CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: **February 2004**	
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		**5.904**	**10.355**	**13.102**	**8.257**	**4.416**	**5.346**	**7.000**
W0718 MARINE AIR TRAFFIC CONTROL AND LANDING SYSTEMS (MATCALS)		**2.857**	**5.288**	**4.686**	**4.783**	**0.860**	**0.876**	**0.893**
W0993 SHIPBOARD AIR TRAFFIC CONTROL SYSTEMS		**2.765**	**4.770**	**8.079**	**3.092**	**3.122**	**4.027**	**5.657**
W1657 SHORE AIR TRAFFIC CONTROL (ATC) SYSTEMS		**0.282**	**0.297**	**0.337**	**0.382**	**0.434**	**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 2004**	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**2.857**	**5.288**	**4.686**	**4.783**	**0.860**	**0.876**	**0.893**
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. Phase II is the design and development of software code to interface Tactical Digital Information Link (TADIL-J) input/output to existing Phase I software; to incorporate National Imagery Mapping Agency (NIMA) functionality; and enhanced simulation and training.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		2.857	5.288	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 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				3.021
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 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost				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.

R-1 SHOPPING LIST - Item No. 109

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 2003	FY 2004	FY 2005
Previous President's Budget:	1.631	5.347	4.698
Current BES/President's Budget	2.857	5.288	4.686
Total Adjustments	1.226	-0.059	-0.012
Summary of Adjustments			
Congressional program reductions			
Congressional undistributed reductions		-0.059	
Congressional rescissions			
SBIR/STTR Transfer			
Economic Assumptions			-0.009
Reprogrammings	1.226		
Reprioritization			-0.003
Congressional increases			
Update			
Subtotal	1.226	-0.059	-0.012

Schedule:

A change in the Acquisition Strategy, approved in January 2003, added an Operational Assessment (OA) to be conducted by the Marine Corps Operational Test and Evaluation Activity during the Developmental Testing (DT), and added a Low Rate Initial Production (LRIP) decision in the third quarter of FY2004, based on the results of the OA. This change in Acquisition Strategy eliminated the DT-IIC, moved OT to the fourth quarter of FY2004, moved the MSIII decision to first quarter FY2005, and IOC to fourth quarter FY2005. A delay in completing planned DT due to Original Equipment Manufacturer, Lockheed Martin, technical issues with the precision approach radar resulted in a Congressional Mark in FY2004. This mark eliminated procurement of the two LRIP systems and moved IOC to FY2006.

An Acquisition Strategy Review conducted November 2003 eliminated the OA and LRIP, leaving OT in late FY2004, MSIII in the first quarter F2005, and IOC the third quarter FY2006. Phase II MSII will not be conducted until Phase I MSIII decision is made. Subsequent Phase II events have moved a year as a result of the Phase I delays.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN BLI 281500, MATCALS	7.601	4.090	15.614	19.624	20.169	19.721	17.321	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 subsystems will be produced by NAWC AD.

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)											DATE: **February 2004**		
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						0.884	11/04	1.304	2.188	2.188
Training Development	WX	NAWCAD S.I.	0.175							0.000	0.175	
Systems Engineering	WX	NAWCAD S.I.	5.131					0.617	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		0.000		1.501		Continuing	Continuing	
Remarks:												
Software Development	C/CPFF	Lockheed Martin						2.306	11/04	3.473	5.779	5.779
Software Development	WX	NAWCAD S.I.						0.351	11/04	0.417	0.768	
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		0.185		2.842		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2004**				
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	2.575	11/02	4.400	11/03	0.100	11/04	1.745	9.106	
Operational Test & Evaluation	WX	MCOTEA	0.342	0.149	11/02	0.581	11/03	0.075	11/04	0.160	1.307	
											0.000	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal T&E			0.628	2.724		4.981		0.175		1.905	10.413	
Program Management Support	WX	NAWCAD S.I.	0.212	0.133	11/02	0.122	11/03	0.138	11/04	Continuing	Continuing	
Travel	WX	NAVAIR	0.081					0.030	11/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			0.293	0.133		0.122		0.168		Continuing	Continuing	
Total Cost			23.645	2.857		5.288		4.686		Continuing	Continuing	

Remarks:

Remarks:

