

CLASSIFICATION:

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4					R-1 ITEM NOMENCLATURE 0603216N Aviation Survivability			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Total PE Cost	29.108	20.378	6.809	5.921	6.011	6.458	6.579	6.702
A3040 TADIRCM	14.298							
W0584 Aircrew Protective Clothing and Devices	2.927	2.831	2.870	2.444	2.474	2.503	2.549	2.596
W0591 Aircraft Survivability, Vulnerabilty and Safety	1.802	1.817	1.829	1.553	1.575	1.600	1.632	1.661
W0592 A/C & Ordnance Safety	1.683	1.733	1.362	1.247	1.271	1.525	1.553	1.582
W1819 Carrier Vehicle Aircraft Fire Suppression	0.984	0.941	0.748	0.677	0.691	0.830	0.845	0.863
W9034 Modular Helmet and Display Development	1.962	1.467						
W9035 JPALS	5.452							
W9169 Aviation Integrated Life Support System		5.134						
W9170 Modular Advanced Vision System		1.761						
W9171 Naval Aviation Network Centric		1.761						
W9172 Advanced Aircraft/Explosion Protection		0.977						
W9173 Rotorcraft External Airbag		1.956						
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, and survival and rescue, following loss of aircraft.								

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Exhibit R-2, RDTEN Budget Item Justification
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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:	February 2003
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY /BA-4		0603216N Aviation Survivability	
<p>(U) Projects W0591, W0592, and W1819 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, and fragment impact and sympathetic detonation. Carrier Aircraft Fire Suppression Systems develops improved fire fighting systems and fire protective measures for aircraft carriers. Project W9034 reflects a Congressional Add that will complete development of the low resolution Crusader modular helmet, and begin development of an enhanced Advanced Helmet Vision System. Project W9169 reflects a Congressional Add that will be used to develop an approach to pass SAILSS (Smart AILSS) sensor cables through the Joint Service Air Mask (JSAM) and Joint Protective Aircrew Ensemble (JPACE) without compromising CB protection. The project will also determine the impact of added head mass on head/neck moments of inertia. Testing and development of system level devices will be conducted in dynamic, flight simulators, in order to develop realistic design goals. Project W9170 reflects a Congressional Add that will support the shift from traditional cathode ray tube (CRT) based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. As part of the design goals, the ability to add fixed line laser eye protection to the visor assembly will be explored. Project W9171 reflects a Congressional Add that will provide support to the principles of network centric warfare (NCW) which will be applied to leverage the power of shared information and knowledge to deliver end-to-end combat capabilities spanning from Space-to-Seabed and Sea-to-Land. Project W9172 reflects a Congressional Add that will be used to develop a stand-alone modeling, simulation, test and evaluation capability to assess aircraft fire/protection and extinguishing systems. This capability does not exist in any other DoD or University laboratory. Project W9173 reflects a Congressional Add that will address the level of protection afforded and feasibility of an external airbag. Rotorcraft application will require larger airbags integrated into the aircraft and development of "predictive" crash sensors. Initial impact studies (water and ground) have already been conducted. Joint efforts with the Army for aircrew systems are already underway.</p> <p>* See P.E. 0603860N W2329 for R-2a and R3 details.</p>			

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EXHIBIT R-2a, RDT&E Project Justification							DATE:	
							February 2003	
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME			
RDT&E, N / BA-4		0603216N Aviation Survivability			W0584 Aircrew Protective Clothing and Devices			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	2.927	2.831	2.870	2.444	2.474	2.503	2.549	2.596
RDT&E Articles Qty								
<p>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 Development Documents (NAPDDS)-- one for an ATCS, and the other for AILSS.</p>								

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Exhibit R-2a, RDTEN Project Justification
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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																															
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Avation Survivability	PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices																																
B. Accomplishments/Planned Program																																		
<table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <th style="width: 30%;"></th> <th style="width: 15%;">FY 02</th> <th style="width: 15%;">FY 03</th> <th style="width: 15%;">FY 04</th> <th style="width: 15%;">FY 05</th> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">1.327</td> <td style="text-align: center;">1.314</td> <td style="text-align: center;">1.417</td> <td style="text-align: center;">1.132</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p>Advanced Integrated Life Support System (AILSS) program. Exercise option to begin the development of frequency Agile flight worthy unity magnification goggles (laser eye protection). Laboratory and field testing of Agile flight worthy goggles prototypes. Focus on alternative materials and optical design to maximize performance. Finalize unity magnification frequency Agile flight worthy goggles and ready for EMD transition. Integrate Smart Advanced Integrated Life Support System (SAILSS) with on-board oxygen and personal air conditioning systems. Integration of SAILSS with focus on imbedded microsensors and personal air conditioning system. Tactical variant of AILSS (TAILSS), move SAILSS into final phases of laboratory testing. Crewstation technology laboratory demonstration of Active Network Guidance Emergency Logic (ANGEL). System integration laboratory demonstration of ANGEL. Combine flight testing of on board/off board data correlation and ANGEL.</p> </div> <table border="1" style="width: 100%; border-collapse: collapse; margin-bottom: 10px;"> <tr> <th style="width: 30%;"></th> <th style="width: 15%;">FY 02</th> <th style="width: 15%;">FY 03</th> <th style="width: 15%;">FY 04</th> <th style="width: 15%;">FY 05</th> </tr> <tr> <td>Accomplishments/Effort/Subtotal Cost</td> <td style="text-align: center;">1.600</td> <td style="text-align: center;">1.517</td> <td style="text-align: center;">1.453</td> <td style="text-align: center;">1.312</td> </tr> <tr> <td>RDT&E Articles Quantity</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <div style="border: 1px solid black; padding: 5px;"> <p>Advanced Technology Crew Station (ATCS) program. System integration and flight testing of Advanced Helmet Vision System enhanced resolution Crusader. I2/Thermal mode control studies. Pilot Vehicle Interface (PVI) on-board/off board data correlation on test aircraft and began flight testing. Advanced Technology Escape System (ATES) ejection seat trajectory and crashworthy seat stroke models with biodynamic models exploring various integrated aircrew head/neck protection configurations for ejection safe helmet mounted systems. . Incorporate computational fluid dynamics and parachute models. Preliminary ergonomic seating design, validated BioRID performance and mature final version. Incorporate models of helmet mounted displays into the PVI to support testing and validation of on board/off board data correlation. Horizontal accelerator/vibrating platform assessment of ergonomics, posture, and crashworthiness. Development of Charge Coupled Device (CCD) based, high resolution Advanced Helmet Vision System (follow on to the low resolution Crusader HMD). Integrate results of injury prevention research into protective equipment to include helmet mounted devices and into ejection seat design for improved seal performance, retention, and safety. Development and testing of side facing seat and improved restraint system. Focus on shock and vibration work.</p> </div>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	1.327	1.314	1.417	1.132	RDT&E Articles Quantity						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	1.600	1.517	1.453	1.312	RDT&E Articles Quantity				
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RDT&E Articles Quantity																																		

