

UNCLASSIFIED
EXHIBIT R-2, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROGRAM ELEMENT TITLE: Aviation Survivability

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</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>
W0584 Aircrew Protective Clothing & Devices	10,906*	7,033*	2,695	2,914	3,017	3,093	3,184	3,271	CONT.	CONT.
W0591 Aircraft Survivability Vulnerability & Safety	2,126	1,505	1,878	1,932	1,972	2,016	2,069	2,118	CONT.	CONT.
W0592 A/C & Ordnance Safety	1,243	1,723	1,725	1,799	1,845	1,894	1,949	2,000	CONT.	CONT.
W1819 Carrier Vehicle Aircraft Fire Suppression System	1,084	842	982	1,022	1,050	1,081	1,114	1,144	CONT.	CONT.
TOTAL	15,359	11,103	7,280	7,667	7,884	8,084	8,316	8,533	CONT.	CONT.

Quantity of RDT&E Articles : Not Applicable

(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.

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2, FY 2000 RDT&E,N BUDGET ITEM JUSTIFICATION SHEET

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PROGRAM ELEMENT TITLE: Aviation Survivability

(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.

*FY-98 budget includes a Congressional add of \$8.586K for the Navy Integrated Day/Night All-Weather Display Helmet, and for Visualization Architecture and Technology executed under project W2385. FY-99 budget includes a Congressional add of \$998K for Escape System Dynamic Flow, and \$1.995K for the Helicopter Aircrew Integrated Life Support System (HAILSS) executed under projects W2604 and W2605 respectively.

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

UNCLASSIFIED

EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

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 1998 Budget</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>
W0584 Aircrew Protective Clothing & Devices	10,906*	7,033*	2,695	2,914	3,017	3,093	3,184	3,271	CONT.	CONT.
TOTAL	10,906	7,033	2,695	2,914	3,017	3,093	3,184	3,271	CONT.	CONT.

Quantity of RDT&E Articles

(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 1998 ACCOMPLISHMENTS:

- (U) (\$1,884) Initiated Advance Technology Escape System (ATES) using controllable propulsion (Fourth Generation Escape System).
- (U) (\$ 436) Completed flight test of the Helicopter Aircrew Integrated Life Support System (HAILSS)/AILSS/Air Warrior (AW) system.
- (U) (\$5,752) Completed integration and flight test of the Navy's day/night all-weather display helmet (CRUSADER). Begin camera upgrade, frequency agile laser eye protection non-linear materials development, and research directed towards risk mitigation (e.g. head/neck moment of inertia).
- (U) (\$2,834) Developed/extended baseline 3D Visualization Architecture Technology (VAT) to smaller groups, began interactive visualization networking.

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

UNCLASSIFIED
EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N
PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W0584
**PROJECT TITLE: Aircrew Protective Clothing &
Devices**

2. FY 1999 PLAN:

- (U) (\$2,050) Continue development of ATEs using controllable propulsion (Fourth Generation Escape System).
- (U) (\$481) Begin development of Smart Advanced Integrated Life Support System (SAILSS) (referred to as Smart Adaptive Mission Support System (SAMSS) in the FY 99 PRESBUDG).
- (U) (\$836) Continue 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) (\$623) As a part of the Advanced Helmet Vision System (AHVS) all weather day/night display helmet, initiate upgrade from CRUSADER day only helmet mounted display system to day/night all weather helmet mounted display system.
- (U) (\$974) Begin development of the laminar flow ejection tower test facility.
- (U) (\$1,945) Continue development of HAILSS with emphasis on cooling and laser eye protection.
- (U) (\$124) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. FY 2000 PLAN:

- (U) (\$997) 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 the Smart Advanced Integrated Life Support System (SAILSS).
- (U) (\$500) Continue development of non-linear materials for frequency agile laser eye protection.
- (U) (\$98) Extend (VAT) to single user virtual image display.

