Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army											Date: February 2016	
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 2015**	**FY 2016**	**FY 2017 Base**	**FY 2017 OCO**	**FY 2017 Total**	**FY 2018**	**FY 2019**	**FY 2020**	**FY 2021**	**Cost To Complete**	**Total Cost**
Total Program Element	-	20.290	13.225	8.218	-	8.218	14.303	7.714	8.003	8.214	Continuing	Continuing
11A: *Advanced Payload Develop & Spt (MIP)*	-	5.271	3.589	2.830	-	2.830	3.050	3.099	3.171	3.235	Continuing	Continuing
11B: *Tsp Development (MIP)*	-	10.324	7.138	1.446	-	1.446	6.685	0.000	0.000	0.000	0.000	25.593
123: *Joint Technology Center System Integration*	-	4.695	2.498	3.942	-	3.942	4.568	4.615	4.832	4.979	Continuing	Continuing

Note

The Fiscal Year (FY) 2016 funding request was reduced by $2.0 million to account for the availability of prior year execution balances.

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. Additionally, this Program Element (PE) supports Future Advanced Payloads for Army UAS systems.

Small Tactical Radar - Lightweight (STARLite) Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI)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 Synthetic Aperture Radar (SAR) mode generates quality images for the battlefield commander for detection, classification and location of stationary commercial wheeled vehicle-size targets. The MTI 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.

Exhibit R-2, RDT&E Budget Item Justification: PB 2017 Army	Date: February 2016
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 7: *Operational Systems Development*	**R-1 Program Element (Number/Name)** PE 0305204A *I Tactical Unmanned Aerial Vehicles*

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 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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	22.870	13.225	12.703	-	12.703
Current President's Budget	20.290	13.225	8.218	-	8.218
Total Adjustments	-2.580	0.000	-4.485	-	-4.485
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-2.580	-			
• SBIR/STTR Transfer	-	-			
• Adjustments to Budget Years	-	-	-4.485	-	-4.485

Change Summary Explanation

The FY2017 funding request was reduced by $4,485,000 to account for availability of prior year execution balances.

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
11A: *Advanced Payload Develop & Spt (MIP)*	-	5.271	3.589	2.830	-	2.830	3.050	3.099	3.171	3.235	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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 Program Element (PE) supports Future Advanced Payloads for Army UAS systems.

Small Tactical Radar - Lightweight (STARLite) ACAT III - Synthetic Aperture Radar/Moving Target Indicator (SAR/MTI) 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 RSTA capabilities. It operates throughout the UAS flight mission profile in adverse weather and through battlefield obscurants. The Synthetic Aperture Radar (SAR) mode generates quality images for the battlefield commander for detection, classification and location of stationary commercial wheeled vehicle-size targets. The MTI 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)- ACAT III - Electro Optical / Infra Red / Laser Designator (EO/IR/LD) provides Standard Definition (SD) or High Definition (HD)as an upgrade. 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 intelligence gathering, 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. Additional updates to enhance the CSP's usability for the Warfighter is to reduce cognitive burden by providing improved situational awareness, while providing multiple fields of view in a simplified manner through Hardware (H/W) and Software (S/W) improvements.

Fiscal Year (FY) 2017 base development dollars in the amount of $2.830 million is for STARLite SPE Software developmental test and integration onto Gray Eagle and enhanced CSP to reduce cognitive burden on the Warfighter.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: STARLite SPE	5.271	1.795	1.415

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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 2015	FY 2016	FY 2017
Description: Software Development to improve STARLite SPE Development, Testing and Integration. ***FY 2015 Accomplishments:*** Continued Software Development for STARLite SPE. ***FY 2016 Plans:*** Continued Software Development for STARLite SPE. Begin SPE integration onto Gray Eagle. ***FY 2017 Plans:*** Complete test and integration of SPE Software improvements onto Gray Eagle			
Title: CSP Increased Usability ***Description:*** S/W development to increase the usability of the CSP. Development to increase the usability of the CSP while reducing cognitive burden on the Warfighter. ***FY 2016 Plans:*** S/W development to increase the usability of the CSP. Development to increase the usability of the CSP while reducing cognitive burden on the Warfighter. ***FY 2017 Plans:*** Complete test and migration of SPE Software improvements onto Gray Eagle.	-	1.794	1.415
Accomplishments/Planned Programs Subtotals	5.271	3.589	2.830

