Exhibit R-2, RDT&E Budget Item Justification: PB 2016 Army											Date: February 2015	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army* / BA 7: *Operational Systems Development*					R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*							
COST ($ in Millions)	**Prior Years**	**FY 2014**	**FY 2015**	**FY 2016 Base**	**FY 2016 OCO**	**FY 2016 Total**	**FY 2017**	**FY 2018**	**FY 2019**	**FY 2020**	**Cost To Complete**	**Total Cost**
Total Program Element	-	33.515	22.870	13.225	-	13.225	12.703	13.445	8.110	8.311	Continuing	Continuing
11A: *Advanced Payload Develop & Spt (MIP)*	-	5.554	5.271	3.589	-	3.589	3.027	3.241	3.279	3.343	Continuing	Continuing
11B: *Tsp Development (MIP)*	-	24.678	12.904	7.138	-	7.138	4.375	4.685	-	-	-	53.780
123: *Joint Technology Center System Integration*	-	3.283	4.695	2.498	-	2.498	5.301	5.519	4.831	4.968	Continuing	Continuing

A. Mission Description and Budget Item Justification

Project 11A: The Advanced Payloads Development project line is a shared funding line between multiple Payload programs. These Payload programs support the Army's transformation by developing Reconnaissance, Surveillance and Target Acquisition (RSTA) and Intelligence, Surveillance and Reconnaissance (ISR) payload systems for Brigade Combat Teams, Divisions, and Corps Unmanned Aircraft Systems (UAS). This is in accordance with Headquarters Department of the Army (HQDA) and Training and Doctrine Command (TRADOC) UAS priorities.

Small Tactical Radar - Lightweight (STARLite) Synthetic Aperture Radar/Ground Moving Target Indicator (SAR/GMTI)is a lightweight, high performance, all weather, multi-functional radar system for the Gray Eagle UAS. The STARLite system provides wide area, near real time Reconnaissance, Surveillance and Target Acquisition (RSTA) capabilities. It operates throughout the UAS flight mission profile in adverse weather and through battlefield obscurants. The SAR mode generates quality images for the battlefield commander for detection, classification and location of stationary commercial wheeled vehicle-size targets. The GMTI mode detects moving ground targets, to include man-sized detection, and provides location information and performs cross-cue with the Electro-Optic/Infrared (EO/IR) sensors. STARLite is increasing its software capabilities based on Initial Operational Test and Evaluation (IOT&E) results which will increase automation and upgrade to a common Graphical User Interface (GUI) to align with the Common Operating Environment (COE) requirement to enable Sensor Processing and Exploitation (SPE). The SPE software enhancements will improve performance, reduce operator workload and enhance operator effectiveness.

Common Sensor Payload (CSP) - Electro Optical / Infra Red / Laser Designator (EO/IR/LD) provides High Definition (HD) Full Motion Video (FMV) in both the Electro Optical and Mid Wave IR spectrums with day/night capability to collect and display continuous imagery with the ability to designate targets of interest for attack by laser guided precision weapons. It is the EO/IR/LD sensor for Gray Eagle UAS which supports force applications, battlespace awareness, force protection, and net-centric operations across the battlefield to provide wide area, near real time RSTA capabilities. Additional initiatives will continue to focus on the transition of technologies directly supporting emerging requirements and the Army's Current and Future Force. CSP is being procured for the Gray Eagle UAS program and has potential application to other platforms.

Project 11B: The Tactical Signals Intelligence (SIGINT) Payload (TSP) is a SIGINT sensor for the Gray Eagle that detects radio frequency (RF) emitters. The TSP system will provide a SIGINT capability to the tactical commander. The TSP system will be a modular, scalable payload using an architecture that is software reconfigurable to allow for growth and flexibility as technology, and as the adversaries use of technology, changes. This flexible architecture allows for third party

software applications to be integrated into the TSP system. The TSP system processing, control and data dissemination is integrated into the Distributed Common Ground System - Army (DCGS-A) via the Operational Ground Station. It supports Manned/Unmanned (MUM) teaming with Brigade Combat Team ground SIGINT Terminal Guidance (STG) teams and manned airborne assets. The TSP system improves situational awareness and shortens the targeting cycle by detecting and identifying emitters associated with high value targets (HVTs). The TSP system is capable of processing conventional signals, standard military signals, and modern signals of interest. This includes detection, recognition, identification, direction finding, and high confidence geo-location.

Project 123: The Unmanned Aircraft System (UAS) Joint Technology Center/Systems Integration Laboratory (JTC/SIL) is a Joint facility that develops, integrates, and supports the enhancement of its Multiple Unified Simulation Environment (MUSE) capability for Army systems and operational concepts. The JTC/SIL conducts prototype hardware and software development, builds the UAS Institutional Mission Simulator (IMS) trainers for the Shadow, Hunter, and Gray Eagle programs, and provides modeling and simulation support. The MUSE is a real-time, operator in-the-loop simulation that may be integrated with larger simulations in support of Army and Joint training and exercises. The MUSE is also employed as a Mission Rehearsal Tool for ongoing combat operations. This project funds the management of the JTC/SIL and MUSE enhancements. This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

B. Program Change Summary ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Previous President's Budget	33.515	22.870	16.690	-	16.690
Current President's Budget	33.515	22.870	13.225	-	13.225
Total Adjustments	-	-	-3.465	-	-3.465
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			
• Other Adjustments 1	-	-	-3.465	-	-3.465

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*	Project (Number/Name) 11A / *Advanced Payload Develop & Spt (MIP)*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
11A: *Advanced Payload Develop & Spt (MIP)*	-	5.554	5.271	3.589	-	3.589	3.027	3.241	3.279	3.343	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

Not applicable for this item.

