

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5					R-1 ITEM NOMENCLATURE LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	9.900	14.638	3.442	10.072	6.241	1.366	1.408	1.434
Lightweight Torpedo / F2234	9.900	11.705	3.442	10.072	6.241	1.366	1.408	1.434
Lightweight/Heavyweight Baseline Commonality / F9239	0.000	2.933	0.000	0.000	0.000	0.000	0.000	0.000
Quantity of RDT&E Articles								
<p>A. (U) Mission Description and Budget Item Justification:</p> <p>Lightweight Torpedo / F2234: The program designs, integrates and tests the Lightweight Torpedo (LWT, MK54). The torpedo is comprised of hardware and software from the MK 46 Torpedo, MK50 Torpedo, and MK 48 ADCAP Torpedo. The Lightweight Torpedo provides performance improvements in shallow water, littoral, counter-measure environments. The Engineering Development Model (EDM) contract was awarded to Raytheon Systems Company (formerly Hughes Aircraft Company) in June 1996. The EDM contract has delivered twenty-one EDM units to support the in-water test program. The FY 2003 MK54 Test and Evaluation Congressional increase (\$4.2M) will support extended TECHEVAL and OPEVAL programs that incorporate additional in-water firings.</p> <p>Lightweight/Heavyweight Baseline Commonality / F9231: FY 2003 Congressional increase of \$3M reduced to \$2.933M by undistributed reductions is to develop and test hardware and software design changes that would realign the lightweight and heavyweight torpedo hardware and software baselines to achieve greater commonality.</p>								

