CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5**					R-1 ITEM NOMENCLATURE 0604504N AIR CONTROL ENGINEERING			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	**13.213**	**4.841**	**10.472**	**7.357**	**6.724**	**2.846**	**2.900**	**2.953**
W0718 MARINE AIR TRAFFIC CONTROL AND LANDING SYSTEMS (MATCALS)	**8.508**	**1.631**	**5.347**	**4.698**	**4.801**	**0.870**	**0.885**	**0.902**
W0993 SHIPBOARD AIR TRAFFIC CONTROL SYSTEMS	**2.504**	**2.907**	**4.824**	**2.321**	**1.540**	**1.541**	**1.572**	**1.601**
W1657 SHORE AIR TRAFFIC CONTROL (ATC) SYSTEMS	**2.201**	**0.303**	**0.301**	**0.338**	**0.383**	**0.435**	**0.443**	**0.450**

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program element provides for the development, integration, and testing of automated Air Traffic Control (ATC) hardware and software required to provide improved flight safety and more reliable all-weather ATC and landing system capabilities at Naval Air Stations and Marine Corps Air Stations and Fleet Area Control & Surveillance Facilities (FACSFAC) worldwide. Funded programs are required to upgrade or replace aging ATC and landing system equipment on aircraft, aircraft carriers, amphibious ships, Naval Air Stations, Marine Corps Air Stations and Navy/Marine Corps tactical/expeditionary airfields and remote landing sites. This program element will also fund the development of a Global Positioning System data link to enable the transfer of precise positioning information between ships and aircraft.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING				PROJECT NUMBER AND NAME W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**8.508**	**1.631**	**5.347**	**4.698**	**4.801**	**0.870**	**0.885**	**0.902**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This program provides for continued development, integration, and testing of hardware and software to meet requirement for all-weather operation and improved flight safety of Air Traffic Control and Landing Systems at Navy/Marine Corps expeditionary airfields. Current program includes approved transition to Phase I for the Air Surveillance and Precision Approach Radar Control System (ASPARCS). The ASPARCS will replace the legacy Air Traffic Control (ATC) Precision Approach Radar (PAR), Air Surveillance Radar (ASR), and Communications and Control Subsystem with a High Mobility Multipurpose Wheeled Vehicle based PAR, ASR, and Operational Subsystem/Communication Subsystem. ASPARCS Phase II is for the Preplanned Product Improvements.

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	0604504N AIR CONTROL ENGINEERING	W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	4.710			
RDT&E Articles Quantity				

Provided final incremental funding for the First Article systems integration and demonstration of the Air Surveillance Radar and Precision Approach Radar System (ASPARCS).

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.658	1.631	0.132	0.062
RDT&E Articles Quantity				

Perform systems engineering functions in support of the ASPARCS program. This effort includes preparation of Developmental Test/Operational Test (DT/OT) plans for Phase I and Phase II ASPARCS, completing ASPARCS Phase I DT(OT), and technical oversight of the ASPARCS program.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	2.000			
RDT&E Articles Quantity				

Developed technology for the Transportable Transponder Landing System (TTLS).

R-1 SHOPPING LIST - Item No. 113

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	0604504N AIR CONTROL ENGINEERING	W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.140			
RDT&E Articles Quantity				

Continued management support to the program office for the development of the ASPARCS.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			3.546	3.033
RDT&E Articles Quantity				

Design and develop software code to interface Tactical Digital Information Link (TADIL-J) input/output to existing ASPARCS Phase I software; design changes to existing ASPARCS software to achieve Defense Information Infrastructure-Common Operating Environment (DII-COE) level 5 compliance. In addition, incorporate National Imagery Mapping Agency (NIMA) functionality, and enhanced simulation and training into the existing ASPARCS software.

	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			1.669	1.603
RDT&E Articles Quantity				

Perform design efforts to integrate the Multi Function Information Distribution System (MIDS) data link terminal into the ASPARCS Phase II system.