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• A00020: *MQ-1 PAYLOAD - UAS - A00020*	-	-	-	-	-	-	-	-	-		
• A01003: *SAR/MTI (MIP) - A01003*	3.686	30.220	1.324	-	1.324	-	-	-	-	Continuing	Continuing
• A01005: *CSP FMV (MIP) - A01005*	8.409	68.472	4.729	-	4.729	4.410	-	-	-	Continuing	Continuing

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

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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)*

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
CSP FMV (MIP) - A01005: Procurement funding line for CSP											

D. Acquisition Strategy

STARLite SAR/MTI 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. Full Rate Production (FRP) was successfully achieved in June 2013. A follow-on production contract was awarded in April 2014 to procure all remaining STARLite Payloads required for the Gray Eagle platform. Based on Initial Operational test and Evaluation (IOT&E) results, STARLite is increasing its software capabilities to increase automation and upgrade to a common Graphical User Interface (GUI) and aligns SPE with the COE requirements. The SPE software enhancements will improve performance, reduce operator workload and enhance operator effectiveness. A competitive Research, Development, Test, and Evaluation (RDTE) funded contract was awarded to Northrop Grumman in October 2013 to perform trade studies and begin the development of the software improvements. Integration onto the Gray Eagle will be done via a sole source cost-plus fixed fee contract with the UAS prime contractor, General Atomics ASI.

CSP EO/IR/LD enables the Gray Eagle to meet a Key Performance Parameter (KPP) requirement. The acquisition strategy for the CSP program was based on a full and open competition for the Army. 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. A three year system support contract was awarded in July 2015 for sustainment and upgrade of the CSP to include retrofitting standard definition sensors with high definition sensors and to perform RDTE activities. CSP is being procured for the Gray Eagle UAS program with fielding through FY2018 and has potential application to other platforms.

The acquisiton strategy is to complete STARLite SPE software developmental test and integration onto Gray Eagle; and Non-Recurring Engineering (NRE)support to the Night Vision and Electronic Sensors Directorate (NVESD) to continue enhancing CSP's usability for the Warfighter to reduce cognitive burden by providing improved situational awareness, while providing multiple fields of view in a simplified manner through Hardware (H/W) and S/W improvements.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army			Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSP Program Management	Various	PM ARES : Aberdeen, MD	11.255	-		-		-		-		-	0	11.255	0
CSP/STARLite Program Management	Various	PM RUS : Aberdeen, MD	8.524	-		-		-		-		-	0	8.524	0
CSP Program Management	MIPR	PM EOIR : Fort Belvoir, VA	0.000	-		0.090		0.100	Dec 2016	-		0.100	Continuing	Continuing	Continuing
STARLite Program Mgmt Personnel	Various	PM SAI : Aberdeen, MD	0.500	0.500	Apr 2015	-		0.150	Dec 2016	-		0.150	Continuing	Continuing	Continuing
		Subtotal	20.279	0.500		0.090		0.250		-		0.250	-	-	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSP Development	C/CPFF	Raytheon : McKinney, TX	84.022	-		-		-		-		-	0	84.022	0
STARLite Development	C/CPFF	Northrop Grumman : Linthicum, MD	6.786	-		-		-		-		-	0	6.786	0
STARLite Improvements to Sensor Processing and Exploitation	MIPR	Northrop Grumman : Linthicum, MD	5.054	4.771	Feb 2015	-		-		-		-	Continuing	Continuing	Continuing
STARLite SPE Software Integration onto Gray Eagle	SS/CPFF	General Atomics ASI : Potway, CA	0.000	-		1.295		1.265	Mar 17	-		1.265	Continuing	Continuing	Continuing
CSP HW/SW Improvements Reduce Cognitive Burden	MIPR	Night Vision Labs : Fort Belvoir, VA	0.000	-		1.704		1.115	Mar 17	-		1.115	Continuing	Continuing	Continuing
		Subtotal	95.862	4.771		2.999		2.380		-		2.380	-	-	-

