CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**					R-1 ITEM NOMENCLATURE 0603513N/Shipboard System Component Development			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Total PE Cost	**44.476**	**49.993**	**9.450**	**9.561**	**9.606**	**9.622**	**9.791**	**9.967**
2465/DC/Survivability	**4.009**	**1.893**	**1.701**	**1.736**	**1.772**	**1.790**	**1.821**	**1.852**
2468/Undersea Warfare (USW)	**3.241**	**1.271**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
2469/ Open Systems Architecture (OSA)	**2.362**	**1.764**	**1.626**	**1.669**	**1.710**	**1.751**	**1.779**	**1.811**
2470/Integrated Topside Design (ITD)	**2.530**	**0.475**	**0.415**	**0.420**	**0.431**	**0.435**	**0.442**	**0.449**
2471/Integrated Power Systems (IPS)	**10.580**	**7.115**	**5.708**	**5.736**	**5.693**	**5.646**	**5.749**	**5.855**
4019/Radar Upgrades	**0.000**	**1.563**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
Congressional Add increases 9999/Congressional Adds	**21.754**	**35.912**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This PE funds the development of shipboard system components and technologies for the future surface combatant family of ships and focuses on the following efforts: (1) development of DDG 1000 specific and future surface combatant survivability and damage control/firefighting systems and features that reduce vulnerability against weapons, (2) demonstration and validation of technology through build-test-build process for surface sonar and combat system application, (3) implements modular standard open systems architecture at the total ship/system level and supports reduced manning efforts through automation, (4) develops technologies to achieve a total integrated topside design focused on DDG 1000 and other future surface ships, (5) supports the Integrated Power System effort that provides total ship electric power, including electric propulsion , power conversion and distribution, combat system and mission load interfaces to the electric power system and (6) future upgrades/technology insertion efforts for the Dual Band Radar (DBR) system.

The following Congressional adds are contained in this Program Element:

FY 06 Congressional Adds-

-Project 9999- Congressional Adds: $21.754-This project consists of the following FY 06 Congressional adds: MTTC/IPI and National Surface Treatment Center, Amorphous metal permanent magnet generator, Carbon Foam program, Intelligent Systems Consortium NASEA-Carderock/SHSU, Alternative composition-low cost pipe for shipboard application, Flash detection system for Navy 501 shipboard engines, Integrated power distribution system for next generation all-electric ship, Smart machinery spaces system, and Water mist fire protection systems.

FY 07 Congressional Adds-

-Project 9999- Congressional Adds: $35.912-This project consists of the following FY 07 Congressional adds: MTTC/IPI and National Surface Treatment Center, Carbon Foam program, Intelligent Systems Consortium NASEA-Carderock/SHSU, Smart machinery spaces system, Water mist fire protection systems, Advanced combatant materials reserach, Advanced fluid controls for shipboard applications, Advanced repair technology for expeditionary navy, Advanced steam turbine, Air gun shock testing of naval vessels, Braided ropes for US Navy Ship salvage, Carrier strike group forward sensor network, Critical on demand infomation support for shipboard maintenance, Fuel contaminate detection system, High efficiency quiet electric drive, Integrated power system converter, Propulsor manufacturing technology development and Smart valve.

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4**	R-1 ITEM NOMENCLATURE 0603513N/Shipboard System Component Development

B. (U) PROGRAM CHANGE SUMMARY:

(U)Funding:	FY 2006	FY 2007	FY 2008	FY 2009
Previous President's Budget:(FY 07 Pres Controls)	50.918	14.135	16.686	16.828
Current President's Budget: (FY08 Pres Controls)	44.476	49.993	9.450	9.561
Total Adjustments	-6.442	35.858	-7.236	-7.267
(U)Summary of Adjustments				
Congressional Reprogramming	-6.950			
Congressional undistributed adjustments	-0.209	-0.192	0.026	0.105
Congressional rescissions	-0.090			
SBIR/STRR Transfer	-0.270			
Reprogrammings	1.119			
Technical Adjustment			-5.592	-5.679
Undistributed general reductions			-0.003	-0.010
Congressional Add increases		36.050		
Program adjustments	-0.042		-1.667	-1.683
Subtotal	-6.442	35.858	-7.236	-7.267

(U)Schedule:

Not Applicable

(U)Technical:

Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development					PROJECT NUMBER AND NAME 2465/DC/Survivability		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**4.009**	**1.893**	**1.701**	**1.736**	**1.772**	**1.790**	**1.821**	**1.852**
RDT&E Articles Qty	**0**	**0**	**0**	**0**		**0**	**0**	**0**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project funds development of DDG 1000 specific and future surface combatant survivability and damage control (DC)/ firefighting systems and features that reduce vulnerability against weapons (e.g., missiles, mines, torpedoes) and enables effective recovery of mission capability under reduced manning conditions. Additionally, this project supports development of systems that reduce susceptibility to magnetic and acoustic influence mines. The requirements for this project are based on the need to develop affordable, balanced survivability designs that address recent wartime lessons learned and emerging and future threats.

(U) System development areas include: 1) development of electrical fault isolation control methods that enable the rapid detection and isolation of combat-induced faults ensuring an effective DC response after damage, 2) wireless machinery control system technologies that will reduce installation costs through the elimination of wires and significantly increase the survivability of control systems ensuring the availability of mission critical systems following damage, and 3) development of electromagnetic signature reduction technologies that provide for jamming sweep resistant magnetic influence mines using advanced degaussing and impressed cathodic protection systems and a closed-loop deamping system that uses existing cathodic protections systems to reduce the near field electric signatures emanating from a steel hulled surface ship.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2465/DC/Survivability

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.265	0.300	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) In FY 06, initiated development of fault isolation control system approaches/ algorithms for medium voltage electrical systems that enable bus level combat induced faults to be rapidly isolated ensuring power to combat systems. Complete development in FY 07 and transition to the DDG 1000 program.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.225	0.800	0.701	0.522
RDT&E Articles Quantity	0	0	Congressional Add increases	0

(U) In FY 06 through 07, develop wireless machinery control system approaches and architectures that significantly improve survivability and reduce installation costs through the eliminatio of cabling. In FY 06, conducted a study to quantify the cost savings associated with wireless control and perfomed a live fire demonstration to assess the impact on fire and smoke on wireless transmission. In FY 07 through FY 09, install a wireless control system aboard a decommissioned ship and demonstrate long term performance

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.304	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) In FY 06 completed development of a low cost prototype shock testing device for qualifying COTS equipment. Transition to DDG 1000.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2465/DC/Survivability

B. Accomplishments/Planned Program (Cont.)

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.215	0.793	1.000	1.214
RDT&E Articles Quantity	0	0	0	0

(U) In FY 06 demonstrated a control system upgrade to the advanced degaussing system aboard DDG 76, USS Higgins that provided for a low electromagnetic signature during ship rolling conditions by reducing eddy currents ; finalize software in FY 07 and transition to DDG 1000 and LPD -17 programs.

