

**UNCLASSIFIED**

**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 0606018F / <i>NC3 Integration</i>
--	--

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	-	25.414	26.308	26.532	0.000	26.532	-	-	-	-	-	-
674877: <i>NC3 Integration, Assessment, and Improvement</i>	-	25.414	26.308	26.532	0.000	26.532	-	-	-	-	-	-
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

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

Nuclear Command, Control, and Communications (NC3) is critical to our Nation's nuclear deterrence. Nuclear Deterrence Operations (NDO) is an Air Force Core Function. Within this core function, Nuclear Command and Control (NC2) is the exercise of authority and direction by the President, as Commander in Chief, through established command lines, over nuclear weapon operations of military forces. The President's authority and direction are exercised through the Nuclear Command and Control System (NCCS). The NCCS is the designated combination of flexible and enduring elements including facilities, equipment, communications, procedures, personnel, and the structure in which these elements are integrated, all of which are essential for planning, directing, and controlling nuclear weapon operations. These functions are accomplished through the NC3 system of systems.

The NC3 system of systems provides connectivity from the President or Secretary of Defense through the National Military Command System (NMCS) to nuclear execution forces worldwide. To enhance NC3 mission success, the AF formalized AF NC3 elements as a specified AF Weapon System (WS), AN/USQ-225. Activities funded in this Program integrate legacy systems, ongoing NC3 programs, and future capabilities for the overall AF NC3 WS.

The AF Nuclear Weapon Center NC3 Integration Directorate (AFNWC/NC) will ensure current, new, and future NC3 capabilities are fully integrated as part of the Air Force's overall effort to sustain, modernize, and recapitalize the nuclear enterprise. AFNWC/NC will be responsible for integrating NC3 materiel management across Air Force Materiel Command (AFMC) to include authority and responsibility for weapon system architecture, weapon system configuration management, weapon system state-of-health reporting, risk management, supply chain management, overall integration, system test, verification, and certification. AFNWC/NC is responsible for defining, building, and sustaining current and future AF NC3 WS system of systems configuration baselines, and marshaling necessary Supporting Centers in AFMC and other units/agencies in the Air Force and the Department of Defense (DoD) to support and/or accomplish these tasks. AFNWC/NC will collaborate with AFMC Supporting Centers to champion the full spectrum of doctrine, organization, training, materiel, leadership and education, personnel, facilities, and policy (DOTMLPF-P) efforts, in support of U.S. Strategic Command as the Enterprise Lead for NC3, the Under Secretary of Defense for Acquisition and Sustainment as the NC3 Enterprise Capability Portfolio Manager, and Air Force Global Strike Command as the Lead Command championing NDO requirements for all Combatant Commands.

This program funds activities for integrating AF NC3 WS materiel, authority, and responsibility for the AF NC3 WS architecture, modeling & simulation, digital engineering, configuration management, risk management, weapon system state-of-health reporting, supply chain supportability and risk management, and overall AF NC3 WS integration, development, system test, verification, fielding, and certification. This program also supports modernization and integration activities associated with Joint All Domain Command and Control (JADC2) and Advanced Battle Management System (ABMS) initiatives.

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force	<b>Date:</b> 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 0606018F / NC3 Integration
--	---

This program element may include necessary emergent or unanticipated civilian pay expenses required to manage, execute, and deliver NC3 Integration, Assessment, and Improvement for emergent or unanticipated weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F and 0605833F. In FY2020 \$1.484M and in FY2021 \$2.550M was expended 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.

<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	25.917	26.356	26.932	0.000	26.932
Current President's Budget	25.414	26.308	26.532	0.000	26.532
Total Adjustments	-0.503	-0.048	-0.400	0.000	-0.400
• Congressional General Reductions	0.000	-0.048			
• 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	-0.503	0.000			
• Other Adjustments	0.000	0.000	-0.400	0.000	-0.400

**Change Summary Explanation**

No significant changes

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<b>Title:</b> NC3 Integration, Assessment, and Improvement	25.414	26.308	26.532
<b>Description:</b> To include but not limited to:			
- Modeling and simulation of the AF NC3 WS current and future capabilities			
- Conducting capability gap analysis			
- Establishing NC3 capability recapitalization and modernization plans			
- Developing and conducting the AF NC3 WS test and certification program as well as expanding existing High Frequency (HF) and other frequency testbeds utilizing a phased approach			
- Conducting NC3 system component verification			
- Implementing and employing program and material management controls for the AF NC3 WS including configuration management, risk management, supply chain supportability and risk management, maintenance data collection and reporting capabilities and AF NC3 WS health monitoring solutions			

