

EXHIBIT R-2, RDT&E Budget Item Justification							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4						R-1 ITEM NOMENCLATURE 0603216N, AVIATION SURVIVABILITY		
COST (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2010 OCO	FY 2010 Total			
Total PE Cost	21.302	13.624	6.505	8.000	14.505			
0584 ACFT PROTECTIVE CLOTHING	2.369	1.957	2.507		2.507			
0591 ACFT SURVIVABILITY, VULNERABILITY	1.538	1.596	1.619	8.000	9.619			
0592 ACFT & ORDNANCE SAFETY	1.529	1.566	1.630		1.630			
1819 CV ACFT FIRE SUPPRESSION	.688	.727	.749		.749			
9999 CONGRESSIONAL ADDS	15.178	7.778						

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

Aviation Survivability addresses the issues of aircrew and platform survivability, focusing on enhancing overall opportunity for aircrew and platform protection and enhanced performance. The capabilities addressed under this program element counter emerging threats of next generation operational weapons systems and enhance combat effectiveness in future operational mission scenarios.

B. PROGRAM CHANGE SUMMARY

Funding:	FY 2008	FY 2009	FY 2010	FY2010 OCO
President's Budget	21.625	5.917	6.576	0.000
Current BES	21.302	13.624	6.505	8.000
Total Adjustments	-0.323	7.707	-0.071	8.000

Summary of Adjustments				
Congressional Rescissions				
Congressional Adjustments		7.744		
SBIR/STTR/FTT Assessments	-0.311			
Program Adjustments			0.003	
Rate/Misc Adjustments	-0.013	-0.037	-0.074	
OCO Adjustment				8.000
Subtotal	-0.324	7.707	-0.071	8.000

Schedule: Project 0584: Advance Helmet Vision Systems - ongoing development of Super Extended Graphic Array (SXGA) and higher Ultra Extended Graphic Array (UXGA) resolution day/night cameras will be integrated. Injury Prevention - results of injury prevention research will be integrated into protective equipment design and testing. AHVS Laboratory testing - Laboratory testing of the unity mag goggles complete and laboratory characterization of unity mag goggle design III is underway.

Project 0592: Air to Air - Technology to address IM shortfalls in air to air weapons such as Sidewinder & AAMRAM. Technology is being demonstrated that will transition to a new Sidewinder warhead early in the design phase. Shock/Blast Barrier - Demonstration of new shock/blast barrier technology that will also mitigate bullet/fragment penetration. Additionally, Harpoon has a potential window of opportunity to mitigate SD of the AGM-84. Technology demonstration of a container design incorporating pumice barriers will reduce the risk/cost of transition to the program. Improved Air Launched Weapons - demonstrate Improved Air Launched munitions for force protection and Homeland Defense.

Project 0591 - Scan Eagle Capability Improvements: Develop Internet Protocol(IP)-based architecture for integrating over-the-horizon capable Scan Eagle control from Subsurface-Guided Nuclear Submarine (SSGN) using two unmanned aerial systems (UAS's) for command-and-control relay. Provides technology development and engineering for point-specific intelligence, surveillance, and reconnaissance transition from maritime to land environments. Scan Eagle will advance available communication technology and data relay for UAS's currently in use and provide linkage opportunities to other services.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY			PROJECT NUMBER AND NAME 0584, ACFT PROTECTIVE CLOTHING			
COST (\$ in Millions)	FY 2008	FY 2009	FY 2010					
Project Cost	2.369	1.957	2.507					
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Project 0584 develops, demonstrates, and validates technologies designed to enhance warfighter performance, protection, mission effectiveness, and survivability. The project addresses life support equipment, advanced helmet vision systems, escape systems technology, crew centered cockpit design, and control stations. 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.