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	0604504N AIR CONTROL ENGINEERING	W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	7.988	1.668	1.194	0.914
Current BES/President's Budget	8.508	1.631	5.347	4.698
Total Adjustments	0.520	-0.037	4.153	3.784
Summary of Adjustments				
Congressional program reductions	-0.213			
Congressional undistributed reductions		-0.010		
Congressional rescissions	-0.017			
SBIR/STTR Transfer	-0.073			
Economic Assumptions	-0.024	-0.027	-0.138	-0.109
Reprogrammings	-0.004			
Other Navy/OSD Adjustments	0.851		4.291	3.893
Congressional increases				
Subtotal	0.520	-0.037	4.153	3.784

Schedule:

ASPARCS Phase I DT, OT and MS III slipped due to the redesign of the Precision Approach Radar (PAR) to accommodate Air Force (AF) requirements funding and Congressional direction to fund the TTLS .

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	0604504N AIR CONTROL ENGINEERING	W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)

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 BLI 281500, MATCALS	0.978	7.680	15.629	15.663	19.677	20.208	19.726	17.204	Continuing	Continuing

E. ACQUISITION STRATEGY: *

Air Surveillance and Precision Approach Radar System (ASPARCS) is an ACAT IVT program. Lockheed Martin was awarded the contract for this effort in June of 2000. This effort included First Article development (Fixed Price Incentive) with (Firm Fixed Priced) production options. The Lockheed Martin contract includes a Cost Plus Fixed Fee option for Phase II of the program. Phase II will include the development of the Common Aviation Command & Control System interoperability capability, the National Imagery Mapping Agency (NIMA) capability, and an enhanced training capability. The Operational Subsystem/Communication Subsytem (OS/CS) is being developed and integrated as a joint Lockheed /Naval Air Warfare Center, Aircraft Division (NAWC AD) effort. The first article and production OS/CS will be produced by NAWC AD.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)

DATE: **February 2003**

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

PROGRAM ELEMENT: 0604504N AIR CONTROL ENGINEERING

PROJECT NUMBER AND NAME: W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)

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
Primary Hardware Devel Phase I	C/FFP	Lockheed Martin	13.806								13.806	13.806
Primary Hardware Devel Phase II	C/CPFF	Lockheed Martin				0.870	11/03	0.884	11/04	0.434	2.188	2.188
Training Development	WX	NAWCAD S.I.	0.175							0.000	0.175	
Systems Engineering	WX	NAWCAD S.I.	5.131			0.601	11/03	0.617	11/04	Continuing	Continuing	
Ancillary Hardware Deveopment	SS/FFP	Rockwell Collins	0.424								0.424	0.424
Primary Hardware Devel TTLS	FFP	ANPC	2.000								2.000	2.000
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			21.536	0.000		1.471		1.501		Continuing	Continuing	

Remarks:

Software Development	C/CPFF	Lockheed Martin				2.549	11/03	2.006	11/04	1.224	5.779	5.779
Software Development	WX	NAWCAD S.I.				0.716	11/03	0.351	11/04	0.417	1.484	
Integrated Logistics Support	WX	NAWCAD S.I.	0.236			0.100	11/03	0.100	11/04	Continuing	Continuing	
Configuration Management	WX	NAWCAD S.I.	0.353								0.353	
Technical Data	WX	NAWCAD S.I.	0.394			0.085	11/03	0.085	11/04	Continuing	Continuing	
Development Support MATCALS	WX	NAWCAD S.I.	0.205								0.205	
											0.000	
											0.000	
Subtotal Support			1.188	0.000		3.450		2.542		Continuing	Continuing	

Remarks:

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**		PROGRAM ELEMENT 0604504N AIR CONTROL ENGINEERING				PROJECT NUMBER AND NAME W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)						
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	WX	NAWCAD S.I.	0.286	1.428	11/02	0.100	11/03	0.400	11/04	1.745	3.959	
Operational Test & Evaluation	WX	MCOTEA	0.342	0.070	11/02	0.145	11/03	0.075	11/04	0.160	0.792	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.628	1.498		0.245		0.475		1.905	4.751	
Remarks:												
Program Management Support	WX	NAWCAD S.I.	0.212	0.133	11/02	0.151	11/03	0.150	11/04	Continuing	Continuing	
Travel	WX	NAVAIR	0.081	0.000	11/02	0.030	11/03	0.030	11/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			0.293	0.133		0.181		0.180		Continuing	Continuing	
Remarks:												
Total Cost			23.645	1.631		5.347		4.698		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 113

