

EXHIBIT R-2, FY 2001 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N

PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W0718 Marine Air Traffic Control and Landing Systems (MATCALs)	771	4,678	9,391	8,171	1,772	1,249	1,195	CONT.	CONT.
W0993 Carrier Air Traffic Control	1,171	1,785	1,796	1,824	1,858	1,888	1,953	CONT.	CONT.
W1657 Air Traffic Control (ATC) Improvements	1,810	2,185	2,351	2,411	2,469	2,517	2,602	CONT.	CONT.
W2643 ECARS	3,389	4,973	0	0	0	0	0	CONT.	CONT.
TOTAL	7,141	13,621	13,538	12,406	6,099	5,654	5,750	CONT.	CONT.

Quantity of RDT&E Articles 1 Unit

(U) 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 capabilities ashore and afloat. Funded programs are required to upgrade or replace aging ATC and approach/landing 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. Development of a Global Positioning System (GPS) data link is required to enable the transfer of precise positioning information between ships and aircraft.

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

NOTE: FY 2000 amount includes (\$0.240) which is the portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

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EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

**PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)**

**PROJECT NUMBER: W0718
PROJECT TITLE: Marine Air Traffic Control and
Landing System (MATCALs)**

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W0718 Marine Air Traffic Control and Landing System (MATCALs)	771	4,678	9,391	8,171	1,772	1,249	1,195	Cont.	Cont.
TOTAL	771	4,678	9,391	8,171	1,772	1,249	1,195		

Quantity of RDT&E Articles 1 Unit

(U) 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 System (ATCALs) at Navy/Marine Corps (MC) expeditionary airfields. This program transferred to COMNAVAIRSYSCOM P.E. 0604504N, Project W0718 in November 1996 (FY 97). Current program includes approved transition to Next Generation Marine ATC System (Air Surveillance and Precision Approach Radar Control System (ASPARCS)).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1999 ACCOMPLISHMENTS:

- (U) (\$300K) Conducted research, investigations, studies/analyses incident to refining requirements of Air Surveillance and Precision Approach Radar Control System (ASPARCS) for compatibility and interoperability with Common Aviation Command & Control System (CAC2S) and common usage with Navy/Marine Corps (MC) ATC to include: (1) hardware/software requirements and solutions needed to incorporate precision Approach Mode II capability, MC intelligence networks, Cooperative Engagement Capability, and Defense Intelligence Information (DII)/Common Operating Environment (COE)/Information Technology 21st Century (IT21); (2) sensor requirements for both airport surveillance and precision approach; and (3) upgrades to existing displays.

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PROJECT NUMBER: W0718

PROGRAM ELEMENT TITLE: Air Control (Eng)

PROJECT TITLE: Marine Air Traffic Control and Landing System (MATCAL)

- (U) (\$151K) Provided software corrections to Operational and Precision Approach Software. Developed and fielded software upgrades. Provided documentation for software version releases.
- (U) (\$320K) Provided technical program office support in development of ASPARCS.

2. (U) FY 2000 PLAN:

- (U) (\$1554K) Provide systems integration, and non-recurring engineering support to procure and integrate communications, displays, processors, and shelters for the Operation Subsystem/Communications Subsystem portion of the Air Surveillance and Precision Approach Radar Control System (ASPARCS).
- (U) (\$1217K) Provide studies/analysis incident to refining requirements of ASPARCS System. These tasks shall include providing assistance in acquisition documentation, participation in briefing and program reviews, source selection, and technical oversight.
- (U) (\$1687K) Provide systems integration and non-recurring engineering support to develop, integrate and demonstrate the Air Surveillance Radar and the Precision Approach Radar Subsystem in the First Article ASPARCS System.
- (U) (\$220K) Provide engineering and management support to the program office for the planning and development of the ASPARCS System.

