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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force **Date:** March 2024

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 0303140F / <i>Information Systems Security Program</i>
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COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
Total Program Element	-	63.048	95.523	94.424	0.000	94.424	87.536	88.058	69.981	71.362	Continuing	Continuing
675100: <i>Cryptographic Modernization</i>	-	63.048	63.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	126.088
675200: <i>Cryptographic Modernization 2 (CM2)</i>	-	0.000	32.483	94.424	0.000	94.424	87.536	88.058	69.981	71.362	Continuing	Continuing

Note

In FY 2025, Project 675100, Cryptographic Modernization, efforts were transferred to Project 675200, Cryptographic Modernization 2 (CM2), in order to add Quantum Resilience to all high-assurance cryptographic products and realign funding to CM2 major thrust priorities.

A. Mission Description and Budget Item Justification

Information Systems Security Program (ISSP) - Includes resources, manpower authorizations, necessary facilities and equipment required to develop, deliver, and sustain Cryptographic Modernization (Crypto Mod) capabilities to nearly all Department of the Air Force (DAF) weapon systems that encrypt/decrypt sensitive information. Crypto Mod ensures confidentiality, integrity, and availability of the information and the systems. The Crypto Mod work done in the ISSP ensures that DAF systems receive cryptographic capabilities that are compliant with National Security Agency mandates and that commanders can confidently leverage for Joint All Domain Command and Control (JADC2) capabilities.

The ISSP Element and associated Crypto Mod activities provide a foundational Communications Security (COMSEC) capability that is the first and last line of cyber defense against adversary exploitation. The DAF and the DoD require the capability to securely collect, process, store, and disseminate an uninterrupted flow of information, while denying an adversary the ability to intercept, collect, destroy, interpret, or manipulate our information flows. Crypto Mod provides secure communication to allow the DoD to achieve and maintain decision superiority, the key to successful application of the military instrument of national power in modern, high-tempo, full-spectrum operations. AF COMSEC equipment protects sensitive information such as warfighter positions, mission planning, target strikes, commanders' orders, intelligence, force strength, and force readiness. When an adversary is capable of interpretation, manipulation, or destruction of the information used by the warfighter, DoD military forces will suffer significant and/or devastating mission degradation that can result in loss of life and resources and/or exceptionally grave damage to national security. The advanced threats and capabilities of near-peer adversaries will necessitate the exclusion of weapon systems with obsolete cryptography from Combatant Commander Areas of Responsibility (AORs)—diminishing the ability of the DAF win in a high-end fight. The 2021 National Defense Authorization Act (NDAA) mandates the services begin reporting on their Crypto Mod activities and status of obsolete products starting in Jan 2022, as well as the National Security Memorandum 10 (4 May 2022) which identifies the need for quantum-resistant crypto. These documents highlight the high importance of ISSP efforts.

The overall focus of the Research, Development, Test, and Evaluation (RDT&E) efforts within the ISSP program is to transform current Crypto Mod devices to protect against current technology threats, which include quantum computing. The modernization effort is required by Chairman Joint Chiefs of Staff Notice (CJCSN) 6510 and NSA Decertification Messages (CED-31-15/037-21/032-16) from FY23 for the need to add Quantum Resilience to the existing high assurance cryptographic products. This effort will allow protection against advanced & evolving quantum computing threats. All existing crypto devices will be vulnerable and must be modernized to be

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Exhibit R-2, RDT&E Budget Item Justification: PB 2025 Air Force	Date: March 2024
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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 0303140F / <i>Information Systems Security Program</i>
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quantum resilient. These efforts are driven by the National Security Agency's (NSA) requirements to implement newly developed Quantum Resistant Algorithms (QRAs). The NSA requires an inventory of cryptographic devices that are more resilient to future threats through full software re-programmability. This will enable protection against near peer adversary exploitation and provide the ability to rapidly adapt against newer threats.

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 FY23 \$1.579M was expended for civilian pay expenses in this program element, and in FY24 \$1.642M 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.

B. Program Change Summary (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Previous President's Budget	70.263	95.523	64.450	0.000	64.450
Current President's Budget	63.048	95.523	94.424	0.000	94.424
Total Adjustments	-7.215	0.000	29.974	0.000	29.974
• 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	-4.631	0.000			
• SBIR/STTR Transfer	-2.584	0.000			
• Other Adjustments	0.000	0.000	29.974	0.000	29.974

Change Summary Explanation

FY23 decreases for JCC2 BTR and SBIR transfer.