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Exhibit R-2a, RDTEN Project Justification
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EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:	2.850	2.895	2.964	2.519
Current BES/President's Budget	2.927	2.831	2.870	2.444
Total Adjustments	0.077	-0.064	-0.094	-0.075
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.017		
Congressional rescissions	-0.006			
SBIR/STTR Transfer	-0.010			
Economic Assumptions	-0.008	-0.047	-0.085	-0.065
Other Navy/OSD Adjustments		0.000	-0.009	-0.010
Reprogrammings	0.101			
Congressional increases				
Subtotal	0.077	-0.064	-0.094	-0.075

Schedule:

Not Applicable

Technical:

Not Applicable.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices					
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
(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 06023231F (Crew Systems and Personal Protection Technology)										
E. ACQUISITION STRATEGY:										
Not Applicable										
F. MAJOR PERFORMERS:										
Not Applicable										

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Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0584 Aircrew Protective Clothing and Devices						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Systems Engineering	WX	NAWCAD PAX	19.342	1.137	Various	1.290	Various	1.101	Various	Continuing	Continuing	
Systems Engineering	Various	Various	10.765	0.150							10.915	
Systems Engineering	C/CPFF	McDonnell Douglas, St Louis	1.325								1.325	1.325
Systems Engineering	C/CPFF	Boeing Seattle, Wa	1.660								1.660	1.660
Subtotal Product Development			33.092	1.287		1.290		1.101		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management	Various	Various	1.986	0.519	Various	0.531	Various	0.451	Various	Continuing	Continuing	
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			1.986	0.519		0.531		0.451		Continuing	Continuing	
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W0584 Aircrew Protective Clothing and Devices					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	Various	Various	15.856	1.015	Various	1.039	Various	0.882	Various	Continuing	Continuing	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			15.856	1.015		1.039		0.882		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River	0.105	0.010	10/02	0.010	10/03	0.010	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.105	0.010		0.010		0.010		Continuing	Continuing	
Remarks:												
Total Cost			51.039	2.831		2.870		2.444		Continuing	Continuing	
Remarks:												

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Exhibit R-3, Project Cost Analysis
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EXHIBIT R4, Schedule Profile																								DATE: February 2003								
APPROPRIATION/BUDGET ACTIVITY										PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME												
RDT&E, N / BA-4										0603216N Aviation Survivability										W0584 Aircrew Protective Clothing and Devices												
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Program Milestones																																
Agile Laser Eye Protection																																
Unity Magnification Goggle																																
Intensified Unity Mag Goggle																																
Advance Helmet Vision System (AHVS)																																
Crusader																																
Visually Coupled Display (high resolution)																																
Adanced Integrated Life Support System (AILSS)																																
Tactical AILSS (TAILSS)																																
Smart AILSS (SAILSS)																																
4th Generation Escape																																
Crashworthiness & Improved Restraint System																																
Injury Prevention																																
Pilot Vehicle Interface (PVI)																																
On Board - Off Board Data Correlation																																
T&E Milestones																																
Crusader laboratory testing																																
ANGEL																																
Advanced Technology Crew Station (ATCS)																																

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* Not required for Budget Activities 1, 2, 3, and 6

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 9 of 68)

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Exhibit R-4a, Schedule Detail
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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	1.802	1.817	1.829	1.553	1.575	1.600	1.632	1.661
RDT&E Articles Qty								

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.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety																	
B. Accomplishments/Planned Program																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	1.319	1.361	0.100	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Unmanned Aerial Vehicles (UAV) Survivability Enhancement Program (SEP): This program will develop and test survivability enhancements for UAV platforms. Included are Advanced Insulated Exhaust Systems, Situational Awareness Systems, Self-sealing polymers, and acoustic signature reduction.</div>																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.183	0.154	1.329	1.178															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Transport/Reconnaissance Survivability Enhancement Program (TR/SEP): This program will develop and test survivability enhancements (i.e., Infrared (IR) engine suppression, new ballistic armor and fire protection) for transport and reconnaissance aircraft to include KC-130J, P-3/MMA, E-6B and others. FY 02/03 work will determine system requirements and technology suitable for demonstration. Fabrication, integration and test will occur in FY 04/05.</div>																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.200	0.250	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Advanced Fire Protection: This program leverages from the Next Generation Propellant Program by demonstrating that previously developed fire suppression chemicals can be slightly modified and loaded into existing F/A-18 fire suppression canisters to provide ballistic fire protection. The final product will be a fire protection canister that will be tested in the V-22 and F/A-18 to demonstrate commonality and survivability.</div>																			

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Exhibit R-2a, RDTEN Project Justification
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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety																	
B. Accomplishments/Planned Program (Cont.)																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.100	0.027	0.200	0.150															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Advanced Threats: This program will assess the vulnerability of USN/USMC aircraft materials and sensors to low-level laser, high level laser and high power microwave threats (FY 02-FY-04). In FY 04, the advanced 35mm threat will be assessed.</div>																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.000	0.025	0.000	0.025															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Biannual Update of R&D Master Plan: Supports outyear aircraft survivability R&D requirements.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.100</td><td style="text-align: center;">0.150</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.100	0.150	RDT&E Articles Quantity				
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Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.100	0.150															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Rotorcraft Survivability Enhancement Program: This program will develop and test survivability enhancements (i.e., Infrared (IR) engine suppression, new ballistic armor and fire protection) for rotorcraft to include H-1 variants, H-53, H-60 and V-22. FY 04/05 work will determine system requirements and technology suitable for demonstration.</div>																			

