

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROGRAM ELEMENT TITLE: Aviation Survivability

(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>
W0584 Aircrew Protective Clothing & Devices	6,811*	9,641*	2,872	2,932	2,988	3,048	3,156	CONT.	CONT.
W0591 Aircraft Survivability Vulnerability & Safety	1,285	1,868	1,904	1,912	1,944	1,978	2,031	CONT.	CONT.
W0592 A/C & Ordnance Safety	1,674	1,715	1,768	1,784	1,828	1,860	1,935	CONT.	CONT.
W1819 Carrier Vehicle Aircraft Fire Suppression System	814	977	992	1,037	1,064	1,090	1,132	CONT.	CONT.
TOTAL	10,584	14,201	7,536	7,665	7,824	7,976	8,254	CONT.	CONT.

Quantity of RDT&E Articles : Not Applicable

*The FY 1999 budget reflects a \$1,000 Congressional add for Escape System Dynamic Flow, which has been revised by \$31K for Congressional undistributed adjustments executed under project W2604. The FY 1999 budget also reflects a \$2,000 Congressional add for Helicopter Aircrew Integrated Life Support System (HAILSS), which has been revised by \$64K for Congressional undistributed adjustments executed under project W2605. The FY 2000 budget reflects a \$3,000 Congressional add for Escape System Dynamic Flow, which has been revised by \$16K for Congressional undistributed adjustments executed under project W2604. The FY 2000 budget reflects a \$2,000 Congressional add for Helicopter Aircrew Integrated Life Support System (HAILSS), which has been revised by \$11K for Congressional undistributed adjustments executed under project W2605. The FY 2000 budget reflects a \$1,000 Congressional add for Lightweight Environmentally Sealed Parachute Assembly (LESPA), which has been revised by \$6K for Congressional undistributed adjustments executed under project W2727. The FY 2000 budget also reflects a \$1,000 Congressional add for Pilot Vehicle Interface Upgrade, which has been revised by 6K for Congressional undistributed adjustments executed under project W2728.

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Aviation Survivability addresses the issues of aircrew and platform survivability, focusing on enhancing overall opportunity for aircrew and platform protection and enhanced performance. The capabilities addressed under this program element counter emerging threats of next generation operational weapons systems and enhance combat effectiveness in future operational mission scenarios.

(U) Aircrew Protective Clothing and Devices develops, demonstrates, and validates technology options that enhance aircrew capability to perform assigned missions. In addition, this project ensures aircrew protection against natural and induced environmental or physiological hazards encountered during routine, combat and emergency flight operations as well as during escape, survival and rescue, following loss of aircraft.

(U) The three remaining projects focus on platform survivability, addressing the reductions in aircraft susceptibility to enemy and non-combat threats, as well as aircraft vulnerabilities to conventional, nuclear, chemical, biological, radiological and directed energy weapons. The Aircraft Survivability, Vulnerability and Safety project expands the survivability technology base and develops prototype hardware which is required to improve the survivability of Naval aircraft. Aircraft and Ordnance Safety transitions generic insensitive munitions technology to Navy and Marine Corps air weapons, ensuring that they are insensitive to fast cook-off, slow cook-off, bullet and fragment impact and sympathetic detonation. Carrier Aircraft Fire Suppression Systems develop improved firefighting systems and fire protective measures for aircraft carriers.

(U) JUSTIFICATION FOR BUDGET ACTIVITY: This program is funded under DEMONSTRATION and VALIDATION because it develops and integrates hardware for experimental tests related to specific ship or aircraft applications.

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0584

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: Aircrew Protective Clothing & Devices

(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>
W0584 Aircrew Protective Clothing & Devices	6,811*	9,641*	2,872	2,932	2,988	3,048	3,156	CONT.	CONT.
TOTAL	6,811	9,641	2,872	2,932	2,988	3,048	3,156	CONT.	CONT.