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army			Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 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	-		-		-		-		-	0	26.035	0
		Subtotal	26.035	-		-		-		-		-	0.000	26.035	0.000

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
CSP Testing	MIPR	Various : Various	17.086	-		-		-		-		-	0	17.086	0
CSP HW/SW Improvements Reduce Cognitive Burden	MIPR	Night Vision Labs : Fort Belvoir, VA	0.000	-		-		0.200	Mar 2017	-		0.200	0	0.200	0
STARLite SPE Software Development Testing	MIPR	YPG : Yuma Proving Ground	0.000	-		0.500		-		-		-	Continuing	Continuing	Continuing
STARLite Testing	MIPR	Various : Various	13.441	-		-		-		-		-	0	13.441	0
		Subtotal	30.527	-		0.500		0.200		-		0.200	-	-	-

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	172.703	5.271		3.589		2.830		-		2.830	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army		Date: February 2016
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)*

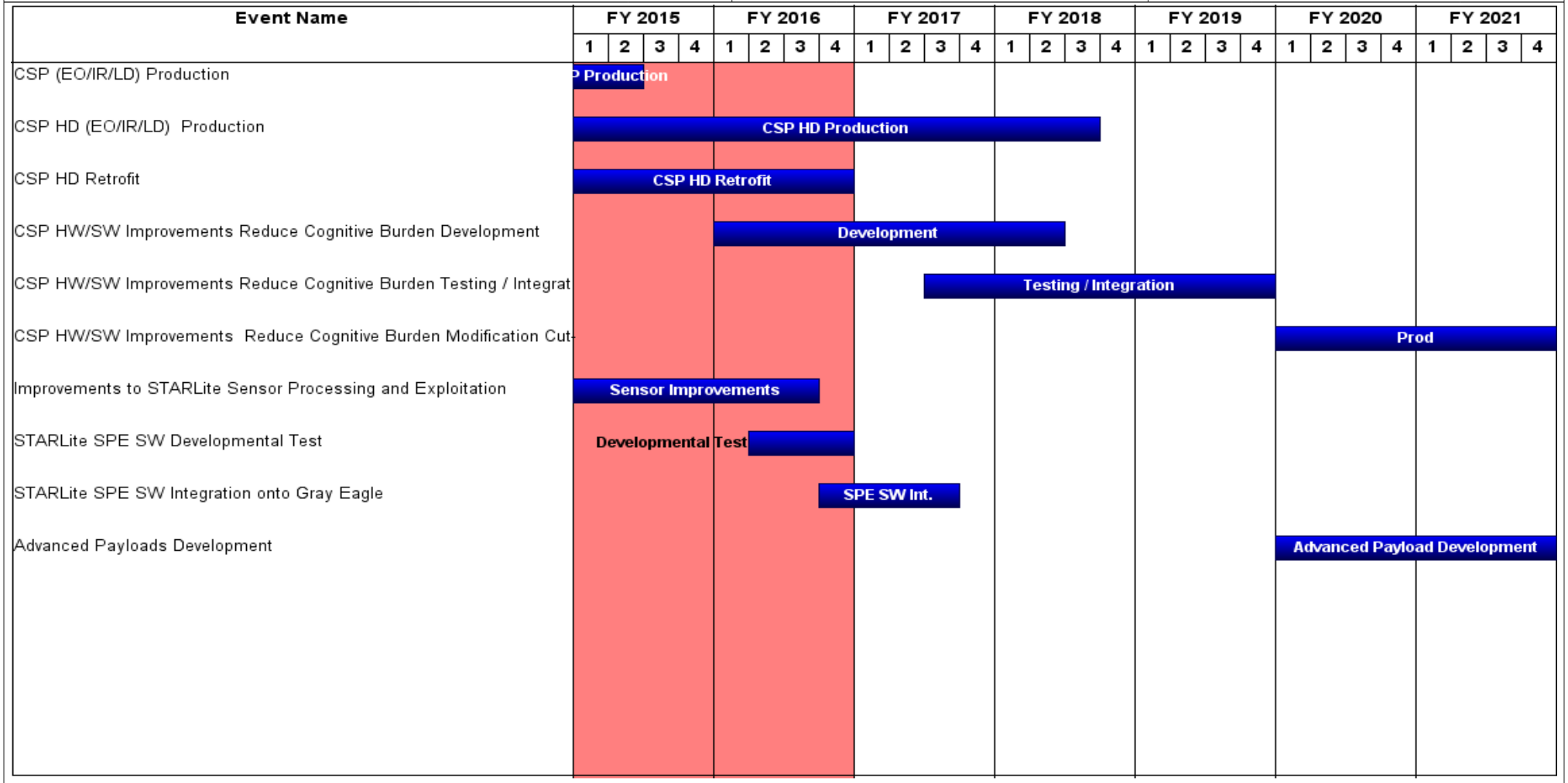

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11A / *Advanced Payload Develop & Spt (MIP)*

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	3	2018
CSP HD Retrofit	4	2013	4	2016
CSP HW/SW Improvements Reduce Cognitive Burden Development	1	2016	2	2018
CSP HW/SW Improvements Reduce Cognitive Burden Testing / Integration	3	2017	4	2019
CSP HW/SW Improvements Reduce Cognitive Burden Modification Cut-In	1	2020	4	2021
Improvements to STARLite Sensor Processing and Exploitation	1	2014	3	2016
STARLite SPE SW Developmental Test	2	2016	4	2016
STARLite SPE SW Integration onto Gray Eagle	4	2016	3	2017
Advanced Payloads Development	1	2020	4	2021

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
11B: *Tsp Development (MIP)*	-	10.324	7.138	1.446	-	1.446	6.685	0.000	0.000	0.000	0.000	25.593
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 reconfigured 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.

Fiscal Year (FY) 2017 Base funding in the amount of $1.446 million completes engineering corrective actions and regression testing from Developmental Testing / Operational Testing (DT/OT) testing and preparations for TSP Block 2 Request For Proposal(RFP)

The FY2017 funding request was reduced by $2.929 million to account for the availability of prior year execution balances, ($.929 million decrement and $2,000,000 shifted to FY18)