R-1 SHOPPING LIST - Item No. 109

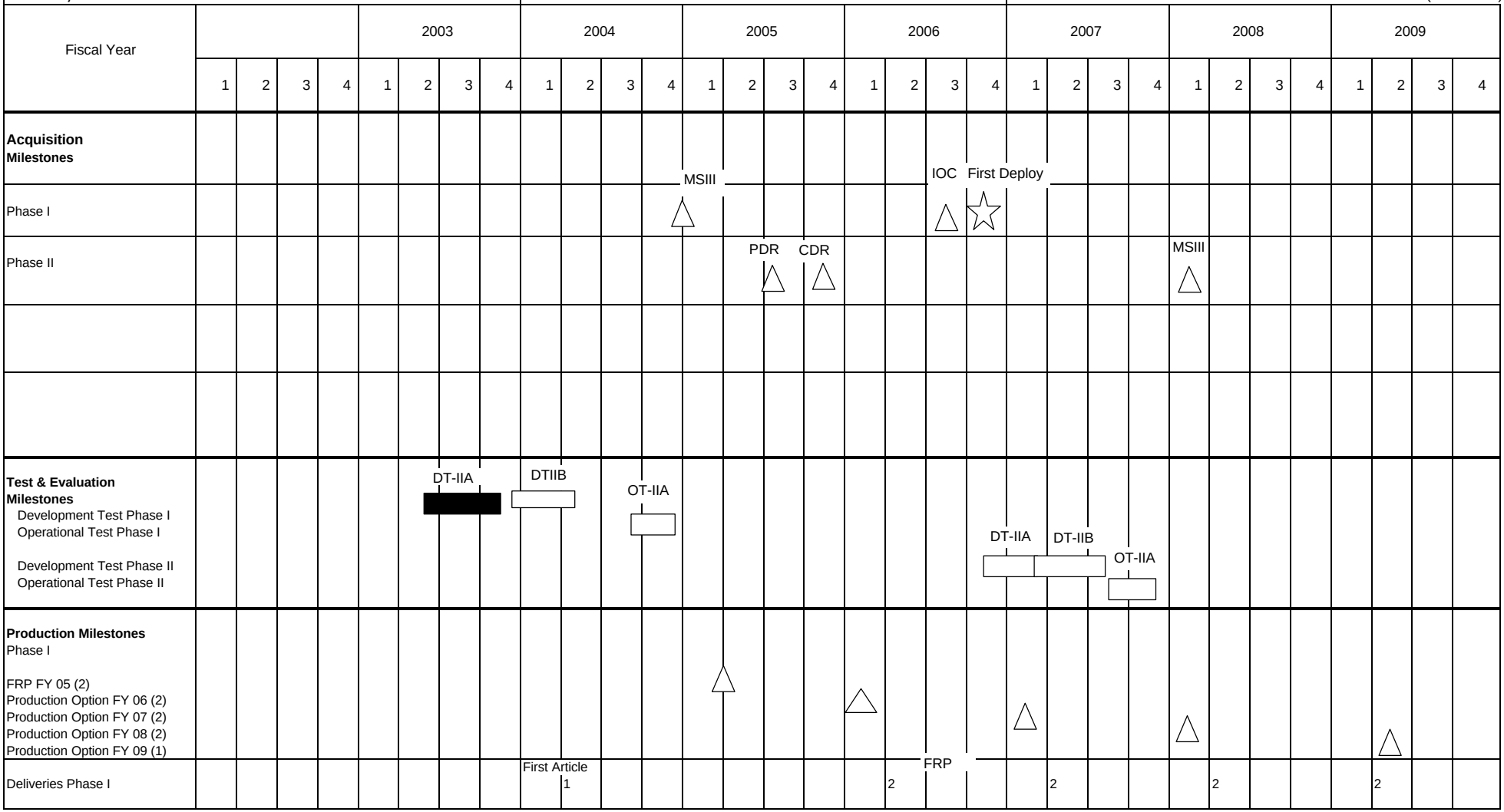
CLASSIFICATION:

EXHIBIT R4, Schedule Profile | DATE: **February 2004**

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. 109

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

CLASSIFICATION:

Exhibit R-4a, Schedule Detail						DATE: **February 2004**		
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Developmental Testing (DT-IIA) Phase I		2Q-4Q						
Developmental Testing (DT-IIB) Phase I		4Q	1Q-2Q					
Operational Testing (OT-IIA) Phase I			3Q-4Q					
Milestone III (MS III) Phase I				1Q				
Full Rate Production (FRP) Decision Phase I				1Q				
Full Rate Production Start Phase I				1Q				
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-IIB) Phase II						1Q-3Q		
Operational Testing (OT-IIA) Phase II						3Q-4Q		
Milestone III Phase II							1Q	

