

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
							February 2003	
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7					MK48 ADCAP/0205632N			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	19.320	21.499	17.227	24.234	24.823	30.039	30.557	31.106
MK48 ADCAP/F0366	19.320	21.499	17.227	24.234	24.823	30.039	30.557	31.106
Quantity of RDT&E Articles								
<p>A. (U) Mission Description and Budget Item Justification: The MK 48 ADCAP (ADvanced CAPability) torpedo R&D program focuses on two specific areas near term: Torpedo Advanced Processor Builds (APBs) and broadband sonar capability. The Chief of Naval Operations continues to stress shallow water (less than 600 feet) as a critical operating area to counter third world diesel electric submarines. Torpedo testing in shallow water has demonstrated that in-service ADCAP has less than full capability in this difficult environment. However, this testing, in conjunction with laboratory simulation efforts, has shown that significant performance improvements can be made by implementing changes to weapon tactics and software algorithms. Development, implementation and testing of these changes is being accomplished under the Torpedo APB program. This program leverages Future Naval Capability (FNC) technologies being developed by the Office of Naval Research (ONR) in the areas of torpedo broadband signal processing, tactics processing, and alertment.</p> <p>(U) Countermeasure (CM) sophistication and availability on the open market directly affects ADCAP kill proficiency and its ability to counter rapidly evolving threats. The focus of the MK 48 ADCAP torpedo R&D program for FY01 and out has shifted from being primarily concentrated on Software Block Upgrade efforts towards coordinated hardware upgrades, rapid Commercial-Off-the-Shelf insertion, and Torpedo APBs to rapidly upgrade the ADCAP to counter evolving threats and maintain robust performance. The Common Broadband Advanced Sonar System (CBASS) program will develop and field a broadband sonar capable of identifying CMs and discriminating them from the target. CBASS will develop 22 test articles (2 test vehicles and 20 Engineering Development Models (EDMs)). CBASS met Milestone II requirements on 6 March 1998 and received MDA approval to proceed into EMD. Full rate production and IOC are scheduled for FY06. The intent of the CBASS program is to achieve improvements in shallow water torpedo performance over current (MK48 Mod 5) capability.</p> <p>(U) The introduction of the Torpedo Technology Insertion program in FY04 will provide for evolutionary torpedo improvements and upgrades (including the transition and testing of advanced technologies from the R&D community (6.2/6.3) and contractors). This approach will incorporate developmental testing of the Future Naval Capability (FNC) transitioning technologies for ADCAP upgrades in the areas of torpedo sensors, weapon/platform connectivity, warhead lethality, speed and depth. These efforts will continue torpedo development investment at a lower cost and shorter term than traditional torpedo programs.</p>								

