

UNCLASSIFIED

FY 1999 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
 PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1447 Surf Combatant Combat Sys Imp	76,231	111,662	117,917	164,316	153,550	141,483	130,428	CONT.	CONT.
K1776 Surf Combatant Weapon Sys Mod	2,071	5,941	7,205	4,275	4,374	4,448	4,534	CONT.	CONT.
K1937 Surf Combatant Weapons Dev	4,235	0	6,879	7,342	977	0	0	0	196,405
K2100 Test Integration Facility	2,797	0	0	0	0	0	0	0	2,797
K2308 Smart Ship Project	0	940	560	21	22	14	10	0	1,527
TOTAL	85,334	118,543	132,561	175,954	158,923	145,945	134,972	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The AEGIS Combat System provides immediate and effective capability to counter the current and expected air, surface and sub-surface threats. Changes in the threat capability and advances in technology such as fiber optics, local area networks, and high performance computing require corresponding Weapon System and Combat System changes. This program provides the Combat System engineering and selected weapons development necessary for a continued increase in the capability of the Combat System in AEGIS cruisers and destroyers. In addition to developing and integrating improvements to the AEGIS Weapon System, this program integrates combat capabilities developed in other Navy R&D programs into the AEGIS Combat System. Modifications of AEGIS Weapon System computer programs must be made to integrate these capabilities into the AEGIS Combat System so that battle effectiveness and Combat System performance will be retained against the evolving threat. Selected Weapon and Combat System upgrades will be backfit into CG 47 Class and DDG 51 Class ships already in the Fleet, providing key warfighting capability while reducing life cycle maintenance costs. The Smart Ship Project will be incorporated into PE 0604307N under Project K2308 starting in FY 1998. This effort will address reducing shipboard manning requirements and the integration of Commercial Off-The-Shelf (COTS) equipment. The goal is to reduce life cycle costs for Navy ships.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under ENGINEERING AND MANUFACTURING DEVELOPMENT because it encompasses engineering and manufacturing development of new end-items prior to production approval decision.

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PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1447 Surf Combatant Combat Sys Imp	76,231	111,662	117,917	164,316	153,550	141,483	130,428	CONT.	CONT.

(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides AEGIS Cruiser and Destroyer Combat System upgrades and integrates new equipments and systems to pace the threat and capture advances in technology such as fiber optics and distributed architecture. Combat Systems are upgraded in baselines. Baseline 2 (CG 52-58) consists of the Vertical Launching System, TOMAHAWK Weapon System, and Anti-Submarine Warfare upgrades. Baseline 3 (CG 59-64) includes the AN/SPY-1B radar and AN/UYQ-21 consoles. Baseline 4 (CG 65-73) integrates the AN/UYK-43/44 computers with superset computer programs developed for the DDG 51. Baseline 4 is the base Combat System for DDG 51-67. Baseline 5 was introduced in FY 1992 ships and includes the Joint Tactical Information Distribution System (JTIDS) Command and Control Processor, Tactical Data Information Link 16, Combat Direction Finding, Tactical Data Information Exchange System, AN/SLQ-32(V)3 Active Electronic Counter Countermeasures, and AEGIS Extended Range (ER) Missile. Baseline 5 was developed in three steps (phases): Phase I integrated AEGIS ER and supports the missile Initial Operational Capability; Phase II integrated system upgrades including Deceptive Electronic Countermeasures, Track Load Control algorithms, and Track Initiation Processor; Phase III integrated JTIDS and the OJ-663 color display Tactical Graphics Capability into the AEGIS Combat System. Baseline 6 will be developed in two phases. Baseline 6 Phase I is planned for the last ship in FY 1994, and Phase III is planned for the first ship in FY 1997. Baseline 6 Phase III is the designation for the computer suite resulting from consolidation of the previous Phase II baseline with variations designed to introduce Tactical Ballistic Missile Defense (TBMD) and Cooperative Engagement Capability (CEC) in in-service ships. Baseline 6 upgrades will include embarked helicopters, Fiber Optics as applied to Data Multiplexing System (DMS), implementation of affordability initiatives, the Radar Set Controller Environmental Simulator (RSCES) and Battle Force Tactical Trainer (BFTT), Advanced Display System, Evolved SEASPARROW

