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EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
							February 2005	
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7					MK48 ADCAP/0205632N			
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	17.828	21.367	21.619	25.761	26.690	27.308	28.085	28.917
MK48 ADCAP/0366	17.828	21.367	21.619	25.761	26.690	27.308	28.085	28.917
Quantity of RDT&E Articles	6	1		1	1	1	1	1
Note: \$2.1M Congressional Plus-up for MK48 ADCAP Torpedo APB Improvements in (PE 0603561N/9039) for FY05.								
A. (U) Mission Description and Budget Item Justification: MK48 ADCAP RDT&E program executes spiral development of weapon performance improvements in three development product areas: (1) Common Broadband Advanced Sonar System (CBASS); (2) Advanced Processor Builds (APBs), and (3) Torpedo Technology Insertion. The budget enables ACAT III development to address CNO defined capability-based requirements and mission needs. This PE (0205632N/0366) is tied to development programs that leverage a Congressionally funded Torpedo APB program (in PE 0603561N/9039), a joint US/Australia, Armaments Cooperative Project to develop MK48 ADCAP, and Future Naval Capability technologies being developed by ONR.								
(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 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 Commonwealth of Australia, Royal Australian Navy (RAN) is participating to jointly develop CBASS torpedo and signed an Armaments Cooperative Project Agreement Mar 2003. The intent of the CBASS program is to achieve improvements in shallow water torpedo performance.								
(U) 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 also leverages the RAN joint torpedo program and 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.								
(U) The Torpedo Technology Insertion program 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.								

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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			
TORPEDO APB	FY 04	FY 05	FY 06
Accomplishments/Effort/Subtotal Cost	9.098	10.647	12.573
RDT&E Articles Quantity*	1	1	1
* Denotes Torpedo APB software builds			
<p>FY04 - Released operational software to the Fleet (version 21.6.2). APB efforts included a Step 2 assessment by the The Torpedo Development Working Group (TDWG) and a Step 2 down select. A System Concept Review (SCR) was conducted April 7 to brief stakeholders on the functionality and predicted performance of Spiral 1 candidates. Concurrence from Fleet and OPNAV on content of Spiral 1 obtained. Initiated Mod6 ACOT software build as part of Spiral 2.</p> <p>FY05 - Torpedo Advanced Processor Build efforts in order to address fleet identified performance priorities for MK48 ADCAP MODS and to address broadband algorithms. Funding will provide for rapid delivery of incremental software improvements to fielded MODS torpedoes and will include budgeting previously allocated from Congressional plus-ups. 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. Torpedo APB software build release planned in FY05 (Spiral 1 Phase 1).</p> <p>FY06 - Torpedo Advanced Processor Build efforts to address fleet identified performance priorities for the Mk48 ADCAP torpedo. FY06 to include developmental and operational testing for Spiral 1.</p> <p>FY07 - Spiral 1 Phase 2 torpedo APB software build planned for release in FY07 which provides full Spiral 1 capability and torpedo effectiveness gain. Efforts to focus on APB Spiral 2 development in preparation for software release in FY08. Tasking to include software coding, modeling and simulation and engineering test in water. Steps in the APB process include 1) evaluation, 2) assessment, 3) implementation, and 4) system assessment.</p>			
CBASS	FY 04	FY 05	FY 06
Accomplishments/Effort/Subtotal Cost	7.755	7.996	2.390
RDT&E Articles Quantity	5		
<p>FY04- Final CBASS kits (preamplifiers and BSARs) of 20 total delivered by Northrop Grumman. Integration of CBASS prototype hardware and software components and test equipment. Completed ACOT-GCB hardware integration. Conducted software testing, modeling and simulation predictions, and initial check-out in-water testing of EDM vehicles. Initiated in-water test program.</p> <p>FY05- Conduct in-water developmental testing, technical and operational testing with CBASS EDM vehicles. Efforts involve torpedo preparations, model validation, post-run analysis, and range preparations including cooperative test series scheduled in Australia as part of joint US/Australia Armaments Cooperative Project.</p> <p>FY06- Complete In-water developmental, technical, and operational testing in preparation for CBASS MS III and IOC planned for FY06.</p> <p>FY07- CBASS development completed in FY06.</p>			

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B. Accomplishments/Planned Program (Cont.)

