

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

May 2009

APPROPRIATION/ BUDGET ACTIVITY
RDTE, Defense Wide BA# 4

PE NUMBER AND TITLE
0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration

COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate				
Total Program Element (PE) Cost			55.289				
P440 DoD Unmanned Aircraft System (UAS) Airspace Integration			35.289				
P442 UAS Common Ground Station Demonstration			20.000				

A. Mission Description and Budget Item Justification:

The Department of Defense (DOD) Unmanned Aircraft Systems (UAS) Common Development is a joint effort to develop and demonstrate common standards, architectures, and technologies that address UAS-specific issues across all Military Services. The intent is to increase interoperability and effectiveness by promoting cooperative development of solutions that are applicable across major classes of UAS. This effort will initially focus on addressing DOD UAS integration into the National Airspace System (NAS) and demonstration of a common, interoperable ground station architecture and associated interface standards.

<u>B. Program Change Summary</u>	FY 2008	FY 2009	FY 2010	
Previous President's Budget (FY 2008/2009)				
Current BES/President's Budget (FY 2010)			55.289	
Total Adjustments			55.289	
Congressional Program Reductions				
Congressional Rescissions				
Congressional Increases				
Reprogrammings				
SBIR/STTR Transfer				
Other			55.289	

C. Other Program Funding Summary: Not applicable for this item.

D. Acquisition Strategy: Not applicable for this item.

E. Performance Metrics: Not Applicable.

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

APPROPRIATION/ BUDGET ACTIVITY RDTE, Defense Wide BA# 4		PE NUMBER AND TITLE 0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace					PROJECT P440	
		Integration						
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate					
P440 DoD Unmanned Aircraft System (UAS) Airspace Integration			35.289					

A. Mission Description and Budget Item Justification:

In FY12 the Department plans to transition from the U-2 to the Global Hawk (GH), but today's restrictions on airspace access preclude this. GH and the Broad Area Maritime Surveillance (BAMS) UAS, also a GH aircraft, need an autonomous, sense-and-avoid (SAA) to satisfy the Title 14 Code of Federal Regulations, Part 91.113, requirement to See-and-Avoid other aircraft. Predator and Sky Warrior have similar requirements for SAA capability; their SAA technology development will leverage the GH/BAMS technology. Development of a Ground Based Sense-and-Avoid (GBSAA) system using existing technology can provide a near-term solution for improved airspace access, both for terminal operations (e.g., Beale AFB, GH transit to/from controlled airspace) and for operations/training within the GBSAA system's coverage area (e.g., Sky Warrior at El Mirage, Shadow operations at Cherry Point).

Funding accelerates the development of a common onboard, autonomous SAA capability for GH and BAMS, provides a similar SAA system for Predator and Sky Warrior, provides a GBSAA capability to meet DoD training and operational objectives at locations where airspace restrictions currently limit training and operations, and establishes dedicated funding to develop standards, modeling and simulation tools, and technology to enable DoD UAS to routinely access the national and international airspace systems.

B. Accomplishments/Planned Program:

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>
			35.289

Accomplishments:

Starting in FY2010 the Department's sense-and-avoid (SAA) developmental efforts will be consolidated within this defense-wide program element. In prior years UAS AI efforts were funded by individual programs of record.

Plans:

Today there are restrictions on airspace access for DoD UAS. Global Hawk (GH) and the Broad Area Maritime Surveillance (BAMS) UAS, also a GH aircraft, need an autonomous, airborne sense-and-avoid (ABSAA) to satisfy the Title 14 Code of Federal Regulations, Part 91.113, requirement to see-and-avoid other aircraft and to operate in international airspace under "Due Regard" procedures. Predator and Sky Warrior have similar requirements for ABSAA capability; their technology development will leverage the GH/BAMS technology. Development of an autonomous, ABSAA system is also dependent on the development of certified performance standards and the modeling and simulation tools needed to validate the standards. Development of a Ground Based Sense-and-Avoid (GBSAA) system using existing technology will provide a near-term solution for improved airspace access, both for terminal operations (e.g., Beale AFB, GH transit to/from controlled airspace) and for operations/training within the GBSAA system's coverage area (e.g., Sky Warrior at El Mirage, Shadow operations at Cherry Point).

This program funds the development of ABSAA systems and standards to enable UAS to routinely access the national and international airspace systems, and provides a GBSAA solution for improved airspace access in the near-term. This program also develops modeling and simulation tools needed to validate the systems and standards.