Missile (ESSM), Identification (ID) upgrades Phase I, Advanced TOMAHAWK Weapon Control System (ATWCS) Phase II, Fire Control System upgrades, and the Joint Maritime Command Information System (JMCIS). Baseline 7 will also be developed in two phases. Baseline 7 Phase I is planned for the last ship in FY 1998 and Phase II is planned for the last ship in FY 2002. Major Baseline 7 upgrades include but are not limited to: AN/SPY-1D(V) radar upgrade, integration of Cooperative Engagement Capability (CEC) and Tactical Ballistic Missile Defense (TBMD) capability (first forward fit implementation), advanced computer architecture, ID upgrades Phase II, Cueing Sensor, STANDARD Missile-2 Block IIIIB full integration, Advanced Integrated Electronic Warfare System (AIEWS) Phase I and II, Light Airborne Multipurpose System (LAMPS) helicopter Mark III

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Block II, Advanced Tactical Support, integrated Naval Surface Fire Support (NSFS), and Mark 50 torpedo with Periscope Depth Attack. This project also addresses the Technology Ship Characteristic Improvement Panel (TSCIP) program for advanced computing architecture applicable to DDG 51 and other future ship classes including SC-21, CVX, and LX. Funding starts in FY 1999 for non-recurring AEGIS cruiser conversion engineering. The program will upgrade selected cruisers with Tactical Ballistic Missile Defense, land attack, and Area Air Defense Coordination (AADC) capabilities.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) (\$16,500) Completed Baseline 6 Phase I computer program coding, debugging, and testing. Continued integration of Baseline 6 Phase 1 upgrades into the AEGIS Combat System. Continued rehosting of ACTS computer programs for BFTT, and for C&D and ID related computer programs into COTS based architecture. Conducted computer program Quality Assurance (QA).
- (U) (\$18,537) Completed consolidation of previous Baseline 6 Phase IT, Phase IIT, and Phase II into Baseline 6 Phase III. Conducted Baseline 6 Phase III System Design Review (SDR) and Preliminary Design Review (PDR). Continued RSCES Engineering Development Model (EDM) development.
- (U) (\$16,390) Completed rehost of SPY-1D(V) radar control loop code into adjunct processors including interface simulation computer programs. Began system definition for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I. Conducted system definition and In Process Review to integrate Baseline 7 Phase I upgrades into the AEGIS Combat System. Completed AEGIS Combat System Interface Simulator (ACSIS) rehost.
- (U) (\$834) Completed engineering of SM-2 Block IIIB and Block IV capability enhancements and technical assessment and feasibility studies for cueing sensor upgrades which will be integrated into Baseline 7.
- (U) (\$7,200) Continued to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (U) (\$16,770) Continued to provide for the participation of Navy laboratories and field activities to perform the engineering and scientific services necessary to monitor and direct the baseline efforts.

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2. (U) FY 1998 PLAN:

- (U) (\$10,800) Conduct Baseline 6 Phase I QA. Complete rehosting of ACTS computer programs for BFTT, and for C&D and ID related computer programs into COTS-based architecture. Conduct Link Certification. Conduct System Qualification Test (SQT) demonstration test at the CSED Site.
- (U) (\$20,262) Conduct Baseline 6 Phase III Critical Design Review (CDR). Begin computer program coding, debugging, and testing. Complete RSCES EDM development.
- (U) (\$19,402) Complete system definition/design for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I and start system design. Conduct Baseline 7 Phase I System Design Review (SDR) for integration of upgrades into the AEGIS Combat System. Start system engineering.
- (U) (\$36,873) Develop the UYQ-70 displays, processors, and associated architectures necessary for UYQ-70 Area TBMD baselines, including necessary UYQ-70 equipment to support development of the AEGIS UYQ-70 TBMD baselines.
- (U) (\$6,114) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (U) (\$18,211) Continue to provide for the participation of Navy laboratories and field activities to perform the engineering and scientific services necessary to monitor and direct the baseline efforts.