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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7		R-1 ITEM NOMENCLATURE MK48 ADCAP/0205632N																
B. Accomplishments/Planned Program																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; padding: 5px;">TORPEDO APB</th> <th style="text-align: center; padding: 5px;">FY 02</th> <th style="text-align: center; padding: 5px;">FY 03</th> <th style="text-align: center; padding: 5px;">FY 04</th> <th style="text-align: center; padding: 5px;">FY 05</th> </tr> <tr> <td style="padding: 5px;">Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center; padding: 5px;">4.666</td> <td style="text-align: center; padding: 5px;">8.188</td> <td style="text-align: center; padding: 5px;">8.334</td> <td style="text-align: center; padding: 5px;">8.670</td> </tr> <tr> <td style="padding: 5px;">RDT&E Articles Quantity</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> </table>				TORPEDO APB	FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	4.666	8.188	8.334	8.670	RDT&E Articles Quantity				
TORPEDO APB	FY 02	FY 03	FY 04	FY 05														
Accomplishments/Effort/Subtotal Cost	4.666	8.188	8.334	8.670														
RDT&E Articles Quantity																		
<p>FY02- Torpedo Advanced Processor Build efforts continued in order to address fleet identified performance priorities for MK48 ADCAP MODS. Efforts included software coding, modeling and simulation of software releases (including development and validation of models) and engineering tests in water for evaluation of proposed releases. Conducted validation of safety features for submarine crew safety.</p> <p>FY03 - FY05 Torpedo Advanced Processor Build efforts continue in order to address fleet identified performance priorities for MK48 ADCAP MODS and to address broadband algorithms. Provides rapid delivery of incremental software improvements to fielded MODS torpedoes every 12-18 months. Efforts include software coding, modeling and simulation of software releases (including development and validation of models) and engineering tests in water for evaluation of proposed releases. Conduct Follow-On Test and Evaluation of . MK48 ADCAP MODS per TEMP. Conduct validation of safety features for submarine crew safety</p>																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="text-align: left; padding: 5px;">CBASS</th> <th style="text-align: center; padding: 5px;">FY 02</th> <th style="text-align: center; padding: 5px;">FY 03</th> <th style="text-align: center; padding: 5px;">FY 04</th> <th style="text-align: center; padding: 5px;">FY 05</th> </tr> <tr> <td style="padding: 5px;">Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center; padding: 5px;">11.294</td> <td style="text-align: center; padding: 5px;">8.751</td> <td style="text-align: center; padding: 5px;">4.993</td> <td style="text-align: center; padding: 5px;">7.925</td> </tr> <tr> <td style="padding: 5px;">RDT&E Articles Quantity</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> </table>				CBASS	FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	11.294	8.751	4.993	7.925	RDT&E Articles Quantity				
CBASS	FY 02	FY 03	FY 04	FY 05														
Accomplishments/Effort/Subtotal Cost	11.294	8.751	4.993	7.925														
RDT&E Articles Quantity																		
<p>FY02- Initiated fabrication of CBASS EDM hardware. Continued development of advanced wideband algorithms, signal processing, and tactical software. Continued integration of CBASS prototype hardware and software components and test equipment. Continued in-water testing to support algorithm development and initial software builds.</p> <p>FY03- Integration and delivery of CBASS EDM hardware. Continue development of advanced wideband algorithms, signal processing, and tactical software. Continue integration of CBASS prototype hardware and software components and test equipment. Continue in-water testing to support algorithm development and initial software builds.</p> <p>FY04- Continue integration of CBASS prototype hardware and software components and test equipment. Conduct software testing, modeling and simulation predictions, and initial check-out in-water testing of EDM vehicles.</p> <p>FY05- Conduct in-water developmental testing, technical and operational testing with CBASS EDM vehicles. Efforts include torpedo preparations, model validation, post-run analysis, and range preparations.</p>																		

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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 MK48 ADCAP/0205632N		
B. Accomplishments/Planned Program (Cont.)				
OPTEVFOR	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.360	0.560	0.400	0.500
RDT&E Articles Quantity				
FY02-FY05 Provided for COMOPTEVFOR trusted agent test analysis and model validation support.				
TACDEVEX 01-03	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		4.000		
RDT&E Articles Quantity				
FY03- Conduct developmental testing of MK48 ADCAP Mod 6 in cold water, littoral environments. Efforts include torpedo preparations, modeling and simulation predictions, post-run analysis, and preparations for required submarine hit-shot certification analysis prior to exercise.				
TECHNOLOGY INSERTIONS	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			3.500	7.139
RDT&E Articles Quantity				
FY04- Transition torpedo technologies selected under Torpedo Technology Insertion program. Perform military worth tradeoff studies to evaluate and identify the candidate advanced technologies that would provide the greatest performance improvement or increased capability. Define a series of spiral development packages of several hardware improvements and to build on proven torpedo hardware platforms. Start development efforts (including planning and systems engineering) that would implement these new technologies into the latest MK48 ADCAP torpedoes.				
FY05- Transition torpedo technologies selected under Torpedo Technology Insertion program. Award contracts to industry to develop technologies. Continue analysis of available technology solutions against desired performance objectives, and continue integration of first technology insertion package.				
BTR 64515	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	3.000			
RDT&E Articles Quantity				
FY02- Awarded contract to develop three (3) underwater test vehicles.				

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EXHIBIT R-2, RDT&E Budget Item Justification			DATE:	
			February 2003	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE		
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7		MK48 ADCAP/0205632N		
C. PROGRAM CHANGE SUMMARY:				
Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 Pres Controls)	16.979	22.052	23.073	30.182
Current BES/President's Budget: (FY04/05 OSD/OMB Controls)	19.320	21.499	17.227	24.234
Total Adjustments	2.341	-0.553	-5.846	-5.948
Summary of Adjustments				
Reprogrammings	2.903	-0.128	-5.530	-5.559
FY2002 SBIR (dtd 5-15-02)	-0.146			
Congressional undistributed reductions	-0.036			
Economic Assumptions	-0.380	-0.425	-0.316	-0.389
Subtotal	2.341	-0.553	-5.846	-5.948
Schedule: Not applicable.				
Technical:				
FY04-05: Limit scope of tradeoff studies, Torpedo APB systems engineering and Algorithm development as a result of USN directed general reductions.				

