CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5**					R-1 ITEM NOMENCLATURE Submarine Tactical Warfare System/0604562N			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	37.209	25.089	32.238	35.670	40.631	54.696	56.482	57.436
F0236/SSN COMB CONT SYS IMP (ENG)	37.209	25.089	32.238	35.670	40.631	54.696	56.482	57.436

Defense Emergency Response Funds (DERF) Funds: Not Applicable

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program develops software and hardware upgrades to integrate improved weapons capabilities within submarine Combat Control System (CCS) MK1, MK2, AN/BSY-1 (Combat Control), AN/BSY-2, SSGN and Virginia Class (Post PSA), as a part of Obsolete Equipment Replacement (OER), the program develops improvements to hardware which has become increasingly difficult and not economical to maintain. The thrust of the CCS Improvement program is the development and fleet introduction of CCS MK2 Program D0 Block 1C ECP 004. CCS MK2 converged multiple submarine combat system developments into a single effort to minimize submarine life cycle costs, across SSN 688, SSN 688I, SSBN 726 (Mod 3) and SSN 21 (Mod 5), SSGN, Virginia Classes. CCS MK2 Program D0 Block 1C ECP 004 provides a modular software architecture, introduces Tomahawk Block 4 and replaces additional obsolete equipment. MK2 Block 1C ECP 5 will replace legacy weapons interface equipment. The program also segregrates CCS into a Tactical Control System and a Weapons Control System concurrent with the development of CCS MK2 V5. This allows for a more open architecture to accommodate Advance Processing Build (APB). This process will allow for annual performance upgrades to the Tactical Control System independent of weapons. Beginning in FY04, initiate a Non Propulsion Electronics System Engineering, Integration and Test Program.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604562N/SUBMARINE TACTICAL WARFARE SYSTEM		PROJECT NUMBER AND NAME F0236/SSN COMB CONT SYS IMP (ENG)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	21.079	14.368	6.329	9.000
RDT&E Articles Quantity				

Continue to develop engineering change to CCS MK2 Program D0 Block 1C to incorporate Tactical Tomahawk capabilities and upgrade for commonality with VIRGINIA Class and SSN 21 Class.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	9.150	3.721	7.704	11.072
RDT&E Articles Quantity				

Mitigate combat systems obsolescence, improve life-cycle cost, increase commonality and provide advanced war fighting capability to the submarine fleet based on the CCS MK2 combat system.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	5.380	4.000	10.500	0.000
RDT&E Articles Quantity				

Development of AN/BSG-1 and mission distribution system upgrades.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification	DATE:
	February 2003

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N /BA-5	0604562N/SUBMARINE TACTICAL WARFARE SYSTEM	F0236/SSN COMB CONT SYS IMP (ENG)

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.188	0.000	0.000	0.000
RDT&E Articles Quantity				

Integration of Advanced Tactical Software, Commercial Off-the-Shelf Technology and Government Off-the-Shelf Products into Backfit Submarine Combat Control Programs.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	3.000	7.705	12.283
RDT&E Articles Quantity				

Non Propulsion Electronics System Engineering, Integration and Test Program. The program also segregrates CCS into a Tactical Control System and a Weapons Control System concurrent with the development of CCS MK2 V5.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.412	0.000	0.000	0.000
RDT&E Articles Quantity				

Develop maintenance build and tech refresh combat control systems.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604562N/SUBMARINE TACTICAL WARFARE SYSTEM	PROJECT NUMBER AND NAME F0236/SSN COMB CONT SYS IMP (ENG)

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	3.315
RDT&E Articles Quantity				

Development of MK2 Block 1C ECP 5.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2003

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0604562N/SUBMARINE TACTICAL WARFARE SYSTEM	F0236/SSN COMB CONT SYS IMP (ENG)

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget: (FY 03 President Controls)	38.884	13.975	21.326	42.904
Current BES/President's Budget (FY04 President Controls)	37.209	25.089	32.238	35.670
Total Adjustments	-1.675	11.114	10.912	-7.234

Summary of Adjustments

SBIR	-0.771	0.000	0.000	0.000
Syscom Contractor Support	0.000	0.000	-0.536	-0.629
NWCF Rates	0.000	0.000	0.030	0.054
Economic Assumtions	-0.106	-0.144	0.000	0.000
Reprogrammings	-0.798	-0.442	11.418	-6.659
Congressional add: CCS Mk2 Modernization	0.000	8.700	0.000	0.000
Congressional add: Accel Fleetwide Mod	0.000	3.000	0.000	0.000
Subtotal	-1.675	11.114	10.912	-7.234

Schedule:

 - Added SWS Modernization to schedule due to budget line being incorporated into Combat Control System.
 - Changed AN/BSG-1 DT/OT to reflect updated Acquisition Program Baselines to program.

Technical:

 Not Applicable

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:
		February 2003

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0604562N/SUBMARINE TACTICAL WARFARE SYSTEM	F0236/SSN COMB CONT SYS IMP (ENG)

D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN/BA-4 54200	38.300	54.254	68.032	100.952	105.906	87.148	92.701	94.209	CONT.	CONT.

