

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
							February 2006	
APPROPRIATION/BUDGET ACTIVITY					R-1 ITEM NOMENCLATURE			
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-5					0604504N AIR CONTROL ENGINEERING			
COST (\$ in Millions)	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	
Total PE Cost	14.473	11.499	4.603	4.975	6.651	6.768	6.914	
0718 MARINE AIR TRAFFIC CONTROL AND LANDING SYSTEMS (MATCALS)	1.795	4.593	0.642	0.662	0.668	0.684	0.704	
0993 SHIPBOARD AIR TRAFFIC CONTROL SYSTEMS	8.940	5.026	3.552	3.897	5.561	5.651	5.770	
1657 SHORE AIR TRAFFIC CONTROL (ATC) SYSTEMS	0.323	0.380	0.409	0.416	0.422	0.433	0.440	
9564 TRANSPORTABLE TRANSPONDER LANDING SYSTEMS (TTLS)	3.415	0.000	0.000	0.000	0.000	0.000	0.000	
9999 Congressional Add		1.500						
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.								

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING			PROJECT NUMBER AND NAME 0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALs)			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		1.795	4.593	0.642	0.662	0.668	0.684	0.704
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 requirements for all-weather operation and improved flight safety of Air Traffic Control and Landing Systems at Marine Corps expeditionary airfields. Current program includes approved transition to 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 Command and Control (C2) Subsystem. Efforts will commence for requirements definition, development and engineering for the ASPARCS Preplanned Product Improvements (P3I), in accordance with Marine Corps Requirements Oversight Council (MROC) Decision Memorandum 11-2005 dated 8 Dec 2004. P3I includes the design and development of software code to interface Tactical Digital Information Link (TADIL-J) input/output to existing software, incorporating National Imagery Mapping Agency (NIMA) functionality, enhanced simulation and training and providing increased operator workstations.