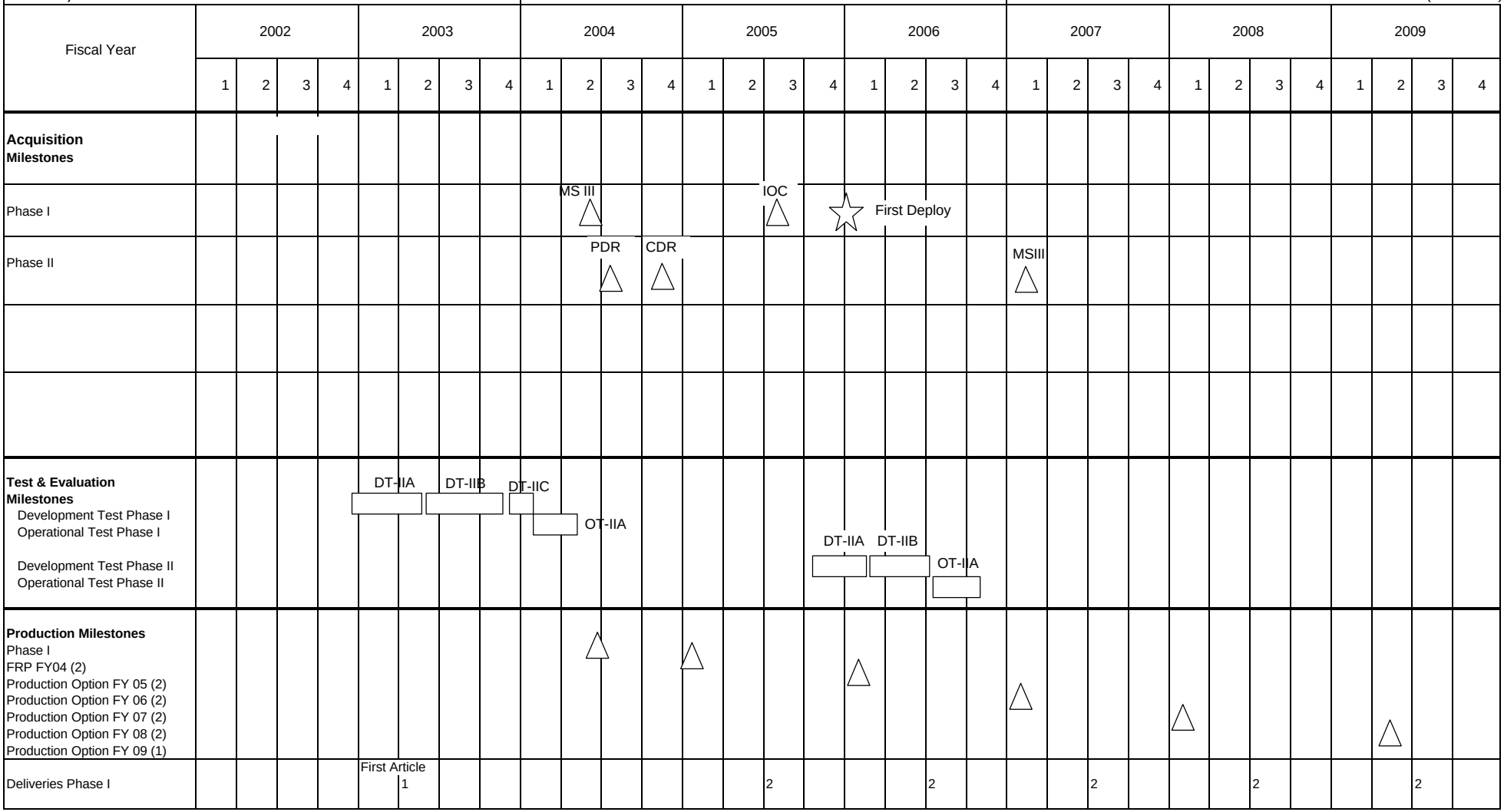
CLASSIFICATION:

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

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

PROGRAM ELEMENT NUMBER AND NAME: 0604504N AIR CONTROL ENGINEERING

PROJECT NUMBER AND NAME: W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)



R-1 SHOPPING LIST - Item No. 113

* Not required for Budget Activities 1, 2, 3, and 6

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT 0604504N AIR CONTROL ENGINEERING				PROJECT NUMBER AND NAME W0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALS)			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Developmental Testing (DT-IIA) Phase I	4Q	2Q						
Developmental Testing (DT-IIB1) Phase I		2Q-4Q						
Developmental Testing (DT-IIC) Phase I		4Q	1Q					
Operational Testing (OT-IIA) Phase I			1Q-2Q					
Milestone III (MS III) Phase I			2Q					
Full Rate Production (FRP) Decision Phase I			2Q					
Full Rate Production Start Phase I			2Q					
IOC Phase I				3Q				
First Deployment Phase I				4Q				
Critical Design Review (CDR) Phase II			4Q					
Preliminary Design Review (PDR) Phase II			3Q					
Developmental Testing (DT-IIA) Phase II				4Q	1Q			
Developmental Testing (DT-IIB1) Phase II					1Q-3Q			
Operational Testing (OT-IIA) Phase II					3Q-4Q			
Milestone III Phase II						1Q		

R-1 SHOPPING LIST - Item No. 113

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING				PROJECT NUMBER AND NAME W0993, Shipboard Air Traffic Control Systems			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**2.504**	**2.907**	**4.824**	**2.321**	**1.540**	**1.541**	**1.572**	**1.601**
RDT&E Articles Qty	**2**	**2**	**1**					

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Shipboard Air Traffic Control Central systems, using versions of the AN/TPX-42(V) Direct Altitude and Identity Readout system (DAIR), identify, marshal, and direct aircraft within a 50 Nautical Mile (NM) radius. At closer range (8 NM) a ship's Automatic Carrier Landing System (ACLS) and Independent Landing Monitor (ILM) are operationally required to effect safe landing on the moving decks of ships. The AN/SPN-46 ACLS and AN/SPN-41 ILM provide precise automatic control and verification of aircraft during their final approach and landing sequence. Due to acquisition limitations in rain, the Moving Target Detection (MTD) technology used in the AN/SPN-46 is being adapted for the AN/SPN-43 search surveillance radar and in the AN/SPN-35B precision approach radar. The insertion of MTD technology plus an antenna pedestal upgrade constitute the AN/SPN-35C upgrade. This AN/SPN-35C configuration also requires development of an interface with the Battle Force Tactical Trainer. The AN/SPN-41/41A transmitter requires redesign to improve reliability. The AN/SPN-46 radar currently functions in cooperation with an active beacon on the controlled aircraft, and this beacon has an obsolescence problem. Other performance upgrades to the AN/SPN-46 include a rearchitecture of its Unit 19 processor, replacement of the AN/AYK-14 hardware and software, as well as various Engineering Change Proposals (ECP) to improve system accuracy, availability and supportability. In recent years, the top 25% of the AN/SPN-43 frequency band has been reallocated to the Fixed Wireless Access community. Because the Navy requires an air traffic control radar, this project unit will include engineering efforts to identify requirements and develop a suitable replacement before the AN/SPN-43 becomes operationally ineffectual. Finally, The AN/TPX-42A(V)14 DAIR will undergo several phased upgrades that will eventually result in two field changes. System improvements include replacing militarized front-end equipment in the track processor with COTS technology, converting the operational program software to the more commonly used and flexible 'C' language, and integrating a flat panel monitor into the AN/UYQ-70 console. The development of a common console will reduce operational costs, improve reliability, and provide compatible interfaces and commonality for all ATC workstation

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	0604504N AIR CONTROL ENGINEERING	W0993, Shipboard Air Traffic Control Systems

B. Accomplishments/Planned Program

	FY 02	FY 03	FY 04	FY 05
AN/SPN-43 Upgrade	0.184	0.900	2.995	0.798
RDT&E Articles Quantity			1	

Conducted analysis of alternatives for AN/SPN-43C replacement/upgrade in FY02. Initiate development of one SPN-43C replacement (article) in FY03 and continue through FY05.