Related RDT&E:
PE 0204229N (Tomahawk & Tomahawk Missile Planning Center)
PE 0205632N (MK 48 ADCAP)
PE 0603504N (Advanced Submarine Combat Systems Dev.)
PE 0604503N (SSN-688 and Trident Modernization)
PE 0604707N (Submarine Electronic Warfare Architecture/Eng. Support)

E. ACQUISITION STRATEGY: CCS MK2 Block 1C:

- CCS MK2 Block 1C utilizes an open architecture in support of new and upgraded Government and Commercial Off-the-Shelf products and insertion of new weapons capabilities.
- Critical Design Review was held Feb 2002.
- CCS MK2 Block 1C Baseline, Mod 3 FOT&E completed Jun 2002.
- Release-To-Fleet is Mar 2003.
- Further CCS MK2 Block 1C development upgrades (ECP004 & beyond) will be completed commencing with contract award 2nd QTR 2003.
- APB (T) products associated with CCS MK2 Block 1C Release-To- Fleet Jan 2003, Jan 2004, Jan 2006, Jan 2007.

F. MAJOR PERFORMERS: **

Raytheon Portsmouth, RI - Software Development for Mod 0 / 1, 2 ,3 and System Development for AN/BSG-1 - June 1997
NUWC Newport, RI - Government Engineering

* Not required for Budget Activities 1,2,3, and 6
** Required for DON and OSD submit only.

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CLASSIFICATION:

				DATE:							
Exhibit R-3 Cost Analysis (page 1)								**February 2003**			

APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-5		0604562N/SUBMARINE TACTICAL WARFARE SYSTEM			F0236/SSN COMB CONT SYS IMP (ENG)						

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
AN/BSG-1 System Development	CPIF	Raytheon Portsmouth, RI	16.143	1.177	12/02	0.000		0.000		0.000	17.320	
Ancillary Hardware Dev (AN/BSG-1)	PD	PEO-CMU Pax River, MD	9.003	1.582	Various	6.000	Various	0.000		0.000	16.585	
Government Engineering	WR	NUWC Newport, RI	52.089	2.547	Various	17.380	Various	8.300	Various	CONT.	CONT.	
TOMAHAWK Reliability	SBIR	Progency	1.635	0.000		0.000		0.000		CONT.	CONT.	
CCS MK2 Block 1C ECP	FFRDC	MITRE	0.754	0.383	11/02	0.508	10/03	0.513	10/04	CONT.	CONT.	
COTS Hardware & Software	CPFF	DDL Omni	7.000	1.500	01/03	2.000	10/03	2.000	10/04	CONT.	CONT.	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			86.624	7.189		25.888		10.813		0.000	130.514	

Remarks:

Contract	Award/Oblig
Block 1C	Dec 00
AN/BSG-1	Jun 97

Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Development Support Equipment											0.000	
Software Development (Mod0/1,2,3)	CPFF	Raytheon Portsmouth, RI	21.000	12.188	Various	0.000		0.000		CONT.	CONT.	
Software Development (Mod 5)	CPAF	DSR		0.100	12/02	4.600	10/03	7.459	10/04		12.159	
Software Development (Mod 5)	CPAF	Raytheon Portsmouth, RI		3.900	12/02							
Software Development (ECP 5)	CPAF	Raytheon Portsmouth, RI						3.315	10/04		3.315	
Software Development (SWS)	CPFF	Raytheon Portsmouth, RI				0.000		12.283	10/04		12.283	
Technical Data											0.000	
GFE											0.000	
Configuration Management											0.000	
Subtotal Support			21.000	16.188		4.600		23.057		0.000	64.845	

Remarks:

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**			PROGRAM ELEMENT 0604562N/SUBMARINE TACTICAL WARFARE SYSTEM				PROJECT NUMBER AND NAME F0236/SSN COMB CONT SYS IMP (ENG)				
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various	7.800	1.112	01/03	1.000	10/03	1.000	10/04	CONT.	CONT.	
Operational Test & Evaluation	Various	Various	7.169	0.500	01/03	0.400	10/03	0.400	10/04	CONT.	CONT.	
Test & Evaluation	Various	Various	1.295	0.000		0.000		0.000			1.295	
GFE											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			16.264	1.612		1.400		1.400		0.000	20.676	
Remarks:												
Contractor Engineering Support											0.000	
Government Engineering Support											0.000	
Program Management Support	CPFF	EG&G Arlington, VA	8.481	0.000		0.250	10/03	0.300	10/04	CONT.	CONT.	
Travel	PD	NAVSEA Arlington, VA	0.350	0.100	12/02	0.100	10/03	0.100	10/04	CONT.	CONT.	
Labor (Research Personnel)											0.000	
SBIR Assessment											0.000	
Subtotal Management			8.831	0.100		0.350		0.400		0.000	9.681	
Remarks: Contract Award/Oblig EG&G Dec 01												
Total Cost			132.719	25.089		32.238		35.670		0.000	225.716	
Remarks:												