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 0584, ACFT PROTECTIVE CLOTHING
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B. Accomplishments/Planned Program

Advanced Technology Crew Station	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.250	1.170	1.465	
RDT&E Articles Quantity				

Advanced Technology Crew Station (ATCS): System integration and flight testing of Advanced Helmet Vision System enhanced resolution Advanced Helmet Vision System (AHVS) 12/Thermal mode control studies. Pilot Vehicle Interface (PVI) common symbology designed and tested. 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, parachute models, and testing. 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 the Parachute Opening Shock Emulator (POSE). Development of SXGA and higher (UXGA) resolution CCD (Charge Coupled Device) day / night vision cameras for integration into the Advanced Helmet Vision System. Integrate results of injury prevention research into protective equipment design and testing 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.

Advanced Integrated Life Support System	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.119	.787	1.042	
RDT&E Articles Quantity				

Advanced Integrated Life Support System (AILSS): Conduct design analyses to integrate the frequency Agile Unity magnification goggles (laser eye protection) into the Advanced Helme Mounted Display. Laboratory testing of the unity mag goggles is complete. Laboratory characterization of unity mag goggle design III is underway, integration studies have begun. Focus on optical design to maximize performance. Integrate Smart Advanced Integrated Life Support System (SAILSS) with on-board oxygen and personal air conditioning systems. Microclimate cooling designed and tested, miniaturization underway.

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C. OTHER PROGRAM FUNDING SUMMARY:			
<u>Line Item No. & Name</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
NOT APPLICABLE			
D. ACQUISITION STRATEGY:			
NOT APPLICABLE			

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Exhibit R-3 Cost Analysis (page 1)							DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME						
RDT&E, N / BA-4			0603216N, AVIATION SURVIVABILITY			0584, ACFT PROTECTIVE CLOTHING						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Primary Hardware Development	VARIOUS	VARIOUS	3.220	0.632	01/09	0.929	01/10					
Systems Engineering	WR	NAVAIR, Patuxent River MD	26.868	0.515	12/08	0.618	12/09					
Systems Engineering	VARIOUS	VARIOUS	13.900									
Licenses	VARIOUS	VARIOUS	0.540	0.180	12/08	0.180	12/09					
Subtotal Product Development			44.528	1.327		1.727						
Remarks:												
Configuration Management	WR	NAVAIR, Patuxent River MD	0.532			0.210	12/09					
Configuration Management	VARIOUS	VARIOUS	3.232									
Subtotal Support			3.764			0.210						

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Exhibit R-3 Cost Analysis (page 2)								DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME					
RDT&E, N / BA-4			0603216N, AVIATION SURVIVABILITY			0584, ACFT PROTECTIVE CLOTHING					
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date				
Developmental Test & Evaluation	WR	NAVAIR, Patuxent River MD	1.418	0.200	12/08	0.310	12/09				
Developmental Test & Evaluation	VARIOUS	VARIOUS	18.240								
Subtotal T&E			19.658	0.200		0.310					
Remarks:											
Program Management Support	WR	NAWCAD, Patuxent River MD	1.200	0.380	12/08	0.210	12/09				
Travel	TO	NAVAIR, Patuxent River MD	0.235	0.050	10/08	0.050	10/09				
Subtotal Management			1.435	0.430		0.260					
Remarks:											
Total Cost			69.385	1.957		2.507					
Remarks:											

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EXHIBIT R4, Schedule Profile											DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4					PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY					PROJECT NUMBER AND NAME 0584, ACFT PROTECTIVE CLOTHING				
Fiscal Year	2008				2009				2010					
	1	2	3	4	1	2	3	4	1	2	3	4		
Program Milestone														
Agile Laser Eye Protection														
Intensified Unity Mag Goggle														
Advance Helmet Vision Systems														
Advanced Integrated Life Support System (AILSS)														
Injury Prevention														
Test & Evaluation Milestones														
AHVS Laboratory testing														
Advanced Technology Crew Station (ATCS)														
Production Deliveries														

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY			PROJECT NUMBER AND NAME 0591, ACFT SURVIVABILITY, VULNERABILITY & SAFETY			
COST (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2010 OCO	FY 2010 TOTAL			
Project Cost	1.538	1.596	1.619	8.000	9.619			
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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B. Accomplishments/Planned Program

TECHNOLOGY REQUIREMENTS	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	.150	.160	.282	
RDT&E Articles Quantity				

Technology Requirements: Determine future survivability technology requirements through trade studies that result in program master plans or specific system improvement plans. Data gathering and analysis that determines specific survivability improvements for a platform or platform types. Technology reviews that determine current state of survivability technology development for USN, USMC, US Army, US Air Force, and industry. Trade studies include transport aircraft infrared signature analysis, rotary wing survivability requirements, advanced threat assessments, and methodology improvements. Support the program manager by performing survivability related systems engineering support.

