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Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Air Force **Date:** February 2020

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 0604617F / <i>Agile Combat Support</i>
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COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
Total Program Element	-	22.739	26.944	20.609	0.000	20.609	18.006	18.327	23.172	23.601	Continuing	Continuing
652895: <i>Civil Engineering Readiness</i>	-	21.197	18.315	18.955	0.000	18.955	16.316	16.607	21.214	21.606	Continuing	Continuing
654910: <i>Aeromedical Readiness</i>	-	1.542	8.629	1.654	0.000	1.654	1.690	1.720	1.958	1.995	Continuing	Continuing

A. Mission Description and Budget Item Justification

This program provides lighter, leaner, rapidly-deployable and technologically-advanced materiel, forces and capabilities to the warfighter. Current projects in this program include Civil Engineering Readiness (Project 652895) and Aeromedical Readiness (Project 654910). Civil Engineering Readiness projects enable airfield protection, and airfield damage recovery for sustainment, and increased resiliency of airfield operations anywhere in the world. Aeromedical Readiness projects provide aerospace medical systems and treatment equipment to improve casualty care and meet worldwide warfighter medical operational requirements.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver the Civil Engineering and Aeromedical Readiness capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

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 2019</u>	<u>FY 2020</u>	<u>FY 2021 Base</u>	<u>FY 2021 OCO</u>	<u>FY 2021 Total</u>
Previous President's Budget	23.489	19.944	20.646	0.000	20.646
Current President's Budget	22.739	26.944	20.609	0.000	20.609
Total Adjustments	-0.750	7.000	-0.037	0.000	-0.037
• Congressional General Reductions	0.000	0.000			
• Congressional Directed Reductions	0.000	0.000			
• Congressional Rescissions	0.000	0.000			
• Congressional Adds	0.000	7.000			
• Congressional Directed Transfers	0.000	0.000			
• Reprogrammings	0.000	0.000			
• SBIR/STTR Transfer	-0.750	0.000			
• Other Adjustments	0.000	0.000	-0.037	0.000	-0.037

Congressional Add Details (\$ in Millions, and Includes General Reductions)

Project: 652895: *Civil Engineering Readiness*

	FY 2019	FY 2020

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Congressional Add Details (\$ in Millions, and Includes General Reductions)

Congressional Add: *Explosive Resistant Windows Technology*

Congressional Add Subtotals for Project: 652895

	FY 2019	FY 2020
	3.374	0.000
	3.374	0.000

Project: 654910: *Aeromedical Readiness*

Congressional Add: *Multi-Modal Threat Detection and Mitigation*

Congressional Add Subtotals for Project: 654910

	0.000	7.000
	0.000	7.000

Congressional Add Totals for all Projects

	3.374	7.000
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Change Summary Explanation

FY20 Congressional Add for Multi-modal threat detection and mitigation

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force										Date: February 2020		
Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support				Project (Number/Name) 652895 / Civil Engineering Readiness			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
652895: <i>Civil Engineering Readiness</i>	-	21.197	18.315	18.955	0.000	18.955	16.316	16.607	21.214	21.606	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This Civil Engineering (CE) Readiness project develops Airbase Technologies (ABT), Airfield Damage Repair (ADR), Airfield Protection (AP), Energy & Utilities (E&U), and CE Materials (CEM) solutions for in-garrison, expeditionary, and contingency installations and airbases. This includes: technologies for airfield assessment, pavement repair and unexploded ordnance identification and mitigation to enable rapid recovery and regeneration of airfield operations; infrastructure design criteria, construction methods, hardened shelters, evaluation tools, materials, aviation firefighting, force protection, expeditionary energy, waste water recycling/treatment, CE materials applications and systems for improved resiliency and rapid recovery of airbase and airfield operations following an attack.

