

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2005	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /					R-1 ITEM NOMENCLATURE 0604307N/AEGIS COMBAT SYSTEM ENGINEERING			
BA-5								
COST (in Millions)	FY2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Total PE Cost	215.584	157.159	216.313	227.951	254.972	235.232	255.320	273.179
1447/Surface Combatant Combat System Imp./AEGIS Open Arch.	199.232	143.889	203.837	182.518	132.704	87.761	98.928	90.720
1776/Surface Combatant Weapon System Mods	0.445	0.000	0.000	0.000	0.000	0.000	0.000	0.000
3044/Solid State Spy Radar/Improved Readiness AN/SPY-1	11.383	3.265	12.476	45.433	122.268	147.471	156.392	182.459
9223/Silicon Carbide MMIC Production	1.249	2.971	0.000	0.000	0.000	0.000	0.000	0.000
9381/Deployable Smartlink Comm Upgrades	1.931	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9382/Integrated Logistics (IDESC)	0.385	0.000	0.000	0.000	0.000	0.000	0.000	0.000
9383/Smart Integration Data Env. (SIDE)	0.959	0.989	0.000	0.000	0.000	0.000	0.000	0.000
9555/AEGISTraveling Wave Tube Circuit	0.000	1.785	0.000	0.000	0.000	0.000	0.000	0.000
9556/Integrated Display & Enhanced Architecture (IDEA)	0.000	4.260	0.000	0.000	0.000	0.000	0.000	0.000
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:								
<p>The AEGIS Combat System (ACS) provides immediate and effective capability to counter the current and expected air, surface, and sub-surface threats. Changes in the threat capability and advances in technology such as fiber optics, local area networks, and high performance computing require corresponding AEGIS Weapon System (AWS) and ACS changes. This program provides the ACS engineering and weapon system developments necessary for a continued increase in the capability of AEGIS Cruisers and Destroyers. In addition to developing and integrating improvements to the AWS, this program integrates combat capabilities developed in other Navy R&D programs into the ACS. Modifications of AWS computer programs must be made to integrate these capabilities into the ACS so that battle effectiveness and ACS performance will be retained against the evolving threat. Selected AWS and ACS upgrades will be backfitted into CG 47 Class and DDG 51 Class ships already in the Fleet, providing new key warfighting capability while reducing life cycle maintenance costs. In addition, with the advent of using Commercial Off-the-Shelf (COTS) equipment extensively throughout the combat system, COTS refresh development efforts will be necessary to pace the core Baseline development work and are included. This Program Element includes the CG/DDG Open Architecture (OA) effort, including rearchitected computer programs, to the AEGIS fleet. CG/DDG OA positions the AEGIS fleet for maximum warfighting improvements and life cycle support benefit and produces a system, which is considerably less difficult to maintain and modernize and mitigates the cost of inevitable required and repetitive technology refresh. The DDG Modernization Program will identify and introduce OA Category-3 compliant hardware and software. As part of the Naval Integrated Fire Control Counter Air (NIFC-CA) program, SM-6 integration efforts will begin in FY06.</p>								

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, 1 of 42)

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NAME AND NUMBER AEGIS COMBAT SYS ENG PE 0604307N				R-1 ITEM NOMENCLATURE 1447 Surface Combatant Combat System Improvements					
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost to Complete	Total Cost
Surface Combatant Combat Sys/1447	199.232	143.889	203.837	182.518	132.704	87.761	98.928	90.720	CONT.	CONT.
RDT&E Articles Qty Not Applicable										

A. Mission Description and Budget Item Justification:

This program provides Cruiser and Destroyer ACS upgrades and integrates new equipment and systems to pace the threat and capture advances in technology. Examples of captured advanced technologies are: fiber optics, distributed architecture, and high performance computing, all of which require corresponding AWS and ACS changes. ACS is upgraded in Baselines. Baseline 2 (CG 52-58) consists of the Vertical Launching System, TOMAHAWK Weapon System, and Anti-Submarine Warfare upgrades. Baseline 3 (CG 59-64) includes the AN/SPY-1B Radar and AN/UYQ-21 consoles. Baseline 4 (CG 65-73) integrates the AN/UYK-43/44 computers with superset computer programs developed for the DDG 51. Baseline 5 was introduced in FY 1992 ships and includes the Joint Tactical Information Distribution System (JTIDS) Command and Control Processor, Tactical Data Information Link 16, Combat Direction Finding, Tactical Data Information Exchange System, AN/SLQ-32 (V)3 Active Electronic Counter Countermeasures, and AEGIS Extended Range (ER) Missile. Baseline 5 was developed in two steps (Phases): Phase I integrated AEGIS ER and supported the missile Initial Operational Capability; Phase III integrated system upgrades including Defensive Electronic Attack, Track Load Control algorithms, and Track Initiation Processor (integrated on 5.3, DDGs 68+); JTIDS and the OJ-663 color display Tactical Graphics capability into the ACS. Baseline 6 Phase I supported OPEVAL of CEC in CGs 66 and 69 and was introduced in the DDG 51 class beginning with DDG 79. Baseline 6 Phase III was introduced on DDG 85. Baseline 6 Phase III upgrades include embarked helicopters, Fiber Optics as applied to Data Multiplexing (FODMS), implementation of affordability initiatives, the Radar Set Controller Environmental Simulator (RSCES) and Battle Force Tactical Trainer (BFTT), Advanced Display System, Evolved SeaSparrow Missile (ESSM), Identification (ID) upgrades Phase I, Advanced TOMAHAWK Weapon System (ATWCS) Phase II, Fire Control System Upgrades, and the Joint Maritime Command Information System (JMCIS). Baseline 7 Phase I is installed in the DDG 51 class beginning with DDG 91. Major Baseline 7 upgrades include but are not limited to introduction and integration of a new radar (AN/SPY-1D(V) upgrade), COTS-based advanced computer processing and the Remote Mine Hunting System. The Cruiser Modernization program will upgrade cruisers to provide enhanced Air Dominance and C4I improvements, enhances the Gun Weapon System capability, improves force protection and provides COTS computing architecture to introduce Open Architecture. Experiences aboard AEGIS ships and shore sites have shown that COTS equipment will require a nominal four year cyclical refresh (periodic replacement) plan. This is a fact of life. Currently, these refresh efforts are not "plug and play;" rather they require additional developmental efforts that will necessitate replacement of new components with updated operating systems, device drivers, and interfaces. This program introduces a CG/DDG Open Architecture (OA) effort, including rearchitected computer program components, in accordance with Navy Open Architecture guidance and standards to the AEGIS fleet. CG/DDG OA positions the AEGIS fleet for maximum warfighting improvements and life cycle support benefit and produces a system, which is considerably less difficult to maintain and modernize and mitigates the cost of inevitable required and repetitive technology refreshes. The DDG Modernization Program will identify and introduce OA Category-3 compliant hardware and software. As part of the Naval Integrated Fire Control Counter Air (NIFC-CA) program, SM-6 integration efforts will begin in FY06. Due to FY05 Congressional action, the Baseline 7 Phase 1C effort originally targeted for fielding in FY06 has been replanned. The replanned development effort, Cruiser Modernization CR2 (CGM CR2), is targeted for fielding in FY08 on B/L 2 CGs and B/L 3/4 CGs in FY11 and highly leverages AOA and DDG Modernization efforts and funding.

