

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification					DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5		R-1 ITEM NOMENCLATURE LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N						
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	12.811	11.324	31.826	28.583	8.548	8.909	9.219	9.518
Lightweight Torpedo 2234	12.811	11.324	31.826	28.583	8.548	8.909	9.219	9.518
Quantity of RDT&E Articles				2			2	
<p>Note: Articles reflect APB builds in FY07 and FY10; Spiral 1 delivery in FY07 and Spiral 2 in FY10.</p> <p>A. (U) Mission Description and Budget Item Justification:</p> <p>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 June 1996 to support the in-water test program. FY2004: Congressional increase (\$2.8M) to support improvement of MK54 array performance and reliability. FY2005: Congressional increase (\$1.5M) received to support improvements of MK54 array performance and reliability. Budget increases to support a Pre-Planned Product Improvement Program (P3I) for MK54 using a spiral development acquisition approach and Advanced Processor Build (APB) process to enable rapid hardware and software improvements to the Fleet. The P3I program will focus on MK48 common hardware and software architecture enhancements that will provide re-architecture / Torpedo Downloader System (TDS), Vertical Launch Anti Submarine Rocket (VLA) Integration, warhead with Insensitive Munition (IM) capability improvement, broadband array improvements, fully open architecture design, and connectivity / advanced interface.</p>								

R-1 SHOPPING LIST - Item No. 120

Exhibit R-2, RDT&E Budget Item Justification

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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5			R-1 ITEM NOMENCLATURE LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N																	
B. Accomplishments/Planned Program																				
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;">MK54 Baseline Development 2234</td> <td style="width: 10%; text-align: center;">FY 04</td> <td style="width: 10%; text-align: center;">FY 05</td> <td style="width: 10%; text-align: center;">FY 06</td> <td style="width: 10%; text-align: center;">FY 07</td> </tr> <tr> <td>TOTAL</td> <td style="text-align: center;">10.011</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> <td style="text-align: center;">0.000</td> </tr> </table>						MK54 Baseline Development 2234	FY 04	FY 05	FY 06	FY 07	TOTAL	10.011	0.000	0.000	0.000					
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<p>FY 2004 ACCOMPLISHMENTS: Completed operational in-water test program (OPEVAL) May 2004. Report delivered July 2004. IOC and Full Rate Production decisions made. Consolidated Torpedo Contract has been awarded (NTE signed June 2004).</p> <p>FY 2005 Plan: N/A</p> <p>FY 2006 Plan: N/A</p> <p>FY 2007 Plan: N/A</p>																				
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<p>FY 2004 ACCOMPLISHMENTS: Awarded contract to conduct system engineering, software and hardware development for new prototype array (funded with Congressional add). Performed engineering trade-off studies leading to initiating Spiral 1 in FY05. Initiated engineering studies for VLA integration.</p> <p>FY 2005 Plan: Funding increases to support commencing development of hardware improvements for Spiral 1 and software upgrades for Advanced Processor Build (APB). Complete array technology demo. Initiate Spiral 1 to integrate Vertical Launch Anti Submarine Rocket (VLA) with MK54 torpedo. VLA efforts include hardware design, develop prototypes, hardware/software integration, and launch system integration. Development includes efforts for hardware and software improvements of re-architecture / Torpedo Downloader System (TDS), and Insensitive Munition (IM) capability improvement. Initiate P3I contract award efforts to contractors. Initiate increased APB 1 development efforts in order to address fleet identified performance priorities for the MK54 LWT.</p> <p>FY 2006 Plan: Continue Spiral 1 to integrate Vertical Launch Anti Submarine Rocket (VLA) with MK54 torpedo. VLA efforts include hardware design, develop prototypes, hardware/software integration, and launch system integration. Development includes efforts for hardware and software improvements of re-architecture / Torpedo Downloader System (TDS), and Insensitive Munition (IM) capability improvement. Initiate engineering in-water tests of Spiral 1 components. Complete FOT&E using Architecture 0. Continue APB 1 development efforts; software development to include coding, and modeling and simulation. Initiate APB 1 engineering in-water tests of proposed releases in preparation of software release to the Fleet release in FY07. Initiate trade-off engineering studies leading to initiating Spiral 2 in FY07.</p> <p>FY 2007 Plan: Complete Spiral 1 to integrate Vertical Launch Anti Submarine Rocket (VLA) with MK54 torpedo. VLA efforts include hardware design, develop prototypes, hardware/software integration, and launch system integration. Development includes efforts for hardware and software improvements of re-architecture / Torpedo Downloader System (TDS), and Insensitive Munition (IM) capability improvement. Complete engineering in-water tests of Spiral 1 components. Conduct VLA Integration testing. Initiate Spiral 2 development including broadband array, Insensitive Munition (IM) capability improvement, and fully open architecture. Complete APB 1 efforts including engineering in-water tests. Release APB 1 to fleet.</p>																				