	FY 02	FY 03	FY 04	FY 05
Shipboard testing for AN/SPN-35C.	1.202		0.065	
RDT&E Articles Quantity				

Completed shipboard testing (DT-IIC) and safety certification for AN/SPN-35C radar upgrade in FY02. Conduct OPEVAL support in FY04.

	FY 02	FY 03	FY 04	FY 05
AN/SPN-46 Unit 19		1.029	0.070	
RDT&E Articles Quantity		1		

Complete development of AN/SPN-46 Unit 19 redesign ECP (for prior development, see under W1657) in FY03 and test it in FY04. The article represents a VME Cage that replaces SEM cards in the Unit 19.

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	0604504N AIR CONTROL ENGINEERING	W0993, Shipboard Air Traffic Control Systems

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
AN/SPN-46 AYK-14 Processor Software			0.109	0.997
RDT&E Articles Quantity				

Initiate conversion of AN/SPN-46 AYK-14 processor software from CMS to "C" language in FY04 and continue through FY05.

	FY 02	FY 03	FY 04	FY 05
AN/SPN-46 Miscellaneous ECPs	0.138	0.030		
RDT&E Articles Quantity	1			

Completed development of AN/SPN-46 Test Support Fixtures ECP and AN/SPN-46 Power Monitor (article) ECP in FY02. Continued development of AN/SPN-46 X-Band Calibration ECP in FY02 and conduct testing in FY03.

	FY 02	FY 03	FY 04	FY 05
AN/TPX-42 Improvements	0.980	0.948	0.938	
RDT&E Articles Quantity	1	1		

Initiated and completed development of AN/TPX-42 Flat Panel Display (article) ECP in FY02. Continue development of AN/TPX-42 Track Processor (article) Upgrade ECP (for prior development, see under W1657) in FY03 and conduct testing in FY04.

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	0604504N AIR CONTROL ENGINEERING	W0993, Shipboard Air Traffic Control Systems

B. Accomplishments/Planned Program (Cont.)

	FY 02	FY 03	FY 04	FY 05
AN/SPN-41 Miscellaneous Upgrades			0.647	0.526
RDT&E Articles Quantity				

Initiate redesign of AN/SPN-41 transmitter assembly in FY04 and continue it through FY05. Initiate development of AN/SPN-41 Electronic Drawer Assembly Upgrade ECP in FY05.

	FY 02	FY 03	FY 04	FY 05
RDT&E Articles Quantity				

	FY 02	FY 03	FY 04	FY 05
RDT&E Articles Quantity				

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	0604504N AIR CONTROL ENGINEERING	W0993, Shipboard Air Traffic Control Systems

C. PROGRAM CHANGE SUMMARY:

Funding:	FY2002	FY2003	FY2004	FY2005
FY 2003 President's Budget:	2.389	2.973	4.961	2.382
FY 2004-2005 President's Budget	2.504	2.907	4.824	2.321
Total Adjustments	0.115	-0.066	-0.137	-0.061
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.017		
Congressional rescissions	-0.005			
SBIR/STTR Transfer	-0.012			
Economic Assumptions	-0.007	-0.049	-0.132	-0.059
Reprogrammings	0.139			
Other Navy/OSD Adjustments			-0.005	-0.002
Congressional increases				
Subtotal	0.115	-0.066	-0.137	-0.061

Schedule:

New milestones for AN/SPN-46 X-Band Calibration ECP are for an emergent requirement. The AN/SPN-41 Transmitter Upgrade is a new start. The AN/SPN-43 MTD development has been deferred and its milestones deleted, pending the results of the AN/SPN-43 Replacement or Upgrade development program. Milestones for AN/SPN-46 Power Monitor ECP have been slipped by one to two quarters to accommodate reprioritization of other projects.

