

UNCLASSIFIED

EXHIBIT R-2, RDT&E Budget Item Justification							DATE:	
APPROPRIATION/BUDGET ACTIVITY							May 2009	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7							R-1 ITEM NOMENCLATURE	
							0305204N, TACTICAL UNMANNED AERIAL VEHICLES	
COST (\$ in Millions)	FY 2008	FY 2009	FY 2010					
Total PE Cost	66.819	51.588	8.971					
0117 REEF POINT (SONOCHUTE UAV)			.100					
2478 TCS	12.130	8.807	8.871					
2768 MQ-8B (VTUAV)*	39.952	9.614						
2910 JOINT TECH CENTER/SYSTEMS INTEG LABORATORY*	1.679	1.719						
3192 STUAS*	6.105	25.364						
9999 CONGRESSIONAL ADDS	6.953	6.084						

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

0117 REEF POINT (SONOCHUTE UAV): The Reef Point Sonochute UAV is a new start FY10 program which will provide an expendable organic UAV that can be launched from a P-3/P-8 Suro Buoy Launcher to support the host aircraft by 1) extending its on-station time, 2) extending on-board sensor range and 3) affording a margin of crew and platform safety not currently available to Maritime Surveillance Aircraft (MSA) community.

2478 TCS (Tactical Control System): TCS is a standards-based system that provides interoperability and commonality for Command and Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) interfaces, and Command and Control of Naval Unmanned Air Systems (UASs). Capability to provide Interoperability across the Naval UAS Family of Systems (FoS) through use of TCS software operating on Ground Control Station hardware utilizing a NATO STANAG-4586 architecture communicating across a Tactical Common Data Link. TCS provides a full range of scaleable UAS capabilities from passive receipt of air vehicle and payload data to full air vehicle and payload command and control. TCS offers the war fighter a common core operating environment to simultaneously receive, process, and disseminate data from different UAS types for reconnaissance, surveillance, and combat assessment. This program supports enhancements and updates to TCS in order to continue to meet supported air vehicle enhancements, incorporation of new technologies that will be used to enhance overall system performance, incorporate new payloads and payload capabilities (such as advanced sensors and weapons), incorporate Multi-Vehicle Control, and incorporate NATO STANAG-4586 and C4I enhancements. TCS software is interoperable and is compliant with the OSD Command and Control, Communications, Intelligence (C3I) Joint Technical Architecture, Distributed Common Ground System standards, and NATO standards.

2768 MQ-8B (Vertical Take-Off and Landing Tactical Unmanned Air Vehicle (VTUAV); popular name "Fire Scout"): MQ-8B provides real-time and non-real-time Intelligence, Surveillance and Reconnaissance (ISR) data to tactical users without the use of manned aircraft or reliance on limited joint theater or national assets. The baseline MQ-8B can accomplish missions including over-the-horizon tactical reconnaissance, classification, targeting, laser designation and battle management (including communications relay). The MQ-8B launches and recovers vertically and can operate from air capable ships, as well as confined area land bases. Other characteristics include autonomous air vehicle launch and recovery, autonomous waypoint navigation with command override capability, the incorporation of an electro-optical/infrared/laser designator-laser range finder modular mission payload, and a maritime search RADAR. Interoperability is achieved through the use of the Tactical Control System (TCS) software in the ground control station, and through the use of the Tactical Common Data Link (TCDL). The data from the MQ-8B will be provided through standard DoD Command, Control, Communications, Computers and Intelligence Surveillance, and Reconnaissance (C4ISR) system architectures and protocols. *\$22.8M FY08 funding was moved from PE 0305205N 4020 BAMS UAS to PE 0305204N 2768 MQ-8B per Above Threshold Reprogramming (ATR) DOD Serial Number FY08-41-RPA. *MQ-8B project code moved from PE 0305204N to PE 0305231N, in FY10.

2910 JTC/SIL (Joint Technology Center/System Integration Laboratory): JTC/SIL provides experimentation for UAV technology assessment, insertion, demonstration, transfer, as well as simulation and exercise support. *JTC/SIL Project code moved from PE 0305204N to PE 0603261N, in FY10.

3192 STUAS (Small Tactical Unmanned Aircraft System) STUAS will provide persistent Intelligence, Surveillance, and Reconnaissance/Target Acquisition (ISR/TA) support for tactical level maneuver decisions and unit level force defense/force protection for Naval ships (multi-ship classes) and Navy land forces. This system will fill the ISR capability shortfalls currently filled by services contracts. This system will support Naval missions such as building the Recognized Maritime Picture, Maritime Security Operations, Maritime Interdiction Operations, and support of Naval units operating from sea/shore in Overseas Contingency Operations.

*STUAS project code moved from PE 0305204N to PE 0305234N in FY10.

*\$2.9M FY09 funds were BTR'd to SABRE Focus Program.