FY25 increase continues FY23 and FY24 increases to accelerate Quantum Resilience modernization to meet NSA-mandated decertification dates for all Air, Ground, and Space networks and platforms in DAF, other Services, and multinational and interagency partners. Modernization will secure an uninterrupted flow of national security information while denying adversaries the ability to exploit, interpret, and manipulate that information. Addresses the near peer pacing threat. The FY 2025 funding request was reduced by \$5.5 million to account for the availability of prior year execution balances.

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force										Date: March 2024		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>				Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>			
COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
675100: <i>Cryptographic Modernization</i>	-	63.048	63.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	126.088
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2025, Project 675100, Cryptographic Modernization, efforts were transferred to Project 675200, Cryptographic Modernization 2 (CM2), in order to add Quantum Resilience to all high-assurance cryptographic products and realign funding to CM2 major thrust priorities.

A. Mission Description and Budget Item Justification

The AF Cryptographic Modernization (CM) effort modernizes cryptographic devices protecting critical national security information across multi-domain operations. This AF effort supports an integrated effort across the cyber domain to transform to next-generation cryptographic capabilities. It provides U.S. forces and multinational and interagency partners the multi-domain security needed to protect the flow and exchange of strategic, operational, and tactical information in accordance with national and international policy/standards, and the validated requirements of decision makers, warfighters, and the intelligence community. The AF Cryptographic Modernization 2 (CM2) effort is required by Chairman Joint Chiefs of Staff Notice (CJCSN) 6510 and NSA Decertification Messages (CED-31-15/037-21/032-16) for the need to add quantum resistance to the existing high assurance cryptographic products. This effort will allow protection against advanced & evolving quantum computing threats. All existing crypto devices will be vulnerable and must be modernized to be quantum resilient. The majority of the development effort includes hardware changes to the existing crypto devices.

The CM effort is a holistic AF-wide "modern" cryptographic strategy to provide long-term, evolving protection of NC3, ISR, PKI, KME, and nearly all AF platforms and ground networks. CM will provide the required enhanced security for all AF voice, data, and video capabilities on the battlefield and throughout the DoD enterprise and will enable the integration of new capabilities to AF users through development of a new DoD Cryptographic Modernization 2 (CM2) Initial Capabilities Document (ICD) dated 15 July 2021.

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 FY23 \$1.579M was expended for civilian pay expenses in this program element, and in FY24 \$1.642M is forecasted for civilian pay expenses in this program element.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: Technology Development (TD)	38.130	58.940	0.000	0.000	0.000

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
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Description: Technology Development (TD) provides the initial development efforts needed to tackle the current and upcoming quantum computing threat for Crypto Modernization 2. TD will stand up all acquisition efforts for over 13 devices to become quantum resilient, reprogrammable architecture to ensure long service life. Capabilities slated for modernization include classified data at rest if data storage is comprised or captured; NC2 and NC3 requirements, secure voice and data, and remote rekey.

FY 2024 Plans:

- Continue to further enable strategic deterrent capabilities for the Sentinel Program by developing and delivering NSA cryptologic solutions to secure communications and data for Nuclear Command and Control missions
- Award innovative proof of concept contracts to build near-real time high assurance crypto situational awareness
- Award contracts to develop the crypto core standards to support the modernization of the joint-interest Future Airborne Tactical Radio that provides secure voice capabilities across the enterprise
- Execute activities to operationalize and enable future NSA required all-black secure key management and distribution capabilities

FY 2025 Base Plans:
Budget to be funded via BPAC 675200 Crypto Mod 2

FY 2025 OCO Plans:
Not Applicable

FY 2024 to FY 2025 Increase/Decrease Statement:
Funding decreased due to transition of funding to BPAC 675200 CM2 budget

Title: IFF Mode 5	13.820	0.100	0.000	0.000	0.000
Description: Modernization of the Identification Friend or Foe (IFF) Mode 5 devices enables the war-fighter to engage and accurately identify friendly or enemy forces as friend or foe. It prevents fratricide during target engagements and provides authentication and encryption/decryption services. The modernized devices will be quantum resilient and prevent enemy disruption of IFF functions. They will enhance the needed security for interrogations and response. These encryption devices operate within military aircraft, fixed, and transportable ground stations when connected to an interrogator and/or transponder. The Identification Friend or Foe (IFF) Mode 5 crypto modules KIV-77 and KIV-78 requires permanent modification. The modification of these devices					