R-1 SHOPPING LIST - Item No. 109

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2004**	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**2.765**	**4.770**	**8.079**	**3.092**	**3.122**	**4.027**	**5.657**
RDT&E Articles Qty		**2**	**1**					

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Shipboard Air Traffic Control Central systems, interfacing with versions of the AN/TPX-42(V) Direct Altitude and Identity Readout system (DAIR) allow Shipboard Air Traffic Controllers to identify, marshal, and direct aircraft within a 50 Nautical Mile (NM) radius of the ship. At closer range (8NM) 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-41 ILM and AN/SPN-46 ACLS provide verification of aircraft approach glideslope position and precise aircraft automatic control respectively during its final approach and landing sequence to an aircraft carrier. 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 and AN/SPN-46 configurations also require development of an interface with the Battle Force Tactical Trainer. Dual efforts are underway to improve AN/SPN-46 system availability and supportability until at least 2020. These efforts include various Engineering Change Proposals (ECP's), and the Life Cycle Extension (LCE) program transitional changes include a re-architecture of its radar control group process with COTS technology, replacement of the computer group processing hardware, and conversion of system program software from CMS-2 to the more commonly used C/C++ programming language. 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 underwent several phased upgrades that have resulted 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 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 2004**
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 03	FY 04	FY 05
AN/SPN-43 Upgrade		0.263		
RDT&E Articles Quantity				

Initiated development of one SPN-43C replacement (article) in FY03.

		FY 03	FY 04	FY 05
Shipboard testing for AN/SPN-35C.		0.117	0.065	
RDT&E Articles Quantity				

Completed DT-IIC and safety certification in FY03. Conduct OPEVAL support and develop a test bed in FY04.

		FY 03	FY 04	FY 05
AN/SPN-46 Radar Control Group		0.751	2.285	5.875
RDT&E Articles Quantity		1		

Previously called "Unit 19". Continued development of AN/SPN-46 Radar Control Group redesign ECP (for prior development, see under W1657) in FY03 and FY04, with design completion and test in FY05. The RDT&E article represents Versa Module Eurocard (VME) cards and backplane that replace Standard Electronic Module (SEM) cards in the Unit 19.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 03	FY 04	FY 05
AN/SPN-46 Computer Group Replacement				0.797
RDT&E Articles Quantity				

Previously called "AYK-14 Processor Software". Initiate replacement of AN/SPN-46 AYK-14 processor and conversion of software from CMS to "C" language in FY05.

		FY 03	FY 04	FY 05
AN/TPX-42 Improvements		1.634	2.420	1.407
RDT&E Articles Quantity		1	1	

Continued development of AN/TPX-42 Track Processor (article) Upgrade ECP (for prior development, see under W1657) in FY03, with completion anticipated in FY04, and the development of AN/TPX-42 Common Console in FY04 and FY05.

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

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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:	FY2003	FY2004	FY2005
FY 2004-2005 President's Budget:	2.907	4.824	2.321
FY 2005 President's Budget	2.765	4.770	8.079
Total Adjustments	-0.142	-0.054	5.758
Summary of Adjustments			
Congressional program reductions			
Congressional undistributed reductions		-0.054	
Congressional rescissions			
SBIR/STTR Transfer	-0.047		
Economic Assumptions			-0.004
Reprogrammings	-0.095		
Reprioritization			5.762
Congressional increases			
Subtotal	-0.142	-0.054	5.758

Schedule:

The FY 2005 adjustment has permitted milestones for the AN/SPN-46 Radar Control Group ("Unit 19") to be accelerated to meet fleet requirements. Due to reprioritization within the Navy Department, the previous schedule depicted on exhibit R-4 (AN/SPN-43 Upgrade) has been replaced by the current R-4 schedules for AN/TPX-42 Air Traffic Control Console and AN/SPN-46 Radar Control Group.

Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN BLI 283200 Automatic Carrier Landing Systems	11.450	17.364	12.515	17.934	18.523	18.910	19.288	Continuing	Continuing
OPN BLI 283100 Shipboard Air Traffic Control	8.109	7.802	7.695	8.048	8.203	8.367	8.532	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).