Quantity of RDT&E Articles: Not Applicable

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project W0584 develops, demonstrates, and validates technology options for integrated aircrew emergency and life support systems designed to enhance mission effectiveness, in-flight protection and survivability. The project covers fixed and rotary wing life support equipment, advanced helmet vision systems, escape systems technology, crew centered cockpit design, and cockpit integration programs. It responds to a number of operational requirements documents, including OR# 210-05-88 for Chemical and Biological (CB) Protection, OR# 099-05-087 for Laser Eye Protection, and the joint Air Force/Navy (CAF 208-93) for an Aerospace Control Helmet Mounted Cueing System. In 1996, the various sub-projects were restructured into a combined Advanced Technology Crew Station (ATCS) and Advanced Integrated Life Support System (AILSS) program. This project is validated by two Non-Acquisition Program Development Documents (NAPPDs) -- one for an Advanced Technology Crew Station (ATCS), and the other for AILSS.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$1,972) Continued the development of Advance Technology Escape System (ATES) using controllable propulsion (Fourth Generation Escape System).
- (U) (\$481) Began the development of Smart Advanced Integrated Life Support System (SAILSS) (referred to as Smart Adaptive Mission Support System (SAMSS) in the FY 99 PRESBUDG).

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W0584

**PROJECT TITLE: Aircrew Protective Clothing &
Devices**

FY 1999 ACCOMPLISHMENTS: (Continued)

- (U) (\$832) Continued the development of frequency agile laser eye protection, including non-linear materials development and demonstration. Frequency agile laser eye protection has application to both AILSS and to CRUSADER day/night helmet development, covered under the AILSS and ATCS NAPDD's, respectively.
- (U) (\$621) As a part of the Advanced Helmet Vision System (AHVS) all weather day/night display helmet, initiated upgrade from CRUSADER day only helmet mounted display system to day/night all weather helmet mounted display system.
- (U) (\$969) Begin the development of the laminar flow ejection tower test facility.
- (U) (\$1,936) Continued the development of Helicopter Aircrew Integrated Life Support System (HAILSS) with emphasis on cooling and laser eye protection.

3. FY 2000 PLAN:

- (U) (\$982) Continue ATES using controllable propulsion (Fourth Generation Escape System). Begin component integration.
- (U) (\$300) AHVS - complete head/neck weight moments of inertia studies.
- (U) (\$300) Continue enhanced resolution development for Crusader day/night all weather helmet mounted display system.
- (U) (\$500) Continue SAILSS.
- (U) (\$500) Continue development of non-linear materials for frequency agile laser eye protection.
- (U) (\$98) Extend Visualization Architecture Technology (VAT) to single user virtual image display.
- (U) (\$2,984) Continue the development of the laminar flow ejection tower test facility.
- (U) (\$1,989) Continue HAILSS with emphasis on miniaturization of sensors and electronics.
- (U) (\$994) Begin the development of the lightweight environmentally sealed parachute.
- (U) (\$994) Begin the development of the pilot vehicle interface upgrade.

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W0584

PROJECT TITLE: Aircrew Protective Clothing & Device

4. FY 2001 PLAN:

- (U) (\$860) Continue ATES using controllable propulsion (Fourth Generation Escape System). Continue component integration.
- (U) (\$935) Complete enhanced resolution Crusader day/night all weather helmet mounted display system.
- (U) (\$477) Continue SAILSS.
- (U) (\$500) Complete technology demonstration for non-linear materials phase of frequency agile laser eye protection development.
- (U) (\$100) Continue VAT, validate single user displays.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY2001</u>
(U) FY 2000 President's Budget:	7,033	2,695	2,914
(U) Appropriated Value:	7,077	9,695	
(U) Adjustments from President's Budget:	-222	+6,946	-42
(U) FY 2001 President's Budget Submit:	6,811	9,641	2,872

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0584

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: Aircrew Protective Clothing & Devices