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B. Accomplishments/Planned Programs (\$ in Millions)					
is required to address quantum threats, produce-ability and algorithm re-programmability mandated by the National Security Agency (NSA) and the 2019 Chairman of the Joint Chiefs of Staff Notice (CJCSN) 6510.					
FY 2024 Plans: Continue development for the KIV-77A/KIV-78A IFF Mode 5 device to address quantum threats, produce-ability and algorithm re-programmability to obtain NSA certification in support of the CM2 ICD (dated Jul 2021)					
FY 2025 Base Plans: Budget to be funded via BPAC 675200 Crypto Mod 2					
FY 2025 OCO Plans: Not Applicable					
FY 2024 to FY 2025 Increase/Decrease Statement: Funding decreased due to transition to BPAC 675200 Crypto Mod 2 budget					
Title: Algorithm Transition Compliance and Support					
Description: Supports Air Combat Command (AF lead for Cyber Superiority) in Algorithm Transition Compliance and provides Information Assurance (IA) support by investigating and analyzing all utilized cryptographic algorithms and hundreds of cryptographic equipment types to support the transformation effort in becoming quantum resilient. This includes the development of prototyping efforts to include the development of a software program of a centralized near real-time accountability of AF COMSEC equipment that reports compliance to AF/DoD Leadership. In addition, it will provide automated software updates to crypto devices (networked & non-networked), and field modernized cryptography, algorithms, and quantum computing.					
FY 2024 Plans: - Continue tech maturation efforts to reduce risk on the new algorithm integrations across all crypto devices - Begin fielding efforts to operationalize new NSA required key management and distribution capabilities across the enterprise - Continue to work across all MAJCOMs to ensure the Department of the Air Force is implementing enterprise crypto solutions to reduce logistical footprints and sustainment costs - Continue to incorporate model-based systems engineering processes and methodologies to increase user validation of solutions and reduce integration costs for platforms					
FY 2025 Base Plans:					
	3.700	3.900	0.000	0.000	0.000

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force				Date: March 2024	
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>		Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>	
B. Accomplishments/Planned Programs (\$ in Millions)					
	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Budget to be funded via BPAC 675200 Crypto Mod 2					
FY 2025 OCO Plans: Not Applicable					
FY 2024 to FY 2025 Increase/Decrease Statement: Funding decreased due to transition to BPAC 675200 Crypto Mod 2 budget					
Title: Space Modular Common Crypto (SMCC)					
Description: SMCC architecture is being studied for quantum resilient impacts.					
FY 2024 Plans: - Continue performance assessments and perform quantum resilience studies					
FY 2025 Base Plans: Budget to be funded via BPAC 675200 Crypto Mod 2					
FY 2025 OCO Plans: Not applicable					
FY 2024 to FY 2025 Increase/Decrease Statement: Funding decreased due to transition to BPAC 675200 Crypto Mod 2 budget					
Title: Classified Data At Rest (CDAR)					
Description: CDAR will provide the capability to render classified data at rest unusable to adversaries if data storage is captured or compromised, eliminating policy compliance shortfalls. The development of CDAR is an NSA approved modernized cryptographic solution(s) for use in 45 Air Force platforms/systems exposed to hostile/uncontrolled environments. The enterprise cryptographic solution will encrypt/decrypt Top Secret and Below (TSAB) data at rest residing in a variety of data storage environments.					
FY 2024 Plans: Budget to be funded via BPAC 675200 Crypto Mod 2 funding					
FY 2025 Base Plans: Budget to be funded via BPAC 675200 Crypto Mod 2 funding					
FY 2025 OCO Plans:					
	0.100	0.100	0.000	0.000	0.000
	7.298	0.000	0.000	0.000	0.000

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Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / Information Systems Security Program	Project (Number/Name) 675100 / Cryptographic Modernization
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Not Applicable					
FY 2024 to FY 2025 Increase/Decrease Statement: Funding decreased due to transition to BPAC 675200 Crypto Mod 2 budget					
Accomplishments/Planned Programs Subtotals	63.048	63.040	0.000	0.000	0.000

C. Other Program Funding Summary (\$ in Millions)											
Line Item	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
• OPAF 03 831010: COMSEC Equipment	91.817	98.600	63.233	-	63.233	64.884	67.262	68.701	70.063	Continuing	Continuing

Remarks
Remarks: Other Program Funding reflects Crypto Modernization (CM) portion of Information Systems Security Program (ISSP) OPAF total.