OPTEVFOR	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.525	1.624	0.500	0.500
RDT&E Articles Quantity				

FY04- Provide for accreditation requirements for shallow water environments required prior to OPEVAL and provide developmental test support.

FY05- Provide for accreditation requirements and developmental test support for shallow water environments required prior to OPEVAL.

FY06- Conduct analysis and prepare final report for test and evaluation (OPEVAL) efforts prior to CBASS Torpedo release.

FY07- Provide for accreditation requirements and conduct analysis relating to APB software release planned in FY08.

TECHNOLOGY INSERTIONS	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.450	1.100	6.156	9.738
RDT&E Articles Quantity				

FY04- Performed and completed advanced technology fiber optic studies; identified the candidate advanced technologies for first spiral bundle.

FY05 - Define a series of spiral development packages of several hardware improvements 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. Award contracts to industry to develop technologies.

FY06- Transition torpedo technologies selected under Torpedo Technology Insertion program. Analysis of available technology solutions against desired performance objectives, and continue integration of first technology insertion package. Conduct System Design Review for Spiral 1.

FY07- Finalization of Spiral 1 development efforts prior to developmental and operational testing in FY08. Efforts to include a Preliminary Design Review.

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APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7		MK48 ADCAP/0205632N			
C. PROGRAM CHANGE SUMMARY:					
Funding:		FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY 05 Pres Controls)		17.227	21.620	22.131	26.018
Current President's Budget (FY 06 Pres Controls):		17.828	21.367	21.619	25.761
Total Adjustments		0.601	-0.253	-0.512	-0.257
Summary of Adjustments					
Programmatic adjustments			-0.004	-0.512	-0.257
Management Improvements		-0.045			
Efficiencies/Revised Econ. Assumptions		-0.146			
Non-pay Inflation Savings		-0.016			
SBIR		-0.049			
Section 8105			-0.001		
Section 8122			-0.065		
Section 8131			-0.125		
FY05 Sec. 8028			-0.058		
Execution Realignment		0.900			
Cancelled Accounts		-0.043			
Subtotal		0.601	-0.253	-0.512	-0.257
Schedule: Not Applicable.					
Technical: Not Applicable.					

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APPROPRIATION/BUDGET ACTIVITY						February 2005								
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-7						R-1 ITEM NOMENCLATURE								
						MK48 ADCAP/0205632N								
D. OTHER PROGRAM FUNDING SUMMARY:										To Complete CONT.				
						FY 2004	FY 2005	FY 2006	FY 2007		FY 2008	FY 2009	FY 2010	FY 2011
MK48 ADCAP MODS (WPN/PE0204284N/BA-3/P-1 Item 322500)						59.506	60.949	61.309	62.579		64.605	66.239	67.92	69.551
Sub. Tactical Warfare Systems (RDT&E/PE0603562N/BA-4/1739)						6.939	5.900	7.125	10.369		9.911	10.233	10.487	10.722
Advanced Submarine Systems (RDT&E/PE0603561N/BA4/9039)						85.693	88.188	162.953	208.732		225.092	247.091	249.240	227.436
E. ACQUISITION STRATEGY:														
CBASS EMD contract was competitively awarded among qualified ADCAP producers. Sole Source Production Contract awarded FY 2004 for MK48 ADCAP MODS, Lightweight MK54 and CBASS kits, including units procured for the Royal Australian Navy (RAN).														
LRIP Contract for CBASS units awarded in FY 2004 and to include units procured in support of the RAN.														
Tech Insertion Spiral 1 EDM contract(s) to be awarded among qualified producers.														
F. MAJOR PERFORMERS:														
NUWC Division Newport, Newport, RI - System Integrator and Software Developer. Continued integration and development testing of CBASS hardware and software components and test equipment.														
Raytheon awarded Sole Source Production Contract for MK48 ADCAP MODS, Lightweight MK54 and CBASS kits, including RAN units.														
Northrop Grumman, Annapolis, MD - Fabricated and delivered CBASS EDM hardware (CBASS kits consisting of preamps and BSARs).														