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 net decrease of \$222 thousand reflects a decrease of \$131 thousand for Small Business Innovative Research (SBIR) assessments, a decrease of \$32 thousand for inflation savings, and a decrease of \$59 thousand for reprioritization of requirements within the Navy. The FY 2000 net increase of \$6,946 thousand reflects an Congressional increase of \$3,000 thousand for Escape System Dynamic Flow Test Facility, an increase of \$2,000 for Helicopter Aircrew Integrated Life Support System (HAILSS), an increase of \$1,000 thousand for Lightweight Environmentally Sealed Parachute Assembly (LESPA), and an increase of \$1,000 for Pilot Vehicle Interface Upgrades offset by a decrease of \$54 thousand for an Across-the-Board Congressional rescision. The FY 2001 net decrease of \$42 thousand reflects a decrease of \$11 thousand for minor economic adjustments, a decrease of \$26 thousand for Strategic Sourcing Plan savings, a decrease of \$20 thousand for revised economic assumptions, a decrease of \$7 thousand for reprioritization of requirements within the Navy offset by an increase of \$16 thousand for Navy Working Capital Fund (NWCF) adjustments and an increase of \$6 thousand for Military and Civilian Pay.

(U) Schedule: Not Applicable

(U) 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>
-------------	-----------------------	-----------------------	-------------------------	-------------------------	-------------------------	-------------------------	-------------------------	--------------------

Related RDT&E

- (U) PE 0602201F (Aerospace Flight Dynamics)
- (U) PE 0602233N (Mission Support Equipment)
- (U) PE 0604264N (Aircrew Systems Development)
- (U) PE 0604706F (Life Support Systems)
- (U) PE 0603231F (Crew Systems and Personal Protection Technology)

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0584

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: Aircrew Protective Clothing & Devices

(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				
4 th Gen Escape (ATES) & controllable propulsion	Continued	Begin Component Integration	Continue Component Integration	Complete 1Q 02
Crusader Day/Night All Weather Display System	Continued	Continue	Complete 4Q 01	
VAT (Networking)			Complete	
VAT (Single User)		Initiate 1Q 00	Continue	Continue
Frequency Agile Laser Eye Protection (non-linear materials)	Continued	Continue	Complete Tech Demo 4Q 01	
SAILSS	Initiated	Continue 1Q 00	Continue	Continue
(U) Engineering Milestones				
(U) T&E Milestones				
Crusader day/night system DT-1	Initiated 4Q 99	Complete		
(U) Contract Milestones: Not applicable.				

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER:

W0584

PROJECT TITLE:

Aircrew Protective Clothing & Devices

<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>
Miscellaneous	WX	NAWCAD PAX	13,134	2,324	Various	1,192	Various	1,386	Various	CONT.	CONT.	
Miscellaneous	Various	Various	10,765	0	Various	0		0				
McDonnell Douglas			1,325									
Boeing			1,660									
Subtotal Product Development			26,884	2,324		1,192		1,386		CONT.	CONT.	
Remarks												
Miscellaneous	WX	Various	322	430	Various	305	Various	499	Various	CONT.	CONT.	
Subtotal Support			322	430		305		499		CONT.	CONT.	
Remarks												

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0584

PROJECT TITLE: Aircrew Protective Clothing & Devices

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
Miscellaneous developmental test & evaluation	Various	Various	1869	4,047	Various	8,134	Various	977	Various	CONT.	CONT.	
Subtotal Test & Evaluation			1869	4,047		8,134		977		CONT.	CONT.	
Remarks												
Travel		Various	65	10	N/A	10	N/A	10	N/A	N/A.	N/A	
Subtotal Management			65	10		10		10		0	0	
Remarks												
Total Cost			29,140	6,811		9,641		2,872		CONT.	CONT.	

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0591

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: Aircraft Survivability Vulnerability & Safety

(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>
W0591 Aircraft Survivability Vulnerability & Safety	1,285	1,868	1,904	1,912	1,944	1,978	2,031	CONT.	CONT.
TOTAL	1285	1,868	1,904	1,912	1,944	1,978	2,031	CONT.	CONT.