D. Acquisition Strategy
Implement AF portion of the DoD's Cryptographic Modernization (CM) Initiative through modernization/modification efforts, in varying stages of the acquisition cycle, with focus on minimizing life cycle costs. The CM portfolio of component acquisition projects is executing using a variety of approaches that vary from an evolutionary acquisition strategy using spiral development (for new component development) to incremental improvement leveraging leading-edge, certified non-developmental items (for modernization). Contract type is selected for each of the individual projects based upon its acquisition approach and its unique technology risks. A mixture of fixed-price and cost-reimbursement contracts have been selected which maximize the best value for the Government.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force												Date: March 2024			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)				Project (Number/Name)							
3600 / 7				PE 0303140F / Information Systems Security Program				675100 / Cryptographic Modernization							
Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
Tech Development	Various	MULTIPLE : MULTIPLE	-	22.602	Feb 2023	32.894	Feb 2024	0.000	Feb 2025	-		0.000	0.000	55.496	-
IFF Mode 5	Various	MULTIPLE : MULTIPLE	-	11.332	Feb 2023	0.100	Feb 2024	0.000	Feb 2025	-		0.000	0.000	11.432	-
Space Modular Common Crypto (SMCC)	Various	MULTIPLE : MULTIPLE	-	0.100	Feb 2023	0.100	Feb 2024	0.000	Feb 2025	-		0.000	0.000	0.200	-
Algorithm Transition Compliance and Support	Various	MULTIPLE : MULTIPLE	-	3.700	Nov 2022	3.780	Nov 2023	0.000	Nov 2024	-		0.000	0.000	7.480	-
CDAR	Various	MULTIPLE : MULTIPLE	-	7.298	Feb 2023	0.000	Feb 2024	0.000	Feb 2025	-		0.000	0.000	7.298	-
Subtotal			-	45.032		36.874		0.000		-		0.000	0.000	81.906	N/A
Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
IFF Mode 5	C/CPAF	Not specified. : TBD	-	2.488	Jan 2023	2.920	Jan 2024	0.000	Jan 2025	-		0.000	0.000	5.408	-
Subtotal			-	2.488		2.920		0.000		-		0.000	0.000	5.408	N/A
Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
Program Support Costs (PSC)	Various	Various : Various	-	15.528	Dec 2022	23.246	Dec 2023	0.000	Dec 2024	-		0.000	0.000	38.774	-
Subtotal			-	15.528		23.246		0.000		-		0.000	0.000	38.774	N/A
Project Cost Totals			-	63.048		63.040		0.000		-		0.000	0.000	126.088	N/A

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Exhibit R-4, RDT&E Schedule Profile: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

FY 2023				FY 2024				FY 2025				FY 2026				FY 2027				FY 2028				FY 2029			
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

<i>Cryptographic Modernization APPN 3600, BA07, PE 0303140F, BPAC 675100</i>	
Technology Development	
IFF Mode 5	
Algorithm Transition Compliance and Support	
Space Modular Common Crypto (SMCC)	
CDAR	

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675100 / <i>Cryptographic Modernization</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Cryptographic Modernization APPN 3600, BA07, PE 0303140F, BPAC 675100</i>				
Technology Development	1	2023	4	2024
IFF Mode 5	3	2023	4	2025
Algorithm Transition Compliance and Support	1	2023	4	2025
Space Modular Common Crypto (SMCC)	1	2023	4	2025
CDAR	1	2023	4	2024

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force										Date: March 2024		
Appropriation/Budget Activity 3600 / 7					R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>				Project (Number/Name) 675200 / <i>Cryptographic Modernization 2 (CM2)</i>			
COST (\$ in Millions)	Prior Years	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total	FY 2026	FY 2027	FY 2028	FY 2029	Cost To Complete	Total Cost
675200: <i>Cryptographic Modernization 2 (CM2)</i>	-	0.000	32.483	94.424	0.000	94.424	87.536	88.058	69.981	71.362	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

In FY 2025, Project 675100, Cryptographic Modernization, efforts were transferred to Project 675200, Cryptographic Modernization 2 (CM2), in order to add Quantum Resilience to all high-assurance cryptographic products and realign funding to CM2 major thrust priorities.