3. (U) FY 2001 PLAN:

- (U) (\$7943K) Continue to provide systems integration and demonstrate the Air Surveillance Radar and the Precision Approach Radar Subsystem in the ASPARCS System
- (U) (\$1228K) Perform systems integration engineering support to perform system engineering functions for the ASPARCS System. This effort is to include assistance in test and evaluation, and technical oversight of the ASPARCS program.
- (U) (\$220K) Continue engineering and management support to the program office for the planning and development of the ASPARCS System.

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BUDGET ACTIVITY: 5

**PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)**

**PROJECT NUMBER: W0718
PROJECT TITLE: Marine Air Traffic Control and
Landing System (MATCALs)**

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY2001</u>
(U) FY 2000 President's Budget:	894	4,704	3,638
(U) Appropriated Value:	1,045	4,704	
(U) Adjustments from President's Budget:	-123	-26	5,753
(U) FY 2001 President's Budget Submit:	771	4,678	9,391

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 net decrease of \$123 thousand reflects a reduction of \$16 thousand for a Small Business Innovation Research assessment, a \$100 thousand decrease for reprioritization of requirements within the Navy, and a \$7 thousand decrease for revised economic assumptions. The FY 2000 decrease reflects a \$26 thousand Across-the-Board Congressional rescission. The FY 2001 net increase of \$5753 thousand reflects a \$85 thousand decrease for Strategic Sourcing Plan savings and Navy Working Capital Fund (NWCF) adjustments, a \$38 thousand decrease for reprioritization of requirements within the Navy and a \$64 thousand decrease for revised economic assumption inflation, a \$5933 thousand increase due to a realignment of funds from OPN to support the ASPARCS development of the First Article and a \$7 thousand increase for Military and Civilian Pay.

(U) Schedule: Due to the restructuring of the program, the contract award date has been moved from December 1999 to May 2000 and the T&E Milestones are now scheduled for 3Q & 4Q in FY02.

Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
(U) OPN MATCALs-BLI 281500	11,602	12,343	4,294	1,019	14,700	16,200	16,648	Cont.

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**PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: Air Control (Eng)**

**PROJECT NUMBER: W0718
PROJECT TITLE: Marine Air Traffic Control and
Landing System (MATCALs)**

Related RDT&E: Not applicable.

U) P.E. Not applicable.

(U) D. ACQUISITION STRATEGY: Not Applicable.

(U) E. SCHEDULE PROFILE

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>To Complete</u>
(U) Program Milestones:		3Q/00 MS II (ASPARCS)		2Q/03 MS III (ASPARCS)
(U) Engineering Milestones:	4Q/99 Complete SW Improve- ments (Current)	3Q/00 Complete DII/COE/IT21 Analysis		
(U) T&E Milestones:				3Q/02 DT 4Q/02 OT Phase I (ASPARCS)
(U) Contract Milestones:		3Q/00 award for NRE First Article (ASPARCS)		2Q/03 exercise of option for Phase II (ASPARCS)

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EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N

PROJECT NUMBER: W0718
PROJECT TITLE: Marine Air Traffic Control
and Landing System (MATCALs)

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Product Development	Various	SPAWARSYSCEN San Diego	921	100	11/98	0		0		Cont.	Cont.	
	Various	NAWCAD Pax River	58	51	11/98	2,771	11/99	1,228	11/00	Cont.	Cont.	
	Various	Contractor TBD				1,687	05/99	7,943	12/00	Cont.	Cont.	
Subtotal Project Development			979	151		4,458		9,171		Cont.	Cont.	
Remarks:	Prior Years includes FY 97 and FY 98 data; program transferred from SPAWAR in FY 97, therefore earlier data is not available.											
Next Generation Studies	Various	NAWCAD Pax River	760	300	11/98	0		0		Cont.	Cont.	
ETS/Studies (Misc)	Various	Various	871	320	11/98	220	11/99	220	11/00	Cont.	Cont.	
Subtotal Support			1,621	620		220		220		Cont.	Cont.	
Remarks:	Prior Years includes FY 97 and FY 98 data; program transferred from SPAWAR in FY 97, therefore earlier data is not available											
Next Generation-T&E Flight Services										Cont.	Cont.	
Subtotal Test & Evaluation			0	0		0		0		Cont.	Cont.	
Remarks:												
Subtotal Management			0	0		0		0		0	0	
Remarks:												
Total Cost			2,610	771		4,678		9,391		Cont.	Cont.	

