EXHIBIT R-2, RDT&E Budget Item Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5**				R-1 ITEM NOMENCLATURE DD (X) Total Ship Systems Engineering/0604300N					
COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Total PE Cost	**286.444**	**235.235**	**717.397**	**923.649**	**1354.041**	**1705.084**	**1311.339**	**CONT.**	**CONT.**
DD (X) Construction/32463	**0.000**	**0.000**	**0.000**	**0.000**	**248.208**	**652.175**	**559.108**	**CONT.**	**CONT.**
DD (X) Sys Des, Dev & Int [1] /32464	**146.940**	**(2) 133.265**	**618.246**	**853.683**	**1055.258**	**1042.623**	**745.234**	**CONT.**	**CONT.**
DC/Survivability/32465	**6.060**	**(3) 0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**CONT.**	**CONT.**
Multi-Function Radar (MFR)/32466	**82.104**	**66.073**	**47.346**	**23.831**	**12.847**	**10.286**	**6.997**	**CONT.**	**CONT.**
Volume Search Radar (VSR)/32735	**51.340**	**28.711**	**51.805**	**46.135**	**37.728**	**0.000**	**0.000**	**0.000**	**(4) 215.719**
Power Node Control Center (PNCC)/32880	**0.000**	**2.726**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**2.726**
Reg Elec. Pwr. Tec, Integ & Lev (REPTILE)/39062	**0.000**	**2.973**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**2.973**
Aluminum Mesh Tank Liner/39063	**0.000**	**1.487**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**1.487**
Quantity of RDT&E Articles	**0**	****2/TBD**	**0**	**0**	**0**	**0**	**0**	**CONT.**	**CONT.**

Notes: (1) (U) DD (X) Systems Design, Development, and Integration. Project formerly known as Design.
(2) (U) Funding for efforts directly related to DD (X) design and systems integration has been reprogrammed to this project from PE 0603513N, Projects 32469 and 32470 and PE 0604300N, Project 32465 in FY 2002 and out.
(3) (U)Funding for this project has been reprogrammed to PE 0603513N in FY 2002 and out.
(4) (U) All requirements in FY 2001 and beyond are consolidated in PE 0604300N, Project 32735.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Program Element (PE) provides funds for development of the DD (X) Class of U. S. Navy surface combatants, advanced development R&D which is integral to DD (X); and Detailed Design and Construction of the first ship. The mission of the DD (X) class is to provide affordable and credible independent forward presence/deterrence and operate as an integral part of Naval, Joint or Combined Maritime Forces. DD (X) will provide advanced land attack capability in support of the ground campaign and contribute to Naval, Joint or Combined battlespace dominance in littoral operations. DD (X) will establish and maintain surface and sub-surface superiority, provide local air defense, and incorporate signature reduction to operate in all threat environments. DD (X) will have seamless Joint Interoperability to integrate all source information for battlespace awareness and weapons direction. PNCCs have the potential to integrate all of the shipboard power functions, such as switching, conversion, distribution and system operation and protection. This technology will support present and future surface ship and submarine platforms as a building block for increased use of electrical equipment. REPTILE is an initiative for the advancement of naval platform and battle-force systems through the discovery, invention, integration, leveraging and demonstration of innovative electrical technologies for naval sea and land applications. Aluminum Mesh is being used for explosion suppression applications to prevent destructive pressures from being generated after the explosive ignition of vapors and gases.

* *(U) For explanation of Test Articles, see Projects 32466 and 32735.

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY/BA-5**	R-1 ITEM NOMENCLATURE DD (X) Total Ship Systems Engineering/0604300N

B. (U) PROGRAM CHANGE SUMMARY:

	FY 2001	FY 2002	FY 2003
(U) FY 2002 President's Budget:	289.591	355.093	
(U) Approrpiated Value:	292.274	237.343	
(U) Adjustment's to FY 2001/2002 Appropriated Value/FY 2002 President's Budget:	-3.147	-119.858	
(U) FY 2003 President's Budget Submit:	286.444	235.235	717.397

(U) Funding:
The 2001 net decrease of $3.147M is due to a Small Business Innovative Research (SBIR) reduction (-$6.373M) and miscellaneous programmatic adjustments (+$3.226M). The FY 2002 decrease of $119.858M is for a Congressional Reduction (-$125.000M), Congressional Adds (+$7.250M), Section 8123 Management Reform Initiatives (-$2.097) and miscellaneous adjustment (-$0.011M).

(U) Schedule: See individual projects

(U) Technical Parameters: Technical parameters are contained in the DD 21 Operational Requirements Document (ORD) approved by JROC on 16 October 1997.

EXHIBIT R-2a, RDT&E Project Justification					DATE: February 2002				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-5**	**DD (X) Total Ship Systems Eng/0604300N**				PROJECT NAME AND NUMBER DD (X) System Design, Development & Integration [1] /32464				
COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	**146.940**	**(1) 133.265**	**618.246**	**853.683**	**1055.258**	**1042.623**	**754.234**	**CONT.**	**CONT.**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**CONT.**	**CONT.**

Notes: (1) Project formerly known as Design.
(2) (U) Funding for efforts directly related to DD (X) design and systems integration have been reprogrammed to this project from PE 0603513N, Projects 32469 and 32470 and PE 0604300N, Project 32465 in FY 2002 and out.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project encompasses efforts for the total ship system engineering development and integration of Hull, Mechanical and Electrical (HM&E), communications, electronics, command and control, combat, weapons and shipboard systems into the DD (X) class. These engineering development and integration efforts include systems engineering, analysis, software development, interface design, technical documentation, and system/subsystem testing to ensure fully functional systems integration. These efforts also include development and testing (factory, land-based and at-sea) of the following Engineering Development Models (EDMs): Total Ship Computing Enviroment, Advanced VLS, Integrated Deckhouse and Apertures, Autonomic Fire Suppression System, Infrared mock-ups, AGS magazine and Hull Form Scale Model. These systems engineering development efforts are required to ensure that DD (X) is a totally integrated ship system, delivering required warfighting technologies to the fleet within the reduced manning and cost goals.