Quantity of RDT&E Articles: Not Applicable

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Aircraft Survivability, Vulnerability and Safety. This project develops prototype hardware to improve the survivability of Navy and Marine Corps aircraft. This project addresses the likelihood of an aircraft being hit (susceptibility) and the probability of a kill if the aircraft is hit (vulnerability). Types of programs funded under this project include signature reduction efforts, subsystem and component hardening and development of fire and explosion suppression techniques for fuel systems. Beginning in fiscal year 1996 Chemical and Biological efforts were consolidated under OSD program element 0603384D (Chemical and Biological Defense (Advanced Development)).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$1,122) Continued the development of a rotary wing Infrared (IR) survivability signature suppression program (completed prototype ground test).
- (U) (\$10) Completed the development of RDT&E master plan (will be updated bi-annually).
- (U) (\$30) Continued data population of Aircraft Survivability Database.
- (U) (\$123) Continued current Survivability Analysis Methodology development to include a Survivability Analysis Methodology Roadmap for USN/USMC.

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0591

PROGRAM ELEMENT TITLE: Aviation Survivability

**PROJECT TITLE: Aircraft Survivability Vulnerability
& Safety**

2. FY 2000 PLAN:

- (U) (\$1,548) Continue the development of a rotary wing IR survivability signature suppression program (initiate flight test).
- (U) (\$100) Initiate uninhabited aerial vehicle (UAV) survivability program; focus on trade study/cost analysis.
- (U) (\$20) Annual update of Aircraft Survivability Database.
- (U) (\$200) Continue development of Survivability Analysis Methodology (based on FY99 roadmap).

3. FY 2001 PLAN:

- (U) (\$1,424) Complete the development of a rotary wing IR survivability signature suppression program.
- (U) (\$20) Biannual update of RDT&E master plan.
- (U) (\$20) Annual update of Aircraft Survivability Database.
- (U) (\$200) Continue development of Survivability Analysis Methodology (based on FY99 roadmap).
- (U) (\$240) Continue UAV survivability trade study (define hardware technology candidate).

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	1,505	1,878	1,932
(U) Appropriated Value:	1,509	1,878	
(U) Adjustments from President's Budget	-220	-10	-28
(U) FY 2001 President's Budget Submit:	1,285	1,868	1,904

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0591

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: Aircraft Survivability Vulnerability & Safety

CHANGE SUMMARY EXPLANATION:

(U)Funding: The FY 1999 net decrease of \$220 thousand reflects a decrease of \$31 thousand for Small Business Innovative Research (SBIR) assessments, a decrease of \$182 thousand for reprioritization of requirements within the Navy, and a decrease of \$7 thousand for inflation savings. The FY 2000 decrease reflects a \$10 thousand decrease for an Across-the Board Congressional rescission. The FY 2001 net decrease of \$28 thousand reflects a decrease of \$11 thousand for Strategic Sourcing Plan savings, a decrease of \$20 thousand for revised economic assumptions, and a decrease of \$5 thousand for reprioritization of requirements within the Navy offset by an increase of \$6 thousand for Navy Working Capital Fund (NWCF) adjustments and an increase of \$2 thousand for Military and Civilian pay.

(U) Schedule: Not applicable

(U) Technical: Not applicable

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

Related RDT&E

(U) PE 0605132D (Joint Technical Coordinating Group on Aircraft Survivability)

(U) PE 0603384D (Chemical/Biological Defense (Advanced Development))

(U) D. ACQUISITION STRATEGY: Not Applicable.