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BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
 PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W0993
 PROJECT TITLE: CARRIER AIR TRAFFIC CONTROL

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W0993 CARRIER AIR TRAFFIC CONTROL	1,171	1,785	1,796	1,824	1,858	1,888	1,953	CONT.	CONT.
TOTAL	1,171	1,785	1,796	1,824	1,858	1,888	1,953	CONT.	CONT.

Quantity of RDT&E Articles Not applicable.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Shipboard Air Traffic Control Centers identify, marshal, and direct aircraft within 50 Nautical Miles (NM) to a ship's Automatic Carrier Landing System (ACLS) and Independent Landing Monitor (ILM). The ACLS and ILM then provide precise automatic control and verification of aircraft during their final approach and landing sequence. Due to the AN/SPN-46 radar's acquisition limitations in rain, a Moving Target Detection (MTD) capability is required. This technology is also being evaluated for use in the AN/SPN-43 search surveillance radar and in the AN/SPN-35B precision approach radar. The insertion of MTD technology plus an antenna control upgrade constitute the AN/SPN-35C upgrade. This AN/SPN-35C configuration will require development of an interface with the Battle Force Tactical Trainer (BFTT). The AN/SPN-46 radar currently functions in cooperation with an active beacon on the controlled aircraft, and this beacon also has an obsolescence problem. Passive Point Source (PPS) development will replace the beacon. Performance Support Systems (PSS) tailored to specific air traffic control systems, such as AN/SPN-43, AN/SPN-35 and AN/SPN-46, are required to improve the performance of system maintainers. PSS includes supplemental training, technical references and logistics information.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1999 ACCOMPLISHMENTS:

- (U) (\$433K) Continued systems engineering and test & evaluation for AN/SPN-35 and AN/SPN-43 MTD systems.
- (U) (\$145K) Completed development of AN/SPN-46 MTD.
- (U) (\$373K) Developed and began testing AN/SPN-35 antenna control upgrade (part of AN/SPN-35C).
- (U) (\$220K) Developed production prototype for AN/SPN-46 Passive Point Source.

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PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W0993
PROJECT TITLE: Carrier Air Traffic Control

2. (U) FY 2000 PLAN:

- (U) (\$295K) Complete systems engineering and test & evaluation for Passive Point Source for AN/SPN-46.
- (U) (\$398K) Complete development of AN/SPN-35 MTD (part of AN/SPN-35C).
- (U) (\$422K) Initiate development of technical documentation for AN/SPN-35C.
- (U) (\$600K) Complete AN/SPN-35C testing.
- (U) (\$70K) Continue systems engineering and test & evaluation for AN/SPN-43 MTD.

3. (U) FY 2001 PLAN

- (U) (\$258K) Initiate development engineering for AN/SPN-43 halyard protection.
- (U) (\$623K) Continue systems engineering, design and development of AN/SPN-43 MTD.
- (U) (\$315K) Develop AN/SPN-35C/Battle Force Tactical Trainer interface.
- (U) (\$300K) Complete development of technical documentation for AN/SPN-35C.
- (U) (\$150K) Develop AN/SPN-46 power monitor engineering change.
- (U) (\$150K) Develop AN/SPN-46 test fixtures.

