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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600: <i>Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development</i>	R-1 Program Element (Number/Name) PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	0.000	8.728	8.864	0.000	8.864	9.050	9.212	9.377	9.549	Continuing	Continuing
674779: <i>Integrated Broadcast Service (IBS)</i>	-	0.000	8.728	8.864	0.000	8.864	9.050	9.212	9.377	9.549	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

In FY2020 Integrated Broadcast Services (IBS) efforts funded in PE1203179F in FY2018 and FY2019, transferred to PE0305179F due to realignment of IBS to Major Force Program 03, Intelligence and Communication.

The IBS fulfills the warfighter's requirements for worldwide threat warning and situational awareness information with timely production and simultaneous dissemination of Intelligence, Surveillance, and Reconnaissance (ISR) derived combat information. It also provides target tracking data to support threat avoidance, targeting, force protection, and situational awareness. This information is continually refined in near real time by strategic, operational and tactical sensors.

IBS is comprised of the following:

- A Common Interactive Broadcast (CIB) on UHF (Ultra High Frequency) satellite channel using a Common Message Format (CMF) and a Military Standard (MIL-STD) Demand Assigned Multiple Access (DAMA) compliant waveform and Line of Sight (LOS) using the Wideband Networking Waveform (WNW) and Joint Tactical Terminal (JTT).
- IBS-Network Services (IBS-NS) includes two Global IBS Network Servers (GINS) and four Theater Interface Nodes (TINs) to support the geographic Combatant Commanders (COCOMs), all built to validated warfighter requirements.
- Two GINS receive data from each theater and integrate this data into a worldwide picture available to all network/broadcast users.
- Four regional TINs allow local and out-of-theater users (not directly receiving IBS broadcast) to receive the CIB information broadcast. Additionally, the TIN will receive and inject data into the CIB for producers without access to the theater CIB.

This PE funds:

- Development/upgrades of IBS (IBS-NS, CIB, and CMF)

This project will identify and implement an open, scalable system architecture that will accommodate growth as the virtual world grows and cyber operations change.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver IBS weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

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B. Program Change Summary (\$ in Millions)	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total
Previous President's Budget	0.000	8.728	8.880	0.000	8.880
Current President's Budget	0.000	8.728	8.864	0.000	8.864
Total Adjustments	0.000	0.000	-0.016	0.000	-0.016
• 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	0.000	0.000			
• Other Adjustments	0.000	0.000	-0.016	0.000	-0.016

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
Title: Development/upgrades of the Integrated Broadcast Service (IBS-NS, CIB, and CMF)	-	6.800	6.177
Description: Development/upgrades of the IBS (IBS-NS, CIB, and CMF).			
FY 2020 Plans:			
- Continued to synchronize and integrate with DOD Intelligence Community (IC) Cloud as a potential producer/consumer; the capability will provide a long term searchable data store for IBS information.			
- Continued to upgrade the IBS Enterprise-level real-time and analytic views on Global and COCOM watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows			
- Continued to upgrade volumetric increase to provide ten times performance enhancement to throughput, storage and replay to address message volume; this will increase the enterprise output.			
- Continued to provide resilience to the IBS CIB UHF Broadcast by utilizing the Mobile User Objective System (MUOS) Wideband Code Division Multiple Access (WCDMA) SATCOM payload supporting the receipt of IBS on 1st generation MUOS terminals			
- Continued to upgrade and connect the Combatant Command (COCOM) J2 CIB planning function with the COCOM J6 Integrated Waveform planning function			
- Continued to upgrade the CIB Planning Tool and IBS-NS capability at the COCOMs to allow automated planning to occur for active producers			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<ul style="list-style-type: none"> - Continued development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices - Continued development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS - WCDMA payload - Continued to upgrade the P5 system health and welfare status at the COCOMs to include Alternate Path status update messages -- Continued to upgrade the resiliency of IBS to include polar coverage - Continued to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data - Continued enhancement of uplink sites to handle operational surge increases - Continued to upgrade the monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watch sites, development and fielding of Downlink Monitoring Element (DME) <p>FY 2021 Plans:</p> <ul style="list-style-type: none"> - Will continue to synchronize and integrate with DOD Intelligence Community (IC) Cloud as a potential producer/consumer; the capability will provide a long term searchable data store for IBS information. - Will continue to upgrade the IBS Enterprise-level real-time and analytic views on Global and COCOM watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows - Will continue to upgrade volumetric increase to provide ten times performance enhancement to throughput, storage and replay to address message volume; this will increase the enterprise output - Will continue to provide resilience to the IBS CIB UHF Broadcast by utilizing the Mobile User Objective System (MUOS) Wideband Code Division Multiple Access (WCDMA) SATCOM payload supporting the receipt of IBS on 1st generation MUOS terminals 				