Congressional Adds.

Skybus 80k and 130k LTA-UAS Multirole Technologies Development, test, design and build of the Skybus 80K will provide a platform to evaluate airship capability in performing multirole, persistent ISR and long-dwell missions in both hostile and non-threatening environments.

UAS Tactical Control System Open Architecture This initiative includes the open systems migration of unique military standard sensors, electronics, and software system components to lower cost/higher performance commercial equivalent capabilities.

Micro-munitions Interface for Tactical Unmanned Systems This initiative is to develop an interface between Unmanned Air Systems (UAS) and micro-munitions, defined as weapons weighing less than 100 pounds. Integration of micro-munitions onto UASs requires a stores/weapons management interface that provides a safe and effective integration between the weapon and the unmanned system.

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EXHIBIT R-2, RDT&E Budget Item Justification		DATE:
		May 2009
APPROPRIATION/BUDGET ACTIVITY	R-1 ITEM NOMENCLATURE	
RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-7	0305204N, TACTICAL UNMANNED AERIAL VEHICLES	

B. PROGRAM CHANGE SUMMARY

Funding:	FY08	FY09	FY10
Previous President's Budget:	56.787	45.717	53.892
Current President's Budget:	66.819	51.588	8.971
Total Adjustments	10.032	5.871	-44.921

Summary of Adjustments

Congressional Rescissions			
Congressional Adjustments	0.032	6.011	
SBIR/STTR/FTT Assessments			
Program Adjustments	10.000		-44.919
Rate/Misc Adjustments		-0.140	-0.002
Subtotal	10.032	5.871	-44.921

Schedule:

TCS - Partnered with MQ-8B. TCS is an Integral part of the MQ-8B Fire Scout System. Schedule is dependent upon MQ-8B development and has been updated accordingly.

MQ-8B - The Littoral Combat Ship schedule change directly affected MQ-8B's ability to conduct DT/OT activities. In Feb 2008, ASN(RDA) approved the plan to complete MQ-8B testing, OPEVAL, and IOC on an existing Navy ship, while maintaining integration activities on the LCS. This plan provides the MQ-8B capability to the fleet in 2009, and provides a mature system to support LCS testing. LRIP II moved to 4Q of FY2008. The FY09 Full Rate Production has been changed to a 1QTR FY09 LRIP III to account for the change in OPEVAL on the FFG.

STUAS/Tier II UAS - Schedule adjusted to reflect change in scope of program. Program now funded for Increment 0 and Increment 1, and associated tasks scheduled. Increment 0 Milestone B, Milestone C, and IOC realigned. Increment 1 milestones established.

Technical:

Not Applicable

NOTES:

\$22.8M FY08 funding was moved from PE 0305205N 4020 BAMS UAS to PE 0305204N 2768 VTUAV per Above Threshold Reprogramming (ATR) DOD Serial Number FY08-41-RPA.
\$2.9M FY09 funds were BTR'd to SABRE Focus Program.

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EXHIBIT R-2a, RDT&E Project Justification							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7		PROGRAM ELEMENT NUMBER AND NAME 0305204N, TACTICAL UNMANNED AERIAL VEHICLES			PROJECT NUMBER AND NAME 0117 Reef Point Sonochute UAV			
COST (\$ in Millions)		FY 2008	FY 2009	FY 2010				
Project Cost				0.100				
RDT&E Articles Qty								

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

Reef Point Sonochute UAV

The Reef Point Sonochute UAV will provide an expendable organic UAV that can be launched from a P-3/P-8 Sono Buoy Launcher to support the host aircraft by 1) extending its on-station time, 2) extending on-board sensor range and 3) affording a margin of crew and platform safety not currently available to Maritime Surveillance Aircraft (MSA) community. The system supports the P-8 MMA Adjunct Unmanned Aerial Vehicle requirement of level II UAV command and control (threshold) to provide real-time receipt of UAV sensor data via direct link as well as the objective goal for later production blocks of MMA for Level IV UAV command and control to enable on-board command and control of UAVs operating as remote sensors and C4ISR collection. This system supports the MMA design for deployable systems which accommodates for the stowage, control, and dispensing of various non-lethal expendables for use in search, localization, tracking, classification/identification tasks, for enhancing survivability, and for Search and Rescue (SAR). The system supports Naval missions such as Maritime Interdiction. The Navy Special Mission Squadrons, VPU-1 and VPU-2 will conduct operational flight testing to help accelerate the technical and operational advancement of the expendable UAV concept. Naval Air Warfare Center Division will support the systems engineering.