1. (U) FY 2001 ACCOMPLISHMENTS:

- (U) ($104.519) Continued Initial System Design (Contract Phase II). Completed initial development of Smart Product Model virtual prototype for contract Phase II. This included development of the total ship computing architecture and computer programs that integrated Combat Systems to support reduced Navy manning and improved LCE&S concepts, HM&E, and administrative functions. Continued development of Smart Product Model virtual prototype to support contract and detailed design of DD (X).
- (U) ($30.434) Continued support of DD (X) Technical Team responsible for the participation, oversight and monitoring of the two industry designs during Contract Phase II and following downselect to one DD (X) industry team. Participated in/evaluated System Functional Review (SFR) and downselection. The Engineering team consisted of Government Labs, Universities and selected technical support contractors. The Technical Team provided the expertise to evaluate/support the DD (X) industry design in the areas of Combat Systems, HM&E, Signatures, C4ISR, Modeling and Simulation, Total Ship Computing, Test and Evaluation, Manning, and LCE&S.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	DD (X) System Design, Development & Integration/32464

- (U) ($5.880) Continued development of DD (X) LFT&E plan. The DD (X) LFT&E program focused on the following areas: Mission Recoverability, Magazine Protection, Damaged Seaway Survival, Selected Equipment Vulnerability, and Advanced Weapon Threat Effects. These areas addressed critical elements of DD (X) survivability as defined in the Test and Evaluation Master Plan (TEMP), the LFT&E Management Plan, and the Operational Requirements Document (ORD). Test results will be used to improve modeling and simulation capability and will support DD (X) design evaluations.
- (U) ($6.107) Continued identification and risk mitigation efforts in high risk areas such as manning, LCE&S, and Total Ship Computing. Continued Manning/Human Systems Integration (HSI) and LCE&S IPTs to address the impact of how industry-developed concepts will impact the future Navy support infrastructure in these functional areas. Reviewed and developed proposed policy changes as a result of DD (X) industry concepts that impact Navy manning and life cycle support structure as a result of FSC proposals.

2. (U) FY 2002 PLAN:

- (U) ($113.400) Continue Initial System Design (Contract Phase II), complete DD (X) downselect and begin DD (X) System Design (Contract Phase III). This includes system and subsystem development of the HM&E, C4ISR, total ship computing and software development, modeling and simulation (including Smart Product Model), and planning, development, and implementation of the life cycle support and engineering concepts. Contract Phase III also includes the planning and development of the test and evaluation infrastructure required for the first DD (X) ship.
- (U) ($13.110) Continue support of DD (X) Technical Team. The Technical Team provides the expertise to evaluate/support the DD (X) industry design in the areas of Combat Systems, HM&E, C4ISR, Modeling and Simulation, Total Ship Computing, and Test and Evaluation. Establish team to review and certify Full Service Contractor (FSC) software development.
- (U) ($2.781) Continue development of the DD (X) LFT&E plan. The DD (X) LFT&E program focuses on the following areas: Mission Recoverability, Magazine Protection, Damaged Seaway Survival, Selected Equipment Vulnerability, and Advanced Weapons Threat Effects. These areas address critical elements of DD (X) survivability as defined in the Test and Evaluation Master Plan (TEMP), the LFT&E Management Plan, and the Operational Requirements Document (ORD). Conduct a Live Fire event using a supersonic threat missile against a ship target with some portion of distributed shipboard systems such as firemain or electrical system intact and operating on the target ship.
- (U) ($3.974) Continue identification and risk mitigation efforts in high risk areas such as manning, LCE&S, and Total Ship Computing. Continue Manning/HSI and LCE&S IPTs to address the impact of how industry-developed concepts will impact the future Navy support infrastructure in these functional areas. Monitor the industry-developed risk watch list and evaluate as a mechanism for reporting risk metrics in DD (X) Aquisition reporting documentation. Review and develop proposed policy changes as a result of DD (X) industry concepts that impact Navy manning and life cycle support structure as a result of industry proposals.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER	
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	DD (X) System Design, Development & Integration/32464	

3. (U) FY 2003 PLAN:

- (U) ($541.740) Continue DD (X) System Design (Contract Phase III). This includes spiral design development, system and subsystem development of the HM&E, C4ISR, total ship computing and software development, modeling and simulation (including Smart Product Model), planning, development and implementation of the life cycle support and engineering concepts, and planning and development of the test and evaluation infrastructure required for the first DD (X) ship. Conduct Preliminary Design Review (PDR). Conduct Integrated Baseline Review (IBR) to establish the DD (X) Performance Management Baseline (PMB). Implement Earned Value Management System.
- (U) ($47.248) Continue support of the DD (X) Technical Team. The Technical Team provides the expertise to evaluate/support the DD (X) industry design in the areas of Combat Systems, HM&E, C4ISR, Modeling and Simulation, Total Ship Computing, and Test and Evaluation. Continue review and certification of the Full Service Contractor software development.
- (U) ($15.472) Execute to DD (X) LFT&E Management Plan. The DD (X) LFT&E program focuses on the following areas: Mission Recoverability, Magazine Protection, Damaged Seaway Survival, Selected Equipment Vulnerability, Advanced Weapons Threat Effects and required documentation. These areas address critical elements of DD (X) survivability as defined in the DD (X) Test and Evaluation Master Plan (TEMP) 1560 Rev A, the LFT&E Management Plan Change 1, and the Operational Requirements Document (ORD). In FY03, test results from a Live Fire test event planned for FY02 will be used to improve survivability modeling and simulation capabilities, support DD (X) design development, contribute to development of the next DD (X) Vulnerability Assessment Report (VAR). Additionally FY03 activities will include conduct of live fire testing consistent with the LFT&E Management Plan Change 2.
- (U) ($13.786) Continue identification and risk mitigation efforts in high-risk areas such as manning, LCE&S and Total Ship Computing. Continue Manning/ HSI and LCE&S Integrated Product Teams to address the impact of how the industry design will impact the future Navy support infrastructure in these functional areas. Monitor the industry-developed risk watch list and evaluate as a mechanism for reporting risk metrics in DD (X) Aquisition reporting documentation. Review and develop proposed policy changes as a result of the DD (X) industry design that impacts Navy manning and life cycle support structure.

