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 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0605626A *I Aerial Common Sensor*							
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	-	17.748	0.002	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.750
AC5: *Enhanced Medium Alt Recon Surv Sys*	-	17.748	0.002	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.750

Note

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) Research, Development, Test, and Evaluation (RDTE) funding line contains funding for Airborne Reconnaissance Low - Enhanced (ARL-E) in Fiscal Year (FY) 2015 ($10.174 million). The remaining funds will go towards Interim Contractor Logistics Support (ICLS) and test support for the EMARSS Variants: EMARSS-G (Constant Hawk & Tactical Operations (TACOP) Light Imaging Detection and Ranging (LiDAR)); EMARSS-V (Vehicle and Dismounted Exploitation Radar (VaDER)); EMARSS-M (Liberty Project Aircraft (LPA)); and EMARSS-S Engineering and Manufacturing Development (EMD) systems.

For FY16 and beyond, the EMARSS RDTE funding line continues on 375206EH3.
For FY16 and beyond, the ARL-E RDTE funding line continues on 375206EH5.

A. Mission Description and Budget Item Justification

The EMARSS is the Army's next generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. EMARSS provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS aircraft will be assigned to the U.S. Army Intelligence and Security Command's (INSCOM) Aerial Exploitation Battalions (AEB). EMARSS is an improvement over the existing Medium Altitude Reconnaissance and Surveillance System Quick Reaction Capability (MARSS QRC) in that it hosts an on board Distributed Common Ground System - Army (DCGS-A) capability, improved satellite communications, improved aircraft performance, and life cycle logistics sustainment capability.

EMARSS will consist of a commercial derivative aircraft equipped with an Electro-optical/Infrared (EO/IR) sensor with Full Motion Video (FMV), a Communications Intelligence (COMINT) collection system, an Aerial Precision Geolocation (APG) system, tactical line-of-site (LOS) and beyond line-of-site (BLOS) communications suite, two DCGS-A enabled operator workstations and a self-protection suite. EMARSS is built to allow future capabilities to be integrated on platform with the addition of a third carry-on workstation.

EMARSS will operate in direct support of tactical missions. EMARSS, integrating elements of the DCGS-A, will provide efficient response to Combat Forces with Intelligence, Surveillance and Reconnaissance (ISR) tasking.

The EMARSS funding line contains funding for the ARL-E program. ARL-E supports the Aerial ISR 2020 Strategy which recommended replacement of the current Airborne Reconnaissance Low Multifunction (ARL-M) and migrates the current ARL sensors plus new niche sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. ARL-E procures the hardware, software, and infrastructure to rapidly install sensors which support a rapid plug and play, quick connect/ disconnect, mounting system to allow the installation of various combinations of sensor-types in support of a wide-range of theater operations. The sensor suite will

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 5: *System Development & Demonstration (SDD)*	**R-1 Program Element (Number/Name)** PE 0605626A *I Aerial Common Sensor*

consist of a COMINT subsystem capable of supporting theater net centric geo-location efforts, High Definition Full Motion Video (FMV); Improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar capability and updated mission workstations, as well as radio and data/communications architecture. ARL-E will leverage existing sensors as well as integrating and installing niche sensors to augment current capabilities. Niche capabilities include Wide Area Aerial Surveillance (WAAS), LIDAR, and Hyper Spectral Imaging (HSI) sensors.

B. Program Change Summary ($ in Millions)	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total
Previous President's Budget	17.748	0.002	0.000	-	0.000
Current President's Budget	17.748	0.002	0.000	-	0.000
Total Adjustments	0.000	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-	-			

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army			Date: February 2016
Appropriation/Budget Activity 2040 / 5	R-1 Program Element (Number/Name) PE 0605626A / *Aerial Common Sensor*	Project (Number/Name) AC5 / *Enhanced Medium Alt Recon Surv Sys*	

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
AC5: *Enhanced Medium Alt Recon Surv Sys*	-	17.748	0.002	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	17.750
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

The Enhanced Medium Altitude Reconnaissance and Surveillance System (EMARSS) Research, Development, Test, and Evaluation (RDTE) funding line contains funding for Airborne Reconnaissance Low - Enhanced (ARL-E) in Fiscal Year (FY) 2015 ($10.174 million). The remaining funds will go towards Interim Contractor Logistics Support (ICLS) and test support for the EMARSS Variants: EMARSS-G (Constant Hawk & Tactical Operations (TACOP) Light Imaging Detection and Ranging (LiDAR)); EMARSS-V (Vehicle and Dismounted Exploitation Radar (VaDER)); EMARSS-M (Liberty Project Aircraft (LPA)); and EMARSS-S Engineering and Manufacturing Development (EMD) systems.

