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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2017 Air Force **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 5: System Development &amp; Demonstration (SDD)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0307581F / JSTARS Recap
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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	5.000	70.879	44.343	128.019	0.000	128.019	413.991	621.998	583.224	473.967	827.800	3,169.221
650003: <i>JSTARS Recapitalization</i>	5.000	70.879	44.343	128.019	0.000	128.019	413.991	621.998	583.224	473.967	827.800	3,169.221
Quantity of RDT&E Articles		-	-	-	-	-	-	-	-	-		

**Program MDAP/MAIS Code:** 513

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

JSTARS Recap is a manned aircraft replacement for the legacy E-8C that provides decision superiority via tactical Battle Management, Command and Control (BMC2) and Battlespace Awareness (BA) across the full Range of Military Operations (ROMO). Armed with an on-board BMC2 crew, powerful radar, and robust communications and information systems, it enables theater ground and air commanders to make quick decisions with decisive results during complex and rapidly unfolding operations. It is the only Theater Air Control System (TACS) node with a wide-area ground surveillance sensor, and provides commanders with 'fail forward' distributed control of an assigned area at the edge of the battlefield. Capabilities include near-real-time wide-area surveillance (WAS) and targeting information on wheeled and tracked vehicles, slow-moving rotary and fixed wing aircraft, rotating antennas, jammers, dismount targets, and stationary ground/surface targets (including maritime). Synthetic Aperture Radar (SAR) imagery enables both terrain imaging and stationary target location. The system is designed for day and night worldwide deployment in all weather conditions.

JSTARS Recap is the most cost-effective and operationally-effective materiel solution derived from the DoD's Joint Capability Integration and Development System (JCIDS) process, which includes a completed Initial Capability Document (ICD), Analysis of Alternatives (AoA), and draft Capability Development Document (CDD). JSTARS Recap enhances the warfighter's ability to achieve the joint vision of combat operations by integrating current and mature subsystem technologies onto a business class commercial derivative aircraft. It delivers advanced battle management aids and information fusion technologies to enable rapid decisions by automating tracking and addressing time-critical targets for surface and land forces. JSTARS Recap addresses the downward sustainment trends with the aging E-8C fleet and focuses on maintaining current JSTARS operational mission capabilities.

In FY 2015, PE 0604283F, BMC2 Sensor Development, Project 645363, MP-RTIP, and PE 0207581F, Joint Surveillance Target Attack Radar System (JSTARS), Project 670003, JSTARS, efforts were transferred to PE 0307581F, JSTARS Recap, Project 650003, JSTARS Recapitalization (Recap) in order to consolidate efforts and continue risk reduction activities. With the Pre-Engineering and Manufacturing Development (EMD) contract completing in 4QFY16, activities in FY17 center around obtaining a MS B decision in 4QFY17. The Air Force will conduct source selection activities for the EMD contract to be awarded in 1QFY18, and continue with Radar Risk Reduction Activities and program office execution. Activities also include studies, analyses, and risk reduction activities addressing all subsystems to support both current program planning/execution and future AF program planning.

This program is in budget Activity 5, System Development and Demonstration (SDD) because it is projected to receive Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full-rate production.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017 Base</b>	<b>FY 2017 OCO</b>	<b>FY 2017 Total</b>
Previous President's Budget	73.088	44.343	298.521	0.000	298.521
Current President's Budget	70.879	44.343	128.019	0.000	128.019
Total Adjustments	-2.209	0.000	-170.502	0.000	-170.502
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	0.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-2.209	0.000			
• Other Adjustments	0.000	0.000	-170.502	0.000	-170.502