A. Mission Description and Budget Item Justification

The AF Cryptographic Modernization 2 (CM2) effort modernizes cryptographic devices protecting critical national security information across multi-domain operations. This Department of the Air Force (DAF) effort supports an integrated effort across the cyber domain to transform to next-generation cryptographic capabilities. It provides U.S. forces and multinational and interagency partners the multi-domain security needed to protect the flow and exchange of strategic, operational, and tactical information in accordance with national and international policy/standards, and the validated requirements of decision makers, warfighters, and the intelligence community. The CM2 modernization effort is required by Chairman Joint Chiefs of Staff Notice (CJCSN) 6510 and NSA Decertification Messages (CED-31-15/037-21/032-16) from FY23 for the need to add Quantum Resilience to the existing high assurance cryptographic products. This effort will allow protection against advanced & evolving quantum computing threats. All existing crypto devices will be vulnerable and must be modernized to be quantum resilient.

The CM2 effort is a holistic AF-wide "modern" cryptographic strategy to provide long-term, evolving protection of NC3, ISR, PKI, KME, and nearly all AF platforms and ground networks. CM2 will provide the required enhanced security for all AF voice, data, and video capabilities on the battlefield and throughout the DoD enterprise. In addition to the development /modernization of the devices, this effort requires studies, proof of concepts, and prototype efforts to accurately address the evolving quantum computing threats in the years to come and ramp up efforts accordingly.

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 FY23 \$1.579 was expended for civilian pay expenses in this program element, and in FY24 \$1.642M is forecasted for civilian pay expenses in this program element.

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Title: Technology Development (TD)	0.000	2.878	28.509	0.000	28.509
Description: Cryptographic Modernization 2 (CM2) will provide crypto devices with common solutions that are more robust, modular, scalable, and provide durability to existing cryptographic end items, as well as updating					

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
<p>midterm aging/unsupportable crypto equipment. All existing crypto devices will be vulnerable and must be modernized to be Quantum Resilient. The development efforts includes hardware and software changes to the existing crypto devices while identifying new efforts necessary for development to address the refined CM2 Minimum Threshold Requirements.</p> <p>FY 2024 Plans:</p> <ul style="list-style-type: none"> - Continue to further enable strategic deterrent capabilities for the Sentinel Program by developing and delivering NSA cryptologic solutions to secure communications and data for Nuclear Command and Control missions - Award innovative proof of concept contracts to build near-real time high assurance crypto situational Awareness (Crypto Enterprise Management capability) - Award contracts to develop the crypto core standards to support the modernization of the joint-interest Future Airborne Tactical Radio that provides secure voice capabilities across the enterprise - Execute activities to operationalize and enable future NSA required all-black secure key management and distribution capabilities <p>FY 2025 Base Plans:</p> <ul style="list-style-type: none"> - Will execute development contract activities for Network Enabled Weapons, Strategic Deterrence, High Speed networks, software mods, Multi-Function Encryption, Crypto Situational Awareness and Space COMSEC ground operating equipment - Will execute the Remote ReKey-NexGen crypto development program - Will continue to work with NSA on implementation of new algorithms and crypto key management standards to share with defense contractors on CM2 efforts - Will continue to further enable artificial intelligence and machine learning capabilities for the Joint All Domain Command and Control (JADC2) by developing and delivering NSA cryptologic solutions to secure communications and data for tactical and strategic level data - Will award development contracts for incorporating quantum resilience for additional Network Enabled Weapons, Beyond Line-of-Sight Comms, and High Speed Crypto - Will execute Crypto Enterprise Management program to build infrastructure for crypto situational awareness - Will continue to further enable strategic deterrent capabilities for the Sentinel Program by developing and delivering NSA cryptologic solutions to secure communications and data for Nuclear Command and Control mission - Will execute innovative proof of concept contracts to build near-real time high assurance crypto situational awareness 					

