

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 5 PROGRAM ELEMENT: 0604512N
PROGRAM ELEMENT TITLE: Shipboard Aviation Systems

PROJECT NUMBER: W2232
PROJECT TITLE: CV Launch & Recovery Systems

(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>
W2232 CV Launch and Recovery Systems									
TOTAL	8,188	9,002	9,833	8,669	8,866	6,555	6,784	CONT.	CONT.
Quantity of RDT&E Articles		5		1					

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This Navy unique project addresses the Engineering and Manufacturing Development (EMD) of all systems required to recover and launch Navy/Marine Corps aircraft (fixed/rotary wing and Vertical/Short Take-Off and Landing (VSTOL))operating aboard aircraft carriers (CV/CVN), amphibious assault ships (LHA/LHD) and aviation facility ships. This program is funded under EMD because it encompasses engineering and manufacturing development of new end-items prior to production approval decision. This program includes the EMD phase of the following systems under Project W2232, including the funding of engineering development models (EDM):

- (U) Improved Carrier Optical Landing System (ICOLS), includes the Improved Fresnel Lens Optical Landing System (IFLOLS) and the Long Range Line-up System (LRLS).
- (U) Aviation Data Management and Control System (ADMACS), including the Integrated Shipboard Information System (ISIS), the Advanced Launch and Recovery Control System (ALRCS), and Virtual Imaging System for Approach and Landing (VISUAL) increments.
- (U) Moriah, the integrated wind measurement and meteorological system.

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

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- (U) Improved Carrier Optical Landing System (ICOLS): ICOLS provides longer range, higher accuracy visual landing aids (VLA) for pilots landing on aircraft carriers and includes the Improved Fresnel Lens Optical Landing System (IFLOLS) and the Long Range Line-up System (LRLS).
- (U) Aviation Data Management and Control System (ADMACS): ADMACS is a real-time, tactical, local area network (LAN) configuration managed for the specific support of the Air Department and the Aircraft Launch and Recovery Equipment (ALRE) data requirements on ships. It also provides connectivity among ALRE systems such as ICOLS, ISIS, ALRCS, and VISUAL; and links Air Operations with other onboard tactical and support networks.
- (U) Integrated Shipboard Information System (ISIS): ISIS employs existing and emerging technology to enable rapid input, collection, processing and distribution of relevant air operations information and then display this information on electronic monitors in all air operations work centers throughout the ship.
- (U) Advanced Launch and Recovery Control System (ALRCS): ALRCS introduces modern, modularized computer control systems to the catapults and arresting gear on aircraft carriers, which will support Condition Based Maintenance (CBM), enhance performance, and reduce life cycle costs.
- (U) Moriah: Moriah integrates standardized digital wind and meteorological sensors to produce an affordable, LAN compatible, wind suite for all classes of air capable Navy ships.
- (U) Virtual Imaging System for Approach and Landing (VISUAL): VISUAL provides ship's force, Landing Signal Officer (LSO), and pilots with enhanced images of the aircraft and ship during launch and recovery operations in low visibility, day and night conditions.

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(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$1,300) Conducted Low Rate Initial Production (LRIP) decision for shipboard IFLOLS. Initiated design effort for shore-based IFLOLS. Developed and tested LRLS design modifications to resolve acoustic, stabilization, and Electro-Magnetic Interference (EMI) deficiencies, and completed Milestone III. Provided pre-production support for the unit installed on USS GEORGE WASHINGTON (CVN 73). Provided engineering and management support to the program, particularly for the transition from the Engineering and Manufacturing Development (EMD) phase to the production phase for LRLS and IFLOLS.
- (U) (\$4,075) Completed Technical Evaluation (TECHEVAL) and Operational Assessment of the CV/CVN variant of ISIS on USS THEODORE ROOSEVELT (CVN 71). Conducted LRIP decision on the CV/CVN Variant of ADMACS/ISIS. Completed installation and check-out of the CV/CVN variant of the ADMACS EDM on CVN 73. Conducted TECHEVAL and Operational Evaluation (OPEVAL) of ADMACS on CVN 73. Provided integration support for the various ADMACS increments under development. Provided operational, engineering, and management support to the ISIS and ADMACS EDM units aboard CVN 71 and 73, and supported the transition from the EMD phase to the production phase.
- (U) (\$2,105) Completed process modeling effort and development of ALRCS performance specification. Initiated the design of the ALRCS EDM. Completed Allocated Baseline Specifications and initiated detailed system/component specification and drawing development. Provided engineering and management support to the program. Funded of the CVX-1 catapult development program Electro-Magnetic Aircraft Launch System (EMALS) via PBD 752, supported development and execution of catapult programmatic and acquisition initiatives, incorporated ALRCS performance, reliability, maintainability, and safety requirements in the baseline design. Additional efforts were also required to ensure that EMALS operating system sequence and interlock, equipment monitoring, and data acquisition functions were compatible with ALRCS.
- (U) (\$ 308) Completed documentation for MS II decision to proceed to the EMD phase of the LHA/LHD variant of the CV/CVN ADMACS/ISIS. No further action was accomplished - project was deferred by OPNAV.
- (U) (\$ 400) Evaluated candidate Moriah sensors, performed qualification testing, and assessed system integration issues. Prepared Request for Proposal (RFP) for EDM and provided engineering and management support to the program.