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W0584

PROGRAM ELEMENT TITLE: Aviation Survivability

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

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	11,981	4,077	2,881
(U) Appropriated Value:	11,981	4,077	
(U) Adjustments from FY99 PRESBUDG:	-1,075	+2,956	-186
(U) FY 2000 President's Budget Submit:	10,906	7,033	2,695

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY98 program adjustment of -\$1,075 thousand reflects -\$323 thousand for SBIR assessment, -\$752 thousand for BTR-98-33 to support the Center for Interdisciplinary Remotely Piloted Aircraft Studies (CIRPAS). The FY99 increase reflects a congressional add of \$3,000 thousand with a decrease of -\$22 thousand for Contract Advisory and Assistance Services, and -\$22 thousand for minor economic adjustments. The FY00 decrease of -\$186 thousand reflects -\$129 thousand to fully fund the Major Range & Test Facility Base (MRTFB) institutional funding, -\$13 thousand for Navy Working Capital Fund (NWCF) rate adjustments, and -\$44 thousand for minor economic adjustments.

(U) Schedule: Not Applicable

(U) Technical: Not Applicable

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

UNCLASSIFIED
EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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PROJECT NUMBER: W0584

PROGRAM ELEMENT TITLE: Aviation Survivability

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

(U) C. OTHER PROGRAM FUNDING SUMMARY:

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)

(U) D. ACQUISITION STRATEGY: Not Applicable

(U) E. SCHEDULE PROFILE

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>To Complete</u>
(U) Program Milestones				
4 th Gen Escape (ATES) & controllable propulsion	Initiated 1 st Q	Continue	Begin Component Integration	1Q/02
Crusader Day/Night All Weather Display System	Initiated 2 nd Q	Continue	Continue	4 th Q/01

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED
EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

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PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W0584
PROJECT TITLE: Aircrew Protective Clothing & Devices

(U) E. SCHEDULE PROFILE (Cont'd)

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>To Complete</u>
(U) Program Milestones (Cont'd)				
VAT (Networking)	Initiated 2 nd Q			Continue
VAT (Single User)			Initiate 1 st Q	Continue
Frequency Agile Laser Eye Protection (non-linear materials)	Initiated 4 th Q	Continue	Continue	Complete Tech Demo 4 th Q
SAILSS		Initiate 1 st Q	Continue	Continue

(U) Engineering Milestones

(U) T&E Milestones

Crusader day only system DT-1	Completed 4 TH Q			
Crusader day/night system DT-1		Initiate 4 th Q	Complete	
HAILSS/AILSS/AW flight test	Initiated 1 st Q Completed 4 th Q			

(U) Contract Milestones: Not applicable.

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

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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>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Miscellaneous	WX	NAWCAD PAX	13,134	2,380	Various	1,192	Various	CONT.	CONT.	
Miscellaneous	Various	Various	10,765	0	Various	0				
McDonnell Douglas			1,325							
Boeing			1,660							
Subtotal Product Development			26,884	2,380		1,192		CONT.	CONT.	
Remarks										
Miscellaneous	WX	Various	322	430	Various	305	Various	CONT.	CONT.	
Subtotal Support			322	430		305		CONT.	CONT.	

Remarks

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

UNCLASSIFIED

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PROJECT NUMBER: W0584

PROJECT TITLE: Aircrew Protective Clothing & Devices

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>
Miscellaneous developmental test & evaluation	Various	Various	1869	4089	Various	1188	Various	CONT.	CONT.	
Subtotal Test & Evaluation			1869	4089		1188		CONT.	CONT.	
Remarks										
Travel		Various	65	10	N/A	10	N/A	N/A.	N/A	
Subtotal Management			65	10		10		0	0	
Remarks										
SBIR assessment				124						
Total Cost			29,140*	7,033		2,695		CONT.	CONT.	

* TOTAL PRIOR YEARS COST TOTALS INCLUDE THE FY96 & PRIOR, FY97 ACTUAL COLUMNS FROM THE FY99 PRESIDENT'S BUDGET R-3 AND THE FY98 CURRENT CONTROLS.

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

UNCLASSIFIED
EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N
PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W0591
PROJECT TITLE: Aircraft Survivability Vulnerability & Safety

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</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>
W0591 Aircraft Survivability Vulnerability & Safety	2,126	1,505	1,878	1,932	1,972	2,016	2,069	2,118	CONT.	CONT.
TOTAL	2,126	1,505	1,878	1,932	1,972	2,016	2,069	2,118	CONT.	CONT.