3. (U) FY 1999 PLAN:

- (U) (\$20,900) Complete Baseline 6 Phase III computer program code, debugging, and testing. Start integration of Baseline 6 Phase III upgrades into the AEGIS Combat System at the CSED Site.
- (U) (\$36,384) Continue system design for full integration of SPY-1D(V) into new construction AEGIS Combat System in Baseline 7 Phase I. Conduct Baseline 7 Phase I PDR for integration of upgrades into the AEGIS Combat System.

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PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

- (U) (\$6,200) Start system definition to integrate Baseline 7 Phase II upgrades into the AEGIS Combat System.
- (U) (\$17,000) Start system definition and engineering for the AEGIS Cruiser Conversion Program to incorporate warfighting capabilities including TBMD, land attack, and AADC into Baseline 2, 3, and 4 Cruisers. This includes computer program modifications.
- (U) (\$2,947) Conduct system definition and start design of an advanced combat system with fully distributed architecture leveraging HIPER-D and other technology efforts for integration with the Navy Theater Wide program.
- (U) (\$8,000) Start system definition and engineering development for integration of the Area Air Defense Coordinator (AADC) capability into AEGIS Ships.
- (U) (\$7,200) Continue to provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site.
- (U) (\$19,286) Continue to provide for the participation of Navy laboratories and field activities necessary to perform the engineering scientific services necessary to monitor and direct the baseline efforts.

B. (U) PROGRAM CHANGE SUMMARY:

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) FY 1998 President's Budget:	79,022	80,842	102,708
(U) Appropriated Value:	82,537	114,915	
(U) Adjustments to FY 1997/98 Appropriated Value/ FY 1998 President's Budget:			
a. Adjustments	-6,306	-3,253	+15,209

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DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp
(U) FY 1999 PRESUDG Submit: 76,231 111,662 117,917

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997 change due to Congressional Undistributed Reductions and SBIR Transfer. FY 1998 change due to undistributed reductions and economic assumptions. FY 1999 change due to an increase for CG conversions and a decrease for inflation adjustments.

(U) Schedule: Consolidation of previous Baseline 6 Phase IT, Phase IIT, and Phase II into Baseline 6 Phase III caused schedule adjustments of approximately six months. There is no impact on meeting ship schedules. Baseline 7 Phase I schedules were adjusted as well, with no impact on meeting ship schedules.

(U) Technical: NONE.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN LI2122, DDG-51								
3,533,515	3,473,270	2,679,474	2,720,434	2,873,480	2,691,124	3,164,994	CONT.	CONT.
(U) OPN L15246, AEGIS Support Equipment								
31,322	20,655	83,169	85,671	65,266	71,923	68,168	CONT.	CONT.

(U) RELATED RDT&E:

(U) PE 0603216C (Theater Ballistic Missile Defense)
(U) PE 0603382N (Advanced Combat System Technology)
(U) PE 0603755N (Ship Self Defense)

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BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp
(U) PE 0604216C (Theater Ballistic Missile Defense)
(U) PE 0604366N (Standard Missile Improvements)

