

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 7

PROGRAM ELEMENT: 0305207N

PROJECT NUMBER: E2673

PROGRAM ELEMENT TITLE: DARP Special Project Aircraft

**PROJECT TITLE: F/A-18 Tactical
Reconnaissance**

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Budget</u>	<u>FY 2000 Estimate</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>
E2673* F/A-18E/F Tactical Reconnaissance (SHARP)	*29,709	*39,340	25,271	22,244	1,874	0	0	0	121,255**
Quantity of RDT&E Articles:		2	3						5

*Was executed under PE 0305207N, project R2673 in FY 1999 and FY 2000. The FY 2000 budget reflects a \$9,000 thousand Congressional add for Synthetic Aperture Radar (SAR) module development (R2808).

**Includes \$2,817 executed under PE 0204136N, project E2350 (FY 1998)

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Shared Reconnaissance Pod (SHARP) provides funds for the development of a dual-spectral-band reconnaissance pod camera system capable of being deployed on tactical aircraft. The camera will have simultaneous visible and infrared imaging capability and provide digital images in national standard formats. The system will be capable of collecting imagery, recording on-board, and transmitting simultaneously to a ground receiving station. Cameras operating in multiple spectral bands will be introduced as the technology evolves. The target aircraft is the F/A-18E/F. A prototype system will be flight demonstrated by June 2001. Provision will be made to accommodate transmission of SAR data. The system will operate semi-autonomously from the aircraft maximizing standard interfaces. Emphasis will be placed on using commercially available subsystems and components in an open architecture so that evolutionary designs in cameras, processors, transmitters, and recorders can be introduced seamlessly via competitive procurement procedures. An aggressive development schedule will be embraced driving toward an operational capability by May 2003.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) FY 1999 Accomplishments:

- (U) (\$400) Project Management coordinated development of the activities/contractors developing Rapid Prototype.
- (U) (\$400) System Engineering ensured design meets Operational Requirements Document (ORD) requirements and can be transitioned to a design that is producible and supportable.
- (U) (\$13,700) Designed and developed a generic pod that can be utilized by the SHARP program. Ensured that standard interfaces are used so the pod can be attached to any number of aircraft that utilize standard interfaces.
- (U) (\$1,500) Modified the hardback of the Long Range Oblique Photography System Engineering Pod to analyze the effects of vibration on sensor performance when a BRU 32 attachment is used.

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(U) PROGRAM ACCOMPLISHMENTS AND PLANS (Continued):

- (U) (\$1,600) Procured sensor to be used in SHARP Rapid Prototype.
- (U) (\$1,800) Purchased Non-Developmental Item recorders and datalink for the SHARP system.
- (U) (\$1,000) Began integration and testing of the SHARP subsystems.
- (U) (\$5,209) Developed the Tactical Reconnaissance Management System maximizing the use of Commercial Off-the-Shelf (COTS) computer hardware and began software design.
- (U) (\$2,500) Designed the software upgrade for minimal integration to the F/A-18 aircraft for demo.
- (U) (\$1,600) Logistics effort coordinated with pod/system designers to ensure the SHARP system is supportable and maintainable. Evaluated current support equipment to determine if it can be upgraded to support the SHARP equipment.

(U) FY 2000 PLAN:

- (U) (\$400) Project Management to coordinate development of the activities/contractors developing Rapid Prototype.
- (U) (\$2,600) Procure sensors to be used in SHARP Rapid Prototype.
- (U) (\$3,000) Procure 2 sensors for Engineering and Manufacturing Development (EMD) Phase.
- (U) (\$1,400) Complete integration and test of the SHARP subsystems for Rapid Prototype.
- (U) (\$2,000) Complete logistics plan and perform preliminary design of support equipment to ensure the Rapid Prototype can be transitioned to a fleet asset.
- (U) (\$300) Flight test sensors to evaluate their performance and compare to ORD requirements.
- (U) (\$800) Program Management to coordinate development activities during the EMD phase of the program.
- (U) (\$400) System engineering to ensure design meets ORD requirements and can be transitioned to a design that is producible and supportable. Identify trades that can be considered as part of the cost as an independent variable process.
- (U) (\$1,000) Systems engineering to develop EDM pods, design/develop the (software/hardware) Interface to the F/A-18 aircraft. Coordinate with other subsystems (F/A-18 Electronic Warfare, Weapons, and Radar) to ensure system compatibility. Coordinate with ground station activities to ensure compatibility.
- (U) (\$2,500) F/A-18 System Configuration Set (SCS) software for Rapid Prototype. Incorporate and test the software upgrade for F/A-18 minimal integration for demo of Rapid Prototype.
- (U) (\$500) F/A-18 SCS software. Upgrade demo tape for F/A-18 E/F aircraft. Update Tactical Aircraft Mission Planning System (TAMPS) for new sensors/design.