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER	
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	DD (X) System Design, Development & Integration/32464	

B. (U) OTHER PROGRAM FUNDING SUMMARY:

COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
Shipboard System Component Dev/0603513N	**246.032**	**295.135**	**243.111**	**163.618**	**141.524**	**81.547**	**72.556**	CONT.	CONT.

C. (U) ACQUISITION STRATEGY:

(U) The DD (X) acquisition strategy encompasses five contract phases: Phase I – System Concepts, Phase II – Initial System Design, Phase III – System Design, Phase IV – Detail Design and Construction, and Phase V – Engineering and Logistics Life Cycle Support. The Navy awarded section 845/804 agreements for Phases I and II for two DD (X) Industry teams. Downselection to a single DD (X) Contractor team will occur in the 3rd quarter of FY 2002 to begin Contract Phase III.

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	DD (X) System Design, Development & Integration/32464

D. (U) SCHEDULE PROFILE:

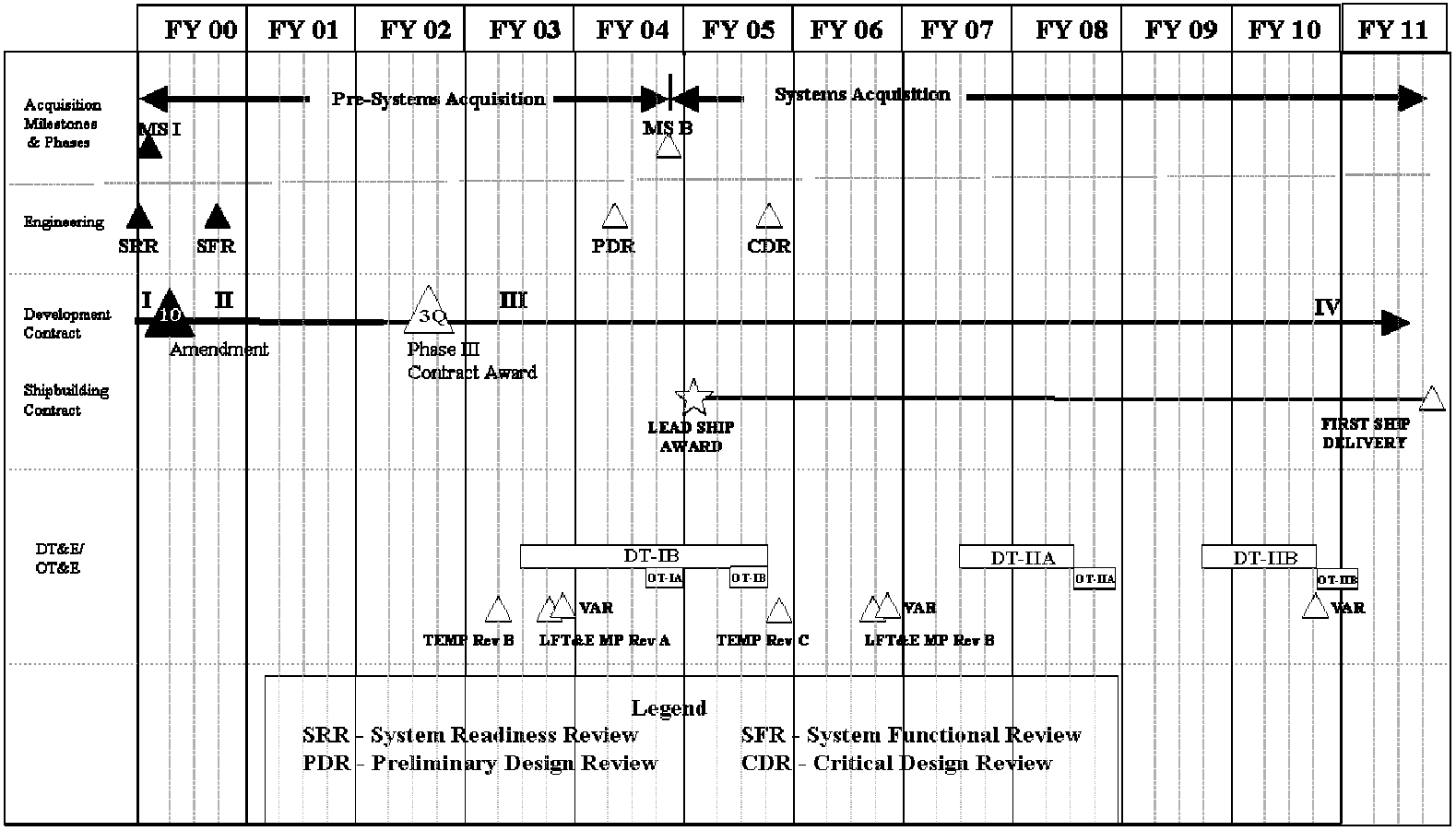

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2002**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N/BA-5**

PROGRAM ELEMENT: **DD (X) Total Ship Systems Eng/0604300N**

PROJECT NAME AND NUMBER: DD (X) System Design, Development & Integration/32464

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Initial System Concepts - Phase I	Sec 845/804	DD (X) Industry Team	54.800	0.000	N/A	0.000	N/A	0.000	N/A	0.000	54.800	
Initial System Design/System, Subsystem Design - Phase II	Sec 845/804	DD (X) Industry Team	0.000	104.519	Various	35.400	Various	0.000	N/A	0.000	139.919	
Primary H/W Development - Phase III	CPIF	DD (X) Design Agent	0.000	0.000	N/A	78.000	3QFY02	510.000	1QFY03	CONT.	CONT.	
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Subtotal Product Development			54.800	104.519		113.400		510.000		CONT.	CONT.	