In FY 06 completed development of an initial rapid prototype that identified safe operating areas as a function of mine threat . In FY 07 complete rapid prototype code development.

In FY08 initiate development of advanced electromagnetic (EM) signature reduction technologies including development of a closed-loop deamping system that reduces the near field electric signature and technologies that provide for jamming magnetically influenced mines. In FY 08 through FY 09, transition the ONR sponsored Organic Mine Jamming effort and develop algorithms that will generate jamming signals using existing shipboard EM reduction systems. In FY 08 and 09 conduct an EM ship vulnerability assessment for the electric mine threat and develop closed loop deamping system performance requirements and a preliminary system architecture.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2465/DC/Survivability

C. (U) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. ACQUISITION STRATEGY:

E. (U) MAJOR PERFORMERS:

(U) Government Field Activities - Naval Surface Warfare Center, Carderock, Md.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: **February 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2465/DC/Survivability									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	CPAF	DDG 1000 Design Agent	1.500	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	1.500	1.500
Ancillary Hardware Development														
Product Development	WX	NSWC CD Bethesda, MD	24.193	4.009	12/05	1.893	12/06	1.701	12/07	1.736	12/08	CONT	CONT	
	Various	Other Contractors	5.251	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	5.251	
Ship Integration													0.000	
Ship Suitability													0.000	
Systems Engineering													0.000	
Training Development													0.000	
Licenses													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Product Development			30.944	4.009		1.893		1.701		1.736		CONT	CONT	1.500

Congressional Add increases

Remarks:

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

Remarks:

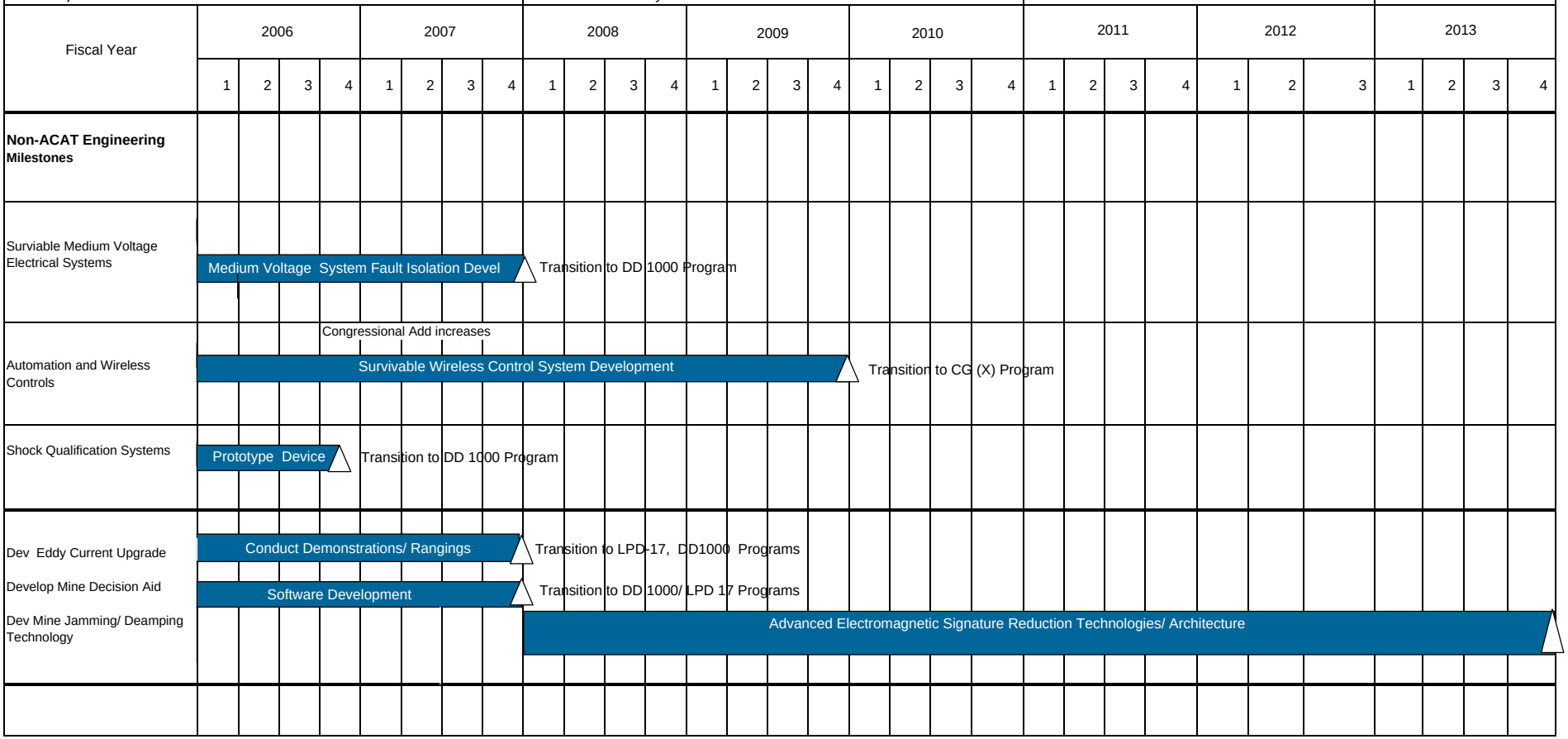
CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2465/DC/Survivability								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													0.000	
Operational Test & Evaluation													0.000	
Live Fire Test & Evaluation													0.000	
Test Assets													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			0.000	0.000						0.000		0.000	0.000	
Remarks:														
Contractor Engineering Support	GSA/FFP	Anteon Arlington, VA	0.234	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.234	0.234
Government Engineering Support	VAR	Othe Gov't Activities	0.835	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.835	
Program Management Support	WX	NSWC CD Bethesda, MD	0.075	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.075	
Travel														
Labor (Research Personnel)	CPFF	Various	0.121	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	0.121	
SBIR Assessment														
Subtotal Management			1.265	0.000		0.000				0.000		0.000	1.265	0.234
Remarks:														
Total Cost			32.209	4.009		1.893		1.701		1.736		CONT	CONT	1.734
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-4** | PROJECT NUMBER AND NAME: 2465/DC/Survivability



