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**Exhibit R-2, RDT&E Budget Item Justification:** PB 2022 Air Force **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>
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COST (\$ in Millions)	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	FY 2023	FY 2024	FY 2025	FY 2026	Cost To Complete	Total Cost
Total Program Element	-	8.728	8.848	21.335	0.000	21.335	-	-	-	-	-	-
674779: <i>Integrated Broadcast Service (IBS)</i>	-	8.728	8.848	21.335	0.000	21.335	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

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 development efforts are 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 the development and/or upgrades of IBS (IBS-NS, CIB, and CMF)

This project will identify and implement an open system architecture that will accommodate growth as the migration continues to cloud hosted enterprise services. Additionally, IBS is a critical data information provider supporting Joint All Domain Command and Control and the emerging requirements for Advanced Battle Management System information exchange requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver IBS system capability. In FY20 \$0.000M was expended for civilian pay expenses in this program element, and in FY21 \$0.000M is forecasted for civilian pay expenses in this program element.

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>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022 Base</b>	<b>FY 2022 OCO</b>	<b>FY 2022 Total</b>
Previous President's Budget	8.728	8.864	9.050	0.000	9.050
Current President's Budget	8.728	8.848	21.335	0.000	21.335
Total Adjustments	0.000	-0.016	12.285	0.000	12.285
• Congressional General Reductions	0.000	-0.016			
• 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	12.285	0.000	12.285

**Change Summary Explanation**

FY21: \$0.016M Congressional Reduction of equal spread across AF RDT&E programs

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
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<b>Title:</b> Development/upgrades of the Integrated Broadcast Service (IBS-NS, CIB, and CMF)	6.906	6.854	19.341
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**Description:** Development/upgrades of the IBS (IBS-NS, CIB, and CMF).

***FY 2021 Plans:***

- Continued efforts 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 efforts to upgrade the IBS Enterprise-level real-time and analytic views on Global and CCMDs watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows
- Continued efforts 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 efforts 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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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- Continued efforts to upgrade and connect the Combatant Command (CCMD) J2 CIB planning function with the CCMD J6 Integrated Waveform planning function</li> <li>- Continued efforts to upgrade the CIB Planning Tool and IBS-NS capability at the CCMDs to allow automated planning to occur for active producers</li> <li>- Continued development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices</li> <li>- Continued development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS - WCDMA payload</li> <li>- Continued efforts to upgrade the P5 system health and welfare status at the COCOMs to include Alternate Path status update messages</li> <li>-- Continued efforts to upgrade the resiliency of IBS to include polar coverage</li> <li>- Continued efforts to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data</li> <li>- Continued efforts enhancement of uplink sites to handle operational surge increases</li> <li>- Continued efforts 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)</li> </ul> <p><b>FY 2022 Plans:</b></p> <ul style="list-style-type: none"> <li>- 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.</li> <li>- Will continue to upgrade the IBS Enterprise-level real-time and analytic views on Global and CCMDs watch floors; further integrate uplink sites with associated TIN by reducing equipment overhead and streamlining data flows</li> <li>- 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</li> </ul>				

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<ul style="list-style-type: none"> <li>- 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</li> <li>- Will continue to upgrade and connect the Combatant Command (CCMD) J2 CIB planning function with the CCMD J6 Integrated Waveform planning function</li> <li>- Will continue to upgrade the CIB Planning Tool and IBS-NS capability at the CCMDs to allow automated planning to occur for active producers</li> <li>- Will continue development of the IBS Thin Client, which provides a light weight application to receive IBS information on mobile devices</li> <li>- Will continue development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS - WCDMA payload</li> <li>- Will continue to upgrade the P5 system health and welfare status at the COCOMs to include Alternate Path status update messages</li> <li>-- Will continue to upgrade the resiliency of IBS to include polar coverage</li> <li>- Will continue to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data</li> <li>- Will continue enhancement of uplink sites to handle operational surge increases</li> <li>- 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)</li> <li>- Will continue to provide modernization efforts in support of the IBS IS-CDD</li> </ul> <p><b><i>FY 2021 to FY 2022 Increase/Decrease Statement:</i></b></p>				