Remarks: Funding for the DD 21 industry team for efforts directly related to DD 21 design and systems integration has been reprogrammed to this project from PE 0603513N, Projects 32469 and 32470 and from PE 0604300N, Project 32465 in FY 2002 and out.

Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks: (U) Support costs during this period are rolled up in development contracts costs.

Exhibit R-3 Cost Analysis (page 2) | DATE: February 2002

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N/BA-5** | PROGRAM ELEMENT: **DD (X) Total Ship Systems Eng/0604300N** | PROJECT NAME AND NUMBER: DD (X) System Design, Development & Integration/32464

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Live Fire Test & Evaluation	Sec 845/804	DD (X) Industry Teams	2.425	2.450	Various	0.000	N/A	0.000	N/A	0.000	4.875	
	CPIF	DD (X) Design Agent	0.000	0.000	N/A	0.000	N/A	4.100	12/02	CONT.	CONT.	
	WR	NSWC CD Bethesda, MD	6.832	3.430	11/00	0.000	N/A	4.550	11/02	CONT.	CONT.	
	WR	NSWC DD Dahlgren, VA	0.200	0.000	11/00	0.000	N/A	0.750	11/02	CONT.	CONT.	
	Various	Various	2.369	0.000	N/A	2.781	02/02	6.072	11/02	CONT.	CONT.	
Subtotal T&E			11.826	5.880		2.781		15.472		CONT.	CONT.	
Remarks:												
Contractor Engineering Support	GSA/FFP	Anteon Arlington,VA	3.300	1.500	11/00	2.000	02/02	17.817	11/02	CONT.	CONT.	
	GSA	BAE Systems, Rockville, MD	2.000	0.000	N/A	0.000	N/A	0.000	N/A	CONT.	CONT.	
	GSA	GRCI, Falls Church, VA	0.000	1.500	11/00	1.000	02/02	3.842	11/02	CONT.	CONT.	
	Misc.	Various	1.800	1.800	11/00	0.500	02/02	3.665	11/02	CONT.	CONT.	
Government Engineering Support	WR	NSWC DD Dahlgren, VA	24.790	12.082	11/00	3.860	02/02	25.105	11/02	CONT.	CONT.	
	WR	NSWC CD Bethesda, MD	7.080	7.300	11/00	2.036	02/02	14.995	11/02	CONT.	CONT.	
	WR	NSWC CR Crane, IN	2.757	0.635	11/00	0.320	02/02	1.500	11/02	CONT.	CONT.	
	WR	NSWC PHD Pt Hueneme,CA	1.870	1.615	11/00	0.720	02/02	4.500	11/02	CONT.	CONT.	
	WR	SSCSD San Diego, CA	2.640	1.871	11/00	1.146	02/02	2.204	11/02	CONT.	CONT.	
	WR	NUWC/N Newport, RI	2.005	0.850	11/00	0.000	N/A	1.500	11/02	CONT.	CONT.	
	WR	NSWC/PC Panama City, FL	0.000	0.800	11/00	0.180	02/02	1.240	11/02	CONT.	CONT.	
	Various	Gov't Activities	6.680	1.734	11/00	2.703	02/02	6.200	11/02	CONT.	CONT.	
University Research	CPFF	APL/JHU Laurel, MD	4.072	2.366	11/00	1.919	02/02	4.775	11/02	CONT.	CONT.	
Program Management Support	Various	Various	7.271	1.738	11/00	0.500	02/02	3.931	11/02	CONT.	CONT.	
Travel	Various	Various	0.762	0.750	Various	0.200	02/02	1.500	11/02	CONT.	CONT.	
Subtotal Management			67.027	36.541		17.084		92.774		CONT.	CONT.	
Remarks:												
Total Cost			133.653	146.940		133.265		618.246		CONT.	CONT.	
Remarks:												

EXHIBIT R-2a, RDT&E Project Justification						DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-5**	PROGRAM ELEMENT NAME AND NUMBER **DD (X) Total Ship Systems Eng/0604300N**			PROJECT NAME AND NUMBER DC/Survivability/32465					
COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	**6.060**	**(1) 0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**CONT.**	**CONT.**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**CONT.**	**CONT.**

Notes: (1) (U) Funding for this project has been reprogrammed to PE 0603513N, Project 32465 in FY 2002 and out.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project funds the engineering development of DD (X) ship protection and damage control/firefighting systems and features that reduce vulnerability against conventional weapons (e.g., missiles, mines, torpedoes) and peacetime accidents that enable an effective recovery of mission capability. The requirements for this project are based on the need to develop affordable, balanced DD (X) survivability designs that address recent wartime lessons learned and meet established DD (X) survivability goals.

(U) Additionally, this project addresses survivability requirements applicable to the existing fleet and other ship acquisition programs (e.g., LPD 17, CVX, LHX). Development areas include: 1) computer-based damage control systems that enable reduced manning through systems automation, minimizing the need for manual Damage Control (DC) actions; 2) personnel protection systems/devices that increase endurance and reduce stress on DC personnel during sustained operations; 3) tactics and doctrine for attacking major threat, ship threatening conflagration; 4) damage tolerant structures that increase hull girder survival against underwater explosions; and 5) system protection devices that enable continued system operation after damage. In FY 2001, PEO (S) was given funding to perform studies related to Power Node Control Centers (PNCCs). PNCCs have the potential to integrate all of the shipboard power functions, such as switching, conversion, distribution and system operation and protection. This technology would support present and future surface ship and submarine platforms as a building block for increased use of electrical equipment. The PNCC concept can potentially improve survivability by enabling an electrical system architecture that can locate and clear faults automatically, provide continuity of power through fast switching and rerouting of power, and provide electrical nodes capable of programmable, multi-function, operations.