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: TSP Engineering Manufacturing Development (EMD) and Low Rate Initial Production (LRIP) Research and Development (R&D) Support.	10.324	7.138	1.446
Description: TSP EMD Development and Equipment; LRIP R&D: Logistics, Training, corrective action engineering support and test activities.			
FY 2015 Accomplishments: Continued TSP Block 1. Includes Contractor/ Government Developmental Testing, MQ-1C air worthiness release, System Support Package development, Key Personnel Training, Logistics Demonstration, and prepared for the Initial Operational Test and Evaluation (IOT&E). Initiated preparation for TSP Block 2 activities.			
FY 2016 Plans:			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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 2015	FY 2016	FY 2017
Continues TSP Block 1 LRIP. Conducts IOT&E with MQ-1C. Prepare for Full rate Production Decision and Material Release approval. Initiate the Interim Contractor Logistics Support (ICLS) contract. ***FY 2017 Plans:*** Continues TSP Block 1 LRIP, support TSP integration into Improved Gray Eagle (IGE). Prep for TSP Block 2 activities. Initial planning for Future upgrades. Continue support of TSP Interim Contractor Logistics Support (ICLS).			
Accomplishments/Planned Programs Subtotals	10.324	7.138	1.446

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• A00020: *A00020 - MQ-1 Payload (MIP)*	-	-	-	-	-	-	-	-	-	0.000	0.000
• A01004: *A01004 - SIGINT (MIP)*	13.218	49.661	39.065	-	39.065	15.672	3.421	3.487	3.431	0	127.955
• 0605766A: *TSP Theater Net-Centric Geolocation (TNG) - PE0605766A, Project DX9: TNG funding included in Tactical Exploitation of National Capabilities (TENCAP) funding line.*	-	-	-	-	-	-	1.000	1.800	1.000	1.000	4.800

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.

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11B / *Tsp Development (MIP)*

The TSP Block 1 is the current Program of Record capability. TSP Block 2 will address objectives and remaining deferred Block 1 threshold requirements as reflected in the approved Capability Production Document (CPD).

Block 1 Low Rate Initial Production (LRIP) Milestone C was approved on 2 May 2014. TSP LRIP contract award was 12 Jun 2014.