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2465/DC/Survivability			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Develop Med Voltage Control Algorithms	1-4Q (prelim)	1-4Q(final)						
Conduct Wireless Control System Live Fire Demo	1-3Q							
Develop Wireless Control System Architectures		1-4Q						
Conduct Wireless Control Shipboard Demonstrations			1-4Q	1-4Q				
Transition COTS Shock Qual'n Test Device Prototype	1-4Q							
Develop Eddy Current Compensation Algorithm	1-4Q (prelim)	1-4Q(final)						
Conduct Eddy Current Demonstration(s)	1-4Q							
Develop Mine Decision Aid Rapid Prototype	1-3Q (prelim)	1-4Q(final)						
Develop Mine Jamming Algorithms			1-4Q (prelim)	1-4Q(final)				
Conduct Mine Jamming Shipboard Demonstrations		Congressional Add increases			1-4Q	1-4Q		
Integrate Mine Jamming and Adv Degaussing Systems							1-4Q	1-4Q
Conduct De-Amping System Threat Assessment			1-4Q					
Develop Prelim De-Amping System Architecture				1-4Q				

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development					PROJECT NUMBER AND NAME 2468/Undersea Warfare		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**3.241**	**1.271**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Undersea Warfare (USW) project provides advanced development demonstration and validation of technology through a build-test-build process for potential surface sonar and combat system application. Efforts focus on resolution of technical issues associated with providing capability against the year 2010 and beyond threat with emphasis on shallow water/littoral area USW and on Demonstration and Validation (DEM/VAL) of DDG 1000 Integrated Undersea Warfare (IUSW-21) Advanced Development Model (ADM). The key technology areas being investigated include: (1) improvements in signal processing, (2) advanced information processing, (3) multi-sensor data fusion, (4) towed array technology, (5) hull array technology and (6) transducer technology to improve target detection and classification performance and reduce system manning requirements for anti-submarine, torpedo defence and in-stride mine avoidance. FY 2006 and subsequent efforts will focus on major technological and performance thrusts for DDG 1000 USW, which will define surface combatant USW capability for the Navy in the next century. These efforts will continue beyond DDG 1000 and provide improvements that apply across surface ship USW platforms.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2468/Undersea Warfare

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.744	0.113	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) FY06, continued evaluation and qualification of risk reduction technologies for incorporation into FY07 sea tests. In FY07, continue executing risk reduction tasks in support of build-test-build process and FY07 sea tests.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.872	0.509	0.000	0.000
RDT&E Articles Quantity	0	0	Congressional Add increases	0

(U) IUSW-21 ADM/EDM Development - Performed Integrated Peer Group (IPG) engineering reviews of IUWS-21 advanced technologies. In FY06, developed and integrated IUSW and Peer Review advanced technologies into ADM/EDM demonstration system for FY07 sea testing. In FY07, complete the development and integration of candidate techologies for FY07 sea test.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.625	0.649	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) In FY06, procured and prepared equipment for FY07 sea tests. In FY07, complete equipment preparation for FY07 sea test, ship and install equipment, and conduct FY07 sea tests including data collection and analysis.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2468/Undersea Warfare	

C. (U) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. (U) ACQUISITION STRATEGY:

(U) In Contract Phase IV responsibility for IUSW ADM/EDM development for the FY06 and FY07 lake tests will be with the DDG 1000 Design Agent.

E. (U)MAJOR PERFORMERS:

(U) Government Field Activities - Naval Undersea Warfare Center, Newport, Ri .

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development					PROJECT NUMBER AND NAME 2469/Open Systems Architecture (OSA)		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**2.362**	**1.764**	**1.626**	**1.669**	**1.710**	**1.751**	**1.779**	**1.811**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) Architectures, Interfaces & Modular Systems (AIMS): This funding supports PEO Ships implementation of Modular Standard Open Systems Architecture (MOSA) at the total system/ship level. These modular interfaces facilitate mission and market adaptability, technology refresh and insertion, and competition. This funding supports the market surveillance and technology and other projections, cost and logistics analyses, process development, industry partnering, demonstrations and assessments necessary to translate into total ship acquisition.

Congressional Add increases

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2469/Open Systems Architecture (OSA)

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.506	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Common Family of Ships (FOS) Business/Technical Architecture and Technology Management: FY06: Business Case/Architecture for common modular systems and standard interfaced.

	FY 06	FY 07	Congressional Add increases	FY 09
Accomplishments/Effort/Subtotal Cost	1.255	0.320	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.
A. Open Offboard Vehicle Zone, FY06-07: Interfaces.
B. Open C&C Zone, FY06-FY07: Interface Implementation Cross Platform.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.275	0.451	0.300	0.326
RDT&E Articles Quantity	0	0	0	0

(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.
A. Open Sensors Zone: FY06-FY07 Concept development., FY07-09 Architecture Development, FY09 Interface Development.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2469/Open Systems Architecture (OSA)

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.555	0.593
RDT&E Articles Quantity	0	0	0	0

(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.
A. Open Machinery Zone: FY08-09 Architecture Concept.

