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<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2013 Army	<b>DATE:</b> February 2012
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<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0305233A: <i>RQ-7 Shadow UAV</i>
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COST (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
Total Program Element	7.555	31.896	31.158	-	31.158	23.634	22.773	22.953	18.991	Continuing	Continuing
RQ7: <i>RQ-7 SHADOW UAV</i>	7.555	31.896	31.158	-	31.158	23.634	22.773	22.953	18.991	Continuing	Continuing

**Note**

Prior to FY2011 funding for this project was in PE 0305204A, Project 114.

**A. Mission Description and Budget Item Justification**

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 nine hours. The TUAV Shadow system consists of four air vehicles (each configured with an Electro Optical/Infrared (EO/IR) sensor payload), launcher, 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) and is supported at the division level by a Mobile Maintenance Facility (MMF).

All 102 Shadow UAS systems have been procured and 93 have been fielded. Shadow has amassed over 709,000 total flight hours, most of which were flown in support of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). The Shadow UAS began being deployed to OIF in 2003 and to OIF in 2006. Incremental 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). Continued developmental improvements are required to provide greater interoperability, increase operational capability and flexibility to the Brigade Combat Team. Modifications to the airframe, avionics, payloads, ground control equipment, and support equipment are based on documented requirements and lessons learned units operating in OEF and OIF.

**Justification:**

FY2013 RQ-7 UAV Base funding of \$31.158 million will be used for Capability Improvements, specifically: Engine improvements (engine development), Air Vehicle modifications (small mission computer development, weatherization, improved fuel system (vented), GPS Denied Operations and redundant avionics development), and Ground Equipment (interoperability) improvements. Additionally, funds will be for System Engineering, Program Management, Software Architecture and Reliability Solutions and System Test and Evaluation support. Funds will also be used to conduct the Increment II OSRVT Limited User Test (LUT), and other applicable OSRVT test events.

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Exhibit R-2, RDT&E Budget Item Justification: PB 2013 Army				DATE: February 2012	
APPROPRIATION/BUDGET ACTIVITY		R-1 ITEM NOMENCLATURE			
2040: Research, Development, Test & Evaluation, Army		PE 0305233A: RQ-7 Shadow UAV			
BA 7: Operational Systems Development					
B. Program Change Summary (\$ in Millions)	FY 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total
Previous President's Budget	7.805	31.940	30.828	-	30.828
Current President's Budget	7.555	31.896	31.158	-	31.158
Total Adjustments	-0.250	-0.044	0.330	-	0.330
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-0.250	-0.044	0.330	-	0.330

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Army									DATE: February 2012		
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 2011	FY 2012	FY 2013 Base	FY 2013 OCO	FY 2013 Total	FY 2014	FY 2015	FY 2016	FY 2017	Cost To Complete	Total Cost
RQ7: RQ-7 SHADOW UAV	7.555	31.896	31.158	-	31.158	23.634	22.773	22.953	18.991	Continuing	Continuing
Quantity of RDT&E Articles											
Note Prior to FY2011 funding for this project was in PE 0305204A, Project 114.											
A. Mission Description and Budget Item Justification 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 nine hours. The TUAV Shadow system consists of four air vehicles (each configured with an Electro Optical/Infrared (EO/IR) sensor payload), launcher, 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) and is supported at the division level by a Mobile Maintenance Facility (MMF).  All 102 Shadow UAS systems have been procured and 93 have been fielded. Shadow has amassed over 709,000 total flight hours, most of which were flown in support of Operation Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF). The Shadow UAS began being deployed to OIF in 2003 and to OIF in 2006. Incremental 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). Continued developmental improvements are required to provide greater interoperability, increase operational capability and flexibility to the Brigade Combat Team. Modifications to the airframe, avionics, payloads, ground control equipment, and support equipment are based on documented requirements and lessons learned units operating in OEF and OIF.  Justification:  FY2013 RQ-7 UAV Base funding of \$31.158 million will be used for Capability Improvements, specifically: Engine improvements (engine development), Air Vehicle modifications (small mission computer development, weatherization, improved fuel system (vented), GPS Denied Operations and redundant avionics development), and Ground Equipment (interoperability) improvements. Additionally, funds will be for System Engineering, Program Management, Software Architecture and Reliability Solutions and System Test and Evaluation support. Funds will also be used to conduct the Increment II OSRVT Limited User Test (LUT), and other applicable OSRVT test events.											
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)								FY 2011	FY 2012	FY 2013	
Title: OIF Improvements/Block Upgrades/Capability Improvements								3.105	-	-	
Articles:								0			