Block 1 TSP EMD contract period of performance was completed on Oct 2015.

Improved Gray Eagle (IGE)- Program Manager Unmanned Aircraft Systems(PM UAS)received a Congressional plus up of $49M President's Budget15(PB15) to procure Extended Range UAS which increases the CPD objective endurance requirements for the current GE configuration to an Improved Gray Eagle (IGE). To meet the PM UAS IGE test schedule 1st QTR FY18 and first unit equipped date, TSP must be integrated and tested on the IGE and the A-kit must be modified before the IGE Follow on Test Evaluation#2 2QFY18.

E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army			Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management-Gov	RO	PM SAI : APG	7.700	0.406	Dec 2014	0.450		0.375		-		0.375	0	8.931	0
Program Management Support	MIPR	Various : APG	4.575	-		-		-		-		-	0	4.575	Continuing
FFRDC Support	FFRDC	MITRE : APG	1.848	-		0.150		-		-		-	0	1.998	0
		Subtotal	14.123	0.406		0.600		0.375		-		0.375	0.000	15.504	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
TSP EMD	C/CPIF	BAE Systems, : Nashua, NH	20.206	-		-		-		-		-	0	20.206	0
TSP Engineering Changes	SS/CPFF	BAE Systems : Nashua, NH	7.495	0.800	Jul 2015	-		1.071	Feb 2017	-		1.071	0	9.366	0
MQ-1C and OGS Integration	SS/CPFF	Various : Various	4.630	-		-		-		-		-	0	4.630	0
TSP System Support (Logistics, Training, & Test)	SS/CPFF	Various : Various	6.870	3.143	Jul 2015	1.830		-		-		-	0	11.843	0
		Subtotal	39.201	3.943		1.830		1.071		-		1.071	0.000	46.045	0.000

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Engineering Support	MIPR	Various : Various	4.041	0.579	Mar 2014	1.538		-		-		-	0	6.158	0
		Subtotal	4.041	0.579		1.538		-		-		-	0.000	6.158	0.000

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army			Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Developmental Test and Activities	MIPR	ATEC/APG : Various	5.211	2.304	Oct 2014	-		-		-		-	0	7.515	0
Operational Testing	MIPR	ATEC : Various	0.500	1.872	Oct 2014	-		-		-		-	0	2.372	0
Test Range & Aircraft Support	MIPR	CECOM Flight Activity : Lakehurst, NJ	3.048	1.220	Mar 2015	-		-		-		-	0	4.268	0
TSP Initial Operational Test and Evaluation	MIPR	ATEC : Various	0.000	-		3.170		-		-		-	0	3.170	0
		Subtotal	8.759	5.396		3.170		-		-		-	0.000	17.325	0.000

	Prior Years	FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	66.124	10.324		7.138		1.446		-		1.446	0.000	85.032	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11B / *Tsp Development (MIP)*