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PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W0993
PROJECT TITLE: Carrier Air Traffic Control

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	1,204	1,795	1843
(U) Appropriated Value:	1,260	1,795	
(U) Adjustments from President's Budget:	-33	-10	-47
(U) FY 2001 President's Budget Submit:	1,171	1,785	1,796

CHANGE SUMMARY EXPLANATION:

- (U) Funding: FY 1999 net decrease of \$33 thousand reflects decreases of \$31 thousand for a Small Business Innovative Research assessment and \$2 thousand for reprioritization of requirements within the Navy. FY 2000 decrease of \$10 thousand is for an across-the-board Congressional rescission. FY 2001 net decrease of \$47 thousand includes a net decrease of \$27 thousand due to Strategic Source Plan savings and Navy Working Capital Fund (NWCF) adjustments, a decrease of \$12 thousand for revised economic assumptions, an increase of \$4 thousand for military and civilian pay, a decrease of \$12 thousand for reprioritization of requirements within the Navy.
- (U) Schedule: FY 1999 funding adjustments impacted AN/SPN-35C technical documentation, which was deferred to FY 2000. Other schedule changes, affecting AN/SPN-43 MTD Production Prototype delivery, testing and completion of development, were necessitated by a shift in program priorities. The AN/SPN-35C improvements became the higher fleet priority, and the completion of AN/SPN-43 MTD was deferred to FY 2002. AN/SPN-46 MTD Production slipped one quarter (FY 1999) due to difficulties in contract negotiations. AN/SPN-43 Performance Support System (PSS) software release (FY 2000) and AN/SPN-35 PSS development have been postponed indefinitely, pending analysis of fleet response to the AN/SPN-41 PSS.
- (U) Technical: Not applicable.

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PROGRAM ELEMENT: 0604504N
 PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W0993
 PROJECT TITLE: Carrier Air Traffic Control

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
1810 Automatic Carrier Landing System - 42PN	10,702	18,486	18,510	16,351	18,016	18,379	18,787	CONT.
1810 Shipboard Air Traffic Control - 42MP	8,467	7,501	7,945	8,115	8,106	8,306	8,369	CONT.

Related RDT&E

- (U) P.E. 0603512N (Carrier Systems Development)
- (U) P.E. 0604512N (Shipboard Aviation Systems)

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PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W0993
PROJECT TITLE: Carrier Air Traffic Control

(U) D. 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 user requirements (all weather operation) or address supportability and cost of ownership problems.

(U) E. SCHEDULE PROFILE

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY2001</u>	<u>To Complete</u>
(U) Program Milestones			3Q/01 PPS Production	
			3Q-4Q/01 SPN-35C Documentation Release	
			4Q/01 SPN-35C/BFTT Specification Release	
(U) Engineering Milestones	4Q/99 PPS Prototype	3Q/00 PPS Production Prototype		2Q/02 Complete AN/SPN-46 Test Support Fixtures ECP
		2Q/00 SPN-35C Production Prototype		2Q/02 Complete AN/SPN-46 Ka Power Monitor ECP
				4Q/02 Complete SPN-43 MTD development
(U) T&E Milestones	1Q-2Q/99 PPS Testing	4Q/00 PPS Testing		4Q/03 Complete SPN-43 Halyard Protection design
		2Q-3Q/00 SPN-35C Prototype Testing		
(U) Contract Milestones	3Q/99 SPN-46 MTD Production	3Q/00 SPN-35C Production		

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EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N

PROJECT NUMBER: W0993

PROJECT TITLE: Carrier Air Traffic Control

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>FY 2001 Cost</u>	<u>FY 2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Project Development (Misc.)	WX	NAWCAD Pax River, MD	22,104	986	11/99	939	11/00	1,706	11/01	CONT.	CONT.	
Subtotal Project Development			22,104	986		939		1,706		CONT.	CONT.	
Remarks:												
Subtotal Support												
Remarks:												
Cost categories: T&E (Misc.)	WX	NAWCAD Pax River, MD	739	90	11/99	590	11/00	0	11/01	CONT.	CONT.	
Subtotal Test & Evaluation			739	90		590		0		CONT.	CONT.	
Remarks:												
Management (Misc.)	Various	NAVAIR & NAWCAD Pax River, MD	589	95	11/99	256	11/00	90	11/01	CONT.	CONT.	
Subtotal Management			589	95		256		90		CONT.	CONT.	
Remarks:												
Total Cost			23,432	1,171		1,785		1,796		CONT.	CONT.	