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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5		R-1 ITEM NOMENCLATURE LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N																																																													
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Exhibit R-2, RDT&E Budget Item Justification
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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2005		
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7						R-1 ITEM NOMENCLATURE LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N		
D. OTHER PROGRAM FUNDING SUMMARY:								
		FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010
								FY 2011
Torpedo MK 46 MODS / MK54 MODS 0 (WPN / PE 0204228N / BA3 / BLI 321500)		42.078	61.176	76.591	96.743	116.642	129.986	133.000
								135.948
E. ACQUISITION STRATEGY:								
<p>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.</p> <p>Sole Source Production Contract awarded in FY 2004 for MK48 ADCAP MODS/CBASS and MK54 Lightweight Torpedoes.</p> <p>P3I spiral acquisition strategy is to award EDM contract(s) among qualified producers.</p>								
F. MAJOR PERFORMERS:								
<p>NUWC, Newport: MK54 System Engineering, System Integration, Software development, and Hardware Engineering development.</p> <p>NUWC, Keyport: MK 54 Torpedo preparation for in-water testing and safety and environmental engineering including Fleet Exercise Section and Automatic Test Equipment. VLA: System Engineering and Integration.</p> <p>NSWC Indian Head: Warhead Development for Lightweight.</p> <p>PEO-IWS 3, Dahlgren: VLA Integration: MK41 Vertical Launching System (VLS) Systems Integration and software development.</p> <p>PEO-IWS 5, Dahlgren: VLA Integration: ASW Fire Control system integration and software development.</p> <p>Raytheon Corporation: MK54 Hardware Development.</p> <p>Material System Incorporated: Hardware Design for array technology.</p> <p>Lockheed Martin: System Engineering for VLA integration.</p>								

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Exhibit R-2, RDT&E Budget Item Justification
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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2005						
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER								
RDT&E, N/BA-5			0604610N			Lightweight Torpedo 2234								
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Hardware Development	WR	NUWC Newport/Keyport	CONT.	0.667	10/03	1.693	10/04	5.542	10/05	7.818	10/06	CONT.	CONT.	N/A
Hardware Development	SS/FP	Material Systems Inc.	N/A	2.086	08/04	1.250		0.000		0.000				
Hardware Development	SS/FP	Raytheon Corporation	N/A	0.000		0.158	11/04	7.814	11/05	7.146	11/06	CONT.	CONT.	N/A
Hardware Development	WR	NSWC Indian Head	N/A	0.000		0.500	10/04	0.977	10/05	0.200	10/06	CONT.	CONT.	N/A
Systems Engineering	WR	NUWC Newport/Keyport	CONT.	0.669	10/03	0.711	10/04	6.091	10/05	4.880	10/06	CONT.	CONT.	N/A
Systems Engineering	SS/FP	Lockheed Martin		0.000		0.500		1.380	11/05	0.210	11/06	CONT.	CONT.	N/A
Systems Engineering	WR	PEO-IWS 3, Dahlgren	N/A	0.000		2.000	10/04	1.700	10/05	0.700	10/06	CONT.	CONT.	N/A
Systems Engineering	WR	PEO-IWS 5, Dahlgren	N/A	0.000		0.655	10/04	2.200	10/05	1.080	10/06	CONT.	CONT.	N/A
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Product Development			CONT.	3.422		7.467		25.704		22.034		CONT.	CONT.	
Development Support Equipment														
Software Development	WR	NUWC Newport/Keyport	CONT.	0.125	10/03	2.713	10/04	4.000	10/05	4.000	10/06	CONT.	CONT.	N/A
Training Development														
Integrated Logistics Support														
Configuration Management														
Technical Data														
GFE														
Subtotal Support			CONT.	0.125		2.713		4.000		4.000		CONT.	CONT.	
Remarks:														