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RDTE, Defense Wide BA# 4

PE NUMBER AND TITLE

0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration

C. Other Program Funding Summary: Not applicable for this item.

D. Acquisition Strategy: Not applicable for this item.

E. Major Performers: Not applicable for this item.

OSD RDT&E COST ANALYSIS (R3)

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT				
4 - Advanced Component Development and Prototypes (ACDP)			0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration							P440				
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Product Development	Competitive - Various	TBD						35289	1-4Q					
Subtotal:								35289						
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date					
Subtotal:														
Project Total Cost:								35289						

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes (ACDP)

PE NUMBER AND TITLE
0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration

PROJECT
P440

Event Name	FY 08				FY 09				FY 10																							
	1	2	3	4	1	2	3	4	1	2	3	4																				
Requirements Analysis																	CBA for International AI															
(1)																	AoA															
(2)																	 NAS ICD															
(3)																	ABSAA - Phase 0  Requirements Analysis															
ABSAA,																	Data Collection/Process															
(4)																	Tech Development /Universal Refinement															
GBSAA Proofs of Concept (POC) / Requirements																	Provisional Separation Assurance															
																	 Development															

Schedule Profile (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes (ACDP)	PE NUMBER AND TITLE 0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration	PROJECT P440
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<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>					
Requirements Analysis		3Q - 4Q	1Q - 4Q					
		2Q - 4Q						
		2Q						
			2Q					
ABSAA		2Q - 4Q	1Q					
		2Q - 4Q	1Q					
GBSAA Proofs of Concept (POC) / Requirements		1Q - 4Q	1Q - 3Q					
			3Q - 4Q					
		1Q - 4Q	1Q - 4Q					
		1Q - 4Q	1Q - 4Q					
			1Q - 4Q					

OSD RDT&E BUDGET ITEM JUSTIFICATION (R2a Exhibit)

May 2009

APPROPRIATION/ BUDGET ACTIVITY RDTE, Defense Wide BA# 4		PE NUMBER AND TITLE 0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration					PROJECT P442	
COST (\$ in Millions)	FY 2008 Actual	FY 2009 Estimate	FY 2010 Estimate					
P442 UAS Common Ground Station Demonstration			20.000					

A. Mission Description and Budget Item Justification:

The UAS Common Ground Station Demonstration project is intended to develop and demonstrate an interoperable, standards-based, open ground station architecture for MQ-1 (Predator/Sky Warrior), MQ-5 (Hunter), MQ-8 (Fire Scout), and MQ-9 (Reaper) UAS. The intent is to improve joint- and coalition-interoperability and to promote competition through the implementation of open standards and open architectures.

B. Accomplishments/Planned Program:

<u>Accomplishments/Planned Program Title:</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>	
			20.000	

Accomplishment / Plans:

Beginning in FY2010, the UAS Common Ground Station Demonstration project intends to develop and demonstrate an interoperable, standards-based, open ground station architecture for MQ-1 (Predator/Sky Warrior), MQ-5 (Hunter), MQ-8 (Fire Scout), and MQ-9 (Reaper) UAS. The intent is to improve joint- and coalition-interoperability and to promote competition through the implementation of open standards and open architectures.

C. Other Program Funding Summary: Not applicable for this item.

D. Acquisition Strategy: Not applicable for this item.

E. Major Performers: Not applicable for this item.

OSD RDT&E COST ANALYSIS (R3)

BUDGET ACTIVITY			PE NUMBER AND TITLE							PROJECT			
4 - Advanced Component Development and Prototypes (ACDP)			0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration							P442			
I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date				
Product Development	Competitive - Various	TBD						20000	1Q				
Subtotal:								20000					
II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date				
Subtotal:													
III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date				
Subtotal:													
IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2008 Cost	FY 2008 Award Date	FY 2009 Cost	FY 2009 Award Date	FY 2010 Cost	FY 2010 Award Date				
Subtotal:													
Project Total Cost:								20000					

Schedule Profile (R4 Exhibit)

May 2009

BUDGET ACTIVITY
4 - Advanced Component Development and Prototypes (ACDP)

PE NUMBER AND TITLE
0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration

PROJECT
P442

Event Name	FY 08				FY 09				FY 10																						
	1	2	3	4	1	2	3	4	1	2	3	4																			
Architecture Development					Final V1.0																										
									Preliminary Analysis																						
									Architecture Definition																						
Architecture Verification,									Industrial Response				VSM Development																		
GCS Prototype Integration									AV Modifications				Artificial Prototyping & Component Certification																		
									1				1																		
									1				1																		
									1				1																		
									1				1																		
									1				1																		

Schedule Profile (R4a Exhibit)

May 2009

BUDGET ACTIVITY 4 - Advanced Component Development and Prototypes (ACDP)	PE NUMBER AND TITLE 0604400D8Z - DoD Unmanned Aircraft System (UAS) Airspace Integration	PROJECT P442
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<u>Schedule Detail</u>	<u>FY 2008</u>	<u>FY 2009</u>	<u>FY 2010</u>					
Architecture Development		1Q - 4Q						
		3Q - 4Q	1Q					
			1Q - 3Q					
			1Q - 4Q					
Architecture Verification		2Q						
		3Q						
		3Q						
			2Q - 4Q					
			3Q - 4Q					
GCS Prototype Integration			1Q - 4Q					
			1Q - 4Q					
		1Q	4Q					