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Exhibit R-2, RDTEN Budget Item Justification
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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING	PROJECT NUMBER AND NAME 0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCAL)																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 15%;">FY05</th><th style="width: 15%;">FY06</th><th style="width: 15%;">FY07</th><th style="width: 30%;"></th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">1.713</td><td style="text-align: center;">0.350</td><td style="text-align: center;">0.000</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY05	FY06	FY07		Accomplishments/Effort/Subtotal Cost	1.713	0.350	0.000		RDT&E Articles Quantity				
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RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; min-height: 60px;">Perform systems engineering functions in support of the ASPARCS program. This effort includes coordination and planning with US Army and contractor for ASPARCS P3I, technical oversight of the ASPARCS program and ILS planning and implementation for ASPARCS.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 15%;">FY05</th><th style="width: 15%;">FY06</th><th style="width: 15%;">FY07</th><th style="width: 30%;"></th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.642</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY05	FY06	FY07		Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.642		RDT&E Articles Quantity				
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<div style="border: 1px solid black; padding: 5px; min-height: 60px;">Improve maintenance concept and reduce life cycle costs associated with field level repairs for ASPARCS. Investigate and resolve obsolescence issues.</div>																			
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<div style="border: 1px solid black; padding: 5px; min-height: 100px;">Perform studies and analysis to implement P3I and other evolutionary improvements. Develop criteria to integrate Tactical Digital Information Link (TADIL-J) input/output to existing ASPARCS software. Develop criteria for existing ASPARCS software to achieve Defense Information Infrastructure-Common Operating Environment (DII-COE) level 5 compliance, National Imagery Mapping Agency (NIMA) functionality, and enhanced simulation and training into the existing ASPARCS software. Perform studies and analysis to Integrate the Multi Function Information Distribution System (MIDS) data link terminal into the ASPARCS system.</div>																			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING	PROJECT NUMBER AND NAME 0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCAL)																																						
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 15%; text-align: right;">FY 2005</th> <th style="width: 15%; text-align: right;">FY 2006</th> <th style="width: 15%; text-align: right;">FY 2007</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Previous President's Budget:</td> <td style="text-align: right;">4.637</td> <td style="text-align: right;">4.663</td> <td style="text-align: right;">0.704</td> </tr> <tr> <td>Current BES/President's Budget</td> <td style="text-align: right;">1.795</td> <td style="text-align: right;">4.593</td> <td style="text-align: right;">0.642</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-2.842</td> <td style="text-align: right; border-top: 1px solid black;">-0.070</td> <td style="text-align: right; border-top: 1px solid black;">-0.062</td> </tr> <tr> <td colspan="4" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td> General Provisions</td> <td style="text-align: right;">-0.082</td> <td style="text-align: right;">-0.070</td> <td></td> </tr> <tr> <td> Miscellaneous Adjustments</td> <td style="text-align: right;">-2.760</td> <td></td> <td style="text-align: right;">-0.062</td> </tr> <tr> <td> Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-2.842</td> <td style="text-align: right; border-top: 1px solid black;">-0.070</td> <td style="text-align: right; border-top: 1px solid black;">-0.062</td> </tr> </tbody> </table> <p>Schedule:</p> <p>Schedule and technical issues with the precision approach radar (PAR) and air surveillance radar (ASR) and integration with the operation subsystem/communication subsystem resulted in a no-cost close out to the Lockheed Martin contract in November 2004. The program obtained an acquisition decision for an existing Army PAR, ASR and C2 node 18 Jan 2005 for Initial Operational Capability (IOC) in FY2006 to fulfill the ASPARCS requirement. However, IOC is expected to occur no earlier than Feb 07 due to the time required to complete the validation of the system technical documentation, complete the training package and the Maintenance and Material Management (3M) system. These efforts are being driven by the Marine Corps unique requirements. This program has joined with the US Army for pre-planned product improvements (P3I). This program will coordinate with the US Army to analyze and resolve obsolescence issues.</p> <p>Technical:</p> <p>Technical issues included that the single Key Performance Parameter, Transportability, was not met by the system. Neither the ASR shelter, PAR Pallet nor the ASR Antenna Trailer complied with the weight carrying capacity of the High Mobility Multi-Purpose Wheeled Vehicle. Additionally, government tests during DT produced numerous Priority 1 thru Priority 5 Discrepancy Reports (DRs) against the Air Surveillance Radar and Precision Approach Radar software. Specifically, 14 software only DRs and 25 hardware/software DRs were logged.</p>						FY 2005	FY 2006	FY 2007	Funding:				Previous President's Budget:	4.637	4.663	0.704	Current BES/President's Budget	1.795	4.593	0.642	Total Adjustments	-2.842	-0.070	-0.062	Summary of Adjustments				General Provisions	-0.082	-0.070		Miscellaneous Adjustments	-2.760		-0.062	Subtotal	-2.842	-0.070	-0.062
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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING	PROJECT NUMBER AND NAME 0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCAL)

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
* 56 - OPN BLI 281500, MATCAL\$	15.928	19.326	20.261	19.981	17.492	17.912	18.344	Continuing	Continuing

* OPN BLI 281500. MATCAL5 is not limited to ASPARCS.

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. Schedule delays and technical issues with the precision approach radar (PAR) and air surveillance radar (ASR) and integration with the operation subsystem/communication subsystem resulted in a no-cost close out to the Lockheed Martin contract in November 2004. An Acquisition Decision Memorandum was signed 18 Jan 2005 approving the procurement of the Army AN/TPN-31 System to fulfill the ASPARCS requirement for FY06. The Marine Corps Requirements Oversight Council (MROC) Decision Memorandum 11-2005 of 8 Dec 2004 outlined the evolutionary improvements envisioned by HQMC. This program has joined with the Army to implement pre-planned product improvements (P3I) and evolutionary product improvements.