B. Accomplishments/Planned Program

Engineering and Maintenance	FY 08	FY 09	FY 10
Accomplishments/Effort/Subtotal Cost			0.100
RDT&E Articles Quantity			

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

EXHIBIT R-2a, RDT&E Project Justification							DATE:		
APPROPRIATION/BUDGET ACTIVITY							May 2009		
RDT&E,N / BA-7							2478, TCS		
PROGRAM ELEMENT NUMBER AND NAME							PROJECT NUMBER AND NAME		
0305204N, TACTICAL UNMANNED AERIAL VEHICLES							2478, TCS		
COST (\$ in Millions)									
2478 TCS									
RDT&E Articles Qty									

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

(U) A. This program supports the Tactical Control System (TCS), a standards-based system that provides interoperability and commonality for Command and Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) interfaces, and Command and Control of Naval Unmanned Air Systems (UASs). Capability to provide Interoperability across the Naval UAS Family of Systems (FoS) through use of TCS software operating on Ground Control Station hardware utilizing a NATO STANAG-4586 architecture communicating across a Tactical Common Data Link.

TCS provides a full range of scaleable UAS capabilities from passive receipt of air vehicle and payload data to full air vehicle and payload command and control. TCS offers the war fighter a common core operativir environment to simultaneously receive, process, and disseminate data from different UAS types for reconnaissance, surveillance, and combat assessment.

This program supports enhancements and updates to TCS in order to continue to meet supported air vehicle enhancements, incorporation of new technologies that will be used to enhance overall system performance, incorporate new payloads and payload capabilities (such as advanced sensors and weapons), incorporate Multi-Vehicle Control, and incorporate NATO STANAG-4586 and C4I enhancements.

TCS software will be incorporated into the MQ-8B Vertical Take-off and Landing Tactical Unmanned Air Vehicle (VTUAV) system, which will IOC in 4Q FY09. TCS software addresses MQ-8B requirements validated by the Joint Requirements Oversight Council in the VTUAV Capability Production Document (May 2007).

TCS maximizes the use of contractor and government off-the-shelf hardware and software whenever possible and incorporates software/hardware enhancements where appropriate to maintain growth potential at minimize hardware obsolescence. TCS software is interoperable, and is compliant with the OSD Command and Control, Communications, Intelligence (C3I) Joint Technical Architecture, and Distributed Common Ground System standards, and NATO standards.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

TCS DEVELOPMENT AND INTEGRATION	FY 2008	FY 2009	FY 2010	
Accomplishments / Effort / Sub-total Cd	10.783	7.643	7.631	
RDT&E Articles Qty				

Continue TCS integration with MQ-8B development. Continue new TCS capabilities to support requirements for Littoral Combat Ship (LCS) integration. Continue TCS NATO STANAG 4586 compliance. Continue TCS Command and Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) interface testing for MQ-8B required C4ISR systems. Complete multi-vehicle UAS control through FY2009.

TECHNICAL AND ENGINEERING SERVICES	FY 2008	FY 2009	FY 2010	
Accomplishments / Effort / Sub-total Cd	1.347	1.164	1.240	
RDT&E Articles Qty				

Continue government engineering support, contractor support, program support, and travel for the TCS program.

C. OTHER PROGRAM FUNDING SUMMARY: FY 2008 FY 2009 FY 2010
Not Applicable

D. ACQUISITION STRATEGY:

The TCS program is developing Government owned, non-proprietary software that supports multiple UAS control. The TCS program continues under the FY04 Congressionally-directed restructure of the program to focus on Navy requirements and standards based on interoperability. Navy requirements for TCS include supporting fielding of the Navy MQ-8B Vertical Take-off and Landing Tactical Unmanned Aerial Vehicle (VTUAV) aboard the Littoral Combat Ship (LCS), FFG, DDG-1000, addition of plug-and-play payloads, and implementation of NATO Standardization Agreement for Standard Interfaces of UAV Control System for NATO UAV Interoperability (STANAG 4586).

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Exhibit R-3 Cost Analysis (page 1)								DATE: May 2009				
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7		PROGRAM ELEMENT 0305204N, TACTICAL UNMANNED AERIAL VEHICLES				PROJECT NUMBER AND NAME 2478, TCS						
Cost Categories	Contract Method & Type	Performing Activity & Location	Total PY s Cost	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
PRODUCT DEVELOPMENT												
Award Fees	C/CPAF	RAYTHEON, FALLS CHURCH, VA	8.510	.431	11/08	.456	11/09					
Primary Hdw Development	C/CPAF	RAYTHEON, FALLS CHURCH, VA	102.834	7.182	11/08	7.145	11/09					
SUBTOTAL PRODUCT DEVELOPMENT			111.344	7.613		7.601						

Remarks:

SUPPORT												
SUBTOTAL SUPPORT												

Remarks:

TEST & EVALUATION												
Dev Test & Eval	WX	VARIOUS	1.230	.030	11/08	.030	11/09					
SUBTOTAL TEST & EVALUATION			1.230	.030		.030						

Remarks:

MANAGEMENT												
Contractor Eng Sup	VARIOUS	VARIOUS	1.735	.407	11/08	.410	11/09					
Government Eng Sup	WX	VARIOUS	7.346	.330	11/08	.355	11/09					
Program Mgmt Sup	VARIOUS	VARIOUS	2.719	.382	11/08	.430	11/09					
Travel	TO	NAVAIR, PATUXENT RIVER MD	.098	.045	11/08	.045	11/09					
SUBTOTAL MANAGEMENT			11.898	1.164		1.240						

Remarks:

Total Cost			124.472	8.807		8.871						
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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-7								0305204N, TACTICAL UNMANNED AERIAL VEHICLES						2478, TCS		
Fiscal Year	FY 2008				FY 2009				FY 2010							
	1	2	3	4	1	2	3	4	1	2	3	4				
Acquisition Milestones								IOC ★								
VTUAV EMD							▲									
COBRA Integration																
Radar Sensor Integration					▶											
Studies and Analysis									▲							
Test & Evaluation	T-C-I	IT-C-2A				▲					IT-D-L	▲				
							OT-C-1	▲	COBRA & Radar T&E			▲				
Production Milestones																
Software Updates																
TCS 3.0																
TCS 4.0																
TCS 5.0																

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EXHIBIT R-2a, RDT&E Project Justification							DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT NUMBER AND NAME			PROJECT NUMBER AND NAME				
RDT&E,N / BA-7			0305204N, TACTICAL UNMANNED AERIAL VEHICLES			2768, VTUAV				
COST (\$ in Millions)			FY 2008	FY 2009	FY 2010					
2768 MQ-8B (VTUAV)			62.752*	9.614						
RDT&E Articles Qty										

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The MQ-8B (Vertical Take-Off and Landing Tactical Unmanned Air Vehicle (VTUAV); popular name "Fire Scout") provides real-time and non-real-time Intelligence, Surveillance and Reconnaissance (ISR) data to tactical users without the use of manned aircraft or reliance on limited joint theater or national assets. The baseline MQ-8B can accomplish missions including over-the-horizon tactical reconnaissance, classification, targeting, laser designation and battle management (including communications relay). The MQ-8B launches and recovers vertically and can operate from air capable ships, as well as confined area land bases. Other characteristics include autonomous air vehicle launch and recovery, autonomous waypoint navigation with command override capability, and the incorporation of an electro-optical/infrared laser designator-laser range finder modular mission payload. Interoperability is achieved through the use of the Tactical Control System (TCS) software in the ground control station, and through the use of the Tactical Common Data Link (TCDL). The data from the MQ-8B will be provided through standard DoD Command, Control, Communications, Computers and Intelligence, Surveillance, and Reconnaissance (C4ISR) system architectures and protocols.

A MQ-8B system is comprised of air vehicles, electro-optical/infrared/laser designator-rangefinder payloads, Ground Control Stations (with TCS and TC DL integrated for interoperability), and a UAV Common Automatic Recovery System (UCARS) for automatic take-off and landings, and associated spares and support equipment. The MQ-8B system will support Surface Warfare, Mine Interdiction Warfare, and Anti-Submarine Warfare mission modules while operating onboard LCS, and system procurement is tied to mission modules supporting LCS, vice sea frames. The System Design will also be integrated on select surface combatants that are air capable and can host MQ-8B ancillary equipment. A limited number of land-based ground control stations supplement the system to support shore-based operations, such as predeployment or acceptance functional check flights. These land-based ground control stations will also support depot level maintenance/post-maintenance activities.

A program to continue development of the MQ-8B to meet the Littoral Combat Ship (LCS) mission requirements was initiated in FY04. Program funding in FY08-10 includes efforts required to integrate the Coastal Battlefield Reconnaissance and Analysis (COBRA) payload, a mine detection sensor, under development by PMS-495. MQ-8B development and testing activities will continue in FY09. Funding is also provided in FY09-FY10 for integration of a multi-mode radar sensor. BLOCK UPGRADE will be an SDD effort to develop interfaces and integrate a multi-mode RADAR. Additionally, BLOCK UPGRADE will add Net Centric Capabilities.

The U.S. Army has selected the MQ-8B as their Class IV UAV for the Future Combat Systems (FCS). Coordination with the U.S. Army FCS Program is on-going to investigate the potential cost savings for both programs where system commonalities and common logistics support can be identified.

USN planning is to integrate MQ-8B on FFG-8 to maintain the MQ-8B OPEVAL in FY09. First deployment of the MQ-8B system will be on FFG. MQ-8B is also supporting LCS integration schedule.

The MQ-8B program received Milestone C approval in May 2007, authorizing Low Rate Initial Production (LRIP).

*This exhibit reflects \$22.8M FY08 funding moved from PE 0305205N 4020 BAMS UAS to PE 0305204N 2768 VTUAV per Above Threshold Reprogramming (ATR) DOD Serial Number FY08-41-RPA.