Quantity of RDT&E Articles

(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 1998 ACCOMPLISHMENTS:

- (U) (\$1,785) Continued the development of a rotary wing Infrared (IR) signature suppression program.
- (U) (\$131) Continued the development of RDT&E master plan update.
- (U) (\$70) Initiated data population of the Aircraft Survivability Database
- (U) (\$140) Continued current development of Survivability Analysis Methodology .

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED
EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N
PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W0591
**PROJECT TITLE: Aircraft Survivability Vulnerability
& Safety**

2. FY 1999 PLAN:

- (U) (\$1,242) Continue the development of a rotary wing IR survivability signature suppression program (complete prototype ground test).
- (U) (\$10) Complete the development of RDT&E master plan (will be updated bi-annually).
- (U) (\$30) Continue data population of Aircraft Survivability Database.
- (U) (\$196) Continue current Survivability Analysis Methodology development, to include a Survivability Analysis Methodology Roadmap for USN/USMC.
- (U) (\$27) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. FY 2000 PLAN:

- (U) (\$1,558) Continue the development of a rotary wing IR survivability signature suppression program (initiate flight test).
- (U) (\$50) Continue uninhabited aerial vehicle (UAV) survivability program; focus on trade study/cost analysis.
- (U) (\$70) Annual update of Aircraft Survivability Database.
- (U) (\$200) Continue development of Survivability Analysis Methodology (based on FY99 roadmap).

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W0591

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

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	2,118	1,509	1,909
(U) Appropriated Value:	2,118	1,509	
(U) Adjustments from FY99 PRESBUDG:	+8	-4	-31
(U) FY 2000 President's Budget Submit:	2,126	1,505	1,878

CHANGE SUMMARY EXPLANATION:

(U) Funding: The FY98 program adjustment reflects an increase of \$31 thousand due to reprogramming, and a -\$23 thousand decrease for the SBIR assessment. The FY99 decrease of -\$4 thousand reflects minor economic adjustments. The FY00 decrease of -\$31 thousand reflects -\$2 thousand for Navy Working Capital Fund (NWCF) rate adjustments, and -\$29 thousand for minor economic adjustments.

(U) Schedule: Not applicable

(U) Technical: Not applicable

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

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

UNCLASSIFIED
EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

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PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W0591
PROJECT TITLE: Aircraft Survivability Vulnerability & Safety

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:

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>	<u>To Complete</u>
(U) Program Milestones				
UAV survivability trade study			Initiate 1 st Q	Complete 3 rd Q/01
(U) Engineering Milestones				
IR Signature Requirements Review	Completed 3 rd Q			
(U) T&E Milestones				
IR Suppressor ground test		Complete 4 th Q		
IR Suppressor flight test			Initiate 4 th Q	Complete 2 nd Q/01
(U) Contract Milestones: Not applicable				

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

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>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Miscellaneous	WX	Various	5115	470	Various	344	Various	CONT.	CONT.	
Primary hardware development	SS/CPFF	SIKORSKY Connecticut	635	877	Oct 98	1000	Oct 99	3226	3226	3226
Primary hardware development	SS/CPFF	Bell Helicopter Ft. Worth, TX	1307							
Subtotal Project Development			7057	1347		1344		CONT.	CONT.	
Remarks										
Miscellaneous	WX					150	Various	CONT.	CONT.	
Subtotal Support			0	0		150		CONT.	CONT.	
Remarks										

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

UNCLASSIFIED

EXHIBIT R-3, FY 2000 RDT&E,N COST ANALYSIS

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PROJECT NUMBER: W0591

PROJECT TITLE: AIRCRAFT SURV VUL & SAFETY

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	Cost to Complete	Total Cost	Target Value of Contract
Miscellaneous	Various	Various	770	121	N/A	374	Various	CONT.	CONT.	
Subtotal Test & Evaluation			770	121		374		CONT.	CONT.	
Remarks										
Travel			165	10	N/A	10	N/A	CONT.	CONT.	
Subtotal Management			165	10		10		CONT.	CONT.	
Remarks										
SBIR assessment				27						
Total Cost			7992*	1505		1878		CONT.	CONT.	

* TOTAL PRIOR YEARS COST TOTALS INCLUDE THE FY96 & PRIOR, FY97 ACTUAL COLUMNS FROM THE FY99 PRESIDENT'S BUDGET R-3 AND THE FY98 CURRENT CONTROLS.