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<p>B. Accomplishments/Planned Program</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th style="width: 30%;"></th> <th style="width: 15%;">FY 02</th> <th style="width: 15%;">FY 03</th> <th style="width: 15%;">FY 04</th> <th style="width: 15%;">FY 05</th> </tr> </thead> <tbody> <tr> <td>System Engineering</td> <td style="text-align: right;">1.707</td> <td style="text-align: right;">1.508</td> <td style="text-align: right;">1.180</td> <td style="text-align: right;">5.677</td> </tr> <tr> <td>Software Development</td> <td style="text-align: right;">1.252</td> <td style="text-align: right;">1.639</td> <td style="text-align: right;">0.916</td> <td style="text-align: right;">0.579</td> </tr> <tr> <td>Hardware Development</td> <td style="text-align: right;">0.558</td> <td style="text-align: right;">3.238</td> <td style="text-align: right;">0.176</td> <td style="text-align: right;">0.050</td> </tr> <tr> <td>System Test & Evaluation</td> <td style="text-align: right;">6.383</td> <td style="text-align: right;">8.253</td> <td style="text-align: right;">1.170</td> <td style="text-align: right;">3.766</td> </tr> <tr> <td>TOTAL</td> <td style="text-align: right;">9.900</td> <td style="text-align: right;">14.638</td> <td style="text-align: right;">3.442</td> <td style="text-align: right;">10.072</td> </tr> </tbody> </table> <p style="margin-top: 20px;">FY 2002 ACCOMPLISHMENTS:</p> <p>System Engineering: continued Lightweight torpedo system engineering efforts.</p> <p>Software Development: continued development of MK54 tactical and signal processing software.</p> <p>System Test & Evaluation: continued simulation and in-water developmental testing. Initiated technical evaluation test program (TECHEVAL).</p> <p>Hardware Development: continued development of Ancillary Hardware, including Fleet Exercise Section (FES) and Automatic Test Equipment (ATE) to support LWT.</p> <p>FY 2003 Plan:</p> <p>System Engineering: continue Lightweight torpedo system engineering efforts</p> <p>Software Development: continue development of tactical and signal processing software to resolve testing issues.</p> <p>Hardware Development: continue development of Ancillary Hardware, including Fleet Exercise Section (FES) and Automatic Test Equipment (ATE) to support LWT.</p> <p>System test & Evaluation: continue simulation and in-water testing. Complete TECHEVAL and conduct operational in-water test program (OPEVAL).</p> <p>Initiate Lightweight/Heavyweight Baseline Commonality initiatives to better align lightweight and heavyweight torpedoes hardware and software baselines.</p> <p>FY 2004 Plan</p> <p>System Engineering & Software Development: continue planning, systems and software engineering that would implement tactical improvements and transition candidate technologies into the LWT to address fleet requests and counter emerging threats.</p> <p>System Test & Evaluation: complete OPEVAL and conduct additional test and evaluation of LHT to address operational in-water test program results and support tactical improvement candidate selection.</p> <p>FY 2005 Plan</p> <p>System Engineering & Software Development: continue planning, systems and software engineering that would implement tactical improvement, Vertical Launch ASROC integration and transition candidate technologies into the LHT to address fleet requests and counter emerging threats.</p> <p>System Test & Evaluation: conduct missile, fire control and vertical launching system integration testing.</p>					FY 02	FY 03	FY 04	FY 05	System Engineering	1.707	1.508	1.180	5.677	Software Development	1.252	1.639	0.916	0.579	Hardware Development	0.558	3.238	0.176	0.050	System Test & Evaluation	6.383	8.253	1.170	3.766	TOTAL	9.900	14.638	3.442	10.072
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<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 40%;"></th> <th style="text-align: right; width: 15%;">FY 2002</th> <th style="text-align: right; width: 15%;">FY 2003</th> <th style="text-align: right; width: 15%;">FY 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Previous President's Budget: (FY 03 Pres Controls)</td> <td style="text-align: right;">10.219</td> <td style="text-align: right;">7.769</td> <td style="text-align: right;">3.630</td> <td style="text-align: right;">1.566</td> </tr> <tr> <td>Current BES/President's Budget: (FY04 President Controls)</td> <td style="text-align: right;">9.900</td> <td style="text-align: right;">14.638</td> <td style="text-align: right;">3.442</td> <td style="text-align: right;">10.072</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right;">-0.319</td> <td style="text-align: right;">6.869</td> <td style="text-align: right;">-0.188</td> <td style="text-align: right;">8.506</td> </tr> <tr> <td colspan="5" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td> Congressional Add MK54 Test & Evaluation</td> <td></td> <td style="text-align: right;">4.200</td> <td></td> <td></td> </tr> <tr> <td> Congressional Add LWT/HWT Baseline Commonality</td> <td></td> <td style="text-align: right;">3.000</td> <td></td> <td></td> </tr> <tr> <td> MK 54 Integration into VLA</td> <td></td> <td></td> <td></td> <td style="text-align: right;">8.900</td> </tr> <tr> <td> FY2002 SBIR (dtd 5-12-02)</td> <td style="text-align: right;">-0.013</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Reprogrammings</td> <td style="text-align: right;">-0.204</td> <td style="text-align: right;">-0.088</td> <td style="text-align: right;">-0.123</td> <td style="text-align: right;">-0.190</td> </tr> <tr> <td> Economic Assumptions</td> <td style="text-align: right;">-0.080</td> <td style="text-align: right;">-0.243</td> <td style="text-align: right;">-0.065</td> <td style="text-align: right;">-0.204</td> </tr> <tr> <td> Congressional undistributed reductions</td> <td style="text-align: right;">-0.022</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Subtotal</td> <td style="text-align: right;">-0.319</td> <td style="text-align: right;">6.869</td> <td style="text-align: right;">-0.188</td> <td style="text-align: right;">8.506</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule: Additional in-water firings were added to the MK54 testing program resulting in an extended OPEVAL and delay to MK54 IOC in FY04. Tactical improvements will incorporate continued in-water testing, software and systems engineering support to improve capability against future threats and associated tactics. Start MK54 LWT integration with the Vertical Launch ASROC (VLA) in FY05.</p> <p>Technical: Not applicable.</p>					FY 2002	FY 2003	FY 2004	FY 2005	Funding:					Previous President's Budget: (FY 03 Pres Controls)	10.219	7.769	3.630	1.566	Current BES/President's Budget: (FY04 President Controls)	9.900	14.638	3.442	10.072	Total Adjustments	-0.319	6.869	-0.188	8.506	Summary of Adjustments					Congressional Add MK54 Test & Evaluation		4.200			Congressional Add LWT/HWT Baseline Commonality		3.000			MK 54 Integration into VLA				8.900	FY2002 SBIR (dtd 5-12-02)	-0.013				Reprogrammings	-0.204	-0.088	-0.123	-0.190	Economic Assumptions	-0.080	-0.243	-0.065	-0.204	Congressional undistributed reductions	-0.022				Subtotal	-0.319	6.869	-0.188	8.506
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EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7						R-1 ITEM NOMENCLATURE LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N			
D. OTHER PROGRAM FUNDING SUMMARY:									
	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete
Torpedo MK 46 MODS / MK54 MODS 0 (WPN / PE 0204228N / BA3 / BLI 321500)	9.777	38.040	34.249	61.648	76.933	96.642	115.831	128.556	CONT.
E. ACQUISITION STRATEGY:									
The EDM contract is currently held by Raytheon Systems Company (formerly Hughes Aircraft 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.									
F. MAJOR PERFORMERS:									
NUWC, Newport: System, Software, and Hardware engineering development.									
NUWC, Keyport: MK 54 Torpedo preparation for in-water testing and safety and environmental engineering including Fleet Excercise Section and Automatic Test Equipment.									
NSWC Indian Head: Warhead Development for Lightweight/Heavyweight Baseline Commonality.									
Raytheon Systems Company: Hardware Development Lightweight/Heavyweight Baseline Commonality.									