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The EMARSS is the Army's next generation C-12 based, direct support, manned airborne intelligence collection, processing, and targeting support system. EMARSS provides a persistent capability to detect, locate, classify/identify, and track surface targets with a high degree of timeliness and accuracy. EMARSS aircraft will be assigned to the U.S. Army Intelligence and Security Command's (INSCOM) Aerial Exploitation Battalions (AEB). EMARSS is an improvement over the existing Medium Altitude Reconnaissance and Surveillance System Quick Reaction Capability (MARSS QRC) in that it hosts an on board Distributed Common Ground System - Army (DCGS-A) capability, improved satellite communications, improved aircraft performance, and life cycle logistics sustainment capability.

EMARSS Payloads will consist of Mission Equipment Packages (MEP) and Processing Exploitation & Dissemination commercial derivative equipment such as, an Electro-optical/Infrared (EO/IR) sensor with Full Motion Video (FMV), a Communications Intelligence (COMINT) collection system, an Aerial Precision Geolocation (APG) system, tactical line-of-site (LOS) and beyond line-of-site (BLOS) communications suite, two DCGS-A enabled operator workstations and a self-protection suite. Payloads integrated on platforms will include: niche capabilities such as Wide Area Aerial Surveillance (WAAS), LiDAR and improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar capability.

EMARSS will operate in direct support of tactical missions. EMARSS, integrating elements of the DCGS-A, will provide provide a near real-time response to Combat Forces with Intelligence, Surveillance and Reconnaissance (ISR) tasking.

The FY 2015 EMARSS funding line contains $10.174 million for the ARL-E program. ARL-E supports the Aerial ISR 2020 Strategy which recommended replacement of the current Airborne Reconnaissance Low Multifunction (ARL-M) and migrates the current ARL sensors plus new niche sensors to meet the ARL-E Capabilities Production Document (CPD) requirements. ARL-E procures the hardware, software, and infrastructure to rapidly install sensors which support a rapid plug and play,

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605626A / *Aerial Common Sensor*	**Project (Number/Name)** AC5 / *Enhanced Medium Alt Recon Surv Sys*

quick connect/disconnect, mounting system to allow the installation of various combinations of sensor-types in support of a wide-range of theater operations. The sensor suite will consist of a COMINT subsystem capable of supporting theater net centric geo-location efforts, High Definition FMV; Improved Synthetic Aperture Radar / Moving Target Indicator (SAR/MTI) radar capability and updated mission workstations, as well as radio and data/communications architecture. ARL-E will leverage existing sensors as well as integrating and installing niche sensors to augment current capabilities. Niche capabilities include WAAS, LiDAR, and Hyper Spectral Imaging (HSI) sensors.

FY 2016 RDTE funding in the amount of $0.002 million provides Interim Contractor Logistical Support (ICLS).

B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
Title: EMARSS - Product Development ***Description:*** Funding is provided for the following efforts: ***FY 2015 Accomplishments:*** EMARSS RDTE funds Sensor Engineering Change Proposals (ECPs) and contractor system support. Partially funds an ICLS capability to support testing. ***FY 2016 Plans:*** Partially funds an ICLS capability.	5.474	0.002	-
Title: Support Costs ***Description:*** Support costs for matrix government, matrix contractor and Program Management (PM) Fixed Wing. ***FY 2015 Accomplishments:*** Support costs for matrix government, matrix contractor and PM Fixed Wing.	0.800	-	-
Title: Program Management Support ***Description:*** Funding is provided for the following effort: ***FY 2015 Accomplishments:*** Continues Program Management Office (PMO) support and travel, Systems Engineering and Technical Assistance (SETA) and MITRE support.	1.300	-	-
Title: ARL-E - Product Development ***Description:*** ARL-E RDTE in EMARSS funding line until new RDTE line can be established. ***FY 2015 Accomplishments:***	10.174	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2017 Army		Date: February 2016
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B. Accomplishments/Planned Programs ($ in Millions)	FY 2015	FY 2016	FY 2017
ARL-E RDTE funds the development of a Long Range Radar prototype for ARL-E.			
Accomplishments/Planned Programs Subtotals	17.748	0.002	-

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
• Aerial Common Sensor (ACS): *EMARSS - Aircraft Procurement (A02005)*	165.890	99.500	-	-	-	-	-	-	-	0	265.390
• EMARSS MEP/PED: *EMARSS Payloads (AZ2054)*	-	20.570	13.316	-	13.316	3.305	21.294	4.452	-	0	62.937
• ARL Mod: *ARL Mods (AZ2050)*	131.892	68.540	52.400	-	52.400	53.778	7.668	2.679	-	0	316.957

Remarks

Aerial Common Sensor (ACS) - A02005 - FY 2015 Base procurement dollars in the amount of $165.890 million supports the modification and conversion of the balance of QRC systems redeploying out of Afghanistan to meet the EMARSS CPD.