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

UNCLASSIFIED

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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 1998 Budget</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>
W0592 A/C & Ordnance Safety	1,243	1,723	1,725	1,799	1,845	1,894	1,949	2,000	CONT.	CONT.
TOTAL	1,243	1,723	1,725	1,799	1,845	1,894	1,949	2,000	CONT.	CONT.

Quantity of RDT&E Articles

(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 1998 ACCOMPLISHMENTS:

- (U) (\$310) Fabricated composite case for Hydro-burst testing of 2.75-inch rocket motor.
- (U) (\$474) Completed evaluation of IM technology for Joint Standoff Weapon (JSOW) (Unitary) and Advanced Anti-Radiation Missile (ARM).
- (U) (\$459) Completed loading of High Performance Air to Missile (HPAAM) Hydroxyl Terminated Polyether (HTPE) propellant in 6-inch diameter composite case motors.

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED
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PROJECT TITLE: A/C & Ordnance Safety

2. (U) FY 1999 PLAN:

- (U) (\$278) Load composite cases, conduct IM and performance testing of 2.75-inch rocket motor.
- (U) (\$481) Building on IM technology developed under the JSOW Unitary, address sympathetic detonation/containment to tandem warheads.
- (U) (\$964) Continue full scale IM tests and static firings of High Performance Air to Missile (HPAAM) Hydroxyl Terminated Polyether (HTPE) propellant in 6-inch diameter composite case motors.

3. (U) FY 2000 PLAN:

- (U) (\$338) Demonstrate manufacturability of 2.75-inch rocket motor.
- (U) (\$434) Continue evaluation of IM technology to validate tandem warhead containment models.
- (U) (\$953) Complete IM tests and static firings of rocket motors for High Performance 6-inch Rocket IM Support. Perform flight testing of AIM9X/Sidewinder composite rocket motor.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	1,252	1,732	1,759
(U) Appropriated Value:	1,252	1,732	
(U) Adjustments from President's Budget:	-9	-9	-34
(U) FY 2000 President's Budget Submit:	1,243	1,723	1,725

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

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PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: A/C & Ordnance Safety

CHANGE SUMMARY EXPLANATION:

(U) Funding: FY1998 reflects a net decrease of -\$9 thousand as a result of minor program adjustments. FY1999 reflects a net decrease of -\$9 thousand as a result of revised economic adjustments. FY2000 reflects a net decrease of -\$34 thousand consisting of -\$18 thousand for Navy Working Capital Fund (NWCF) rate adjustments and -\$16 thousand for minor program adjustments.

(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 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

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 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>
Systems Engineering	WX	NAWC WD China Lake	9,293	1,703	10/98	1,705	10/99	CONT.	CONT.	
Subtotal Product Development			9,293	1,703		1,705		CONT.	CONT.	
Remarks										
Subtotal Support			0	0		0		0	0	
Remarks										
Subtotal Test & Evaluation			0	0		0		0	0	
Remarks										
Miscellaneous	WX	NAWCAD PAX	10	20	10/98	20	10/99	CONT.	CONT.	
Subtotal Management			10	20		20		CONT.	CONT.	
Remarks										
Total Cost			9,303	1,723		1,725		CONT.	CONT.	

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

UNCLASSIFIED
EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N
PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W1819
PROJECT TITLE: CV A/C Fire Suppression System

(U) COST: (Dollars in Thousands)

<u>Project Number & Title</u>	<u>FY 1998 Budget</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>
W1819 Carrier Vehicle Aircraft Fire Suppression System	1,084	842	982	1,022	1,050	1,081	1,114	1,144	CONT.	CONT.
TOTAL	1,084	842	982	1,022	1,050	1,081	1,114	1,144	CONT.	CONT.

