1) /New Array OT	1	2014	4	2014
Tech Insertion 1 (TI-1) /New Array IOC	2	2015	2	2015
Software Spirals BUG/CAT DT	2	2010	2	2011
Software Spirals BUG/CAT OT	4	2011	2	2012
Software Spirals BUG/CAT IOC	4	2012	4	2012
APB Spiral 5	3	2009	4	2014
APB Spiral 6	1	2014	4	2015
HAAWC Design/Development/Qualification	1	2009	4	2014
HAAWC Production Readiness Review (PRR)	4	2014	4	2014
HAAWC DT	4	2014	2	2015
HAAWC OT	3	2015	4	2015

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COST (\$ in Millions)	FY 2009 Actual	FY 2010 Estimate	FY 2011 Base Estimate	FY 2011 OCO Estimate	FY 2011 Total Estimate	FY 2012 Estimate	FY 2013 Estimate	FY 2014 Estimate	FY 2015 Estimate	Cost To Complete	Total Cost
9999: <i>Congressional Adds</i>	1.596	2.390	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	3.986
Quantity of RDT&E Articles	0	0	0	0	0	0	0	0	0		
A. Mission Description and Budget Item Justification The composite array effort will develop and test a 112 element array for the Tech Insertion-1 (TI-1) project. This array will be evaluated for its performance in providing higher fidelity for detecting targets in harsh environments. The increase in channels will provide for more flexibility in beam formation and signal processing that will ultimately lead to a more capable weapon.											
B. Accomplishments/Planned Program (\$ in Millions)											
							FY 2009	FY 2010			
Congressional Add: Weapon Acquisition and Firing System							0.000	2.390			
<i>FY 2010 Plans:</i> Weapons Acquisition and Firing System (WAFS) will be developed to create automated weapon setting tools by fusing available platform and target information. Improved operator performance through automated tools will improve torpedo placement and overall weapon effectiveness.											
Congressional Add: Torpedo Composite Homing Array							1.596	0.000			
<i>FY 2009 Accomplishments:</i> Funding on contract with Progeny Systems Corporation (PSC) to continue efforts at Material Systems Incorporated (MSI) for new array development. Tasking includes fabrication of array elements, array frame procurement, and delivery of new arrays for qualification testing.											
Congressional Adds Subtotals							1.596	2.390			

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C. Other Program Funding Summary (\$ in Millions) N/A		
D. Acquisition Strategy N/A		
E. Performance Metrics N/A		

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