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	0604504N AIR CONTROL ENGINEERING	W0993, Shipboard Air Traffic Control Systems

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 BLI 283200 Automatic Carrier Landing Systems	16.090	11.500	17.493	16.308	17.971	18.565	18.908	19.253	Continuing	Continuing
OPN BLI 283100 Shipboard Air Traffic Control	7.822	7.651	7.860	7.704	8.087	8.242	8.393	8.544	Continuing	Continuing

E. ACQUISITION STRATEGY:

The AN/SPN-35C upgrade acquisition will consist of several commercial procurements that will be integrated by the NAWCAD into the final configuration. Four primary contracts will be used, with CLINs for a base year and four options. In addition, several miscellaneous or ancillary hardware requirements will also be required that will take the form of small purchases, to be made from the open market (for items such as cables, connectors and backshells).

All other projects are non-ACAT upgrades to existing systems. An evolutionary acquisition approach is being used to introduce these technology advancements that either satisfy user requirements, such as all weather operation, or address supportability and cost of ownership problems.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**		PROGRAM ELEMENT 0604504N AIR CONTROL ENGINEERING			PROJECT NUMBER AND NAME W0993, Shipboard Air Traffic Control Systems							
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
Primary H/W Dev - SPN-35	WR	NAWCAD Pax River, MD	4.845							Continuing	Continuing	
Primary H/W Dev - SPN-41	WR	NAWCAD Pax River, MD	6.890			0.487	11/03	0.365	11/04	Continuing	Continuing	
Primary H/W Dev - SPN-43	WR	NAWCAD Pax River, MD	7.249	0.900	11/02	2.000	11/03	0.498	11/04	Continuing	Continuing	
Primary H/W Dev - SPN-46	WR	NAWCAD Pax River, MD	7.993	0.541	11/02	0.006	11/03			Continuing	Continuing	
Primary H/W Dev - TPX-42	WR	NAWCAD Pax River, MD	0.985	0.233	11/02	0.188	11/03	0.050	11/04	Continuing	Continuing	
Training Development - SPN-35	C/T&M	IDSI Pax River, MD	0.030	0.030	12/02	0.030	12/03	0.030	12/04	Continuing	Continuing	
Training Development - SPN-46	C/T&M	IDSI Pax River, MD	0.090	0.030	12/02	0.030	12/03	0.030	12/04	Continuing	Continuing	
Training Development - TPX-42	C/T&M	IDSI Pax River, MD		0.030	12/02	0.030	12/03	0.030	12/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			28.082	1.764		2.771		1.003		Continuing	Continuing	
Remarks:												
Software Development - SPN-43	WR	NAWCAD Pax River, MD				0.898	11/03	0.897	11/04	Continuing	Continuing	
Software Development - SPN-46	WR	NAWCAD Pax River, MD		0.287	11/02		11/03		11/04	Continuing	Continuing	
Software Development - TPX-42	WR	NAWCAD Pax River, MD		0.565	11/02					Continuing	Continuing	
Integrated Log Spt - SPN-43	WR	NAWCAD Pax River, MD				0.495	11/03	0.300	11/04	Continuing	Continuing	
Integrated Log Spt - SPN-46	WR	NAWCAD Pax River, MD		0.072	11/02	0.005	11/03	0.050	11/04	Continuing	Continuing	
Integrated Log Spt - TPX-42	WR	NAWCAD Pax River, MD		0.150	11/02	0.075	11/03			Continuing	Continuing	
Studies & Analyses - SPN-43	WR	NAWCAD Pax River, MD	0.306								0.306	
											0.000	
Subtotal Support			0.306	1.074		1.473		1.247		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2003**				
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**		PROGRAM ELEMENT 0604504N AIR CONTROL ENGINEERING				PROJECT NUMBER AND NAME W0993, Shipboard Air Traffic Control Systems						
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 & Eval - SPN-35	WR	NAWCAD Pax River MD	0.623								0.623	
Developmental Test & Eval - SPN-46	WR	NAWCAD Pax River MD				0.070	11/03				0.070	
Developmental Test & Eval - TPX-42	WR	NAWCAD Pax River MD				0.375	11/03				0.375	
Operational Test & Eval - SPN-35	WR	NAWCAD Pax River MD				0.065	11/03				0.065	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.623	0.000		0.510		0.000			1.133	
Remarks:												
Program Management Support	C/Cost	NTA Patuxent River MD	1.134	0.039	11/02	0.040	11/03	0.041	11/04	Continuing	Continuing	
Travel	WR	NAWCAD Pax River MD		0.030	11/02	0.030	11/03	0.030	11/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			1.134	0.069		0.070		0.071		Continuing	Continuing	
Remarks:												
Total Cost			30.145	2.907		4.824		2.321		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 113