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Exhibit R-3, Project Cost Analysis
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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2005				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER								
RDT&E, N/BA-5			0604610N			Lightweight Torpedo 2234								
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
System Test & Evaluation	WR	COMOPTEVFOR	CONT.	1.300	10/03	0.200	10/04	0.600	10/05	0.300	10/06	CONT.	CONT.	N/A
System Test & Evaluation	WR	NUWC Newport/Keyport	CONT.	6.861	10/03	0.450	10/04	0.855	10/05	0.820	10/06	CONT.	CONT.	N/A
System Test & Evaluation	WR	NSWC Patuxent River	0.600	0.510	10/03	0.000		0.130	10/05	0.900	10/06	N/A	0.510	N/A
System Test & Evaluation	WR	ARL/PSU State College, PA	0.200	0.163	12/03	0.050	11/04	0.100	11/05	0.100	11/06	N/A	N/A	N/A
Subtotal T&E			CONT.	8.834		0.700		1.685		2.120		CONT.	CONT.	
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support	Various	Anteon	CONT.	0.400	MISC.	0.404	MISC.	0.397	MISC.	0.389	MISC.	CONT.	CONT.	N/A
Travel			CONT.	0.030	MISC.	0.040	MISC.	0.040	MISC.	0.040	MISC.	CONT.	CONT.	N/A
Labor (Research Personnel)				0.000		0.000		0.000		0.000				
Overhead			CONT.	0.000	MISC.	0.000	MISC.	0.000	MISC.	0.000	MISC.	CONT.	CONT.	N/A
Subtotal Management			CONT.	0.430		0.444		0.437		0.429		CONT.	CONT.	
Remarks:														
Total Cost			CONT.	12.811		11.324		31.826		28.583		CONT.	CONT.	
Remarks:														

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 6 of 8)

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EXHIBIT R-4, Schedule Profile

DATE:

