

CLASSIFICATION:

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EXHIBIT R-2, RDT&E Budget Item Justification							DATE: June 2001			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4		PROGRAM ELEMENT NAME AND NUMBER ADV COMBAT SYS TECH/0603382N			R-1 ITEM NOMENCLATURE Advanced Combat System Technology /0603382N					
COST (\$ in Millions)		FY 2000	FY 2001	FY 2002						
Total PE Cost		6.547	6.879	3.458						
Advanced Combat System Technology/K0324		6.547	6.879	3.458						
Quantity of RDT&E Articles		Not Applicable								

A. (U) Mission Description and Budget Item Justification

The Advanced Combat System Technology line funds studies and experiments which will be conducted in distributed computer architecture, radar technology, and Tactical Informational Management Concepts in the Computing Testbed to mature them as transition candidates for introduction into the AEGIS Weapon System. This program will take a disciplined systems engineering approach to find how these advances can be integrated into the AEGIS system and subsequent combat systems, and to plan combat system baseline upgrade schedules. Fully Distributed Computing Architecture is the first advanced development effort, leveraging the joint AEGIS/Defense Advanced Research Projects Agency (DARPA) High Performance Distributive Computing (Hiper-D) technology effort. It implements the results of system engineering experiments with currently emerging Commercial-off-the-Shelf (COTS) computer technologies and distributed processing advances to replace the current AEGIS Combat System architecture with an open, distributed architecture. A significant priority of task will be complex Tactical Information Management of the flow and display of tactical information through the "detect-control-engage" process to better support the operator/decision maker. These advanced technologies are candidate systems for future baseline upgrades.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) FY00 ACCOMPLISHMENTS:

- (U) (\$1.173) Continued system engineering experiments with currently emerging COTS/DARPA computer technologies and assessed improvements in capabilities against previously benchmarked capabilities. Provided feedback on existing technology shortfalls still needing improvement for use in weapon systems. Worked within the commercial standards communities addressing the shortfalls in computing capabilities for Navy applications.
- (U) (\$3.246) Conducted integrated Demonstration 2000 in the Computing Testbed with selected AEGIS Weapon System capabilities focused on initial Theater Ballist Missile Defense (TBMD) capabilities running concurrently with Anti Air Warfare (AAW) capabilities in re-architected SPY and Weapon Control System (WCS) computer programs. Additionally, selected Quorum technologies were transitioned into the testbed. Transitioned second increment of Combat System Technologies from Office of Naval Research (ONR) technology program.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 4	PROGRAM ELEMENT NAME AND NUMBER ADV COMBAT SYS TECH/0603382N	R-1 ITEM NOMENCLATURE Advanced Combat System Technology /0603382N
<p>(U) FY00 ACCOMPLISHMENTS (CONT.)</p> <ul style="list-style-type: none"> - (U) (\$1.162) Initiated transition efforts of lessons learned in the FY99 middleware risk reduction experiments targeted at the AEGIS combat systems. Additionally, provided multiple engineering level exchanges of lessons learned to the Common Command and Decision (CC&D) industry teams. Worked with the Baseline development teams to identify remaining or emerging issues associated with transition to Baseline 6 Phase III and Baseline 7 Phase I for open architecture capabilities. - (U) (\$0.966) Rearchitected SPY and WCS computer programs to conduct both AAW and TBMD mission capabilities simultaneously. Introduced new middleware technology to both elements computer programs. <p>(U) FY01 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$1.295) Continue system engineering experiments with currently emerging COTS and DARPA computer technologies to assess their applicability in meeting Aegis Combat System performance requirements and open system architecture objectives. Provide feedback on any existing shortfalls for future enhancements. Work within the commercial standards communities to address the shortfalls in computing capabilities for Navy applications. - (U) (\$3.097) Conduct an integrated demonstration in the Computing Testbed of selected Aegis Weapon System capabilities focused on transitioning them to the target Distributed Tactical Computing Environment (DTCE), based on emerging COTS technologies and DARPA Quality of Service technologies (attributes include: portability, scalability, fault tolerance and dynamic resource management). - (U) (\$1.200) Continue integration of lessons learned in the FY00 DTCE risk reduction experiments whose technologies include resource management, networking, operating systems, and middleware targeted at the Aegis Combat System. Work with baseline development teams to identify emerging issues associated with transitioning baselines 6.3, 7.1 and cruiser conversion baselines to an open architecture based on these technologies. - (U) (\$0.961) Develop an approach to certify Aegis Weapon Systems based on dynamically allocated system functions – critical to certifying operational combat system programs based on these technologies. - (U) (\$0.200) Assess system engineering and development tools and provide feedback to Aegis program and prime contractor. - (U) (\$0.126) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638. <p>(U) FY02 PLAN:</p> <ul style="list-style-type: none"> - (U) (\$0.400) Continue development and integration of DTCE capability based on COTS and DARPA technologies. - (U) (\$1.955) Conduct experiments focused on transition of selected Aegis Weapon System elements to the DTCE and document lessons learned with respect to performance and open system attributes. Matures certification methodologies and develop trial certification procedures. - (U) (\$0.103) Provide feedback to DARPA and to the Aegis prime contractor for incorporation into baseline developments. - (U) (\$1.000) Assess capability of DTCE to meet projected requirements of future baseline upgrades and missions, e.g. NTW and TBMD. 		