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 13 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety																	
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Accomplishments/Effort/Subtotal Cost			0.100	0.050															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Survivability Analysis Methodology Update: This program will update USN/USMC Vulveratility models (Computation of Vulnerable Area and Repair Time (COVART)), Advanced Joint Effectiveness Model (AJEM) to ensure the most up to date analysis tools. This will include updating component probability of kill (PK) data as necessary and will assess conversion methodologies such as Pro/engineer (PRO/E) Computer Aided Design (CAD) model conversion to Facet Generator (FASTGEN) used to show ballistic shot lines.</div>																			
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<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 35%;"></th> <th style="text-align: right; width: 15%;">FY 2002</th> <th style="text-align: right; width: 15%;">FY 2003</th> <th style="text-align: right; width: 15%;">FY 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Previous President's Budget:</td> <td style="text-align: right;">1.876</td> <td style="text-align: right;">1.857</td> <td style="text-align: right;">1.884</td> <td style="text-align: right;">1.593</td> </tr> <tr> <td>Current BES/President's Budget</td> <td style="text-align: right;">1.802</td> <td style="text-align: right;">1.817</td> <td style="text-align: right;">1.829</td> <td style="text-align: right;">1.553</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-0.074</td> <td style="text-align: right; border-top: 1px solid black;">-0.040</td> <td style="text-align: right; border-top: 1px solid black;">-0.055</td> <td style="text-align: right; border-top: 1px solid black;">-0.040</td> </tr> <tr> <td colspan="5" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td> Congressional program reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Congressional undistributed reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Congressional rescissions</td> <td style="text-align: right;">-0.004</td> <td style="text-align: right;">-0.010</td> <td></td> <td></td> </tr> <tr> <td> SBIR/STTR Transfer</td> <td style="text-align: right;">-0.028</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Economic Assumptions</td> <td style="text-align: right;">-0.005</td> <td style="text-align: right;">-0.030</td> <td style="text-align: right;">-0.053</td> <td style="text-align: right;">-0.039</td> </tr> <tr> <td> Reprogrammings</td> <td style="text-align: right;">-0.037</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Other Navy/OSD Adjustments</td> <td></td> <td></td> <td style="text-align: right;">-0.002</td> <td style="text-align: right;">-0.001</td> </tr> <tr> <td> Congressional increases</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Subtotal</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;">-0.074</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;">-0.040</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;">-0.055</td> <td style="text-align: right; border-top: 1px solid black; border-bottom: 1px solid black;">-0.040</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule:</p> <p style="margin-left: 20px;">Not applicable</p> <p style="margin-top: 20px;">Technical:</p> <p style="margin-left: 20px;">Not applicable</p>						FY 2002	FY 2003	FY 2004	FY 2005	Funding:					Previous President's Budget:	1.876	1.857	1.884	1.593	Current BES/President's Budget	1.802	1.817	1.829	1.553	Total Adjustments	-0.074	-0.040	-0.055	-0.040	Summary of Adjustments					Congressional program reductions					Congressional undistributed reductions					Congressional rescissions	-0.004	-0.010			SBIR/STTR Transfer	-0.028				Economic Assumptions	-0.005	-0.030	-0.053	-0.039	Reprogrammings	-0.037				Other Navy/OSD Adjustments			-0.002	-0.001	Congressional increases					Subtotal	-0.074	-0.040	-0.055	-0.040
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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 15 of 68)

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EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003																																				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0591 Aircraft Survivability , Vulnerability and Safety																																					
<p>D. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Line Item No. & Name</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2002</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2003</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2004</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2005</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2006</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2007</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2008</th> <th style="text-align: center; border-bottom: 1px solid black;">FY 2009</th> <th style="text-align: center; border-bottom: 1px solid black;">To Complete</th> <th style="text-align: center; border-bottom: 1px solid black;">Total Cost</th> </tr> </thead> <tbody> <tr> <td colspan="11">PE 0605132D (Joint Technical Coordinating Group on Aircraft Survivability)</td> </tr> <tr> <td colspan="11">PE 0603384D (Chemical/Biological Defense (Advanced Development))</td> </tr> </tbody> </table> <p>E. ACQUISITION STRATEGY: *</p> <p style="margin-left: 40px;">Not applicable</p> <p>F. MAJOR PERFORMERS: **</p>											Line Item No. & Name	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009	To Complete	Total Cost	PE 0605132D (Joint Technical Coordinating Group on Aircraft Survivability)											PE 0603384D (Chemical/Biological Defense (Advanced Development))										
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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)							DATE: February 2003					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W0591 Aircraft Survivability, Vulnerability and Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	SS/CPFF	Sikorsky, Connecticut	3.113								3.113	3.113
Primary Hardware Development	TBD	Contractor TBD (UAV)	0.885	0.677	10/02						1.562	1.562
Primary Hardware Development	WX	Various Govt Activities	0.050	0.150	10/02	0.473	10/03				0.673	
Systems Engineering	WX	Various	7.103	0.420	10/02	0.250	10/03	0.492	10/04	Continuing	Continuing	
Primary Hardware Development	SS/CPFF	Bell Helicopter	1.307								1.307	1.307
Primary Hardware Development	SS/CPFF	TBD (TR/SEP)				0.896	11/03	0.269	11/04		1.165	1.165
Subtotal Product Development			12.458	1.247		1.619		0.761		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data	WX	Various	0.254	0.025	11/02						0.279	
Studies & Analyses	CPFF	TBD				0.150	11/03	0.075	11/04		0.225	0.225
GFE												
Award Fees												
Subtotal Support			0.254	0.025		0.150		0.075			0.504	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W0591 Aircraft Survivability, Vulnerability and Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	WX	Various	1.598	0.500	10/02			0.657	10/04	Continuing	Continuing	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			1.598	0.500				0.657		Continuing	Continuing	
Remarks:												
Contractor Engineering Support												
Government Engineering Support	WX	Various										
Program Management Support	WX	Various	0.035	0.035	10/02	0.050	10/03	0.050	10/04	Continuing	Continuing	
Travel	WX	Various	0.205	0.010	10/02	0.010	10/03	0.010	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.240	0.045		0.060		0.060		Continuing	Continuing	
Remarks:												
Total Cost			14.550	1.817		1.829		1.553		Continuing	Continuing	
Remarks:												

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Exhibit R-3, Project Cost Analysis
(Exhibit R-3, page 18 of 68)

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CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:								
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME								
RDT&E, N / BA-4												0603216N Aviation Survivability												W0591 Aircraft Survivability, Vulnerability and Safety								
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
Program Milestones																																
Trade Studies																																
TR/SEP Rotorcraft SEP Fixed Wing/Attack SEP																																
Unmanned Combat Aerial Vehicle (UCAV)																																
Prototype Development																																
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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 19 of 68)

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CLASSIFICATION:

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 20 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability				PROJECT NUMBER AND NAME W0592, Aircrfat & Ordnance Safety			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	1.683	1.733	1.362	1.247	1.271	1.525	1.553	1.582
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Aircraft and Ordnance Safety Program transitions transformational munitions technology to Navy and Marine Corps air weapons, to comply with the Chief of Naval Operations direction that all munitions carried aboard Navy ships be insensitive to unplanned stimuli (thermal, impact, and shock events). The Aircraft and Ordnance Safety Program also ensures the safety and protection of personnel, aircraft, ships, and operational facilities, through improved precision targeting, fail-safe ordnance, selective effects munitions and shock/blast force protection technologies.