	FY 06	FY 07	Congressional Add increases	FY 09
Accomplishments/Effort/Subtotal Cost	0.326	0.993	0.771	0.750
RDT&E Articles Quantity	0	0	0	0

(U) Implementation: Transition with industry common Architectures, Interfaces, and Modular Systems (AIMS) for shipboard zones.
A. Open Weapons/Power Projection Zone: FY 06: Architecture developed, FY07-08: Interface development, FY09: Interface Implementation

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2469/Open Systems Architecture (OSA)	

C. (U) OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. ACQUISITION STRATEGY:

E. (U)MAJOR PERFORMERS:

(U) Government Field Activities - Naval Surface Warfare Center, Carderock, Md. and Naval Surface Warfare Center, Dahlgren, Va.

CLASSIFICATION:

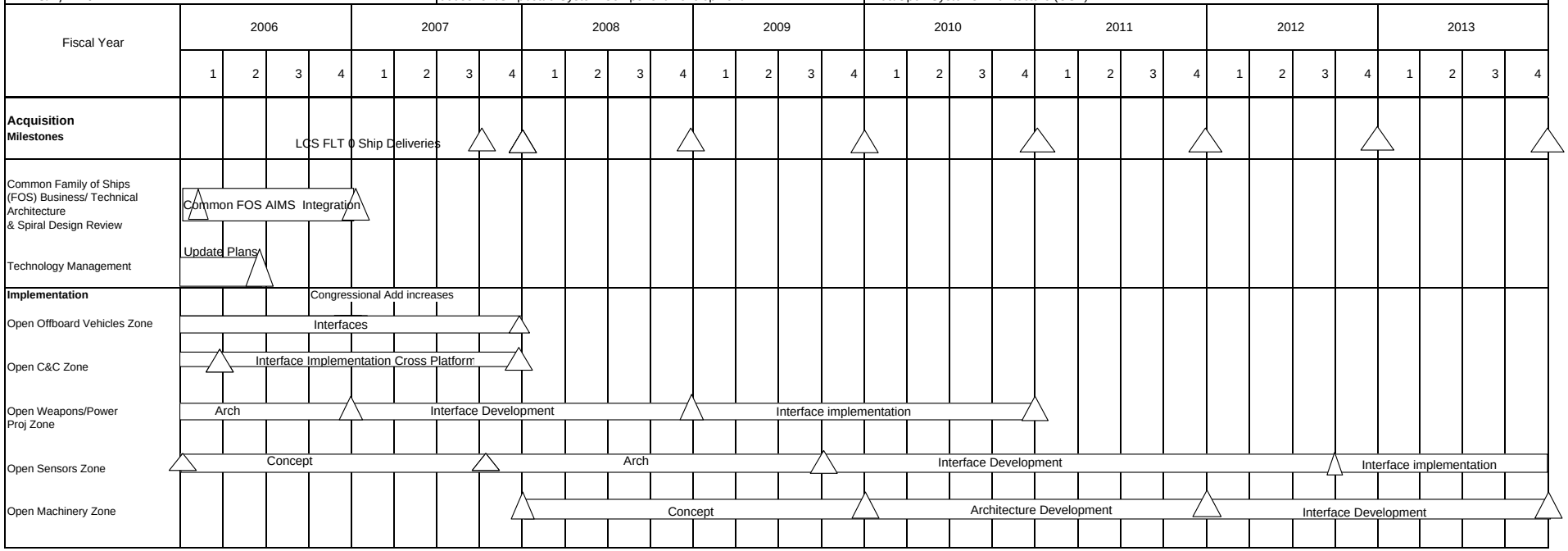
Exhibit R-3 Cost Analysis (page 1)										DATE: **February 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2469/Open Systems Architecture (OSA)								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	845/804	DDG 1000 Industry Teams	35.327	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	35.327	35.327
	WX	NSWC CD Bethesda, MD	10.023	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	10.023	
	Various	Other Gov't Activities	4.987	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	4.987	
	Various	Other Contractors	2.735	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.735	2.735
Ancillary Hardware Development														
Systems Engineering														
Licenses														
Tooling														
GFE														
Award Fees														
Subtotal Product Development			53.072	0.000						0.000		0.000	53.072	38.062
Remarks:														
Development Support													0.000	
Software Development													0.000	
Training Development													0.000	
Integrated Logistics Support													0.000	
Configuration Management													0.000	
Technical Data													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal Support			0.000	0.000						0.000		0.000	0.000	
Remarks:														

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: **February 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**			PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2469/Open Systems Architecture (OSA)								
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation													0.000	
Operational Test & Evaluation													0.000	
Test Assets													0.000	
Tooling													0.000	
GFE													0.000	
Award Fees													0.000	
Subtotal T&E			0.000	0.000						0.000		0.000	0.000	
Remarks:														
Contractor Engineering Support	Various	Other Contractors	9.032	0.235	10/05	0.224	10/06	0.000	N/A	0.000	N/A	0.000	9.498	
Government Engineering Support	WX	NSWC CD Philadelphia, PA	3.763	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	3.763	
	WX	NSWC Carderock, Md.	4.634	1.428	10/05	0.000	N/A	0.000	N/A	0.000	N/A	0.000	6.062	
	Various	Other Gov't Activities	32.060	0.699	Various	1.540	Various	1.626	Various	1.669	Various	CONT	CONT	
Program Management Support														
Travel														
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			49.489	2.362		1.764		1.626		1.669		CONT	CONT	
Remarks:														
Total Cost			102.561	2.362		1.764		1.626		1.669		CONT	CONT	38.062
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile			DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2469/Open Systems Architecture (OSA)	



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT PE 0603513N Shipboard System Component Developmen				PROJECT NUMBER AND NAME 2469/ Open Systems Architecture (OSA)			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Business/Technical Architecture								
Common FOS AIMS Modularity Integration Complete	1Q-4Q	1Q						
Technology Management:								
Update TM plans	2Q							
Implementation								
Open Offboard Vehicles Zone:								
Open Offboard Vehicles Zone Interfaces Defined	1Q-4Q	1Q-4Q						
Open Command and Control Zone								
Open C&C Zone Interfaces Implemented Cross-Platform	1Q-4Q	1Q-4Q						
Open Weapons/Power Projection Zone:								
Open Weapons Zone Arch Complete	1Q-4Q	Congressional Add increases						
Open Weapons Zone Interfaces Defined		1Q-4Q	1Q-4Q					
Open Weapons Zone Interfaces Implemented				1Q-4Q	1Q-4Q			
Open Sensors Zone:								
Open Machinery Zone Concept Complete	1Q-4Q	1Q-4Q						
Open Machinery Zone Arch Complete		4Q	1Q-4Q	1Q-4Q				
Open Machinery Zone Interfaces Defined				4Q	1Q-4Q	1Q-4Q	1Q-3Q	
Open Machinery Zone Interface Development							4Q	1Q-4Q
Open Machinery Zone								
Open Sensors Zone Concept Complete			1Q-4Q	1Q-4Q				
Open Sensors Zone Architecture Complete					1Q-4Q	1Q-4Q		
Open Sensors Zone Interfaces Defined							1Q-4Q	1Q-4Q