A. Mission Description and Budget Item Justification

The Advanced Payloads Development project is a shared funding line between multiple Payload programs. These Payload programs support the Army's transformation by developing Reconnaissance, Surveillance and Target Acquisition (RSTA) and Intelligence, Surveillance and Reconnaissance (ISR) payload systems for Brigade Combat Teams, Divisions, and Corps Unmanned Aircraft Systems (UAS). This is in accordance with Headquarters Department of the Army (HQDA) and Training and Doctrine Command (TRADOC) UAS priorities. Additionally, this PE supports Future Advanced Payloads for Army UAS systems.

Small Tactical Radar - Lightweight (STARLite) Synthetic Aperture Radar/Ground Moving Target Indicator (SAR/GMTI) is a lightweight, high performance, all weather, multi-functional radar system for the Gray Eagle UAS. The STARLite system provides wide area, near real time Reconnaissance, Surveillance and Target Acquisition (RSTA) capabilities. It operates throughout the UAS flight mission profile in adverse weather and through battlefield obscurants. The SAR mode generates quality images for the battlefield commander for detection, classification and location of stationary commercial wheeled vehicle-size targets. The GMTI mode detects moving ground targets, to include man-sized detection, and provides location information and performs cross-cue with the Electro-Optic/Infrared (EO/IR) sensors. STARLite is increasing its software capabilities based on Initial Operational Test and Evaluation (IOT&E) results which will increase automation and upgrade to a common Graphical User Interface (GUI) to align with the Common Operating Environment (COE) requirement to enable Sensor Processing and Exploitation (SPE). The SPE software enhancements will improve performance, reduce operator workload and enhance operator effectiveness.

Common Sensor Payload (CSP) - Electro Optical / Infra Red / Laser Designator (EO/IR/LD) provides High Definition (HD) Full Motion Video (FMV) in both the Electro Optical and Mid Wave IR spectrums with day/night capability to collect and display continuous imagery with the ability to designate targets of interest for attack by laser guided precision weapons. It is the EO/IR/LD sensor for Gray Eagle UAS which supports force applications, battlespace awareness, force protection, and net-centric operations across the battlefield to provide wide area, near real time RSTA capabilities. Additional initiatives will continue to focus on the transition of technologies directly supporting emerging requirements and the Army's Current and Future Force. CSP is being procured for the Gray Eagle UAS program and has potential application to other platforms.

FY 2016 base development dollars in the amount of $3.589 million is for STARLite SPE software developmental test and integration onto Gray Eagle and enhanced CSP usability for the Warfighter.

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11A / *Advanced Payload Develop & Spt (MIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Software Development to improve CSP and STARLite Sensor Processing and Exploitation (SPE) ***Description:*** Development, Testing and Integration ***FY 2014 Accomplishments:*** Commence Software Development for STARLite Sensor Processing and Exploitation (SPE) ***FY 2015 Plans:*** Continued Software Development for STARLite SPE ***FY 2016 Base Plans:*** Complete Test and Integration of SPE Software Improvements onto Gray Eagle	5.554	5.271	1.795	-	1.795
Title: CSP Increased Usability ***Description:*** S/W development to increase the usability of the Common Sensor Payload (CSP). ***FY 2016 Base Plans:*** S/W enhancements for increased usability	-	-	1.794	-	1.794
Accomplishments/Planned Programs Subtotals	5.554	5.271	3.589	-	3.589

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• A00020: *MQ-1 PAYLOAD - UAS - A00020*	97.781	-	-	-	-	-	-	-	-	-	97.781
• A01003: *SAR/MTI (MIP) - A01003*	-	3.686	23.490	-	23.490	1.336	-	-	-	-	28.512
• A01005: *CSP FMV (MIP) - A01005*	-	8.409	26.502	8.700	35.202	4.771	4.444	-	-	-	52.826

Remarks

MQ-1 PAYLOAD - UAS - A00020 was a shared Aircraft Procurement, Army (APA) funding line for CSP, STARLite and Tactical Signals Intelligence (SIGINT) Payload (TSP). STARLite (A01003), and CSP (A01005) are broken into individual lines within MQ-1Payload (MIP) (A01001).
SAR/MTI (MIP) - A01003: Procurement funding line for STARLite
CSP FMV (MIP) - A01005: Procurement funding line for CSP

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11A / *Advanced Payload Develop & Spt (MIP)*

D. Acquisition Strategy

STARLite SAR/GMTI is a threshold requirement for the Gray Eagle UAS. The acquisition strategy for STARLite program was based on a full and open competition for the Army. A five year competitive production contract was awarded in April 2008 to Northrop Grumman for the build, integration, test and delivery of STARLite systems with preplanned improvements for Extended Range and Increased Reliability. Full Rate Production (FRP) was successfully achieved in June 2013. A follow-on production contract was awarded in April 2014 for 3 years to procure all remaining STARLite Payloads required for the Gray Eagle platform. A STARLite system support contract was awarded in September 2013 to provide system sustainment. STARLite is increasing its software capabilities based on Initial Operational Test and Evaluation (IOT&E) results which will increase automation and upgrade to a common Graphical User Interface (GUI) to align with the Common Operating Environment (COE) requirement to enable Sensor Processing and Exploitation (SPE). The SPE software enhancements will improve performance, reduce operator workload and enhance operator effectiveness. A competitive RDTE contract was awarded to Northrop Grumman October 2013 to perform trade studies and begin the development of the software improvements.

Common Sensor Payload (CSP) EO/IR/LD is a KPP (Key Performance Parameter) requirement for the Gray Eagle UAS. The acquisition strategy for the CSP program was based on a full and open competition for the Army. It was briefed and approved at the Army Systems Acquisition Review Council (ASARC) in Dec 2006. A competitive contract was awarded in Nov 2007 to Raytheon for the build, integration, test and delivery of the CSP. FRP was completed June 2013. CSP program was approved by HQDA for fifty-five (55) High Definition (HD) payloads.