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PROGRAM ELEMENT: 0604504N

PROJECT NUMBER: W1657

PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT TITLE: Air Traffic Control Improvements

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W1657 AIR TRAFFIC CONTROL IMPROVEMENTS	1,810	2,185	2,351	2,411	2,469	2,517	2,602	CONT.	CONT.
TOTAL	1,810	2,185	2,351	2,411	2,469	2,517	2,602	CONT.	CONT.

Quantity of RDT&E Articles Not applicable.

(U) 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 communications systems, for example, Navy and Marine air traffic control facilities including Fleet Area Control and Surveillance Facility (FACSFAC). These systems must be modified to ensure continued interoperability with the National Airspace System (NAS), which is undergoing a major modernization. NAS Modernization initiatives in Project W1657 include the Visual Information Display System (VIDS), as well as incorporating a Navy ground control approach radar capability in the Standard Terminal Automated Replacement System (STARS). Automatic Carrier Landing System (ACLS) Improvements include performance upgrades to various components of the AN/SPN-46, including rearchitecture of the Unit 19 processor and IT-21 technology improvements to the radar display. The IT-21 improvements have been allocated to this program as a client of the Advanced Display System (AN/UYQ-70) program.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. ((U) FY 1999 ACCOMPLISHMENTS:

- (U) (\$250K) Completed GPS data link/landing system engineering study.
- (U) (\$294K) Provided systems engineering support to complete evaluation of GPS data link/landing system demonstration.
- (U) (\$350K) Initiated development of AN/TPX-42 computer upgrade.
- (U) (\$300K) Continued engineering development for NAS Modernization.
- (U) (\$616K) Initiated engineering, design and development of an Automatic Carrier Landing System (ACLS) Improvements upgrade.

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PROJECT NUMBER: W1657

PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT TITLE: Air Traffic Control Improvements

2. (U) FY 2000 PLAN:

- (U) (\$200K) Complete development of AN/TPX-42 computer upgrade.
- (U) (\$1,089K) Provide systems engineering support for ACLS Improvements upgrade.
- (U) (\$596K) Initiate development of AN/TPX-42 track processor and associated software upgrade.
- (U) (\$300K) Continue engineering development for NAS Modernization.

3. (U) FY 2001 PLAN:

- (U) (\$1,402K) Development of AN/TPX-42 track processor and associated software upgrade prototype.
- (U) (\$652K) Continue development of ACLS Improvements upgrade.
- (U) (\$297K) Continue engineering development for NAS Modernization.

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PROJECT NUMBER: W1657

PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT TITLE: Air Traffic Control Improvements

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	1,887	2,197	2,414
(U) Appropriated Value:	1,893	2,197	
(U) Adjustments from President's Budget:	-77	-12	-63
(U) FY 2001 President's Budget Submit:	1,810	2,185	2,351

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 net decrease of \$77 thousand reflects decreases of \$34 thousand for a Small Business Innovative Research assessment, \$34 thousand for a reprioritization of Navy requirements, and \$9 thousand for revised economic assumptions. FY 2000 decrease of \$12 thousand is for an across-the-board Congressional rescission. FY 2001 net decrease of \$63 thousand reflects a net decrease of \$38 thousand due to Strategic Source Plan savings and Navy Working Capital Fund (NWCF) adjustments, a decrease of \$16 thousand for revised economic assumptions, a \$6 thousand increase for military and civilian pay, and a \$15 thousand decrease for reprioritization of requirements within the Navy.

(U) Schedule: FY 1999 funding adjustments have delayed testing of the AN/SPN-46 IT-21 upgrade by one quarter. A technical decision to use Commercial-Off-the-Shelf sources for the AN/TPX-42 Computer Upgrade has resulted in combining two previous milestones from FY 2000, Production Prototype (developmental model) and Testing, into a single Milestone for the delivery of the final ECP package. Development of the AN/TPX-42 Performance Support System (PSS) has been postponed indefinitely, pending analysis of fleet response to the AN/SPN-41 PSS.

(U) Technical: Not applicable.