TECHNOLOGY DESIGN & DEVELOPMENT	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	.988	.939	.954	
RDT&E Articles Quantity				

Technology Design & Development: Design of susceptibility and/or vulnerability reduction prototype hardware. Fabrication and integration/installation of prototype hardware in mockups, aircraft, test fixtures, or as part of larger subsystems. Prototype hardware includes fire and fuel protection systems, transparent and opaque armors, exhaust suppressors, counter-asymmetric threat hardware.

TECHNOLOGY TEST & EVALUATION	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	.400	.497	.383	
RDT&E Articles Quantity				

Technology Test & Evaluation: Integration, laboratory, ground, and flight tests of prototype hardware. Includes ballistic testing of coupons, samples, and production representative hardware. Radio frequency, Infrared, visual, and acoustic signature measurements of components and fully installed systems. Testing of hardware uses surrogate or real threats or threat systems at major range and test facilities. All tests are designed to demonstrate prototype's technology readiness level indicating maturity level and ability to transition to production (through engineering change proposal (ECP) or spiral development).

ARCHITECTURE DEVELOPMENT	FY 08	FY 09	FY 10	FY 10 OCO
Accomplishments/Effort/Subtotal Cost				8.000
RDT&E Articles Quantity				

Scan Eagle Capability Improvements: Develop Internet Protocol (IP)-based architecture for integrating over-the-horizon capable Scan Eagle control from Subsurface-Guided Nuclear Submarine (SSGN) using two unmanned aerial systems (UAS's) for command-and-control relay. Provides technology development and engineering for point-specific intelligence, surveillance, and reconnaissance transitioning from maritime to land environments. Scan Eagle will advance available communication technology and data relay for UAS's currently in use and provide linkage opportunities to other services.

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APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-4	0603216N, AVIATION SURVIVABILITY	0591, ACFT SURVIVABILITY, VULNERABILITY & SAFETY	
C. OTHER PROGRAM FUNDING SUMMARY:			
<u>Line Item No. & Name</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
NOT APPLICABLE			
D. ACQUISITION STRATEGY:			
NOT APPLICABLE			

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RDT&E, N / BA-4			0603216N, AVIATION SURVIVABILITY			0591, ACFT SURVIVABILITY, VULNERABILITY & SAFETY						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date					
Primary Hardware Development	SS-CPFF	Bell Helicopter, Dallas,TX	0.582	0.541	01/09	0.754	03/10					
Primary Hardware Development	SS-CPFF	VARIOUS	9.742									
Primary Hardware Development	SS-CPFF	Boeing, St. Louis				4.000	04/10					
Systems Engineering	VARIOUS	VARIOUS	9.278	0.100	VARIOUS	0.150	VARIOUS					
Systems Engineering	MP	US ARMY	0.125	0.075	11/08	0.050	03/10					
Systems Engineering	WR	NSWC CARDEROCK	4.520									
Subtotal Product Development			24.247	0.716		4.954						
Remarks:												
Development Support	WX	NSWC, CARDEROCK MD	2.483									
Software Development	SS-CPFF	Boeing, St. Louis	1.012									
Software Development	SS-CPFF	Boeing, St. Louis				2.000	04/10					
Technical Data	WX	VARIOUS	0.279									
Studies & Analyses	CPFF	SURVICE, INC	0.585									
Systems Eng (DC)	CPFF	SURVICE, INC	0.150	0.175	12/08							
Systems Eng (DC)	TBD	WYLE	0.060	0.048	12/08							
Subtotal Support			4.569	0.223		2.000						