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force				Date: March 2024						
Appropriation/Budget Activity 3600 / 7		R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>		Project (Number/Name) 675200 / <i>Cryptographic Modernization 2 (CM2)</i>						
B. Accomplishments/Planned Programs (\$ in Millions)										
<ul style="list-style-type: none"> - Will execute contracts developing the crypto core standards to support the modernization of the joint-interest Future Airborne Tactical Radio that provides secure voice capabilities across the enterprise - Will execute activities to operationalize and enable future NSA required all-black secure key management and distribution capabilities <p>FY 2025 OCO Plans: Not Applicable</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Funding increased due to transition of funding from BPAC 675100 CM1 budget. CM1 FY24 \$58.940M was realigned in FY25 to multiple CM2 Major Thrusts based on effort priorities.</p>						FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
<p>Title: Algorithm Transition Compliance and Support</p> <p>Description: Supports Air Combat Command (AF lead for Cyber Superiority) in Algorithm Transition Compliance and provides Information Assurance (IA) support by investigating and analyzing all utilized cryptographic algorithms and hundreds of cryptographic equipment types to support the transformation effort in becoming quantum resilient. This includes the development of prototyping efforts to include the development of software program of a centralized near real-time accountability of AF COMSEC equipment that reports compliance to AF/DoD Leadership. In addition, it will provide automated software updates to crypto devices (networked & non-networked), and field modernized cryptography, algorithms, and quantum computing.</p> <p>FY 2024 Plans: Budget funded via BPAC 675100 CM 1</p> <p>FY 2025 Base Plans:</p> <ul style="list-style-type: none"> - Will continue tech maturation efforts to reduce risk on the new algorithm integrations across all crypto devices - Will continue fielding efforts to operationalize new NSA required key management and distribution capabilities across the enterprise - Will continue to work across all MAJCOMs to ensure the Department of the Air Force is implementing enterprise crypto solutions to reduce logistical footprints and sustainment costs - Will continue to incorporate model-based systems engineering processes and methodologies to increase user validation of solutions and reduce integration costs for platforms <p>FY 2025 OCO Plans:</p>						0.000	0.000	4.092	0.000	4.092

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / Information Systems Security Program	Project (Number/Name) 675200 / Cryptographic Modernization 2 (CM2)			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
Not applicable					
FY 2024 to FY 2025 Increase/Decrease Statement: Funding increased due to transition of funding from BPAC 675100 CM1 budget. No significant change from CM1 FY24 \$3.900M.					
Title: Crypto Enterprise Management					
Description: Cryptographic Enterprise Management (CEM) will lead development of an asset management and information system capable of providing near real-time cryptographic equipment accountability and situational awareness. Efforts will focus on consolidation, integration, sustainment, and standardization of data from disparate USAF logistics and supply chain management systems currently tracking, reporting, and managing.					
FY 2024 Plans: - Assemble CEM software architecture, infrastructure, services, pipelines, development, and test platform(s) - Execute CEM Minimum Viable Product (MVP) requirements and begin software development activities to achieve MVP delivery					
FY 2025 Base Plans: - Will post MVP delivery, accomplish Continuous Integration Continuous Deployment (CI/CD) through quarterly capability releases - Will continuously improve and refine CEM software development process, practices, tools, and program strategies to deliver in quarterly releases					
FY 2025 OCO Plans: Not Applicable					
FY 2024 to FY 2025 Increase/Decrease Statement: Funding increased due to delivering capability through Continuous Integration Continuous Deployment (CI/CD) through quarterly capability releases					
Title: Classified Data At Rest (CDAR)					
Description: CDAR will provide the capability to render classified data at rest unusable to adversaries if data storage is captured or compromised, eliminating policy compliance shortfalls. The development of CDAR is an NSA approved modernized cryptographic solution(s) for use in 45 Air Force platforms/systems exposed to					
	0.000	7.122	11.973	0.000	11.973
	0.000	11.653	14.700	0.000	14.700

