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Exhibit R-2, RDT&E Budget Item Justification: PB 2024 Air Force **Date:** March 2023

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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
Total Program Element	-	21.335	14.123	21.588	0.000	21.588	18.865	19.255	19.647	20.358	Continuing	Continuing
674779: <i>Integrated Broadcast Service (IBS)</i>	-	21.335	14.123	21.588	0.000	21.588	18.865	19.255	19.647	20.358	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

The Integrated Broadcast Service (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), a Military Standard (MIL-STD) Common-waveform, a Joint Tactical Terminal (JTT), a Tactical Data Processor (TDP) to filter and display messages and data, and CMF analysis tools.
- 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 modernization and/or upgrades of these IBS elements (IBS-NS, CIB, and CMF), as well as the modernization elements in the Information Systems - Capabilities Development Document (IS-CDD), signed 4 Feb 21. 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 (JADC2) 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 weapon system capability. The use of such programs funds would be in addition to the civilian pay expenses budgeted in program element 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22 \$0.390M was expended for civilian pay expenses in this program element, and in FY23 \$0.00M 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. Program Change Summary (\$ in Millions)	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total
Previous President's Budget	21.335	22.123	21.539	0.000	21.539
Current President's Budget	21.335	14.123	21.588	0.000	21.588
Total Adjustments	0.000	-8.000	0.049	0.000	0.049
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	-8.000			
• 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	0.049	0.000	0.049

Change Summary Explanation

FY23 program funds were Congressionally decreased by \$8.000M for "Product Development Early to Need."

C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
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Title: Enterprise Development (IBS-NS, CIB, CMF, and receivers)	7.383	8.485	13.363
Description: Develops/tests/supports IBS over Mobile User Objective System (MUOS) Wideband Code Division Multiple Access (WCDMA) implementation, IBS-Alt Path enhancements, receiver software enhancements, Artificial Intelligence/Machine Learning (AI/ML) development, and modernization/upgrade efforts involving IBS-NS.			
FY 2023 Plans:			
- Continue to perform MUOS WCDMA software upgrades, alternate path development, and receiver software modifications			
- Continue to provide resilience to the IBS CIB UHF Broadcast by utilizing the MUOS WCDMA Satellite Communications (SATCOM) payload supporting the receipt of IBS on 1st generation MUOS terminals			
- Continue development of the IBS Thin Client, which provides a light-weight application to receive IBS information on mobile devices			
- Continue development of the CIB MUOS Group Integration - Many to Many, which achieves IBS Over the Air requirements on the MUOS - WCDMA payload			
- Continue to upgrade the resiliency of IBS to include polar coverage			

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> - Investigate AI/ML capabilities for incorporating into IBS Enterprise - Continue to provide modernization efforts in support of the IBS IS-CDD - 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) - 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 - 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 - Continue to upgrade the CIB Planning Tool and IBS-NS capability at the CCMDs to allow automated planning to occur for active producers - 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 - Continue to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Will continue to perform MUOS WCDMA software upgrades, alternate path development, and receiver software modifications - 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 - Will continue development of the IBS Thin Client, which provides a light-weight application to receive IBS information on mobile devices 			

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> - 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 resiliency of IBS to include polar coverage - Will continue to investigate AI/ML capabilities for incorporating into IBS Enterprise - Will continue to provide modernization efforts in support of the IBS IS-CDD - 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) - 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 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 upgrade the CIB Planning Tool and IBS-NS capability at the CCMDs to allow automated planning to occur for active producers - 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 - Will continue to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data - Will continue to provide modernization efforts in support of the IBS IS-CDD - 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 volumetric increase to provide ten times performance enhancement to throughput, storage and replay to address message volume; this will increase the Enterprise output 				

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> - Will continue to upgrade the CIB Planning Tool and IBS-NS capability at the CCMDs to allow automated planning to occur for active producers - 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 - Will continue to upgrade and transition current classified dissemination path to new architecture and enable SCI-level dissemination of IBS data <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to increased requirements.</p>				
<p>Title: TDP and Analysis Tool Upgrades</p> <p>Description: Enhances Enterprise TDP and Common Message Format Analysis Tool (CMF-AT)</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue enhancement of enterprise TDP and Common Message Format Analysis Tool (CMF-AT), also providing engineering expertise for IBS integration into a proliferate-Low Earth Orbit (p-LEO) constellation as a future alternate dissemination path <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Will Continue enhancement of enterprise TDP and Common Message Format Analysis Tool (CMF-AT), also providing engineering expertise for IBS integration into a proliferate-Low Earth Orbit (p-LEO) constellation as a future alternate dissemination path <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to inflation factors and continued support of IBS Modernization Efforts</p>		4.445	0.267	0.310
<p>Title: Enterprise Support</p> <p>Description: Enterprise Systems Engineering/CMF Integration/CIB Integration</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Continue to perform Enterprise Systems Engineering and CMF/CIB Integration, including support to Hybrid Cloud at the tactical edge evaluation and software development 		5.859	4.571	5.110