Quantity of RDT&E Articles

(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 1998 ACCOMPLISHMENTS:

- (U) (\$302) Continued development of ordnance cooling requirements; established updated ordnance inventory, incorporated ordnance evaluation provisions in fire testing, developed instrumentation requirements, evaluated relative effect of varying cooling techniques.
- (U) (\$378) Finalized overhaul of environmentally safe fire testing facility; finished test site refurbishment, maintained compliant permit status, incorporation and operational testing of water and fuel delivery systems, optimized instrumentation provisions and ensured functionality, designed and constructed simulated engine test article, conducted baseline fire testing to qualify facility.
- (U) (\$228) Commenced fire testing of agents, equipment, aircraft and ordnance materials; performance evaluation of compressed nitrogen foam system, OPEVAL of modified twin agent unit, conducted full scale aircraft engine fire testing (damage assessment, test standard, operational methodologies, handheld performance, flight line extinguishers).

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W1819

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: CV A/C Fire Suppression System

1. FY 1998 ACCOMPLISHMENTS: (CONT)

- (U) (\$176) Initiated development of flight deck imaging system; evaluated need for enhancement, formulated preliminary system requirements.

2. FY 1999 PLAN:

- (U) (\$89) Complete evaluation of ordnance cooling requirements; remain current on ordnance inventory, conduct full scale fire testing of dummy ordnance (assess defined threat to individual components, evaluate impact of various fire fighting techniques and equipment).
- (U) (\$402) Upgrade capabilities of environmentally safe fire test facility; maintain compliant permit status, design and construct test article provisions for conducting wheel/brake, electrical, 2D/3D, spill, and mass conflagration evaluations.
- (U) (\$100) Continue fire testing of agents, equipment, aircraft and ordnance materials; finalize engine fire testing, commence wheel/brake and electrical full scale testing (assess collateral damage, conduct comparative systems testing, develop test standards, optimize operational methodologies).
- (U) (\$245) Complete development of flight deck imaging system; develop system designs for comparative testing, secure test articles, develop pass/fail criteria.
- (U) (\$6) Portion of extramural program reserved for Small Business Innovation Research assessment in accordance with 15 USC 638.

3. 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) (\$160) 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.

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

UNCLASSIFIED
EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N
PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT NUMBER: W1819
PROJECT TITLE: CV A/C Fire Suppression System

3. FY 2000 PLAN: (CONT)

- (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.

(U) B. PROGRAM CHANGE SUMMARY

	<u>FY 1998</u>	<u>FY 1999</u>	<u>FY 2000</u>
(U) FY 1999 President's Budget:	1,096	846	987
(U) Appropriated Value:	1,096	846	
(U) Adjustments from DON Budget:	-12	-4	-5
(U) FY 2000 OSD Budget Submit:	1,084	842	982

CHANGE SUMMARY EXPLANATION:

(U) The net decrease in FY98 is due to a reprogramming of -\$12 thousand. The FY99 decrease of -\$4 thousand is for economic adjustments. The net decrease of -\$5 thousand in FY 2000 denotes +\$4 thousand for Navy Working Capital Fund (NWCF) and -\$9 thousand for economic adjustments.

(U) Schedule: Not applicable

(U) Technical: Not applicable

R-1 Item No. 31
UNCLASSIFIED

UNCLASSIFIED

EXHIBIT R-2a, FY 2000 RDT&E,N BUDGET PROJECT JUSTIFICATION SHEET

DATE: February 1999

BUDGET ACTIVITY: 4

PROGRAM ELEMENT: 0603216N

PROJECT NUMBER: W1819

PROGRAM ELEMENT TITLE: Aviation Survivability

PROJECT TITLE: CV A/C Fire Suppression System

(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 2000 RDT&E,N COST ANALYSIS

DATE: February 1999

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>Cost to Complete</u>	<u>Total Cost</u>	<u>Target Value of Contract</u>
Misc	WX	MISC	4618	647	Various	170	Various	CONT.	CONT.	
Subtotal Product Development			4618	647		170		CONT.	CONT.	
Remarks										
Miscellaneous	WX	MISC	1104	0		280	Various	CONT.	CONT.	
Subtotal Support			1104	0		280		CONT.	CONT.	
Miscellaneous	WX	MISC	2238	179	Various	522	Various	CONT.	CONT.	
Subtotal Test & Evaluation			2238	179		522		0	0	
Remarks										
Travel	WX	NAWCAD PAX	25	10	Various	10	Various	CONT.	CONT.	
Subtotal Management			25	10		10		CONT.	CONT.	
SBIR Assessment				6						
Remarks										
Total Cost			7,985	842		982		CONT.	CONT.	

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