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development					PROJECT NUMBER AND NAME 2470/Integrated Topside Design (ITD)		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**2.530**	**0.475**	**0.415**	**0.420**	**0.431**	**0.435**	**0.442**	**0.449**
RDT&E Articles Qty	**0**	**0**	**0**		**0**	**0**	**0**	**0**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops the necessary technologies to achieve a total integrated topside design focused on DDG 1000 and other future surface combatant ships as well as supporting upgrades to existing ships in the Fleet. Technology focus areas include the development, enhancement, validation and verification of modeling and simulation (M&S) tools to support topside signature control, electronic warfare effectiveness, and electromagnetic engineering. This project also develops technical data to support the use of large-scale marine composites on surface combatants to facilitate topside signature control. Topside signature control and electronic warfare effectiveness M&S tools supported by this project enable Navy transformation efforts related to sea strike by facilitating the cost effective design, design approval, and Live Fire Test and Evaluation of low signature surface ships. The validated, integrated, physics-based, electromagnetic radiation (VIPER) M&S tool suite currently being developed under this project will provide the Navy with a state-of-the-art electromatgnetic engineering (EME) capability that is applicable to both new construction and existing ships in the Fleet. By providing the design community with tools able to accurately predict the optimum arrangement of topside sensors to minimize electromagnetic interference (EMI), this project enables Navy transformation efforts by facilitating FORCEnet, the connection of sensors, networks, weapons, decision aids and warriors from seabed to space. Development of marine composite technical data supports Navy transformation efforts by enabling the cost effective design of stealthy surface ship topsides that have improved corrosion control which, in turn enables optimized manning. This program is directed toward improved affordability, performance, reduced life cycle cost, reliability and maintainability, signature reduction, standardization, and weight and manning reductions for the existing and future Fleet.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2470/Integrated Topside Design (ITD)

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.999	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

FY 06: Completed V2.0 Topside RF Coupling D&A M&S Tool; Released V12.1 RTS M&S Tool; Released V3.3 ShipIR M&S Tool.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	1.091	0.475	0.415	0.420
RDT&E Articles Quantity	0	0	Congressional Add increases	0

FY06: Released Ver 3.0 Advanced Antenna Design and Analysis (D&A) M&S Tool ; Released V3.0 Frequency Selective Surface D&A M&S Tool.
FY07: Release Ver 4.0 Advanced Antenna Design and Analysis (D&A) M&S Tool
FY08: Start Ver 5.0 Advanced Antenna Design and Analysis (D&A) M&S Tool Development
FY09: Release Ver 5.0 Advanced Antenna Design and Analysis (D&A) M&S Tool

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.440	0.000	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

FY06: Issued Revised Composites Joint Design Guide; Issued revised Fire safety rules and guidelines

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2470/Integrated Topside Design (ITD)

C. (U)OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. ACQUISITION STRATEGY:

E. (U) MAJOR PERFORMERS:

(U)Government Field Activities-Naval Research Laboratory, Washington DC, and Space and Naval Warfare Systems Center, San Diego, Ca.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2007**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2471/Integrated Power Systems			
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**10.580**	**7.115**	**5.708**	**5.736**	**5.693**	**5.646**	**5.749**	**5.855**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project supports the Integrated Power Systems (IPS) program. IPS provides total ship electric power, including electric propulsion, power conversion and distribution, combat system and mission load interfaces to the electric power system. IPS supports multiple ship class applications for future surface ships, with DDG 1000, DDG 1000 future flight upgrades, and CG(X) being the primary ship application target. On 6 January 2000, SECNAV announced Navy intent that DDG 1000 be an electric drive ship with integrated power architecture. IPS reduces acquisition and operating costs of naval ships and increases military effectiveness. IPS leverages investments in technologies that will be useable by both military and commercial sectors.

- (U) IPS has the potential to revolutionize the design, construction, and operation of U.S. naval ships by using electricity as the primary energy transfer medium aboard ship. The flexibility of electric power transmission allows power generating modules with various power ratings to be connected to propulsion loads and ship service in any arrangement that supports the ship's mission at lowest overall cost. Systems engineering in IPS is focused on increasing the commonality of components used across ship types and in developing modules which will be integral to standardization, zonal system architectures, and generic shipbuilding strategies. The purpose of increased commonality is to reduce the total cost of ship ownership by using common modules composed of standard components and/or standard interfaces.

- (U) IPS addresses ship platform program goals through: reduced ship acquisition cost through integration of propulsion and ship's service prime movers; lower ship operational costs resulting from more flexible operating characteristics and more efficient components; reduced ship construction costs by allowing more extensive modular construction of power generation, distribution, and loads; improved ship survivability and reduced vulnerability through increased arrangement flexibility and improved electrical system survivability; reduced manning through improved power management systems and reduced on-board maintenance requirements; improved ship signature characteristics; improved design adaptability to meet future requirements of multiple ship types or missions; integrating power management and protection by fully utilizing the power electronics in the system to perform fault protection as well as power conversion and load management functions; simplified technology insertion which allows new technologies to be installed within IPS much less expensively than presently possible; and, reduced machinery system acquisition costs through utilization of commercially shared technologies and components.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2471/Integrated Power Systems

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	7.946	5.150	2.226	2.496
RDT&E Articles Quantity	0	0	0	0

