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Exhibit R-2, RDT&E Budget Item Justification	Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/5	R-1 ITEM NOMENCLATURE Submarine Tactical Warfare System / 0604562N

COST (\$ in Millions)	FY 1998	FY 1999	FY 2000	FY 2001	FY 2002	FY 2003	FY 2004	FY 2005	Cost to Complete	Total Cost
Total P.E. Cost	39.5	27.8	13.4	11.4	11.4	31.5	22.4	40.8	CONT.	CONT.
F0236/SSN CCS (IMP) (ENG)	39.5	27.8	13.4	11.4	11.4	31.5	22.4	40.8	CONT.	CONT.
Project B Name/No. & subtotal cost										
Project C Name/No. & subtotal cost										
Quantity of RDT&E Articles & cost										

A. (U) **MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:** This program develops software upgrades to integrate improved weapons capabilities within submarine Combat Control System (CCS) MK1, MK2, and AN/BSY-1 (Combat Control) and, 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 fleet introduction of CCS MK2 Program D0 and the development of CCS MK2 Program D0 Blocks 1 and 2. CCS MK2 converged multiple submarine combat system developments into a single effort to minimize submarine life cycle costs, across SSN 688, SSN 688I and SSBN 726 Classes. CCS MK2 Program D0 provides a modular software architecture, introduces Tomahawk Block 3 and Harpoon Block 1C capabilities, introduces Advanced Capability (ADCAP) on TRIDENT, and replaces additional obsolete equipment. CCS MK2 Program D0 Block 1 integrates CCS MK2 into AN/BSY-1 systems, replaces additional obsolete equipment, incorporates a direct interface to the Global Positioning System, incorporates Joint Maritime Command Information System (JMCIS) into CCS MK2, and implements Advanced Tomahawk Weapon Control System (ATWCS), ADCAP torpedo improvements and several other miscellaneous enhancements. CCS MK2 Program D0 Block 2 incorporates into submarine CCS anticipated upgrades to ADCAP, Tomahawk and Harpoon, and implements additional OER. Improved Submarine Launched Mobile Mine (ISLMM) requires development of a stand-alone mine launching capability. AN/BSG-1 (formerly known as Tomahawk Land Attack Missile – Nuclear (TLAM-N) Portable Launching System (PLS) provides SSN submarines with a stand-alone TLAM-N missile launching capability.

(U) **PROGRAM ACCOMPLISHMENTS AND PLANS:**

1. (U) **FY 1998 ACCOMPLISHMENTS:**

- (U) (\$28.3) Commenced System Design Certification Testing (SDCT) for CCS MK2 Program D0 Block 1C.
- (U) (\$11.2) Continued development of AN/BSG-1.

2. (U) **FY 1999 PLAN:**

- (U) (\$18.9) Complete SDCT for CCS MK2 Program D0 Block 1C.
- (U) (\$ 8.5) Continue development of AN/BSG-1.
- (U) (\$.4) Portion of extramural program is reserved for Small Business Innovation Research Assessment in accordance with 15 USC 638.

3. (U) **FY 2000 PLAN:**

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- (U) (\$2.8) Conduct Operational Test (OT) for CCS MK2 Program D0 Block 1C and obtain Milestone III.
- (U) (\$3.2) Commence development of Improved Submarine Launched Mobile Mine (ISLMM) launcher capability.
- (U) (\$0.9) Develop Tactical Control Program (Tactical Decision Aids) to provide for transition of new technology from 6.4 into submarine CCS.
- (U) (\$0.2) Develop engineering change to CCS MK 2 Program D0 Block 1C to incorporate ADCAP torpedo Common Broadband Advanced Sonar System (CBASS) capability.
- (U) (\$6.3) Continue development of AN/BSG-1.

B. ((U) PROGRAM CHANGE SUMMARY:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
FY 1999 President's Budget:	43.1	28.6	18.0
Appropriated Value:	45.7	28.6	
Adjustment to FY 1998/99 .Appropriated Value/FY 1999 President's Budget:			
a. FY98 SBIR Transfer	-1.0		
b. Congressional Undistributed Reductions	-2.6	-.8	
c. Combat Control System Engineering			-11.1
d. Combat System Restructure			-1.6
e. TLAM-N Termination			-1.5
f. ISLMM FCS			+3.2
g. PBD 719R (TLAM-N)			+6.3
h. Combat Systems Upgrade			
i. Minor Adjustments			
FY 2000/01 PRES Budget Submit:	39.5	27.8	13.4

(U) CHANGE SUMMARY EXPLANATION:

- (U) Funding: FY98 adjustments are due to SBIR transfer (-1.0), Congressional Undistributed Reductions (-2.6), FY99 adjustments are due to Congressional Undistributed Reductions (-.8); FY00 adjustments are due to Combat Control System Engineering (-11.1), Zero Sum Combat System Restructuring (-1.6), TLAM-N termination (-1.5), Fund ISLMM FCS RDT&EN effort (+3.2), and continuation TLAM-N (+6.3)
- (U) Schedule: Critical Design Review for AN/BSG-1 moved to August 1998, due to implementation of ECP 0001 and dependency on NSSN Hardware.

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(U) Technical: Not applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>To</u> <u>Complete</u>	<u>Total</u> <u>Cost</u>
OPN/BA4 54200	18.9	17.4	26.1	23.5	31.0	39.4	49.3	78.2	CONT.	CONT.