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
- Funding increase due to development efforts focused on IBS modernization requirements outlined in the IS-CDD. These include s/w enhancements to integrate into the new Joint Tactical Terminal Next Generation Radio. Begins process to complete Cloud Migration and upgrades Common Integrated Broadcast Uplink sites to be WCDMA compliant.			
<b>Title:</b> Enterprise System Engineering <b>Description:</b> Enterprise Systems Engineering/CMF Integration/CIB Integration <b>FY 2021 Plans:</b> Will continue Enterprise Systems Engineering/CMF/CIB Integration <b>FY 2022 Plans:</b> Will continue Enterprise Systems Engineering/CMF/CIB Integration	0.900	0.994	0.994
<b>Title:</b> Test & Evaluation <b>Description:</b> Test & Evaluation of the IBS System <b>FY 2021 Plans:</b> Will conduct Test and Evaluation activities of the IBS-NS system/subsystems <b>FY 2022 Plans:</b> Will conduct Test and Evaluation activities of the IBS-NS system/subsystems	0.922	1.000	1.000
<b>Accomplishments/Planned Programs Subtotals</b>	8.728	8.848	21.335

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

<u>Line Item</u>	<u>FY 2020</u>	<u>FY 2021</u>	<u>FY 2022</u> <u>Base</u>	<u>FY 2022</u> <u>OCO</u>	<u>FY 2022</u> <u>Total</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>FY 2026</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 832070: <i>Intelligence Comm Equipment</i>	16.743	5.727	9.145	-	9.145	-	-	-	-	-	-

**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 2022 Air Force** **Date:** May 2021

<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0305179F / <i>Integrated Broadcast Service (IBS)</i>	<b>Project (Number/Name)</b> 674779 / <i>Integrated Broadcast Service (IBS)</i>
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<b>Product Development (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Product Development	C/CPFF	Not specified. : TBD	-	-		-		8.000		-		8.000	-	-	-
IBS (IBS-NS, CIB, and CMF) Development Upgrades	SS/CPFF	CACI/OGA/Various : Fairfax, VA	-	6.906	Feb 2020	6.854	Feb 2021	11.341	Feb 2022	-		11.341	-	-	-
<b>Subtotal</b>			-	6.906		6.854		19.341		-		19.341	-	-	N/A

<b>Support (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Enterprise Engineering/CMF Integration/CIB Integration	SS/CPFF	L3Harris : Greenville, TX	-	0.790	Aug 2020	0.874	Aug 2021	0.864	Aug 2022	-		0.864	-	-	-
<b>Subtotal</b>			-	0.790		0.874		0.864		-		0.864	-	-	N/A

<b>Test and Evaluation (\$ in Millions)</b>				FY 2020		FY 2021		FY 2022 Base		FY 2022 OCO		FY 2022 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			
Interoperability and Development Testing	MIPR	JITC : Ft Hauchuca, AZ	-	0.665	Oct 2019	0.700		0.700		-		0.700	-	-	-
Responsible Test Organization (RTO)	PO	45th Test Sqn : Eglin AFB, FL	-	0.257	Oct 2019	0.300		0.300		-		0.300	-	-	-
<b>Subtotal</b>			-	0.922		1.000		1.000		-		1.000	-	-	N/A





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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b>IBS-NS</b>				
Develop the monitoring and control tools to assist in assured dissemination	1	2020	1	2022
Integrate CMF updates into IBS-NS	1	2020	4	2022
Enterprise Systems Engineering of IBS (IBS-NS, CIB, and CMF)	1	2020	4	2022
Testing and Evaluation of IBS (IBS-NS, CIB, and CMF)	1	2020	4	2022
Develop and integrate IS-CDD requirements	1	2021	4	2022