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(U) PROGRAM ACCOMPLISHMENTS AND PLANS (Continued):

- (U) (\$3,140) Begin RECCE Management System (RMS) software design for EMD phase. Design Built-In-Test (BIT) software to support Reliability and Maintainability (R&M) requirements. Upgrade integration labs/instrumentation.
- (U) (\$400) Complete RECCE Management System (RMS) design for the Rapid Prototype.
- (U) (\$11,900) SHARP Engineering Development Model(EDM) development. Complete pod design for EMD phase and fabricate 3 EDMs.
- (U) (\$9,000) Procure a SAR system design that can be incorporated in a SHARP Pod. (The SAR system to be incorporated is an NDI system.) Upgrade the SHARP design to incorporate a side-looking radome and the avionics to support the SAR system design. Develop an integration plan to incorporate the SAR stand alone system on the F/A-18E. Develop F/A-18C/D SCS software so a SHARP pod can be flown on a C/D Aircraft.

(U) FY2001 PLAN

- (U) (1,000) Program Management to coordinate development activities during the EMD Phase of the Program.
- (U) (1,195) Systems engineering to develop EDM pods, design/develop the (software/hardware) interface to the F/A-18 aircraft. Coordinate with other subsystems (F/A-18 EW, Weapons, and Radar), to ensure system compatibility. Coordinate with ground station activities to ensure compatibility.
- (U) (9,400) SHARP EDM development. Upgrade design as needed to support pod qualification. Complete pod design for EMD phase and fabricate 2 EDM pods, Integrate Weapons Replaceable Assembly (WRA)'s and begin initial aircraft integration on F/A-18 E/F aircraft.
- (U) (6,000) Procure 2 additional sensors for EMD phase.
- (U) (600) F/A-18 SCS software. Integration and test of the SHARP subsystems.
- (U) (4,076) Complete coding for RMS to support integration of the EMD phase. Begin BIT software development and testing, and begin integration to the F/A-18E/F SCS.
- (U) (3,000) Integration and test of the SHARP EDM pod. Perform initial E3 testing, Carrier Suitability testing and Initial Operation Testing to support Low Rate Initial Production.

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(U) B. PROGRAM CHANGE SUMMARY

(U) Program Change Summary for total P.E.

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	*29,845	*30,558	25,588
(U) Appropriated Value:	30,000	39,558	
(U) Adjustments from President's Budget:	-136	+8,782	-317
(U) FY 2001 President's Budget Submission:	*29,709	*39,340	25,271

*Was executed under PE 0305207N, project R2673

(U) CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 net decrease of \$136 thousand reflects inflation adjustments. The FY 2000 net increase of \$8,782 thousand reflects a \$218 thousand reduction for Across-the-Board Congressional rescission, and a \$9,000 thousand Congressional plus-up for Sharp System Synthetic Aperture Radar (SAR) module development. The FY2001 net decrease of \$317 thousand reflects a decrease of \$282 thousand for reprioritization of requirements within the Navy and a decrease of \$35 thousand for Strategic Sourcing Planning and Navy Working Capital Fund rate adjustments.

(U) Schedule: Not applicable.

(U) Technical: Not applicable.

