

UNCLASSIFIED

CLASSIFICATION:

EXHIBIT R-2, RDT&E Budget Item Justification	DATE: May 2009
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APPROPRIATION/BUDGET ACTIVITY RESEARCH DEVELOPMENT TEST & EVALUATION, NAVY / BA-4	R-1 ITEM NOMENCLATURE 0603261N, Tactical Airborne Reconnaissance
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COST (\$ in Millions)	FY 2008	FY 2009	FY 2010				
Total PE Cost	6.837	4.243	7.713				
2467, UAV CONOPS	6.837	4.243	5.991				
2910, JOINT TECH CENTER/SYSTEMS INTEG LAB*			1.722				

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

UAV CONOPS - In support of the Navy's overall UAS strategy, this program develops Concept of Operations (CONOPS) that integrate UASs into the Chief of Naval Operations (CNO)/Navy Vision of Sea Power 21 (Sea Shield, Sea Strike, Sea Basing, and FORCEnet). By providing fleet input based on current operations with UASs in a simulated combat environment, this CONOPS development investment is the foundation of how the Carrier Strike Group (CSG) and the Expeditionary Strike Group (ESG) will operate a combined Manned and Unmanned Naval Air Force.

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.

*FY 2008 and FY 2009 JTC/SIL are budgeted under PE 0305204N PU 2910. JTC/SIL was realigned to 0603261N beginning FY2010.

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B. PROGRAM CHANGE SUMMARY:

Funding:	FY08	FY09	FY10	
Previous President's Budget:	4.037	4.298	4.311	
Current President's Budget:	6.837	4.243	7.713	
Total Adjustments	2.800	-0.055	3.402	

Summary of Adjustments

Congressional Rescissions				
Congressional Adjustments	2.800	0.043		
SBIR/STTR/FTT Assessments				
Program Adjustments			3.403	
Rate/Misc Adjustments		0.012	-0.001	
Subtotal	2.800	0.055	3.402	

Schedule:

Additional Targeting studies are required to support Weapons studies and demos. Additional Weapons and Payload CONOPS studies and demos are planned as UAV utility expands. Tasking and Manning Assessment (Focused Flying) are expanded to include CONOPS across Naval platforms.

The Operational Test Milestones were removed from the schedule as they were left over from when this PE provided funding to the Naval Strike Warfare Center, Fallon, to obtain an operational assessment of CONOPS demo/study results during their training sessions. It was an oversight that they were never removed from the schedule.

Technical:

2467 CONOPS - UAS CONOPS studies and demos focused on Weapon and Payload employment.

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COST (\$ in Millions)		FY 2008	FY 2009	FY 2010				
Project Cost		6.837	4.243	5.991				
RDT&E Articles Qty		1						

A. MISSION DESCRIPTION AND BUDGET ITEM JUSTIFICATION:

The Naval Unmanned Aircraft Systems (UAS) Strategy employs a family of UASs to perform tactical, persistent and – penetrating Intelligence, Surveillance, and Reconnaissance (ISR) in support of Naval and Joint missions from forward bases/platforms and naval ships.

In support of the Navy's overall UAS strategy, this program develops Concept of Operations (CONOPS) that integrate UASs into the Chief of Naval Operations (CNO)/Navy Vision of Sea Power 21 (Sea Shield, Sea Strike, Sea Basing, and FORCEnet). By providing fleet input based on current operations with UASs in a simulated combat environment, this CONOPS development investment is the foundation of how the Carrier Strike Group (CSG) and the Expeditionary Strike Group (ESG) will operate a combined Manned and Unmanned Naval Air Force. Specifically:

- Provides studies and demonstrations in support of the Naval UAS Family of Systems (FoS) CONOPS development
- Develops, demonstrates, and evaluates CONOPS, and assesses manning requirements of ship-based tactical UASs
- Conducts studies and demonstrations to develop and support the Naval UAS FoS Kill Chain Integration
- Develops the Naval UAS FoS Architecture to support integration into USN battle space dominance operations and network centric warfare
- Develops Intelligence, Surveillance, and Reconnaissance (ISR) CONOPS in support of Major Combat Operations (MCOs), Global War on Terror (GWOT), and Combat Search and Rescue (CSAR)
- Provides Naval support for development of Standards across DOD UASs and NATO, emphasizing standardization and interoperability
- Conducts studies for UAS tasks, data management, airspace integration, Sense & Avoid, and Focused Flying efforts
- Conducts CONOPS studies, demonstrations, and exercises for Vehicle Control, Targeting, and weapons, sensor, and payload employment
- Utilizes a UAS CONOPS demonstration system for CONOPS development, test and evaluation, and expediting technology transition. The demonstration system consists of a ground control station, launch and recovery equipment, air vehicles, spares, and associated equipment

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4	PROGRAM ELEMENT NUMBER AND NAME 0603261N, Tactical Airborne Reconnaissance	PROJECT NUMBER AND NAME 2467, UAV CONOPS
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B. Accomplishments/Planned Program

Studies and Demonstrations	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.269	0.600	0.700	
RDT&E Articles Quantity	1			

Studies and demonstrations to develop CONOPS for manned-unmanned integration of UAS and aircraft systems. Purchase a UAS CONOPS demonstration system for CONOPS development, test and evaluation, and technology transition.

Shipboard CONOPS	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.241	1.245	1.310	
RDT&E Articles Quantity				

Shipboard CONOPS - Conduct studies, demonstrations, and exercises for data relay, comm relay, targeting, vehicle control, and weapons, sensor, and payload employment.

Engineering and Program Support	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	0.430	1.027	0.915	
RDT&E Articles Quantity				

Government engineering support, program office travel, and contract support services.

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B. Accomplishments/Planned Program (Cont.)

NATO STANAG and Interoperability	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	1.097	1.371	1.158	
RDT&E Articles Quantity				

Conduct CONOPS studies for interoperability and development of standards across UASs and NATO emphasizing standardization and interoperability.

Architecture Support / Common Ground Station	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost			1.908	
RDT&E Articles Quantity				

Joint service revision configuration management of Unmanned System Interoperability profile and Joint Common Ground Station Architecture. Government engineering support.

MCTUAS Re-Wing Effort	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost	2.800			
RDT&E Articles Quantity				

RQ-7 is procured through the Army on the Army's Shadow TUAS production contract and is identical to the Army's system. The Marine Corps configuration matches the Army's to ensure combat units have maximum interoperability, maintainability, and combat effectiveness. The Re-Wing configuration provides greater flight endurance and allows for follow-on technology improvements.

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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			0603261N, Tactical Airborne Reconnaissance			2467, UAV CONOPS						
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/FPIF	AAI, Hunt Valley, MD	2.800									
Ancillary Hardware Development												
Aircraft Integration												
Ship Integration	Various	Various	3.686	0.951	11/08	0.768	11/09					
Ship Suitability												
Systems Engineering	WX	NAWCAD, Pax River	1.485	0.275	11/08	0.282	11/09					
Training Development												
Licenses												
Tooling												
GFE												
Award Fees												
Subtotal Product Development			7.971	1.226		1.050						
Remarks:												
Development Support	Various	Various	12.071	0.429	12/08	0.432	02/10					
Software Development	C/CPFF	Various	2.250			1.908	02/10					
Integrated Logistics Support												
Configuration Management												
Technical Data												
Studies & Analyses	WX	NAWCWD, China Lake	1.392	0.346	12/08	0.347	12/09					
Studies & Analyses	WX	NAWCAD, Pax River	0.564	1.025	12/08	1.030	12/09					
Award Fees												
Subtotal Support			16.277	1.800		3.717						
Remarks:												