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

	FY 2019	FY 2020	FY 2021
Title: Airbase Technologies	1.567	1.698	3.044
Description: Technical support providing RDT&E capabilities for cross-cutting CE applications and processes for all CE functional areas. Provides replacements and repair of critical RDT&E lab equipment, test systems and instruments. Specialized RDT&E systems and software required to conduct CE RDT&E.			
FY 2020 Plans: Continue development and testing material technologies for indigenous soil-based cements and bio-cementation for expeditionary ADR, test and evaluation of aviation asphalt aging mitigation technologies for reduced life cycle costs, development and testing of additive manufacturing approaches for CE applications, development of functionalized materials for hardened infrastructure and force protection applications, evaluation of disposal and mitigation technologies for AFFF and evaluation of expeditionary energy storage systems for incorporation of renewable energy systems with USAF BEAR equipment. Replace/repair critical RDT&E lab equipment. Fund program management support, RDT&E IT systems and software required to conduct CE RDT&E.			
FY 2021 Plans: Continue development and testing material technologies for indigenous soil-based cements and bio-cementation for expeditionary ADR, test and evaluation of aviation asphalt aging mitigation technologies for reduced life cycle costs, development and testing of additive manufacturing approaches for CE applications, development of functionalized materials for hardened infrastructure and force protection applications, evaluation of disposal and mitigation technologies for AFFF and evaluation of expeditionary energy storage systems for incorporation of renewable energy systems with USAF BEAR equipment. Replace/repair critical RDT&E lab equipment. Fund program management support, RDT&E IT systems and software required to conduct CE RDT&E.			
FY 2020 to FY 2021 Increase/Decrease Statement:			

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force		Date: February 2020		
Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / Civil Engineering Readiness		
B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
Planned increase based on project requirements				
Title: Airfield Damage Repair		10.333	10.666	10.308
<p>Description: This effort develops, tests, and certifies equipment, materials, and Tactics, Techniques, and Procedures (TTPs) for the rapid assessment and repair of airfield damage, which includes identification, mitigation or removal of unexploded ordnance and expedient repairs for fuel and utility systems. This effort will also accelerate the transition of proven technologies in expedient and sustained protection of critical infrastructure, including operating surfaces, shelters, fuel storage and distribution systems, and command and control (C2) systems. Further, this effort focuses on the resiliency of airbase infrastructure as well as the timely repair and regeneration of airfield operations within established time limits in order to gain and maintain air superiority.</p> <p>FY 2020 Plans: Mature and transition the rapid assessment, mitigation and repair tools and solutions for airfield damage repair through research, development, testing and evaluation. Rapid assessment includes the development of spiral 3 SUAS, sensors, and automated damaging detection solutions to significantly decrease the assessment time and improve automated detection of unexploded ordnance. Mitigation includes the testing and evaluation of generation 2 systems to remotely neutralize and remove UXOs through a family of Rapid Explosive Hazard Mitigation (REHM) systems. Repair of airfield damage focuses on development, testing and transition of lighter/leaner systems and materials including maximum use of native in-situ materials for airfield recovery.</p> <p>FY 2021 Plans: Mature and transition the rapid assessment, mitigation, and repair tool and material solutions for airfield damage recovery through research, development, testing, and evaluation. Rapid assessment includes spiral development of integration of small unmanned aerial systems (SUAS), sensors, and automated damage detection software solutions to significantly decrease damage assessment time and improve automated detection of unexploded ordnance (UXO). Mitigation includes testing and evaluation of automated systems to remotely remove and neutralize UXO through a family of Rapid Explosive Hazard Mitigation (REHM) components. This family of systems will include manned and unmanned systems with improved blast resistance capability to fit on both new and existing systems. Repair of damage focuses on development, testing, and transition of materials and equipment sets for rapid recovery of enemy induced battle damaged runways. New materials will have minimal dependence on shipping and logistics, with importance being placed on materials available on hand at any location, while new systems will focus heavily on testing and operation in extreme weather conditions.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Planned decrease based on project requirements</p>				
Title: Expeditionary Airfield Damage Repair (EADR) JCTD		3.143	2.751	2.000

UNCLASSIFIED

Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force	Date: February 2020
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / Civil Engineering Readiness
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
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Description: The purpose of the EADR JCTD is to develop and transition the capability to rapidly and repeatedly repair damaged airfield surfaces operating under the dynamic basing concept of operations (CONOP). The goal is to develop and transition technologies that minimize airfield downtime and maximize combat sortie generation. The JCTD will execute a spiral development-oriented program that will transition mature technologies throughout the life of the program.