AN/SPN-46 Radar Control Group redesign and AN/SPN-46 Computer Group replacement subprojects are part of the AN/SPN-46 Life Cycle Extension (LCE) project, which is anticipated to be designated ACAT IV. Initial contract awards are expected in FY 2004 and FY 2006 respectively for these subprojects.

AN/TPX-42 Common Console is an anticipated ACAT IV-T program, with improvements being incorporated into the production of AN/TPX-42 upgrade kits.

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 2004**				
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							Continuing	Continuing	
Primary H/W Dev - SPN-43	WR	NAWCAD Pax River, MD	7.249	0.254	11/02					Continuing	Continuing	
Primary H/W Dev - SPN-46	WR	NAWCAD Pax River, MD	7.993	0.424	11/02	1.900	11/03			Continuing	Continuing	
Primary H/W Dev - TPX-42	WR	NAWCAD Pax River, MD	0.985	0.233	11/02	0.759	11/03	0.473	11/04	Continuing		
Training Development - SPN-35	C/T&M	IDSI Indian Head, MD	0.030								0.030	
Training Development - SPN-46	C/T&M	IDSI Indian Head, MD	0.090								0.090	
Training Development - SPN-42	C/T&M	IDSI Indian Head, MD									0.000	
											0.000	
											0.000	
											0.000	
Subtotal Product Development			28.082	0.911		2.659		0.473		Continuing	Continuing	
Remarks:												
Software Development - SPN-43	WR	NAWCAD Pax River, MD								Continuing	Continuing	
Software Development - SPN-46	WR	NAWCAD Pax River, MD		0.255	11/02			1.152	11/04	Continuing	Continuing	
Software Development - TPX-42	WR	NAWCAD Pax River, MD		1.197	11/02	0.882	11/03	0.510	11/04	Continuing	Continuing	
Integrated Log Spt - SPN-43	WR	NAWCAD Pax River, MD								Continuing	Continuing	
Integrated Log Spt - SPN-46	WR	NAWCAD Pax River, MD		0.072	11/02	0.385	11/03			Continuing	Continuing	
Integrated Log Spt - TPX-42	WR	NAWCAD Pax River, MD		0.150	11/02	0.275	11/03	0.101	11/04	Continuing	Continuing	
Studies & Analyses - SPN-43	WR	NAWCAD Pax River, MD	0.306	0.009	11/02						0.315	
Studies & Analyses - TPX-42	WR	NAWCAD Pax River, MD				0.315	11/03	0.243	11/04		0.558	
Subtotal Support			0.306	1.683		1.857		2.006		Continuing	Continuing	
Remarks:												

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: **February 2004**				
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	0.117	11/02						0.740	
Developmental Test & Eval - SPN-46	WR	NAWCAD Pax River MD						5.481	11/04		5.481	
Developmental Test & Eval - TPX-42	WR	NAWCAD Pax River MD				0.134	11/03	0.080	11/04		0.214	
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	0.117		0.199		5.561			6.500	
Remarks:												
Program Management Support	C/Cost	NTA Patuxent River MD	1.134	0.039	11/02	0.040	11/03	0.024	11/04	Continuing	Continuing	
Travel	WR	NAWCAD Pax River MD		0.015	11/02	0.015	11/03	0.015	11/04	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			1.134	0.054		0.055		0.039		Continuing	Continuing	
Remarks:												
Total Cost			30.145	2.765		4.770		8.079		Continuing	Continuing	
Remarks:												

R-1 SHOPPING LIST - Item No. 109

EXHIBIT R4, Schedule Profile — **AN/TPX-42 Air Traffic Control Console** — DATE: **February 2004**

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	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
Prototype Phase									■	■	■	■																				
System Requirements Review									SRR ▲	SRR ▲	SRR ▲																					
Preliminary Design Review												PDR △																				
System Development												□	□	□	□																	
Critical Design Review													CDR △																			
Quality Design and Build													□	□	□																	
Test Readiness Review																TRR ▲																
Test & Evaluation Milestones																																
Development Test												□	□	□	□	□	□	□	□													
Technical Evaluation																				□												
Operational Evaluation																				OT-IIC □												
Production Milestones																																
LRIP I FY 06																LRIP I Start △																
Deliveries																		1 △														