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 21 of 68)

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RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">REACTIVE MATERIALS: Continue evaluating reactive material warheads for Insensitive Munitions (IM) compliance. Output: IM characterization of warheads with reactive material components.</div>																			
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Accomplishments/Effort/Subtotal Cost	0.566	0.375	0.264	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">SYMPATHETIC DETONATION PROTECTION: Demonstrate pumice as a sympathetic detonation (SD) barrier for weapon shipping containers. Refine pumice design capability for SD mitigation. Output: New modeling capabilities and demonstrated technology to reduce the threat of SD in Joint Stand-Off Weapon (JSOW) and General Purpose (GP) bomb Munitions.</div>																			
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Accomplishments/Effort/Subtotal Cost	0.698	0.200	0.000	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">SIDEWINDER COMPOSITE ROCKET MOTOR DEMO: Conduct ground and flight testing Sidewinder composite rocket motor. Conduct air to air missile IM warhead testing. Output: IM warhead for air to air missile & Flight demo of composite case weapon airframe.</div>																			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
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Accomplishments/Effort/Subtotal Cost	0.000	0.600	0.379	0.000															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">COMPOSITE CASE IM DEMONSTRATION: Conduct composite case Insensitive Munitions (IM) testing demonstration. Begin long range air to surface composite case IM demonstration. Output: Flight demo of composite case weapon airframe for air to air/ground missile.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.221</td><td style="text-align: center;">0.277</td><td style="text-align: center;">0.514</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.000	0.221	0.277	0.514	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.000	0.221	0.277	0.514															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">AIR TO AIR MISSILE PROPULSION SYSTEM DEMO/TESTING: Conduct improved air to air missile demonstration and testing. Output: baseline IM performance of air breathing systems.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.265</td><td style="text-align: center;">0.362</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.265	0.362	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.265	0.362															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">SHOCK/BLAST BARRIER PROTECTION DEMO/TESTING: Conduct shock/blast protection demonstration and testing. Output: Design and demonstration of shock absorbent materials for the protection of weapons and weapon platforms.</div>																			

R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability	PROJECT NUMBER AND NAME W0592, Aircraft & Ordnance Safety																	
B. Accomplishments/Planned Program (Cont.)																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.177</td><td style="text-align: center;">0.371</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.177	0.371	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.177	0.371															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">IMPROVED AIR LAUNCHED WEAPONS: Demonstrate improved air launched munitions for force protection and homeland defense. Output: Demonstrate/determine the IM and safety characteristics of improved air launched munitions.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td><td style="text-align: center;">0.000</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000	RDT&E Articles Quantity				
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Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000															
RDT&E Articles Quantity																			
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Accomplishments/Effort/Subtotal Cost	0.000	0.000	0.000	0.000															
RDT&E Articles Quantity																			
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R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability	PROJECT NUMBER AND NAME W0592, Aircraft & Ordnance Safety		

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
FY 2003 President's Budget	1.729	1.772	1.789	1.532
FY 2004 President's Budget	1.683	1.733	1.362	1.247
Total Adjustments	-0.046	-0.039	-0.427	-0.285
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.010		
Congressional rescissions	0.011			
SBIR/STTR Transfer				
Economic Assumptions	-0.005	-0.029	-0.045	-0.036
Reprogrammings	-0.050			
Other Navy/OSD Adjustments	-0.002		-0.382	-0.249
Congressional increases				
Subtotal	-0.046	-0.039	-0.427	-0.285

Schedule: Not Applicable

Technical: Not Applicable

R-1 SHOPPING LIST - Item No. 336

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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 25 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT NUMBER AND NAME 0603216N, Aviation Survivability			PROJECT NUMBER AND NAME W0592, Aircraft & Ordnance Safety			

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
0604802A, Department of Army 0603609N, Conventional Munitions										

E. ACQUISITION STRATEGY: *

The Aircraft and Ordnance Safety Project acquisition strategy consists of actions (technology transition) which are intended to assist the improvement of NAVAIR-cognizant munitions. Specific task planning involves close coordination with the PMAs, field activities, and the IM and IMAD offices. Primary considerations in planning address windows of opportunity within the overall system procurement/life cycle, including milestone II (E&MD), P3I, and PIP events. Munition system design elements involving IM response risk (existing or anticipated) are analyzed in relation to proven and available IM technologies applicable to improvements in those design elements. When it is established that a system can probably be improved by implementing new technology and a window of opportunity for transition is available, the greatest overall improvement in fleet safety regarding IM response risk is the final deciding factor used to prioritize task selection for funding from limited resources.

F. MAJOR PERFORMERS: **

R-1 SHOPPING LIST - Item No. 336

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-4			PROGRAM ELEMENT 0603216N, Aviation Survivability			PROJECT NUMBER AND NAME W0592, Aircrfat & Ordnance Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	WX	NAWCWD China Lake	15.944	1.703	10/02	1.332	10/03	1.215	10/04	Continuing	Continuing	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			15.944	1.703		1.332		1.215		Continuing	Continuing	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)									DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT 0603216N, Aviation Survivability			PROJECT NUMBER AND NAME W0592, Aircrat & Ordnance Safety						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation			0.052								0.052	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.052	0.000		0.000		0.000		0.000	0.052	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCWD China Lake, CA	0.120	0.030	10/02	0.030	10/03	0.032	10/04	Continuing	Continuing	
Transportation												
SBIR Assessment												
Subtotal Management			0.120	0.030		0.030		0.032		Continuing	Continuing	
Remarks:												
Total Cost			16.116	1.733		1.362		1.247		Continuing	Continuing	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R4, Schedule Profile																								DATE:											
APPROPRIATION/BUDGET ACTIVITY												PROGRAM ELEMENT NUMBER AND NAME												PROJECT NUMBER AND NAME											
RDT&E, N / BA-4												0603216N, Aviation Survivability												W0592, Aircrfat & Ordnance Safety											
Fiscal Year	2002				2003				2004				2005				2006				2007				2008				2009						
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4							
Reactive Materials																																			
Sympathetic Detonation Protection																																			
Sidewinder composite Rocket Motor																																			
Composite Case																																			
Air to Air Missile propulsion																																			
System IM Demo																																			
Shock/Blast Barrier Protection																																			
Improved Air Launched Weapons																																			