UNCLASSIFIED

EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

**PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)**

**PROJECT NUMBER: W1657
PROJECT TITLE: Air Traffic Control Improvements**

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>
1810 National Air Space System – 42CB	7,702	34,919	30,549	43,785	31,672	32,572	19,198	CONT.
1810 Shipboard Air Traffic Ctrl - 42MP	8,467	7,501	7,945	8,115	8,106	8,306	8,369	CONT.

Related RDT&E

(U) Not applicable.

(U) D. 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 user requirements (all weather operation) or address supportability and cost of ownership problems.

(U) E. SCHEDULE PROFILE

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>To Complete</u>
(U) Program Milestones		2Q/00 NAS Modernization VIDS Production	2Q/01 NAS Modernization Program Milestone III (Production Decision)	
(U) Engineering Milestones		3Q/00 ACLS Improvement Unit 19 Prototype Delivery	2Q/01 TPX-42 Track Proc. Production Prototype	4Q/03 ACLS Improvement Logistics documentation Updated
			4Q/01 TPX-42 Computer Upgrade ECP Delivery	4Q/04 AN/TPX-42 Track Proc. EMD complete

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EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W1657
PROJECT TITLE: Air Traffic Control Improvements

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>To Complete</u>
(U) T&E Milestones	1Q-2Q/99 Evaluate GPS NAPIE Prototype	3Q-4Q/00 TPX-42 Computer Upgrade Testing		2Q/03 AN/TPX-42 Track Proc. S/W testing complete
	3Q/99 GPS Test Results Release	3Q/00 ACLS Improvement IT-21 Testing		4Q/03 ACLS Improvement Flight testing complete
(U) Contract Milestones			1Q/01 TPX-42 Computer Upgrade Production	

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EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

Date: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N

PROJECT NUMBER: W1657

PROJECT TITLE: Air Traffic Control Improvements

Cost Categories:	Contract Method & Type	Performing Activity & Location	Total Prior Yrs Cost	FY 1999 Cost	FY 1999 Award Date	FY 2000 Cost	FY 2000 Award Date	FY 2001 Cost	FY 2001 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Project Development (Misc.)	WX	NAWCAD	33,861	1,137	11/99	1,768	11/00	2,226	11/01	CONT.	CONT.	
		Pax River MD										
	WX	SPAWARSYSCEN Charleston, SC		180	11/99							
Subtotal Project Development			33,861	1,317	11/99	1,768	11/00	2,226	11/01	CONT.	CONT.	
Remarks:												
Subtotal Support												
Remarks:												
T & E (Misc.)	WX	NAWCAD Pax River, MD	2,138	200	11/99	118	11/00	0	11/01	CONT.	CONT.	
Subtotal Test & Evaluation			2,138	200		118		0		CONT.	CONT.	
Management Support (Misc.)	Various	NAVAIR & NAWCAD Pax River, MD	2,633	293	05/99	299	05/00	125	05/01	CONT.	CONT.	
Subtotal Management			2,633	293		299		125		CONT.	CONT.	
Total Cost			38,632	1,810		2,185		2,351		CONT.	CONT.	

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EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W2643
**PROJECT TITLE: Expeditionary
 Common Automatic
 Recovery System
 (ECARS)**

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Budget</u>	<u>FY 2001 Estimate</u>	<u>FY 2002 Estimate</u>	<u>FY 2003 Estimate</u>	<u>FY 2004 Estimate</u>	<u>FY 2005 Estimate</u>	<u>To Complete</u>	<u>Total Program</u>
W2643 ECARS	3,389*	4973*	0	0	0	0	0	0	0
TOTAL	3,389	4973	0	0	0	0	0	0	0

Quantity of RDT&E Articles Not applicable.

* The FY 1999 budget reflects a \$3,500K Congressional add, and FY 2000 a \$5,000K Congressional add, both of which have been revised \$111K and \$27K respectively for Congressional undistributed adjustments.