D. (U) SCHEDULE PROFILE: See attachment (1).

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BUDGET ACTIVITY: 5

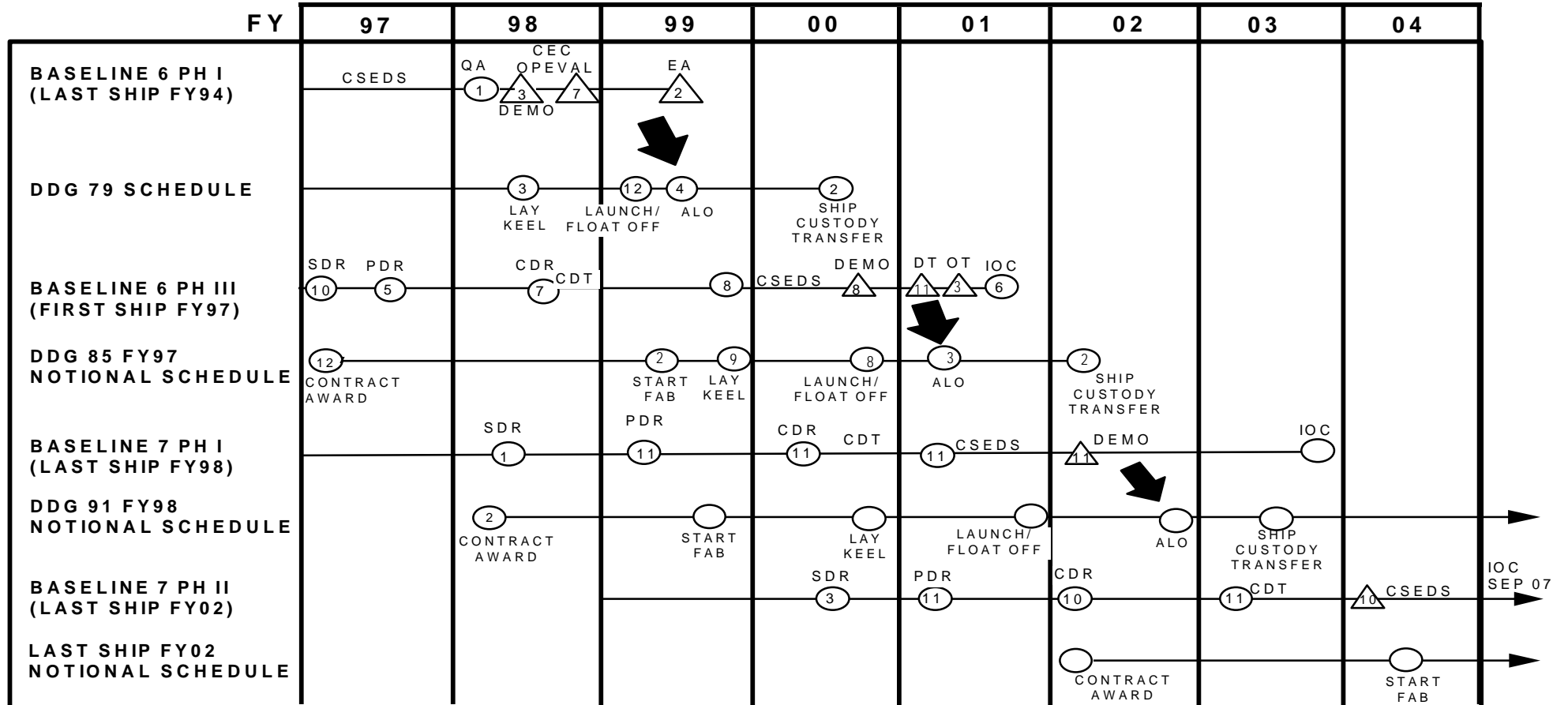
PROGRAM ELEMENT: 0604307N

PROJECT NUMBER: K1447

PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

PROJECT TITLE: Surf Combatant Combat Sys Imp

AEGIS FORWARD FIT BASELINE DEVELOPMENT PLANNING SCHEDULE



NOTE: IOC = SHIP CUSTODY TRANSFER (SCT)

ATTACHMENT 1

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FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
a. System Engineering	63,461	97,980	93,440
b. Gov. Engineering Spt.	11,123	11,986	22,730
c. Pgm. Management Spt.	572	589	607
d. Development Test and Eval.	1,075	1,107	1,140
Total	76,231	111,662	117,917