System Development: Continue to improve baseline power system performance by performing analysis, modeling and simulation, life cycle cost analysis, producibility studies, module development, ship integration, architecture design, ship electric architectures and high power weapons systems requirements, and related efforts. Evaluate emerging technologies for ship applications to determine future feasibility and development requirements. Emerging technologies include fuel cells, high-energy weapons, high power radars, and advanced power electronics. Performed preliminary design of high-speed generators and initiated detailed design with follow-on prototype fabrication planned.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	2.034	1.392	Congressional Add increases	2.940
RDT&E Articles Quantity	0	0	0	0

System Test: Conducted Integrated Fight Through Power (IFTP) testing at NSWCCD, Philadelphia PA. Completed integration of IFTP and DDX IPS test sites. Mitigate potential risks associated with a fielded IPS system to reduce ship's signature, improve survivability and efficiency by fabricating components, inserting into the IPS test site or an appropriate test platform. Conduct demonstrations to maintain and develop the critical engineering capability and capacity to insert future high power weapon systems (radars, lasers and electromagnetic launch weapons) into DDG 1000 and future ship classes including CG(X). Conduct demonstrations to show improved performance and potential to reduce combat system costs.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.600	0.573	0.300	0.300
RDT&E Articles Quantity	0	0	0	0

Platform Specific: Developed IPS configurations in support of all future surface ship programs. Develop/modify IPS ship configuration documentation including concepts of operations, System Level Description/Requirements, and module performance specifications as necessary to support power system requirements forCG(X), TAOE (X) and LHAR (X), MPF future, and COBRA JUDY. Improve ship power system smart product model to support cost/performance tradeoffs of alternative IPS ship configurations and evaluation of emerging electric power system and component technologies.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	2471/Integrated Power Systems

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	5.736	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. (U)ACQUISITION STRATEGY:

(U) IPS is a candidate system for DDG 1000 and all other future surface ships.

E. (U)MAJOR PERFORMERS:

(U) IPS DDG 1000 Design Agent, Ingalls Shipbuilding Iinc. General Atomics and DRS Power and Controls Technologies Inc., IPS IFTP contractors. Curtiss Wright, High Speed Generator contractor. Northrop-Grumman Electronic Systems, power electronics contractor.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: **February 2007**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**		PROGRAM ELEMENT 0603513N/Shipboard System Component Development			PROJECT NUMBER AND NAME 2471/Integrated Power Systems									
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	C/CPAF	Lockheed M Syracuse, NY	23.572	0.000	01/00	0.000	N/A	0.000	N/A	0.000	N/A	0.000	23.572	23.572
	Sec845/804	DDG 1000 Industry Teams	66.661	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	66.661	66.661
	CPAF	DDG 1000 Design Agent	154.500	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	154.500	154.500
	US/UK MOU	DERA, UK	1.350	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	1.350	1.350
	Sec845/804	IFTP Teams	53.482	0.429	10/05	0.000	N/A	0.000	N/A	0.000	N/A	0.000	53.911	
	C/CPAF	Anteon, Corp. Fairfax, VA	3.303	1.378	10/05	0.900	10/06	0.700	10/07	0.700	10/08	CONT	CONT	
	WX	NSWCCD Philadelphia, PA	24.665	0.722	10/05	0.540	10/06	0.589	10/07	0.605	10/08	CONT	CONT	
	WX	NSWCCD Dahlgren, Va.	2.826	0.000	N/A	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.826	
	Various	Other Contractors	10.053	0.000	10/05	0.050	10/06	0.050	10/07	0.050	10/08	CONT	CONT	
	Various	Other Govt Activities	1.895	0.000	10/05	0.050	10/06	0.050	10/07	0.050	10/08	CONT	CONT	
	C/CPFF	CW-EMD, Cheswick, PA	0.000	4.460	10/05	5.100	10/06	3.159	10/07	2.160	10/08	CONT	CONT	
	C/CPFF	NGES, Sunnyvale, CA	0.000	2.686	12/05	0.000	N/A	0.000	N/A	0.000	N/A	0.000	2.686	
Ancillary Hardware Development		Congressional Add increases												
Systems Engineering														
Licenses														
Tooling														
GFE														
Award Fees	C/CPAF	Anteon, Corp. Fairfax, VA	0.109	0.055	3Q/06	0.037	3Q/07	0.037	3Q/08	0.037	3Q/09	CONT	CONT	
Subtotal Product Development			342.416	9.730		6.677		4.585		3.602		CONT	CONT	246.083
Remarks:														
Development Support														
Software Development														
Training Development														
Integrated Logistics Support														
Configuration Management														
GFE														
Award Fees														
Subtotal Support			0.000	0.000						0.000		0.000	0.000	0.000
Remarks:														

CLASSIFICATION:

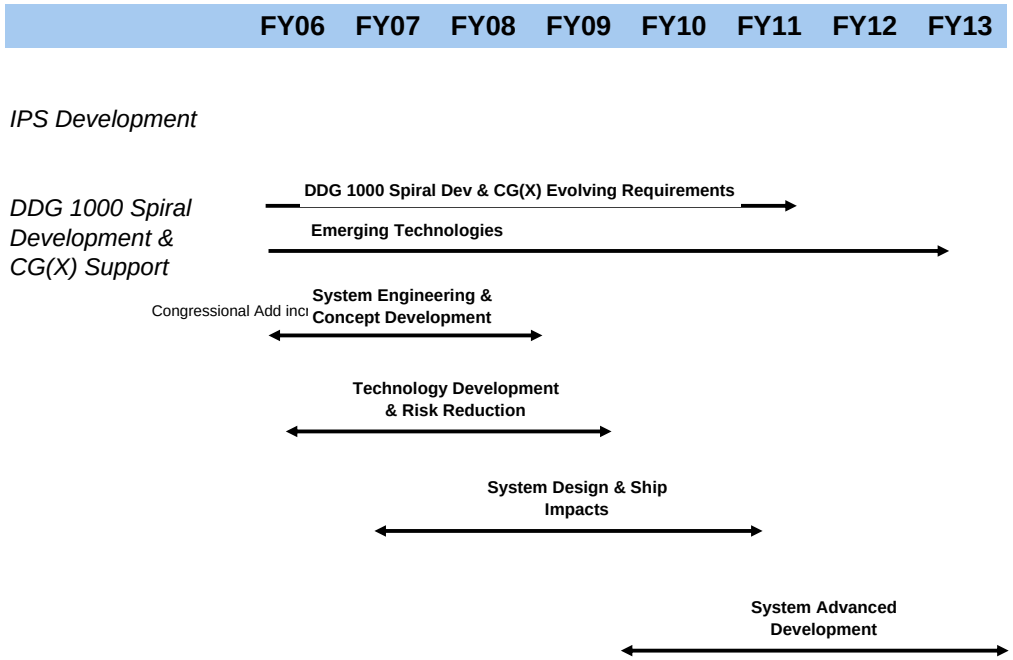
Exhibit R-3 Cost Analysis (page 2) | DATE: **February 2007**