R-1 SHOPPING LIST - Item No. 102

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENGINEERING	PROJECT NUMBER AND NAME 1447 Surface Combatant Combat System Improvements		
B. Accomplishments/Planned Program				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Efforts/Subtotal Cost	26.000	27.196	0.000	0.000
RDT&E Articles Quantity				
<p>Accomplishments: Continued maturation of Baseline 7 Phase I in support of Land Based SPY-1D(V) DT/OT and DDG 91-102 ship building milestones. Conducted demonstration of Baseline 7 Phase I capabilities. Included support of AWS Baseline Replan initiatives: capture of high priority CPCR fixes into Baseline 7 Phase I variants (71C, 71R); reducing number of deficiency workarounds; NSWC-DD Forward Engineering Test Team and SPY-1D (V) TECHEVAL.</p> <p>Planned: SPY-1D(V) OPEVAL and Deployment certification.</p>				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Efforts/Subtotal Cost	17.374	27.751	17.160	0.000
RDT&E Articles Quantity				
<p>Accomplishments: Continued coding, debugging and testing of Baseline 7 Phase I COTS Refresh necessary for fielding DDGs 103-112. Conducted computer program Critical Design Review and Production Test Center Readiness Review. Implementation path for AEGIS CG/DDG Open Architecture (OA) products., developed a plan for integration of AOA products.</p> <p>Planned: Continue to code, debug and conduct element test and multi-element integration tests, including CEC 2.1, culminating in a demo in 2Q FY06.</p>				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Efforts/Subtotal Cost	51.752	45.725	97.200	74.000
RDT&E Articles Quantity				
<p>Accomplishments: Baseline 7 phase II evolved into a three Spiral development effort to implement CG/DDG Open Architecture (OA) by providing open architected elements to the AEGIS Fleet earlier. This effort re-architects Aegis computer program for the following elements: SPY (Radar), AEGIS Display System (ADS), and Weapon Control System (WCS) in accordance with and compliant with Navy Open Architecture specifications and standards. Incrementally introducing the re-architected products in a spiral fashion in 7 Phase 1 Refresh (DDG103+) and Cruiser Modernization COTS Refresh 2 (CGM CR2) (Baseline 2 Cruisers). Successfully demonstrated design and code portability and reuse of the preliminary SPY OA elements.</p> <p>Planned: Conduct Lifecycle Architecture Review (LAR) for Spiral Two. Deliver OA display products (ATDU, HAIL-SS, etc.) for incorporating into B/L 7.1 R.</p>				

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B. Accomplishments/Planned Program (Cont.)																			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;"></td> <td style="width: 15%;">FY 04</td> <td style="width: 15%;">FY 05</td> <td style="width: 15%;">FY 06</td> <td style="width: 15%;">FY 07</td> </tr> <tr> <td>Accomplishments/Efforts/Subtotal Cost</td> <td>64.407</td> <td>9.971</td> <td>22.820</td> <td>18.518</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p style="margin-top: 10px;">Accomplishments: Began design of Cruiser Modernization CGM CR2 effort now targeted for Baseline 2 Cruisers in FY08 and applicable to Baseline 3/4 Cruisers in FY11. Effort highly leveraged to AOA and DDG Mod.</p> <p style="margin-top: 10px;">Planned: Design, code, debug and test Cruiser unique modifications associated with interfacing to AOA products and computer program.</p>						FY 04	FY 05	FY 06	FY 07	Accomplishments/Efforts/Subtotal Cost	64.407	9.971	22.820	18.518	RDT&E Articles Quantity				
	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Efforts/Subtotal Cost	64.407	9.971	22.820	18.518															
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	FY 04	FY 05	FY 06	FY 07															
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	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Efforts/Subtotal Cost	15.477	19.758	7.621	12.400															
RDT&E Articles Quantity																			

R-1 SHOPPING LIST - Item No. 102

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, 4 of 42)

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENGINEERING	PROJECT NUMBER AND NAME 1447 Surface Combatant Combat System Improvements																	
B. Accomplishments/Planned Program (Cont.)																			
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	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Efforts/Subtotal Cost	0.000	0.000	0.000	3.500															
RDT&E Articles Quantity																			
Planned: Begin development efforts to identify mitigation path to overcome COTS Obsolescence issues. Mitigation path will adhere to the Open Architecture Standards & Policy.																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th><th style="width: 15%;">FY 06</th><th style="width: 15%;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Efforts/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td style="text-align: center;">15.700</td><td style="text-align: center;">14.100</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 04	FY 05	FY 06	FY 07	Accomplishments/Efforts/Subtotal Cost	0.000	0.000	15.700	14.100	RDT&E Articles Quantity				
	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Efforts/Subtotal Cost	0.000	0.000	15.700	14.100															
RDT&E Articles Quantity																			
Planned: Begin development efforts to identify and introduce Open Architecture Category-3 compliant hardware and computer programs in support of the DDG Modernization program.																			
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	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Efforts/Subtotal Cost	0.000	0.000	23.336	40.000															
RDT&E Articles Quantity																			
Planned: Begin development efforts for Naval Integrated Fire Control Counter Air (NIFC-CA), SM-6/AEGIS integration. Conduct Performance Analyses and Trade studies, Modeling and Simulation studies and SM-6 algorithmic studies culminating in a development leading to a Family of Systems design.																			

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

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APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME		
RDT&E, N / BA-5	0604307N/AEGIS COMBAT SYSTEM ENGINEERING	1447 Surface Combatant Combat System Improvements		
C. PROGRAM CHANGE SUMMARY:				
Funding:	FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY05 Pres Controls)	205.400	146.463	169.091	167.041
Current President's Budget: (FY06/07 Pres Controls)	199.232	143.889	203.837	182.518
Total Adjustments	-6.168	-2.574	34.746	15.477
Summary of Adjustments - POM 06:				
Programmatic Adjustments		-0.264	34.746	15.477
Undistributed Congressional Reductions	-2.536	-1.31		
AEGIS Open Architecture	2.500			
FY04 SBIR	-4.214			
Reprogramming to FY05 Naval Studies		-1.000		
Execution Realignment	-1.405			
Cancelled Account	-0.513			
Subtotal	-6.168	-2.574	34.746	15.477
Schedule:				
1) Baseline 7 Phase 1 deployment cert moved to 3Q FY05				
2) SPY-1D(V) OPEVAL moved to 4Q FY05.				
3) IDR added for DDG Modernization.				
4) Adjusted 7 Phase 1C schedule to reflect Cruiser Modernization COTS Refresh 2 (CGM CR2) effort.				
Technical:				
N/A				

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, 6 of 42)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification								DATE: February 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENGINEERING			PROJECT NUMBER AND NAME 1447 Surface Combatant Combat System Improvements				

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Cost</u>
SCN LI2122 - DDG 51	3,193.0	3,431.0	225.4	327.5	40.2				Cont.	Cont.
OPN LI5246 - AEGIS Supt. Eqp	94.9	70.7	98.9	81.6	107.1	139.0	184.0	173.1	Cont.	Cont.
OPN LI0900 - DDG Mod			3.0	3.8	58.9	210.8	218.0	255.8	Cont.	Cont.

E. ACQUISITION STRATEGY:

Combat System Improvements are implemented in Baselines as described in the project mission statement. In FY 1998, Lockheed Martin was awarded a five year omnibus contract (sole source) to develop and integrate combat system improvements, which will fund all remaining AEGIS Baseline Upgrade Development efforts. After the baseline has been completed and tested, the computer program and associated equipment are delivered to the new construction shipbuilders where the program and equipment are installed and tested along with all other elements of the shipboard combat system and associated combat support systems. The computer program is a GFE deliverable to the Production Test Center for equipment test and check out.

3.237

F. MAJOR PERFORMERS:

Lockheed Martin, Moorestown, NJ (Combat System Design Agent/Prime Contractor)
NSWC/DD, Dahlgren, VA (Lifetime Support Engineering Agent)