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RDT&E PE/Project Cost Breakdown
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 PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (\$ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Lockheed Martin, Moorestown, NJ	SS/CPAF	03/93	398,799	398,799	184,375	59,461	67,951	87,385	CONT.	CONT.
Lockheed Martin, Minneapolis, MN	SS/	02/98	25,500	25,500	0	0	25,500	0	0	25,500
Applied Physics Lab (APL), Baltimore, MD	SS/CPFF	02/94	24,118	24,118	12,868	2,750	4,000	10,500	CONT.	CONT.
McClellan AFB, CA	MIPR	01/94	18,664	18,664	18,664	0	0	0	0	18,664
Navy Surface Warfare Center, Dahlgren, VA	WR	10/93	39,821	39,821	21,445	6,160	5,986	9,230	CONT.	CONT.
Vitro Corp., Silver Spring, MD	C/CPAF	10/92	27,411	27,411	14,661	4,000	4,250	5,500	CONT.	CONT.
Miscellaneous			14,435	14,435	7,388	2,213	2,279	3,555	CONT.	CONT.
Support and Management			8,379	8,379	6,611	572	589	607	CONT.	CONT.
Miscellaneous			6,596	6,596	3,274	1,075	1,107	1,140	CONT.	CONT.
GOVERNMENT FURNISHED PROPERTY: Not applicable.										

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FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

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BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1447
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Combat Sys Imp

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	259,401	74,584	109,966	116,170	CONT.	CONT.
Subtotal Support and Management	6,611	572	589	607	CONT.	CONT.
Subtotal Test and Evaluation	3,274	1,075	1,107	1,140	CONT.	CONT.
Total Project	269,286	76,231	111,662	117,917	CONT.	CONT.

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RDT&E PE/Project Cost Breakdown
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FY 1999 RDT&E BUDGET ITEM JUSTIFICATION

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BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1776 Surf Combatant Weapon Sys Mod	2,071	5,941	7,205	4,275	4,374	4,448	4,534	CONT.	CONT.

A. (U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides for modifications to the AEGIS Weapon System MK-7 to counter the threat as articulated in ONI System Threat Assessment Report, ONI TA #046-93 dated May 1993 and subsequent updates. The modifications will be introduced into CG 47 Class and DDG 51 Class ships.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) (\$300) Continued AN/SPY-1B/D upgrade analysis support.
- (U) (\$1,258) Continued ORTS upgrade for Baselines 3, 4 and 5 design, development and engineering.
- (U) (\$513) Began AN/SPY-1B/B(V)/D Moving Target Indicator analysis, design, development, and engineering for radar enhancements.

2. (U) FY 1998 PLAN:

- (U) (\$600) Continue AN/SPY-1B/D upgrade analysis support, including signal processor overtemperature protection and Track Initiation Processor (TIP) design changes.
- (U) (\$1,239) Continue ORTS upgrade for Baselines 3,4, and 5 design, development, and engineering.

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FY 1999 RDT&E BUDGET ITEM JUSTIFICATION

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- BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod
- (U) (\$1,702) Begin design and engineering for Radar Set Controller Environmental Simulator (RSCES) for AN/SPY-1D radar system.
 - (U) (\$1,100) Provide the RDT&E share of operations and maintenance of the CSED Site, Program Generation Center, Computer Program Test Site, and Land Based Test Site to supplement Project K1447.
 - (U) (\$1,300) Provide lab support to supplement Project K1447 in the integration of SPY-1D(V) radar into the AEGIS Weapon System.

3. (U) FY 1999 PLAN:

- (U) (\$100) Continue AN/SPY-1B/D upgrade analysis support. Complete TIP design changes.
- (U) (\$1,200) Continue ORTS upgrade for Baselines 3, 4, and 5 design, development, and engineering.
- (U) (\$1,100) Continue AN/SPY-1B/B(V)/D Moving Target Indicator analysis, design, development, and engineering for radar enhancement.
- (U) (\$1,800) Continue system engineering for AN/SPY-1B/D DECCM upgrades.
- (U) (\$3,005) Continue design and engineering for RSCES for AN/SPY-1D(V) radar system.

B. (U) PROGRAM CHANGE SUMMARY:

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) FY 1998 President's Budget:	2,114	6,123	7,325
(U) Appropriated Value:	2,204	6,123	
(U) Adjustments to FY 1997/98 Appropriated Value/			

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BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod
FY 1998 President's Budget:

a. Adjustments	-133	-182	-120
(U) FY 1999 PRESUDG Submit:	2,071	5,941	7,205

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1997: Change due to SBIR transfer and minor pricing adjustments. FY 1998 change due to undistributed reductions and economic assumptions. FY 1999 change due to minor pricing and inflation adjustments.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
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(U) OPN LI5246, AEGIS Support Equipment	31,322	20,655	83,169	85,671	65,266	71,923	68,168	CONT. CONT.
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(U) RELATED RDT&E: Not applicable.