2. FY 2000 PLAN:

- (U) (\$ 957) Assess hardware and software architecture for Condition Based Maintenance, inbedded training, and operator workload reduction. Design, procure, and integrate selected sensors and subsystem prototypes of the ALRCS EDM. Provide engineering and management support to the program.

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- (U) (\$ 400) Complete the design and integration documentation for the CV/CVN ADMACS/ISIS. Conduct Milestone III decision. Provide engineering and management support to the program.

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PROJECT TITLE: CV Launch & Recovery Systems

- (U) (\$1,800) Award contract for Moriah EDM. Develop and integrate sensor suites for two EDM units and conduct Milestone II decision. Provide engineering and management support to the program.
- (U) (\$3,953) Initiate the EMD phase of the VISUAL program. Award contract and initiate the design and integration of the VISUAL EDM and conduct Milestone II decision. Provide engineering and management support to the program.
- (U) (\$1,803) Complete design of shore-based IFLOLS and produce EDM. Conduct Technical and Operational Evaluations and the Milestone III decision. Transition to FRP.
- (U) (\$0.089) Portion of extramural program is reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. FY 2001 PLAN:

- (U) (\$2,906) Develop ALRCS milestone and acquisition documentation. Solicit for EDM system integration, conduct Milestone II, and award the development contract. Provide engineering and management support to the program.
- (U) (\$1,400) Conduct Moriah Technical and Operational Evaluations. Prepare milestone documentation. Provide engineering and management support to the program.
- (U) (\$5,527) Deliver VISUAL EDM and conduct Operational Testing IIA and Development Testing IIA. Provide engineering and management support for the program.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	8,430	9,052	9,975
(U) Appropriated Value:	8,531	9,052	
(U) Adjustments from President's Budget:	-242	-50	-142
(U) FY 2001 President's Budget Submit:	8,188	9,002	9,833

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PROGRAM ELEMENT TITLE: Shipboard Aviation Systems

PROJECT TITLE: CV Launch & Recovery Systems

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY99 decrease of \$242 thousand reflects a \$17 thousand decrease for Small Business Innovative Research assessment, a \$186 thousand decrease for reprioritization of requirements within the Navy, and a \$39 thousand decrease for revised economic assumption. FY 2000 decrease of \$50 thousand reflects a reduction for an Across-the-Board Congressional rescission. FY 2001 net decrease of \$142 thousand reflects \$33 thousand net decrease for Strategic Sourcing Plan savings and Navy Working Capital Fund (NWCF) adjustments, a \$20 thousand increase for Military and Civilian pay, a \$67 thousand decrease for Revised Economic assumptions, and a \$62 thousand decrease for reprioritization of requirements within the Navy.

(U) Schedule:

LRLS: 3Q/98 MS III
IFLOLS: 1Q/99 MS III
ADMACS/ISIS: 2Q/99 MS III
ALRCS: 2Q/99 MS II
Moriah: 4Q/98 MS II

LRLS: 3Q/99 MS III
IFLOLS: 2Q/00 MS III
ADMACS/ISIS: 4Q/99 MS III
ALRCS: 4Q/01 MS II
Moriah: 2Q/00 MS II

Milestone changes: The LRLS MS III scheduled in FY98 became an LRIP decision for shore-based unit procurement due to problems with shipboard stabilization and Electromagnetic Interference issues. IFLOLS conducted a limited production decision as MS III was postponed until 2Q FY00 because of redesign efforts to make the shore-based system affordable. ADMACS/ISIS MS III is delayed until 1Q FY 2000 pending resolution of software development and integration issues. The ALRCS MS II was delayed from 2Q FY99 to 4Q FY01 due to emergent technical issues on other projects which reprioritized program effort. Moriah has slipped MSII to 2Q FY00 due to delays in receiving program documentation and directed changes to the acquisition plan. The LHA/LHD ADMACS/ISIS program was deferred by the resource sponsor. All other changes were made to provide additional program details.