R-1 SHOPPING LIST - Item No. 102

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Exhibit R-3 Cost Analysis (page 1)							DATE: February 2005							
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME								
RDT&E, N / BA-5			0604307N/AEGIS COMBAT SYSTEM ENGINEERING			1447 Surface Combatant Combat System Improvements								
Cost Categories	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
Systems Engineering	SS/CPAF	Lockheed, Moorestown, NJ	887.166	117.148	01/04	92.443	01/05	143.604	01/06	129.189	01/07	Cont.	Cont.	
Systems Engineering	SS/CPFF	APL, Baltimore MD	27.643	0.800	10/03	0.240	10/04	0.950	10/05	0.817		Cont.	Cont.	
Systems Engineering	WR/RCP	NSWC, Dahlgren VA	157.819	42.813	11/03	17.442	11/04	27.650	11/05	24.415		Cont.	Cont.	
Systems Engineering	BPA	PCI, VA Beach, VA	11.394	2.175	10/03	0.000		0.000		0.000		Cont.	Cont.	
Systems Engineering	SS/CPAF	BAE Systems, Rockville, MD		0.000		3.294	10/04							
Systems Engineering	WR	NSWC, PHD CA	21.867	3.628	11/03	2.087	11/04	2.149	11/05	1.848		Cont.	Cont.	
Systems Engineering	WR/RCP	NWAS, Corona CA	16.559	2.650	11/03	1.011	11/04	1.541	11/05	1.325		Cont.	Cont.	
Systems Engineering	SS/CPAF	General Dynamics	35.014	1.596	06/04	0.000		0.000		0.000		Cont.	Cont.	
Systems Engineering	WR	SPAWAR	4.764	0.936	11/03	0.662	11/04	0.977	11/05	0.840		Cont.	Cont.	
Systems Engineering	CPFF	Techmatics	2.000	0.000		0.000		0.000		0.000				
Systems Engineering	WR/RCP	Dam Neck	7.015	0.500	Various	0.000		0.000		0.000		Cont.	Cont.	
Systems Engineering	WR/RCP	Miscellaneous	35.126	1.200	Various	0.500	Various	0.780		0.670		Cont.	Cont.	
Award Fees	SS/CPAF	Lockheed, Moorestown, NJ	117.880	14.061	07/04	13.344	07/05	16.282	07/06	14.879		Cont.	Cont.	
Award Fees	SS/CPAF	BAE Systems, Rockville, MD	0.580			0.200	10/04						0.580	
Award Fees	SS/CPAF	Anteon, Washington, DC	0.000	0.000		0.200	10/04							
Award Fees	SS/CPAF	PCI, VA Beach, VA	0.625										0.625	
Award Fees	SS/CPAF	General Dynamics	3.721	0.100	06/04							Cont.	Cont.	
Award Fees	WR/RCP	Miscellaneous	2.790			3.237							2.790	
Subtotal Product Development			1331.963	187.607		134.660		193.933		173.983		Cont.	Cont.	
Support	CPFF	APL, Baltimore MD	8.401	0.530	10/03	0.438	10/04	0.535	10/05	0.460		Cont.	Cont.	
Support	WR	NSWC, Pt. Hueneme, CA	5.008	0.500	11/03	0.367	11/04	0.540	11/05	0.464		Cont.	Cont.	
Support	WR	NSWC, Dahlgren VA	2.727	0.060	Various	0.043	Various	0.150	Various	0.149		Cont.	Cont.	
Support	WR/RCP	Miscellaneous	8.234	1.500	Various	1.200	Various	1.236	Various	1.062		Cont.	Cont.	
Subtotal Support			24.370	2.590		2.048		2.461		2.135		Cont.	Cont.	

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

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(Exhibit R-2, 8 of 42)

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 2)												DATE: February 2005		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5			PROGRAM ELEMENT 0604307N/AEGIS COMBAT SYSTEM ENGINEERING			PROJECT NUMBER AND NAME 1447/9066 Surface Combatant Combat System								
Cost Categories	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 and Evaluation	SS/CPAF	Lockheed, Moorestown, NJ	19.622	3.300	07/04	2.390	07/05	3.300	07/06	2.838	07/07	Cont.	Cont.	
Test and Evaluation	WR	NSWC, Pt. Hueneme, CA	6.840	0.750	11/03	0.547	11/04	0.800	11/05	0.688		Cont.	Cont.	
Test and Evaluation	CPFF	APL, Baltimore MD	3.500									Cont.	Cont.	
Test and Evaluation	WR/RCP	Miscellaneous	11.527	2.000	Various	2.829	Various	2.934	Various	2.523		Cont.	Cont.	
												Cont.	Cont.	
												Cont.	Cont.	
												Cont.	Cont.	
Subtotal T&E			41.489	6.050		5.766		7.034		6.049		Cont.	Cont.	
Remarks:														
Program Management Support	BPA	BAE Systems, Rockville MD	28.989	2.595	10/03	0.000		0.000		0.000		Cont.	Cont.	
		Anteon, Washington, DC	0.000	0.000		0.450	10/04							
	WR/RCP	Miscellaneous	7.246	0.390	Various	0.965	Various	0.409	Various	0.351	Various	Cont.	Cont.	
												Cont.	Cont.	
												Cont.	Cont.	
SBIR Assessment												Cont.	Cont.	
Subtotal Management			36.235	2.985		1.415		0.409		0.351		Cont.	Cont.	
Remarks:														
Total Cost			1,434.057	199.232		143.889		203.837		182.518		Cont.	Cont.	
Remarks:														

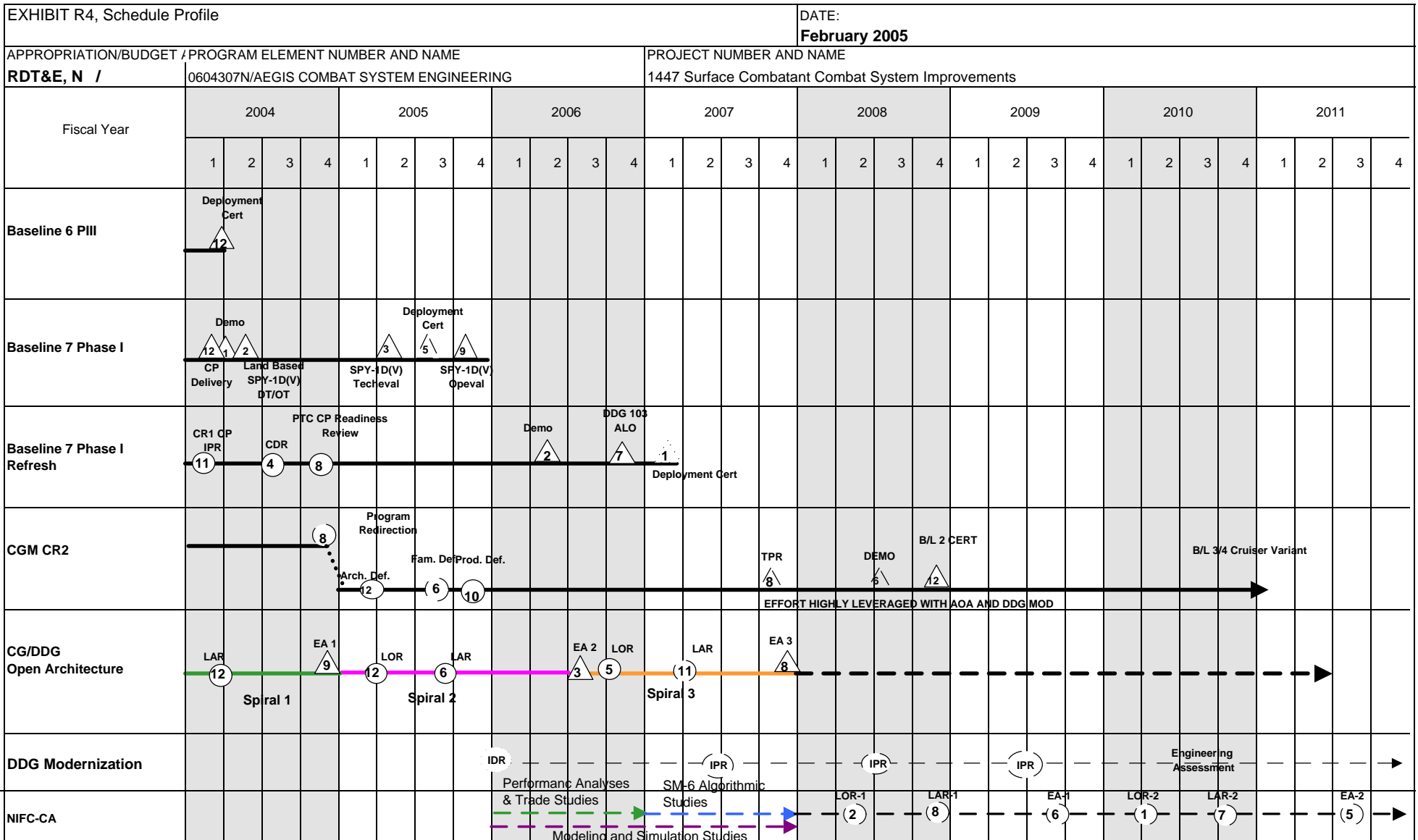
R-1 SHOPPING LIST - Item No. 102

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, 9 of 42)