D. (U) SCHEDULE PROFILE: See attachment (2).

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BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604307N

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PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering

PROJECT TITLE: Surf Combatant Weapon Sys Mod

WEAPON SYSTEM MODS PE 0604307N, PROJ. K1776

FY	96	97	98	99	00	01	02	03
AEGIS ORDALTS:								
SPY-1B/D DECCM				SYSTEM ENGINEERING DEVELOPMENT AND TESTING				
B/L 3, 4 & 5 ORTS UPGRADE	ORTS MM I UPGRADE IMP	ORTS UPGRADE B/L 3, 4 & 5						
SPY-1B/D UPGRADES	SYSTEMS ANALYSIS							
SPY-1B/D MTI		DESIGN, DEVEL, ENGIN & TESTING		DESIGN, DEVELOPMENT, ENGINEERING & TESTING				
SPY-1D RSCES			DESIGN, DEVELOPMENT, ENGINEERING & TESTING					

ATTACHMENT 2

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FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
a. Systems Engineering	1,251	5,092	6,316
b. Government Engineering Support	817	845	884
c. Program Management Support	3	4	5
Total	2,071	5,941	7,205

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DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1776
 PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapon Sys Mod

B.(U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (\$ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Martin Marietta, Morriestown, NJ										
	SS/CPFF	03/91	25,467	25,467	12,804	1,251	5,092	6,316	CONT.	CONT.
Miscellaneous			4,644	4,644	2,098	817	845	884	CONT.	CONT.
Support and Management										
Miscellaneous			1,068	1,068	1,056	3	4	5	CONT.	CONT.
Test and Evaluation: Not applicable.										
GOVERNMENT FURNISHED PROPERTY: Not applicable.										

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	14,902	2,068	5,937	7,200	CONT.	CONT.
Subtotal Support and Management	1,056	3	4	5	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	0	0
Total Project	15,958	2,071	5,941	7,205	CONT.	CONT.

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FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapons Dev

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K1937 Surf Combatant Weapon Dev	4,235	0	6,879	7,342	977	0	0	0	196,405

A.(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program is required to develop selected systems and subsystems for the ARLEIGH BURKE (DDG 51) class ships. This project funds development of equipment for the AEGIS Weapon System, as opposed to the costs of integrating elements into the Combat System which is funded in Project K1447. Current funding completes the development of an upgrade to the current AN/SPY-1D radar, Engineering Development Model 4B (EDM-4B), to enhance its capability against low cross section sea skimming targets in increasingly more severe electronic countermeasures and in near-land clutter environments. The changes are in the transmitter, signal processor, and radar control computer program. Two new efforts will start in FY 1999. First, support for a Ballistic Missile Defense Organization (BMDO) Program which is developing a common, backfittable theater-wide radar upgrade signal processor to provide affordable theater-wide exoatmospheric discrimination capability. Second, integration of the AN/SPQ-9B radar into the AEGIS Weapon System to improve capability against the advanced low-altitude threat.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1997 ACCOMPLISHMENTS:

- (U) (\$3,235) Completed rehosting radar system computer program from two AN/UYK-43 computers to one AN/UYK-43 and one commercial adjunct processor, including testing of microprocessors against AEGIS benchmark requirements, testing commercial operating systems, and computer program architecture development.
- (U) (\$1,000) Conducted DT/Operational Assessment (OA) of the adjunct processor performance at the CSED Site.

2. (U) FY 1998 PLAN: Not Applicable.

3. (U) FY 1999 PLAN:

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RDT&E PE/Project Cost Breakdown
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FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1998

- BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapons Dev
- (U) (\$2,940) Initiate expanded common signal processor design for the AN/SPY-1 Radar and include advanced AAW functionality and features. The expanded signal processor design will add AAW functionality to and leverage the common signal processor's TBMD functionality design currently being pursued via TBMD funding. The advanced AAW functionality will implement adaptive digital signal processing to improve low altitude clutter rejection performance and ECCM capabilities.
 - (U) (\$3,939) Initiate the design for the installation and integration of the AN/SPQ-9B Radar (or its advanced variant) in the AEGIS Weapon System. The installation design will include remaining modification work for backfit in destroyers and cruisers.

