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Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Army **DATE:** February 2011

APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305233A: <i>RQ-7 Shadow UAV</i>
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COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	-	7.805	31.940	-	31.940	30.828	23.370	22.507	22.687	Continuing	Continuing
RQ7: <i>RQ-7 SHADOW UAV</i>	-	7.805	31.940	-	31.940	30.828	23.370	22.507	22.687	Continuing	Continuing

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

The Tactical Unmanned Aerial Vehicle (TUAV) Shadow 200 provides the Army Brigade Commander with dedicated Reconnaissance, Surveillance and Target Acquisition (RSTA), Intelligence, Battle Damage Assessment (BDA) and Force Protection. The Shadow provides the Brigade Commander with critical battlefield intelligence and targeting information in the rapid cycle time required for success at the tactical level. The TUAV Shadow system air vehicle meets the required operating range of 50 kilometers and remains on station for up to five hours. The TUAV Shadow system consists of four air vehicles (each configured with an EO/IR sensor payload), launcher and ground control and support equipment including: power generation, communications equipment, automated recovery equipment, one system remote video terminals, vehicle mounted shelters, and High Mobility Multipurpose Wheeled Vehicles with trailer(s). Each system is equipped with one Maintenance Section Multifunctional (MSM) Vehicle and is supported at the division level by a Mobile Maintenance Facility (MMF).

The TUAV has logged over 524,175 flight hours since Jun 01, most of which were flown in support of Operation Iraqi Freedom and Operation Enduring Freedom. Block upgrades are required for continued improvement and interoperability. Common Systems Integration is required to ensure interoperability with other manned and unmanned weapon systems, to include One System Remote Video Transceiver (OSRVT). Additional development and integration is also required to provide greater capabilities and improved operational flexibility to the Brigade Commander. These improvements to the airframe, avionics, payloads, ground control equipment, and support equipment are based on documented requirements and lessons learned from operational units. Only the SIGINT effort with the payloads improvement is new for FY12. Work previously shown under OIF Improvements/Block Upgrades/Capability Improvements in previous budgets is broken out for greater clarity.

FY12 Base funds will be used for Capability Improvements, specifically: mission computer and multi-band radio development/integration and engine improvements; integration of Synthetic Aperture Radar Ground Moving Target Indicator (SAR GMTI), signals intelligence (SIGINT), and high definition (HD) payloads. Additionally, funds will be for System Engineering/Reliability Solutions (to include improvements to meet emerging national airspace requirements) and test support.

Prior to FY11, funding for this project was in PE 0305204A, Project 114.

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B. Program Change Summary (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	-	7.805	50.487	-	50.487
Current President's Budget	-	7.805	31.940	-	31.940
Total Adjustments	-	-	-18.547	-	-18.547
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	-18.547	-	-18.547