R-1 SHOPPING LIST - Item No. 36

* Not required for Budget Activities 1, 2, 3, and 6

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Exhibit R-4, Schedule Profile
(Exhibit R-4, page 29 of 68)

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CLASSIFICATION:

[illegible]

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-4a, Schedule Detail
(Exhibit R-4a, page 30 of 68)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W1819 Carrier Vehicle Aircraft Fire Suppression System			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	0.984	0.941	0.748	0.677	0.691	0.830	0.845	0.863
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This project develops improved fire fighting systems and fire protective measures for aircraft related fires on aircraft carriers, including assessment of fire properties, definition of fire threats, improvements to fire fighting agents and delivery systems, fire detection and suppression system performance evaluations, and fire fighter training improvements.

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 31 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W1819 Carrier Vehicle Fire Suppression System																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.198</td><td style="text-align: center;">0.186</td><td style="text-align: center;">0.339</td><td style="text-align: center;">0.282</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.198	0.186	0.339	0.282	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.198	0.186	0.339	0.282															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Fire Fighting Agents: Evaluate new or modified agents which adequately address changing agent restrictions or technical needs. Objective is to ensure that periodic, but unpredictable, restrictions on agent production or use, primarily driven by the environmental and toxicological fields, do not negatively impact fleet safety.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.475</td><td style="text-align: center;">0.491</td><td style="text-align: center;">0.180</td><td style="text-align: center;">0.254</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.475	0.491	0.180	0.254	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.475	0.491	0.180	0.254															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Fire Fighting Systems: Evaluate system automation features and demonstrate enhancements to personnel protection equipment. Objective is to evaluate system hardware for effectiveness against updated fire threats.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.311</td><td style="text-align: center;">0.264</td><td style="text-align: center;">0.229</td><td style="text-align: center;">0.141</td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.311	0.264	0.229	0.141	RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.311	0.264	0.229	0.141															
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Fire Fighting Tactics: Evaluate reduced manning impact and resultant modifications to tactics. Provide opportunities for training during agent/system testing. Objective is to maintain emergency capabilities as reductions in manpower draw from available response crews.</div>																			

R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																																																																												
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W1819 Carrier Vehicle Aircraft Fire Suppression System																																																																													
<p>C. PROGRAM CHANGE SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; width: 35%;"></th> <th style="text-align: right; width: 15%;">FY 2002</th> <th style="text-align: right; width: 15%;">FY 2003</th> <th style="text-align: right; width: 15%;">FY 2004</th> <th style="text-align: right; width: 15%;">FY 2005</th> </tr> </thead> <tbody> <tr> <td>Funding:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Previous President's Budget:</td> <td style="text-align: right;">1.017</td> <td style="text-align: right;">0.962</td> <td style="text-align: right;">0.981</td> <td style="text-align: right;">0.831</td> </tr> <tr> <td>Current BES/President's Budget</td> <td style="text-align: right;">0.984</td> <td style="text-align: right;">0.941</td> <td style="text-align: right;">0.748</td> <td style="text-align: right;">0.677</td> </tr> <tr> <td>Total Adjustments</td> <td style="text-align: right; border-top: 1px solid black;">-0.033</td> <td style="text-align: right; border-top: 1px solid black;">-0.021</td> <td style="text-align: right; border-top: 1px solid black;">-0.233</td> <td style="text-align: right; border-top: 1px solid black;">-0.154</td> </tr> <tr> <td colspan="5" style="padding-top: 10px;">Summary of Adjustments</td> </tr> <tr> <td> Congressional program reductions</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Congressional undistributed reductions</td> <td></td> <td style="text-align: right;">-0.006</td> <td></td> <td></td> </tr> <tr> <td> Congressional rescissions</td> <td style="text-align: right;">-0.002</td> <td></td> <td></td> <td></td> </tr> <tr> <td> SBIR/STTR Transfer</td> <td style="text-align: right;">-0.007</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Economic Assumptions</td> <td style="text-align: right;">-0.003</td> <td style="text-align: right;">-0.015</td> <td style="text-align: right;">-0.024</td> <td style="text-align: right;">-0.019</td> </tr> <tr> <td> Reprogrammings</td> <td style="text-align: right;">-0.021</td> <td></td> <td></td> <td></td> </tr> <tr> <td> Other Navy/OSD Adjustments</td> <td></td> <td></td> <td style="text-align: right;">-0.209</td> <td style="text-align: right;">-0.135</td> </tr> <tr> <td> Congressional increases</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td> Subtotal</td> <td style="text-align: right; border-top: 1px solid black;">-0.033</td> <td style="text-align: right; border-top: 1px solid black;">-0.021</td> <td style="text-align: right; border-top: 1px solid black;">-0.233</td> <td style="text-align: right; border-top: 1px solid black;">-0.154</td> </tr> </tbody> </table> <p style="margin-top: 20px;">Schedule:</p> <p style="margin-left: 40px;">Not applicable</p> <p style="margin-top: 20px;">Technical:</p> <p style="margin-left: 40px;">Not applicable</p>						FY 2002	FY 2003	FY 2004	FY 2005	Funding:					Previous President's Budget:	1.017	0.962	0.981	0.831	Current BES/President's Budget	0.984	0.941	0.748	0.677	Total Adjustments	-0.033	-0.021	-0.233	-0.154	Summary of Adjustments					Congressional program reductions					Congressional undistributed reductions		-0.006			Congressional rescissions	-0.002				SBIR/STTR Transfer	-0.007				Economic Assumptions	-0.003	-0.015	-0.024	-0.019	Reprogrammings	-0.021				Other Navy/OSD Adjustments			-0.209	-0.135	Congressional increases					Subtotal	-0.033	-0.021	-0.233	-0.154
	FY 2002	FY 2003	FY 2004	FY 2005																																																																											
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R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RD TEN Project Justification
(Exhibit R-2a, page 33 of 68)

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D. OTHER PROGRAM FUNDING SUMMARY:

* Not required for Budget Activities 1,2,3, and 6
 ** Required for DON and OSD submit only.

Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 34 of 68)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9034 Modular Helmet and Dispay Development			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost	1.962	1.467						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The funding will support the shift from traditional CRT based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems..