B. (U) PROGRAM CHANGE SUMMARY:

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) FY 1998 President's Budget:	4,354	0	0
(U) Appropriated Value:	4,538	0	0
(U) Adjustments to FY 1997/98 Appropriated Value/ FY 1998 President's Budget:			
a. Adjustments	-298		+6,879
(U) FY 1999 PRESBDG Submit:	4,235	0	6,879

(U) CHANGE SUMMARY EXPLANATION:

- (U) Funding: FY 1997 change due to Congressional undistributed reductions and minor pricing adjustments. FY 1999 change due to Theater Wide Radar Improvement and AN/SPQ-9B AEGIS integration.
- (U) Schedule: Not Applicable.
- (U) Technical: Not Applicable.

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RDT&E PE/Project Cost Breakdown
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FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapons Dev

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) SCN LI2122, DDG-51								
3,533,515	3,473,270	2,679,474	2,720,434	2,873,480	2,691,124	3,164,994	CONT.	CONT.

(U) RELATED RDT&E: Not Applicable.

D. (U) SCHEDULE PROFILE: Not Applicable.

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
a. Systems Engineering	3,655	0	5,969
b. Government Engineering Support	580	0	910
Total	4,235	0	6,879

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RDT&E PE/Project Cost Breakdown
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FY 1999 RDT&E,N PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K1937
 PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Surf Combatant Weapons Dev

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (\$ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Martin Marietta,	Morriestown, NJ	SS/CPFF 03/91	185,955	185,955	176,210	3,655	0	5,969	CONT.	CONT.
Miscellaneous	Not Applicable									
Support and Management	Not Applicable									
Miscellaneous	Not Applicable									
Test and Evaluation	Not Applicable									
Miscellaneous			2,060	2,060	570	580	0	910	CONT.	CONT.
					Total					
					FY 1996	FY 1997	FY 1998	FY 1999	To	Total
					<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Budget</u>	<u>Complete</u>	<u>Program</u>
Subtotal Product Development					176,210	3,655	0	5,969	CONT.	CONT.
Subtotal Test and Evaluation					570	580	0	910	CONT.	CONT.
Total Project					176,780	4,235	0	6,879	CONT.	CONT.

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RDT&E PE/Project Cost Breakdown
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FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

(U) COST: (Dollars in Thousands)

PROJECT NUMBER & TITLE	FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
K2308 Smart Ship Project	0	940	560	21	22	14	10	0	1,567

A.(U) MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Smart Ship Project (SSP) was initiated by a Chief of Naval Operations directive to examine a variety of means to reduce life cycle cost of ships, concentrating on the fact that a major portion of ship's life cycle cost is manpower. The Project is chartered to devise and implement technology and policy changes which will reduce the workload for a ship's crew. Reduced workload may result in reduced manning and therefore reduce ship life cycle costs. The technology being considered replaces human functions rather than just improving efficiency, and its application requires funding. Policy changes are focused on reducing unnecessary or redundant requirements, and do not require funding. Selected technology and policy changes will be tested in an in-service fleet ship, USS YORKTOWN (CG 48). Those changes which prove successful will be considered for implementation in both current in-service ships and future ships to maximize life cycle cost savings across all Navy ship classes. The Project will develop, procure, install, train and support test projects for demonstration in the test ship. Successful projects will be analyzed and packaged for wider application in the fleet.

(U) PROGRAM ACCOMPLISHMENTS AND PLAN:

1. (U) FY 1997 ACCOMPLISHMENTS: Not Applicable.

2. (U) FY 1998 PLAN:

- (U) (\$461) Assess current technology and equipment available through Department of Defense and industry sources which are candidates for reducing shipboard manning requirements and individual crew member workloads. Any manning and workload reductions identified will not affect ship and system readiness and performance, crew safety, nor habitability.