(U) E. SCHEDULE PROFILE:

FY 1999

FY 2000

FY2001

To Complete

(U) Program Milestones

UAV survivability trade study

Initiate
1Q 00

Complete
3Q 01

(U) Engineering Milestones: Not Applicable

(U) T&E Milestones

IR Suppressor ground test

Completed
4Q 99

IR Suppressor flight test

Initiate
4Q 00

Complete
2Q 01

(U) Contract Milestones: Not applicable

R-1 Item No. 31

UNCLASSIFIED

UNCLASSIFIED

DATE;
February 2000

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

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0591
PROJECT TITLE: AIRCRAFT SURV VUL & SAFETY

<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>
Miscellaneous	WX	Various	5115	277	Various	334	Various	528	Various	CONT.	CONT.	
Primary hardware development	SS/CPFF	SIKORSKY Connecticut	635	877	Oct 98	1000	Oct 99	659	Oct 00	3226	3226	3226
Primary hardware development	SS/CPFF	Bell Helicopter Ft. Worth, TX	1307									
Subtotal Project Development			7057	1154		1334		1187		CONT.	CONT.	
Remarks												
Miscellaneous	WX					150	Various	127	Various	CONT.	CONT.	
Subtotal Support			0	0		150		127		CONT.	CONT.	
Remarks												

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0591

PROJECT TITLE: AIRCRAFT SURV VUL & SAFETY

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>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>
Miscellaneous	Various	Various	770	121	N/A	374	Various	580	Various	CONT.	CONT.	
Subtotal Test & Evaluation			770	121		374		580		CONT.	CONT.	
Remarks												
Travel			165	10	N/A	10	N/A	10	N/A	CONT.	CONT.	
Subtotal Management			165	10		10		10		CONT.	CONT.	
Remarks												
Total Cost			7992	1285		1868		1904		CONT.	CONT.	

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0592

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: A/C & Ordnance Safety

(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>
W0592 A/C & Ordnance Safety	1,674	1,715	1,768	1,784	1,828	1,860	1,935	CONT.	CONT.
TOTAL	1,674	1,715	1,768	1,784	1,828	1,860	1,935	CONT.	CONT.

Quantity of RDT&E Articles: Not Applicable

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project transitions Insensitive Munitions (IM) technology from IM Advanced Development (generic technology) to Air Weapon Systems to comply with Chief of Naval Operations direction that all munitions carried aboard Navy ships be insensitive to fast cook-off (FCO), slow cook-off (SCO), bullet and fragment impact (BI and FI), and sympathetic detonation (SD).

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. (U) FY 1999 ACCOMPLISHMENTS:

- (U) (\$241) Loaded composite cases and conducted IM and static fire testing of 2.75-inch rocket motor.
- (U) (\$469) Addressed sympathetic detonation/containment design for tandem warheads and evaluating concept.
- (U) (\$964) Completed the High Performance Air to Missile (HPAAM) Hydroxyl Terminated Polyether (HTPE) full scale IM tests and static firings. Continued composite case captive carry demonstration.

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0592

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: A/C & Ordnance Safety

2. (U) FY 2000 PLAN:

- (U) (\$338) Demonstrate manufacturability of 2.75-inch rocket motor. Evaluate reactive material warheads for IM compliance.
- (U) (\$424) Continue evaluation of IM technology to pumice as a sympathetic detonation barrier and validate tandem warhead containment models.
- (U) (\$953) Fabricate Sidewinder composite rocket motor cases. Perform ground and flight testing of Sidewinder composite rocket motor.

3. (U) FY 2001 PLAN:

- (U) (\$855) Continue evaluating reactive material warheads for IM compliance.
- (U) (\$413) Demonstrate pumice as a sympathetic detonation barrier for weapon shipping containers.
- (U) (\$500) Complete flight testing and document flight certification process for Sidewinder composite case.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	1,723	1,725	1,799
(U) Appropriated Value:	1,732	1,725	
(U) Adjustments from President's Budget:	-49	-10	-31
(U) FY 2001 President's Budget Submit:	1,674	1,715	1,768

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0592

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: A/C & Ordnance Safety

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY 1999 net decrease of \$49 thousand reflects a decrease of \$8 thousand for inflation savings and a decrease of \$41 thousand for reprioritization of requirements within the Navy. The FY 2000 decrease reflects a \$10 thousand decrease for an Across-the Board Congressional rescission. The FY 2001 net decrease of \$31 thousand reflects a decrease of \$26 thousand for Strategic Sourcing Plan savings, a decrease of \$19 thousand for revised economic assumptions, and a decrease of \$5 thousand for reprioritization of requirements within the Navy offset by an increase of \$14 thousand for Navy Working Capital Fund (NWCF) adjustments and an increase of \$5 thousand for Military and Civilian pay.