FY 2014 A02005 Oversea Contingency Operations (OCO) in the amount of $28 million procured one EMARSS-V.

For FY 2016 and beyond, the EMARSS Aviation Procurement - Army (APA) funding line continues from A02005 and splits between Project Manager Sensors - Aerial Intelligence (PM SAI) AZ2054 EMARSS Payloads and Project Manager Fixed Wing (PM FW) A02112 EMARSS Special Electronic Mission Aircraft (SEMA). Also in FY 2016 the EMARSS Payloads AZ2054 line is established/separated from ARL Mod AZ2050. Separate funding lines support the Army Acquisition Executive's directive, codified in the October 28, 2011 memorandum, to assign overall acquisition lead for manned airborne intelligence systems to Program Executive Officer for Aviation PEO-AVN); and overall sensor,processing, exploitation, and dissemination responsibilities to Program Executive Officer or Intelligence, Electronic Warfare, and Sensors (PEO-IEWS).

D. Acquisition Strategy

EMARSS is a Program of Record based on an Army G-3/5/7 Directed Requirement (DR) signed 11 December 2009. The program entered the acquisition process in the EMD phase with a 1QFY11 contract award that was competitively awarded to a single contractor. Program completed System Design Review in 1QFY12 and began modification and integration of the aircraft in 2QFY12. Program currently has an Army validated CPD and a successful Milestone C.

ARL-E portion, in the amount of $10.174 million, funds the engineering, manufacturing and development of a Long Range radar prototype to replace the current ARL Phoenix Eye to meet requirement for increased performance for ARL-E.

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E. Performance Metrics

N/A

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army			Date: February 2016
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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
PMO	Various	PM SAI : Aberdeen Proving Ground, MD	12.053	0.500		-		-		-		-	0	12.553	0
SETA Support	C/CPFF	PM SAI : Aberdeen Proving Ground, MD	6.060	0.400		-		-		-		-	0	6.460	0
MITRE - FFRDC Support	C/CPFF	PM SAI : Aberdeen Proving Ground, MD	3.933	0.400		-		-		-		-	0	4.333	0
		Subtotal	22.046	1.300		-		-		-		-	0.000	23.346	0.000

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
EMARSS EMD (#5 & #6 green ACFT purchase)	C/CPIF	Boeing Company : Ridley Park, PA	72.438	-		-		-		-		-	0	72.438	0
Request for Equitable Adjustment (REA)	C/FP	Boeing Company : Ridley Park, PA	7.085	-		-		-		-		-	0	7.085	0
Prime Contractor Systems Support	C/CPFF	Boeing Company : Ridley Park, PA	22.712	3.736		-		-		-		-	0	26.448	0
Engineering Change Proposals (ECP) for Sensors	C/CPIF	Boeing Company : Ridley Park, PA	12.966	1.738		-		-		-		-	0	14.704	0
Sensors acquisition	SS/FFP	BAE Systems : Nashua, NH	6.351	-		-		-		-		-	0	6.351	0
EMD Contract Cost Growth	Allot	Boeing Company : Ridley Park, PA	19.600	-		-		-		-		-	0	19.600	0
EMARSS - EMD 5 (currently held for potential REAs)	C/CPIF	Boeing Company : Ridley Park, PA	20.000	-		-		-		-		-	0	20.000	0
DCGS-A & Orion S/W processing on board	Various	Various : Various	6.740	-		-		-		-		-	0	6.740	0
ARL-E - Radar Development	C/TBD	TBD : TBD	0.000	10.174	Jun 2015	-		-		-		-	0	10.174	0

Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Army			Date: February 2016
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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
		Subtotal	167.892	15.648		-		-		-		-	0.000	183.540	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
Matrix Government	MIPR	Various : Various	15.387	0.400		-		-		-		-	0	15.787	0
Matrix Contractor Support	Various	Various : Various	3.313	0.400		-		-		-		-	0	3.713	0
		Subtotal	18.700	0.800		-		-		-		-	0.000	19.500	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
Government DT/OT, LUT	Various	Various : Various	11.760	-		0.002		-		-		-	0	11.762	0
Contractor Test (CT/DT)	C/CPIF	Various : Various	0.390	-		-		-		-		-	0	0.390	0
Test Flight Ranges	Various	Various : Various	7.517	-		-		-		-		-	0	7.517	0
Forward Operational Assessment (FOA)	MIPR	Various : Various	0.124	-		-		-		-		-	0	0.124	0
Initial Operational Test and Evaluation (IOT&E)	MIPR	Various : Various	1.000	-		-		-		-		-	0	1.000	0
Joint Test & Integration Facility (JTIF)	Various	Various : various	11.771	-		-		-		-		-	0	11.771	0
		Subtotal	32.562	-		0.002		-		-		-	0.000	32.564	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	241.200	17.748		0.002		-		-		-	0.000	258.950	0.000