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Budget Item Justification
(Exhibit R-2, Page 22 of 24)

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FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

- (U) (\$235) Conduct ship and system design and engineering necessary to adapt candidate technology and equipment to adapt to shipboard environment and to integrate the equipment into existing ship systems.
- (U) (\$244) Install and check out equipment on board designated ships and conduct at-sea testing.

3. (U) FY 1999 PLAN:

- (U) (\$560) Complete installation and check out of candidate technology and associated equipment on board designated ships and conduct at-sea testing.

B. (U) PROGRAM CHANGE SUMMARY:

	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
(U) FY 1997 President's Budget:	0	969	5,610
(U) Appropriated Value:	0		
(U) Adjustments to FY 1997/98 Appropriated Value/ FY 1998 President's Budget			
a. Adjustments	0	-29	-5,050
(U) FY 1999 PRESUDG Submit:	0	940	560

(U) CHANGE SUMMARY EXPLANATION:

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Budget Item Justification
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FY 1999 RDT&E BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

(U) Funding: FY 1998 change due to undistributed reductions and economic assumptions. FY 1999 change due to program restructure and inflation adjustments.

(U) Schedule: Not Applicable.

(U) Technical: Not Applicable.

C. (U) OTHER PROGRAM FUNDING SUMMARY: (Dollars in thousands)

FY 1997 ACTUAL	FY 1998 ESTIMATE	FY 1999 ESTIMATE	FY 2000 ESTIMATE	FY 2001 ESTIMATE	FY 2002 ESTIMATE	FY 2003 ESTIMATE	TO COMPLETE	TOTAL PROGRAM
(U) OPN LI5246, AEGIS Support Equipment 31,322	20,655	83,169	85,671	65,266	71,923	68,168	CONT.	CONT.

(U) RELATED RDT&E: Not Applicable.

A. (U) PROJECT COST BREAKDOWN: (\$ in thousands)

Project Cost Categories	<u>FY 1997</u>	<u>FY 1998</u>	<u>FY 1999</u>
a. Systems Engineering	0	0	0
b. Government Engineering Support	0	891	530

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Budget Item Justification
(Exhibit R-2, Page 24 of 24)

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FY 1999 RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1998

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604307N PROJECT NUMBER: K2308
 PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering PROJECT TITLE: Smart Ship Project

c. Program Management Support	0	49	30
d. Developmental Test and Evaluation	0	0	0
Total	0	940	560

B. (U) BUDGET ACQUISITION HISTORY AND PLANNING INFORMATION (\$ in thousands)

PERFORMING ORGANIZATIONS

Contractor/ Government Performing Activity	Contract Method/ Fund Type Vehicle	Award/ Oblig Date	Perform Activity EAC	Project Office EAC	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Product Development										
Contingent Contractors, NSWC/CD										
	SS/CPAF	03/98	1,047	1,047	0	0	891	530	CONT.	CONT.
Support and Management										
Misc.										
			406	406	0	0	49	30	CONT.	CONT.
Test and Evaluation										
Misc.										
			86	86	0	0	0	0	CONT.	CONT.

GOVERNMENT FURNISHED PROPERTY: Not applicable

	Total FY 1996 & Prior	FY 1997 Budget	FY 1998 Budget	FY 1999 Budget	To Complete	Total Program
Subtotal Product Development	0	0	891	530	CONT.	CONT.

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RDT&E PE/Project Cost Breakdown
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FY 1999 RDT&E PROGRAM ELEMENT/PROJECT COST BREAKDOWN

DATE: February 1998

BUDGET ACTIVITY: 5	PROGRAM ELEMENT: 0604307N	PROJECT NUMBER: K2308				
	PROGRAM ELEMENT TITLE: AEGIS Combat System Engineering	PROJECT TITLE: Smart Ship Project				
Subtotal Support and Management	0	0	49	30	CONT.	CONT.
Subtotal Test and Evaluation	0	0	0	0	CONT.	CONT.
Total Project	0	0	940	560	CONT.	CONT.

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RDT&E PE/Project Cost Breakdown
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