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Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /		PROGRAM ELEMENT BA 5 0604504N, AIR CONTROL				PROJECT NUMBER AND NAME 0718, MARINE AIR TRAFFIC (MATCAL)						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 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
Training Development	WX	NAWCAD S.I.	0.175								0.175	
Systems Engineering	WX	NAWCAD S.I.	5.131								5.131	
Ancillary Hardware Development	SS/FFP	Rockwell Collins	0.424								0.424	.424
Primary Hardware Devel TTLS	FFP	ANPC	2.000								2.000	2.000
GFE	WX	NCCOSC		0.175	04/05						0.175	
P3I	SS/FFP	Raytheon		1.620	04/05	4.593	01/06				6.213	6.213
Subtotal Product Development			21.536	1.795		4.593					27.924	
Remarks: The program has joined with the U.S Army for pre-planned product improvement, therefore all funding will be placed on contract with the Army.												
Integrated Logistics Support	SS/FFP	Raytheon	0.336								0.336	0.336
Configuration Management	WX	NAWCAD S.I.	0.284								0.284	
Technical Data	WX	NAWCAD S.I.	0.479								0.479	
Development Support MATCAL	WX	NAWCAD S.I.	0.205								0.205	
Studies and Analysis	SS/FFP	Raytheon						0.642	01/07		0.642	0.642
Subtotal Support			1.304					0.642			1.946	
Remarks:												
Developmental Test & Evaluation	WX	NAWCAD S.I.	7.261								7.261	
Operational Test & Evaluation	WX	MCOTEA	1.072								1.072	
Subtotal T&E			8.333								8.333	
Remarks:												
Program Management Support	WX	NAWCAD S.I.	0.467								0.467	
Travel	TO	NAVAIR HQ, PATUXENT RIVER, MD	0.081								0.081	
SUBTOTAL MANAGEMENT			0.548								0.548	
Remarks:												
Total Cost			31.721	1.795		4.593		.642			38.751	
Remarks:												

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EXHIBIT R4, Schedule Profile																									DATE:							
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA-5										0604504N AIR CONTROL ENGINEERING										0718 MARINE AIR TRAFFIC CONTROL & LANDING SYSTEM (MATCALs)												
Fiscal Year					2005				2006				2007				2008				2009				2010				2011			
					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																																
ASPARCS System					ADM								IOC																			
Pre-Planned Improvements					Requirements Definition				Development				Studies & Analysis																			
Obsolescence Studies																																
Test & Evaluation Milestones																																
Development Test																																
Operational Test																																
Production Milestones																																
ADM FY 05 (2)																																
Production Option FY 06 (2)																																
Follow on Production FY 07 (2)																																
Follow on Production FY 08 (2)																																
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Deliveries												2		2			2				2			2				2				

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING			PROJECT NUMBER AND NAME 0993 Shipboard Air Traffic Control Systems				
COST (\$ in Millions)			FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost			8.940	5.026	3.552	3.897	5.561	5.651	5.770
RDT&E Articles Qty			4		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. Dual efforts are underway to improve the 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' 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 an Air Traffic Control common console will reduce operational costs, improve reliability, and provide compatible interfaces and commonality for all ATC workstations.

Test Article Descriptions:

For AN/SPN-46 Radar Control Group, three test articles are required to perform concurrent testing in FY 2005. The test article can best be described as a direct replacement of the Radar Control Group equipment rack, employing a set of Versa Module Eurocards to improve the performance of antenna control, antenna position reporting and radar timing control functions.

For AN/SPN-46 Computer Group, a test article is required to perform a series of tests in FY 2008. This test article will replace two existing computer racks with a single rack utilizing a set of state-of-the-art Versa Module Eurocard processors and software rewritten in a high order program language ("C").

For AN/TPX-42 Air Traffic Control Common Console, a test article is required to perform operational assessment in FY 2006. The test article can be described primarily in terms of its functionality. It will combine the existing AN/TPX-42 console's hardware with the functionality to display targets processed by AN/TPX-42, AN/SPN-46 and the Joint Precision Approach and Landing System.