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APPROPRIATION/BUDGET ACTIVITY 2040: Research, Development, Test & Evaluation, Army BA 7: Operational Systems Development				R-1 ITEM NOMENCLATURE PE 0305233A: RQ-7 Shadow UAV				PROJECT RQ7: RQ-7 SHADOW UAV			
COST (\$ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
RQ7: RQ-7 SHADOW UAV	-	7.805	31.940	-	31.940	30.828	23.370	22.507	22.687	Continuing	Continuing
Quantity of RDT&E Articles											
A. Mission Description and Budget Item Justification											
<p>The Tactical Unmanned Aerial Vehicle (TUAV) Shadow 200 provides the Army Brigade Commander with dedicated Reconnaissance, Surveillance and Target Acquisition (RSTA), Intelligence, Battle Damage Assessment (BDA) and Force Protection. The Shadow provides the Brigade Commander with critical battlefield intelligence and targeting information in the rapid cycle time required for success at the tactical level. The TUAV Shadow system air vehicle meets the required operating range of 50 kilometers and remains on station for up to five hours. The TUAV Shadow system consists of four air vehicles (each configured with an EO/IR sensor payload), launcher and ground control and support equipment including: power generation, communications equipment, automated recovery equipment, one system remote video terminals, vehicle mounted shelters, and High Mobility Multipurpose Wheeled Vehicles with trailer(s). Each system is equipped with one Maintenance Section Multifunctional (MSM) Vehicle and is supported at the division level by a Mobile Maintenance Facility (MMF).</p> <p>The TUAV has logged over 575,000 flight hours since Jun 01, most of which were flown in support of Operation Iraqi Freedom and Operation Enduring Freedom. Block upgrades are required for continued improvement and interoperability. Common Systems Integration is required to ensure interoperability with other manned and unmanned weapon systems, to include One System Remote Video Transceiver (OSRVT). Additional development and integration is also required to provide greater capabilities and improved operational flexibility to the Brigade Commander. These improvements to the airframe, avionics, payloads, ground control equipment, and support equipment are based on documented requirements and lessons learned from operational units. Only the SIGINT effort with the payloads improvement is new for FY12. Work previously shown under OIF Improvements/Block Upgrades/Capability Improvements in previous budgets is broken out for greater clarity.</p> <p>FY12 Base funds will be used for Capability Improvements, specifically: mission computer and multi-band radio development/integration and engine improvements; integration of Synthetic Aperture Radar Ground Moving Target Indicator (SAR GMTI), signals intelligence (SIGINT), and high definition (HD) payloads. Additionally, funds will be for System Engineering/Reliability Solutions (to include improvements to meet emerging national airspace requirements) and test support.</p> <p>Prior to FY11, funding for this project was in PE 0305204A, Proj 114.</p>											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)							FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Title: OIF Improvements/Block Upgrades/Capability Improvements							-	3.355	-	-	-
Articles:								0			
Description: Funding is provided for the following effort											
FY 2011 Plans:											

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)						
		FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Funds OIF Improvements/Block Upgrades/Capability Improvements						
Title: System Engineering/Reliability Solutions		-	2.0250	-	-	-
Articles:						
Description: Funding is provided for the following effort						
FY 2011 Plans:						
Continued System Engineering/Reliability Solutions						
Title: Air Vehicle Improvements		-	-	14.071	-	14.071
Description: Funding is provided for the following effort						
FY 2012 Base Plans:						
Continued funding for Air Vehicle Improvements						
Title: Payload Improvements		-	-	7.420	-	7.420
Description: Funding is provided for the following effort						
FY 2012 Base Plans:						
Continues to fund Payload Improvements						
Title: Ground Equipment Improvements		-	-	2.500	-	2.500
Description: Funding is provided for the following effort						
FY 2012 Base Plans:						
Continues to fund Ground Equipment Improvements						
Title: One System Remote Video Terminal (OSRVT)		-	-	3.914	-	3.914
Description: Funding is provided for the following effort						
FY 2012 Base Plans:						
Continues to fund One System Remote Video Terminal (OSRVT)						
Title: Test and Evaluation		-	1.5000	1.607	-	1.607
Articles:						

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B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)									FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Description: Funding is provided for the following effort													
FY 2011 Plans: Funded Test and Evaluation													
FY 2012 Base Plans: Continues to fund Test and Evaluation													
Title: System Engineering/Program Management									-	-	2.428	-	2.428
Description: Funding is provided for the following effort													
FY 2012 Base Plans: Continues the funding for System Engineering/Program Management													
Title: Program Management Support									-	0.475 0	-	-	-
Description: Funding is provided for the following effort													
FY 2011 Plans: Funds Program Management Support													
Title: Other Government Agencies									-	0.450 0	-	-	-
Description: Funding is provided for the following effort													
FY 2011 Plans: Funds Other Government Agencies													
Accomplishments/Planned Programs Subtotals									-	7.805	31.940	-	31.940
C. Other Program Funding Summary (\$ in Millions)													
Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost		
• A00018: Shadow MODS (RQ-7)	649.939	602.815	126.239	94.600	220.839		189.659	300.884	232.198	Continuing	Continuing		
	2.743	2.628								Continuing	Continuing		