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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		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2011	FY 2012	FY 2013
Description: Funding is provided for the following effort				
FY 2011 Accomplishments: Funds OIF Improvements/Block Upgrades/Capability Improvements				
Title: System Engineering/Reliability Solutions	Articles:	2.025 0	-	-
Description: Funding is provided for the following effort				
FY 2011 Accomplishments: Continued System Engineering/Reliability Solutions				
Title: Air Vehicle Improvements	Articles:	-	14.027 0	10.520
Description: Funding is provided for the following effort				
FY 2012 Plans: Continued funding for Air Vehicle Improvements				
FY 2013 Plans: Continued development of enhanced fuselage and center wing (including improved weatherization). Begins development of triple redundant avionics suite, and continues reliability improvements. Continues development of larger, more reliable engine.				
Title: Payload Improvements	Articles:	-	7.420 0	6.000
Description: Funding is provided for the following effort				
FY 2012 Plans: Continues to fund Payload Improvements				
FY 2013 Plans: Continues to fund Payload Improvements				
Title: Ground Equipment Improvements	Articles:	-	2.500 0	2.768
Description: Funding is provided for the following effort				

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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		
B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)		FY 2011	FY 2012	FY 2013
FY 2012 Plans: Continues to fund Ground Equipment Improvements. Continues development of interoperability capabilities through use of Universal Ground Data Terminals and Universal Ground Control Stations.				
FY 2013 Plans: Continues to fund Ground Equipment Improvements. Continues development of interoperability capabilities through use of Universal Ground Data Terminals and Universal Ground Control Stations.				
Title: One System Remote Video Terminal (OSRVT)  Articles:  Description: Funding is provided for the following effort  FY 2012 Plans: Continues to fund One System Remote Video Terminal (OSRVT). Integrate Incremental II bi-directional functionality into the OSRVT.  FY 2013 Plans: Continues to fund One System Remote Video Terminal (OSRVT). Integrate Incremental II bi-directional functionality into the OSRVT. Software Blocking and Interoperability improvements		-	3.914 0	5.883
Title: Test and Evaluation  Articles:  Description: Funding is provided for the following effort  FY 2011 Accomplishments: Funded Test and Evaluation  FY 2012 Plans: Continues to fund Test and Evaluation  FY 2013 Plans: Continues to fund Test and Evaluation		1.500 0	1.607 0	1.996
Title: System Engineering/Program Management  Articles:  Description: Funding is provided for the following effort		-	2.428 0	3.991

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<b>Exhibit R-2A, RDT&amp;E Project Justification:</b> PB 2013 Army							<b>DATE:</b> February 2012				
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>				<b>R-1 ITEM NOMENCLATURE</b> PE 0305233A: <i>RQ-7 Shadow UAV</i>			<b>PROJECT</b> RQ7: <i>RQ-7 SHADOW UAV</i>				
<b>B. Accomplishments/Planned Programs (\$ in Millions, Article Quantities in Each)</b>											
							<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013</b>		
<b>FY 2012 Plans:</b> Continues the funding for System Engineering/Program Management											
<b>FY 2013 Plans:</b> Continues the funding for System Engineering/Program Management											
<b>Title:</b> Program Management Support							<b>Articles:</b>	0.475 0	-	-	
<b>Description:</b> Funding is provided for the following effort											
<b>FY 2011 Accomplishments:</b> Funds Program Management Support											
<b>Title:</b> Other Government Agencies							<b>Articles:</b>	0.450 0	-	-	
<b>Description:</b> Funding is provided for the following effort											
<b>FY 2011 Accomplishments:</b> Funds Other Government Agencies											
<b>Accomplishments/Planned Programs Subtotals</b>							7.555	31.896	31.158		
<b>C. Other Program Funding Summary (\$ in Millions)</b>											
<b>Line Item</b>	<b>FY 2011</b>	<b>FY 2012</b>	<b>FY 2013 Base</b>	<b>FY 2013 OCO</b>	<b>FY 2013 Total</b>	<b>FY 2014</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>	<b>Cost To Complete</b>	<b>Total Cost</b>
• RQ-7 UAV MODS (A00018): <i>RQ-7 UAV MODS (A00018)</i>	548.998	165.139	104.339		104.339		143.584	135.313	137.220	0.000	1,379.383
• TUAV - Initial Spares: <i>TUAV - Initial Spares</i>	2.613									0.000	2.613
• TUAS (MIP Project 114): <i>TUAS (MIP Project 114)</i>	1.619									0.000	1.619
<b>D. Acquisition Strategy</b>											
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 Milestone III Decision 25 Sep 02. The full rate production contract was awarded 27 Dec 02 and all 102 systems were procured by FY2009. Continued development of the selected TUAV system will be											