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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7						R-1 ITEM NOMENCLATURE MK48 ADCAP/0205632N				
D. OTHER PROGRAM FUNDING SUMMARY:										
	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete CONT.	
MK48 ADCAP MODS (WPN/PE0204284N/BA-3/P-1 Item 322500)	41.617	60.934	60.372	61.893	62.872	63.952	65.457	66.692		
Sub. Tactical Warfare Systems (RDT&E/PE0603562N/BA-4/S1739)	9.120	13.075	6.027	6.350	7.062	10.387	10.489	10.775		
Advanced Submarine Systems (RDT&E/PE0603561N/BA4/S9039)	122.614	129.601	52.744	158.595	74.686	75.290	272.209	319.708		
E. ACQUISITION STRATEGY:										
CBASS EMD contract was competitively awarded among qualified ADCAP producers.										
F. MAJOR PERFORMERS:										
NUWC Division Newport, Newport, RI - Continued integration of CBASS prototype hardware and software components and test equipment. Continued in-water testing to support algorithm development and initial software builds.										
Northrop Grumman, Annapolis, MD - Initiated fabrication of CBASS EDM hardware and delivered two (2) rackmount systems.										

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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-7			MK48 ADCAP/0205632N			MK48 ADCAP/F0366						
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
Primary Hardware Development	WR	NUWC NPT	CONT.	0.000	10/02	1.254	10/03	1.885		CONT.	CONT.	N/A
Primary Hardware Development	Various	Various	0.000	0.000		1.700	11/03	4.089	11/04	CONT.	CONT.	N/A
Primary Hardware Development	C,CPIF	Northrop Grumman	27.916	3.111	11/02	0.000		0.000		0.000	31.027	31.027
Ancillary Hardware Development	C,CPFF	TRI / Austin	0.000	0.075	12/03							
Systems Engineering	WR	NUWC NPT	CONT.	7.135	10/02	3.378	10/03	5.036	10/04	CONT.	CONT.	N/A
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			CONT.	10.321		6.332		11.010		CONT.	CONT.	
Remarks: Total Cost and Target Value of Contract represents contract Latest Revised Estimate based on completed negotiations and CBASS hardware technical requirements.												
Development Support Equipment												
Software Development	WR	NUWC NPT	CONT.	2.529	10/02	4.317	10/03	3.678	10/04	CONT.	CONT.	N/A
Software Development												N/A
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			CONT.	2.529		4.317		3.678		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-7			MK48 ADCAP/0205632N			MK48 ADCAP/F0366						
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
Test & Evaluation	WR	NUWC NPT	CONT.	4.112	10/02	3.004	10/03	5.734	10/04	CONT.	CONT.	N/A
Operational Test & Evaluation	WR	OPTEVFOR	CONT.	0.560	11/02	0.400	11/03	0.500	11/04	CONT.	CONT.	N/A
Modeling & Simulation	WR	NUWC NPT	CONT.	2.080	10/02	1.236	10/03	1.338	10/04	CONT.	CONT.	N/A
Modeling & Simulation	Various	Various	CONT.	1.000	11/02	1.150	11/03	1.150	11/04	CONT.	CONT.	N/A
GFE												
Subtotal T&E			CONT.	7.752		5.790		8.722		CONT.	CONT.	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support	Various	Anteon	CONT.	0.500	MISC.	0.500	MISC.	0.500		CONT.	CONT.	N/A
Travel				0.045		0.045		0.045		CONT.	CONT.	N/A
Labor (Research Personnel)												
Overhead				0.352		0.243		0.279		CONT.	CONT.	N/A
Subtotal Management			CONT.	0.897		0.788		0.824		CONT.	CONT.	
Remarks:												
Total Cost			CONT.	21.499		17.227		24.234		CONT.	CONT.	
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 RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7					R-1 ITEM NOMENCLATURE MK48 ADCAP/0205632N	

PROGRAM EFFORTS	FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09
Torpedo Advanced Processor Builds		ADCAP Mods DT/FOT&E △ ▽	△	ADCAP Performance Upgrades based on Fleet Priorities △		△	△	→
CBASS Development		Engineering Tests in Support of CBASS Algorithm and Software Development		DT/OT ▽ △ ▽	OPEVAL △ ▽			
Torpedo Technology Insertion					△ MSIII Tech Insertion Package #1 DT/OT △ ▽ △			Tech Insertion Package #2 DT/OT △ ▽ △
			△	△ SDR △ PDR △ CDR			△ SDR △ PDR △ CDR	

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