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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 5: System Development & Demonstration (SDD)</i>	R-1 Program Element (Number/Name) PE 0207279F / <i>Isolated Personnel Survivability and Recovery</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	-	0.000	27.881	56.225	0.000	56.225	0.000	30.200	0.000	25.493	0.000	139.799
65412B: <i>Isolated Personnel*</i>	-	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	25.493	0.000	25.493
654522: <i>CSAR EMD</i>	-	0.000	27.881	56.225	0.000	56.225	0.000	30.200	0.000	0.000	0.000	114.306

*This project's R-2a exhibit has been suppressed due to funding not beginning until after FY 2024

A. Mission Description and Budget Item Justification

This Program Element contains two projects tasked to provide Air Force aircrew updated survival equipment to assist in their recovery in the event they become Isolated Personnel (IP).

Project 65412B (Isolated Personnel): The Isolated Personnel Survival and Flight Equipment (IPSAFE) program develops, and fields updates to aircrew survival kits to support climate specific equipment and aims to increase the ability for an IP to evade and survive in operational environments where rapid extraction is not possible.

Project 654522 (CSAR EMD): The Next Generation Survival Radio (NGSR) program is an Air Force led development effort to replace the aging legacy Combat Survivor Evader Locator (CSEL) handheld radio for the entire Joint Force. NGSR plans to deliver communications capability supporting the Joint Personnel Recovery Agency (JPRA) Combat Search and Rescue (CSAR) mission to locate, authenticate, and communicate with Joint forces who become isolated. The NGSR program plans to become the primary Department of Defense (DoD) Program of Record (POR) to deliver secured end-to-end communication and locate and recover downed aircrew/ special operations personnel.

This program is in Budget Activity 5, System Development and Demonstration (SDD) because it has passed Milestone B approval and is conducting engineering and manufacturing development tasks aimed at meeting validated requirements prior to full rate production.

B. Program Change Summary (\$ in Millions)	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024 Base</u>	<u>FY 2024 OCO</u>	<u>FY 2024 Total</u>
Previous President's Budget	0.000	27.881	56.098	0.000	56.098
Current President's Budget	0.000	27.881	56.225	0.000	56.225
Total Adjustments	0.000	0.000	0.127	0.000	0.127
• 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	0.127	0.000	0.127

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Appropriation/Budget Activity
3600: *Research, Development, Test & Evaluation, Air Force I BA 5: System Development & Demonstration (SDD)*

R-1 Program Element (Number/Name)
PE 0207279F / *Isolated Personnel Survivability and Recovery*

Change Summary Explanation

FY2024 - Program increase by 0.127M to support NGSR device development.

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

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i>	Project (Number/Name) 654522 / CSAR EMD
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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
654522: CSAR EMD	-	0.000	27.881	56.225	0.000	56.225	0.000	30.200	0.000	0.000	0.000	114.306
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-	-	-

A. Mission Description and Budget Item Justification

The Next Generation Survival Radio (NGSR) program is an Air Force led effort to replace the aging Combat, Survivor, Evader, Locator (CSEL) Radio supporting the entire Joint force. The Department of Defense (DoD) plans for the NGSR Handheld Radio (HHR) to serve as the primary communications link for all DoD aircrew who become isolated personnel. NGSR replaces the existing CSEL program as the DoD Program of Record (PoR) for delivering a communications capability in support of the Joint Personnel Recovery Agency (JPRA) Combat Search and Rescue (CSAR) mission to locate, authenticate, and communicate with Joint forces who become Isolated Personnel (IP).

NGSR provides secure, over-the-horizon, two-way data communications and precise geo-positioning information to rescue forces. Additionally, NGSR is able to operate in anti-access/area denial (A2/AD) environments by providing a low probability of intercept/low probability of detection communication pathway for isolated personnel. NGSR is one node of an overall personnel recovery network which includes multiple on-orbit satellite constellations, geographically dispersed satellite ground stations, joint service CSAR communication devices, and a Joint Personnel Recovery Center (JPRC) web application. NGSR plans to incorporate modern encryption technology to comply with current National Security Agency (NSA) cryptographic standards.

The Air Force will meet system objectives by executing a competitive Rapid Prototyping effort to design and build a production-ready NGSR artifact. Once prototyped, the Air Force, Army, Navy, and Marine Corps will field the NGSR prototype to their respective services via a follow-on sole-source Rapid Fielding production contract.