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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 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-5			0604610N			Lightweight Torpedo / F2234						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Hardware Development	WR	NUWC Newport/Keyport	CONT.	0.305	10/02	0.176	10/03	0.050	10/04	CONT.	CONT.	N/A
Systems Engineering	WR	NUWC Newport/Keyport	CONT.	1.196	10/02	0.723	10/03	0.300	10/04	CONT.	CONT.	N/A
Systems Engineering	Various	Various						4.862	10/04	CONT.	CONT.	N/A
Systems Engineering	WR	NSWC Indian Head	0.209	0.000		0.000		0.000		N/A	N/A	N/A
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			CONT.	1.501		0.899		5.212		CONT.	CONT.	
Development Support Equipment												
Software Development	WR	NUWC Newport/Keyport	CONT.	1.639	10/02	0.916	10/03	0.579	10/04	CONT.	CONT.	N/A
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			CONT.	1.639		0.916		0.579		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 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-5			0604610N			Lightweight Torpedo / F2234						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
System Test & Evaluation	WR	COMOPTEVFOR	CONT.	0.899	10/02	0.400	10/03	0.075	10/04	CONT.	CONT.	N/A
	Various	Various						3.496	10/04	CONT.	CONT.	N/A
	WR	NUWC Newport/Keyport	CONT.	7.154	10/02	0.770	10/03	0.195	10/04	CONT.	CONT.	N/A
	WR	NAWC Patuxent River	0.692	0.000		0.000		0.000		N/A	N/A	N/A
	WR	ARL/PSU State College, PA	1.707	0.200		0.000		0.000		N/A	N/A	N/A
Subtotal T&E			CONT.	8.253		1.170		3.766		CONT.	CONT.	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	Various	Anteon	CONT.	0.183	MISC.	0.409	MISC.	0.404	MISC.	CONT.	CONT.	N/A
Travel			CONT.	0.030	MISC.	0.030	MISC.	0.030	MISC.	CONT.	CONT.	N/A
Labor (Research Personnel)												
Overhead			CONT.	0.099	MISC.	0.018	MISC.	0.081	MISC.	CONT.	CONT.	N/A
Subtotal Management			CONT.	0.312		0.457		0.515		CONT.	CONT.	
Remarks:												
Total Cost			CONT.	11.705		3.442		10.072		CONT.	CONT.	
Remarks:												

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Exhibit R-3, Project Cost Analysis

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2003					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-5			0604610N			Lightweight/Heavyweight Baseline Commonality / F9239						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Hardware Development	Various	Various	N/A	1.500	MISC.					1.500	1.500	N/A
Systems Engineering	WR	NUWC Newport/Keyport	N/A	0.683	03/03					N/A	N/A	N/A
Systems Engineering	WR	NSWC Indian Head	N/A	0.750	03/03					N/A	N/A	N/A
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			N/A	2.933								
Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support												
Remarks:												