FY 2020 Plans:

Continue to execute and revise a series of structured analysis of alternatives (AoA) to identify and down-select capability solutions to meet operational requirements. Execute a spiral development program to include modeling, JCTD-appropriate advanced technology development, test and evaluation and field-worthy assessment of prototype solutions. Develop and assess the component spiral products comprising the total capability; along with a predictive methodology to estimate site-specific repair requirements and the tactics, techniques and procedures (TTP) necessary for capability operation. Begin transitioning and acquisition of solutions to meet the requirements for expedient and expeditionary airfield damage repair (EADR).

FY 2021 Plans:

Down-select final capability solution set to meet operational requirement. Conduct final Operational User Assessment exercises to demonstrate final total capability for prototype solution. Publish predictive methodology to estimate site-specific repair requirements and tactics, techniques, and procedures (TTP) necessary for capability operation across services. Begin transition and acquisition of solutions to meet requirements for expedient and expeditionary airfield damage repair (EADR).

FY 2020 to FY 2021 Increase/Decrease Statement:

Planned decrease - final year of JCTD

Title: Airfield Protection

Description: Research, develop and transition technologies for hardening and protecting airfield infrastructure from munitions attack, unexploded ordnance and aircraft, equipment and infrastructure fires. Included within this effort are structural solutions, expeditionary and expedient hardening and protection solutions, explosive ordnance disposal technologies and aviation firefighting technologies. The technologies developed from this effort provide improved resiliency and rapid restoration of airbase and airfield operations following an attack.

FY 2020 Plans:

Continue RDT&E of new concepts for protection materials for lighter, less expensive solutions for infrastructure hardening. Test and evaluate technologies against penetrating munitions including cruise missile hardening and improve expedient sheltering to address advanced threats. Continue development and begin testing of selective hardening systems for infrastructure. Continue testing and evaluation of unconventional countermeasures technology for transition. Continue research and development of aviation firefighting technologies for treatment and replacement of the perfluorinated aqueous film forming foams (AFFF),

	2.780	2.800	2.603
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UNCLASSIFIED

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B. Accomplishments/Planned Programs (\$ in Millions)		FY 2019	FY 2020	FY 2021
<p>clean firefighting agents - Halon replacement and aviation firefighting equipment. Continue RDT&E of EOD technologies for neutralization of sub-munition and UXO threats.</p> <p>FY 2021 Plans: Continue RDT&E of new concepts for protection materials for lighter, less expensive solutions for infrastructure hardening. Test and evaluate technologies against penetrating munitions including cruise missile hardening and improve expedient sheltering to address advanced threats. Continue development and begin testing of selective hardening systems for infrastructure. Continue testing and evaluation of unconventional countermeasures technology for transition. Continue research and development of aviation firefighting technologies for treatment and replacement of the perfluorinated aqueous film forming foams (AFFF), clean firefighting agents - Halon replacement and aviation firefighting equipment. Continue RDT&E of EOD technologies for neutralization of sub-munition and UXO threats.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Planned decrease based on project requirements</p>				
<p>Title: Energy & Utilities</p> <p>Description: Research, develop and transition technologies for energy and utilities resiliency for BEAR base and airbase infrastructure. The focus of this effort is for energy and utilities technologies that provide increased efficiency and decreased logistic costs for expeditionary and in-garrison applications. This includes:expeditionary shelters, environmental conditioning systems, water and waste stream processing, power production and power management systems.</p> <p>FY 2020 Plans: Continue development of the BTEIL and METER sites at Tyndall AFB. Test and evaluate new energy & water expeditionary technologies and systems in an operational environment prior to fielding. Conduct bench and lab scale testing of new energy and utilities technologies at the METER site prior to scaling up to full scale test and evaluation at the BTEIL site. Support test and evaluation of commercial technologies/systems to improve efficiency and reduce waste for expeditionary and fixed base operations. This includes:expeditionary shelters, environmental conditioning systems, water and waste stream processing, power production and power management systems.</p> <p>FY 2021 Plans: Continue development of the METER site at Tyndall AFB. . Conduct bench and lab scale testing of new energy and utilities technologies at the METER site prior to scaling up to full scale test and evaluation at the BTEIL site. Test and evaluate expeditionary energy and shelter technologies that incorporate resiliency and sustainability for USAF expeditionary assets. Field demonstration of innovative expeditionary water and waste systems in an operational environment prior to fielding. Support test and evaluation of commercial technologies/systems that includes: expeditionary shelters, environmental conditioning systems, energy storage, power generation and management system, water and waste stream processing system. These system will</p>		0.000	0.400	1.000