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EXHIBIT R4, Schedule Profile	DATE: **February 2003**

APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME
RDT&E, N / BA-5	0604562N / Submarine Tactical Warfare System	F0236 / Submarine Combat System Improvements

Fiscal Year: 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 (quarters 1–4 each)

Acquisition Milestones

CCS Mk2 Block 1C Baseline
- Mod 3 — 6 FOT&E (2002 Q3)

CCS Mk2 Block 1C ECP 4
- Mod 2 — DEVELOPMENT; 3 RTF; 9 RTF
- Mod 0/1 — DEVELOPMENT; SDCT (3, 6); 10 RTF
- Mod 3 — DEVELOPMENT; SDCT (12); RTF (3, 3)
- Mod 5 (WC/TC Segregation) — DEVELOPMENT; 5 RTF

CCS Mk2 Block 1C ECP 5
- DEVELOPMENT; 5 RTF (V3); RTF (V2); RTF (V1)

APB(T) Integration — 1 RTF; 1 RTF; 1 RTF; 1 RTF; 1 RTF

AN/BSG-1 — 8 SDCT; 1 MS III

SWS Modernization — DEVELOPMENT

Test & Evaluation Milestones

CCS Mk2 Block 1C

ECP 4
- Mod 2 — Phase 1 (9 DT/OT; 2); Phase 2 (4; 7 DT/OT)
- Mod 5 — 11; 3 DT/OT

ECP 5 — 10; 3 DT/OT

Development Test

AN/BSG-1 — 8 DT

SWS Modernization — SWS 04 TECHEVAL; SWS 05 TECHEVAL; SWS 06 TECHEVAL

Operational Test

AN/BSG-1 — 10 OT

SWS Modernization — SWS 04 OPEVAL; SWS 05 OPEVAL; SWS 06 OPEVAL

Production Milestones

Deliveries

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CLASSIFICATION:

Exhibit R-4a, Schedule Detail					DATE: **February 2003**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**			PROGRAM ELEMENT 0604562N / Submarine Tactical Warfare System			PROJECT NUMBER AND NAME F0236 / Submarine Combat System Improvements		
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
CCS MK2 Block 1C ECP 4, Mod 2 - Development	1Q - 4Q							
CCS MK2 Block 1C Baseline, Mod 3 - FOT&E	3Q							
CCS MK2 Block 1C ECP 4, Mod 3 - Development	3Q - 4Q	1Q						
CCS MK2 Block 1C ECP 4, Mod 0/1 - Development	4Q	1Q - 2Q						
AN/BSG-1 - SDCT	4Q							
CCS MK2 Block 1C ECP 4, Mod 2 - Phase 1 DT/OT	4Q	1Q - 2Q						
CCS MK2 Block 1C ECP 5 - Development		1Q - 4Q	1Q - 4Q	1Q - 4Q				
CCS MK2 Block 1C Baseline, Mod 3 - SDCT		1Q - 2Q						
APB(T) Integration - Release To Fleet		2Q						
CCS MK2 Block 1C ECP 4, Mod 2 - Phase 1 RTF		2Q						
CCS MK2 Block 1C Baseline, Mod 3 - RTF		2Q						
CCS MK2 Block 1C ECP 4, Mod 0/1 - SDCT		2Q - 3Q						
CCS MK2 Block 1C ECP 4, Mod 2 - Phase 2 DT/OT		3Q - 4Q						
AN/BSG-1 - DT			4Q					
CCS MK2 Block 1C ECP 4, Mod 2 - Phase 2 RTF		4Q						
SWS Modernization - Development			1Q - 3Q					
AN/BSG-1 - OT				1Q				
CCS MK2 Block 1C ECP 4, Mod 0/1 - RTF			1Q					
APB(T) Integration - Release To Fleet			2Q					
AN/BSG-1 - MS III			3Q					
SWS Modernization, SWS 04 - TechEval			3Q - 4Q					
CCS MK2 Block 1C ECP 5 - Development				1Q - 4Q				
SWS Modernization, SWS 04 - OpEval				1Q - 3Q				
APB(T) Integration - Release To Fleet				2Q				
SWS Modernization, SWS 05 - TechEval				3Q - 4Q				
CCS MK2 Block 1C ECP 5 - DT/OT					1Q - 2Q			
CCS MK2 Block 1C ECP 4, Mod 5 - DT/OT					1Q - 2Q			
SWS Modernization, SWS 05 - OpEval					1Q - 3Q			
APB(T) Integration - Release To Fleet					2Q			
CCS MK2 Block 1C ECP 4, Mod 5 - RTF					3Q			
CCS MK2 Block 1C ECP 5 - V3 RTF					3Q			
SWS Modernization, SWS 06 - TechEval					3Q - 4Q			
CCS MK2 Block 1C ECP 5 - V2 RTF						1Q		
SWS Modernization, SWS 06 - OpEval						1Q		
CCS MK2 Block 1C ECP 5 - V1 RTF						2Q		
APB(T) Integration - Release To Fleet						2Q		