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

CLASSIFICATION:

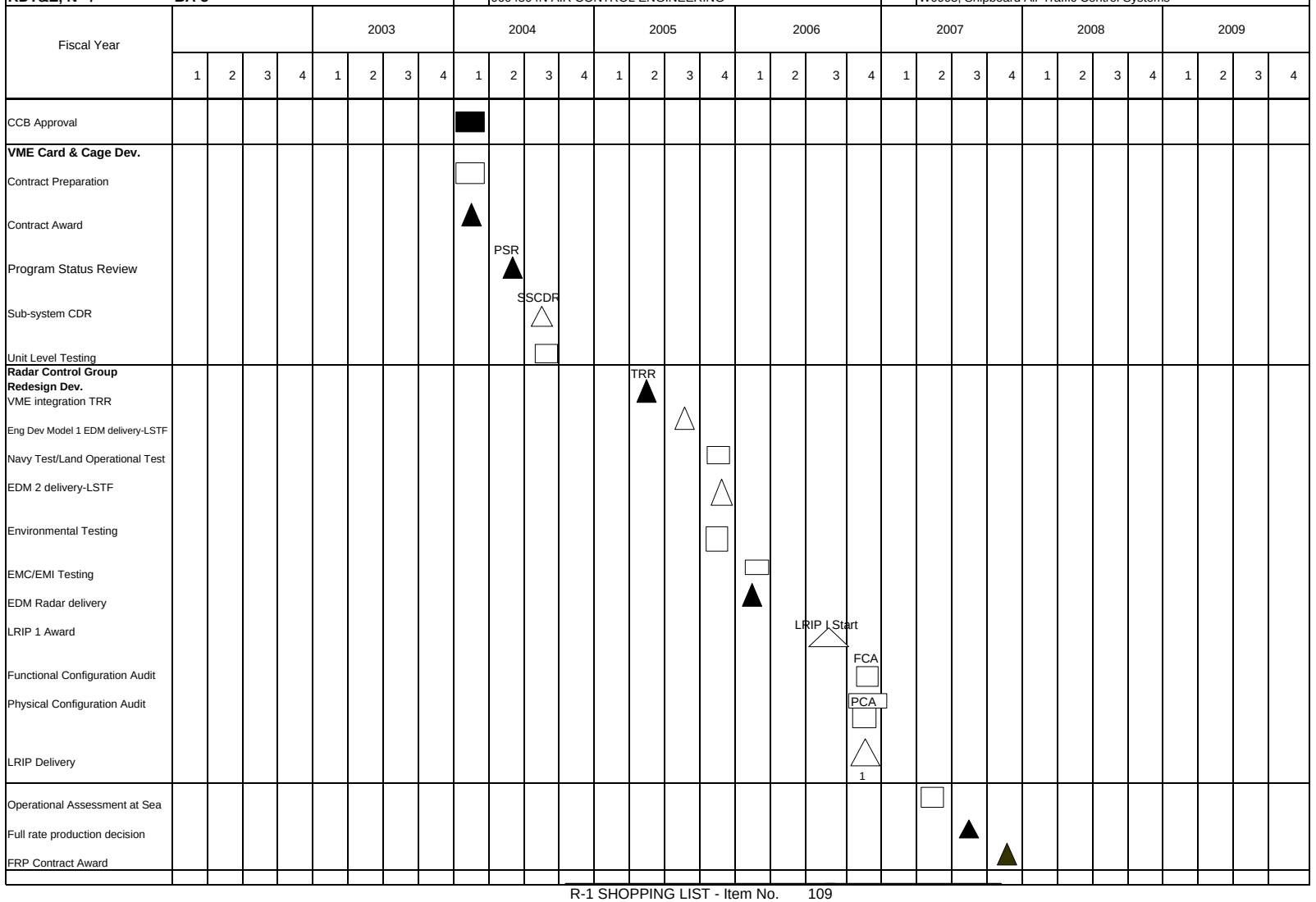
Exhibit R-4a, Schedule Detail **AN/TPX42 Air Traffic Control Console**					DATE: **February 2004**			
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N /BA-5**	PROGRAM ELEMENT 0604504N Air Control Engineering				PROJECT NUMBER AND NAME W0993, Shipboard Air Traffic Control Systems			
Schedule Profile		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Prototype Phase			1Q-4Q					
System Requirements Review (SRR)			1Q-3Q					
Preliminary Design Review (PDR)			4Q					
System Development			4Q	1Q-4Q				
Critical Design Review (CDR)				2Q				
Quality Design and Build				2Q				
Test Readiness Review (TRR)					1Q			
Developmental Testing (DT)			4Q	1Q-4Q	1Q-3Q			
Start Low-Rate Initial Production I (LRIP I)					1Q			
LRIP I Delivery					2Q			
Technical Evaluation (TECHEVAL)					3Q			
Operational Evaluation (OT-IIC) (OPEVAL)					4Q			