The acquisition strategy for FY2016 is to complete STARLite SPE software developmental test and integration onto Gray Eagle; and Non-Recurring Engineering (NRE) support to NVESD to continue enhancing the CSP usability for the Warfighter.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*	Project (Number/Name) 11A / *Advanced Payload Develop & Spt (MIP)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSP Program Management	Various	PM ARES : Aberdeen, MD	11.255	-		-		-		-		-	-	11.255	-
CSP/STARLite Program Management	Various	PM RUS : Aberdeen, MD	8.524	-		-		-		-		-	-	8.524	-
CSP Program Management	MIPR	PM EOIR : Fort Belvoir, VA	0.000	-		-		0.090	Dec 2015	-		0.090	Continuing	Continuing	Continuing
STARLite Program Mgmt Personnel	Various	PM SAI : Aberdeen, MD	0.000	0.500	Dec 2013	0.500	Apr 2015	-		-		-	Continuing	Continuing	Continuing
		Subtotal	19.779	0.500		0.500		0.090		-		0.090	-	-	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSP Development	C/CPFF	Raytheon : McKinney, TX	84.022	-		-		-		-		-	-	84.022	-
STARLite Development	C/CPFF	Northrop Grumman : Linthicum, MD	6.786	-		-		-		-		-	-	6.786	-
STARLite Improvements to Sensor Processing and Exploitation	MIPR	Northrop Grumman : Linthicum, MD	0.000	5.054	Mar 2014	4.771	Feb 2015	-		-		-	Continuing	Continuing	Continuing
STARLite SPE Software Integration onto Gray Eagle	MIPR	PM MAE : Redstone AL	0.000	-		-		1.295	Jun 2016	-		1.295	Continuing	Continuing	Continuing
CSP Enhanced Usability	MIPR	Night Vision Labs : Fort Belvoir, VA	0.000	-		-		1.704	Mar 2016	-		1.704	Continuing	Continuing	Continuing
		Subtotal	90.808	5.054		4.771		2.999		-		2.999	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*	Project (Number/Name) 11A / *Advanced Payload Develop & Spt (MIP)*	

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Payload Integration (NRE) on Gray Eagle	C/CPFF	PM MAE (General Atomics) : San Diego, CA	26.035	-		-		-		-		-	-	26.035	-
		Subtotal	26.035	-		-		-		-		-	-	26.035	-

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSP Testing	MIPR	Various : Various	17.086	-		-		-		-		-	-	17.086	-
STARLite Testing	MIPR	Various : Various	13.441	-		-		-		-		-	-	13.441	-
STARLite SPE Software Development Testing	MIPR	YPG : Yuma Proving Ground	0.000	-		-		0.500	Apr 2016	-		0.500	Continuing	Continuing	Continuing
		Subtotal	30.527	-		-		0.500		-		0.500	-	-	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	167.149	5.554		5.271		3.589		-		3.589	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11A / *Advanced Payload Develop & Spt (MIP)*