*MQ-8B project code moved from PE 0305204N to PE 0305231N in FY10.

B. ACCOMPLISHMENTS / PLANNED PROGRAM:

SD&D-HARDWARE AND SYSTEM DEVELOPMENT	FY 2008	FY 2009	FY 2010	
Accomplishments / Effort / Sub-total Cost	45.100	8.900		
RDT&E Articles Qty				

Continue incremental procurement and integration of EMD MQ-8B Air Vehicles to support the Engineering and Manufacturing Development (EMD) program. Continue to completion EMD of the MQ-8B system. Continue combined developmental and operational testing. Continue integration of the Coastal Battlefield Reconnaissance and Analysis (COBRA) payload. Begin integration of a multi-mode radar sensor.

SYSTEMS	FY 2008	FY 2009	FY 2010	
Accomplishments / Effort / Sub-total Cost	4.261			
RDT&E Articles Qty				

Continue ILS, technical data, and training system development. Procurement of trainers and spares to support OPEVAL.

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EXHIBIT R-2a, RDT&E Project Justification			DATE:	
			May 2009	
APPROPRIATION/BUDGET ACTIVITY		PROGRAM ELEMENT NUMBER AND NAME		PROJECT NUMBER AND NAME
RDT&E,N / BA-7		0305204N, TACTICAL UNMANNED AERIAL VEHICLES		2768, VTUAV
DEVELOPMENT TESTING	FY 2008	FY 2009	FY 2010	
Accomplishments / Effort / Sub-total Cost	2.207	.344		
RDT&E Articles Qty				

Complete developmental testing of the MQ-8B system. Continue combined developmental and operational testing, TECHEVAL, and planning for OPEVAL.

ENGINEERING AND TECHNICAL SERVICES	FY 2008	FY 2009	FY 2010	
Accomplishments / Effort / Sub-total Cost	11.184	.370		
RDT&E Articles Qty				

Continue engineering management, program technical management, and management support for the MQ-8B system. These include transportation of system assets, fleet introduction team and program office personnel travel, and contract support services. Continue to support system development, system integration and test, and TECHEVAL.

C. OTHER PROGRAM FUNDING SUMMARY:	FY 2008	FY 2009	FY 2010
RDT&E 0305231N MQ-8B			25.639
APN: 044300: 0305204N MQ-8B	37.432	50.189	
APN: 044300: 0305231N MQ-8B			77.616
APN Initial Spares: 060510: 0305204N MQ-8B	8.149	6.894	
APN Initial Spares: 060510: 0305231N MQ-8B			2.340

D. ACQUISITION STRATEGY:

Continue with the MQ-8B EMD program. Design and develop an improved system initiated in FY04 to support the Littoral Combat Ship Program. Achieved Milestone C in 3Q FY2007. FRP and IOC will follow completion of OPEVAL.

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Exhibit R-3 Cost Analysis (page 1)								DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY RDT&E,N / BA-7		PROGRAM ELEMENT 0305204N, TACTICAL UNMANNED AERIAL VEHICLES				PROJECT NUMBER AND NAME 2768, VTUAV							
	Contract Method & Type		Total PYs Cost	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date						
Cost Categories		Performing Activity & Location											
PRODUCT DEVELOPMENT													
Primary Hdw Development		C/CPFF	NORTHROP GRUMMAN , San Diego, CA	464.382	8.900	11/08							
SUBTOTAL PRODUCT DEVELOPMENT				464.382	8.900								

Remarks:

SUPPORT													
Integrated Logistics Sup	VARIOUS	VARIOUS	17.397										
SUBTOTAL SUPPORT			17.397										

Remarks:

TEST & EVALUATION													
Dev Test & Eval	WX	NAWCAD, PATUXENT RIVER MD	4.701										
Dev Test & Eval	VARIOUS	VARIOUS	3.671										
Oper Test & Eval	WX	NAWCAD, PATUXENT RIVER MD		.080	11/08								
Oper Test & Eval	WX	NAWCAD, CHINA LAKE CA		.264	11/08								
SUBTOTAL TEST & EVALUATION			8.372	.344									

Remarks:

MANAGEMENT													
Government Eng Sup	WX	NAWCAD, CHINA LAKE CA		.080	11/08								
Government Eng Sup	WX	NAWCAD, PATUXENT RIVER MD	28.983	.240	11/08								
Program Mgmt Sup	VARIOUS	NAWCAD, PATUXENT RIVER MD	19.822										
Travel	TO	NAVAIR, PATUXENT RIVER MD	.667	.050	10/08								
SUBTOTAL MANAGEMENT			49.472	.370									

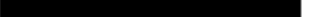
Remarks:

Total Cost			539.623	9.614									
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Remarks: MQ-8B project code moved from PE 0305204N to PE 0305231N, in FY10.