UNCLASSIFIED

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C. Other Program Funding Summary (\$ in Millions)												
	<u>Line Item</u>	<u>FY 2010</u>	<u>FY 2011</u>	<u>FY 2012</u> <u>Base</u>	<u>FY 2012</u> <u>OCO</u>	<u>FY 2012</u> <u>Total</u>	<u>FY 2013</u>	<u>FY 2014</u>	<u>FY 2015</u>	<u>FY 2016</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
	• Initial Spares - TUAV: <i>Initial Spares - TUAV</i>											
	• 114: <i>TUAS</i>	62.188	1.672								0.000	63.860
D. Acquisition Strategy												
<p>A System Capability Demonstration (SCD) was conducted with four contractors. The results from the SCD in conjunction with proposal evaluations resulted in the competitive down select of a Best Value TUAS. A successful Milestone II ASARC was conducted 21 Dec 99, and a TUAV LRIP contract was awarded to AAI Corporation 27 Dec 99. In order to accelerate fielding of the TUAS, a second LRIP for four systems was awarded 30 Mar 01 following a successful OPTEMPO test. In order to maintain accelerated fielding and continue ramp up to full rate production, a third LRIP was awarded in Mar 02. A successful LRIP program led to a MS III decision 25 Sep 02. The full rate production contract was awarded 27 Dec 02. Continued development of the TUAS system will be accomplished through a series of modifications and retrofits such as air vehicle improvements, additional payload integration, and ground control equipment improvements. Development/integration of these improved capabilities will be through individual efforts on a sole source cost-plus fixed fee engineering services contract with the Shadow prime contractor.</p>												
E. Performance Metrics												
Performance metrics used in the preparation of this justification material may be found in the FY 2010 Army Performance Budget Justification Book, dated May 2010.												

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Army										DATE: February 2011				
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Management Services (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Program Management Personnel	Various	PM UAS,:Redstone Arsenal, AL	-	0.475		1.021		-		1.021	Continuing	Continuing	Continuing	
Subtotal			-	0.475		1.021		-		1.021				
Product Development (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Base: OIF Improvements / Block Upgrades / Capability	SS/CPFF	AAI Corporation, MD:AAI Corporation, MD	-	3.355		-		-		-	Continuing	Continuing	Continuing	
Base: System Engineering / Reliability Solutions	SS/CPFF	AAI Corporation, MD:AAI Corporation, MD	-	2.025		-		-		-	Continuing	Continuing	Continuing	
Base: Air Vehicle Improvements	SS/CPFF	AAI Corporation, MD:AAI Corporation, MD	-	-		14.071		-		14.071	0.000	14.071	0.000	
Base: Ground Equipment Improvements	SS/CPFF	AAI Corporation, MD:AAI Corporation, MD	-	-		2.500		-		2.500	0.000	2.500	0.000	
Base: Payload Improvements	SS/CPFF	Various:Various	-	-		7.420		-		7.420	0.000	7.420	0.000	
Base: One System Remote Video Terminal (OSRVT)	Various	Various:Various	-	-		3.914		-		3.914	0.000	3.914	0.000	
Subtotal			-	5.380		27.905		-		27.905				
Support (\$ in Millions)					FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract	
Contractor Engineering Support	Various	Various:Various	-	0.300		0.943		-		0.943	Continuing	Continuing	Continuing	

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Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Army			DATE: February 2011		
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			PROJECT RQ7: <i>RQ-7 SHADOW UAV</i>		

	FY 2010				FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016			
	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
Air Vehicle Improvements																												
Payload Improvements																												
Ground Equipment Improvements																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Army			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 2040: <i>Research, Development, Test & Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	R-1 ITEM NOMENCLATURE PE 0305233A: <i>RQ-7 Shadow UAV</i>	PROJECT RQ7: <i>RQ-7 SHADOW UAV</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Air Vehicle Improvements	4	2011	3	2016
Payload Improvements	4	2011	3	2016
Ground Equipment Improvements	4	2011	3	2016