(U) Technical: Not applicable

(U) C. OTHER PROGRAM FUNDING SUMMARY

<u>Appn</u>	<u>FY 1999</u> <u>Actual</u>	<u>FY 2000</u> <u>Estimate</u>	<u>FY 2001</u> <u>Estimate</u>	<u>FY 2002</u> <u>Estimate</u>	<u>FY 2003</u> <u>Estimate</u>	<u>FY 2004</u> <u>Estimate</u>	<u>FY 2005</u> <u>Estimate</u>	<u>To</u> <u>Complete</u>
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OP,N (P.E. 0204216N, Aircraft Launch and Recovery Equipment)

37,488 40,432 36,433 32,782 38,172 34,225 35,591 Cont.

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Related RDT&E

(U) P.E. 0603512N (Carrier Systems Development)

(U) D. ACQUISITION STRATEGY:

IFLOLS is a Technical Data Package (TDP) procurement. The Navy prepared a complete technical data package, based on the EDMs delivered in FY 1997. A production contract was awarded to Hughes Technical Service, Indianapolis, IN in May 1999.

LRLS: The Navy prepared a performance specification and competitively awarded a fixed-price contract to deliver three EDMs in FY 1997, with fixed-price production options.

ADMACS/ISIS is being designed and integrated by the Navy. The Navy will be procure hardware/software from multiple sources, integrate the hardware/software, and deliver the system to Navy shipyards for installation.

Moriah: The Navy is preparing a performance specification, based on the EDMs, and will competitively award a fixed-price contract to deliver production systems.

VISUAL: The Navy is preparing a performance specification and will competitively award a cost plus award fee contract to deliver EDMs, with fixed-price production options.

ALRCS: The Navy is preparing a performance specification and the ALRCS Team will compete the system integration contract. Production systems will be competitively procured.

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(U) E. SCHEDULE PROFILE

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>	<u>To Complete</u>
(U) Program Milestones	IFLOLS: 3Q/99 LRIP LRLS: 3Q/99 MS III ADMACS/ISIS: 4Q/99	IFLOLS: 2Q/00 MS III ADMACS/ISIS: 4Q/99 MSIII VISUAL: 2Q/00 MSII Moriah: 2Q/00 MSII	ALRCS: 4Q/01 MS II	ALRCS: 3Q/04 MS III VISUAL: 1Q/03 MS III Moriah: 2Q/02 MS III
(U) Engineering Milestones		VISUAL: 4Q/00 CDR Moriah: 4Q/00 CDR		
(U) T&E Milestones	ISIS: 1Q/99 OA ADMACS/ISIS: 1Q/99 DT ADMACS/ISIS: 2Q/99 OT	IFLOLS (Shore): 2Q/00 DT/OA	Moriah: 1Q/01 DT Moriah: 2Q/01 OT VISUAL: 3Q/01 DT VISUAL: 4Q/01 OT	

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(U) Contract Milestones

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IFLOLS: 3Q/99 LRIP

ADMACS/ISIS: 4Q/99 LRIP

LRLS: 3Q/99 FRP

Moriah: 2Q/00 EDM

VISUAL: 2Q/00 EDM

ADMACS/ISIS: 1Q/00 FRP

IFLOLS: 2Q/00 FRP

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

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PROJECT TITLE: CV LAUNCH & RECOVERY SYSTEMS

<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>FY2000 Award Date</u>	<u>FY2001 Cost</u>	<u>FY2001 Award Date</u>	<u>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Design, Manufacturing	WX	NAWCAD LKE	26,434	7,988	11/98	4,757	11/99	7,036	11/99	CONT.	CONT.	
Design, Manufacturing -VISUAL	FP C/CPAF	RAYTHEON TBD	4,475			4,042	3/00	2,590	3/01	CONT.	4,475 CONT.	TBD
Subtotal Product Development			30,909	7,988		8,799		9,626		CONT.	CONT.	
Remarks:												
ALRE PROGRAM SUPPORT			580	200		203		207		CONT.	CONT.	
Subtotal Support			580	200		203		207		CONT.	CONT.	
Subtotal Test & Evaluation			0	0		0		0	0			
Remarks:												
Subtotal Management			0	0		0		0	0			
Remarks:												
Total Cost			31,489	8,188		9,002		9,833		CONT.	CONT.	

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