**Change Summary Explanation**

FY17: The decrease in FY17 reflects EMD contract award now being made in FY18.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
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<b>Title:</b> Technology Maturation and Risk Reduction (TMRR)	70.879	44.343	128.019
<b>Description:</b> JSTARS Recap TMRR/Pre-EMD Contract activities leverage DoD's prior investments and Industry's Independent Research and Development (IR&D) investments to conduct technical reviews and subsystem prototype demonstrations. The goal of TMRR/Pre-EMD activities is to validate industry's system-level design readiness/maturity with respect to top integration risks and use of Open Systems Architecture (OSA) and Open Mission System (OMS) standards. The TMRR/Pre-EMD activities inform the government about the integration complexity and associated lifecycle risks involved with different system-level design solutions. Activities also include studies, analyses, and risk reduction addressing all subsystems to support current program planning/execution and future program planning.			
<b>FY 2015 Accomplishments:</b>			
- Materiel Development Decision (MDD) ADM was approved 7 May 2015			
- Request for Quotes (RFQs) released and contract awarded on 3 Pre-EMD base contracts 7 August 2015 to carry through System Requirements Review (SRR)			
<b>FY 2016 Plans:</b>			
- Received MS A decision 10 December 2015			
- Exercised contract option in 1QFY16 for Industry Teams to complete system level designs			

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2015</b>	<b>FY 2016</b>	<b>FY 2017</b>
<ul style="list-style-type: none"> <li>- Will conduct multiple system-level technical reviews (to include System Functional Reviews (SFRs) and Preliminary Design Reviews (PDRs))</li> <li>- Will conduct subsystem prototype demonstrations</li> <li>- Will release draft Request for Proposal (RFP) for EMD to industry (2QFY16)</li> <li>- Will prepare for and complete RFP Release Decision milestone requirements (4QFY16)</li> </ul> <p><b>FY 2017 Plans:</b></p> <ul style="list-style-type: none"> <li>- Will conduct Radar Risk Reduction activities in FY17 to mature radar designs specific to JSTARS Recap, maintain radar subsystem competition, establish sub component manufacturing lines, further radar OSA efforts, and reduce the JSTARS Recap number one risk, subsystem integration.</li> <li>- Will continue other subsystem and weapon systems risk reduction activities</li> <li>- Will conduct associated activities to obtain MS B (4QFY17)</li> <li>- Will conduct source selection of the EMD contract for early 1QFY18 award</li> </ul>			
<b>Accomplishments/Planned Programs Subtotals</b>	70.879	44.343	128.019

**D. Other Program Funding Summary (\$ in Millions)**

N/A

**Remarks**

**E. Acquisition Strategy**

The JSTARS Recap program is a pre-Major Defense Acquisition Program (MDAP) that achieved MS A approval on 10 December 2015 and with MS B planned for 4QFY17. JSTARS Recap is comprised of a business-class commercial derivative jet with integrated BMC2, radar and communication subsystems. The program will integrate available systems and mature technologies using Open Systems Architecture (OSA) to minimize the risks for the EMD Phase and lower lifecycle costs.

The program will conduct Pre-EMD activities which will consist of Requirements Maturation (a Pre MS A activity) and TMRR (a Post MS A activity). A subsequent separate full and open competition for EMD will follow the Pre-EMD effort. EMD contract award is planned for 1QFY18 to achieve system affordability goals and support the warfighter's Initial Operating Capability (IOC) date. The USAF will field a total of 16 operational JSTARS Recap aircraft and will maintain and support one JSTARS Recap test aircraft in order to meet the user's requirement (total of 17 aircraft), which is currently being fulfilled by the JSTARS Legacy E-8C fleet. Three weapon systems will be developed and built during EMD to accomplish both Developmental Test and Evaluation (DT&E) and Operational Test and Evaluation (OT&E). All of these systems will be configured as operational representatives; one will remain a dedicated test aircraft and two will be used with two Low Rate Initial Production (LRIP) aircraft to meet the IOC requirement of four aircraft. Full Rate Production (FRP) will result in a total of 12 additional aircraft, with the plan of four being delivered annually to meet Full Operational Capability (FOC) of FY28.