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
<ul style="list-style-type: none"> - Continue to upgrade and connect the Combatant Command (CCMD) J2 CIB planning function with the CCMD J6 Integrated Waveform planning function - Continue enhancement of uplink sites to handle operational surge increases - Investigate IBS architecture CMF parser library update requirements to support increased IBS volumetric message traffic <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Will continue to perform Enterprise Systems Engineering and CMF/CIB Integration, including support to Hybrid Cloud at the tactical edge evaluation and software development - Will continue to upgrade and connect the Combatant Command (CCMD) J2 CIB planning function with the CCMD J6 Integrated Waveform planning function - Will continue enhancement of uplink sites to handle operational surge increases - Will continue to investigate IBS architecture CMF parser library update requirements to support increased IBS volumetric message traffic <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to inflation factors and continued support of IBS Modernization Efforts</p>				
<p>Title: Acquisition Support</p> <p>Description: Acquisition Support for Modernization</p> <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Monitor execution of modernization program efforts. - Refine IS-CDD initiatives into technical requirements for acquisition strategy approval and contract award(s) <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Will monitor execution of modernization program efforts. - Will continue to refine more IS-CDD initiatives into technical requirements for acquisition strategy approval and contract award(s) <p>FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to increased requirements.</p>		3.110	0.000	1.750
<p>Title: Test & Evaluation</p>		0.538	0.800	1.055

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C. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
Description: Test & Evaluation of the IBS System FY 2023 Plans: - Perform Test and Evaluation activities of the NS systems/sub-systems components and CMF. FY 2024 Plans: - Will perform Test and Evaluation activities of the NS systems/sub-systems components and CMF. FY 2023 to FY 2024 Increase/Decrease Statement: Funding increased due to inflation factors and continued support of IBS Modernization Efforts			
Accomplishments/Planned Programs Subtotals	21.335	14.123	21.588

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

Line Item	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	FY 2025	FY 2026	FY 2027	FY 2028	Cost To Complete	Total Cost
• OPAF 03 832070: <i>Intelligence Comm Equipment</i>	13.825	5.724	11.568	-	11.568	13.963	9.078	9.417	9.616	Continuing	Continuing

Remarks

E. Acquisition Strategy

IBS acquisition leverages three existing sole source, single award, IDIQ contracts to modernize the network architecture and broadcast dissemination.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force												Date: March 2023			
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 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Enterprise Development	Various	OGA/Various : Multiple	-	7.383	Dec 2021	8.485	Dec 2022	13.363	Dec 2023	-		13.363	Continuing	Continuing	-
TDP and Analysis Tools	MIPR	NIWC : San Diego, CA	-	4.445	Dec 2022	0.267	Dec 2022	0.310	Dec 2023	-		0.310	Continuing	Continuing	-
Subtotal			-	11.828		8.752		13.673		-		13.673	Continuing	Continuing	N/A
Support (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Enterprise Support	SS/CPFF	MEIS (IMT)/L3 : Multiple	-	5.859	Jan 2022	4.571	Jan 2023	5.110	Jan 2024	-		5.110	Continuing	Continuing	-
Acquisition Support	SS/CPAF	GTRI : Atlanta, GA	-	3.110	Jun 2022	0.000		1.750	Jun 2024	-		1.750	Continuing	Continuing	-
Subtotal			-	8.969		4.571		6.860		-		6.860	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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
Interoperability and Development Testing	MIPR	JITC : Ft Huachuca, AZ	-	0.250	Feb 2022	0.540	Dec 2022	0.785	Dec 2023	-		0.785	Continuing	Continuing	-
Responsible Test Organization (RTO)	PO	45th Test Sqn : Eglin AFB, FL	-	0.288	Oct 2021	0.260	Dec 2022	0.270	Dec 2023	-		0.270	Continuing	Continuing	-
Subtotal			-	0.538		0.800		1.055		-		1.055	Continuing	Continuing	N/A
Project Cost Totals			-	21.335		14.123		21.588		-		21.588	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
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>

FY 2022				FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028			
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

IBS	
Develop the monitoring and control tools to assist in assured dissemination	
Integrate CMF updates into IBS-NS	
Enterprise Systems Engineering of IBS (IBS-NS, CIB, and CMF)	
Testing and Evaluation of IBS (IBS-NS, CIB, and CMF)	
Develop and integrate IS-CDD requirements	
Enterprise Development	

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
IBS				
Develop the monitoring and control tools to assist in assured dissemination	1	2022	4	2028
Integrate CMF updates into IBS-NS	1	2022	4	2028
Enterprise Systems Engineering of IBS (IBS-NS, CIB, and CMF)	1	2022	4	2028
Testing and Evaluation of IBS (IBS-NS, CIB, and CMF)	1	2022	4	2028
Develop and integrate IS-CDD requirements	1	2022	4	2028
Enterprise Development	1	2022	4	2028