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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 0207610F / <i>Battlefield Abn Comm Node (BACN)</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	-	30.953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
671201: <i>E-11 Development</i>	-	30.953	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

Battlefield Airborne Communication Node "BACN" enables tactical edge Joint and Coalition information interoperability via air, space, and surface systems, to include a Backbone Network for high capacity data transfer. As requirements emerge, BACN will integrate new hardware and software capabilities that improve system performance, interoperability, availability, prototyping of activities in line with department approach of system development upgrades to support current/future open mission system "OMS" technologies. Efforts may include onboard enhancements such as datalink receiving capability in platform cockpit to include but not limited to Link-16, as well as analysis and developmental efforts to explore feasibility of onboard operators to support onboard payload control capabilities. Efforts include, but are not limited to, expansion of external time reference capabilities, development/integration of additional communications systems/subsystems and components; Ka band SATCOM, IBS, PTW, enhancements to Military Global Positioning System "GPS", integration of advanced antennas and waveforms, development efforts enabling integration of ABMS/JADC2 capabilities, enhancements to ground support capabilities. Additionally, safety of flight considerations, to include weapon system performance, aircraft structural integrity, availability, continuity of service requirements will be addressed, aircraft avionics upgrades, as well as early system engineering assessments and risk reduction activities associated with weapon system "payload" & "platform" survivability in non-contested through contested environments. Efforts include required non-recurring engineering and Diminishing Manufacturing Sources "DMS" issues, the development of simulators/trainers, development of training materials, the development efforts associated with the integration of future waveforms that are backwards compatible with existing communications, and technical publications as well as the assimilation of any mandates levied on the BACN weapon system. Execute risk reduction activities for development of future capabilities on BACN payload/aircraft efforts.

*All funding beyond FY22 for BACN Weapon System development is within PE0207238F

This program element may include necessary civilian pay expenses required to manage, execute, and deliver emergent or unanticipated weapon system capability. The use of such programs 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 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	
Previous President's Budget	32.008	0.000	0.000	0.000	0.000	
Current President's Budget	30.953	0.000	0.000	0.000	0.000	
Total Adjustments	-1.055	0.000	0.000	0.000	0.000	
• 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	-1.055	0.000				
• Other Adjustments	0.000	0.000	0.000	0.000	0.000	
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2022	FY 2023	FY 2024
Title: Main Base Operating Base Integration Communications Engineering				1.500	0.000	0.000
Description: Small scale enhancements to BACN ground sites to enable increased operational effectiveness and/or efficiencies						
FY 2023 Plans: N/A						
FY 2024 Plans: N/A						
FY 2023 to FY 2024 Increase/Decrease Statement: N/A						
Title: Military GPS Enhancements with M-Code				0.000	0.000	0.000
Description: Effort enhances Military GPS, including development and integration of emerging GPS and/or PNT technologies such as M-Code, testing, & complete certification. Funds engineering and integration of M-Code GPS capabilities to be included onboard the entire BACN weapon systems (both the E-11 aircraft and BACN payload). All E-11s existing and procured are required to have M-Code GPS and this effort will provide enhanced military grade GPS capabilities to the BACN fleet. Substantial analysis, design, systems engineering, developmental activities are required to integrate capabilities onboard existing E-11s as the aircraft are civilian derivative aircraft.						
FY 2023 Plans:						

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C. Accomplishments/Planned Programs (\$ in Millions)		FY 2022	FY 2023	FY 2024
N/A				
FY 2024 Plans: N/A				
FY 2023 to FY 2024 Increase/Decrease Statement: N/A				
Title: Ka-Band Satellite Communications (Ka-SATCOM)		26.292	0.000	0.000
Description: Ka-band SATCOM upgrade is an effort to replace fielded L-Band SATCOM enhancing BACN voice/data traffic & BACN payload control. The addition of Ka-Band SATCOM provides the BACN weapon system and users substantial increases in operational flexibility to include. These include 4x bandwidth in operation, higher frequency which provides greater interference resiliency over L-Band, allows for simultaneous voice/data traffic as well as BACN payload control, reduces reliance of OCONUS Line of Sight (LOS) payload ground control stations, enables Beyond Line of Site (BLOS) payload control and substantially expands BACN ability to meet warfighter needs in any operational theatres.				
FY 2023 Plans: Award development effort to incorporate Ka-Band SATCOM onto the BACN weapon system				
FY 2024 Plans: Continue development effort to incorporate Ka-Band SATCOM onto the BACN weapon system, and prepare E-11 fleet for integration activities				
FY 2023 to FY 2024 Increase/Decrease Statement: N/A				
Title: Data Links / Gateway Modernization Engineering		3.161	0.000	0.000
Description: Development enhancements required for integration of updated enterprise terminals to the BACN Capability.				
FY 2023 Plans: N/A				
FY 2024 Plans: N/A				
FY 2023 to FY 2024 Increase/Decrease Statement: N/A				
Accomplishments/Planned Programs Subtotals		30.953	0.000	0.000

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D. Other Program Funding Summary (\$ in Millions) N/A		
Remarks		
E. Acquisition Strategy Acquisition strategies varied by effort that provide research, development, integration and interoperability of the BACN platform, payload, supporting systems and equipment and will utilize all contracting options and mechanisms available.		

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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 0207610F / Battlefield Abn Comm Node (BACN)				671201 / E-11 Development								
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	
MilGPS - 675383	SS/CPAF	NGDS : Wichita, KS	-	-		-		-		-		-	Continuing	Continuing	-	
MilGPS - 671201	SS/CPAF	NGMS : San Diego, CA	-	26.292	Jan 2022	-		-		-		-	Continuing	Continuing	-	
Subtotal			-	26.292		-		-		-		-	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	
Acquisition Support	Various	Various : Various, MA	-	1.500	Jan 2022	-		-		-		-	Continuing	Continuing	-	
Subtotal			-	1.500		-		-		-		-	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	
Test and Evaluation	C/CPAF	Not specified. : TBD	-	0.500	Dec 2021	-		-		-		-	Continuing	Continuing	-	
Subtotal			-	0.500		-		-		-		-	Continuing	Continuing	N/A	
Management Services (\$ 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	
BACN A&AS	Various	A&AS : Bedford, MA	-	1.000	Apr 2022	-		-		-		-	Continuing	Continuing	-	
MITRE	Various	MITRE : Bedford, MA	-	1.567	Oct 2021	-		-		-		-	Continuing	Continuing	-	
Travel	Various	Not specified. : TBD	-	0.094	Oct 2021	-		-		-		-	Continuing	Continuing	-	
Subtotal			-	2.661		-		-		-		-	Continuing	Continuing	N/A	

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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 0207610F / <i>Battlefield Abn Comm Node (BACN)</i>	Project (Number/Name) 671201 / <i>E-11 Development</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

Battlefield Airborne Communication Node (BACN)

BACN KA-SATCOM

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[Redacted]																											

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0207610F / <i>Battlefield Abn Comm Node (BACN)</i>	Project (Number/Name) 671201 / <i>E-11 Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Battlefield Airborne Communication Node (BACN)</i>				
BACN KA-SATCOM	3	2023	4	2024