UNCLASSIFIED

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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / Civil Engineering Readiness
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
provide war-fighter with improve energy resiliency and efficiency while and reducing logistics for expeditionary and fixed base operations.			
FY 2020 to FY 2021 Increase/Decrease Statement: No changes - continuing			
Accomplishments/Planned Programs Subtotals	17.823	18.315	18.955

	FY 2019	FY 2020
Congressional Add: Explosive Resistant Windows Technology	3.374	0.000
FY 2019 Accomplishments: Contract award delayed - contract awarded June 2019 - no significant accomplishment in FY19		
FY 2020 Plans: Develop and assess blast and ballistic resistant window, entry and surrounding structure for improved performance against open blast and cased munitions		
Congressional Adds Subtotals	3.374	0.000

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

<u>Line Item</u>	<u>FY 2019</u>	<u>FY 2020</u>	<u>FY 2021</u> <u>Base</u>	<u>FY 2021</u> <u>OCO</u>	<u>FY 2021</u> <u>Total</u>	<u>FY 2022</u>	<u>FY 2023</u>	<u>FY 2024</u>	<u>FY 2025</u>	<u>Cost To</u> <u>Complete</u>	<u>Total Cost</u>
• OPAF 04 Line Item 845100A: <i>Contingency Operations - Engineering and EOD Equipment</i>	77.209	14.752	0.000	-	0.000	69.327	163.362	167.150	161.639	Continuing	Continuing

Remarks
FY19-25 Procurement funding for Expedient Small Asset Protection (ESAP) systems, Rapid Airfield Damage Assessment System (RADAS) and Recovery of Airbases Denied by Ordnance (RADBO)in PE 0208028F.

D. Acquisition Strategy

This Civil Engineering (CE) Readiness project develops and evaluates technologies for in-garrison, expeditionary, and contingency installations & airbases. This encompasses a wide range of solutions and COTS equipment that are fielded to support the CE mission of the USAF. The acquisition strategy utilizes AFCEC RDT&E contracts as well as other DoD and US Government laboratories/engineering centers, contracts and other transaction agreements whenever practical for the specific technology development effort.