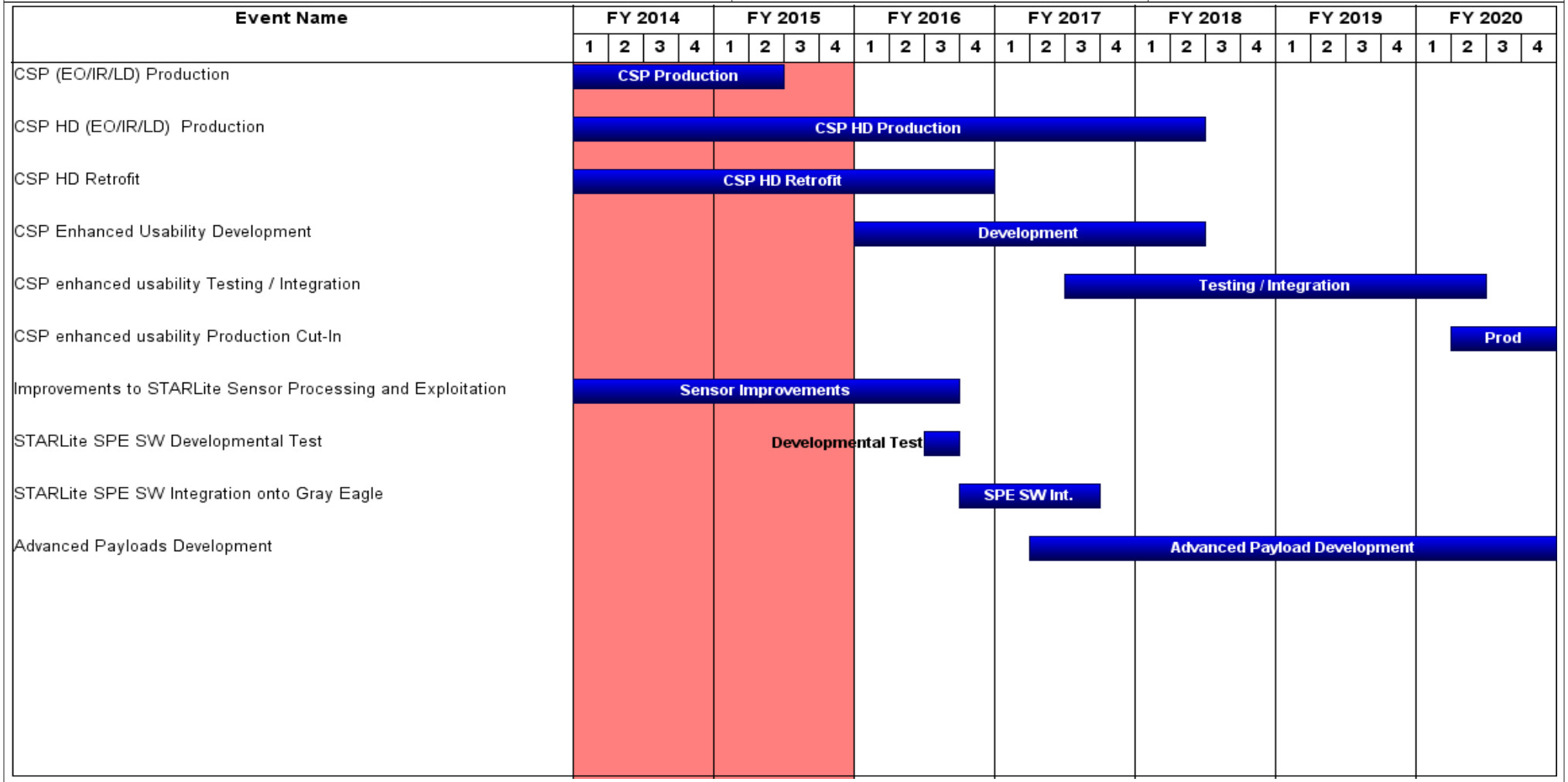

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11A / *Advanced Payload Develop & Spt (MIP)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
CSP (EO/IR/LD) Production	1	2008	2	2015
CSP HD (EO/IR/LD) Production	2	2013	2	2018
CSP HD Retrofit	4	2013	4	2016
CSP Enhanced Usability Development	1	2016	2	2018
CSP enhanced usability Testing / Integration	3	2017	2	2020
CSP enhanced usability Production Cut-In	2	2020	3	2024
Improvements to STARLite Sensor Processing and Exploitation	1	2014	3	2016
STARLite SPE SW Developmental Test	3	2016	3	2016
STARLite SPE SW Integration onto Gray Eagle	4	2016	3	2017
Advanced Payloads Development	2	2017	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*	Project (Number/Name) 11B / *Tsp Development (MIP)*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
11B: *Tsp Development (MIP)*	-	24.678	12.904	7.138	-	7.138	4.375	4.685	-	-	-	53.780
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Tactical Signals Intelligence (SIGINT) Payload (TSP) is a SIGINT sensor for the Gray Eagle that detects radio frequency (RF) emitters. The TSP system will provide a SIGINT capability to the tactical commander. The TSP system will be a modular, scalable payload using an architecture that is software reconfigurable to allow for growth and flexibility as technology, and as the adversaries use of technology, changes. This flexible architecture allows for third party software applications to be integrated into the TSP system. The TSP system processing, control and data dissemination is integrated into the Distributed Common Ground System - Army (DCGS-A) via the Operational Ground Station. It supports Manned/Unmanned (MUM) teaming with Brigade Combat Team ground SIGINT Terminal Guidance (STG) teams and manned airborne assets. The TSP system improves situational awareness and shortens the targeting cycle by detecting and identifying emitters associated with high value targets (HVTs). The TSP system is capable of processing conventional signals, standard military signals, and modern signals of interest. This includes detection, recognition, identification, direction finding, and high confidence geo-location.

FY2016 Base funding in the amount of $7.138 Million completes engineering corrective actions, regression testing, Government Production Qualification Testing, Logistics Demonstration and Initial Operational Test and Evaluation (IOT&E).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: TSP Engineering Manufacturing Development (EMD) and Low Rate Initial Production Research and Development (R&D) Support	24.678	12.904	7.138	-	7.138
Description: EMD Development and Equipment; LRIP R&D: Logistics, Training, corrective action engineering support and test activities.					
FY 2014 Accomplishments: Complete TSP Block 1, Increment 1 Engineering Manufacturing Development (EMD) Phase and supports corrective actions, and regression testing. Also, includes completion of Operational Ground Station and MQ-1C Integration and Test.					
FY 2015 Plans: Continues TSP Block 1. Includes Contractor/ Government Developmental Testing, MQ-1C air worthiness release, System Support Package development, Key Personnel Training, Logistics Demonstration, and prepares for the IOT&E. Begins preparation for TSP Block 2 activities.					
FY 2016 Base Plans:					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11B / *Tsp Development (MIP)*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Completes TSP Block 1. Includes the completion of Government Production Qualification Testing, prepares and conducts IOT&E and supports the Full Rate Production Decision. Continue initial planning for future capability upgrades.					
Accomplishments/Planned Programs Subtotals	24.678	12.904	7.138	-	7.138

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• A00020: *A00020 - MQ-1 Payload (MIP)*	97.781	-	-	-	-	-	-	-	-	-	97.781
• A01004: *A01004 - SIGINT (MIP)*	-	13.218	47.551	-	47.551	39.232	15.844	3.421	3.487	-	122.753
• PE0605766A, Project DX9: *Theater Netcentric Geolocation (TNG) - PE0605766A, Project DX9*	1.400	1.520	-	-	-	-	-	0.171	0.795	-	3.886

Remarks

MQ-1 PAYLOAD - UAS - A00020: Shared Aircraft Procurement, Army (APA) procurement funding line for CSP, STARLite, TSP, and Advanced Payloads.

SIGINT (MIP) - A01004: Procurement funding line for TSP Payloads. Under Parent Line MQ-1 Payloads (MIP) - A01001.

TSP Theater Net-Centric Geolocation (TNG) - PE0605766A, Project DX9: TNG funding included in Tactical Exploitation of National Capabilities (TENCAP) funding line.

D. Acquisition Strategy

TSP is a threshold requirement for the MQ-1C Gray Eagle UAS. The TSP program entered the Engineering and Manufacturing Development (EMD) phase with a Milestone B decision in September 2011. The TSP Program EMD contract award was based on full-and-open competition and was focused on integration and test onto the Gray Eagle platform and integration and test of TSP software into the Operational Ground Station. The TSP EMD program is a derivative of systems that were fielded as a Quick Reaction Capability on the MQ-1C UAS and a variety of other manned platforms. The demonstrated scalability of these fielded materiel solutions allows the TSP EMD program to leverage effort that directly supports the TSP EMD program.