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The USMC's Marine Air Ground Force (MAGTF) requires the capability to recover Aviation Combat Element (ACE) aircraft and Unmanned Aerial Vehicles (UAVs) reliably in an expeditionary environment. The current landing aid systems are antiquated, require considerable lift and setup time, and are primarily fixed base systems. The objectives of the Expeditionary Common Automatic Recovery System (ECARS) specifically include the development of a landing systems beacon replacement for both manned and unmanned aircraft.

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EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W2643
**PROJECT TITLE: Expeditionary
Common Automatic
Recovery System
(ECARS)**

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1999 ACCOMPLISHMENTS:

- (U) (\$1,005K) Initiated systems engineering, test and evaluation of ECARS.
- (U) (\$ 934K) Began developing a prototype landing system beacon for manned/unmanned aircraft.
- (U) (\$1,450K) Began developing system upgrades for extended range capability.

2. (U) FY 2000 PLAN:

- (U) (\$1,698K) Continue systems engineering, test and evaluation of ECARS.
- (U) (\$1,050K) Complete development of a prototype landing system beacon for manned/unmanned aircraft.
- (U) (\$2,225K) Continue developing system upgrades for extended range capability.

3. (U) FY 2001 PLAN: Not applicable

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EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W2643
PROJECT TITLE: Expeditionary Common Automatic Recovery System (ECARS)

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	3,492	0	0
(U) Appropriated Value:	3,500	5,000	0
(U) Adjustments from President's Budget:	-103	-27	0
(U) FY 2001 President's Budget Submit:	3,389	4,973	0

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY 1999 net decrease of \$103 thousand includes decreases of \$87 thousand for a Small Business Innovative Research assessment and \$16 thousand for revised economic assumptions. FY 2000 decrease of \$27 thousand is for an across-the-board Congressional rescission.

(U) Schedule: Contract award slippage from third quarter FY1999 to first quarter FY2000 was the result of late release of funds from deferral.

(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY: Not applicable

(Related RDT&E

- (U) P.E. 0603860F (JPALS)
- (U) P.E. 0603860N (JPALS)

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EXHIBIT R-2a, FY 2001 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N
PROGRAM ELEMENT TITLE: AIR CONTROL (Eng.)

PROJECT NUMBER: W2643
PROJECT TITLE: Expeditionary Common Automatic Recovery System (ECARS)

(U) P.E. 0603640M (Marine Corps Advanced Technology Demonstrations)

(U) D. ACQUISITION STRATEGY: Purpose of project is to develop capability demonstrations. Acquisition approach will direct efforts toward providing useful avionics off-the-shelf alternatives.

(U) E. SCHEDULE PROFILE

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) Program Milestones			3Q/01 Beacon Prototype
(U) Engineering Milestones		3Q/00 System Performance Spec.	
(U) T&E Milestones			4Q/01 Beacon Flight Test
(U) Contract Milestones		1Q/00 Contract Award	

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EXHIBIT R-3, FY 2001 RDT&E,N COST ANALYSIS

DATE: February 2000

BUDGET ACTIVITY: 5

PROGRAM ELEMENT: 0604504N

PROJECT NUMBER: W2643

PROJECT TITLE: Expeditionary Common Automatic Recovery System (ECARS)

Cost Categories:	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total Prior Yrs Cost</u>	<u>FY 1999 Cost</u>	<u>FY 1999 Award Date</u>	<u>FY 2000 Cost</u>	<u>FY 2000 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Project Development (Misc.)	BOA	NAVAIR Pax River, MD		2,984	11/99	3,275	TBD			
Subtotal Project Development				2,984		3,275				
Remarks:										
Subtotal Support										
Remarks:										
Test & Evaluation (Misc.)	WX	NAWCAD Pax River, MD		205	01/00	900	TBD			
Subtotal Test & Evaluation				205		900				
Remarks:										
Management Support (Misc.)	Various	NAVAIR & NAWCAD Pax River, MD		200	01/00	798	TBD			
Subtotal Management				200		798				
Remarks:										
Total Cost				3,389		4,973				

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