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / Civil Engineering Readiness
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Airbase Technologies	Various	AFCEC : Tyndall AFB, FL	-	1.567	Nov 2017	1.698	Oct 2019	1.419		-		1.419	Continuing	Continuing	-
Airfield Damage Repair (ADR)	Various	AFCEC : Tyndall AFB, FL	-	2.400	Dec 2018	2.400	Dec 2019	1.272	Dec 2020	-		1.272	Continuing	Continuing	-
Airfield Damage Repair (ADR) ERDC	MIPR	USERDC : Vicksburg, MS	-	2.500	Jan 2019	2.000	Jan 2020	2.100	Jan 2021	-		2.100	Continuing	Continuing	-
Airfield Damage Repair (ADR) Asphalt	C/CPFF	Applied Research Associates : Tyndall AFB, FL	-	1.500	Apr 2019	0.700	Dec 2020	-		-		-	Continuing	Continuing	-
Airfield Pavements & Technologies	C/CPFF	TBD : TBD	-	-		1.000	Apr 2020	2.500	Oct 2020	-		2.500	Continuing	Continuing	-
Expeditionary Airfield Damage Repair (EADR) JCTD	Various	Not specified. : TBD	-	2.780	Apr 2019	2.751	Jan 2020	2.000	Oct 2020	-		2.000	0.000	7.531	-
Rapid Explosive Hazard Mitigation (REHM) Robotics	C/CPFF	Applied Research Associates : Tyndall AFB, FL	-	1.250	Dec 2018	0.400		-		-		-	Continuing	Continuing	-
EOD & Robotics Technologies	C/CPFF	TBD : TBD	-	-		0.727	Apr 2020	2.000	Oct 2020	-		2.000	Continuing	Continuing	-
Rapid Airfield Damage Assessment System (RADAS) Integration	MIPR	TORC Robotics : Blacksburg, VA	-	2.091	Dec 2018	2.100	Dec 2020	2.000	Dec 2020	-		2.000	Continuing	Continuing	-
Airfield Protection	Various	AFCEC : Tyndall AFB, FL	-	1.850	Sep 2018	-		-		-		-	Continuing	Continuing	-
Airfield Protection (AP) Infrastructure Hardening	C/CPFF	Battelle : Panama City, FL	-	3.070	Jun 2019	1.900	Oct 2019	2.075	Dec 2020	-		2.075	Continuing	Continuing	-
Airfield Protection (AP) Aviation Firefighting Technologies	C/CPFF	Battelle : Panama City, FL	-	0.900	Nov 2017	0.900	Oct 2019	1.300	Dec 2020	-		1.300	Continuing	Continuing	-
Energy & Utilities RDT&E	C/CPFF	Battelle : Panama City, FL	-	-		0.450	Jan 2020	1.000	Oct 2020	-		1.000	Continuing	Continuing	-
Subtotal			-	19.908		17.026		17.666		-		17.666	Continuing	Continuing	N/A

UNCLASSIFIED

Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / Civil Engineering Readiness
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			

Remarks
\$77K increase to FY18 ADR due to inflation adjustment

Support (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Support	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Program Management Administration (PMA)	Various	AFCEC : Tyndall AFB, FL	-	0.325	Nov 2018	0.325	Apr 2019	0.325	Apr 2021	-		0.325	Continuing	Continuing	-
Subtotal			-	0.325		0.325		0.325		-		0.325	Continuing	Continuing	N/A

Remarks
PMA includes travel and supplies to support CE Readiness RDT&E activities.

Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Management Services	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
A&AS Program Support RDT&E	C/FFP	Multiple : FL	-	0.964	Jan 2019	0.964	Jan 2020	0.964	Oct 2020	-		0.964	Continuing	Continuing	-
Subtotal			-	0.964		0.964		0.964		-		0.964	Continuing	Continuing	N/A

Remarks
Advisory and Assistance Services (A&AS) contract support for the Life Cycle Management Center (LCMC) procurement of Expeditionary Small Airfield Protection (ESAP), Expeditionary Large Airfield Protection (ELAP), and WaFERS.

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals		-	21.197	18.315	18.955	18.955	Continuing	Continuing	N/A

Remarks

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 652895 / Civil Engineering Readiness
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FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
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

CE Readiness																												
Airbase Technologies																												
ADR Robotic In-seat Appliques																												
ADR In-situ Material Repair RDT&E																												
ADR Lighter/Leaner Expeditionary Repair																												
E-ADR JCTD																												
REHM Spiral 2 Rapid UXO Clearance																												
RADAS Development, Test & Evaluation																												
RADAS Spiral 2 RDT&E																												
Airfield Mitigation and Recovery Robotics																												
AFFF disposal and mitigation technologies																												
Directed Energy Application for UXO Neutralization																												
Civil engineering projects for sustained airbase operations																												
Airfield Protection - Advanced Hardening RDT&E																												