(U) Related RDT&E:

- (U) PE 0204229N (Tomahawk & Tomahawk Missile Planning Center)
- (U) PE 0205632N (MK 48 ADCAP)
- (U) PE 0603504N (Advanced Submarine Combat Systems Dev.)
- (U) PE 0604503N (Submarine System Equipment Dev.)
- (U) PE 0604707N (Submarine Electronic Warfare Architecture/Eng. Support)

D. (U) ACQUISITION STRATEGY:

- 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.
- Acquisition Decision Memorandum approved 21 June 1996 granted approval to enter Engineering Manufacturing Development.
- Sole Source Cost Plus Incentive Fee Contract awarded to Raytheon.
- Program Review with Milestone Decision Authority conducted 20 March 1998 demonstrated hardware design maturity. Approval was received to exercise CCS MK2 Block 1C Hardware Production Option for FY98/99/00.

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E. SCHEDULE PROFILE:



Submarine Combat Systems

Combat Control Development Schedule

		FY98	FY99	FY00	FY01	FY02	FY03	FY04	FY05
		O N D J F M A M J J A S	O N D J F M A M J J A S	O N D J F M A M J J A S	O N D J F M A M J J A S	O N D J F M A M J J A S	O N D J F M A M J J A S	O N D J F M A M J J A S	O N D J F M A M J J A S
CCS MK2 PROGRAM D0 BLOCK 1C	MOD 2	3 ▲ Program Review 1 ▲ CDR	4 5 SDCT ▲▲						
	MOD 0/1	1 ▲ CDR	Phase I DT/OT 7 9 10 12 DT OT	5 ▲ MS III					
	MOD 3	1 ▲ CDR	5 6 SDCT ▲▲	10 1 ▲ ▲	5 ▲ MS III				
			6 7 SDCT ▲▲	11 12 ▲ ▲	5 ▲ MS III				
	TACTICAL TOMAHAWK					1 ▲ AWARD	SDCT ▲	1 1 ▲ ▲ DT/OT	8 ▲ RTF
	ISLMM			4 ▲ AWARD		12 ▲ SDCT	6 9 ▲ ▲ DT/OT		
CBASS ECP				11 ▲ AWARD	SDCT ▲	6 9 ▲ ▲ DT/OT			
TCP DELIVERIES				1 ▲	1 ▲	1 ▲	1 ▲	1 ▲	
ANBSG-1		8 ▲ CDR	SDCT ▲		6 ▲ MS III				

LEGEND: ▲ SCHEDULED COMPLETION ▲ COMPLETED PE: 0604562N Proj: F0236

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Exhibit R-3 Cost Analysis		Date: February 1999
APPROPRIATION/BUDGET ACTIVITY RDT&E,N/5	PROGRAM ELEMENT NAME AND NUMBER Submarine Tactical Warfare System/ 0604562N	PROJECT NAME AND NUMBER SSN Combat Control System Improv (ENG)/F0236

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total <u>PYs</u> Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	FY01 Cost	FY01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Hardware Development Block 1C/ CBASS ECP	CPIF	RAYTHEON, Portsmouth, RI	28.6	3.4	*	0				CONT.	CONT.	
Ancillary Hardware Development (AN/BSG-1)	PD	PEO-CMU, Patuxent River, MD	3.4	3.0	*	0				0	6.4	
AN/BSG-1	CPIF	RAYTHEON, Portsmouth, RI	7.4	5.5	*	6.3	*			1.0	12.9	
ISLMM	SBIR	TBD	0	0		1.6	4/00			CONT.	CONT.	
Government Engineering	WR	NUWC NEWPORT, RI	26.5	5.4	10/98	.9	10/99			CONT.	CONT.	
GFE												
Award Fees												
Other												
Subtotal Product Development			65.9	17.3		8.8				CONT.	CONT.	
Remarks: * <u>CONTRACT</u> <u>Award/Oblig</u> Block 1/C Jun 96 AN/BSG-1 Jun 97 ISLMM Apr 00												
Development Support Equipment												
Software Development	Various	Various	23.3	1.5		2.1				CONT.	CONT.	
Training Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
GFE												
Subtotal Support			23.3	1.5		2.1				CONT.	CONT.	

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Exhibit R-3 Project Cost Analysis
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Remarks:

Cost Categories (Tailor to WBS, or System/Item Requirements)	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY99 Cost	FY99 Award Date	FY00 Cost	FY00 Award Date	FY01 Cost	FY01 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various	3.1	1.6		0				CONT.	CONT.	
Operational Test & Evaluation	Various	Various	0	5.1		0.2				CONT.	CONT.	
Tooling												
GFE												
Subtotal T&E			3.1	6.7		0.2				CONT.	CONT.	

Remarks:

Contractor Engineering Support												
Government Engineering Support												
Program Management Support	CPFF	EG&G, Arlington, VA	6.2	2.2	*	0.2	*			CONT.	CONT.	
Travel	PD	NAVSEA, Arlington, VA	0.1	0.1		0.1				CONT.	CONT.	
Subtotal Management			6.3	2.3		0.3				CONT.	CONT.	

Remarks:

*CONTRACT AWARD/OBLIG
EG&G Sep 94

Total Cost			98.6	27.8		11.4				CONT.	CONT.	
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Exhibit R-3 Project Cost Analysis
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