R-1 SHOPPING LIST - Item No. 109

EXHIBIT R4, Schedule Profile
AN/SPN-46 Radar Control Group

DATE: **February 2004**

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



R-1 SHOPPING LIST - Item No. 109

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

CLASSIFICATION:

UNCLASSIFIED

Exhibit R-4a, Schedule Detail **AN/SPN-46 RADAR CONTROL GROUP**						DATE: **February 2004**		
APPROPRIATION/BUDGET ACTIVITY **RDT&E, N / BA-05**	PROGRAM ELEMENT 0604504N Air Control				PROJECT NUMBER AND NAME W0993 Carrier ATC			
Schedule Profile		FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
CCB Approval			1Q					
VME Card & Cage Development								
Contract Preparation			1Q					
Contract Award			1Q					
Program Status Review			2Q					
Sub-System Critical Design Review (SSCDR)			3Q					
Unit Level Testing			3Q					
Radar Control Group Redesign Development								
VME Integration Test Readiness Review				2Q				
Eng Dev Model #1 (EDM) Radar Control Delivery - LSTF				3Q				
Navy Test/Land based Operational Assessment				4Q				
EDM#2 Radar Control Group Delivery - LSTF				4Q				
Environmental Testing				4Q				
EMC/EMI Testing					1Q			
EDM Radar Delivery					1Q			
LRIP 1 Award					3Q			
Functional Configuration Audit (FCA)					4Q			
Physical Configuration Audit (PCA)					4Q			
LRIP Delivery					4Q			
Operational Assessment at sea						2Q		
Full Rate Production (FRP) Decision						3Q		
FRP Contract Award						4Q		

R-1 SHOPPING LIST - Item No. 109

Notes:
Two phases complete the VME development efforts.
Start the the total Unit 19 redesign (hardware before completion of testing of the VME Cards and Card Cage effort. Use results at PDR for Redesign Effort.
Two EDMs: One at the Landing Systems Test Facility (Patuxent River, MD) and the other to Environmental and EMC/EMI Testing.
One LRIP following completion of the EDM Testing.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: **February 2004**	
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		**0.282**	**0.297**	**0.337**	**0.382**	**0.434**	**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.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		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 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.067	0.063	0.073
RDT&E Articles Quantity				

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

NEXT GENERATION COMMUNICATION SYS UPG		FY 03	FY 04	FY 05
Accomplishments/Effort/Subtotal Cost		0.067	0.063	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. 109

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 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

R-1 SHOPPING LIST - Item No. 109

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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:	FY2003	FY2004	FY2005
FY2004 President's Budget:	0.303	0.301	0.338
FY2005 President's Budget:	0.282	0.297	0.337
Total Adjustments	-0.021	-0.004	-0.001
Summary of Adjustments			
Congressional program reductions			
Congressional undistributed reductions		-0.004	
Congressional rescissions			
SBIR/STTR Transfer			
OSD			
Navy (FMB/Sponsor/NAVAIR)			
Economic Assumtions			-0.001
Reprogrammings	-0.021		
Congressional increases			
Subtotal	-0.021	-0.004	-0.001

(U) Schedule:

Not Applicable.

(U) Technical:

Not Applicable.

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: **February 2004**
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 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost
OPN BLI 284000 National Air Space System	7.018	15.935	16.122	31.345	27.819	28.376	28.942	Continuing	Continuing
OPN BLI 284500 Air Station Support Equip	6.836	7.543	3.640	3.849	3.929	4.008	4.088	Continuing	Continuing
OPN BLI 284600 Microwave Landing System	0.000	0.000	7.232	7.728	9.042	9.083	10.017	21.464	102.857
OPN BLI 284700 FACSFAC	4.221	4.305	3.712	3.885	4.012	4.061	4.157	Continuing	Continuing

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.