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EXHIBIT R4, Schedule Profile						DATE			
APPROPRIATION/BUDGET ACTIVITY						PROGRAM ELEMENT NUMBER AND NAME			
RDT&E, N /BA-7						0305204N, TACTICAL UNMANNED AERIAL VEHICLES			
PROJECT NUMBER AND NAME						2768, VTUAV			
Fiscal Year	FY 2008				FY 2009				
	1	2	3	4	1	2	3	4	
Acquisition Milestones									IOC 
VTUAV EMD									
COBRA Integration									
Radar Sensor Integration									
Studies and Analysis									
Test & Evaluation	IT-C-I					IT-C-2A			 OT-C-1 
Production Milestones									
LRIP MQ-8B Air Vehicles				 LRIP I		 LRIP II			
FRP MQ-8B Air Vehicles									
Procurement Deliveries								 LRIP I	

Remarks: MQ-8B project code moved from PE 0305204N to PE 0305231N, in FY10.

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Exhibit R-4a, Schedule Detail				DATE: May 2009				
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT			PROJECT NUMBER AND NAME				
RDTE&E,N / BA-7	0305204N, TACTICAL UNMANNED AERIAL VEHICLES			2768, VTUAV				
Schedule Profile	FY 2008	FY 2009	FY 2010					
Acquisition Milestones TCS/VTUAV IOC								
COBRA Integration	1Q-4Q	1Q-4Q						
Studies & Analysis								
Initial Operational Capability (IOC)		4Q						
Radar Sensor Integration		1Q-4Q						
Full Rate Production (FRP)								
VTUAV EMD (MQ-8B)	1Q-4Q	1Q-4Q						
Test & Evaluation Milestones								
IT-C-I	1Q-4Q							
IT-C-2A	4Q	1Q-3Q						
OT-C-I		4Q						
IT-D-1								
COBRA T&E								
Radar T&E								
LRIP II MQ-8B Air Vehicles contract award	4Q							
LRIP III MQ-8B Air Vehicles contract award		1Q						
FRP contract awards (I-IV)								
Delivery								
Air Vehicles -- FY07 LRIP I		3Q-4Q						
Air Vehicles -- FY07 LRIP II								
Air Vehicles -- FY08 LRIP III								
Air Vehicles -- FRP I								
Air Vehicles -- FRP II								
Air Vehicles -- FRP III								
Air Vehicles -- FRP IV								

Remarks: MQ-8B project code moved from PE 0305204N to PE 0305231N, in FY10.

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EXHIBIT R-2a, RDT&E Project Justification							DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7		PROGRAM ELEMENT NUMBER AND NAME 0305204N, TACTICAL UNMANNED AERIAL VEHICLES			PROJECT NUMBER AND NAME 2910, JOINT TECH CENTER/SYSTEMS INTEG LAB			
COST (\$ in Millions)		FY 2008	FY 2009	FY 2010				
Project Cost		1.679	1.719					
RDT&E Articles Qty								
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: The Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is a center of technical excellence to support all Unmanned Air Vehicle (UAV) programs within the services. The mission includes Service-specific and Joint Command, Control, Communications, Computers and Intelligence, Surveillance, and Reconnaissance (C4ISR) programs throughout DoD. The JTC/SIL provides a Government test bed for rapid prototyping, technology insertion and transition, systems engineering, modeling/simulation, training and Command and Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) optimization. The cornerstone of JTC/SIL's diverse tool set is the Multiple Unified Simulation Environment (MUSE), which is the Department's simulation/training system of choice for ISR systems, sensors, and platforms. The Services and Warfighting Commanders have a requirement for the capability to train with a system that provides a real-time simulation environment containing multiple intelligence systems that can be integrated with larger force-on-force simulations. The MUSE creates a realistic operational environment which supports the ability to assess military utility, architecture and CONOPS development, Tactics, Techniques, and Procedures (TTP) development and refinement, conduct emerging concepts experimentation, and C4ISR optimization within warfighting exercises and experiments. It is the only simulation system used by the Combat Commanders and Joint Services to support command and battle staff C4ISR training; there is no alternative available to satisfy those requirements. The MUSE also creates a realistic operational environment that supports an embedded training capability for multiple Program Managers; tools to minimize acquisition and life cycle cost and schedule impacts; the ability to conduct emerging concepts experimentation, future systems exploration, systems integration, and technology insertion; applications for Joint and Service-specific warfighting exercises; and C4ISR optimization. MUSE is currently in use within all services and unified commands simulating Predator, Global Hawk, Hunter, and MCTUAS UAVs, national and commercial satellite collectors, P-3, and the U-2. During warfighting exercises, the JTC/SIL integrates imagery simulations with associated C4ISR systems to support execution of critical imagery processes. For those assets normally not available for training, the JTC/SIL provides surrogate systems and interfaces. Distributed training environments, virtually linking participants from various locations worldwide, are routinely supported within the MUSE architecture. The MUSE is also used as a mission rehearsal tool for current, on-going military combat operations. Additionally, the JTC/SIL supports a range of materiel developers, integrating prototypes and trainers into the C4ISR and training environments of supported units. The Tactical UAV (TUAV) ground station developed by the JTC/SIL includes an embedded MUSE trainer, and is planned to be incorporated into the VTUAV Ground Control Station (GCS). Interim training capabilities for the Tactical Exploitation System (TES) are currently employed in the joint exercises. JTC/SIL Project Code moved from PE 0305204N to PE0603261N in FY2010.								