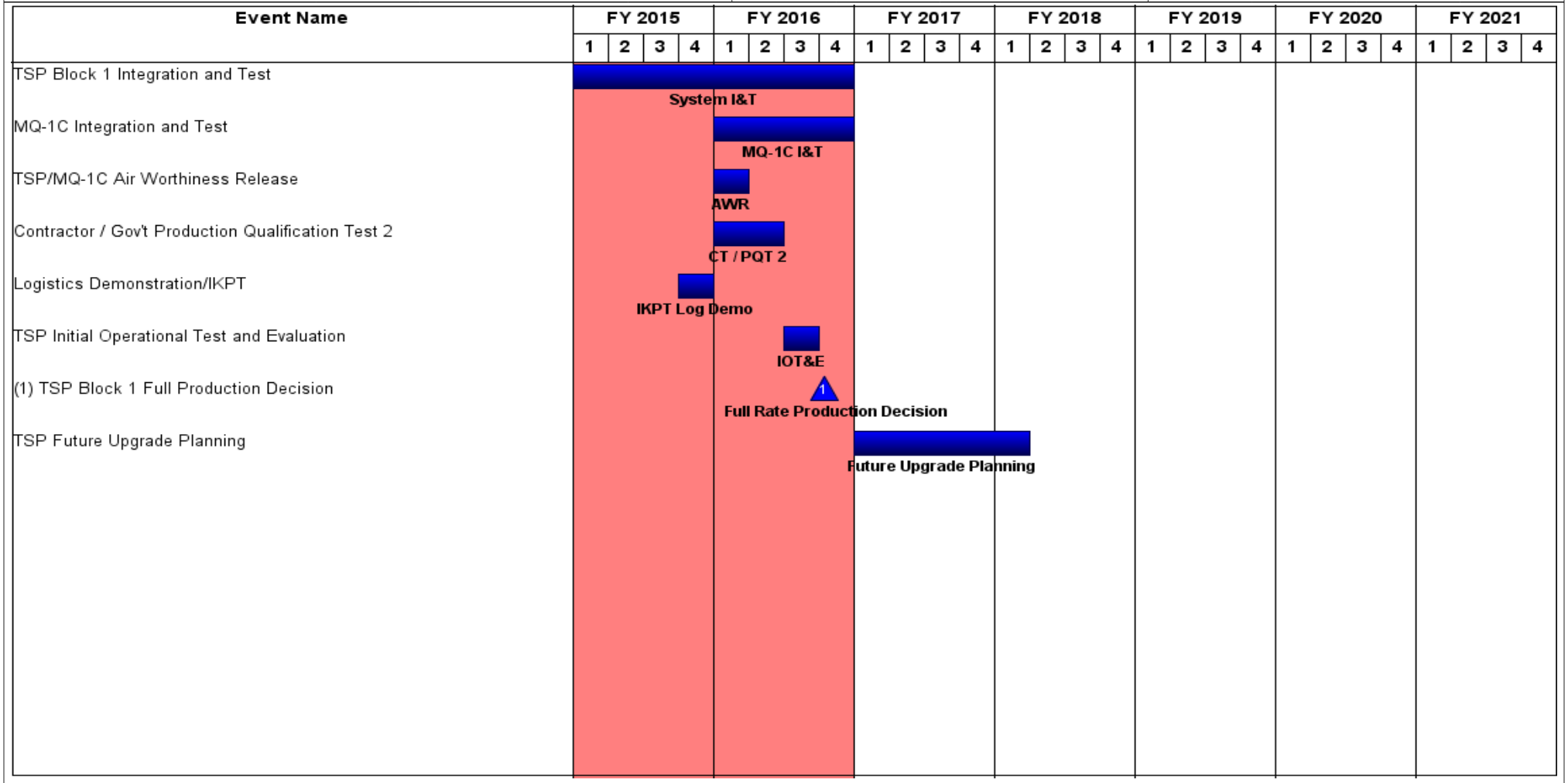

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 11B / *Tsp Development (MIP)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
TSP Block 1 Integration and Test	1	2015	4	2016
MQ-1C Integration and Test	1	2016	4	2016
TSP/MQ-1C Air Worthiness Release	1	2016	1	2016
Contractor / Gov't Production Qualification Test 2	1	2016	2	2016
Logistics Demonstration/IKPT	4	2015	4	2015
TSP Initial Operational Test and Evaluation	3	2016	3	2016
TSP Block 1 Full Production Decision	4	2016	4	2016
TSP Future Upgrade Planning	1	2017	1	2018