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Exhibit R-3, Project Cost Analysis

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Exhibit R-3 Cost Analysis (page 2)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER						
RDT&E, N/BA-5			0604610N			Lightweight Torpedo / F2234						
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System Test & Evaluation												
Subtotal T&E												
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Labor (Research Personnel)												
Overhead												
Subtotal Management												
Remarks:												
Total Cost			N/A	2.933		0.000		0.000				
Remarks:												

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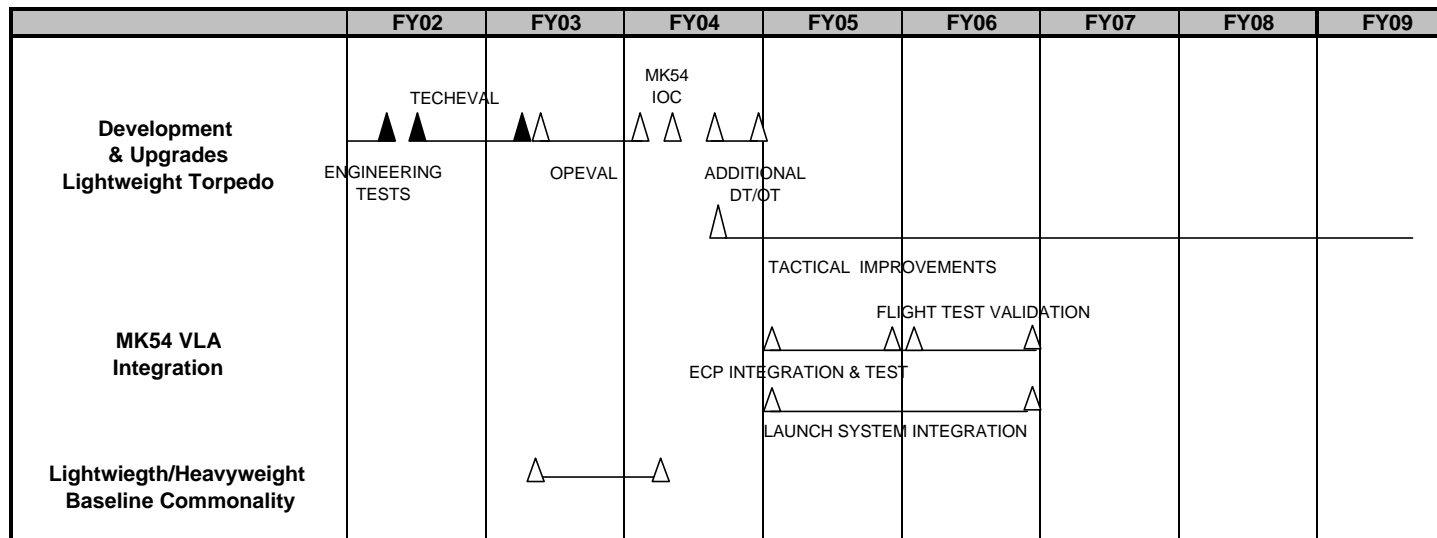
Exhibit R-3, Project Cost Analysis

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EXHIBIT R-4, Schedule Profile					DATE: February 2003	
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 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/BA-5	PROGRAM ELEMENT 0604610N				PROJECT NUMBER AND NAME LIGHTWEIGHT TORPEDO DEVELOPMENT / 0604610N			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Engineering Test	1Q							
TECHEVAL	2Q-4Q	1Q						
OPEVAL		2Q-4Q	2Q					
IOC			2Q					
Additional DT/OT			3Q-4Q					
Tactical Improvement			3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
VLA Integration & Test				1Q-4Q				
VLA Launch System Integration				1Q-4Q	1Q-4Q			
Flight Test Validation					1Q-4Q			
LWT/HWT Baseline Commonality Architecture Study		2Q-3Q						
LWT/HWT Baseline Commonality Contract Preparation		3Q-4Q						
LWT/HWT Baseline Commonality System Development		4Q	1Q					

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