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EXHIBIT R-2a, RDT&E Project Justification			DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0305204N, TACTICAL UNMANNED AERIAL VEHICLES	PROJECT NUMBER AND NAME 2910, JOINT TECH CENTER/SYSTEMS INTEG LAB		
B. Accomplishments/Planned Program				
MUSE Development	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.830	0.851		
RDT&E Articles Quantity				
MUSE Development - Continue development of VTUAV model, continue Common Trainer for current platforms, continue to provide C4ISR simulation support to major exercises and demonstrations, complete integration of Tactical Exploitation of National Capabilities (TENCAP) simulation into PC-based MUSE, complete development of virtual Signals Intelligence (SIGINT) platform, continue development of Laser Designator capability, continue upgrade for National Space Assets Enhancements, continue C4I Enhancements, continue initial Fixed Target Damage simulation.				
Engineering and Maintenance	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.500	0.500		
RDT&E Articles Quantity				
Maintenance, Licenses and Equipment Purchases includes the day-to-day maintenance of lab equipment, license maintenance and license renewals from vendors for individual pieces of equipment, purchases of equipment to support the MUSE, and purchases to upgrade the MUSE capability.				
Program Management	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.349	0.368		
RDT&E Articles Quantity				
Laboratory Sustainment includes government management, contracts administration, cost accounting, configuration management, administrative support of the lab, MUSE architecture development, property management/accountability, and procurement of equipment.				

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EXHIBIT R-2a, RDT&E Project Justification		DATE:	May 2009
APPROPRIATION/BUDGET ACTIVITY	PROGRAM ELEMENT NUMBER AND NAME	PROJECT NUMBER AND NAME	
RDT&E, N / BA-7	0305204N, TACTICAL UNMANNED AERIAL VEHICLES	2910, JOINT TECH CENTER/SYSTEMS INTEG LAB	
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-7			0305204N, TACTICAL UNMANNED AERIAL VEHICLES			2910, JOINT TECH CENTER/SYSTEMS INTEG LAB							
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	MIPR	JTC/SIL Redstone Arsenal, AL	5.954										
Ancillary Hardware Development													
Aircraft Integration													
Ship Integration													
Ship Suitability													
Systems Engineering													
Training Development													
Licenses													
Tooling													
GFE													
Award Fees													
Subtotal Product Development			5.954	0.000		0.000							
Remarks:													
Development Support													
Software Development	MIPR	JTC/SIL Redstone Arsenal, AL	3.900	1.351	02/09								
Integrated Logistics Support													
Configuration Management													
Technical Data													
Studies & Analyses													
GFE													
Award Fees													
Subtotal Support			3.900	1.351		0.000							
Remarks:													

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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-7			0305204N, TACTICAL UNMANNED AERIAL VEHICLES			2910, JOINT TECH CENTER/SYSTEMS INTEG LAB							
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													
Operational Test & Evaluation													
Live Fire Test & Evaluation													
Test Assets													
Tooling													
GFE													
Award Fees													
Subtotal T&E			0.000	0.000		0.000							
Remarks:													
Contractor Engineering Support													
Government Engineering Support	MIPR	JTC/SIL Redstone Arsenal, AL	2.283	0.368	11/08								
Program Management Support													
Travel													
Transportation													
SBIR Assessment													
Subtotal Management			2.283	0.368		0.000							
Remarks:													
Total Cost			12.137	1.719		0.000							
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-7										0305204N, TACTICAL UNMANNED AERIAL VEHICLES												2910, JOINT TECH CENTER/SYSTEMS INTEG LAB											
Fiscal Year	2008				2009				2010																								
	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					
Acquisition Milestones																																	
Test & Evaluation Milestones																																	
Provide MUSE Support to UAV developers																																	
Production Deliveries																																	