UNCLASSIFIED

Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 652895 / <i>Civil Engineering Readiness</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
CE Readiness				
Airbase Technologies	1	2019	4	2024
ADR Robotic In-seat Appliques	1	2019	2	2021
ADR In-situ Material Repair RDT&E	1	2019	4	2023
ADR Lighter/Leaner Expeditionary Repair	1	2019	4	2022
E-ADR JCTD	1	2019	4	2021
REHM Spiral 2 Rapid UXO Clearance	1	2019	4	2023
RADAS Development, Test & Evaluation	1	2019	4	2023
RADAS Spiral 2 RDT&E	1	2019	4	2021
Airfield Mitigation and Recovery Robotics	1	2019	3	2024
AFFF disposal and mitigation technologies	1	2019	4	2024
Directed Energy Application for UXO Neutralization	2	2019	4	2022
Civil engineering projects for sustained airbase operations	1	2019	1	2024
Airfield Protection - Advanced Hardening RDT&E	1	2019	4	2023

UNCLASSIFIED

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Appropriation/Budget Activity 3600 / 5					R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support				Project (Number/Name) 654910 / Aeromedical Readiness			
COST (\$ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
654910: Aeromedical Readiness	-	1.542	8.629	1.654	0.000	1.654	1.690	1.720	1.958	1.995	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

A. Mission Description and Budget Item Justification

This program provides key capabilities that provide life-saving and/or quality of life technologies and equipment. Aeromedical Readiness program enables the critical care of combat casualties by further developing and optimizing existing technologies for ground Expeditionary Medical Systems (EMEDS) and Aeromedical evacuation systems. EMEDS and Aeromedical Evacuation systems provide the urgent care needed to treat deployed injured warfighters and return them to duty while in country, and to treat combat casualties that need to be safely transported to a stateside hospital for follow on treatment. The program also supports critical capabilities development in the multi-disciplinary areas for light-weight, durable, and rapidly deployable medical equipment to ensure the Air Force is poised to meet future medical readiness and operational requirements. Additionally, the program supports research efforts to optimize human physiologic and cognitive performance.

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

	FY 2019	FY 2020	FY 2021
<p>Title: Non-Invasive Warming and Cooling Device (NIWCD)</p> <p>Description: Single device to provide therapeutic temperature control during treatment and movement of patient from point of injury through the continuum of care. The mortality in combat casualties with hypothermia is double that of normothermic casualties with similar injuries.</p> <p>FY 2020 Plans: Contract close-out</p> <p>FY 2021 Plans: Contract Closed out in FY20</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Contract Closed out in FY20</p>	0.625	0.000	0.000
<p>Title: Aeromedical Equipment Testing/Studies/Minor Development</p> <p>Description: Aeromedical supports Defense Health Program, Joint Services and MAJCOM medical modernization. The Air Force Medical Readiness Agency (AFMRA) Surgeon General Requirement Oversight Council (SGROC) Governance process manages medical capability gaps, research and development, funding prioritization and decisional boards. Aeromedical procures and qualifies commercial-off-the-shelf (COTS) or near COTS medical and aeromedical products and/or performs minor development, studies and management efforts, under Aeromedical Readiness. Aeromedical Program efforts evaluate integrating technologies or prototype systems in a realistic operating environment, expedite technology transition from the laboratory to operational use, emphasis on proving maturity prior to integration and viable decision ready materiel solutions.</p>	0.917	1.629	1.654

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Exhibit R-2A, RDT&E Project Justification: PB 2021 Air Force	Date: February 2020
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Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 654910 / Aeromedical Readiness
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B. Accomplishments/Planned Programs (\$ in Millions)	FY 2019	FY 2020	FY 2021
<p>FY 2020 Plans: Continue EMD and development of high priority warfighter requirements.</p> <p>FY 2021 Plans: Continue the transition of Scientific and Technical (S&T) projects to Research and Development (R&D) of various items in Engineering and Manufacturing Development (EMD) phase of the acquisition life cycle.</p> <p>FY 2020 to FY 2021 Increase/Decrease Statement: Increase to account for inflationary effects.</p>			
Accomplishments/Planned Programs Subtotals	1.542	1.629	1.654