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RDT&E, N / BA-4			0603216N, AVIATION SURVIVABILITY			0591, ACFT SURVIVABILITY, VULNERABILITY & SAFETY							
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date						
Developmental Test & Evaluation	WX	NAVAIR, Patuxent River MD	0.198			0.150	10/09						
Developmental Test & Evaluation	WX	VARIOUS	1.922			0.066	VARIOUS						
Developmental Test & Evaluation	WX	NAWCAD Patuxent River MD				1.500	06/10						
Live Fire Test & Evaluation	WX	NAWCWD CHINA LAKE CA	1.495	0.372	11/08								
Live Fire Test & Evaluation	MP	ARMY RESEARCH LAB	0.100	0.125	11/08	0.167	03/10						
Subtotal T&E			3.715	0.497		1.883							
Remarks:													
Program Management Support	VARIOUS	VARIOUS	0.523	0.100	12/08	0.142	10/09						
Program Management Support	WX	NAWCAD Patuxent River MD				0.500	10/09						
Program Management Support	TBD	JF TAYLOR LEX PK, MD	0.030	0.030	01/09	0.130	10/09						
Travel	TO	NAVAIR, Patuxent River MD	0.294	0.030	11/08	0.010	10/09						
Subtotal Management			0.847	0.160		0.782							
Remarks:													
Total Cost			33.378	1.596		9.619							
Remarks:													

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EXHIBIT R4, Schedule Profile											DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME										PROJECT NUMBER AND NAME					
RDT&E,N / BA-4	0603216N, AVIATION SURVIVABILITY										0591, ACFT SURVIVABILITY, VULNERABILITY & SAFETY					
Fiscal Year	FY 2008				FY 2009				FY 2010							
	1	2	3	4	1	2	3	4	1	2	3	4				
Acquisition Milestones																
Survivability Master Plan Updates Asymmetric Threat Evaluations																
Technology Design & Development																
Rotary Wing Prototype Hardware Survivability Improvements																
Technology Test & Evaluation																
Rotary Wing Ballistic Testing																
Rotary Wing Signature Tests																
Prototype Hardware Tests																
Architecture Development																
IP-Based Architecture Development																
Production Milestones																
Deliveries																

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY			PROJECT NUMBER AND NAME 0592, ACFT & ORDNANCE SAFETY			
COST (\$ in Millions)	FY 2008	FY 2009	FY 2010					
Project Cost	1.529	1.566	1.630					
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Aircraft and Ordnance Safety Program transitions innovative munitions safety 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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B. Accomplishments/Planned Program

Insensitive Munitions	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.529	1.566	1.630	
RDT&E Articles Quantity				

INSENSITIVE MUNITIONS

*Conduct improved air to air missile propulsion demonstration and testing. Output: baseline Insensitive Munitions (IM) performance of air breathing systems.

*Conduct shock/blast barrier protection demonstration and testing. Demonstrate pumice as a sympathetic detonation barrier for weapon shipping containers. Investigate alternative mitigation materials. Output: Design, modeling and demonstration of shock absorbent materials for the protection of weapons and weapon platforms.

*Demonstrate improved air launched munitions for force protection and homeland defense. Analysis, Design, Demonstration of an improved Navy IM bomb that will mitigate Sympathetic Detonation and cook-off threats. Output: Demonstrate/determine the IM and safety characteristics of improved air launched munitions.

*Develop and validate insensitive munitions solutions to advanced energetic material warheads and rocket motors. Hyperbaric materials, New binding materials, Novel fuses and high energy density materials. Continue Improved Navy IM bomb analysis/design/demo. Output: Design, modeling and demonstration of insensitive munitions solutions to new advanced energetic materials.

*Develop and validate insensitive munitions solutions for advanced containment/case/warhead materials. Metal matrix composite materials, High temperature cases, Reactive warheads, Composite cases. Continue evaluating reactive material warheads for IM compliance. Output: Design, modeling and demonstration of insensitive munitions solutions to new advanced containment/case/warhead materials.