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	DC/Survivability/32465

1. (U) FY 2001 ACCOMPLISHMENTS:

- (U) ($0.416) Continued development of the pre-hit Configuration Management capability including development of post-hit electrical fault clearing approaches for medium voltage systems. Initiated planning for electrical system T&E to evaluate system isolation performance under projected threat conditions. Completed development of a lightweight firefighting/boundary suit ensemble.
- (U) ($2.531) Completed initial System Design and engineering of DD (X) DC/Survivability systems. Began system/subsystem development of DC/Survivability systems.
- (U) ($0.200) Continued design of damage tolerant hull girder configurations that limit holing and flooding and prevent ship sinking from close-in UNDEX.
- (U) ($2.913) Power Node Control Centers. Performed studies to assess the impact of using PNCCs on solid state breakers within the IPS architectures. Examined how PNCC concept could be integrated into the IPS design. Designed/developed engineering hardware model.

2. (U) FY 2002 PLAN: See PE 0603513N, Shipboard System Component Development.

3. (U) FY 2003 PLAN: See PE 0603513N, Shipboard System Component Development.

B. (U) OTHER PROGRAM FUNDING SUMMARY:

COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
Shipboard System Component Dev/0603513N	**246.032**	**295.135**	**243.111**	**163.618**	**141.524**	**81.547**	**72.556**	CONT.	CONT.

C. (U) ACQUISITION STRATEGY:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2002**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-5**	PROGRAM ELEMENT NAME AND NUMBER **DD (X) Total Ship Systems Eng/0604300N**	PROJECT NAME AND NUMBER DC/Survivability/32465	

D. (U) SCHEDULE PROFILE:

FY 2001	FY 2002
4Q Electrical Options (Prel)	3Q PNCC hardware model
1Q DD (X) System/Subsystem Development of DC/Survivability systems	
4Q Lightweight Firefighting Boundary Suit	

CLASSIFICATION: **UNCLASSIFIED**

Exhibit R-3 Cost Analysis (page 1)						DATE: **February 2002**				
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT				PROJECT NAME AND NUMBER				
RDT&E, N/BA-5		**DD (X) Total Ship Systems Eng/0604300N**				DC/Survivability/32465				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	SPD/Phila. PA	0.000	2.200	02/02			0.000	2.200	
Ancillary Hardware Development										
Systems Engineering										
Product Development	Sec 845/804	DD (X) Industry Team	4.599	2.389	11/00			0.000	6.988	
	WR	NSWC CD Bethesda, MD	3.871	0.844	06/01			CONT.	CONT.	
	Various	Other Govt. Activities	5.251	0.627	Various			CONT.	CONT.	
Subtotal Product Development			13.721	6.060				0.000	CONT.	
Remarks: For FY 2002 and out, this effort has been reprogrammed to PE 0603513N, Project 32465. See those exhibits for FY 02 information.										
Development Support Equipment										
Software Development										
Training Development										
Integrated Logistics Support										
Configuration Management										
Technical Data										
GFE										
Subtotal Support			0.000	0.000		0.000		0.000	0.000	
Remarks:										

Exhibit R-3 Cost Analysis (page 2)						DATE: **February 2002**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-5**		PROGRAM ELEMENT **DD (X) Total Ship Systems Eng/0604300N**				PROJECT NAME AND NUMBER DC/Survivability/32465				
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation										
Operational Test & Evaluation										
Tooling										
GFE										
Subtotal T&E			0.000	0.000		0.000		0.000	0.000	
Remarks:										
Contractor Engineering Support										
Government Engineering Support										
Program Management Support										
Travel										
Labor (Research Personnel)										
Overhead										
Subtotal Management			0.000	0.000		0.000		0.000	0.000	
Remarks:										
Total Cost			13.721	6.060		0.000		CONT.	CONT.	
Remarks:										

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-5**	PROGRAM ELEMENT NAME AND NUMBER **DD (X) Total Ship Systems Eng/0604300N**	PROJECT NAME AND NUMBER Multi-Function Radar (MFR) / 32466	

COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	**82.104**	**66.073**	**47.346**	**23.831**	**12.847**	**10.286**	**6.997**	**CONT.**	**CONT.**
RDT&E Articles Qty	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**CONT.**	**CONT.**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides funds for the development of the Multi-Function Radar (MFR) in association with DD (X) and CVN 77. This provides DD (X) and other applicable surface ships with an affordable, high performance radar for ship defense well into the next century. This system is based on solid state, active array radar technology and will provide search, detect, track, and weapon control functions while dramatically reducing manning and life cycle costs associated with multiple systems that perform these functions today. The MFR will achieve a level of force protection that greatly enhances ship defense capability against all threats envisioned in the littoral environment. A Test Article will be available in FY 02 to support DT/OA land-based and at-sea testing.

1. (U) FY 2001 ACCOMPLISHMENTS:
- (U) ($71.479) Continued E&MD phase of MFR. Continued EDM hardware procurement and start fabrication. Transmit/Receive (T/R) Module Production Readiness Review completed.
- (U) ($4.003) Provided Government Engineering Services support for E&MD. Performed oversight and assessment of MFR E&MD efforts.
- (U) ($5.000) Began evaluation, planning, documentation and scheduling for FY 02 Developmental Tests and Operational Assessment (DT/OA).
- (U) ($1.622) Provided Program Management in support of the above program milestones.