(U) Schedule: Not applicable

(U) Technical: Not applicable

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

Related RDT&E: PE 0604802A
PE 0603609N

(U) D. ACQUISITION STRATEGY: This is a non-ACAT program with no specific acquisition strategies.

(U) E. SCHEDULE PROFILE: Not applicable

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0592
PROJECT TITLE: A/C & Ordnance Safety

<u>Cost Categories:</u>	<u>Contract Method & Type</u>	<u>Performing Activity & Location</u>	<u>Total PriorYrs 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>
Systems Engineering	WX	NAWC WD China Lake	9,293	1,654	10/98	1,685	10/99	1,738	10/00	CONT	CONT	
Subtotal Product Development			9,293	1,654		1,685		1,738		CONT	CONT	
Remarks:												
Subtotal Support			0	0		0		0		0	0	
Remarks:												
Subtotal Test & Evaluation			0	0		0		0		0	0	
Remarks:												
Miscellaneous	WX	NAWC AD PAX	10	20	10/98	30	10/99	30	10/00	CONT	CONT	
Subtotal Management			10	20		30		30		CONT	CONT	
Remarks:												
Total Cost			9,303	1,674		1,715		1,768		CONT	CONT	

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W1819

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: CV A/C Fire Suppression System

(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>
W1819 Carrier Vehicle Aircraft Fire Suppression System	814	977	992	1,037	1,064	1,090	1,132	CONT.	CONT.
TOTAL	814	977	992	1,037	1,064	1,090	1,132	CONT.	CONT.

Quantity of RDT&E Articles: Not Applicable

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: This project develops improved firefighting systems and fire protective measures for aircraft related fires on aircraft carriers, including assessment of fire properties, definition of fire threats, improvements to firefighting agents and delivery systems, fire detection and suppression system performance evaluations, and firefighter training improvements.

(U) PROGRAM ACCOMPLISHMENTS AND PLANS:

1. FY 1999 ACCOMPLISHMENTS:

- (U) (\$83) Completed evaluation of ordnance cooling requirements; remained current on ordnance inventory, conducted full scale fire testing of dummy ordnance (assessed defined threat to individual components, evaluated impact of various fire fighting techniques and equipment).
- (U) (\$386) Upgraded capabilities of environmentally safe fire test facility; maintained compliant permit status, designed and constructed test article provisions for conducting wheel/brake, electrical, 2D/3D, spill, and mass conflagration evaluations.
- (U) (\$100) Continued fire testing of agents, equipment, aircraft and ordnance materials; finalized engine fire testing, commence wheel/brake and electrical full scale testing (assessed collateral damage, conducted comparative systems testing, developed test standards, optimized operational methodologies).
- (U) (\$245) Completed development of flight deck imaging system; developed system designs for comparative testing, secure test articles, develop pass/fail criteria.

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W1819

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: CV A/C Fire Suppression System

2. FY 2000 PLAN:

- (U) (\$542) Conduct testing of fire test standards for wheel/brake, electrical, and spill fires. Identify critical test parameters and provide adequate instrumentation for testing. Manufacture details for fire threat simulators with adequate test repeatability provisions. Conduct full scale, fleet representative fire testing to evaluate relative performance of available and developmental extinguishing systems.
- (U) (\$155) Enhance the Mobile Aircraft Fire Fighting Training Device by evaluating options to propane fuel. Conduct live fire training demonstrations. Incorporate system upgrades based on fleet responses. Establish zoning criteria to maximize fleet personnel training opportunities.
- (U) (\$280) Continue carrier reduced manning studies. Evaluate potential negative safety impact of reduced manning of Navy ships relative to current level of onboard fire fighting provisions. Ensure adequate fire fighting provisions are maintained through evaluation of systems hardware enhancements, development of novel fire fighting approaches, and optimized personnel emergency procedures. Assess opportunities for overall improvement in shipboard handling of fire emergencies.