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> 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 0606018F / <i>NC3 Integration</i>		
<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>- Issue tracking and resolution, assessments and analysis, and governance</li> <li>- Providing data-driven system of system solutions, and shaping NC3 component program acquisition strategies for AF NC3 WS sustainment and performance capability improvements</li> <li>- Initiating and implementing new capability programs/systems and changes to existing programs to align with AF NC3 WS requirements, test and certification, and future capabilities</li> <li>- Interfacing with JADC2 &amp; ABMS leadership to ensure NC3 Modernization efforts are synchronized with larger AF modernization efforts &amp; identifying risk areas where advanced tech demos may be required</li> </ul> <p><b>FY 2021 Plans:</b> NC3 weapon system integration efforts including, but not limited to:</p> <ul style="list-style-type: none"> <li>- Continue to implement test and evaluation certification program for NC3 WS</li> <li>- Continue to expand existing communication spectrum and cyber assessment test bed utilizing a phased approach</li> <li>- Continue to perform NC3 physics, communication and networking analysis</li> <li>- Continue to develop and evolve technical framework of the NC3 WS to meet mission threats of 2030 and beyond</li> <li>- Continue to conduct WS analysis, develop WS capability model, plan WS updates, and implement WS updates</li> <li>- Continue to evaluate options for system-of-system performance improvements within constraints of NC3 WS strategic vision and roadmap</li> <li>- Continue to analyze, model, and prototype emerging NC3 technologies</li> <li>- Continue to develop and implement AF NC3 WS program and materiel management control processes including risk management, configuration management, supply chain management, maintenance data collection and reporting and NC3 WS health assessment application, integrated scheduling, change management, budgeting and cost controls, etc.</li> <li>- Continue to conduct NC3 WS health assessments, reporting, and issue resolution</li> <li>- Continue to map out the NC3 WS supply chain and develop supply chain monitoring capability, supply chain supportability and supply chain risk management</li> <li>- Continue to develop layered architecture to measure and report capability impacts</li> <li>- Continue to develop and coordinate Operational Performance Criteria Document (OPCD) to support weapon system configuration element specs, test and evaluation, and assessment of weapon capabilities and limitations</li> <li>- Continue to establish authoritative intelligence community analysis for high-altitude electromagnetic pulse (HEMP)</li> <li>- Continue to improve integration and interoperability of the NC3 WS</li> <li>- Continue to conduct WS risk, issue, and opportunity analysis, and mitigation/corrective action/pursuit plan development</li> <li>- Continue to enhance digital transformation of NC3 WS</li> </ul>				

**UNCLASSIFIED**

<b>Exhibit R-2, RDT&amp;E Budget Item Justification:</b> PB 2022 Air Force		<b>Date:</b> 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 0606018F / <i>NC3 Integration</i>		
<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2020</b>	<b>FY 2021</b>	<b>FY 2022</b>
<p>- Continue evolving approach to discover, collaboratively develop, consume and manage Modeling Based Systems Engineering (MBSE) data, models, visualizations and simulations required for NC3 Weapon System evolution decisions</p> <p><b>FY 2022 Plans:</b>                      NC3 weapon system integration efforts including, but not limited to:</p> <ul style="list-style-type: none"> <li>- Continue to implement test and evaluation certification program for NC3 WS</li> <li>- Continue to expand existing communication spectrum and cyber assessment test bed utilizing a phased approach</li> <li>- Continue to perform NC3 physics, communication and networking analysis</li> <li>- Continue to develop and evolve technical framework of the NC3 WS to meet mission threats of 2030 and beyond</li> <li>- Continue to conduct WS analysis, develop WS capability model, plan WS updates, and implement WS updates</li> <li>- Continue to evaluate options for system-of-system performance improvements within constraints of NC3 WS strategic vision and roadmap</li> <li>- Continue to analyze, model, and prototype emerging NC3 technologies</li> <li>- Continue to develop and implement AF NC3 WS program and materiel management control processes including risk management, configuration management, supply chain management, maintenance data collection and reporting and NC3 WS health assessment application, integrated scheduling, change management, budgeting and cost controls, etc.</li> <li>- Continue to conduct NC3 WS health assessments, reporting, and issue resolution</li> <li>- Continue to map out the NC3 WS supply chain and develop supply chain monitoring capability, supply chain supportability and supply chain risk management</li> <li>- Continue to develop layered architecture to measure and report capability impacts</li> <li>- Continue to develop and coordinate Operational Performance Criteria Document (OPCD) to support weapon system configuration element specs, test and evaluation, and assessment of weapon capabilities and limitations</li> <li>- Continue to establish authoritative intelligence community analysis for high-altitude electromagnetic pulse (HEMP)</li> <li>- Continue to improve integration and interoperability of the NC3 WS</li> <li>- Continue to conduct WS risk, issue, and opportunity analysis, and mitigation/corrective action/pursuit plan development</li> </ul> <p><b>FY 2021 to FY 2022 Increase/Decrease Statement:</b>                      Increase from FY21 to FY22 includes inflation.</p>				
<b>Accomplishments/Planned Programs Subtotals</b>		25.414	26.308	26.532
<b>D. Other Program Funding Summary (\$ in Millions)</b>				
N/A				
<b>Remarks</b>				