2. (U) FY 2002 PLAN:
- (U) ($52.800) Continue E&MD phase of MFR hardware & software. Conduct Factory Testing. Provide test and integration support for Navy Land Based Testing.
- (U) ($5.463) Government Engineering Services and program management support for E&MD. Perform oversight and assessment of MFR E&MD efforts.
- (U) ($6.167) Continue evaluation, planning, documentation and scheduling for DT/OA.
- (U) ($1.643) Provide Program Management in support of the above program milestones.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	Multi-Function Radar (MFR) / 32466

3. FY 2003 PLAN:
- (U) ($17.820) Continue E&MD phase of MFR. Continue Factory Integration Testing. Deliver EDM to Navy Land Based Test Site. Provide test and integration support for Navy Land Based Testing. Begin MFR Transition to Production efforts.
- (U) ($8.380) Government Engineering Services and program Management support for E&MD. Perform oversight and assessment of MFR E&MD efforts. Evaluate EDM delivered unit. Support Navy Land Based Testing. Support MFR Transition to Production efforts.
- (U) ($19.431) Continue evaluation, planning, documentation and scheduling for DT/OA. Conduct DT/OA. Begin transition to production, including the development, fabrication, documentation and engineering support associated with the following efforts: (1) high speed automated manufacturing equipment, (2) test equipment and associated test program sets, (3) systems engineering and test engineering support and (4) failure analysis, parts engineering and configuration management.
- (U) ($1.715) Provide Program Management in support of the above program milestones.

B. (U) OTHER PROGRAM FUNDING SUMMARY:

COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
Shipboard System Component Dev/0603513N	**246.032**	**295.135**	**243.111**	**163.618**	**141.524**	**81.547**	**72.556**	CONT.	CONT.

C. (U) ACQUISITION STRATEGY:

(U) In FY 1999, the Government selected a single MFR contractor (Raytheon) to begin Phase III E&MD. EDM delivery will be in FY 2002.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-5**	PROGRAM ELEMENT NAME AND NUMBER **DD (X) Total Ship Systems Eng/0604300N**	PROJECT NAME AND NUMBER Multi-Function Radar (MFR) / 32466

D. (U) SCHEDULE PROFILE:

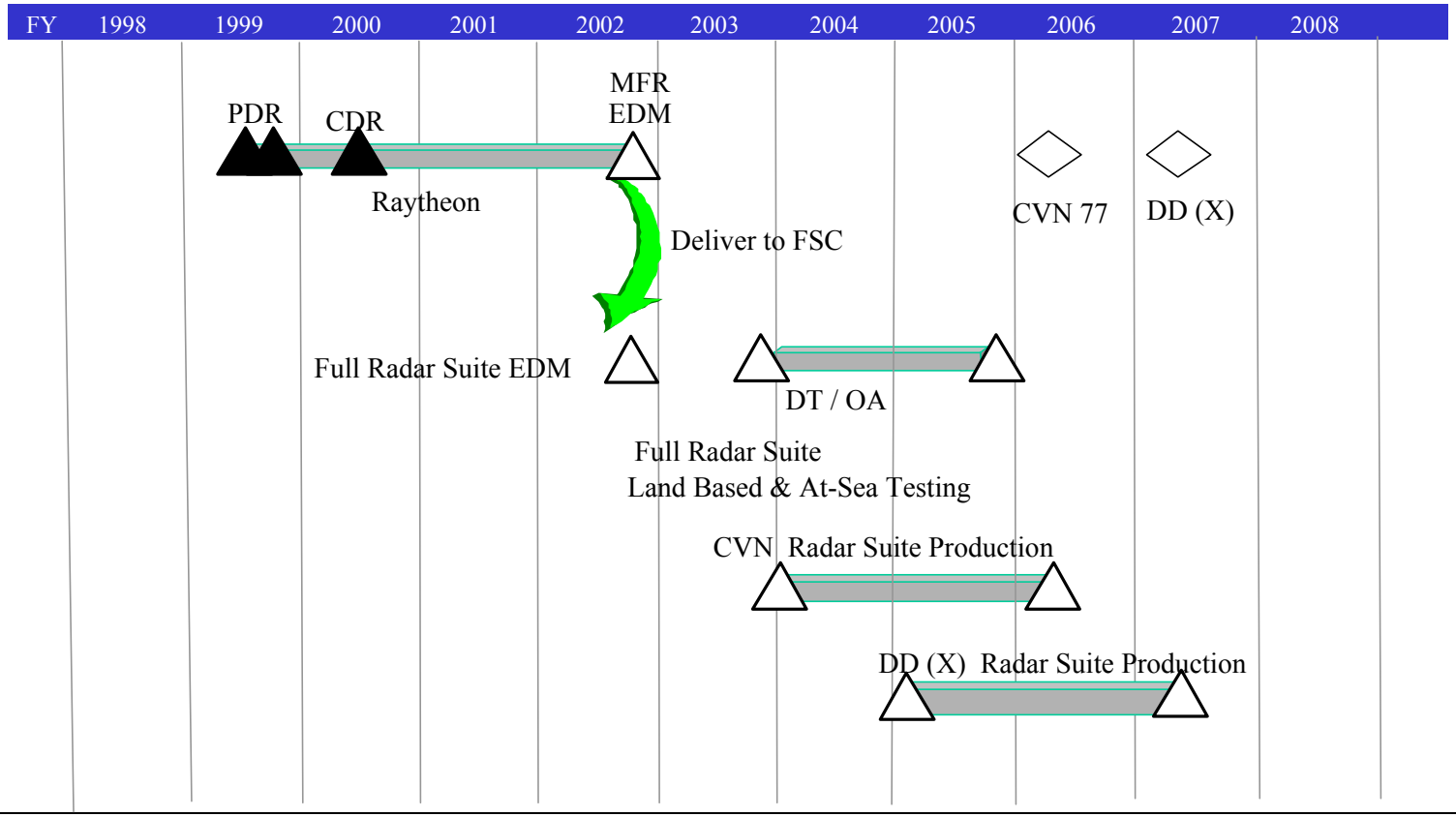

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2002**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NAME AND NUMBER
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	Multi-Function Radar (MFR) / 32466

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPAF/IF	Prime E&MD (Raytheon)	50.400	71.479	11/00	52.800	Various	17.820	12/02	CONT.	CONT.	195.000
	Sec 845/804	DD (X) Industry Team	2.434	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.434	
	CP	Various	12.414	0.000	N/A	0.000	N/A	0.000	N/A	0.000	12.414	
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Subtotal Product Development			65.248	71.479		52.800		17.820		CONT.	CONT.	