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B. Accomplishments/Planned Program				
	FY 05	FY 06	FY 07	
AN/SPN-46 Radar Control Group	6.736	1.517	0.000	
RDT&E Articles Quantity	3			
<p>Conduct critical design review, complete system development, build test articles and conduct environmental testing, conduct configuration audits, conduct a test readiness review and operational assessment, and obtain Full Rate Production decision. Three test articles required to perform concurrent testing. These test articles can best be described as a direct replacement of the Radar Control Group equipment rack, employing a set of Versa Module Eurocards to improve the performance of antenna control, antenna position reporting and radar timing control functions.</p>				
	FY 05	FY 06	FY 07	
AN/SPN-46 Computer Group Replacement	0.797	1.699	3.552	
RDT&E Articles Quantity			1	
<p>This subproject replaces the AN/AYK-14 processor and converts software from CMS to "C" language. Conduct a software requirements review and develop a specification. Develop software and hardware, build a test article, and integrate and test it in a lab environment. Conduct a test readiness review, developmental test and operational test. The test article is required to perform a series of tests in FY 2008. This test article will replace two existing computer racks with a single rack utilizing a set of state-of-the-art Versa Module Eurocard processors and software rewritten in a high order program language ("C").</p>				
	FY 05	FY 06	FY 07	
AN/TPX-42 Improvements	1.407	1.810	0.000	
RDT&E Articles Quantity	1			
<p>Complete development and test of AN/TPX-42 Track Processor Upgrade and complementary software conversion (CMS to 'C'), with the resulting design applied to production of the AN/TPX-42A(V)14 'A' Kits and 'C' Kits. Develop an ATC Common Console, using the console from AN/TPX-42A(V)14 with Field Change 2 as the core technology. Conduct requirements and design reviews, and conduct an Operational Assessment. Following successful Full Rate Production approval, the design change will be introduced into the production of 'A' Kits and 'C' Kits. It is anticipated that this technology insertion will result in a formal nomenclature change for the AN/TPX-42 system, so the identification of the modification kits will change to 'F' and 'G' Kits, respectively. Test article required to perform operational assessment in FY 2006. The test article can be described primarily in terms of its functionality. It combines the existing AN/TPX-42 console's hardware with the functionality to display targets processed by AN/TPX-42, AN/SPN-46 and the Joint Precision Approach and Landing System.</p>				

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C. PROGRAM CHANGE SUMMARY:

	<u>FY2005</u>	<u>FY2006</u>	<u>FY2007</u>
Funding:			
Previous President's Budget	7.998	5.102	3.834
Current BES/President's Budget	8.940	5.026	3.552
Total Adjustments	0.942	-0.076	-0.282
Summary of Adjustments			
Other general provisions		-0.076	
Congressional Undistributed Reductions	-0.121		
Congressional Increases	0.002		
Other misc. changes			-0.282
BTR	1.061		
	0.942	-0.076	-0.282

Schedule:

Schedule change reflects a restructure of the System Development for the AN/TPX-42 to support Milestone A and Milestone B.

Technical:

Not Applicable.

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D. OTHER PROGRAM FUNDING SUMMARY:

Line Item No. & Name	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011	To Complete	Total Cost
58 - OPN BLI 283200 Automatic Carrier Landing Systems	11.280	17.159	18.005	18.599	19.081	19.455	19.935	Continuing	Continuing
57 - OPN BLI 283100 Shipboard Air Traffic Control	7.119	7.210	7.476	7.710	7.934	8.029	9.292	Continuing	Continuing

E. ACQUISITION STRATEGY:

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 was awarded in FY 2004 for the Radar Control Group, and is expected to be awarded in FY 2006 for the Computer Group.

AN/TPX-42 Common Console is an anticipated ACAT IV 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.