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																																DATE: **February 2003**
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**									PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING														PROJECT NUMBER AND NAME W0993, Shipboard Air Traffic Control Systems											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Acquisition Milestones																																
Prototype Phase																																
Radar System Development				SDR	PDR						CDR				PRR																	
EDM Radar Delivery															Lab 1	Flt Rel 2																
Software 1XXSW Delivery 2XXSW Delivery					SSR																											
Test & Evaluation Milestones														TRR																		
Development Test															DT-IIA																	
Operational Test																																
Production Milestones																																
LRIP I FY 05																																
LRIPII FY 06																																
FRP FY 07																																
Deliveries																																

R-1 SHOPPING LIST - Item No. 113

* Not required for Budget Activities 1, 2, 3, and 6

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2003**		
APPROPRIATION/BUDGET ACTIVITY **RDT&BA-5**	PROGRAM ELEMENT 0604504N AIR CONTROL ENGINEERING				PROJECT NUMBER AND NAME W0993, Shipboard Air Traffic Control Systems			
Schedule Profile	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase								
System Design Review (SDR)		1Q						
Milestone II (MSII)								
Contract Preparation		1Q						
Software Specification Review (SSR)		1Q						
Preliminary Design Review (PDR)		1Q						
System Development			1Q-3Q					
Critical Design Review (CDR)			3Q					
Quality Design and Build			4Q	1Q-2Q				
Test Readiness Review (TRR)				3Q				
Developmental Testing (DT-IIA)				3Q				
Eng Dev Model (EDM) Radar Delivery - Lab				3Q				
Software Delivery 1XXSW				3Q				
Preproduction Readiness Review (PRR)				3Q				
EDM Radar Delivery - Flt Related				4Q				
Milestone C (MS C)								
Operational Testing (OT-IIA)								
Start Low-Rate Initial Production I (LRIP I)								
Software Delivery 2XXSW								
Developmental Testing (DT-IIB1)								
Developmental Testing (DT-IIB2)								
Start Low-Rate Initial Production II								
Operational Testing (OT-IIB)								
Developmental Testing (DT-IIC)								
Functional Configuration Audit (FCA)								
Low-Rate Initial Production I Delivery								
Technical Evaluation (TECHEVAL)								
Physical Configuration Audit								
Operational Evaluation (OT-IIC) (OPEVAL)								
Low-Rate Initail Production II Delivery								
IOC								
Full Rate Production (FRP) Decision								
Full Rate Production Start								
First Deployment								

R-1 SHOPPING LIST - Item No. 113

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2003**	
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-5**	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING				PROJECT NUMBER AND NAME W1657, Shore Air Traffic Control Systems			
COST ($ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	**2.201**	**0.303**	**0.301**	**0.338**	**0.383**	**0.435**	**0.443**	**0.450**
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This program provides for engineering development, integration, adaptation, and testing of new and/or modernized real-time Air Traffic Control (ATC) systems, air navigational aids, landing systems, and ATC communication systems for Naval and Marine Corps Air Stations (NAS/MCAS) and Fleet Area Control and Surveillance Facilites (FACSFAC) worldwide. These systems are critical to Naval Aviation and provide for safe, efficient air operations. Additionally the FAA is effecting major modernization of the National Airspace System (NAS); e.g.; transitioning from radar-based to space-based technology with usage of digital technology in communications, displays, etc. The Navy must maintain compatibility with FAA developed ATC systems in order to ensure seamless interoperability within the NAS. NAS modernization initiatives in Project W1657 include the Visual Information Display System (VIDS) and follow-on Pre-planned Product Improvements, with additional RDT&E efforts required for modified commerical-off-the-shelf (COTS) ATC systems and equipment for modernization and recapitalization of these systems at our NAS, MCAS & FACSFAC facilities worldwide. Prior to FY 2003 this project unit also funded shipboard projects involving Automatic Carrier Landing System (ACLS) and AN/TPX-42A(V) Direct Altitude and Identity Readout (DAIR) performance upgrades. These upgrades include computer hardware and software processing improvements to various components in the AN/SPN-46(V) ACLS and AN/TPX-42A(V) DAIR systems. Efforts involving the AN/SPN-46(V) have been referred to collectively as "ACLS Improvements", which include the Unit 19 and IT-21 upgrade projects.