Remarks:

Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks:

Exhibit R-3 Cost Analysis (page 2)

DATE: **February 2002**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N/BA-5**

PROGRAM ELEMENT: **DD (X) Total Ship Systems Eng/0604300N**

PROJECT NAME AND NUMBER: Multi-Function Radar (MFR) / 32466

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various		5.000	11/00	3.089	02/02	5.431	11/02	CONT.	CONT.	
	TBD	SCSC Wallops Isd,VA	0.000	0.000	N/A	1.176	02/02	8.000	11/02	CONT.	CONT.	
	SS/CPFF	JHU/APL Laurel, MD	0.000	0.000	N/A	0.872	02/02	2.000	11/02	CONT.	CONT.	
	WR	NSWC PHD Pt Hueneme,CA	0.000	0.000	N/A	1.030	02/02	4.000	11/02	CONT.	CONT.	
Subtotal T&E			0.000	5.000		6.167		19.431		CONT.	CONT.	
Remarks:												
Government Engineering Support	WR	NSWC DD Dahlgren, VA	2.000	1.500	11/00	1.567	02/02	1.650	11/02	CONT.	CONT.	
	WR	NSWC PHD Pt Hueneme,CA	1.000	0.800	11/00	0.964	02/02	1.015	11/02	CONT.	CONT.	
	SS/CPFF	JHU/APL Laurel, MD	1.000	1.000	11/00	1.220	02/02	1.275	11/02	CONT.	CONT.	
	WR	Various	2.197	0.703	11/00	1.712	02/02	4.440	11/02	CONT.	CONT.	
Program Management Support	C/CPFF	Various	0.600	1.622	11/00	1.643	02/02	1.715	11/02	CONT.	CONT.	
Travel												
Subtotal Management			6.797	5.625		7.106		10.095		CONT.	CONT.	
Remarks:												
Total Cost			72.045	82.104		66.073		47.346		CONT.	CONT.	
Remarks:												

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002	
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER			PROJECT NAME AND NUMBER				
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**			Volume Search Radar (VSR) / 32735				

COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	Cost to Complete	Total Cost
Project Cost	**51.340**	**28.711**	**51.805**	**46.135**	**37.728**	**0.000**	**0.000**	**CONT.**	**215.719**
RDT&E Articles Qty	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**CONT.**	**CONT.**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project provides funds for the development of the Volume Search Radar (VSR) in association with DD (X). This provides DD (X) and other applicable surface ships with an affordable, high performance air search radar. This system is based on solid state, active array radar technology and will provide search, detect, and track while dramatically reducing manning and life-cycle costs associated with multiple systems that perform these functions today. VSR provides long range above-the-horizon surveillance and timely cueing to MFR. A Test Article will be available in FY 02 to support DT/OA land-based and at-sea testing.

1. (U) FY 2001 ACCOMPLISHMENTS:
- (U) ($47.000) Completed initial Critical Design Reviews (CDRs) in early FY01 for both DD (X) competing teams and continued development efforts.
- (U) ($4.128) Provided Government Engineering Services support for Engineering and Manufacturing Development (E&MD). Performed oversight and assessment of VSR E&MD efforts and system integration.
- (U) ($0.212) Provided Program Management in support of the above program milestones.

2. (U) FY 2002 PLAN:
- (U) ($26.100) Continue Phase II development efforts. After DD (X) downselect, the Full Service Contractor (FSC) will procure Engineering Development Model (EDM) hardware and start fabrication. Continue E&MD phase of VSR, and conduct factory testing. Provide test and integration planning support for Navy Land Based Testing.
- (U) ($0.929) Provide Government Engineering Services support for E&MD. Perform oversight and assessment of MFR E&MD efforts. Support Navy Land Based Test Planing.
- (U) ($1.097) Conduct VSR test and evaluation, planning, documentation and scheduling.
- (U) ($0.585) Provide Program Management in support of the above program milestones.

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NAME AND NUMBER	PROJECT NAME AND NUMBER
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	Volume Search Radar (VSR) / 32735

3. (U) FY 2003 PLAN:
- (U) ($38.000) Continue E&MD phase of VSR and deliver EDM to the Navy Land Based Test Site. Provide test and integration support for Navy Land Based Testing.
- (U) ($7.213) Provide Government Engineering Services support for E&MD. Perform oversight and assessment of MFR E&MD efforts. Evaluate delivered EDM unit. Support Navy Land Based Testing.
- (U) ($5.382) VSR Test and Evaluation, planning, documentation and scheduling.
- (U) ($1.210) Provide Program Management in support of the above program milestones.

B. (U) OTHER PROGRAM FUNDING SUMMARY

COST ($ in Millions)	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	To Complete	Total Cost
Shipboard System Component Dev/0603513N	**246.032**	**295.135**	**243.111**	**163.618**	**141.524**	**81.547**	**72.556**	CONT.	CONT.

C. (U) ACQUISITION STRATEGY:

(U) Downselection to a single DD (X) Contractor team to occur in the 3rd qtr of FY2002. The DD(X) Design Agent will initiate fabrication delivery of the VSR EDM in FY 2003. MFR/VSR Radar Suite DT/OA is anticipated in FY 2003 through FY 2005.