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force			Date: March 2024		
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675200 / <i>Cryptographic Modernization 2 (CM2)</i>			
B. Accomplishments/Planned Programs (\$ in Millions)					
hostile/uncontrolled environments. The enterprise cryptographic solution will encrypt/decrypt Top Secret and Below (TSAB) data at rest residing in a variety of data storage environments.					
FY 2024 Plans: - Complete year 2 of the 3-year development contract for Increment 1: Single-channel device - Begin year 1 of the 3-year development contract for Increment 2: Multi-channel device					
FY 2025 Base Plans: - Will deliver Production Representative Engineering Design Models and complete year 3 of the 3-year development contract for Increment 1: Single-channel device - Will deliver initial Digital Engineering Models/Artifacts and continue 36-month engineering and manufacturing development contract for Increment 2: Multi-channel device					
FY 2025 OCO Plans: Not Applicable					
FY 2024 to FY 2025 Increase/Decrease Statement: Funding increased due to the completion of the Increment 1: Single-channel device development contract in 3rd quarter FY2025					
Title: IFF Mode 5					
Description: Modernization of the Identification Friend or Foe (IFF) Mode 5 devices enables the warfighter to engage and accurately identify friendly or enemy forces as friend or foe. It prevents fratricide during target engagements and provides authentication and encryption/decryption services. The modernized devices will be quantum resilient and prevent enemy disruption of IFF functions. They will enhance the needed security for interrogations and response. These encryption devices operate within military aircraft, fixed, and transportable ground stations when connected to an interrogator and/or transponder. The Identification Friend or Foe (IFF) Mode 5 crypto modules KIV-77 and KIV-78 requires permanent modification. The modification of these devices is required to address quantum threats, produce-ability and algorithm re-programmability mandated by the National Security Agency (NSA) and the 2019 Chairman of the Joint Chiefs of Staff Notice (CJCSN) 6510.					
FY 2024 Plans: Budget funded via BPAC 675100 CM 1					
FY 2025 Base Plans:					
	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
	0.000	0.000	14.000	0.000	14.000

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force				Date: March 2024	
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675200 / <i>Cryptographic Modernization 2 (CM2)</i>			
B. Accomplishments/Planned Programs (\$ in Millions)	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
- Will complete development of the IFF Mode 5 device that addresses quantum threats, produce-ability and algorithm re-programmability in support of the CM2 ICD (dated Jul 2021). FY 2025 OCO Plans: Not Applicable FY 2024 to FY 2025 Increase/Decrease Statement: Funding increased due to transition of funding from BPAC 675100 CM1. This is the highest priority CM2 major thrust. CM1 FY24 Tech Dev \$58.940M was realigned in FY25 to multiple CM2 Major Thrusts based on effort priorities.					
Title: KG-3XA (NC3 Very Low Frequency Capability) Description: KG-3XA 1067 modification will provide a transmit and receive quantum resilient compliant National Security Agency (NSA) approved cryptographic solution for the Very Low Frequency (VLF) Enterprise (KGV-363) and modernize legacy KG-3X cryptographic device (KG-333) to support Nuclear Command, Control, and Communications Center (NC3) missions. The KG-3XA development effort will deliver form, fit function cryptographic capabilities employed in air and group equipment to securely process emergency action messages. FY 2024 Plans: - Complete year 2 of the 3-year development contract for KGV-363 development - Begin year 1 of the 3-year development contract for KG-333 modernization FY 2025 Base Plans: - Will deliver Production Representative Engineering Design Models (PREDMS) and complete year 3 of the 3-year development contract for KGV-363 development contract - Will deliver initial Digital Engineering Models/Artifacts and continue a 36-month engineering and manufacturing development contract for KG-333 modernization development FY 2025 OCO Plans: Not Applicable FY 2024 to FY 2025 Increase/Decrease Statement: Funding decreased due to the completion of the KGV-363 Development contract in FY2025	0.000	10.830	6.150	0.000	6.150
Title: Space COMSEC/SMCC	0.000	0.000	15.000	0.000	15.000

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Exhibit R-2A, RDT&E Project Justification: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675200 / <i>Cryptographic Modernization 2 (CM2)</i>

B. Accomplishments/Planned Programs (\$ in Millions)

	FY 2023	FY 2024	FY 2025 Base	FY 2025 OCO	FY 2025 Total
<p>Description: Implements Cryptographic Modernization 2 across space enterprise devices including Space Ground Operating Equipment (GOE) and orbital Aerospace Vehicle Equipment (AVE) supporting satellites of all sizes. These Space CM2 efforts will also increase the performance envelope for space crypto to support the emerging growth of space-based communications by increasing data throughput and number of channels supported per device. .</p> <p>FY 2024 Plans: Budget funded via BPAC 675100 CM 1 Technology Development.</p> <p>FY 2025 Base Plans: - Will develop the KG-210 GOE combining space and terrestrial communications capabilities into single device to seamlessly connect the space and terrestrial networks at all space operations centers.</p> <p>FY 2025 OCO Plans: Not Applicable</p> <p>FY 2024 to FY 2025 Increase/Decrease Statement: Funding increased due to transition of funding from BPAC 675100 CM1 budget to CM2. High CM2 priority. CM1 FY24 Tech Dev \$58.940M was realigned in FY25 to multiple CM2 Major Thrusts based on effort priorities.</p>					
Accomplishments/Planned Programs Subtotals	0.000	32.483	94.424	0.000	94.424