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Exhibit R-2A, RDT&E Project Justification: PB 2013 Army		DATE: February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0305233A: <i>RQ-7 Shadow UAV</i>	<b>PROJECT</b> RQ7: <i>RQ-7 SHADOW UAV</i>
<p>accomplished through a series of modifications and retrofits such as Tactical Common Data Link (TCDL), Communications Relay, Laser Designator, High reliability engine, Larger fuselage, and reliability upgrades. Development/integration of these improved capabilities will be through individual efforts on a (mostly) sole source cost-plus fixed fee engineering services contract with the Shadow prime contractor. Development of the larger engine will be accomplished through a competitive process.</p>		
<b>E. Performance Metrics</b> 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.		

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2013 Army											DATE: February 2012			
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						
Management Services (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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: Program Management	RO	PM UAS:Redstone Arsenal, AL	0.475	1.485		1.678		-		1.678	Continuing	Continuing	0.000	
Subtotal			0.475	1.485		1.678		-		1.678			0.000	
Product Development (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	
OIF Improvements / Block Upgrades / Capability Improvements	SS/CPFF	AAI Corporation:Hunt Valley, MD	3.105	-		-		-		-	0.000	3.105	0.000	
System Engineering / Reliability Solutions	SS/CPFF	AAI Corporation:Hunt Valley, MD	2.025	-		-		-		-	0.000	2.025	0.000	
Base: Air Vehicle Improvements	SS/CPFF	AAI Corporation, MD:AAI Corporation, MD	-	14.027		10.520		-		10.520	Continuing	Continuing	0.000	
Base: Ground Equipment Improvements	SS/CPFF	AAI Corporation, MD:AAI Corporation, MD	-	3.000		2.768		-		2.768	Continuing	Continuing	0.000	
Base: Payload Improvements	SS/CPFF	Various:Various	-	5.177		6.000		-		6.000	Continuing	Continuing	0.000	
Base: One System Remote Video Terminal (OSRVT)	Various	Various:Various	-	3.914		5.883		-		5.883	Continuing	Continuing	0.000	
Subtotal			5.130	26.118		25.171		-		25.171			0.000	
Support (\$ in Millions)				FY 2012		FY 2013 Base		FY 2013 OCO		FY 2013 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	1.374		1.550		-		1.550	Continuing	Continuing	Continuing	



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PE 0305233A: *RQ-7 Shadow UAV*  
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Exhibit R-4, RDT&E Schedule Profile: PB 2013 Army						DATE: February 2012					
APPROPRIATION/BUDGET ACTIVITY						R-1 ITEM NOMENCLATURE					
2040: Research, Development, Test & Evaluation, Army						PE 0305233A: RQ-7 Shadow UAV					
BA 7: Operational Systems Development						PROJECT					
						RQ7: RQ-7 SHADOW UAV					

	FY 2011				FY 2012				FY 2013				FY 2014				FY 2015				FY 2016				FY 2017			
	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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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2013 Army			<b>DATE:</b> February 2012
<b>APPROPRIATION/BUDGET ACTIVITY</b> 2040: <i>Research, Development, Test &amp; Evaluation, Army</i> BA 7: <i>Operational Systems Development</i>	<b>R-1 ITEM NOMENCLATURE</b> PE 0305233A: <i>RQ-7 Shadow UAV</i>	<b>PROJECT</b> RQ7: <i>RQ-7 SHADOW UAV</i>	

Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Air Vehicle Improvements	1	2012	4	2017
Payload Improvements	1	2012	4	2017
Ground Equipment Improvements	1	2012	4	2017