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R-1 SHOPPING LIST - Item No. 102

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, 10 of 42)

CLASSIFICATION:

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Exhibit R-4a, Schedule Detail					DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT				PROJECT NUMBER AND NAME			
RDT&BA-5	0604307N/AEGIS COMBAT SYSTEM ENGINEERING				1447 Surface Combatant Combat System Imp.			
Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
6 Phase III								
CP Deployment Cert	1Q							
7 Phase I								
CP Delivery	1Q							
Demo	2Q							
Land Based SPY-1D(V) DT/OT	2Q							
SPY-1D(V) Techeval	4Q							
SPY-1D(V) Opeval		4Q						
Deployment Cert		3Q						
7 Phase I Refresh								
CR 1 CP IPR	1Q							
CDR	3Q							
PTC CP Readiness Review	4Q							
Demo			2Q					
DDG 103 ALO			4Q					
CGM CR2								
Architecture Definition	4Q							
Family Definition		3Q						
Production Definition		1Q						
TPR				4Q				
Demo					3Q			
B/L 2 Cert						1Q		
CG/DDG Open Architecture								
LAR	1Q							
EA 1	4Q							
LOR		1Q						
LAR		3Q						
EA2			3Q					
LOR			4Q					
LAR				2Q				
EA3				4Q				
DDG Modernization								
IDR			1Q					
IPR				X	X	X		
EA							X	
NIFC-CA								
Performance Analyses and Trade Studies			1Q-4Q					
SM-6 Algorithmic Studies				1Q-4Q				
Modeling and Simulation Studies			1Q-4Q	1Q-4Q				
LOR-1					2Q			
LAR-1					4Q			
EA-1						3Q		
LOR-2							2Q	
LAR-2							4Q	
EA-2								3Q

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, 11 of 42)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification							DATE: FEBRUARY 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENG				PROJECT NUMBER AND NAME 1776/Surface Combatant Weapon Sys Mods			
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	0.445	0.000	0.000	0.000	0.000	0.000	0.000	0.000
RDT&E Articles Qty	0	0	0	0	0	0	0	0

MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

A. Mission Description

This program provides for modifications to the AWS MK-7 to counter the threat as articulated in ONI System Threat Assessment Report, ONI-TA-012-99 dated Oct 1999 and subsequent updates. The modifications will be introduced into CG 47 Class and DDG 51 Class ships.

EXHIBIT R-2, RDT&E Project Justification							DATE: FEBRUARY 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENG			PROJECT NUMBER AND NAME 3044/9223/9255 - Solid State SPY Radar				
COST (\$ in Millions)	FY 2004*	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost	12.632	8.021	12.476	45.433	122.268	147.471	156.392	182.459
RDT&E Articles Qty	0	0	0	0	0	0	0	0

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:**SOLID STATE SPY RADAR / SILICON CARBIDE MMIC PRODUCIBILITY PROGRAM:**

The Solid State SPY Radar is being developed to support Theater Air and Missile Defense requirements as part of a next generation cruiser, CG(X), radar suite. The S-Band Solid State SPY Radar will provide multi-mission capabilities, supporting both long range, exoatmospheric detection, tracking and discrimination of ballistic missiles, as well as robust Ballistic Missile Defense and Self Defense against air and surface threats. For the BMD capability, increased radar sensitivity and bandwidth over the current SPY-1 system is needed to detect, track and support engagements of advanced ballistic missile threats at the required ranges. For the Ballistic Missile Defense and Self Defense capability, increased sensitivity and clutter rejection capability is needed to detect, react to, and engage stressing Very Low Observable /Very Low Flyer (VLO/VLF) threats in the presence of heavy land, sea, and rain clutter. This effort provides for the development of an S-Band solid state replacement for the SPY-1 Radar with the required capabilities to pace the evolving threat.

AN/SPY-1 READINESS IMPROVEMENT PROGRAM:

The SPY-1 Readiness Improvement program is the productizing of an intelligent automated maintenance tool, which will improve operational & combat effectiveness while improving system availability of the AN/SPY-1 Series radar. This intelligent maintenance tool, the Multi-Function Distributed Analysis Tool (MFDAT) will significantly reduce SPY-1 radar system alignment & maintenance time, increase system availability, and increase operational precision through more reliable alignment. The SPY-1 radar system is the Navy's primary radar for air defense and ballistic missile defense and will be so for the next 20+ years. This program will improve SPY-1 Series Radar operational availability and precision through the use of an automated, intelligent maintenance tool enabling the Sailor to maintain peak alignment and accurately diagnose and correct trouble conditions. The increase will allow for the transitioning of the MFDAT from the prototype developed under a SBIR Phase II program to full-scale production system capable of being fielded on combat naval vessels. The funding will complete the non-recurring engineering costs for engineering costs for development and provide production drawings, interface and maintenance documents, as well as calibration procedures.

AEGIS TRAVELING WAVE TUBE CIRCUIT:

This program defines the efforts necessary to identify and solve DMS issues 10KW traveling wave tube (TWT). In particular, changes to the slow wave structure will be identified that will provide an additional source for the slow wave structure used in the 10KW TWT.

CG(X) PROGRAM:**CG(X) transferred into P.E. 0604307N (3044) from P.E. 0604300N (3104)**

The CG(X) is a multi-mission ship required to perform self-defense, area air defense, and ballistic missile defense. The CG(X) must have a radar capable of operating in different environmental and mission regimes against a wide variety of potential targets and profiles. A scalable radar design with major improvements in power, sensitivity, resistance to natural and man-made environments over current radar systems is needed for multi-mission TAMD (BMD and Area AAW). Modularity of hardware and software, a designed in growth path for technology insertion, and Open Architecture (OA) Compliance are required for performance and technology enhancements throughout service life.

* FY 2004 includes: Silicon Carbide MMIC Producibility Program congressional add, Improved Readiness for AN/SPY-1 Radar congressional add, Baseline 5.3.9 EMI fix, AEGIS Traveling Wave Tube Circuit congressional add, and AUSPAR Project Below Threshold Reprogramming (BTR).

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EXHIBIT R-2, RDT&E Project Justification			DATE: FEBRUARY 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENG	PROJECT NUMBER AND NAME 3044/9223/9225 - Solid State SPY Radar		
B. Accomplishments/Planned Program				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	8.000	0.000	6.000	23.133
RDT&E Articles Quantity	0	0	0	0
R&D / RISK REDUCTION Planned: - Digital Array Radar (DAR) build, integration, and component test - Prototype build, integration, and initial test - Conducted Navy Program Decision Milestone to finalize technology and radar baseline				
	FY 04	FY 05	FY 06	FY 07
Accomplishments/Effort/Subtotal Cost	0.974	2.200	0.000	0.000
RDT&E Articles Quantity	0	0	0	0
ADVANCED TECHNOLOGY MMIC DEVELOPMENT Planned: - Improve the producibility (i.e. yield and cost) of high power Silicon Carbide (SiC) MMIC power amplifiers. - Non recurring engineering design of high power SiC MMICs. Recurring fabrication to support future capability radar demonstrations				