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<ul style="list-style-type: none"> - Will continue to upgrade and connect the Combatant Command (COCOM) J2 CIB planning function with the COCOM J6 Integrated Waveform planning function - Will continue to upgrade the CIB Planning Tool and IBS-NS capability at the COCOMs to allow automated planning to occur for active producers - Will continue development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices - Will continue development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS - WCDMA payload - Will continue to upgrade the P5 system health and welfare status at the COCOMs to include Alternate Path status update messages -- Will continue to upgrade the resiliency of IBS to include polar coverage - Will continue to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data - Will continue enhancement of uplink sites to handle operational surge increases - Will continue to upgrade the monitoring and control tools to assist in assured dissemination tasks at COCOM uplink watch sites, development and fielding of Downlink Monitoring Element (DME) <p>FY 2020 to FY 2021 Increase/Decrease Statement: Efficiencies in execution.</p>				
<p>Title: Enterprise System Engineering</p> <p>Description: Enterprise Systems Engineering/CMF Integration/CIB Integration</p> <p>FY 2020 Plans: - Continued Enterprise Systems Engineering/CMF/CIB Integration</p> <p>FY 2021 Plans:</p>		-	0.900	0.994

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
- Will continue Enterprise Systems Engineering/CMF/CIB Integration			
<i>FY 2020 to FY 2021 Increase/Decrease Statement:</i> Minor update to test operating costs			
<i>Title:</i> Test & Evaluation <i>Description:</i> Test & Evaluation of the IBS System	-	1.028	1.693
<i>FY 2020 Plans:</i> Conducted Test and Evaluation activities for components of the IBS-NS system/subsystems			
<i>FY 2021 Plans:</i> Will conduct Test and Evaluation activities of the IBS-NS system/subsystems			
<i>FY 2020 to FY 2021 Increase/Decrease Statement:</i> Increase activity to validate upgrades across the enterprise			
Accomplishments/Planned Programs Subtotals	-	8.728	8.864

D. Other Program Funding Summary (\$ in Millions)											
<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• RDTE 07 1203179F: <i>Integrated Broadcast Service (IBS)</i>	8.568	-	-	-	-	-	-	-	-	0.000	8.568
• SPAF 01 IBS000: <i>Integ Broadcast Service</i>	16.445	-	-	-	-	-	-	-	-	0.000	16.445
• OPAF 03 832070: <i>Intelligence Comm Equipment</i>	-	16.743	5.727	-	5.727	6.335	6.655	6.972	7.302	Continuing	Continuing

Remarks

E. Acquisition Strategy
 IBS is in the PEO Digital portfolio and executed by AFLCMC/HBG.
 IBS uses an Adaptive Life-cycle approach that provides incremental improvement and new capability in 90-day cycles.
 For contracting efforts, a Single Award IDIQ contract with multiple task orders was awarded to CACI International Inc.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0305179F / Integrated Broadcast Service (IBS)				674779 / Integrated Broadcast Service (IBS)							
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Product Development	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
IBS (IBS-NS, CIB, and CMF) Development Upgrades	Various	CACI/OGA/Various : Fairfax, VA	-	-		7.068	Nov 2019	7.177	Nov 2020	-		7.177	Continuing	Continuing	-
Subtotal			-	-		7.068		7.177		-		7.177	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Support	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Interoperability and Development Testing	MIPR	JITC : Ft Hauchuca, AZ	-	-		0.500	Oct 2019	0.400	Nov 2020	-		0.400	Continuing	Continuing	-
Responsible Test Organization (RTO)	PO	46th Test Sqn : Eglin, AFB, FL	-	-		0.300		0.300	Nov 2020	-		0.300	Continuing	Continuing	-
Subtotal			-	-		0.800		0.700		-		0.700	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 Total			
Cost Category Item	Contract Method & Type	Performing Activity & Location	Prior Years	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Award Date	Cost	Cost To Complete	Total Cost	Target Value of Contract
Test and Evaluation	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Program Management/ Engineering Support	C/CPFF	Credence : Warner Robins, GA	-	-		0.160	Oct 2019	0.197	Oct 2020	-		0.197	Continuing	Continuing	-
Enterprise Engineering/ CMF Integration/CIB Integration	SS/CPFF	L3 Comm IS : Greenville, TX	-	-		0.700	Nov 2019	0.790	Dec 2020	-		0.790	Continuing	Continuing	-
Subtotal			-	-		0.860		0.987		-		0.987	Continuing	Continuing	N/A

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force		Date: February 2020
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>	Project (Number/Name) 674779 / <i>Integrated Broadcast Service (IBS)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
IBS-NS				
Develop the monitoring and control tools to assist in assured dissemination	1	2020	1	2023
Integrate CMF updates into IBS-NS	1	2020	4	2025
Enterprise Systems Engineering of IBS (IBS-NS, CIB, and CMF)	1	2020	4	2025
Testing and Evaluation of IBS (IBS-NS, CIB, and CMF)	1	2020	4	2025