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
123: *Joint Technology Center System Integration*	-	4.695	2.498	3.942	-	3.942	4.568	4.615	4.832	4.979	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 2015	FY 2016	FY 2017
Title: Product Development	2.313	2.298	3.611
Description: Funding is provided for the following efforts.			
FY 2015 Accomplishments: 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 Plans: Redesign Vignette Planning and Rehersal Software (ViPRS) by implementing a Service Oriented Architecture (SOA) to facilitate external users developing generic solutions without Joint Technology Center System Integration Laboratory (JSIL) assistance and to optimize the software baseline to keep up with training audience requirements, thereby reducing the costs of travel and training. Redesign MUSE/ Air Force Synthetic Environment for regognizance and Surveillance (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 UAS platforms that MUSE/AFSERS simulates. This will reduce costs			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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 2015	FY 2016	FY 2017
since HUD modifications will be able to be modified without having to implement code changes. Continued examination of all Graphical User Interfaces (GUIs) to ensure maximum usability for the war fighter. ***FY 2017 Plans:*** Re-design and implementation of Windows Entity Server (WES) and NetLink to maintain pace with ever expanding Military Exercises. Continued integration with Night Vision Electronics & Sensors Directorate's (NVEDS's), Night Vision Imagery Generator (NVIG). Implementation of a Weather server that will facilitate the injection of weather, into the modeling and simulation domain, for Military Exercises. 4586 tech insertion into MUSE for Command & Control (C2) to facilitate the testing of data feeds prior to using the C2 feed on the live asset. 4609 technical insertion into MUSE for video with embedded Key Line Value (KLV) to be compliant with standard video feeds and to work with US ally standard video feeds.			
Title: Support Office of the Secretary of Defense (OSD) Joint UAS Interoperability Requirements and Activities ***Description:*** Funding is provided for the following efforts. ***FY 2015 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.	2.000	-	-
Title: Management Services ***Description:*** Funding is provided for the following efforts. ***FY 2015 Accomplishments:*** Continue coordination and oversight of MUSE product development. ***FY 2016 Plans:*** Continue coordination and oversight of MUSE product development. ***FY 2017 Plans:*** Continue coordination and oversight of MUSE product development.	0.382	0.200	0.331
Accomplishments/Planned Programs Subtotals	4.695	2.498	3.942

C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PE 0603261N Navy: *PE 0603261N Navy*	2.000	-	-	-	-	-	-	-	-	Continuing	Continuing

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
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 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	FY 2018	FY 2019	FY 2020	FY 2021	Cost To Complete	Total Cost
• PE 0305206F Air Force: *PE 0305206F Air Force*	3.934	3.475	3.841	-	3.841	3.419	3.479	3.544	3.607	Continuing	Continuing

Remarks

The JTC/SIL and the MUSE receive funding from the Air Force and Navy. 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 2017 Army			Date: February 2016
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 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Program Management	MIPR	AMC, AMCOM, AMRDEC, SED : Redstone Arsenal, AL	2.106	0.382	Dec 2014	0.200	Nov 2015	0.331	Nov 2016	-		0.331	Continuing	Continuing	Continuing
		Subtotal	2.106	0.382		0.200		0.331		-		0.331	-	-	-

Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
MUSE Development	MIPR	AMC, AMCOM, AMRDEC, SED : Redstone Arsenal, AL	8.837	2.313	Dec 2014	2.298	Dec 2015	3.611	Dec 2016	-		3.611	Continuing	Continuing	Continuing
		Subtotal	8.837	2.313		2.298		3.611		-		3.611	-	-	-

Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Interoperability Support	MIPR	AMC, RDECOM, AMRDEC : Redstone Arsenal, AL	7.460	2.000	Dec 2014	-		-		-		-	Continuing	Continuing	0
		Subtotal	7.460	2.000		-		-		-		-	-	-	0.000

	Prior Years	FY 2015 Cost	FY 2015 Award Date	FY 2016 Cost	FY 2016 Award Date	FY 2017 Base Cost	FY 2017 Base Award Date	FY 2017 OCO Cost	FY 2017 OCO Award Date	FY 2017 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	18.403	4.695		2.498		3.942		-		3.942	-	-	-

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army		Date: February 2016
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*