R-1 SHOPPING LIST - Item No. 102

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EXHIBIT R-2, RDT&E Project Justification			DATE: FEBRUARY 2005																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENG	PROJECT NUMBER AND NAME 3044/9223/9225 - Solid State SPY Radar																	
B. Accomplishments/Planned Program (Cont.)																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th><th style="width: 15%;">FY 06</th><th style="width: 15%;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">3.553</td><td style="text-align: center;">5.796</td><td style="text-align: center;">5.956</td><td style="text-align: center;">21.400</td></tr><tr><td>RDT&E Articles Quantity</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr></tbody></table>						FY 04	FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	3.553	5.796	5.956	21.400	RDT&E Articles Quantity	0	0	0	0
	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost	3.553	5.796	5.956	21.400															
RDT&E Articles Quantity	0	0	0	0															
<div style="border: 1px solid black; padding: 5px;">SYSTEMS ENGINEERING Planned:<ul style="list-style-type: none">- Participate in the development of threat definitions, performance requirements and radar specifications; perform radar systems performance analysis.- Participate in Integrated Product Teams (IPTs) and Working Groups (WGs) to resolve critical issues.- Perform supporting studies and analyses.- Defines efforts necessary to identify and solve DMS issues 10KW traveling wave tube (TWT).- Certify Baseline incorporating EMI fix for Baseline 5.3.8 CGs and DDGs- Finalize Acquisition Strategy (AS), Acquisition Plan (AP), and Technical Data Package (TDP) for competition- Conduct CG(X) Radar competition</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th><th style="width: 15%;">FY 06</th><th style="width: 15%;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.105</td><td style="text-align: center;">0.025</td><td style="text-align: center;">0.520</td><td style="text-align: center;">0.900</td></tr><tr><td>RDT&E Articles Quantity</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td><td style="text-align: center;">0</td></tr></tbody></table>						FY 04	FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	0.105	0.025	0.520	0.900	RDT&E Articles Quantity	0	0	0	0
	FY 04	FY 05	FY 06	FY 07															
Accomplishments/Effort/Subtotal Cost	0.105	0.025	0.520	0.900															
RDT&E Articles Quantity	0	0	0	0															
<div style="border: 1px solid black; padding: 5px;">PROGRAM MANAGEMENT SUPPORT Planned:<ul style="list-style-type: none">- Program planning, assessment of technical alternatives, risk identification and mitigation.- Cost and schedule development and execution.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;">Total Cost:</td><td style="width: 15%; text-align: center;">12.632</td><td style="width: 15%; text-align: center;">8.021</td><td style="width: 15%; text-align: center;">12.476</td><td style="width: 15%; text-align: center;">45.433</td></tr></table>					Total Cost:	12.632	8.021	12.476	45.433										
Total Cost:	12.632	8.021	12.476	45.433															

R-1 SHOPPING LIST - Item No. 102

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Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, 15 of 42)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification			DATE: FEBRUARY 2005																																																																																	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENG	PROJECT NUMBER AND NAME 3044/9223/9225 - Solid State SPY Radar																																																																																		
<p>C. (U) 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 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> <th style="text-align: right; width: 15%;">FY 2006</th> <th style="text-align: right; width: 15%;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>FY05 President's Budget</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">0.000</td> <td style="text-align: right;">9.274</td> <td style="text-align: right;">39.914</td> </tr> <tr> <td>FY06 President's Budget</td> <td style="text-align: right;">12.632</td> <td style="text-align: right;">8.021</td> <td style="text-align: right;">12.476</td> <td style="text-align: right;">45.433</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">12.632</td> <td style="text-align: right; border-top: 1px solid black;">8.021</td> <td style="text-align: right; border-top: 1px solid black;">3.202</td> <td style="text-align: right; border-top: 1px solid black;">5.519</td> </tr> <tr> <td colspan="5" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td> Programmatic/Other Adjustments</td> <td style="text-align: right;">-0.040</td> <td style="text-align: right;">-0.179</td> <td style="text-align: right;">3.202</td> <td style="text-align: right;">5.519</td> </tr> <tr> <td> Management Improvements</td> <td style="text-align: right;">-0.011</td> <td></td> <td></td> <td></td> </tr> <tr> <td> SBIR Reductions</td> <td style="text-align: right;">-0.117</td> <td></td> <td></td> <td></td> </tr> <tr> <td> SiC Congressional Add</td> <td style="text-align: right;">1.300</td> <td style="text-align: right;">3.000</td> <td></td> <td></td> </tr> <tr> <td> AN/SPY-1 Congressional Add</td> <td style="text-align: right;">3.000</td> <td style="text-align: right;">3.400</td> <td></td> <td></td> </tr> <tr> <td> AEGIS Traveling Wave Tube congressional add</td> <td></td> <td style="text-align: right;">1.800</td> <td></td> <td></td> </tr> <tr> <td> CG(X) RDTEN</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> PBD Adjustments</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Execution Realignment</td> <td style="text-align: right;">8.500</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Subtotal</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;">12.632</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;">8.021</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;">3.202</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;">5.519</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule:</p> <p style="margin-left: 20px;">Not Applicable.</p> <p style="margin-top: 20px;">Technical:</p> <p style="margin-left: 20px;">Not Applicable.</p>						FY 2004	FY 2005	FY 2006	FY 2007	Funding:					FY05 President's Budget	0.000	0.000	9.274	39.914	FY06 President's Budget	12.632	8.021	12.476	45.433	Total Adjustments	12.632	8.021	3.202	5.519	Summary of Adjustments					Programmatic/Other Adjustments	-0.040	-0.179	3.202	5.519	Management Improvements	-0.011				SBIR Reductions	-0.117				SiC Congressional Add	1.300	3.000			AN/SPY-1 Congressional Add	3.000	3.400			AEGIS Traveling Wave Tube congressional add		1.800			CG(X) RDTEN					PBD Adjustments					Execution Realignment	8.500				Subtotal	12.632	8.021	3.202	5.519
	FY 2004	FY 2005	FY 2006	FY 2007																																																																																
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R-1 SHOPPING LIST - Item Nr 102

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, 16 of 42)

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CLASSIFICATION:

EXHIBIT R-2, RDT&E Project Justification							DATE: FEBRUARY 2005		
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5			PROGRAM ELEMENT NUMBER AND NAME 0604307N/AEGIS COMBAT SYSTEM ENG			PROJECT NUMBER AND NAME 3044/9223/9225 - Solid State SPY Radar			

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
RD TEN 0604300N Proj 3107 CG (X) Developmen	0.000	0.000	45.000	60.000	162.200	204.000	226.000	243.000	cont	cont.
SCN 211400 - CG (X)								3,273.612		

E. ACQUISITION STRATEGY:

SOLID STATE SPY RADAR / SILICON CARBIDE MMIC PRODUCIBILITY PROGRAM: The Solid State SPY Radar Program was awarded to Lockheed Martin in June 1999 based upon a competitive selection resulting from a Broad Agency Announcement (BAA). This program is for the competition of a prototype radar system. A milestone decision for EDM will be based upon successful completion of this prototype phase.

AN/SPY-1 READINESS IMPROVEMENT PROGRAM: This is a Phase II SBIR managed by Mikros Systems Corporation.

AEGIS TRAVELING WAVE TUBE CIRCUIT PROGRAM: This program is managed by NSWC Crane.

CG(X): (U) Plans are to leverage research and development investments, integrate significantly matured fundamental advanced technologies from technology risk reduction efforts and allies, and incorporate Open Architecture approaches to develop a scalable radar design with major improvements in power, sensitivity, resistance to natural and man-made environments over current radar systems for multi-mission TAMD (BMD and Area AAW). System design will be accomplished using proven advanced technologies and commercial standards to lower schedule risk and develop a product with the lowest life-cycle cost.