The TSP program Acquisition Strategy was modified to accommodate the FY 2012 Appropriation that reduced the 11B Funding Line by $14.100 Million. The modified TSP program followed an incremental Acquisition Strategy with a TSP Block 0, Block 1 and Block 2. Schedule adjusted in accordance with the TSP Acquisition Decision Memorandum dated 22 Mar 2012. Block 0 was to be the QRC system to provide an early operational capability for the MQ-1C. The TSP Block 1 is the current Program

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11B / *Tsp Development (MIP)*

of Record that entered EMD in FY 2011 to meet all the threshold requirements in the approved Capability Production Document (CPD). Block 2 was to address future objective needs.

Based on available funding, the TSP acquisition strategy has been revised to merge Block 0 and current Block 1 capabilities into a single Block of capability. Current capabilities that have not been integrated into the Block 1 are deferred and included in the Block 2 suite of requirements.

Block 1 is the initial production capability, with Block 2 being a continuation of the TSP program of record and will integrate the remaining CPD threshold requirements.

Block 1 Low Rate Initial Production (LRIP) Milestone C was approved on 26 Mar 2014. TSP LRIP contract award was 12 Jun 2014.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*	Project (Number/Name) 11B / *Tsp Development (MIP)*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management-Gov	RO	PM SAI : APG	7.059	0.641	Dec 2013	0.406	Dec 2014	0.450	Dec 2015	-		0.450	-	8.556	-
Program Management Support	MIPR	Various : APG	3.855	0.720	Mar 2014	-		-		-		-	-	4.575	Continuing
FFRDC Support	FFRDC	MITRE : APG	1.201	0.647	Mar 2014	-		0.150	Dec 2015	-		0.150	-	1.998	-
		Subtotal	12.115	2.008		0.406		0.600		-		0.600	-	15.129	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSP EMD	C/CPIF	BAE Systems, : Nashua, NH	20.206	-		-		-		-		-	-	20.206	-
TSP Engineering Changes	SS/CPFF	BAE Systems : Nashua, NH	0.000	7.495	Apr 2014	0.800	Jul 2015	-		-		-	-	8.295	-
MQ-1C and OGS Integration	SS/CPFF	Various : Various	0.000	4.630	Feb 2014	-		-		-		-	-	4.630	-
TSP System Support (Logistics, Training, & Test)	SS/CPFF	Various : Various	0.000	6.870	Apr 2014	3.143	Jul 2015	1.830	Dec 2015	-		1.830	-	11.843	-
		Subtotal	20.206	18.995		3.943		1.830		-		1.830	-	44.974	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	MIPR	Various : Various	3.066	0.975	Mar 2014	0.579	Mar 2014	1.538	Dec 2015	-		1.538	-	6.158	-
		Subtotal	3.066	0.975		0.579		1.538		-		1.538	-	6.158	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*	Project (Number/Name) 11B / *Tsp Development (MIP)*	

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Activities	MIPR	ATEC/APG : Various	4.911	0.300	Mar 2014	2.304	Oct 2014	-		-		-	-	7.515	-
Operational Testing	MIPR	ATEC : Various	0.500	-		3.372	Oct 2014	-		-		-	-	3.872	-
Test Range & Aircraft Support	MIPR	CECOM Flight Activity : Lakehurst, NJ	0.648	2.400	Apr 2014	2.300	Mar 2015	-		-		-	-	5.348	-
TSP Initial Operational Test and Evaluation	MIPR	ATEC : Various	0.000	-		-		3.170	Nov 2015	-		3.170	-	3.170	-
		Subtotal	6.059	2.700		7.976		3.170		-		3.170	-	19.905	-

	Prior Years	FY 2014		FY 2015		FY 2016 Base		FY 2016 OCO		FY 2016 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	41.446	24.678		12.904		7.138		-		7.138	-	86.166	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11B / *Tsp Development (MIP)*