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Exhibit R-3 Cost Analysis (page 2)							DATE: May 2009					
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603261N, Tactical Airborne Reconnaissance			PROJECT NUMBER AND NAME 2467, UAV CONOPS						
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					
Test and Evaluation												
Interoperability	WX	NAWCWD, China Lake	1.750	0.215	12/08	0.217	12/09					
Live Fire Test & Evaluation												
Test Assets												
Tooling												
GFE												
Award Fees												
Subtotal T&E			1.750	0.215		0.217						
Remarks:												
Contractor Engineering Support												
Government Engineering Support	Various	Various	2.711	0.611	12/08	0.614	12/09					
Program Management Support	Various	Various	1.379	0.356	12/08	0.358	12/09					
Travel	TO	NAVAIR, Pax River	0.329	0.035	10/08	0.035	10/09					
Transportation												
SBIR Assessment												
Subtotal Management			4.419	1.002		1.007						
Remarks:												
Total Cost			30.417	4.243		5.991						
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 0603261N, Tactical Airborne Reconnaissance						PROJECT NUMBER AND NAME 2467, UAV CONOPS							
Fiscal Year	2008				2009				2010										
	1	2	3	4	1	2	3	4	1	2	3	4							
Tactics Development and Evaluation	[REDACTED]				UAS Targeting														
	[REDACTED]				Weapons and Payload														
	[REDACTED]				Task/Manning Assessment														
	[REDACTED]				Standards Based Interoperability														
	[REDACTED]				UASs FoS and Shipboard														
	[REDACTED]																		
	[REDACTED]																		
Test & Evaluation Milestones																			
	Demo System Delivery																		

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APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4		PROGRAM ELEMENT NUMBER AND NAME 0603261N, Tactical Airborne Reconnaissance			PROJECT NUMBER AND NAME 2910, JOINT TECH CENTER/SYSTEMS INTEG LAB			
COST (\$ in Millions)		FY 2008	FY 2009	FY 2010				
Project Cost				1.722				
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 (RQ-4), Hunter, and MCTUAS UAVs (RQ-7), 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 MQ-8 Ground Control Station (GCS). Interim training capabilities for the Tactical Exploitation System (TES) are currently employed in the joint exercises.

NOTE: FY 2008 and FY 2009 JTC/SIL are budgeted under PE 0305204N PU 2910. JTC/SIL was realigned to 0603261N beginning FY2010.

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B. Accomplishments/Planned Program

MUSE Development	FY 08	FY 09	FY 10	
Accomplishments/Effort/Subtotal Cost			0.850	
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	
RDT&E Articles Quantity				

Maintenance, Licenses and Equipment Purchases include 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			0.372	
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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C. OTHER PROGRAM FUNDING SUMMARY:

<u>Line Item No. & Name</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
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Not Applicable

D. ACQUISITION STRATEGY:

Not Applicable

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Exhibit R-3 Cost Analysis (page 2)										DATE: May 2009			
APPROPRIATION/BUDGET ACTIVITY RDT&E, N / BA-4			PROGRAM ELEMENT 0603261N, Tactical Airborne Reconnaissance			PROJECT NUMBER AND NAME 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				0.372	11/09						
Program Management Support													
Travel													
Transportation													
SBIR Assessment													
Subtotal Management			0.000	0.000		0.372							
Remarks:													
Total Cost			0.000	0.000		1.722							
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 0603261N, Tactical Airborne Reconnaissance					PROJECT NUMBER AND NAME 2910, JOINT TECH CENTER/SYSTEMS INTEG LAB												
Fiscal Year	2008				2009				2010																
	1	2	3	4	1	2	3	4	1	2	3	4													
Acquisition Milestones																									
Test & Evaluation Milestones																									
Provide MUSE Support to UAV developers																									

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FY 2008 and FY 2009 JTC/SIL are budgeted under PE 0305204N PU 2910. JTC/SIL was realigned to 0603261N beginning FY2010.