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2002
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N/BA-5**	PROGRAM ELEMENT NAME AND NUMBER **DD (X) Total Ship Systems Eng/0604300N**	PROJECT NAME AND NUMBER Volume Search Radar (VSR) / 32735	

D. (U) SCHEDULE PROFILE:

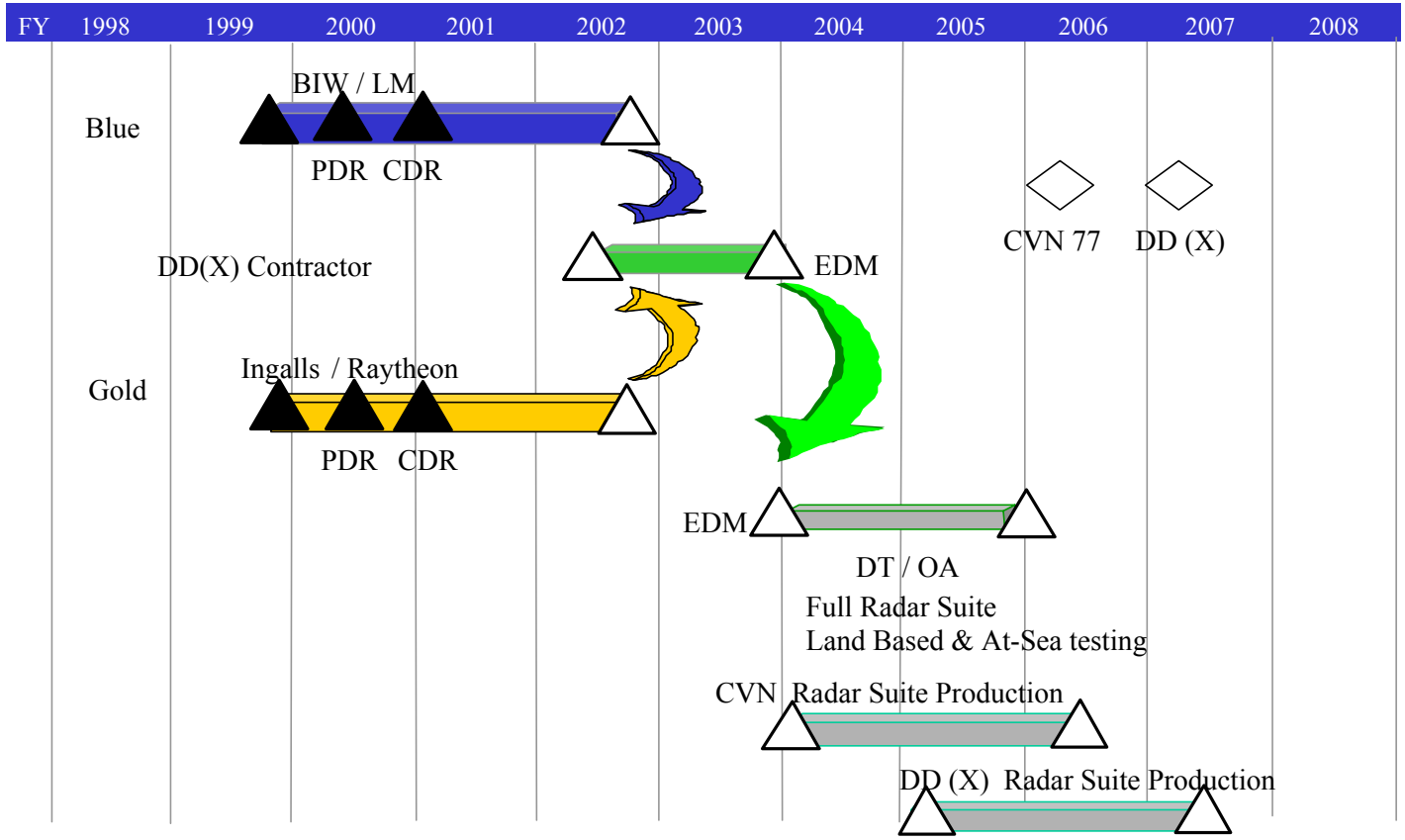

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2002**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT	PROJECT NAME AND NUMBER
RDT&E, N/BA-5	**DD (X) Total Ship Systems Eng/0604300N**	Volume Search Radar (VSR) / 32735

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	Sec 845/804	DD (X) Industry Team	0.000	47.000	N/A	3.100	Various	0.000	N/A	0.000	50.100	
	CPIF	DD(X) Design Agent	0.000	0.000	N/A	23.000	3QFY02	38.000	1QFY03	CONT.	CONT.	
Ancillary Hardware Development												
Systems Engineering												
Licenses												
Tooling												
GFE												
Subtotal Product Development			0.000	47.000		26.100		38.000		CONT.	CONT.	

Remarks:

Development Support Equipment												
Software Development												
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	

Remarks:

Exhibit R-3 Cost Analysis (page 2)											DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NAME AND NUMBER							
RDT&E, N/BA-5			**DD (X) Total Ship Systems Eng/0604300N**			Volume Search Radar (VSR) / 32735							
Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 01 Cost	FY 01 Award Date	FY 02 Cost	FY 02 Award Date	FY 03 Cost	FY 03 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WR	NSWC DD Dahlgren, VA				0.000	02/02	1.000	12/02	CONT.	CONT.	
	WR	NSWC PHD Port Hueneme, CA				0.000	N/A	1.000	12/02	CONT.	CONT.	
	TBD	SCSC Wallops Island, VA				0.600	02/02	2.000	12/02	CONT.	CONT.	
	TBD	Various				0.497	Various	1.382	12/02	CONT.	CONT.	
Operational Test & Evaluation												
Tooling												
GFE												
Subtotal T&E			0.000	0.000		1.097		5.382		CONT.	CONT.	
Remarks: No Developmental or Operational Test and Evaluation will be conducted during FY 1999 through FY 2001.												
Government Engineering Support	WR	NSWC DD Dahlgren, VA	0.000	1.443	11/00	0.203	02/02	0.675	12/02	CONT.	CONT.	
	WR	Various	0.000	2.685	11/00	0.726	02/02	6.538	12/02	CONT.	CONT.	
Program Management Support	CPFF	Various	0.000	0.212	11/00	0.585	02/02	1.210	12/02	CONT.	CONT.	
Travel												
Subtotal Management			0.000	4.340		1.514		8.423		CONT.	CONT.	
Remarks:												
Total Cost			0.000	51.340		28.711		51.805		CONT.	CONT.	
Remarks:												