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

<u>Line Item</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025 Base</u>	<u>FY 2025 OCO</u>	<u>FY 2025 Total</u>	<u>FY 2026</u>	<u>FY 2027</u>	<u>FY 2028</u>	<u>FY 2029</u>	<u>Cost To Complete</u>	<u>Total Cost</u>
• OPAF 03 831010: <i>Comsec Equipment</i>	91.817	98.600	63.233	-	63.233	64.884	67.262	68.701	70.063	Continuing	Continuing

Remarks

D. Acquisition Strategy

Implement AF portion of the DoD's Cryptographic Modernization 2 (CM2) Initiative through modernization/modification efforts, in varying stages of the acquisition cycle, with focus on minimizing life cycle costs. The CM portfolio of component acquisition projects is executing using a variety of approaches that vary from an evolutionary acquisition strategy using spiral development (for new component development) to incremental improvement leveraging leading-edge, certified non-developmental items (for modernization). Contract type is selected for each of the individual projects based upon its acquisition approach and its unique technology risks. A mixture of fixed-price and cost-reimbursement contracts have been selected which maximize the best value for the Government.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force **Date:** March 2024

Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / Information Systems Security Program	Project (Number/Name) 675200 / Cryptographic Modernization 2 (CM2)
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Product Development (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
Technology Development (TD)	Various	MULTIPLE : MULTIPLE	-	-		12.437	Jan 2024	20.115	Jan 2025	-		20.115	Continuing	Continuing	-
IFF Mode 5	Various	MULTIPLE : MULTIPLE	-	-		-		10.648	Feb 2025	-		10.648	Continuing	Continuing	-
SPACE MODULAR COMMON CRYPTO (SMCC)	Various	MULTIPLE : MULTIPLE	-	-		-		15.000	Feb 2025	-		15.000	Continuing	Continuing	-
Algorithm Transition Compliance and Support	Various	MULTIPLE : MULTIPLE	-	-		-		4.092	Nov 2024	-		4.092	Continuing	Continuing	-
CDAR	Various	MULTIPLE : MULTIPLE	-	-		20.046	Feb 2024	14.700	Feb 2025	-		14.700	Continuing	Continuing	-
Crypto Enterprise Management	Various	MULTIPLE : MULTIPLE	-	-		-		5.264	Nov 2024	-		5.264	Continuing	Continuing	-
KG-3XA	Various	MULTIPLE : MULTIPLE	-	-		-		3.130	Nov 2024	-		3.130	Continuing	Continuing	-
Subtotal			-	-		32.483		72.949		-		72.949	Continuing	Continuing	N/A

Remarks
In FY24 PB 32.5M development funding from 675100 transferred to 675200.

Test and Evaluation (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
IFF Mode 5	Various	Various : Various	-	-		-		3.352	Jan 2025	-		3.352	Continuing	Continuing	-
Subtotal			-	-		-		3.352		-		3.352	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2025 Air Force												Date: March 2024			
Appropriation/Budget Activity 3600 / 7				R-1 Program Element (Number/Name) PE 0303140F / Information Systems Security Program				Project (Number/Name) 675200 / Cryptographic Modernization 2 (CM2)							
Management Services (\$ in Millions)				FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 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
Program Support Costs (PSC)	Various	Various : Various : TBD	-	-		-		18.123	Dec 2024	-		18.123	Continuing	Continuing	-
Subtotal			-	-		-		18.123		-		18.123	Continuing	Continuing	N/A
			Prior Years	FY 2023		FY 2024		FY 2025 Base		FY 2025 OCO		FY 2025 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-		32.483		94.424		-		94.424	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4A, RDT&E Schedule Details: PB 2025 Air Force		Date: March 2024
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0303140F / <i>Information Systems Security Program</i>	Project (Number/Name) 675200 / <i>Cryptographic Modernization 2 (CM2)</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Cryptographic Modernization 2 (CM2)</i>				
Technology Development	1	2024	4	2029
IFF Mode 5	1	2025	4	2026
Algorithm Transition Compliance and Support	1	2025	4	2029
Space COMSEC/SMCC	1	2025	4	2029
CDAR	1	2024	4	2027
Crypto Enterprise Management	1	2025	4	2029
KG-3XA	1	2025	4	2026