R-1 SHOPPING LIST - Item No. 36

Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 35 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9034 Modular Helmet and Display Development																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">1.962</td><td style="text-align: center;">1.467</td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	1.962	1.467			RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	1.962	1.467																	
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Modular Helmet and Display Development Development of the low resolution Crusader modular helmet. Development of the enhanced resolution variant to be entitled Advanced Helmet Vision System (AHVS). Currently the system exists as a walk around demonstrator which will be missionized to support limited flight testing. Laboratory evaluation of Crusader final and prototype AHVS to include resolution, brightness, weight, center of gravity and moments of inertia.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost					RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			
<div style="border: 1px solid black; height: 70px; margin-top: 10px;"></div>																			
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Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			
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R-1 SHOPPING LIST - Item No. 36

UNCLASSIFIED

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9034 Modular Helmet and Display Development	

C. PROGRAM CHANGE SUMMARY:

Funding:	FY 2002	FY 2003	FY 2004	FY 2005
Previous President's Budget:	1.982			
Current BES/President's Budget	1.962	1.467		
Total Adjustments	-0.020	1.467	0.000	0.000
Summary of Adjustments				
Congressional program reductions	-0.004			
Congressional undistributed reductions		-0.009		
Congressional rescissions				
SBIR/STTR Transfer	-0.015			
Economic Assumptions	-0.005	-0.024		
Reprogrammings	0.004			
Other Navy/OSD Adjustments				
Congressional increases		1.500		
Subtotal	-0.020	1.467	0.000	0.000

Schedule:

Not applicable

Technical:

Not applicable

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 37 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9034 Modular Helmet and Display Development					
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0602201F (Aerospace Flight Dynamics)										
PE 0602233N (Mission Support Equipment)										
PE 0604264N (Aircrew Systems Development)										
PE 0604706F (Life Support Systems)										
PE 06023231F (Crew Systems and Personal Protection Technology)										
E. ACQUISITION STRATEGY:										
Not Applicable										
F. MAJOR PERFORMERS:										
Not Applicable										

R-1 SHOPPING LIST - Item No. 336

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W9034 Modular Helmet and Display Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD		1.250	TBD						1.250	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	WX	Miscellaneous	1.942	0.217	TBD						2.159	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			1.942	1.467		0.000		0.000		0.000	3.409	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W9034 Modular Helmet and Display Development						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River	0.020								0.020	
Transportation												
SBIR Assessment												
Subtotal Management			0.020	0.000		0.000		0.000			0.020	
Remarks:												
Total Cost			1.962	1.467		0.000		0.000			3.429	
Remarks:												

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9169 Aviation Integrated Life Support System			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		5.134						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Funding will be used to develop an approach to pass SAILSS (Smart AILSS) sensor cables through the Joint Service Air Mask (JSAM) and Joint Protective Aircrew Ensemble (JPACE) without compromising CB protection. The project will also determine the impact of added head mass on head/neck moments of inertia. The injury research is a multi pronged effort to collect data (cadaver), analyze said data, and develop the algorithms. The cadaver studies are conducted at host facilities, University of Virginia and Medical College of Wisconsin. Principal areas of study are the cervical and vertebral vertebrae (potential to address thoracic). The Quantitative Computed Tomography (QCT) studies occur posttest while composite studies of bone segments, soft tissue are conducted as required. This is an extremely labor intensive, controlled, costly protocol, but it is the only way to assess vertebral strength. This data is then supplemented with noninjurious human subject studies to assess fatigue effects, maximally exertion, and prolonged exertion/extension. Algorithm development is conducted predominantly in-house with some support from Southwest Research Insititute.

The integration with parallel CB variants of life support systems such as JSAM (Joint Service Air Mask) and JPACE (Joint Protective Aircrew Ensemble) requires significant clothing design, testing, and redesign. The principal support comes from Titan systems and Mustang survival. The testing consists of chemical agent attack under controlled conditions. The difficulty is how to ensure the wiring/sensors do not compromise the CB interfaces. Testing and development of system level devices will be conducted in dynamic, flight simulators, in order to develop realistic design goals, which will lead to proactive design refinement and reduce development costs.

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9169 Aviation Integrated Life Support System																	
B. Accomplishments/Planned Program																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		5.134																	
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Aviation Integrated Life Support System Funding will be used to develop an approach to pass SAILSS (Smart AILSS) sensor cables through the Joint Service Air Mask (JSAM) and Joint Protective Aircrew Ensemble (JPACE) without compromising CB protection. The project will also determine the impact of added head mass on head/neck moments of inertia. Testing and development of system level devices will be conducted in dynamic, flight simulators, in order to develop realistic design goals.</div>																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			

R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9169 Aviation Integrated Life Support System		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:				
Current BES/President's Budget		5.134		
Total Adjustments	0.000	5.134	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.031		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.085		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		5.250		
Subtotal	0.000	5.134	0.000	0.000
Schedule:				
Not Applicable				
Technical:				
Not Applicable.				

R-1 SHOPPING LIST - Item No. 36

UNCLASSIFIED

Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 43 of 68)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9169 Aviation Integrated Life Support System				

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0602201F (Aerospace Flight Dynamics)										
PE 0602233N (Mission Support Equipment)										
PE 0604264N (Aircrew Systems Development)										
PE 0604706F (Life Support Systems)										
PE 06023231F (Crew Systems and Personal Protection Technology)										

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

R-1 SHOPPING LIST - Item No. 36

UNCLASSIFIED

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W9169 Aviation Integrated Life Support System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD		2.200	TBD						2.200	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	TBD	TBD		1.200	TBD						1.200	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	3.400		0.000		0.000		0.000	3.400	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management	TBD	TBD		0.140	TBD						0.140	
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.140		0.000		0.000		0.000	0.140	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9169 Aviation Integrated Life Support System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	TBD	TBD		0.575	TBD						0.575	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.575		0.000		0.000		0.000	0.575	
Remarks:												
Contractor Engineering Support												
Government Engineering Support	TBD	TBD		1.009	TBD						1.009	
Program Management Support												
Travel	WX	NAWCAD Patuxent River		0.010	TBD						0.010	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	1.019		0.000		0.000			1.019	
Remarks:												
Total Cost			0.000	5.134		0.000		0.000			5.134	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability				PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.761						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The funding will support the shift from traditional CRT based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. The AHVS is comprised of two modules. The outer module is a binocular, multi-spectral (day, night, NVG, FLIR) visor upon which flight information and weapons symbology is projected. Communications equipment and oxygen mask are mounted to the inner module, which is custom fitted to each aircrew. The inner module (helmet) provides a stable platform upon which mission specific outer modules are attached. This concept reduces future development costs – designers would begin work from a stable, defined inner helmet platform with common attachment points. Separate helmet development would not be required for any future designs

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 47 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">1.761</td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		1.761			RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		1.761																	
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Modular Advanced Vision System The funding will support the shift from traditional CRT based helmet mounted displays to a computer driven array using laser projection. This fundamental change in approach will significantly increase display resolution and brightness while reducing weight and center of gravity problems. As part of the design goals, the ability to add fixed line laser eye protection to the visor assembly will be explored.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost					RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			

R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:				
Current BES/President's Budget		1.761		
Total Adjustments	0.000	1.761	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.010		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.029		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		1.800		
Subtotal	0.000	1.761	0.000	0.000
Schedule:				
Not Applicable				
Technical:				
Not Applicable.				