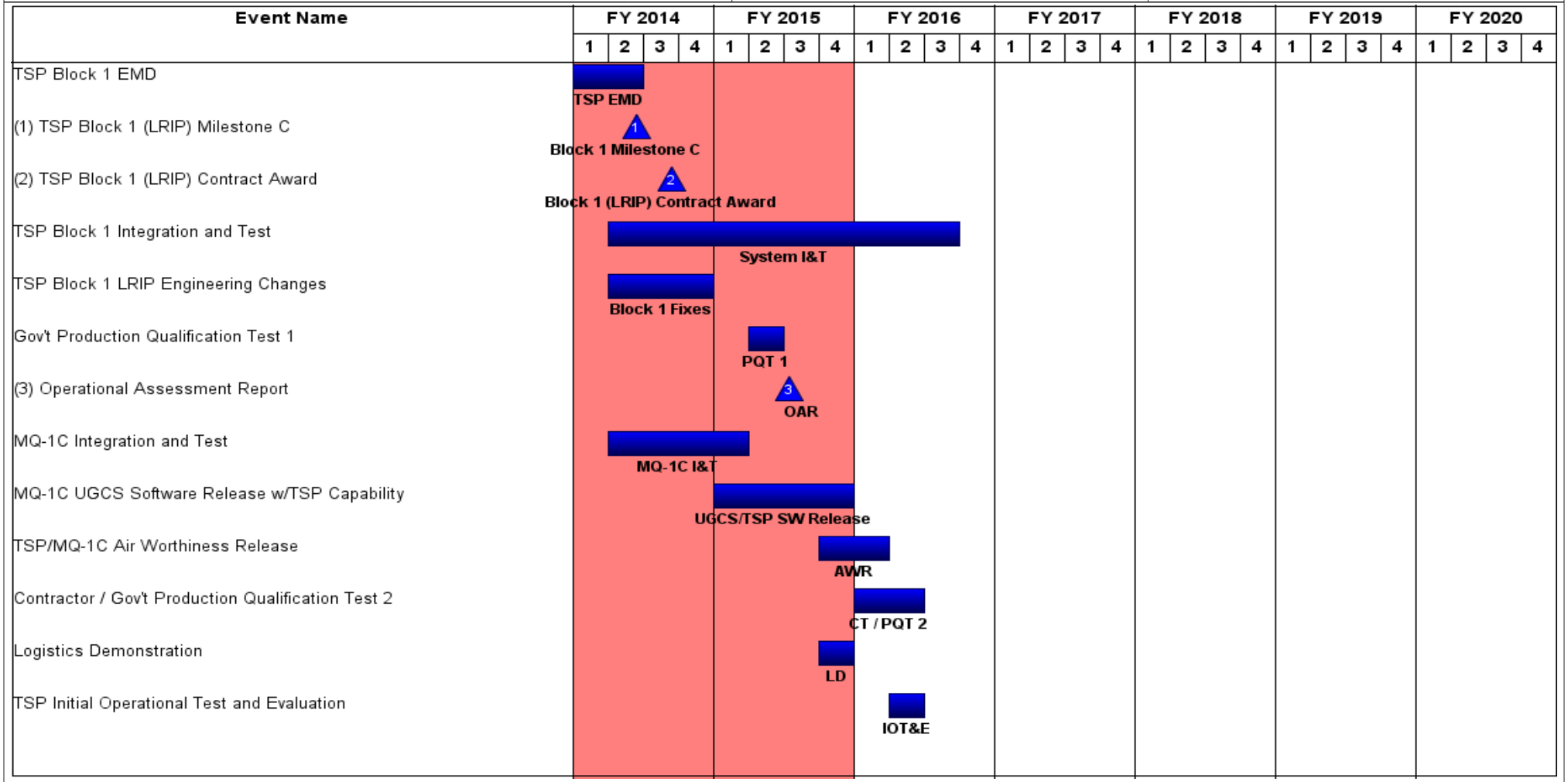

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11B / *Tsp Development (MIP)*

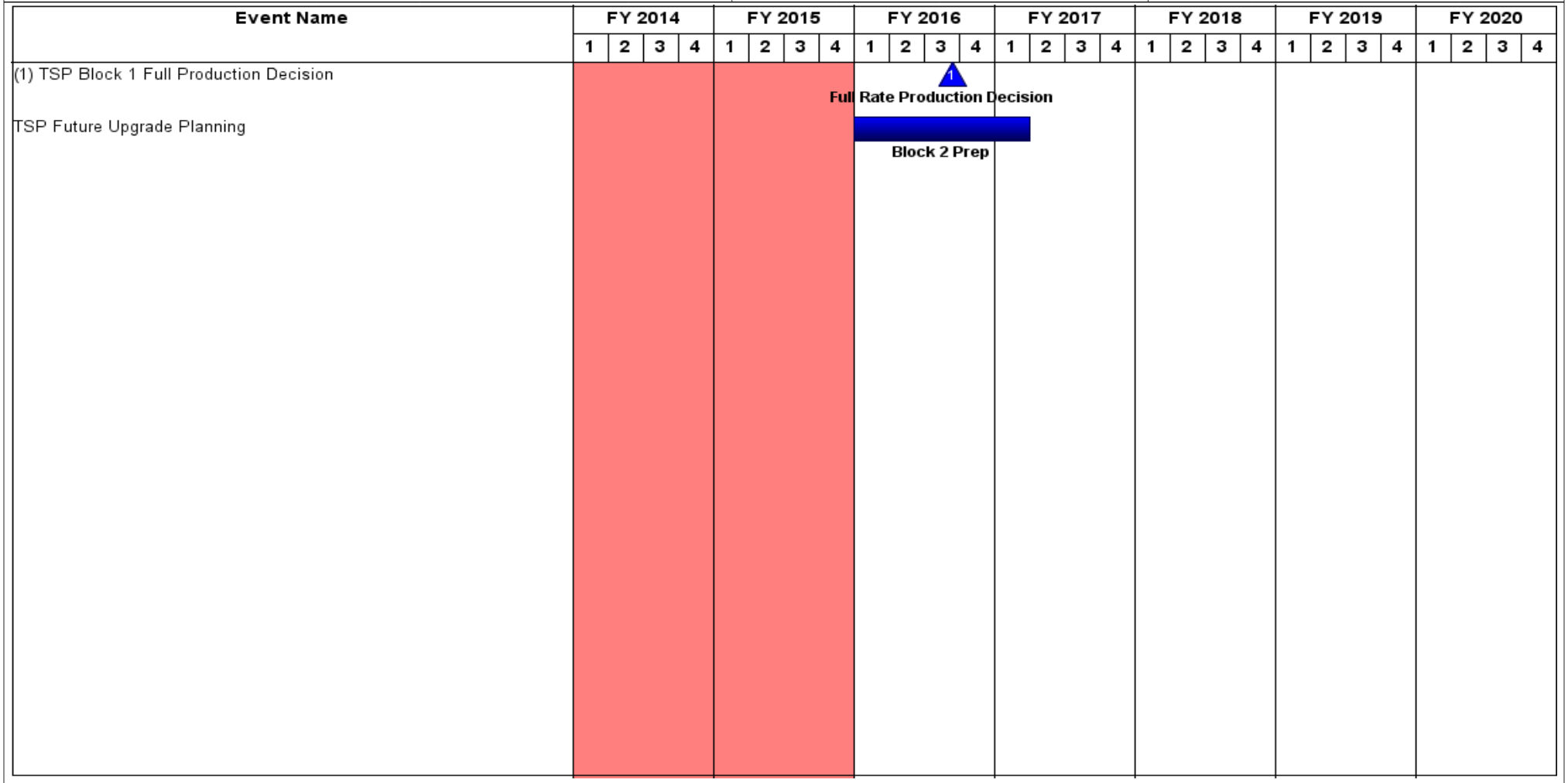

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11B / *Tsp Development (MIP)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
TSP Block 1 EMD	4	2011	2	2014
TSP Block 1 (LRIP) Milestone C	2	2014	2	2014
TSP Block 1 (LRIP) Contract Award	3	2014	3	2014
TSP Block 1 Integration and Test	2	2014	3	2016
TSP Block 1 LRIP Engineering Changes	2	2014	4	2014
Gov't Production Qualification Test 1	2	2015	2	2015
Operational Assessment Report	3	2015	3	2015
MQ-1C Integration and Test	2	2014	1	2015
MQ-1C UGCS Software Release w/TSP Capability	1	2015	4	2015
TSP/MQ-1C Air Worthiness Release	4	2015	1	2016
Contractor / Gov't Production Qualification Test 2	1	2016	2	2016
Logistics Demonstration	4	2015	4	2015
TSP Initial Operational Test and Evaluation	2	2016	2	2016
TSP Block 1 Full Production Decision	3	2016	3	2016
TSP Future Upgrade Planning	1	2016	1	2017