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2017 Army		Date: February 2016
Appropriation/Budget Activity 2040 / 5	**R-1 Program Element (Number/Name)** PE 0605626A / *Aerial Common Sensor*	**Project (Number/Name)** AC5 / *Enhanced Medium Alt Recon Surv Sys*

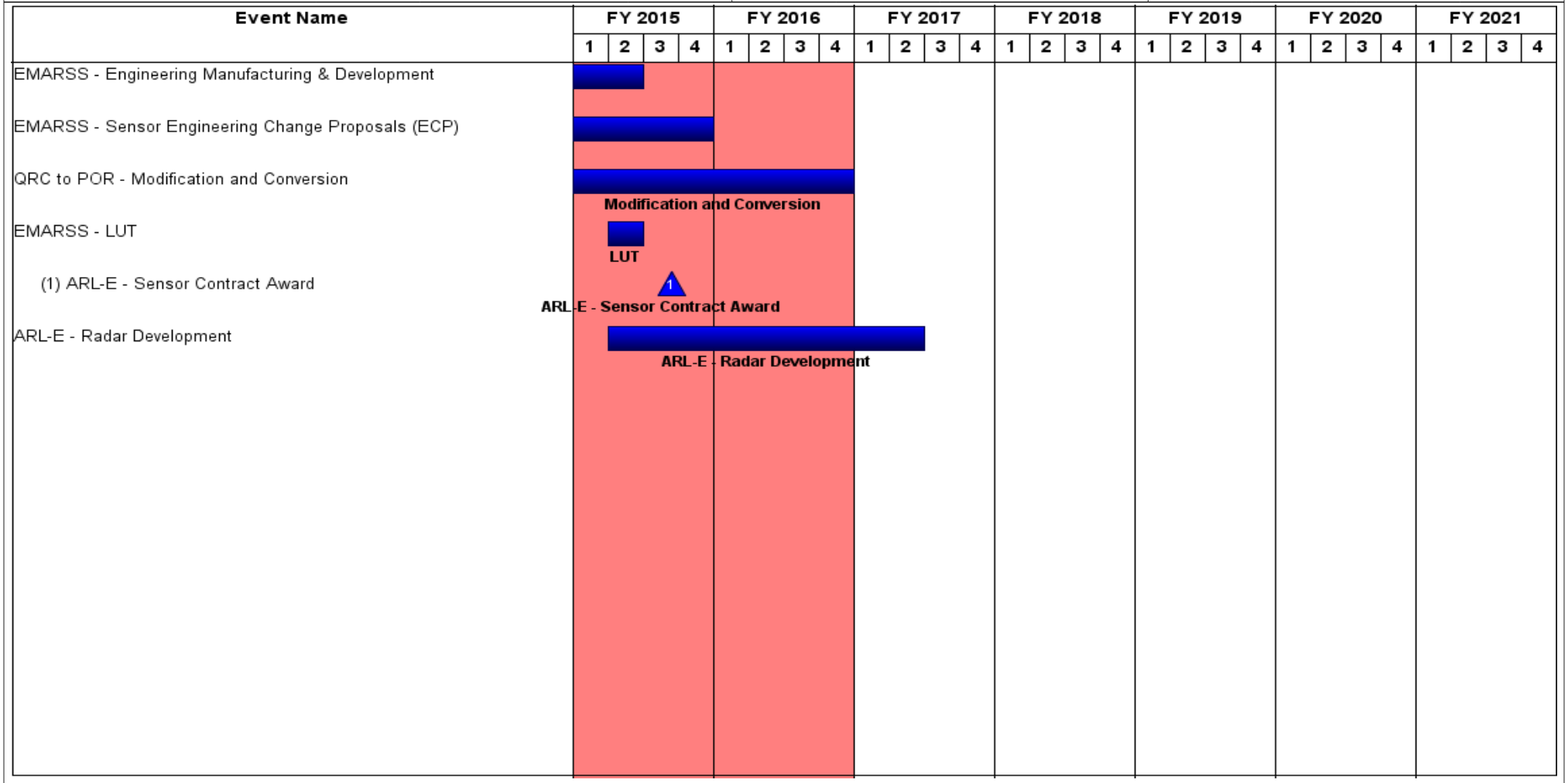

Exhibit R-4A, RDT&E Schedule Details: PB 2017 Army		Date: February 2016
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Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
EMARSS - Engineering Manufacturing & Development	3	2011	2	2015
EMARSS - Sensor Engineering Change Proposals (ECP)	4	2014	4	2015
QRC to POR - Modification and Conversion	4	2014	4	2016
EMARSS - LUT	2	2015	2	2015
ARL-E - Sensor Contract Award	3	2015	3	2015
ARL-E - Radar Development	2	2015	2	2017