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 49 of 68)

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System					
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0602201F (Aerospace Flight Dynamics)										
PE 0602233N (Mission Support Equipment)										
PE 0604264N (Aircrew Systems Development)										
PE 0604706F (Life Support Systems)										
PE 06023231F (Crew Systems and Personal Protection Technology)										
E. ACQUISITION STRATEGY:										
Not Applicable										
F. MAJOR PERFORMERS:										
Not Applicable										

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD		1.370	TBD						1.370	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	TBD	TBD		0.261	TBD						0.261	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	1.631		0.000		0.000		0.000	1.631	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)										DATE: February 2003		
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9170 Modular Advanced Vision System						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation	TBD	TBD		0.130	TBD						0.130	
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.130		0.000		0.000		0.000	0.130	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel												
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.000		0.000		0.000			0.000	
Remarks:												
Total Cost			0.000	1.761		0.000		0.000			1.761	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9171 Naval Aviation Network Centric Warfare Analysis Modeling & Simul			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.761						
RDT&E Articles Qty								

(U) A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The principles of network centric warfare (NCW) will be applied to leverage the power of shared information and knowledge to deliver end-to-end combat capabilities spanning from Space-to-Seabed and Sea-to-Land. The aspect of human decision making within Naval Aviation is insufficiently addressed and viewed as one of the most critical issues in making NCW a quantum impact on future warfighting. This project will leverage the use of facilities funded from other R&D programs. This combination of four key facilities at NAS Patuxent River, MD: the Air Combat Environment Test & Evaluation Facility (ACETEF), the Ship Ground Station (SGS), the Crewstation Technology Lab (CTL) and the NCW Decision Support Center will raise the level of modeling and simulation from an engineering demonstration to a simulation of battles and missions with the added aspect of integrating and analyzing the human decision maker within the total system.

The funds will go toward the integration of the CTL, and the SGS with the previously integrated NAVAIR labs at Patuxent River, Maryland and link into the already-integrated NAVAIR labs and ranges at Point Mugu and China Lake in California. The integration of the CTL and SGS with ACETEF and the NCW Decision Support Center will facilitate the measurement and analysis of human systems integration factors in human-in-the-loop Unmanned Air Vehicle (UAV) control systems and weapon systems as they interoperate with Destroyers, Cruisers, and Aircraft Carriers in real-world operational situations that are consistent with the prescribed Defense Planning Guidance Scenarios. ACETEF will integrate hardware, models, and concepts into a virtual battlespace. The NCW Decision Support Center will allow senior leadership to be immersed in the operational scenario and visualize the net-centric operations of multiple platforms. The data yielded will be of Test & Evaluation quality and will, therefore support technical and operational assessments of the contributions that these NCW systems make to increased effective combat power.

In the final analysis, program results will influence warfare doctrine, tactics, operational tempo, and speed/accuracy of target acquisition.

R-1 SHOPPING LIST - Item No. 36

Exhibit R-2a, RDTE&E Project Justification
(Exhibit R-2a, page 53 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Simulation																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td style="text-align: center;">1.761</td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table> <div style="border: 1px solid black; padding: 5px; margin-top: 5px;"><p>-(U) (\$0.300) Prepare Strategic Vision and Roadmap</p><p>-(U) (\$0.261) Initiate Mission Capabilities Requirements Definition/Integration with Subject Matter Experts</p><p>-(U) (\$1.200) Physically link and generate Software code to interconnect the NCW Decision Support Center (DSC), Ship Ground Station (SGS) and Crewstation Technology Lab (CTL) to the Air Combat Test & Evaluation Facility (ACTEF)</p></div>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.000	1.761			RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.000	1.761																	
RDT&E Articles Quantity																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 30%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td style="text-align: center;">0.000</td><td></td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table> <div style="border: 1px solid black; height: 70px; margin-top: 5px;"></div>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost	0.000				RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.000																		
RDT&E Articles Quantity																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost	0.000																		
RDT&E Articles Quantity																			

R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Simulation	

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:				
Current BES/President's Budget		1.761		
Total Adjustments	0.000	1.761	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.010		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.029		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		1.800		
Subtotal	0.000	1.761	0.000	0.000
Schedule:				
Not applicable				
Technical:				
Not applicable				

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 55 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Simulation					
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0602201F (Aerospace Flight Dynamics)										
PE 0602233N (Mission Support Equipment)										
PE 0604264N (Aircrew Systems Development)										
PE 0604706F (Life Support Systems)										
PE 06023231F (Crew Systems and Personal Protection Technology)										
E. ACQUISITION STRATEGY:										
Not Applicable										
F. MAJOR PERFORMERS:										
Not Applicable										

R-1 SHOPPING LIST - Item No. 36

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N Aviation Survivability			W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Stimulation						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development												
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	CPFF	Various	0.000	0.400	04/03						0.400	0.400
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	0.400		0.000		0.000		0.000	0.400	
Remarks:												
Development Support												
Software Development	CPFF	Various	0.000	1.341	04/03						1.341	1.341
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	1.341		0.000		0.000		0.000	1.341	
Remarks:												

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9171 Naval Aviation Network Centric Warfare Analysis, Modeling & Stimulation						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River		0.020	TBD						0.020	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.020		0.000		0.000			0.020	
Remarks:												
Total Cost			0.000	1.761		0.000		0.000			1.761	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9172 Advanced Aircraft Explosion Protection			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		0.977						
RDT&E Articles Qty								
<p>A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:</p> <p>Funding will be used to develop a stand-alone modeling, simulation, test and evaluation capability to assess aircraft fire/protection and extinguishing systems. This capability does not exist in any other DoD or University laboratory.</p>								

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9172 Advanced Aircraft Explosion Protection																	
B. Accomplishments/Planned Program																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		0.977																	
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Advanced Aircraft Explosion Protection Funding will be used to develop a stand-alone modeling, simulation, test and evaluation capability to assess aircraft fire/protection and extinguishing systems. This capability does not exist in any other DoD or University laboratory.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost					RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			
<div style="border: 1px solid black; height: 60px;"></div>																			

R-1 SHOPPING LIST - Item No. 36

UNCLASSIFIED

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9172 Advanced Aircraft Explosion Protection		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:				
Current BES/President's Budget		0.977		
Total Adjustments	0.000	0.977	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.006		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.017		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		1.000		
Subtotal	0.000	0.977	0.000	0.000
Schedule:				
Not Applicable				
Technical:				
Not Applicable.				