F. MAJOR PERFORMERS:

SS SPY: Lockheed Martin - Moorestown, NJ
 Improved Readiness for AN/SPY-1 Radar: Mikros Systems Corporation, Princeton, NJ
 Silicon Carbide Producibility MMIC Program: CREE, Inc. Durham, NC
 CG(X): TBD

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

UNCLASSIFIED

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Exhibit R-3 Cost Analysis (page 1)													DATE: FEBRUARY 2005		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NAME AND NUMBER			PROJECT NUMBER AND NAME									
RDT&E, N / BA - 5			0604307N/AEGIS COMBAT SYSTEM ENG			3044/9223/9225 - Solid State SPY Radar									
Cost Categories	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 Dev / Sys Eng															
R&D / Risk Reduction	SS/CPAF	Lockheed Martin (NJ)	22.204	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	Continuing	Continuing	TBD	
	MIPR	DCMA	0.000	8.000	03/05										
	TBD	TBD	0.000	0.000	N/A	0.000	N/A	6.000	TBD	23.133	TBD	Continuing	Continuing	TBD	
Advanced Technology MMIC Dev	Cost Share	CREE	1.785	0.974	05/04	2.200	04/05								
System Engineering	Various	Various	1.565	0.000	N/A	0.967	N/A	5.956	TBD	21.400	TBD	Continuing	Continuing	TBD	
	CPFF	MIKROS	0.000	2.503	03/04	2.869	04/05								
	WX	NSWC DD	1.250	0.800	01/04	0.055	04/05								
	CPFF	JHU/APL	1.514	0.100	01/04										
	WX	NRL	0.150	0.100	01/04										
	WX	PHD	0.000	0.050	03/05	0.120	04/05								
	WX	NSWC Crane	0.000	0.000	N/A	1.785	03/05					Continuing	Continuing	TBD	
Subtotal Product Development			28.468	12.527		7.996		11.956		44.533		Continuing	Continuing	TBD	
Remarks:															
Support / Management Services	Various	Various	0.050	0.105	06/04	0.025	04/05	0.520	TBD	0.900	TBD	Continuing	Continuing	TBD	
Subtotal T&E:			0.050	0.105		0.025		0.520		0.900		Continuing	Continuing	TBD	
Remarks:															
Total Cost			28.518	12.632		8.021		12.476		45.433		Continuing	Continuing	TBD	

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, 18 of 42)

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EXHIBIT R4, Schedule Profile																				DATE:								FEBRUARY 2005							
APPROPRIATION/BUDGET ACTIVITY									PROGRAM ELEMENT NUMBER AND NAME									PROJECT NUMBER AND NAME																	
RDT&E, N / BA-5									0604307N / AEGIS COMBAT SYSTEM ENGINEERING									3044/9223 - Solid State SPY Radar																	
Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4			
Acquisition Milestones																																			
Prototype Phase													Fabrication Integration & Test																						
Radar System Development													PDR				CDR				IPR				IPR				Delivery						
Software Development																																			
Test & Evaluation Milestones													PDR				CDR																		
Land Based Testing																																			
Deliveries																																			

R-1 SHOPPING LIST - Item No. 102

CDR	Critical Design Review
IPR	In-Progress Review
PDR	Preliminary Design Review
TRR	Test Readiness Review

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail							DATE: FEBRUARY 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-5	PROGRAM ELEMENT 0604307N/AEGIS COMBAT SYSTM ENG			PROJECT NUMBER AND NAME 3044/9223/9225 - Solid State SPY Radar				
Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Prototype Phase								
Radar System Development								
Preliminary Design Review (PDR)				1Q				
Critical Design Review (CDR)					1Q			
In-Process Review (IPR)						1Q	1Q	
Delivery							4Q	
Software Delivery								
Preliminary Design Review (PDR)				1Q				
Critical Design Review (CDR)					1Q			
Coding Complete							2Q	
Test & Evaluation								
Test Readiness Review (TRR)							4Q	
Land Based Test								4Q
Deliverables								
Prototype								
							4Q	

R-1 SHOPPING LIST - Item No. 102

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, 20 of 42)

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:											
																								FEBRUARY 2005											
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E, N / BA-5												0604307N/AEGIS COMBAT SYSTEM ENG												3044/Improved Readiness for AN/SPY-1 Radar											
Fiscal Year	2003				2004				2005				2006				2007				2008				2009				2010						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4							
Contract Award			▲																																
MFDAT Phase II Base Program																																			
System Design																																			
Hardware Design																																			
Software Design																																			
AN/SPY-1A Emulator Design																																			
System Integration																																			
System Test & Checkout																																			
Baseline Prototype																																			
Demo Test Report																																			
Final Report																																			
MFDAT Phase II Option Program																																			
Neural Network Integration																																			
System Test & Checkout																																			
Demo Test Report																																			
Final Report																																			

R-1 SHOPPING LIST - Item No. 102

- Not required for Budget Activities 1, 2, 3, and 6

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[illegible]

R-1 SHOPPING LIST - Item No. 102

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, 22 of 42)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:											
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E,N/BA-5												PE 0604300N - DD(X) Total Ship Systems Engineering												3044/CG(X)											
Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4							
DAR Backend Development																																			
International Initiatives																																			
NPDM Contract Award																																			
CG(X) Radar EDM																																			

* Not required for Budget Activities 1, 2, 3, and 6

LEGEND	
CDR	Critical Design Review
EDM	Engineering Development Model
LBT	Land Based Testing
NPDM	Navy Program Decision Meeting
PDR	Preliminary Design Review
SFR	System Functional Review

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[illegible]

R-1 SHOPPING LIST - Item No. 102

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 30 of 39)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE:			
							February 2005			
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER				PROJECT NAME AND NUMBER:					
RDT&E, N / BA 5	AEGIS COMBAT SYS ENG PE 0604307N				PROJECTS 9381/9382/9383 Deploy Smartlink/IDESC/SIDE					
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost To Complet	Total Cost
Proj 9381 - Deployable Smartlink Communications Upgrade	1.931	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.931
Proj 9382 - Integrated Logistics (IDESC)	0.385	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.385
Proj 9383 - Smart Integrated Data Environment (SIDE)	0.959	0.989	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.948
RDT&E Articles Qty	Not Applicable									

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Proj 9381 - Deployable Smartlink Communications Upgrade
Congressional plus-up for Small Business Innovative Research (SBIR) Phase III design and development of the Malibu Research antenna system.

Proj 9382 - Integrated Logistics (IDESC)
Congressional Plus-Up for Integrated Logistics (Integrated Data Environment Service Center/IDESC). The IDE is intended to provide Program Managers with the capability to realistically manage program cycle time reductions and total ownership costs while having a direct, positive effect on operational readiness. The Integrated Logistic Support (ILS) IDE is expected to provide framework and collaborative environment to integrate the acquisition and sustainment processes, now so disjointed in the DOD to provide managers the tools to control life cycle acquisition and sustainment.

Proj 9383 - Smart Integrated Data Environment (SIDE)
The Smart Integrated Data Environment (SIDE) is a concept for a fully interactive, ship-wide integration of physical plant and supporting operations, maintenance, logistics, training, and other data. Decision-aids and automated processes are further integrated to make the data both dynamic and useful at every echelon of the organization. SIDE has potential to increase productivity and, hence, decrease Sailor workload. The funding will be used for the development of a limited capability, shore-based prototype that will prove the concept and provide an automated Engineering Operating Sequencing System (EOSS)/Combat Systems Operating Sequencing Systems (CSOSS) equipment tag-out capability for shore based validation teams. This initial capability will be expanded to incorporate an engineering casualty control exercise component and subsequently will be transitioned to shipboard use and further developed to incorporate the full range of potential capability.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME AEGIS COMBAT SYS ENG PE 0604307N	PROJECT NUMBER AND NAME PROJECTS 9381/9382/9383 Deploy Smartlink/IDESC/SIDE	
B. Accomplishments/Planned Program			
	FY 04	FY 05	FY 06
Proj 9381 - Deployable Smartlink Communications Upgrade	1.931		
Proj 9382 - Integrated Logistics (IDESC)	0.385		
Proj 9383 - Smart Integrated Data Environment (SIDE)	0.959	0.989	
RDT&E Articles Quantity			

Proj 9381 - Deployable Smartlink Communications Upgrade
 Accomplishments: Designed, developed and incorporated upgrades to the SMARTLINK Communications System. Preliminary test and validation to qualify system for acquisition was accomplished.
 Planned: Complete radar cross section testing and provide final system specification for acquisition.

Proj 9382 - Integrated Logistic (IDESC)
 Accomplishments: To date, the contractors' performance has been outstanding. In a pilot project supported by this office to validate certain technical capabilities and to provide leadership and program management, NetIDEAS and LM NE&SS completed its work on time, with budget and exceeded technical requirements.

 Planned: The ILS and IDE objectives for PEO Ships Business Systems are:
 1) Support transformation to integrated system product support.
 2) Provide Industry based ILS connectivity to the DOD acquisition process.
 3) Assist industrial partners in building and using product supply chains.
 4) Integrate the private sector with the DOD program stakeholders through a collaborative engineering and work environment.
 5) Initiate and manage life cycle behavior among all stakeholders of a product using operational readiness and total ownership costs as measures of success.