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*	Project (Number/Name) 123 / *Joint Technology Center System Integration*	

COST ($ in Millions)	Prior Years	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
123: *Joint Technology Center System Integration*	-	3.283	4.695	2.498	-	2.498	5.301	5.519	4.831	4.968	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Unmanned Aircraft System (UAS) Joint Technology Center/System Integration Laboratory (JTC/SIL) is a Joint facility that develops, integrates, and supports the enhancement of its Multiple Unified Simulation Environment (MUSE) capability for Army systems and operational concepts. The JTC/SIL conducts prototype hardware and software development, builds the UAS Institutional Mission Simulator (IMS) trainers for the Shadow, Hunter, and Gray Eagle programs, and provides modeling and simulation support. The MUSE is a real-time, operator in-the-loop simulation that may be integrated with larger simulations in support of Army and Joint training exercises. The MUSE is also employed as a Mission Rehearsal Tool for ongoing combat operations. This project funds the management of the JTC/SIL and MUSE enhancements.

This system supports the Legacy to Objective transition path of the Transformation Campaign Plan (TCP).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
Title: Product Development	1.524	2.313	2.298	-	2.298
Description: Funding is provided for the following efforts. ***FY 2014 Accomplishments:*** Move to smart phone or more portable computing capabilities. Evaluate the adaptable environment that gives the user more flexibility by choosing which components to use for a more customized environment. Incorporate new sensor technologies. Incorporate new aircraft and avionics. Design, develop, implement, and release Build 9.04 ***FY 2015 Plans:*** Continue Development of application based software for portable devices. Enhance mission planning software to facilitate ease of use and currency with UAS mission planning application capabilities. Develop and enhance Service Oriented Architecture to support Cloud computing for US military exercises. Develop new sensors simulation capabilities to reflect Service UAS capabilities. ***FY 2016 Base Plans:*** Redesign ViPRS by implementing a Service Oriented Architecture (SOA) to facilitate external users developing generic solutions without JSIL assistance and to optimize the software baseline to keep up with training					

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 123 / *Joint Technology Center System Integration*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total
audience requirements, thereby reducing the costs of travel and training. Redesign MUSE/AFSERS U2/ GlobalHawk, Tactical Exploitation of National Capabilities (TENCAP), to meet the growing demands of the war fighter training audience and to optimize User Interface for ease of use, which will reduce training costs and the need for JSIL personnel to attend every event. Design and implement a Heads Up Display (HUD) capability for the UAV platforms that MUSE/AFSERS simulates. This will reduce costs since HUD modifications will be able to be modified without having to implement code changes. Continued examination of all GUIs to ensure maximum usability for the war fighter.					
Title: Support OSD Joint UAS Interoperability Requirements and Activities ***Description:*** Funding is provided for the following efforts. ***FY 2014 Accomplishments:*** Continue development of UCS Architecture environment and compliance tools. Continue to develop and publish multiple new USIPs based on OSD prioritization. Continue to provide technical and administrative support to I IPT and associated WGs. ***FY 2015 Plans:*** Continue development of UCS Architecture environment and compliance tools. Continue to develop and publish multiple new USIPs based on OSD prioritization. Continue to provide technical and administrative support to I IPT and associated WGs.	1.465	2.000	-	-	-
Title: Management Services ***Description:*** Funding is provided for the following efforts. ***FY 2014 Accomplishments:*** Continue coordination and oversight of MUSE product development and OSD Interoperability Requirements and tool development. ***FY 2015 Plans:*** Continue coordination and oversight of MUSE product development. ***FY 2016 Base Plans:*** Continue coordination and oversight of MUSE product development.	0.294	0.382	0.200	-	0.200
Accomplishments/Planned Programs Subtotals	3.283	4.695	2.498	-	2.498

Exhibit R-2A, RDT&E Project Justification: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 123 / *Joint Technology Center System Integration*	

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2014	FY 2015	FY 2016 Base	FY 2016 OCO	FY 2016 Total	FY 2017	FY 2018	FY 2019	FY 2020	Cost To Complete	Total Cost
• PE 0603261N Navy: *PE 0603261N Navy*	2.000	2.000	-	-	-	-	-	-	-	Continuing	Continuing
• PE 0305206F Air Force: *PE 0305206F Air Force*	2.472	3.934	3.998	-	3.998	3.411	3.478	3.543	3.607	Continuing	Continuing

Remarks

The JTC/SIL and the MUSE receive funding from the Air Force and Navy through their POM processes. This effort is a continuing effort in support of Service UAS programs.