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 61 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9172 Advanced Aircraft Explosion Protection					
D. OTHER PROGRAM FUNDING SUMMARY:										
<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0602201F (Aerospace Flight Dynamics)										
PE 0602233N (Mission Support Equipment)										
PE 0604264N (Aircrew Systems Development)										
PE 0604706F (Life Support Systems)										
PE 06023231F (Crew Systems and Personal Protection Technology)										
E. ACQUISITION STRATEGY:										
Not Applicable										
F. MAJOR PERFORMERS:										
Not Applicable										

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UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag			
COST (\$ in Millions)	FY 2002	FY 2003	FY 2004	FY 2005	FY 2006	FY 2007	FY 2008	FY 2009
Project Cost		1.956						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

This effort will address the level of protection afforded and feasibility of an external airbag, and then to bring the capability to a production ready, aircraft fieldable status. While automotive airbag technology is relatively mature, this unique application will require much larger airbags, an aircraft structural integration approach for mounting the airbags in a maintainable manner, and the development of a "predictive" crash sensor. Initial impact studies (water and ground) have already been conducted.

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Exhibit R-2a, RDTEN Project Justification
(Exhibit R-2a, page 63 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003																
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag																	
B. Accomplishments/Planned Program																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td style="text-align: center;">1.956</td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost		1.956			RDT&E Articles Quantity				
	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost		1.956																	
RDT&E Articles Quantity																			
<div style="border: 1px solid black; padding: 5px;">Rotorcraft External Airbag This effort will address the level of protection afforded and feasibility of an external airbag. Rotorcraft application will require larger airbags integrated into the aircraft and development of a "predictive" crash sensors. Initial impact studies (water and ground) have already been conducted.</div>																			
<table border="1" style="width: 100%; border-collapse: collapse;"><thead><tr><th style="width: 25%;"></th><th style="width: 15%;">FY 02</th><th style="width: 15%;">FY 03</th><th style="width: 15%;">FY 04</th><th style="width: 15%;">FY 05</th></tr></thead><tbody><tr><td>Accomplishments/Effort/Subtotal Cost</td><td></td><td></td><td></td><td></td></tr><tr><td>RDT&E Articles Quantity</td><td></td><td></td><td></td><td></td></tr></tbody></table>						FY 02	FY 03	FY 04	FY 05	Accomplishments/Effort/Subtotal Cost					RDT&E Articles Quantity				
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Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			
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	FY 02	FY 03	FY 04	FY 05															
Accomplishments/Effort/Subtotal Cost																			
RDT&E Articles Quantity																			
<div style="border: 1px solid black; height: 60px;"></div>																			

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification			DATE: February 2003	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability	PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag		

C. PROGRAM CHANGE SUMMARY:

	FY 2002	FY 2003	FY 2004	FY 2005
Funding:				
Previous President's Budget:				
Current BES/President's Budget		1.956		
Total Adjustments	0.000	1.956	0.000	0.000
Summary of Adjustments				
Congressional program reductions				
Congressional undistributed reductions		-0.012		
Congressional rescissions				
SBIR/STTR Transfer				
Economic Assumptions		-0.032		
Other Navy/OSD Adjustments				
Reprogrammings				
Congressional increases		2.000		
Subtotal	0.000	1.956	0.000	0.000
Schedule:				
Not Applicable				
Technical:				
Not Applicable.				

R-1 SHOPPING LIST - Item No. 36

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Exhibit R-2a, RDTEEN Project Justification
(Exhibit R-2a, page 65 of 68)

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CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification							DATE: February 2002		
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag				

D. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2002</u>	<u>FY 2003</u>	<u>FY 2004</u>	<u>FY 2005</u>	<u>FY 2006</u>	<u>FY 2007</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>To Complete</u>	<u>Total Cost</u>
PE 0602201F (Aerospace Flight Dynamics)										
PE 0602233N (Mission Support Equipment)										
PE 0604264N (Aircrew Systems Development)										
PE 0604706F (Life Support Systems)										
PE 06023231F (Crew Systems and Personal Protection Technology)										

E. ACQUISITION STRATEGY:

Not Applicable

F. MAJOR PERFORMERS:

Not Applicable

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CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 1)								DATE: February 2003				
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Primary Hardware Development	TBD	TBD		1.021	TBD						1.021	
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration												
Ship Suitability												
Systems Engineering	TBD	TBD		0.931	TBD						0.931	
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			0.000	1.952		0.000		0.000		0.000	1.952	
Remarks:												
Development Support												
Software Development												
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses												
GFE												
Award Fees												
Subtotal Support			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												

UNCLASSIFIED

CLASSIFICATION:

Exhibit R-3 Cost Analysis (page 2)									DATE: February 2003			
APPROPRIATION/BUDGET ACTIVITY RDTE, N / BA-4			PROGRAM ELEMENT 0603216N Aviation Survivability			PROJECT NUMBER AND NAME W9173 Rotorcraft External Airbag						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 03 Cost	FY 03 Award Date	FY 04 Cost	FY 04 Award Date	FY 05 Cost	FY 05 Award Date	Cost to Complete	Total Cost	Target Value of Contract
Developmental Test & Evaluation												
Operational Test & Evaluation												
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			0.000	0.000		0.000		0.000		0.000	0.000	
Remarks:												
Contractor Engineering Support												
Government Engineering Support												
Program Management Support												
Travel	WX	NAWCAD Patuxent River		0.004	TBD						0.004	
Transportation												
SBIR Assessment												
Subtotal Management			0.000	0.004		0.000		0.000			0.004	
Remarks:												
Total Cost			0.000	1.956		0.000		0.000			1.956	
Remarks:												