Proj 9383 - Smart Integrated Data Environment (SIDE)
 Accomplishments:
 - Requirements defined.
 - Architecture developed.
 - Engineering plant model developed.

 Planned:
 - Develop and deliver automated machinery tag-out system from model.
 - Expand system to incorporate engineering casualty control training capability.
 - Expand system capability to include automated processes and decision-aids.
 - Transition to shipboard use.

R-1 SHOPPING LIST - Item No. 102

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2005	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME AEGIS COMBAT SYS ENG PE 0604307N	PROJECT NUMBER AND NAME PROJECTS 9381/9382/9383 Deploy Smartlink/IDESC/SIDE		
C. PROGRAM CHANGE SUMMARY:				
Funding:	FY 2004	FY 2005	FY 2006	FY 2007
Previous President's Budget: (FY 2005 PRESBUD)	3.362			
Current BES/President's Budget: (FY 2006/2007 PRESBUD)	3.275	0.989		
Total Adjustments	-0.087	0.989		
Summary of Adjustments				
Non-Pay Inflation Savings	0.003			
SBIR	0.084			
Congressional Increases		0.989		
Subtotal	0.087	0.989		
Schedule:				
Not Applicable.				
Technical:				
Not Applicable.				
Funding:				
Not Applicable.				

R-1 SHOPPING LIST - Item No. 102

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 27 of 42)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2005																								
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5			PROGRAM ELEMENT NUMBER AND NAME AEGIS COMBAT SYS ENG PE 0604307N			PROJECT NUMBER AND NAME PROJECTS 9381/9382/9383 Deploy Smartlink/IDESC/SIDE																									
<p>D. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Line Item No. & Name</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2004</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2005</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2006</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2007</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2008</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2009</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2010</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2011</th> <th style="text-align: center; border-bottom: 1px solid black;">To Complete</th> <th style="text-align: center; border-bottom: 1px solid black;">Total Cost</th> </tr> </thead> <tbody> <tr> <td>Not Applicable</td> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </tbody> </table> <p>E. ACQUISITION STRATEGY: *</p> <p><u>Proj 9381 - Deployable Smartlink Communications Upgrade</u> Utilizing the SBIR Phase III contract, develop the Deployable Smartlink Communications System incorporating system upgrades through test and evaluation that mitigate technical and operational risks to achieve a system that is acquirable by the Navy</p> <p><u>Proj 9382 - Integrated Logistics (IDESC)</u> Utilizing the Lockheed Martin Lifetime Support Contract to develop the IDESC. Today, data collection and information management through a product's life cycle is done in manual and serial process. Renewed emphasis on maintenance and modernization to existing fleet resources has exacerbated the need for improved methods of designing, monitoring and implementing modernization programs. Modernization programs rely heavily on engineering and product data that is contained in many different locations, within disparate and heterogeneous systems and has ownership by many different activities. There is a significant and increasing cost associated with the proper planning, designing, implementing, monitoring and tracking all of the data, processes and personnel required to meet the demands of our modernization programs. The ability to meet modernization goals has a direct impact on the fleet sailor and the Navy's ability to meet the mission demands.</p> <p>It is now feasible to use commercial technology to integrate engineering databases so that they function as a virtually integrated management data environment, allowing near real time information sharing across the enterprise without the need to replace legacy systems. This solution also provides the ability for true collaboration using the web. This greatly enhances the accuracy and timeliness of the information provided to decision-makers and improves their ability to assess and correct problems early. This would permit total visibility for program managers and all parties who contribute to maintenance and modernization, enabling them to collaborate early in the process and decrease total ownership cost (TOC).</p> <p><u>Proj 9383 - Smart Integrated Data Environment</u> Utilize the Congressional Plus-up in FY04 to develop a prototype system for proof of concept. Use Congressional Plus-up in FY05 to develop and integrate shipboard engineering training capability. Transition to shipboard system in FY05 and expand capabilities in outyears. This program is for development of prototype only. A milestone decision will be based on successful completion of the prototype.</p>										Line Item No. & Name	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost	Not Applicable										
Line Item No. & Name	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost																					
Not Applicable																															

R-1 SHOPPING LIST - Item No. 102

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2005
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME AEGIS COMBAT SYS ENG PE 0604307N	PROJECT NUMBER AND NAME PROJECTS 9381/9382/9383 Deploy Smartlink/IDESC/SIDE
<p>F. MAJOR PERFORMERS:</p> <p><u>Proj 9381 - Deployable Smartlink Communications Upgrade</u> NSWC Dahlgren - Project Management Malibu Research - Prime Contractor NSWC Crane - Acquisition Planning and IPT lead</p> <p><u>Proj 9382 - Integrated Logistics (IDESC)</u> NetIDEAS, Inc. (NetIDEAS)</p> <p><u>Proj 9383 - Smart Integrated Data Environment</u> Delex Systems, Inc., Vienna, VA</p>		

R-1 SHOPPING LIST - Item No. 102

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2005				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA 5			AEGIS COMBAT SYS ENG PE 0604307N					PROJECTS 9381/9382/9383 Deploy						
Cost Categories	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
Systems Engineering	CPFF	Malibu Research, Inc./		1.618	03/04									
		NSWC Dahlgren												
Systems Engineering	FFP	NetIDEAS Inc. Mt Laurel, NJ		0.235	03/04									
Systems Engineering	CPAF	LMCO, Moorestown, NJ		0.020	03/04									
SIDE Prototype Development	T&M	Delex Systems, Inc.		0.959	06/04	0.989	03/05							
Subtotal Product Development				2.832		0.989								
Remarks:														
Support		NSWC Dahlgren		0.082	03/04									
Support		NetIDEAS Inc. Mt Laurel, NJ		0.100	03/04									
Subtotal Support				0.182		0.000								
Remarks:														

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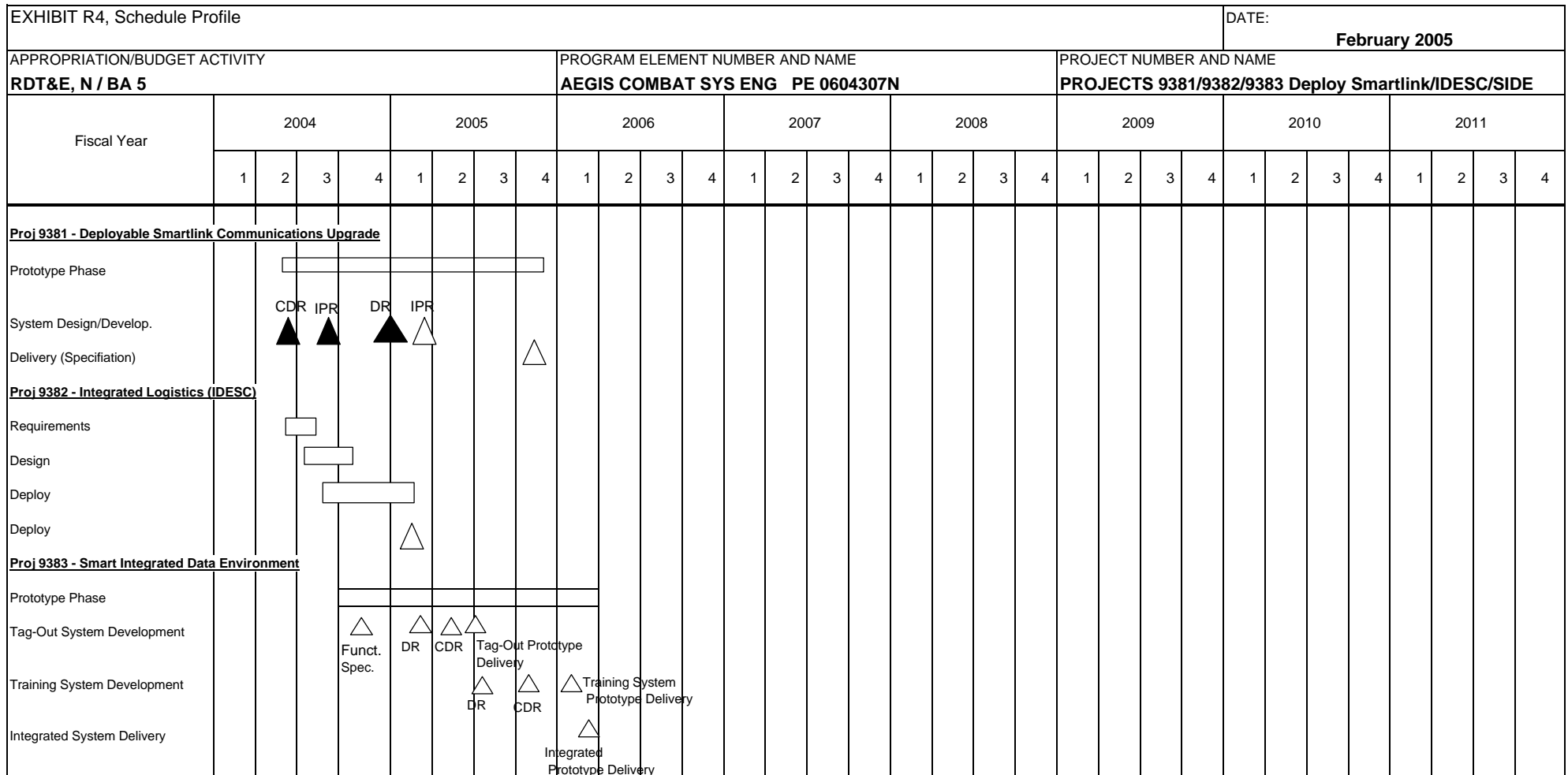
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2005				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA 5			AEGIS COMBAT SYS ENG PE 0604307N					PROJECTS 9381/9382/9383 Deploy						
Cost Categories	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
Subtotal T&E				0.000		0.000								
Remarks:														
IPT Lead and Program Mgmt		NSWC Crane		0.231	02/04									
Program Management Support	CPAF	LMCO, Moorestown, NJ		0.010	03/04									
Program Management Support	FFP	NetIDEAS Inc., Mt.Laurel, NJ		0.020	03/04									
Subtotal Management				0.261		0.000								
Remarks:														
Total Cost			0.000	3.275		0.989								
Remarks:														