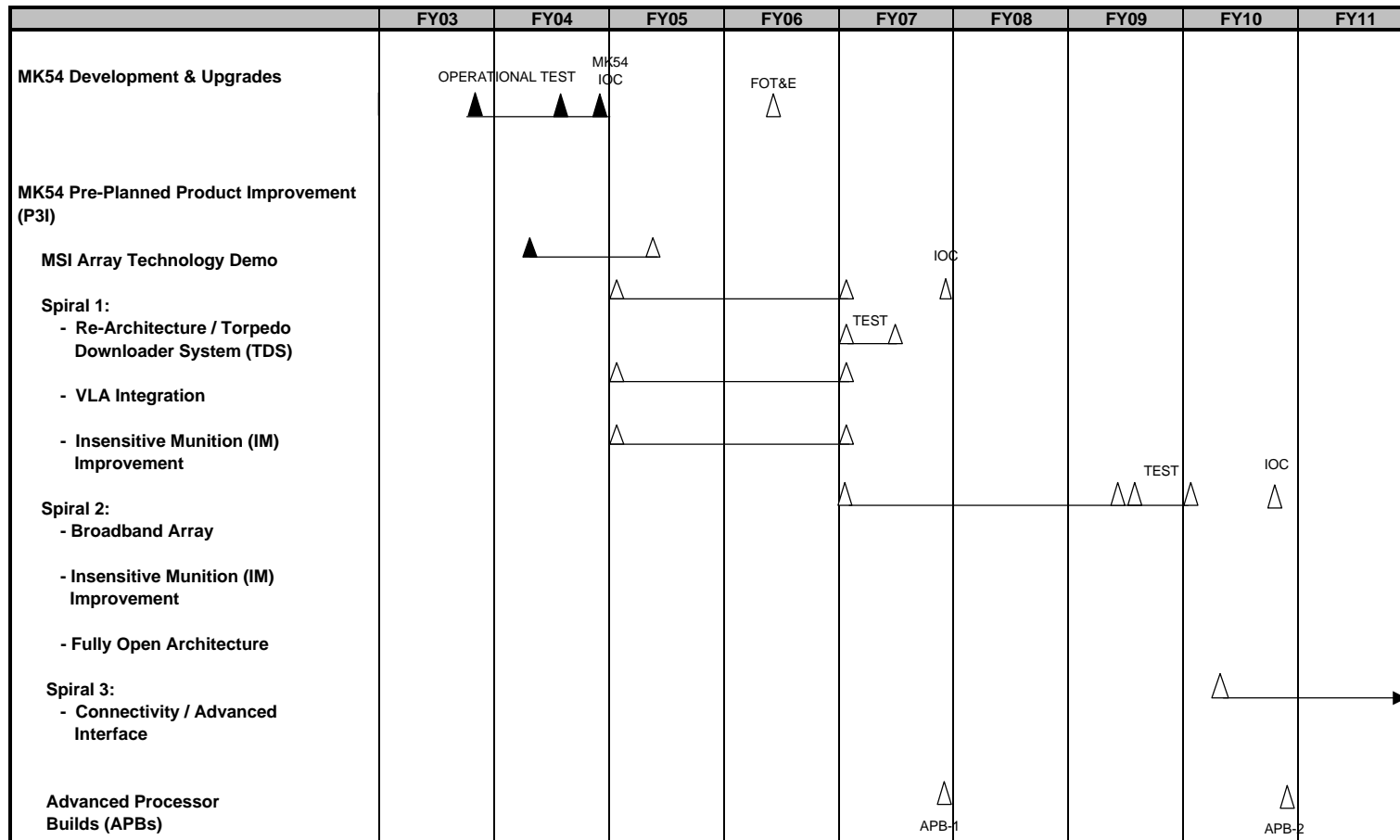
February 2005

APPROPRIATION/BUDGET ACTIVITY

R-1 ITEM NOMENCLATURE

RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5

LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N



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Exhibit R-2, RDT&E Budget Item Justification
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Exhibit R-4a, Schedule Detail					DATE:				
					February 2005				
APPROPRIATION/BUDGET ACTIVITY			PROJECT NUMBER AND NAME						
RDT&E,N/BA-5			LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N						
Schedule Profile	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
MK54 Development & Upgrades									
OPEVAL	4Q	1Q-3Q							
IOC		4Q							
FOT&E				3Q					
MK54 Pre-Planned Product Improvement (P3I)									
MSI Array Technology Demo		2Q -4Q	1Q-2Q						
Spiral 1:									
Re-Architecture / Torpedo Downloader System (TDS) Development			1Q-4Q	1Q-4Q	1Q				
VLA Integration			1Q-4Q	1Q-4Q	1Q				
Insensitive Munition (IM) Improvement			1Q-4Q	1Q-4Q	1Q				
P3I Spiral 1 Testing					1Q-3Q				
P3I Spiral 1 IOC					4Q				
Spiral 2:					1Q-4Q	1Q-4Q	1Q-2Q		
Broadband Array									
Insensitive Munition (IM) Improvement									
Fully Open Architecture									
P3I Spiral 2 Testing							3Q-4Q	1Q	
P3I Spiral 2 IOC								4Q	
Spiral 3:									
Connectivity / Adv. Interface								2Q-4Q	1Q-4Q
Advanced Processor Builds (APBs)									
APB-1					4Q				
APB-2								4Q	

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Exhibit R-4a, RDT&E Budget Item Justification
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