APPROPRIATION/BUDGET ACTIVITY: **RDT&E, N / BA-4** | PROGRAM ELEMENT: 0603513N/Shipboard System Component Development | PROJECT NUMBER AND NAME: 2471/Integrated Power Systems

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	FY 08 Cost	FY 08 Award Date	FY 09 Cost	FY 09 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	NSWC CD Philadelphia, PA	18.777	0.820	01/00	0.408	10/06	1.093	10/07	2.104	10/08	CONT	CONT	
Operational Test & Evaluation														
Test Assets														
Tooling														
GFE														
Award Fees														
Subtotal T&E			18.777	0.820		0.408		1.093		2.104		CONT	CONT	
Remarks: Congressional Add increase														
Contractor Engineering Support														
Government Engineering Support														
Program Management Support														
Travel	Various	Various	0.574	0.030	10/05	0.030	10/06	0.030	10/07	0.030	10/08	CONT	CONT	
Labor (Research Personnel)														
SBIR Assessment														
Subtotal Management			0.574	0.030		0.030		0.030		0.030		CONT	CONT	
Remarks:														
Total Cost			361.767	10.580		7.115		5.708		5.736		CONT	CONT	246.803
Remarks:														

CLASSIFICATION:

EXHIBIT R4, Schedule Profile		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development	PROJECT NUMBER AND NAME 2471/Integrated Power Systems



CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2007**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT 0603513N/Shipboard System Component Development				PROJECT NUMBER AND NAME 2471/Integrated Power Systems			
Schedule Profile	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
						01/00		
System Engineering & Concept Development	1Q-4Q	1Q-4Q	1Q-4Q					
Technology Development & Risk Reduction	2Q-4Q	1Q-4Q	1Q-4Q	1Q-3Q				
System Design & Ship Impact		3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-2Q		
System Advanced Development				3Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q	1Q-4Q
		Congressional Add increases						

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification						DATE: **February 2007**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-4**	PROGRAM ELEMENT NUMBER AND NAME 0603513N/Shipboard System Component Development					PROJECT NUMBER AND NAME 4019/Radar Upgrades		
COST ($ in Millions)	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Project Cost	**0.000**	**1.563**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**	**0.000**
RDT&E Articles Qty	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Radar Upgrades will fund future upgrades/technology insertion efforts for the Multi-Function Radar (MFR)/Volume Search Radar (VSR)/Dual Band Radar (DBR) suite. Upgrades and technology inserts are required to maintain the level of force protection needed for ship defense against all threats envisioned in the littoral environment. The upgrades will include all aspects of the radar system/subsystems, including hardware and software. Specific subsystem areas include the Array, T/R module, Receiver/Exciter, Signal Data Processor and power/cooling systems.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	4019/Radar Upgrades

B. Accomplishments/Planned Program

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.679	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

Radar Upgrades and Technology Insertion for the MFR/VSR/DBR hardware and software. Commence Radar Upgrades studies and analysis in FY 07.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.784	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

Government Engineering Services and Program Management support for radar upgrades and technology insertion of the MFR/VSR/DBR radars. Perform oversight and assessment of efforts associated with this phase of the program.

	FY 06	FY 07	FY 08	FY 09
Accomplishments/Effort/Subtotal Cost	0.000	0.100	0.000	0.000
RDT&E Articles Quantity	0	0	0	0

Provide Program Management in support of radar upgrades and technology insertion.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	4019/Radar Upgrades

C. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	To Complete	Total Cost
PE 0604300N/ DDG 1000 Total Ship Sys Engineering	1,100.804	820.065	621.544	658.223	880.899	1,004.274	839.915	702.464	CONT.	CONT.
PE 211900 / SCN	706.240	2,557.268	2,953.523	2,462.783	2,500.662	2,264.771	2,370.489	2,065.435	CONT.	CONT.

D. (U)ACQUISITION STRATEGY:

(U)

E. (U)MAJOR PERFORMERS:

(U) Northrop Grumman Ship Systems, Raytheon and Lockheed Martin.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2007**
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-4	0603513N/Shipboard System Component Development	9999/ Congressional Plus-Ups : VARIOUS

CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
2858C				
MTTC/IPI and National Surface Treatment Center	6.900	3.885	0.000	0.000

(U) This Congressional add funded a continued operation of the McConnell Technology and Training Center and the National Surface Treatment Center (MTTC). This effort funded projects targeted at resolving fleet maintenance problems/issues through the rapid insertion of new technologies.

	FY 06	FY07	FY08	FY09
9517C				
Amorphous metal permanent magnet generator	0.986	0.000	Congressional Add increases	0.000

(U) Funded the development of designs for an Amorphous Metal Permanent Magnet Generator Set and related technologies. Developed technology for smaller, lighter generator sets employing amorphous metal permanent magnets had the potential to greatly increase power rating, yet reduced the size and weight of the generator set. Such generator technology also held the potential for reduced life cycle costs by increased fuel efficiency and reduced logistics support costs.

	FY 06	FY07	FY08	FY09
9518C				
Carbon foam program	1.932	2.789	0.000	0.000

(U) This effort for the Carbon Foam program focused on the development of uses for lightweight, strong, fire resistant and thermally insulating carbon foam material aboard Navy ships. The application of this material may provide improved characteristics that will enable a requirement objective or threshold to be exceeded improving performance of a ship and ship class.

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CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9521C				
Intelligent Systems Consortium NAVSEA-Carderock	0.986	0.996	0.000	0.000

(U) This Congressional add continued to fund the Intelligent Systems Consortium NAVSEA Carderock with the U.S. offshore energy industry to focus on the development of intelligent shipboard electro-mechanical devices in support of the Navy's all-electric ship concept, reduced manning requirements and future seabasing needs.