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	0604504N AIR CONTROL ENGINEERING	W1657, Shore Air Traffic Control Systems

(U) B. Accomplishments/Planned Program

VIDS	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.138	0.148	0.121	0.140
RDT&E Articles Quantity				

Continue engineering development and development of pre-planned product improvements for the Visual Information Display System.

FIBER OPTIC INTERSITE SYSTEM UPGRADE	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.078	0.065	0.074
RDT&E Articles Quantity				

Initiate research and development efforts required for the Fiber Optic Intersite System (FOIS) Upgrade.

NEXT GENERATION COMMUNICATION SYS UPG	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.145	0.077	0.065	0.074
RDT&E Articles Quantity				

Begin initial research & development efforts required for the Next Generation Communication System Upgrade.

R-1 SHOPPING LIST - Item No. 113

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	0604504N AIR CONTROL ENGINEERING	W1657, Shore Air Traffic Control Systems

(U) B. Accomplishments/Planned Program (Cont.)

FACSFAC	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost			0.050	0.050
RDT&E Articles Quantity				

Initiate research efforts to determine the best technical approach to integrate various data link and communication system upgrades into the FACSFAC System

ACLS Improvements	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	0.907			
RDT&E Articles Quantity				

Continued development of AN/SPN-46 Unit 19 redesign.

AN/TPX-42 Improvements	FY 02	FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost	1.011			
RDT&E Articles Quantity				

Initiated integration of Track Processor into TPX-42 system.

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	0604504N AIR CONTROL ENGINEERING	W1657, SHORE AIR TRAFFIC CONTROL SYSTEM

C. PROGRAM CHANGE SUMMARY:

Funding:	FY2002	FY2003	FY2004	FY2005
FY 2003 President's Budget:	2.331	0.310	0.310	0.347
FY 2004-2005 President's Budget	2.201	0.303	0.301	0.338
Total Adjustments	-0.130	-0.007	-0.009	-0.009
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.002		
Congressional rescissions	-0.005			
SBIR/STTR Transfer	-0.017			
Economic Assumptions	-0.006	-0.005	-0.007	-0.006
Reprogrammings	-0.102			
Other Navy/OSD Adjustments			-0.002	-0.003
Congressional increases				
Subtotal	-0.130	-0.007	-0.009	-0.009

(U) Schedule:

Not Applicable.

(U) 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	0604504N AIR CONTROL ENGINEERING	W1657, Shore Air Traffic Control Systems

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 BLI 284000 National Air Space System	20.798	4.893	30.095	29.810	34.902	27.959	28.467	28.891	Continuing	Continuing
OPN BLI 284500 Air Station ATC Equip	7.223	6.866	7.633	7.344	7.611	7.762	7.902	8.046	Continuing	Continuing
OPN BLI 284600 Microwave Landing System	5.266	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
OPN BLI 284700 FACSFAC	1.120	4.265	4.337	4.279	4.491	4.632	4.684	4.784	Continuing	Continuing
OPN BLI 283100 Shipboard Air Traffic Control	7.822	7.651	7.860	7.704	8.087	8.242	8.393	8.544	Continuing	Continuing
OPN BLI 283200 ACLS	16.090	11.500	17.493	16.308	17.971	18.565	18.908	19.253	Continuing	Continuing

NOTE: BLI 283100, 283200, and 284600 no longer applicable after FY 2002.
Related RDT&E Not Applicable

E. ACQUISITION STRATEGY:

All projects are non-ACAT upgrades to existing systems. An evolutionary acquisition approach is being used to introduce technology advancements that either satisfy emergent user requirements or address supportability and cost of ownership problems.

F. MAJOR PERFORMERS:

N/A