UNCLASSIFIED

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

**Appropriation/Budget Activity**  
3600: *Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development*

**R-1 Program Element (Number/Name)**  
PE 0606018F / *NC3 Integration*

**E. Acquisition Strategy**

The NC3 Integration acquisition strategy applies WS acquisition lifecycle principles across the system of systems AF NC3 WS. Key elements include configuration management, supply chain supportability and risk management, maintenance data collection and reporting, risk management, integration, test, verification, and certification, as well as modeling, simulation, gap analysis, and architecture development for capabilities in sustainment, development, and for future capabilities. To conduct these essential activities a combination of competitively awarded contracts, classified contracts, as well as sole source contracts, will be used to augment AF 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.

**UNCLASSIFIED**

**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 0606018F / NC3 Integration	<b>Project (Number/Name)</b> 674877 / NC3 Integration, Assessment, and Improvement
--	---	---

<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			
DMS FFRDC/UARC/A&AS	Various	Various : Various	-	23.260	Oct 2019	23.632	Oct 2020	23.997	Oct 2021	-		23.997	-	-	-
<b>Subtotal</b>			-	23.260		23.632		23.997		-		23.997	-	-	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			
Integration Studies /Test Support	Various	Various : Various	-	0.019	Feb 2020	0.021	Oct 2020	0.023	Oct 2021	-		0.023	-	-	-
<b>Subtotal</b>			-	0.019		0.021		0.023		-		0.023	-	-	N/A

<b>Management Services (\$ 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			
PMA (Eng/Acq Spt/Travel/Supplies)	Various	Various : Various	-	2.135	Oct 2019	2.655	Oct 2020	2.512	Oct 2021	-		2.512	-	-	-
<b>Subtotal</b>			-	2.135		2.655		2.512		-		2.512	-	-	N/A

	Prior Years	FY 2020	FY 2021	FY 2022 Base	FY 2022 OCO	FY 2022 Total	Cost To Complete	Total Cost	Target Value of Contract
<b>Project Cost Totals</b>		-	25.414	26.308	26.532	-	-	26.532	N/A

**Remarks**  
FY22 Management Services includes Direct Cite Authority (DCA) for 12 civilian positions; \$1.97M.

**UNCLASSIFIED**

<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0606018F / NC3 Integration	<b>Project (Number/Name)</b> 674877 / NC3 Integration, Assessment, and Improvement

	FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025				FY 2026			
	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>NC3 WS Integration</b>																												
AF NC3 WS Test and Certification Program																												
NC3 Health Assessment and Analysis																												
Enhance Target Architecture through Development of NC3 Technologies																												
Implement AF NC3 WS Program and Materiel Management Control Process																												
AF NC3 WS Risk Management Program, Monthly Working Group, and Quarterly Board																												
AF NC3 Maintenance Data Reporting																												
NC3 Supply Chain Risk Analysis																												
NC3 Supply Chain Normalization and Supply Health Reporting																												
AF NC3 WS NC3 Configuration Boards Bi-monthly																												
Implement NC3 Enterprise Comm Tech Analysis Repository																												
NC3 Capability Improvement Program (NCIP) Biannually																												
AF NC3 WS Review Biannually																												

**UNCLASSIFIED**

<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2022 Air Force		<b>Date:</b> May 2021
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0606018F / <i>NC3 Integration</i>	<b>Project (Number/Name)</b> 674877 / <i>NC3 Integration, Assessment, and Improvement</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>NC3 WS Integration</i></b>				
AF NC3 WS Test and Certification Program	1	2020	4	2023
NC3 Health Assessment and Analysis	1	2020	4	2023
Enhance Target Architecture through Development of NC3 Technologies	1	2020	4	2023
Implement AF NC3 WS Program and Materiel Management Control Process	1	2020	4	2023
AF NC3 WS Risk Management Program, Monthly Working Group, and Quarterly Board	1	2020	4	2023
AF NC3 Maintenance Data Reporting	1	2020	4	2023
NC3 Supply Chain Risk Analysis	1	2020	4	2023
NC3 Supply Chain Normalization and Supply Health Reporting	1	2020	4	2023
AF NC3 WS NC3 Configuration Boards Bi-monthly	1	2020	4	2023
Implement NC3 Enterprise Comm Tech Analysis Repository	1	2020	4	2023
NC3 Capability Improvement Program (NCIP) Biannually	1	2020	4	2023
AF NC3 WS Review Biannually	1	2020	4	2023