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<p>C. OTHER PROGRAM FUNDING SUMMARY:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;"><u>Line Item No. & Name</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2008</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2009</u></th> <th style="text-align: center; border-bottom: 1px solid black;"><u>FY 2010</u></th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">Not Applicable</td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>D. ACQUISITION STRATEGY:</p> <p>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 program offices, 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 Engineering and Manufacturing Development (E&MD), Planned Product Improvement (P3I), and Product Improvement program (PIP) events. Munitions 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.</p>			<u>Line Item No. & Name</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	Not Applicable			
<u>Line Item No. & Name</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>							
Not Applicable										

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Exhibit R-3 Cost Analysis (page 1)								DATE: May 2009			
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Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 09 Cost	FY 09 Award Date	FY 10 Cost	FY 10 Award Date				
Primary Hardware Development											
Ancillary Hardware Development											
Aircraft Integration											
Ship Integration											
Ship Suitability											
Systems Engineering	WX	NAWCWD, China Lake CA	25.015	1.566	10/08	1.630	10/09				
Training Development											
Licenses											
Tooling											
GFE											
Award Fees											
Subtotal Product Development			25.015	1.566		1.630					
Remarks:											
Total Cost			25.015	1.566		1.630					

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EXHIBIT R4, Schedule Profile													DATE: May 2009											
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4						PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY						PROJECT NUMBER AND NAME 0592, ACFT & ORDNANCE SAFETY												
Fiscal Year	2008				2009				2010															
	1	2	3	4	1	2	3	4	1	2	3	4												
Air to Air Missile Demo/Testing																								
Improved Air Launched Weapons																								
Advanced Containment/Case/Warhead Materials																								
Shock/Blast Barrier Protection Modeling and Demo/Testing																								
Advanced Energetic Materials																								

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COST (\$ in Millions)	FY 2008	FY 2009	FY 2010					
Project Cost	0.688	0.727	0.749					
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.

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B. Accomplishments/Planned Program

Fire Fighting	FY 08	FY 09	FY 10
Accomplishments/Effort/Subtotal Cost	.688	.727	.749
RDT&E Articles Quantity			

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.

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.

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.

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2a, RDT&E Project Justification		DATE:	May 2009
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 1819, CV FIRE SUPPRESSION	
C. OTHER PROGRAM FUNDING SUMMARY:			
<u>Line Item No. & Name</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
NOT APPLICABLE			
D. ACQUISITION STRATEGY:			
NOT APPLICABLE			

R-1 SHOPPING LIST - Item No. 27

EXHIBIT R-2a, RDT&E Project Justification							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY				PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS			
COST (\$ in Millions)	FY 2008	FY 2009	FY 2010	FY 2011				
Project Cost	15.178	7.778						
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

CONGRESSIONAL ADDS

EXHIBIT R-2a, RDT&E Project Justification		DATE: May 2009
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS
B. Accomplishments/Planned Program		
9346A		
Accomplishments/Effort/Subtotal Cost	FY 08	FY 09
RDT&E Articles Quantity	1.161	FY10
EQUIPMENT LIFE EXTENSION PROJECT		
<p>This effort will fund an equipment life extension laboratory for definition of systems no longer procurable that are critical to functionality of weapon systems. By equipping currently existing in-house laboratories to maintain, modify, and update existing, non supported systems, a significant cost reduction will be realized.</p>		
9507A		
Accomplishments/Effort/Subtotal Cost	FY 08	FY 09
RDT&E Articles Quantity	1.952	FY10
INTELLENT AUTONOMY TRANSITION PROGRAM		
<p>A high level of autonomy is required to achieve manpower reduction goals, data-link bandwidth limitations, and covert operations. The challenge is integrating new technology into existing military unmanned craft and finding a Research and Development/Test and Integration Center to host developmental testing. Autonomous systems are non-deterministic which are very difficult to test/certify. The current effort attempts to break this cycle of cost increases for unmanned systems by developing control algorithms and low cost high bandwidth data links to connect the UAVs to the control system.</p>		
9510A		
Accomplishment/Effort/Subtotal Cost	FY 08	FY 09
RDT&E Articles Quantity	0.790	FY10
SILVER FOX UAV		
<p>Support the assessment of Silver Fox's ability to provide surveillance during mine clearing operations. In particular, search and scan patterns will be assessed and optimized. Key areas of study include determining resolution and field of view of the sensor as a function of altitude and mission profile.</p>		