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 0605827F, 0605828F, 0605829F, 0605831F, 0605832F, 0605833F, 0605898F, 0606398F. In FY22, \$0.251M was expended for civilian pay expenses in this program element, and in FY23, \$0.340M is forecasted for civilian pay expenses in this program element

NGSR is not fully funded across the Future Years Defense Program. The Department of the Air Force is assessing all options to address the funding shortfalls for MTA programs, including additional funding in a future budget request, performance trades based on technical maturity, or transition to alternative pathways.

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

	FY 2022	FY 2023	FY 2024
Title: Next Generation Survival Radio (NGSR)	-	27.881	56.225
Description: The Research and Development (R&D) efforts associated with the NGSR effort aim to Rapidly Prototype a production-ready -- multi-function -- handheld radio in advance of planned future production and fielding efforts. The radio serves			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>as the prime communications pathway for Army, Navy, Marine, and Air Force pilots in the event they become isolated personnel. R&D efforts associated with the development of the NGSR prototype include the following:</p> <ul style="list-style-type: none"> - Upgrade and modify the Mobile User Objective System (MUOS) Satellite Communication (SATCOM) Ground infrastructure, allowing for waveform agnostic use of the on-orbit constellation. - Development of a software re-programmable multi-function handheld device capable of Line-of-sight (LOS) and Beyond Line-of-sight (BLOS) communications. - NGSR transition and modernization of the existing Combat Survivor Evader Locator (CSEL) software applications -- used by the Joint Personnel Recovery Center (JPRC) to identify and locate emergency events -- and migration of the applications to a cloud environment. - Selection, development, integration, and testing of an encryption standard that meets NGSR radio, waveform, and transmission capabilities. <p>FY 2023 Plans:</p> <ul style="list-style-type: none"> - Will award NGSR Task Order on a MUOS Indefinite Delivery / Indefinite Quantity (ID/IQ) contract to begin digitization of the MUOS ground station. - Will invest in the initial digital infrastructure, software development pipelines, and personnel required for MUOS ground station development and integration. - Will support NGSR waveform selection and testing. - Will support the start of classified development (people, infrastructure, efforts) of an NGSR required communication pathway for use by isolated personnel in highly contested environments. - Will facilitate multi-award contracts to compete vendor designs for NGSR rapid prototyping. - Will provide additional contracted personnel and program management support for the NGSR program office. - Will support the start of test planning at the identified NGSR Developmental Test (DT) and Operational Test (OT) organizations (personnel, technology, and efforts). 			

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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2022	FY 2023	FY 2024
<p>- Will support encryption technology evaluation, selection, and initial compatibility analysis for technical sufficiency for use in the NGSR radio.</p> <p><i>FY 2024 Plans:</i></p> <ul style="list-style-type: none"> - Will deliver vendor initial prototype designs - Will deliver vendor-refined designs for evaluation - Will kick off Vendor prototype builds (software/hardware) - Will build/configure Mobile User Objective System (MUOS) Digitized Earth Terminal Interface (DETI) digital infrastructure - Will build MUOS ground connections with the Joint Personnel Recovery Center (JPRC) interfaces - Will conduct testing on waveform compatibility with MUOS constellation - Will fund test organization support and infrastructure build/configuration - Will fund web migration of JPRC emergency event notification application - Will fund migration/testing of JPRC applications to a cloud environment <p><i>FY 2023 to FY 2024 Increase/Decrease Statement:</i> FY24 funding increases ensure a synchronization (time and technology development) of parallel efforts and support the Air Force plan to rapidly field the NGSR radio prior to any degradation of existing CSEL capability. The increase in funding facilitates the ramp-up in Beyond Line of Site (BLOS) ground station modifications and software development, supports multiple vendor competitive development activities for the Handheld Radio (HHR), facilitates the ramp-up of modernization and migration activities for the personnel recovery applications and interfaces and supports the ramp-up of efforts associated with encryption modification and integration.</p>			
Accomplishments/Planned Programs Subtotals	-	27.881	56.225

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

Line Item	FY 2022	FY 2023	FY 2024	FY 2024	FY 2024	FY 2025	FY 2026	FY 2027	FY 2028	Cost To	
			Base	OCO	Total					Complete	Total Cost
• OPAF 05 837140: <i>0207279F - Next Generation Survival Radio (654522)</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.000	76.750	0.000	Continuing	Continuing

Remarks

D. Acquisition Strategy

The NGSR acquisition strategy leverages a Middle Tier Acquisition (MTA) pathway and an Other Transactional Authority (OTA) contracting strategy to Rapidly Prototype and then Rapidly Field a CSEL replacement capability.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force **Date:** March 2023