3. FY 2001 PLAN:

- (U) (\$459) Complete testing and finalize fire test standards for wheel/brake, electrical, and spill fires. Complete identification of critical test parameters and provision of adequate instrumentation for testing. Compile pros and cons of each system for review.
- (U) (\$225) Continue carrier reduced manning studies. Evaluate potential negative safety impact of reduced manning of Navy ships relative to current level of onboard fire fighting provisions. Ensure adequate fire fighting provisions are maintained through evaluation of systems hardware enhancements, development of novel fire fighting approaches, and optimized personnel emergency procedures. Assess opportunities for overall improvement in shipboard handling of fire emergencies.
- (U) (\$134) Initiate studies of fire threat from alternate fuel. Evaluate the different characteristics of JP-8 versus JP-5 fires. Identify deficiencies and promote opportunities for improvement.
- (U) (\$174) Evaluate next generation fire threats aboard carriers. Assess enhanced fire threats associated with more reliance on high powered electrical and electromagnetic components aboard ship. Evaluate remote fire detection and fire suppression methodologies and test prototypical hardware for performance.

**R-1 Item No. 31
UNCLASSIFIED**

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W1819

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: CV A/C Fire Suppression System

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1999</u>	<u>FY 2000</u>	<u>FY 2001</u>
(U) FY 2000 President's Budget:	842	982	1,022
(U) Appropriated Value:	846	982	
(U) Adjustments from President's Budget:	-28	-5	-30
(U) FY 2001 President's Budget Submit:	814	977	992

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY1999 net decrease of \$28 thousand reflects a decrease of \$7 thousand for Small Business Innovation Research (SBIR) assessments, a decrease of \$4 thousand for inflation savings, and a decrease of \$17 thousand for reprioritization of requirements within the Navy. The FY2000 decrease reflects a \$5 thousand for an Across -the Board Congressional rescission. The FY 2001 net decrease of \$30 thousand reflects a decrease of \$9 thousand for Strategic Sourcing Plan savings, a decrease of \$20 thousand for Navy Working Capital Fund (NWCF) adjustments, a decrease of \$11 thousand for revised economic assumptions, and a decrease of \$3 thousand for reprioritization of requirements within the Navy offset by an increase of \$10 thousand for Navy Working Capital Fund (NWCF) adjustments and an increase of \$3 thousand for Military and Civilian Pay.

(U) Schedule: Not applicable

(U) Technical: Not applicable

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

Related RDT&E: Not applicable

(U) D. ACQUISITION STRATEGY: Not Applicable.

(U) E. SCHEDULE PROFILE: Not Applicable.

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

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

DATE: February 2000

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W1819

PROJECT TITLE: CV A/C Fire Suppression

<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 (Contra)</u>
Miscellaneous	WX	MISC	4618	631	Various	165	Various	184	Various	CONT.	CONT.	
Subtotal Product Development			4618	631		165		184		CONT.	CONT.	
Remarks:												
Miscellaneous	WX	MISC	1104	0		280	Various	376	Various	CONT.	CONT.	
Subtotal Support			1104	0		280		376		CONT.	CONT.	
Remarks:												
Miscellaneous	WX	MISC	2238	173	Various	522	Various	422	Various	CONT.	CONT.	
Subtotal Test & Evaluation			2238	173		522		422		CONT.	CONT.	
Remarks:												
Travel	WX	NAWCAD PAX	25	10	Various	10	Various	10	Various	CONT.	CONT.	
Subtotal Management			25	10		10		10		CONT.	CONT.	
Remarks:												
Total Cost			7,985	814		977		992		CONT.	CONT.	

**R-1 Item No. 31
UNCLASSIFIED**