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EXHIBIT R-2a, RDT&E Project Justification			DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7	PROGRAM ELEMENT NUMBER AND NAME 0305204N, TACTICAL UNMANNED AERIAL VEHICLES	PROJECT NUMBER AND NAME 3192, Small Tactical Unmanned Aircraft System (STUAS)		
B. Accomplishments/Planned Program				
SDD Development	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost		14.300		
RDT&E Articles Quantity		1		
Award contract to initiate the System Development Demonstration (SDD) efforts for the STUAS/Tier II UAS program. The Prime System Contractor will be responsible for overall system development and performance as well as systems engineering, integrated logistics support, and associated management activities.				
Engineering and Technical Services	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	6.105	8.164		
RDT&E Articles Quantity				
Government Engineering Technical Support, Logistics Support, test and evaluation, Contractor Support Services, Program Management Support and program related travel.				
	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost				
RDT&E Articles Quantity				

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Exhibit R-3 Cost Analysis (page 1)								DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY			PROGRAM ELEMENT			PROJECT NUMBER AND NAME							
RD&E, N / BA-7			0305204N, TACTICAL UNMANNED AERIAL VEHICLES			3192, Small Tactical Unmanned Aircraft System (STUAS)							
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	C/CPIF	TBD		17.200	08/09								
Ancillary Hardware Development													
Aircraft Integration													
Ship Integration													
Ship Suitability													
Systems Engineering													
Training Development													
Licenses													
Tooling													
GFE													
Award Fees													
Subtotal Product Development			0.000	17.200		0.000							
Remarks:													
Development Support													
Software Development													
Integrated Logistics Support	WX	Various		0.716	11/08								
Configuration Management													
Technical Data													
Studies & Analyses													
GFE													
Award Fees													
Subtotal Support			0.000	0.716		0.000							
Remarks:													

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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-7			0305204N, TACTICAL UNMANNED AERIAL VEHICLES			3192, Small Tactical Unmanned Aircraft System (STUAS)							
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	OPTEVFOR, Norfolk, Va		0.743	12/08								
Operational Test & Evaluation	WX	OPTEVFOR, Norfolk, Va		0.225	12/08								
Live Fire Test & Evaluation													
Test Assets													
Tooling													
GFE													
Award Fees													
Subtotal T&E			0.000	0.968		0.000							
Remarks:													
Contractor Engineering Support	Various	Various	1.310	0.764	12/08								
Government Engineering Support	WX	Various	3.500	1.843	11/08								
Program Management Support	Various	Various	1.260	0.938	12/08								
Travel	TO	NAVAIR HQ Pax River, MD	0.035	0.035	10/08								
Transportation													
SBIR Assessment													
Subtotal Management			6.105	3.580		0.000							
Remarks:													
Total Cost			6.105	22.464		0.000							
Remarks: *Note: Exhibit reflects \$2.9M FY09 funds BTR'd to SABRE Focus Program.													

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EXHIBIT R4, Schedule Profile													DATE: May 2009				
APPROPRIATION/BUDGET ACTIVITY RDTE&E, N / BA-7								PROGRAM ELEMENT NUMBER AND NAME 0305204N, TACTICAL UNMANNED AERIAL VEHICLES					PROJECT NUMBER AND NAME 3192, Small Tactical Unmanned Aircraft System (STUAS)				
Fiscal Year	2008				2009				FY2010								
	1	2	3	4	1	2	3	4	1	2	3	4					
Acquisition Milestones																	
Pre-MS Activities								Source Selection									
Milestone B									MS-B								
									Demo								
									EMD CA								

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EXHIBIT R-2a, RDT&E Project Justification								DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-7		PROGRAM ELEMENT NUMBER AND NAME 0305204N TACTICAL UNMANNED AERIAL VEHICLES			PROJECT NUMBER AND NAME 9999 Congressional Adds				
COST (\$ in Millions)		FY 2008	FY 2009	FY 2010					
9999 Congressional Adds		6.953	6.084						
RDT&E Articles Qty									
A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION: Congressional Adds									

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EXHIBIT R-2a, RDT&E Project Justification			DATE: May 2009	
APPROPRIATION/BUDGET ACTIVITY RDT&E, N /BA-7	PROGRAM ELEMENT NUMBER AND NAME 0305204N TACTICAL UNMANNED AERIAL VEHICLES	PROJECT NUMBER AND NAME 9999 Congressional Adds		
B. Accomplishments/Planned Program				
9B02A Skybus 80K & 130K LTA-UAS Multirole Tech	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost		1.993		
RDT&E Articles Quantity				
Development and testing of the Skybus 80K and 130K. Government Engineering Support, contractor support services, and travel.				
9B03A UAS TCS Open Architecture	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	2.979	2.495		
RDT&E Articles Quantity				
Develop and accelerate Open Architecture Technology Insertion solution. Government Engineering Support, contractor support services, and travel.				
9C76A Micro-munitions Interface for Tactical UAS	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	3.974	1.596		
RDT&E Articles Quantity				
Develop an interface between Unmanned Air Systems and micro-munitions, defined as weapons weighing less than 100 pounds. Government engineering support, contractor support services, and travel.				

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