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Product Development (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
MUOS Ground Station Upgrade	MIPR	1. BLOS Development : TBD	-	-		13.678	Apr 2023	20.200	Nov 2023	-		20.200	Continuing	Continuing	-
LPI/LPD Waveform Upgrade	MIPR	1. BLOS Development : TBD	-	-		1.000	Apr 2023	2.000	Nov 2023	-		2.000	Continuing	Continuing	-
NGSR Rapid Prototype (Design/Refine/Build)	C/CPIF	2. NGSR Rapid Prototyping : TBD	-	-		7.891	Jul 2023	22.398	Jul 2024	-		22.398	Continuing	Continuing	-
JPRC Software Modernization and Migration	Various	3. JPRC Software Upgrades : TBD	-	-		3.449	Apr 2023	3.552	Nov 2023	-		3.552	Continuing	Continuing	-
Encryption Development	PO	4. Encryption Upgrades : TBD	-	-		1.610	Mar 2023	2.575	Nov 2023	-		2.575	Continuing	Continuing	-
Subtotal			-	-		27.628		50.725		-		50.725	Continuing	Continuing	N/A

Test and Evaluation (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Sys Test & Eval	Various	Not specified. : TBD	-	-		0.200	Mar 2023	2.000	Nov 2023	-		2.000	Continuing	Continuing	-
Subtotal			-	-		0.200		2.000		-		2.000	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2022		FY 2023		FY 2024 Base		FY 2024 OCO		FY 2024 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			
Sys Eng / Prog Management (SEPM)	TBD	Not specified. : TBD	-	-		0.053	Jul 2023	3.500	Nov 2023	-		3.500	Continuing	Continuing	-
Subtotal			-	-		0.053		3.500		-		3.500	Continuing	Continuing	N/A

			Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	-	27.881	56.225	-	56.225	Continuing	Continuing	N/A

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2024 Air Force							Date: March 2023			
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	Prior Years	FY 2022	FY 2023	FY 2024 Base	FY 2024 OCO	FY 2024 Total	Cost To Complete	Total Cost	Target Value of Contract	

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2024 Air Force		Date: March 2023
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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
1. Beyond Line of Site Development																												
1.1. MUOS Ground Station Upgrade - DETI																												
1.2. LPI/LPD Waveform Upgrade																												
2. NGSR Rapid Prototyping																												
2.1. Competitive Rapid Prototype Development																												
2.2. Personnel Recovery Systems Integration and Testing																												
2.3. BLOS Integration and Testing																												
3. JPRC Software Modernization and Migration																												
3.1. JPRC Application (Web Transition)																												
3.2. JPRC Software Cloud Migration																												
4. NGSR Message Encryption Development																												
4.1. Encryption Selection/Tailoring																												
4.2. Encryption Integration and Testing																												
5. Objective System - Rapid Fielding																												
5.1. Planning																												
5.2. NGSR Operational Testing																												
5.3. NGSR Production																												
6. Software Augmentation and Upkeep																												
6.1. MUOS Ground Station - DETI																												
6.2. NGSR Handheld Device																												
6.3. JPRC Applications and Cloud																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2024 Air Force		Date: March 2023
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0207279F / <i>Isolated Personnel Survivability and Recovery</i>	Project (Number/Name) 654522 / CSAR EMD

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
1. Beyond Line of Site Development				
1.1. MUOS Ground Station Upgrade - DETI	3	2023	1	2026
1.2. LPI/LPD Waveform Upgrade	3	2023	2	2025
2. NGSR Rapid Prototyping				
2.1. Competitive Rapid Prototype Development	4	2023	1	2026
2.2. Personnel Recovery Systems Integration and Testing	2	2024	1	2026
2.3. BLOS Integration and Testing	3	2025	1	2026
3. JPRC Software Modernization and Migration				
3.1. JPRC Application (Web Transition)	3	2023	1	2026
3.2. JPRC Software Cloud Migration	3	2023	1	2026
4. NGSR Message Encryption Development				
4.1. Encryption Selection/Tailoring	2	2023	1	2026
4.2. Encryption Integration and Testing	1	2024	1	2026
5. Objective System - Rapid Fielding				
5.1. Planning	1	2024	1	2026
5.2. NGSR Operational Testing	1	2026	4	2027
5.3. NGSR Production	1	2027	4	2028
6. Software Augmentation and Upkeep				
6.1. MUOS Ground Station - DETI	1	2026	4	2028
6.2. NGSR Handheld Device	1	2026	4	2028
6.3. JPRC Applications and Cloud	1	2026	4	2028