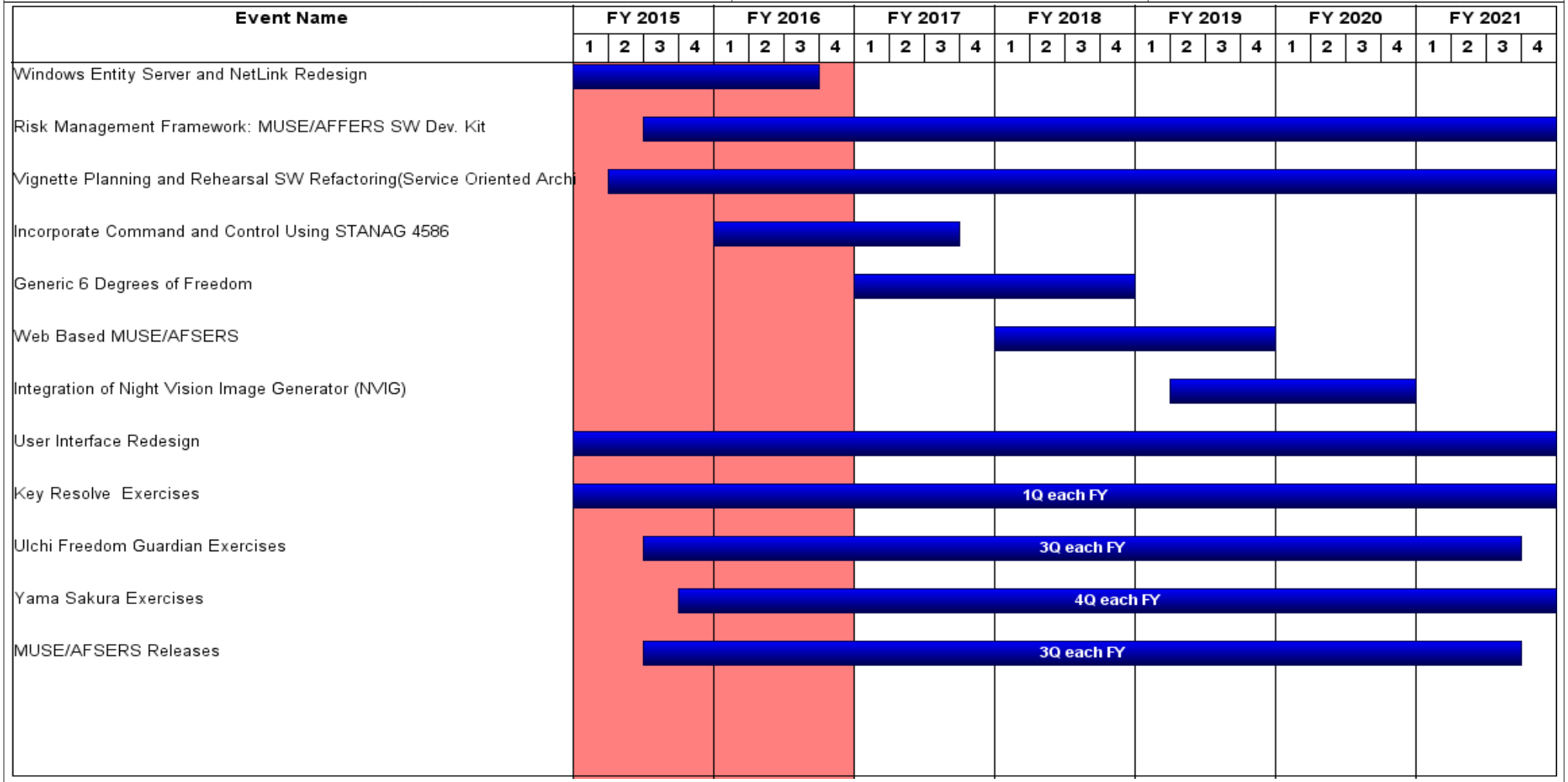

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 7	**R-1 Program Element (Number/Name)** PE 0305204A / *Tactical Unmanned Aerial Vehicles*	**Project (Number/Name)** 123 / *Joint Technology Center System Integration*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Windows Entity Server and NetLink Redesign	1	2015	3	2016
Risk Management Framework: MUSE/AFFERS SW Dev. Kit	3	2015	4	2021
Vignette Planning and Rehearsal SW Refactoring(Service Oriented Architecture)	2	2015	4	2021
Incorporate Command and Control Using STANAG 4586	1	2016	3	2017
Generic 6 Degrees of Freedom	1	2017	4	2018
Web Based MUSE/AFSERS	1	2018	4	2019
Integration of Night Vision Image Generator (NVIG)	2	2019	4	2020
User Interface Redesign	1	2015	4	2021
Key Resolve Exercises	1	2015	1	2022
Ulchi Freedom Guardian Exercises	3	2015	3	2021
Yama Sakura Exercises	4	2015	4	2021
MUSE/AFSERS Releases	3	2015	3	2021