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)										DATE: February 2006			
APPROPRIATION/BUDGET ACTIVITY RD&E, N / BA-5			PROGRAM ELEMENT 0604504N AIR CONTROL ENGINEERING				PROJECT NUMBER AND NAME 0993 Shipboard Air Traffic Control Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract	
Primary H/W Dev - SPN-46	WX	NAWCAD, Pax River, MD	10.524	0.714	11/04			0.310	11/06	Continuing	Continuing		
Primary H/W Dev - SPN-46	SS/CR	SNC, Sierra, NV		5.586	12/04	0.500	12/05	0.270	12/06		6.356	6.356	
Primary H/W Dev - TPX-42	WX	NAWCAD, Pax River, MD	2.035	0.588	11/04						2.623		
											0.000		
Subtotal Product Development			12.559	6.888		0.500		0.580		Continuing	Continuing		
Remarks:													
Software Development - SPN-46	WX	NAWCAD, Pax River, MD	0.255	0.225	11/04	0.293	11/05	0.332	11/06	Continuing	Continuing		
Software Development - SPN-46	C/CPFF	TBD		0.594	01/05	2.740	12/05	2.582	12/06		5.916	5.916	
Software Development - TPX-42	WX	NAWCAD, Pax River, MD	2.265	0.664	11/04						2.929		
Integrated Log Spt - TPX-42	WX	NAWCAD, Pax River, MD	0.362	0.270	11/04						0.632		
Studies & Analysis - SPN-46	WX	NAWCAD, Pax River, MD	0.030	0.243	11/04						0.273		
Subtotal Support			2.912	1.996		3.033		2.914		Continuing	Continuing		
Remarks:													

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Exhibit R-2, RD&E Budget Item Justification
(Exhibit R-2, page 13 of 25)

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2006				
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-5			PROGRAM ELEMENT 0604504N AIR CONTROL ENGINEERING			PROJECT NUMBER AND NAME 0993 Shipboard Air Traffic Control Systems						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 05 Cost	FY 05 Award Date	FY 06 Cost	FY 06 Award Date	FY 07 Cost	FY 07 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Eval - SPN-46	WX	NAWCAD, Pax River, MD				0.626	11/05				0.626	
Developmental Test & Eval - TPX-42	WX	NAWCAD, Pax River, MD				0.748	11/05				0.748	
Operational Test & Eval - TPX-42	WX	OPTEVFOR, Norfolk, VA				0.062	11/05				0.062	
											0.000	
											0.000	
Subtotal T&E			0.000			1.436					1.436	
Remarks:												
Logistics Management Support	C/CR	NTA, Patuxent River, MD	1.213	0.041	11/04	0.042	12/05	0.043	12/06	Continuing	Continuing	
Travel	TO	NAVAIRHQ, Pax River, MD	0.030	0.015	11/04	0.015	11/05	0.015	11/06	Continuing	Continuing	
											0.000	
											0.000	
											0.000	
											0.000	
Subtotal Management			1.243	0.056		0.057		0.058		Continuing	Continuing	
Remarks:												
Total Cost			16.714	8.940		5.026		3.552		Continuing	Continuing	
Remarks:												

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Exhibit R-2, RDTE Budget Item Justification
(Exhibit R-2, page 14 of 25)

CLASSIFICATION:

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EXHIBIT R4, Schedule Profile																										DATE:						
AN/TPX-42 Air Traffic Control Common Console																										February 2006						
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA-5										0604504N AIR CONTROL ENGINEERING										0993 Shipboard Air Traffic Control Systems												
Fiscal Year	2005				2006				2007				2008				2009				2010				2011				2010			
	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																																
Preliminary Design Review		PDR ▲																														
System Development																																
Critical Design Review		CDR ▲																														
Quality Design and Build		■																														
Test Article (EDM) Delivery (Qty 1)						1 ▲																										
Test Readiness Review							TRR △																									
Test & Evaluation Milestones																																
Operational Assessment								□																								
Production Milestones																																
Full Rate Production Decision								△																								
First Lot Deliveries												3 △																				

R-1 SHOPPING LIST - Item No. 110

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 15 of 25)

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CLASSIFICATION:

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 16 of 25)

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Exhibit R-2, RDTEB Budget Item Justification
(Exhibit R-2, page 17 of 25)

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CLASSIFICATION:

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Exhibit R-4a, Schedule Detail						DATE:		
AN/SPN-46 RADAR CONTROL GROUP						February 2006		
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME		
RDT&E, N / BA-05			0604504N Air Control			0993 Shipboard Air Traffic Control Systems		
Schedule Profile		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Reviews:								
System Requirements Review (SRR)		1Q						
Integrated Test Plan Technical Readiness Review (ITP TRR)		3Q						
Configuration Design Review (CDR)		3Q						
Engineering Demonstration Model (EDM TRR)			1Q					
Production Readiness Review (PRR)			2Q					
Physical Configuration Audit (PCA)				3Q				
Test Events								
DT-A I, DT-A II, DT B-1 Testing		1Q-4Q						
DT-B II		4Q	1Q					
DT-B III		4Q	1Q-3Q					
DT-B IV			1Q-2Q					
Radar Control Group Redesign Development								
Milestones:								
1. Acquisition Strategy Review (ASR)		1Q						
2. Milestone Decision B		2Q						
3. Demonstation Readiness Review (DRR)		3Q						
4. Preliminary Operational Capibility (POC)			1Q					
5. Milestone Decision C			3Q					
6. Full Rate Production (FRP)				2Q				
7. Functional Configuration Audit (FCA)				3Q				
8. Initial Operational Capibility (IOC)					1Q			
9. Material Support Date (MSD)						3Q		
10. Full Operational Capibility (FOC)							3Q	
Production Milestones								
1. Letter Contract Award		2Q						
2. Production Contract Award			3Q					
3. Low Rate Initial Production Lot 1			3Q-4Q	1Q-4Q				
4. Full Rate Production Lot 2				3Q-4Q	1Q-4Q			
5. Full Rate Production Lot 3					1Q-4Q	1Q-3Q		
Deliveries:								
Prototype								
EDM 1, EDM 2, and EDM 3		4Q						

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Exhibit R-2, RDTEN Budget Item Justification
(Exhibit R-2, page 18 of 25)

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:								
AN/SPN-46 COMPUTER GROUP												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME								
APPROPRIATION/BUDGET ACTIVITY												0604504N AIR CONTROL ENGINEERING												0993 Shipboard Air Traffic Control Systems								
RDT&E, N / BA-5																																
Fiscal Year					2005				2006				2007				2008				2009				2010				2011			
					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								MS B											MS C													
Software Requirements Review																																
Specification Development																																
Software Development								Contract Award																								
Hardware Development																																
Test Article (EDM) Delivery																																
System Integration and Test																																
Test & Evaluation Milestones																																
Developmental Test																																
Operational Test																																
Production Milestones																																
FRP Start FY 09																																
Deliveries																																

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Exhibit R-2, RD TEN Budget Item Justification
(Exhibit R-2, page 20 of 25)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2006	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5		PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING			PROJECT NUMBER AND NAME 1657 Shore Air Traffic Control Systems			
COST (\$ in Millions)		FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	FY 2010	FY 2011
Project Cost		0.323	0.380	0.409	0.416	0.422	0.433	0.440
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 Facilities (FACSFAC). 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). The Navy must maintain compatibility with FAA developed ATC systems in order to ensure seamless interoperability within the NAS. NAS modernization initiatives include the Visual Information Display System (VIDS) and follow-on Pre-planned Product Improvements, with additional RDT&E efforts required for modified commercial-off-the-shelf (COTS) ATC systems and equipment for modernization and recapitalization of these systems at our NAS, MCAS & FACSFAC facilities worldwide. Landing Systems initiatives include re-engineering and technology insertion efforts for the Precision Approach Radar (PAR), Tactical Air Navigation System (TACAN), and other landing systems.