D. Acquisition Strategy

Continued MUSE development will be accomplished through a combination of Government in-house functional directorate support using a variety of existing contract vehicles.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2016 Army			Date: February 2015
Appropriation/Budget Activity 2040 / 7	R-1 Program Element (Number/Name) PE 0305204A / *Tactical Unmanned Aerial Vehicles*	Project (Number/Name) 123 / *Joint Technology Center System Integration*	

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	AMC, AMCOM, AMRDEC, SED : Redstone Arsenal, AL	1.812	0.294	Dec 2013	0.382	Dec 2014	0.200	Dec 2015	-		0.200	Continuing	Continuing	Continuing
		Subtotal	1.812	0.294		0.382		0.200		-		0.200	-	-	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MUSE Development	MIPR	AMC, AMCOM, AMRDEC, SED : Redstone Arsenal, AL	7.313	1.524	Mar 2014	2.313	Dec 2014	2.298	Dec 2015	-		2.298	Continuing	Continuing	Continuing
		Subtotal	7.313	1.524		2.313		2.298		-		2.298	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Interoperability Support	MIPR	AMC, RDECOM, AMRDEC : Redstone Arsenal, AL	5.995	1.465	Feb 2014	2.000	Dec 2014	-		-		-	Continuing	Continuing	-
		Subtotal	5.995	1.465		2.000		-		-		-	-	-	-

	Prior Years	FY 2014 Cost	FY 2014 Award Date	FY 2015 Cost	FY 2015 Award Date	FY 2016 Base Cost	FY 2016 Base Award Date	FY 2016 OCO Cost	FY 2016 OCO Award Date	FY 2016 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	15.120	3.283		4.695		2.498		-		2.498	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 123 / *Joint Technology Center System Integration*

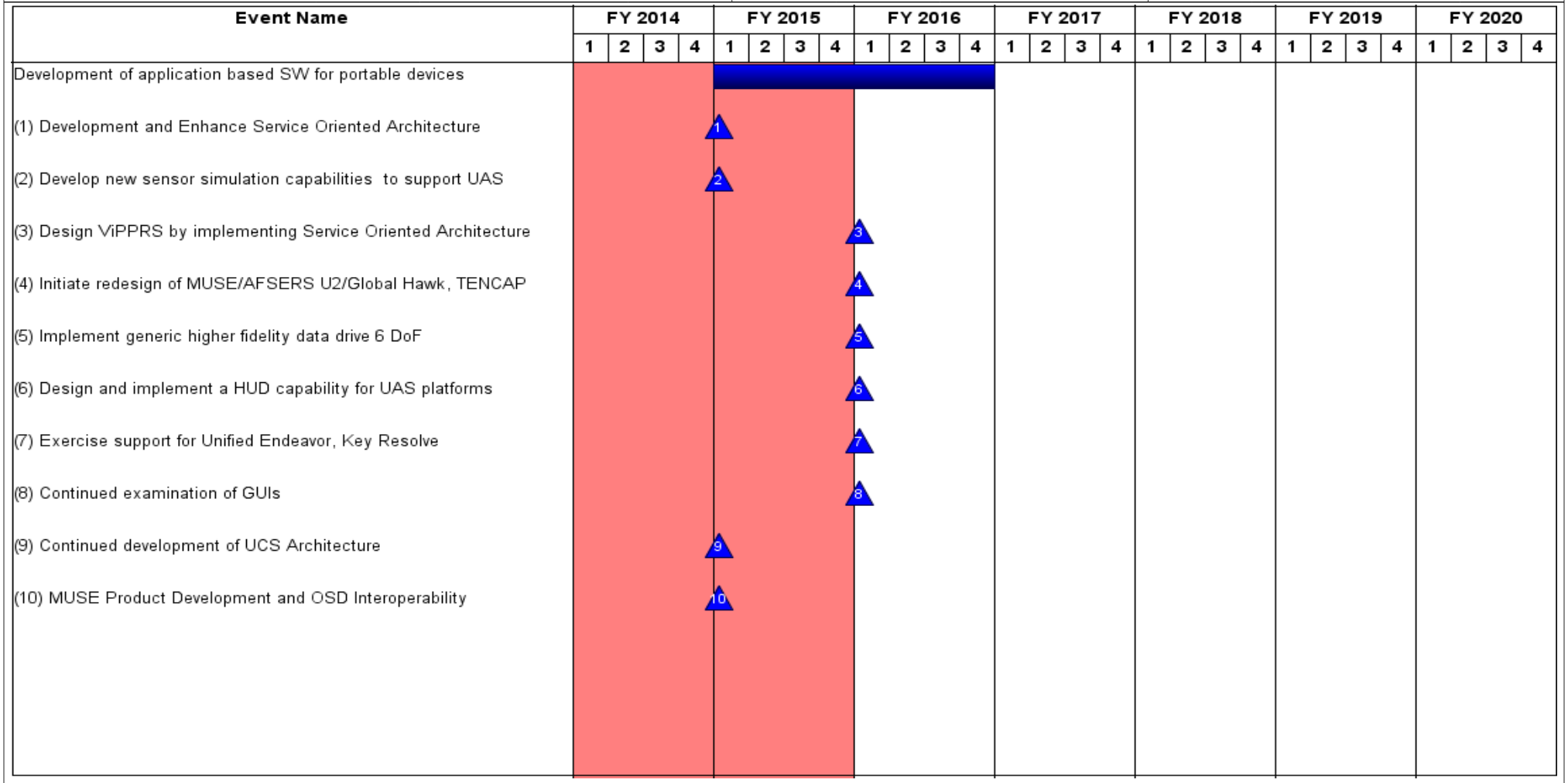

Exhibit R-4A, RDT&E Schedule Details: PB 2016 Army		Date: February 2015
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 123 / *Joint Technology Center System Integration*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Development of application based SW for portable devices	1	2015	4	2016
Development and Enhance Service Oriented Architecture	1	2015	4	2016
Develop new sensor simulation capabilities to support UAS	1	2015	4	2016
Design ViPPRS by implementing Service Oriented Architecture	1	2016	4	2017
Initiate redesign of MUSE/AFSERS U2/Global Hawk, TENCAP	1	2016	4	2017
Implement generic higher fidelity data drive 6 DoF	1	2016	4	2017
Design and implement a HUD capability for UAS platforms	1	2016	4	2017
Exercise support for Unified Endeavor, Key Resolve	1	2016	4	2017
Continued examination of GUIs	1	2016	4	2017
Continued development of UCS Architecture	1	2015	4	2016
MUSE Product Development and OSD Interoperability	1	2015	4	2017