(U) C. OTHER PROGRAM FUNDING SUMMARY:

(U) PROCUREMENT FUNDING:

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1999 Actual</u>	<u>FY 2000 Estimate</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>
F/A-18E/F Fighter (Hornet) APN-1 (Ancillary Equipment)	0	0	0	12,911	21,828	33,454	32,926	0	101,119

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Reconnaissance**

(U) RELATED RDT&E:

(U) PE 0305206N (Airborne Reconnaissance Advance Development)

(U) PE 0204136N (F/A-18 Squadrons)

(U) PE 0305208N (JSIPS)

(U) D. ACQUISITION STRATEGY:

The SHARP program consists of 3 separate procurements:

1. The pod will be procured with an order on a Cost Plus Fixed-Fee (CPFF)/IDIQ contract to Raytheon Indy.
2. The sensor will be procured competitively with a Fixed-Price Incentive (FPI) or Cost Plus Fixed-Fee CPFF contract .
3. The digital recorder will be procured competitively with a FPI or CPFF contract.

(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		2Q/03 – MS III
(U) Engineering Milestones	4Q/99 PDR	1Q/00 CDR	4Q/01 Prototype Complete	
(U) T&E Milestones				1Q/03 - TECHEVAL 4Q/03 - OPEVAL
(U) Contract Milestones		2Q/00 EMD Contract	2Q/01 Sensor Award	

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

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PROGRAM ELEMENT TITLE: DARP Special Project Aircraft

PROJECT TITLE: F/A-18 Tactical Reconnaissance

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total* Prior Yrs Cost</u>	<u>FY 1999**</u>		<u>FY 2000**</u>		<u>FY 2001***</u>			<u>Total Cost</u>	<u>Target Value of Contract</u>
				<u>FY 1999* Cost</u>	<u>Award Date</u>	<u>FY 2000** Cost</u>	<u>Award Date</u>	<u>FY2001 Cost</u>	<u>Award Date</u>	<u>Cost to*** Complete</u>		
POD Development/Integration	SS/CPFF	RAYTHEON, Indianapolis, IN	29	14,000	7/99	11,500	01/00	9,400	10/00	0	34,929	34,929
Prototype Sensor/WRAs	C/CS	Akron, OH	0	4,500	5/99					0	4,500	4,500
Prototype Sensor/WRAs	CPFF	CAI, Recon Optical, Inc. Barrington, IL	0	1,900	5/99					0	1,900	1,900
Prototype Sensor/WRAs	TBD	TBD						6,000	02/01	4,000	10,000	10,000
Procure SAR System	TBD	TBD				2,500	07/00				2,500	2,500
Upgrade Pod System	TBD	RAYTHEON, Indianapolis, IN				1,500	06/00				1,500	1,500
Software Engineering Development	WX	NAWCWD China Lake, CA	1,564	1,700	02/99	12,482	10/99	4,476	10/00	5,518	25,740	
		NRL, DC	0	4,364	02/99	4,600	10/99				8,964	
Misc. Product Development	WX	NAWCWD China Lake, CA		1,500	02/99	233	10/99	495	10/00	1,000	3,228	
	WX	Lakehurst, NJ				200	10/99	700	10/00	2,000	2,900	
		NRL, DC	0			1,500	10/99				1,500	
Subtotal Project Development			1,593	27,964		34,515		21,071		12,518	97,661	
Subtotal Support Not Applicable			0	0		0		0		0	0	

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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	FY2001 Cost	FY2001** Award Date	Cost to*** Complete	Total Cost	Target Value of Contract
<u>Test & Evaluation Organizations</u>												
Product Test & Integration	WX	NAWCAD Patuxent River, MD	1,023	745	02/99	3,800	10/99	3,210	10/00	10,600	19,378	
Subtotal Product Test & Evaluation			1,023	745		3,800		3,210		10,600	19,378	
Contractor Support/Travel Misc.	Various	NAVAIR Patuxent River, MD	201	1,000	02/99	1,025	02/99	990	10/00	1,000	4,216	
Subtotal Management			201	1,000		1,025		990		1,000	4,216	
Total Cost			2,817	29,709		39,340		25,271		24,118	121,255	

* Executed under PE 0204136N Project E2350
 ** Executed under PE 0305207N Project R2673
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