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R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT AEGIS COMBAT SYS ENG PE 0604307N				PROJECT NUMBER AND NAME PROJECTS 9381/9382/9383			
Schedule Profile	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
<u>Proj 9381 - Deployable Smartlink Communications Upgrade</u>								
Prototype Phase	2-4Q	1Q						
System Design	2-4Q	1Q						
Delivery - Prototype System		4Q						
<u>Proj 9382 - Integrated Logistics (IDESC)</u>								
Requirements	2-3Q							
Design	3-4Q							
Deploy	3-4Q	1Q						
Delivery		1Q						
<u>Proj 9383 - Smart Integrated Design Environment (SIDE)</u>								
Prototype Phase	4Q	1-4Q	1Q					
Tag-Out System Development	4Q	1-2Q						
Model Development	4Q	1-2Q						
Functional Specification		1Q						
Design Review		1Q						
Critical Design Review		2Q						
Tag-Out Prototype Delivery		2Q						
Casualty Control Training Prototype Delivery								
Design Review		2Q						
Critical Design Review		4Q						
Engineering Casualty Control Training System Prototype Deliv.			1Q					
Delivery - Integrated SIDE Prototype			1Q					

R-1 SHOPPING LIST - Item No. 102

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 33 of 42)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5		PROGRAM ELEMENT NAME AND NUMBER AEGIS COMBAT SYS ENG PE 0604307N				PROJECT NAME AND NUMBER: 9556/Integrated Display and Enhanced Architecture (IDEA)				
COST (\$ in Millions)	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	Cost To Complete	Total Cost
9556/Integrated Display & Enhanced Architecture (IDEA)	0.000	4.260	0.000	0.000	0.000	0.000	0.000	0.000	0.000	4.260
RDT&E Articles Qty	Not Applicable									
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: <u>Integrated Display & Enhanced Architecture (IDEA)</u> IDEA permits an operator to immediately reconfigure his/her workstation and assume the responsibilities of any other operator, thereby facilitating real Navy manning reductions while still meeting operational requirements. In addition to reconfigurable display surfaces, IDEA enables HSI improvements for improved decision-making and increased productivity. Allows display components to be developed once and reused to realize cost savings across Navy programs.										

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2005		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME AEGIS COMBAT SYS ENG PE 0604307N	PROJECT NUMBER AND NAME 9556/Integrated Display and Enhanced Architecture		
B. Accomplishments/Planned Program				
	FY 04	FY 05	FY 06	FY 07
Integrated Display & Enhanced Architecture (IDEA)		4.26		
RDT&E Articles Quantity				

Integrated Display & Enhanced Architecture (IDEA)

Planned:

- Requirements defined.
- IDEA Architecture developed.
- System Hardware Architecture defined

R-1 SHOPPING LIST - Item No. 102

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2005
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME AEGIS COMBAT SYS ENG PE 0604307N	PROJECT NUMBER AND NAME 9556/Integrated Display and Enhanced Architecture

C. PROGRAM CHANGE SUMMARY:

	FY 2004	FY 2005	FY 2006	FY 2007
Funding:				
FY05 President's Budget		0.000		
FY06 President's Budget		4.260		
Total Adjustments		4.260		
Summary of Adjustments				
Congressional Add		4.300		
Undistributed Congressional Adjustment		-0.039		
Other Adjustments		-0.001		
		4.26		
Subtotal				
Schedule:				
Not Applicable.				
Technical:				
Not Applicable.				
Funding:				
Not Applicable.				

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2005			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5		PROGRAM ELEMENT NUMBER AND NAME AEGIS COMBAT SYS ENG PE 0604307N			PROJECT NUMBER AND NAME 9556/Integrated Display and Enhanced Architecture					
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
Not Applicable										
E. ACQUISITION STRATEGY:										
<u>Integrated Display & Enhanced Architecture (IDEA)</u>										
Utilizing the Lockheed Martin contract, develop IDEA. DRS is a subcontractor under this contract, which is envisioned to perform a majority of the work.										

R-1 SHOPPING LIST - Item No. 102

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2005
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA 5	PROGRAM ELEMENT NUMBER AND NAME AEGIS COMBAT SYS ENG PE 0604307N	PROJECT NUMBER AND NAME 9556/Integrated Display and Enhanced Architecture
<p>F. MAJOR PERFORMERS:</p> <p><u>Integrated Display & Enhanced Architecture (IDEA)</u> Lockheed Martin Maritime Sensors and Systems DRS, Inc.</p>		

R-1 SHOPPING LIST - Item No. 102

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2005				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA 5			AEGIS COMBAT SYS ENG PE 0604307N					9556/Integrated Display and Enhanced Architecture						
Cost Categories	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
Systems Engineering	SS/CPAF	Lockheed, Moorestown, NJ				3.834	03/05							
Award Fee	SS?CPAF	Lockheed, Moorestown, NJ				0.426	09/05							
Subtotal Product Development						4.260								
Remarks:														
Remarks:														

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2005				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT					PROJECT NUMBER AND NAME						
RDT&E, N / BA 5			AEGIS COMBAT SYS ENG PE 0604307N					9556/Integrated Display and Enhanced Architecture						
Cost Categories	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
Subtotal T&E														
Remarks:														
Subtotal Management														
Remarks:														
Total Cost				0.000		4.260		0.000		0.000				
Remarks:														

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:				February 2005				
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA 5										AEGIS COMBAT SYS ENG PE 0604307N										9556/Integrated Display and Enhanced Architecture												
Fiscal Year	2004				2005				2006				2007				2008				2009				2010				2011			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Integrated Display & Enhanced Architecture (IDEA)																																
Spiral Development																																
<div><div></div><div></div><div></div><div></div><div></div></div> <div><div>▲</div><div>△</div><div>△</div><div>▲</div><div>△</div></div> <div><div>Func. Spec.</div><div>CDR</div><div>EA</div><div>IPR</div><div>Demo</div></div>																																

R-1 SHOPPING LIST - Item No. 102

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R-1 SHOPPING LIST - Item No. 102

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 42 of 42)