	FY 06	FY07	FY08	FY09
9523C				
Alternative composition, low cost pipe for shipboard	1.676	0.000	Congressional Add increases	0.000

(U) This effort for Alternative composition, low cost pipe for shipboard was funded to qualify Glass-Reinforced Plastic (GRP) piping for shipboard use. Current metallic piping corrodes or erodes and does not last over the ship life cycle. The development of erosion resistant GRP or composite piping leads to longer service life when used in appropriate ship systems.

	FY 06	FY07	FY08	FY09
9803N				
Flash detection system for Navy 501 shipboard eng	1.479	0.000	0.000	0.000

(U) Flash detection system was funded to research and develop health-monitoring algorithms for Gas Turbine engines. The Flash Detection System utilized the already developed optical flash detector to monitor the Gas Turbine exhaust operation for abnormalities that are used in identifying engine problems. Observation of the Gas Turbine exhaust provided useful information on the operation characteristics and health of the engine helped to reduce failure and schedule maintenance.

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CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9805N/9805C				
Integr power distribution sys for next gen all-elec shp	2.915	0.000	0.000	0.000

This Congressional add funded the development of integrated power distribution systems for future surface combatants that allow for rapid response to electrical system load demands.

	FY 06	FY07	FY08	FY09
9807N/9807C				
Smart machinery spaces system	3.894	2.740	Congressional Add increases	0.000

This effort for Smart machinery spaces system focused on the development of a comprehensive, automated “Condition-Based Maintennace (CBM)+” solution that incorporates Configuration Management (CM), CBM, and Automated Logistics functions.

	FY 06	FY07	FY08	FY09
9808N/9808C				
Water mist fire protection systems	0.986	0.996	0.000	0.000

This Congressional add funded the Water mist fire protection systems to test Navy standard water mist fire protection system to commercial standards, so that system can be marketed commercially.

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CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9971N				
Advanced combatant materials research	0.000	4.284	0.000	0.000

The Advanced Combatant Materials funding will investigate high strength, damage tolerant, lightweight materials and associated advanced fabrication technologies that can achieve significant weight reduction or improved performance. These include improved marine aluminum alloys, solid state welding processes, novel titanium alloy processing, advanced steels for improved blast and ballistic protection, and a breakthrough in composite - metal joining invented in the UK.

	FY 06	FY07	FY08	FY09
9972N				
Advanced fluid controls for shipboard applications	0.000	0.996	Congressional Add increases	0.000

The congressional add for Advanced fluid controls for shipboard applications will help develop materials, including composites and ceramics, for a variety of fluid control solutions that focus on providing intelligent control and interface directly with the ship's main computer.

	FY 06	FY07	FY08	FY09
9973N				
Advanced repair technology for expeditionary Navy	0.000	0.996	0.000	0.000

Congressional add funding is provided in support of the Advanced Repair Technology for Expeditionary Navy Program.

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CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9974N				
Advanced steam turbine	0.000	0.996	0.000	0.000

Funding for Advanced Steam Turbine is to develop advance technologies resulting in a quieter, smaller turbine generator for the US Navy.

	FY 06	FY07	FY08	FY09
9975N				
Air Gun Shock Testing of naval vessels	0.000	0.996	Congressional Add increases	0.000

The congressional add will help develop a low cost, environmentally safe underwater shock testing method employing non-explosive energy sources suitable for shock testing the ship or shock qualifying major shipboard systems.

	FY 06	FY07	FY08	FY09
9976N				
Braided Ropes for US Navy Ship Salvage	0.000	0.996	0.000	0.000

The purpose of the Braided Ropes for US Navy Ship Salvage funding is to develop and test a stronger, more reliable and more efficient means for lifting, mooring and rigging of ships, barges, and aircraft during salvage search, recovery and towing operations.

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CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9977N				
Carrier Strike Group Forward Sensor Network	0.000	3.885	0.000	0.000

The congressional add for Carrier Strike Group Forward Sensor Network will help develop an integrated, limited area communication and force protection capability for ports and strike group ships within near line of sight utilizing a wireless mesh network comprised of ships and buoys with sensor systems.

	FY 06	FY07	FY08	FY09
9978N				
Critical on demand info spt for shipboard maintainence	0.000	0.996	Congressional Add increases	0.000

The congressional add for Critical on Demand Information Support for Shipboard Maintainers is for development of mobile, hand-held information technology and technical tool for shipboard maintenance personnel. The tool supports wireless networking, technical data access and display, collaboration through resource sharing and live video and audio capability and diagnostic tools.

	FY 06	FY07	FY08	FY09
9979N				
Fuel Contaminate Detection system	0.000	2.491	0.000	0.000

The congressional add for Fuel Contaminate Detection system will help develop sensors and detection system that will identify combustion air and fuel contaminates that can cause premature gas turbine engine failures.

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CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9980N				
High Efficiency Quiet Electric Drive	0.000	1.494	0.000	0.000

Funding for High Efficiency Quiet Electric Drive will be used to develop and demonstrate an advanced propulsion motor drive by utilizing a hybrid power electronics approach.

	FY 06	FY07	FY08	FY09
9981N				
Integrated Power System Converter	0.000	0.996	Congressional Add increases	0.000

Funding for Integrated Power System Converter will be used to develop integrated power system propulsion motor drive power electronics technologies for future surface combatants that allow for rapid response to electrical system load demands.

	FY 06	FY07	FY08	FY09
9982N				
Propulsor Manufacturing Technology Development	0.000	4.234	0.000	0.000

The Congressional add for propulsor Manufacturing Technology Development is to develop coatings for propellers to improve erosion resistance, fouling resistance and efficiency characteristics.

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CONGRESSIONAL PLUS-UPS:

	FY 06	FY07	FY08	FY09
9983N				
Smart valve	0.000	1.146	0.000	0.000

The Congressional add for Smart Valve will help develop linear electromechanical actuator technology to help eliminate high pressure hydraulic and pneumatic systems in a shipboard environment.

			Congressional Add increases	
