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

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604001F / NC3 Advanced Concepts
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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	-	6.900	5.098	10.011	0.000	10.011	10.131	10.163	10.242	10.248	0.000	62.793
646020: <i>NC3 Advanced Concepts</i>	-	6.900	5.098	10.011	0.000	10.011	10.131	10.163	10.242	10.248	0.000	62.793
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

Nuclear Command, Control, and Communications (NC3) Advanced Concepts are required for analysis, development and prototyping of next generation NC3 systems and subsystems. This program ensures a responsive design and development engineering infrastructure to address evolving Nuclear Deterrence Operations (NDO) mission requirements; emerging issues and technology insertion/technology application on the NC3 Weapon System (WS), future strategic systems/capability, and other common strategic areas where appropriate; and develop enhanced multi-use capabilities. The NC3 Advanced Concepts Program will provide technology maturation and risk reduction activities to support the AF NC3 Weapon System (AN/USQ-225). Activity will reduce life cycle costs, inform technology maturation & risk reduction efforts, improve system performance, mitigate evolving threats, and ensure both viability and durability of the AF NC3 Weapon System.

Additional details can be provided at a higher classification.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605831F and 0605833F. In FY22 \$0.0M was expended for civilian pay expenses in this program element, in FY23 \$0.0M is forecasted for civilian pay expenses in this program element.

This effort is in Budget Activity 4, Advanced Component Development and Prototypes (ACD&P), because efforts are necessary to evaluate integrated technologies, representative modes or prototype systems in a high fidelity and realistic operating environment.

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<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024 Base</b>	<b>FY 2024 OCO</b>	<b>FY 2024 Total</b>
Previous President's Budget	6.900	5.098	0.000	0.000	0.000
Current President's Budget	6.900	5.098	10.011	0.000	10.011
Total Adjustments	0.000	0.000	10.011	0.000	10.011
• 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	10.011	0.000	10.011

**Change Summary Explanation**

FY24 10.0M increase for development and risk reduction of NC3 technologies, to include prototyping, testing, and demonstration of technical capabilities.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<b>Title:</b> NC3 Advanced Concepts	6.900	5.098	10.011
<b>Description:</b> NC3 Advanced Concepts activities will include, but are not limited to: conducting studies, analysis, and prototyping; test bed activities; exercise participation; developing modeling and simulation of identified NC3 WS architecture; integrated NC3 WS testing, validation, and certification; and direct mission support contracts in support of next generation NC3 systems and sub-systems. NC3 Advanced Concepts ensures a responsive design and development engineering infrastructure to address evolving NDO.			
<b>FY 2023 Plans:</b> Continue studies, analysis, and prototyping; test bed activities; exercise participation; develop modeling and simulation of identified NC3 WS architecture; integrated NC3 WS testing, validation, and certification; direct mission support contracts in support of next generation NC3 systems and sub-systems; rapidly respond to evolving warfighter priorities and warfighter requirements.			
<b>FY 2024 Plans:</b> Continue studies, analysis, and prototyping; test bed activities; exercise participation; develop modeling and simulation of identified NC3 WS architecture; integrated NC3 WS testing, validation, and certification; direct mission support contracts in support of next generation NC3 systems and sub-systems; rapidly respond to evolving warfighter priorities and warfighter requirements.			

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<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force I BA 4: Advanced Component Development &amp; Prototypes (ACD&amp;P)</i>	<b>R-1 Program Element (Number/Name)</b> PE 0604001F / NC3 Advanced Concepts
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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2022</b>	<b>FY 2023</b>	<b>FY 2024</b>
<p>Additionally, FY24 funding will support continued early development and risk reduction of an NC3 multi-band/multi-channel (MB/MC) software defined radio (SDR), which will inform evolving NC3 requirements as well as provide viable prototyping for testing and demonstration of technical capability. Funds will also support High Frequency (HF) engineering analysis to reduce technical risk and schedule for potential future program of record/requirement (details can be provided at higher classification levels).</p> <p><b><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i></b> Increased funding to support development and risk reduction of NC3 technologies, such as software defined radios, to inform evolving NC3 requirements as well as to provide viable prototypes for testing and demonstration of various technical capabilities.</p>			
<b>Accomplishments/Planned Programs Subtotals</b>	6.900	5.098	10.011

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

N/A

**Remarks**

**E. Acquisition Strategy**

To conduct NC3 Advanced Concepts essential activities, a combination of competitively awarded contracts, sole source contracts, and/or other transaction authority, may be used to augment Air Force organic capabilities with technical skill sets from Federally Funded Research and Development Centers (FFRDCs), research laboratories, University-Affiliated Research Centers (UARCs), and industry Advisory and Assistance Services (A&AS) providers. All NC3 Advanced Concepts activities will be evaluated for promising technologies and considered for tech transition into the Air Force NC3 Weapon System.



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

<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604001F / <i>NC3 Advanced Concepts</i>	<b>Project (Number/Name)</b> 646020 / <i>NC3 Advanced Concepts</i>
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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

<b><i>NC3 Advanced Concepts</i></b>	
Studies, analysis, and prototyping	
Test bed activities and exercise participation	
Develop modeling and simulation of identified NC3 WS architecture	

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2024 Air Force		<b>Date:</b> March 2023
<b>Appropriation/Budget Activity</b> 3600 / 4	<b>R-1 Program Element (Number/Name)</b> PE 0604001F / <i>NC3 Advanced Concepts</i>	<b>Project (Number/Name)</b> 646020 / <i>NC3 Advanced Concepts</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>NC3 Advanced Concepts</i></b>				
Studies, analysis, and prototyping	1	2022	4	2028
Test bed activities and exercise participation	1	2022	4	2028
Develop modeling and simulation of identified NC3 WS architecture	1	2022	4	2028

**Note**  
NC3 Advanced Concepts (Level of Effort)