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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-7			MK48 ADCAP/0205632N			MK48 ADCAP/0366									
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	
Primary Hardware Development	WR	NUWC NPT	CONT.	0.776	10/03	0.860	10/04	3.056	10/05	4.388	10/06	CONT.	CONT.	N/A	
Primary Hardware Development	Various	Various - TBD	0.000	0.000		0.000		2.750	12/05	5.000	12/06	CONT.	CONT.	N/A	
Primary Hardware Development	C,CPIF	Northrop Grumman	31.674	1.222	11/03	0.200	11/04	0.000		0.000		0.000	33.096	33.096	
Systems Engineering	WR	NUWC NPT	CONT.	4.201	10/03	5.807	10/04	6.199	10/05	5.711	10/06	CONT.	CONT.	N/A	
Licenses															
Tooling															
GFE															
Award Fees															
Subtotal Product Development			CONT.	6.199		6.867		12.005		15.099		CONT.	CONT.	N/A	
Remarks: Total Cost and Target Value of Northrop Grumman contract represents contract Latest Revised Estimate based on completed negotiations and CBASS hardware technical requirements. Various - TBD; Primary hardware development activity to be selected after evaluation of technologies from various vendors.															
Development Support Equipment															
Software Development	WR	NUWC NPT	CONT.	4.354	10/03	3.478	10/04	2.970	10/05	3.732	10/06	CONT.	CONT.	N/A	
Software Development	Various	Various	0.000	0.490	12/03	1.300	12/04	2.500	12/05	2.500	12/06	CONT.	CONT.	N/A	
Training Development															
Integrated Logistics Support															
Configuration Management															
Technical Data															
GFE															
Subtotal Support			CONT.	4.844		4.778		5.470		6.232		CONT.	CONT.	N/A	
Remarks:															

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Exhibit R-3, Project Cost Analysis
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DATE:											February 2005			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER								
RDT&E, N/BA-7			MK48 ADCAP/0205632N			MK48 ADCAP/0366								
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
Test & Evaluation	WR	NUWC NPT	CONT.	2.760	10/03	4.545	10/04	1.290	10/05	1.299	10/06	CONT.	CONT.	N/A
Operational Test & Evaluation	WR	OPTEVFOR	CONT.	0.525	11/03	1.624	11/04	0.500	11/05	0.500	11/06	CONT.	CONT.	N/A
Modeling & Simulation	WR	NUWC NPT	CONT.	1.925	10/03	2.712	10/04	0.925	10/05	1.244	10/06	CONT.	CONT.	N/A
Modeling & Simulation	C,CPFF	ARL / PSU	0.000	0.767	12/03	0.040	12/04	0.650	12/05	0.650	12/06	CONT.	CONT.	N/A
Subtotal T&E			CONT.	5.977		8.921		3.365		3.693		CONT.	CONT.	
Remarks:														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support	Various	Anteon	CONT.	0.475	MISC.	0.451	MISC.	0.429	MISC.	0.408	MISC.	CONT.	CONT.	N/A
Travel			CONT.	0.052		0.045		0.045		0.045		CONT.	CONT.	N/A
Overhead			CONT.	0.280		0.305		0.305		0.284		CONT.	CONT.	N/A
Subtotal Management			CONT.	0.807		0.801		0.779		0.737		CONT.	CONT.	
Remarks:														
Total Cost			CONT.	17.828		21.367		21.619		25.761		CONT.	CONT.	
Remarks:														

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Exhibit R-3, Project Cost Analysis
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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-7					MK48 ADCAP/0205632N			
PROGRAM EFFORTS								
	FY04	FY05	FY06	FY07	FY08	FY09	FY10	FY11
	ADCAP Performance Upgrades based on Fleet Priorities (DT/OT testing scheduled prior to each software delivery)							
Torpedo Advanced Processor Builds	▲	△		△	△		△	→
	Engineering Tests in Support of CBASS Algorithm and Software Development							
CBASS Development		▽△	△▽					
			△△					
			△△					
			FRP					
	Advanced Tech Tech Develop. Contract Awards							
Torpedo Technology Insertion	▲				△	DT/OT	▽△	△
								→
				△	△			
			SDR	PDR	DRR		△△△	
							SDR PDRDRR	

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