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B. Accomplishments/Planned Program		
9763A		
Accomplishments/Effort/Subtotal Cost	FY 08	FY 09
RDT&E Articles Quantity	1.552	FY10
SMART VISOR		
<p>The Smart Visor will integrate emerging liquid crystal and or thin film technologies into a visor substrate to improve laser eye protection. The approach is based on a polymeric stack that can be molded into the visor substrate. The second approach that could provide variable attenuation in real time is a spherical liquid crystal visor. Both approaches will provide cost effective broadband, variable density protection.</p>		
9961A		
Accomplishments/Effort/Subtotal Cost	FY 08	FY 09
RDT&E Articles Quantity	0.997	FY10
AIR SENTINEL		
<p>Funding will develop an automated system that resides in the ground control station of a UAV system for the detection and management of unmanned aircraft emergencies.</p>		
9963A		
Accomplishment/Effort/Subtotal Cost	FY 08	FY 09
RDT&E Articles Quantity	1.559	FY10
INTELLIGENCE GATHERING UNINHABITED SYS		
<p>Funds to provide an operational system to joint ground forces for localized Intelligence, Surveillance, and Reconnaissance System that are based on an open and scalable systems architecture in a low impact and cost effective manner.</p>		

EXHIBIT R-2a, RDT&E Project Justification		DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS	
B. Accomplishments/Planned Program			
9965A			
	FY 08	FY 09	FY10
Accomplishments/Effort/Subtotal Cost	2.722	1.994	
RDT&E Articles Quantity			
UNMANNED AIRCRAFT SYS OPTIMIZATION			
To optimize the performance of the sensors onboard both manned and unmanned vehicles, stationary systems and smart dust.			
9966A			
	FY 08	FY 09	FY10
Accomplishments/Effort/Subtotal Cost	2.332		
RDT&E Articles Quantity			
UNMANNED FORCE AUTMENTATION SYS			
To continue research, development and testing of advanced Unmanned Air System technologies that facilitate the rapid transition of Unmanned Air Vehicle systems to the warfighters that offer order-of-magnitude improvements in usability, capability, and operational effectiveness. impact and cost effective manner.			
9B51A			
	FY 08	FY 09	FY10
Accomplishment/Effort/Subtotal Cost	1.553	1.994	
RDT&E Articles Quantity			
MODULAR ADVANCED HELMET VISION SYSTEM			
The Modular Advanced Helmet Vision Systems (MAVS) will provide significantly improved impact, hearing, laser eye, and chem-bio protection, along with communications and oxygen delivery, in a versatile, low-cost, mission reconfigurable design.			

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA4	PROGRAM ELEMENT NUMBER AND NAME 0603216N, AVIATION SURVIVABILITY	PROJECT NUMBER AND NAME 9999, CONGRESSIONAL ADDS	
B. Accomplishments/Planned Program			
9B52A			
	FY 08	FY 09	FY10
Accomplishments/Effort/Subtotal Cost	1.557		
RDT&E Articles Quantity			
TECHNOLOGY COLLABORATION FOR AEROSPACE ENGINEERING			
The Technology Collaboration for Aerospace will develop new and better system modeling software or processes for human systems integration (HSI) oriented engineering with initial emphasis on physical modeling of human body and human body components.			
9D15A			
	FY 08	FY 09	FY10
Accomplishments/Effort/Subtotal Cost		0.798	
RDT&E Articles Quantity			
AGILE LASER EYE PROTECTION			
Continue the development of the Unity Magnification Goggle to provide protection against a frequency agile laser and to integrate night vision cameras using an innovative optical design to allow day / night usage that does not reduce day acuity and color perception.			
9D16A			
	FY 08	FY 09	FY10
Accomplishments/Effort/Subtotal Cost		1.995	
RDT&E Articles Quantity			
IN BUOY PROCESSOR FOR TASS			
This funding provided support for the In Buoy Processor for TASS effort.			