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APPROPRIATION/BUDGET ACTIVITY							PROGRAM ELEMENT NAME AND NUMBER				R-1 ITEM NOMENCLATURE					
RDT&E, N / BA 4							ADV COMBAT SYS TECH/0603382N				Advanced Combat System Technology /0603382N					
Program Change Summary:							FY 2000	FY 2001	FY 2002							
FY 2001 President's Budget:							6.790	6.943	6.989							
Appropriated Value:							6.828	6.943								
Adjustments to FY2000/2001 Appropriated Value							-0.281	-0.064								
FY2001 President's Budget:																
FY 2002 PRES Budget Submit:							6.547	6.879	3.458							
Funding:																
FY 2000 funding decrease is due to reduction for SBIR (-\$0.065), shifting Navy priorities (\$-.134), across-the-board reduction (-\$0.038), minor pricing adjustments (\$-0.044).																
FY2001 decrease is due to Congressional pro-rata reduction (\$-.049) and a government-wide rescission (\$-0.015).																
Schedule: Not applicable.																
Technical: Not applicable.																
							FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
RDT&E, N / 1319 / BA 5																
PE0604307							240.898	200.330	262.037						CONT.	CONT.
C. Acquisition Strategy: Risk reduction efforts are lead by NSWC/DD, the AEGIS Combat System Lifetime Support Engineering Agent (LSEA). Results are transitioned to industry for cost and risk mitigation in the production of AEGIS Combat Systems.																
D. Schedule Profile: Not Applicable																

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Exhibit R-3 Cost Analysis (page 1)									DATE: June 2001			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER:						
RDT&E, N / BA 4			ADV COMBAT SYS TECH/0603382N			Advanced Combat System Technology /K0324						
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 00 Cost	FY 00 Award Date	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	SS/CPFF	APL, Baltimore, MD	7.579	1.520	11/99	2.031	11/00	0.866	11/01	CONT.	CONT.	
Systems Engineering	WR	NSWC, Dahlgren, VA	9.905	3.875	12/99	4.074	12/00	2.241	12/01	CONT.	CONT.	
Systems Engineering	WR	NAWCAD, St. Inigoes, MD	2.000							CONT.	CONT.	
Subtotal Product Development			19.484	5.395		6.105		3.107		CONT.	CONT.	0.000
Remarks:												
Support	WR	Miscellaneous	0.405	0.230	11/99	0.260	11/00	0.072	11/01	CONT.	CONT.	
Subtotal Support			0.405	0.230		0.260		0.072		CONT.	CONT.	
Remarks:												
Test & Evaluation	WR	Miscellaneous	0.315	0.315	11/99	0.381	11/00	0.000	11/01	CONT.	CONT.	
Subtotal T&E			0.315	0.315		0.381		0.000		CONT.	CONT.	
Remarks:												
Program Management Support	WR	Miscellaneous	0.443	0.607	11/99	0.133	11/00	0.279	11/01	CONT.	CONT.	
Subtotal Management			0.443	0.607		0.133		0.279		CONT.	CONT.	
Remarks:												
Total Cost			20.647	6.547		6.879		3.458		CONT.	CONT.	

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Exhibit R-3, Project Cost Analysis
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