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OSA and Open Mission System (OMS) are a fundamental technical and business basis of the program. The USAF has developed and maintained the system's government reference architecture which adheres to an OSA and shapes how industry will plan their integration activities towards this materiel solution. The net result of this technical/business approach is a responsive industrial base and ensures the design of the system is adaptable/flexible to meet changing threats. The USAF has allocated resources to support internal system engineering and integration activities aimed at bolstering competition, improving affordability, and reducing overall Weapon System (WS) lifecycle costs.

**F. Performance Metrics**

Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0307581F / JSTARS Recap	<b>Project (Number/Name)</b> 650003 / JSTARS Recapitalization
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<b>Product Development (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
PRE-EMD Contract #1	C/FFP	Boeing Service Co. : Richardson, TX	0.000	17.695	Aug 2015	10.231	Jan 2016	0.000		0.000		0.000	0.000	27.926	27.926
PRE-EMD Contract #2	C/FFP	Northrup Grumman systems Corp : Melbourne, FL	0.000	17.695	Aug 2015	7.453	Jan 2016	0.000		0.000		0.000	0.000	25.148	25.148
PRE-EMD Contract #3	C/FFP	Lockheed Martin Corp : King of Prussia, PA	0.000	17.695	Aug 2015	7.424	Jan 2016	0.000		0.000		0.000	0.000	25.119	25.119
Radar Risk Reduction	C/Various	TBD : TBD	0.000	0.000		0.000		102.818	Oct 2016	0.000		102.818	0.000	102.818	TBD
JSTARS Recap EMD	Various	TBD : TBD	0.000	0.000		0.000		0.000		0.000		0.000	2,793.033	2,793.033	TBD
<b>Subtotal</b>			0.000	53.085		25.108		102.818		0.000		102.818	2,793.033	2,974.044	-

**Remarks**  
Pre-Engineering and Manufacturing Development (EMD) contracts will be incrementally funded with the basic contract (Materiel Solution Analysis) awarded on 7 August 2015 and options for Technology Maturation and Risk Reduction (TMRR) activities exercised in FY16. Two Radar Risk Reduction contracts will be awarded in FY17. EMD contract will be awarded in 1QFY18.

<b>Support (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
<b>Subtotal</b>			-	-		-		-		-		-	-	-	-

<b>Test and Evaluation (\$ in Millions)</b>				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
Responsible Test Organization (RTO)	MIPR	Various : Various	0.000	1.269	Feb 2015	2.054	Oct 2015	2.100	Oct 2016	0.000		2.100	52.147	57.570	TBD
<b>Subtotal</b>			0.000	1.269		2.054		2.100		0.000		2.100	52.147	57.570	-

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**Exhibit R-3, RDT&E Project Cost Analysis: PB 2017 Air Force** **Date:** February 2016

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0307581F / JSTARS Recap	<b>Project (Number/Name)</b> 650003 / JSTARS Recapitalization
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Test and Evaluation (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			

**Remarks**  
 Activities include, but not limited to, detailed test planning and provisioning to include the writing of a detailed test and safety plans, setting up the test execution data and documentation management infrastructure, developing data analysis tools, provisioning for test assets, instrumentation and ranges. Activities will be accomplished utilizing the DoD Major Ranges & Test Facilities which include, but not limited to, the AFTC (412TW and 96TH), Joint Interoperability Test Center (JITC), the 346th TS, Live Fire Test Organizations (AFLMC/EZJA and 96th TG Det 1), and Operational Test Agencies (AFOTEC).