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING	PROJECT NUMBER AND NAME 1657 Shore Air Traffic Control Systems												
(U) B. Accomplishments/Planned Program														
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;">VIDS</th><th style="width: 20%;">FY 05</th><th style="width: 20%;">FY 06</th><th style="width: 30%;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.262</td><td style="text-align: center;">0.186</td><td style="text-align: center;">0.289</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>			VIDS	FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	0.262	0.186	0.289	RDT&E Articles Quantity			
VIDS	FY 05	FY 06	FY 07											
Accomplishments/Effort/Subtotal Cost	0.262	0.186	0.289											
RDT&E Articles Quantity														
<div>Continue engineering development of pre-planned product improvements for the Visual Information Display System (VIDS) and initiate efforts to incorporate VIDS into the FACSFACs and display alternatives for Navy ATC Systems.</div>														
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 20%;">FY 05</th><th style="width: 20%;">FY 06</th><th style="width: 30%;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.100</td><td style="text-align: center;">0.100</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>				FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	0.000	0.100	0.100	RDT&E Articles Quantity			
	FY 05	FY 06	FY 07											
Accomplishments/Effort/Subtotal Cost	0.000	0.100	0.100											
RDT&E Articles Quantity														
<div>Initiate re-engineering and technology insertion efforts for the Precision Approach Radar, the Tactical Air Navigation System and other Landing Systems.</div>														
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;">FACSFAC</th><th style="width: 20%;">FY 05</th><th style="width: 20%;">FY 06</th><th style="width: 30%;">FY 07</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.061</td><td style="text-align: center;">0.094</td><td style="text-align: center;">0.020</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td></tr></tbody></table>			FACSFAC	FY 05	FY 06	FY 07	Accomplishments/Effort/Subtotal Cost	0.061	0.094	0.020	RDT&E Articles Quantity			
FACSFAC	FY 05	FY 06	FY 07											
Accomplishments/Effort/Subtotal Cost	0.061	0.094	0.020											
RDT&E Articles Quantity														
<div>Initiate research efforts to determine the best technical approach to integrate various data link and communication system upgrades into the FACSFAC System including but not limited to the Digital Airport Surveillance Radar into the FACSFAC FACTS 3200 system.</div>														

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EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2006
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING	PROJECT NUMBER AND NAME 1657 Shore Air Traffic Control Systems

C. PROGRAM CHANGE SUMMARY:

	FY2005	FY2006	FY2007
Funding:			
Previous President's Budget:	0.329	0.386	0.439
Current BES/President's Budget:	0.323	0.380	0.409
Total Adjustments	-0.006	-0.006	-0.030
Summary of Adjustments			
Other general provisions	-0.006	-0.006	
Miscellaneous Adjustments			-0.030
Subtotal	-0.006	-0.006	-0.030

(U) Schedule:
Not Applicable.

(U) Technical:
Not Applicable.

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006						
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING	PROJECT NUMBER AND NAME 1657 Shore Air Traffic Control Systems							
D. OTHER PROGRAM FUNDING SUMMARY:									
<u>Line Item No. & Name</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>To Complete</u>	<u>Total Cost</u>
59 - OPN BLI 284000 National Air Space System	13.082	18.202	27.575	25.427	29.024	29.715	30.420	Continuing	Continuing
60 - OPN BLI 284500 Air Station Support Equip	3.615	3.904	3.968	4.081	4.168	4.264	4.364	Continuing	Continuing
61 - OPN BLI 284600 Landing System	7.182	7.766	9.157	9.393	10.402	10.682	10.976	Continuing	Continuing
62 - OPN BLI 284700 FACSAC	3.683	3.562	3.758	3.875	3.995	4.113	4.240	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.									

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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2006																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-5	PROGRAM ELEMENT NUMBER AND NAME 0604504N AIR CONTROL ENGINEERING	PROJECT NUMBER AND NAME 9999 / CONGRESSIONAL ADDS																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;">9564C</td><td style="width: 15%;">FY05</td><td style="width: 15%;">FY06</td><td style="width: 15%;">FY07</td><td style="width: 25%;"></td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td>0.000</td><td>1.500</td><td>0.000</td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>					9564C	FY05	FY06	FY07		Accomplishments/Effort/Subtotal Cost	0.000	1.500	0.000		RDT&E Articles Quantity				
9564C	FY05	FY06	FY07																
Accomplishments/Effort/Subtotal Cost	0.000	1.500	0.000																
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px; min-height: 60px;"><p>Transportable Transponder Landing System (TTLS)</p><p>Provide engineering, logistical and technical services in support of evaluation of TTLS.</p></div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><tr><td style="width: 30%;"></td><td style="width: 15%;">FY05</td><td style="width: 15%;">FY06</td><td style="width: 15%;">FY07</td><td style="width: 25%;"></td></tr><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></table>						FY05	FY06	FY07		Accomplishments/Effort/Subtotal Cost					RDT&E Articles Quantity				
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Accomplishments/Effort/Subtotal Cost																			
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