Management Services (\$ in Millions)				FY 2015		FY 2016		FY 2017 Base		FY 2017 OCO		FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost			
FFRDC	Various	Various : Bedford, MA	3.025	8.440	Oct 2014	9.193	Oct 2015	11.077	Oct 2016	0.000		11.077	51.400	83.135	TBD
PASS Support (A and AS)	Various	Various : Bedford, MA	1.485	4.117	Nov 2014	1.090	Nov 2015	1.804	Nov 2016	0.000		1.804	10.500	18.996	TBD
ETASS Support (A and AS)	Various	Various : Bedford, MA	0.000	1.373	Nov 2014	2.550	Nov 2015	2.550	Nov 2016	0.000		2.550	9.400	15.873	TBD
PMA - Other	Various	Various : Bedford, MA	0.490	2.595	Dec 2014	4.348	Dec 2015	7.670	Dec 2016	0.000		7.670	4.500	19.603	TBD
<b>Subtotal</b>			5.000	16.525		17.181		23.101		0.000		23.101	75.800	137.607	-

**Remarks**  
 High percentage of management services are a result of FFRDC and other contractor support required to conduct studies and other risk reducing analysis to better inform the government about integration risks, use of Open System Architecture (OSA), and subsystem performance towards Service Acquisition Executive (SAE) initiative "owning the technical baseline." Specific activities include modeling and analysis/simulation to better understand/anticipate performance, establishment of System Integration Lab (SIL) for development/integration, and Open Mission Systems (OMS) compliance testing. In addition, contractor support is necessary for all the required acquisition documentation.

	Prior Years	FY 2015	FY 2016	FY 2017 Base	FY 2017 OCO	FY 2017 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>	5.000	70.879	44.343	128.019	0.000	128.019	2,920.980	3,169.221	-

**Remarks**

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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2017 Air Force		<b>Date:</b> February 2016
<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0307581F / JSTARS Recap	<b>Project (Number/Name)</b> 650003 / JSTARS Recapitalization

	FY 2015				FY 2016				FY 2017				FY 2018				FY 2019				FY 2020				FY 2021			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
Materiel Development Decision - ADM Signed May 2015	██████																											
Milestone A (DEC 2015)							██																					
PRE Engineering and Manufacturing Development activities							██████																					
Technology Maturation and Risk Reduction							██████																					
System Requirements Review							██																					
System Functional Review							██																					
Preliminary Design Review - TMRR								██																				
Capability Development Document (Joint Staff coordination through the JROC)												██																
Development RFP Release Decision Point												██																
Radar Risk Reduction RFP Release							██																					
Radar Risk Reduction Activities												██████████																
Milestone B (SEP 2017)																██												
Engineering and Manufacturing Development																████████████████████												
Preliminary Design Review - EMD																██												
T1, T2, and T3 Aircraft buys/deliveries																██████████████████████████████												
Critical Design Review																				██								
Developmental Test and Evaluation																												██████

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

<b>Appropriation/Budget Activity</b> 3600 / 5	<b>R-1 Program Element (Number/Name)</b> PE 0307581F / JSTARS Recap	<b>Project (Number/Name)</b> 650003 / JSTARS Recapitalization
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Schedule Details

Events	Start		End	
	Quarter	Year	Quarter	Year
Material Development Decision - ADM Signed May 2015	2	2015	3	2015
Milestone A (DEC 2015)	1	2016	1	2016
PRE Engineering and Manufacturing Development activities	4	2015	2	2016
Technology Maturation and Risk Reduction	2	2016	4	2016
System Requirements Review	1	2016	1	2016
System Functional Review	2	2016	2	2016
Preliminary Design Review - TMRR	3	2016	3	2016
Capability Development Document (Joint Staff coordination through the JROC)	4	2016	4	2016
Development RFP Release Decision Point	4	2016	4	2016
Radar Risk Reduction RFP Release	2	2016	2	2016
Radar Risk Reduction Activities	1	2017	1	2018
Milestone B (SEP 2017)	4	2017	4	2017
Engineering and Manufacturing Development	1	2018	4	2021
Preliminary Design Review - EMD	3	2018	3	2018
T1, T2, and T3 Aircraft buys/deliveries	1	2018	3	2020
Critical Design Review	1	2019	1	2019
Developmental Test and Evaluation	2	2021	4	2021