	FY 2019	FY 2020
<p>Congressional Add: Multi-Modal Threat Detection and Mitigation</p> <p>FY 2019 Accomplishments: N/A FY20 New Start</p> <p>FY 2020 Plans: Create a force multiplier for USAF wide-area Force Protection by coupling fielded sensor technologies and countermeasures with Artificial Intelligence (AI)/Machine Learning (ML). Enhance the effectiveness of USAF defense personnel with AI/ML systems to detect and classify targets, determine intent, and deploy countermeasures</p>	0.000	7.000
Congressional Adds Subtotals	0.000	7.000

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

N/A

Remarks

Multi-Modal Threat Detection and Mitigation Congressional Add improperly aligned to BPAC 654910. Funding is being executed out of BPAC 652895.

D. Acquisition Strategy

Programs will consider a streamlined acquisition approach. Whenever practical, commercial items are tested and evaluated as candidates for providing solutions to user needs. This normally involves contractor characterization, verification, and qualification testing to ensure Food and Drug Administration (FDA) approved, commercial off-the-shelf equipment is properly evaluated to identify any capability gaps that may require minor modifications for military use. However, acquisition strategies may also be carried out for traditional Engineering and Manufacturing Development (EMD). Funds may be used to address associated emerging Aeromedical Readiness requirements and for program management activities.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / Agile Combat Support	Project (Number/Name) 654910 / Aeromedical Readiness
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Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Product Development	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Non-Invasive Warming and Cooling Aeromedical Equipment	C/CPFF	Edaptive Computing : Dayton, OH	-	0.634	Mar 2019	-		-		-		-	Continuing	Continuing	-
Technology Transfer Planning for Aeromedical Equipment R&D Efforts, Cost Estimates Technology Readiness Assessments, Food and Drug Administration consulting	TBD	TBD : TBD	-	0.907	Sep 2020	1.624	Sep 2021	1.594	Sep 2022	-		1.594	Continuing	Continuing	-
Multi-Modal Threat Detection and Mitigation	C/CPAF	TBD : TBD	-	-		7.000	Mar 2020	-		-		-	Continuing	Continuing	-
Subtotal			-	1.541		8.624		1.594		-		1.594	Continuing	Continuing	N/A

Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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			
Management Services	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Program Management Administration	C/CPFF	AFLCMC : Wright-Patterson AFB, OH	-	0.001	Oct 2018	0.005	Oct 2019	0.060	Oct 2020	-		0.060	Continuing	Continuing	-
Subtotal			-	0.001		0.005		0.060		-		0.060	Continuing	Continuing	N/A

	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	Cost To Complete	Total Cost	Target Value of Contract	
Project Cost Totals		-	1.542	8.629	1.654	-	1.654	Continuing	Continuing	N/A

Remarks
 Product Development: Technology Transfer/Aeromedical Equipment is TBD due to contract source selections.

 Multi-Modal Threat Detection and Mitigation Congressional Add improperly aligned to BPAC 654910. Funding is being executed out of BPAC 652895.

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Exhibit R-4, RDT&E Schedule Profile: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 654910 / <i>Aeromedical Readiness</i>
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	FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024				FY 2025			
	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>Aeromedical Readiness RDTE Efforts</i>	
EMD Phase for the Non-Invasive Warming & Cooling Device (NIWCD)	
Contract Close Out	
Aeromedical Equipment Testing/Studies/ Minor Development	
<i>Multi-Modal Threat Detection and Mitigation</i>	
Multi-Modal Threat Detection and Mitigation	

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Exhibit R-4A, RDT&E Schedule Details: PB 2021 Air Force **Date:** February 2020

Appropriation/Budget Activity 3600 / 5	R-1 Program Element (Number/Name) PE 0604617F / <i>Agile Combat Support</i>	Project (Number/Name) 654910 / <i>Aeromedical Readiness</i>
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Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>Aeromedical Readiness RDTE Efforts</i>				
EMD Phase for the Non-Invasive Warming & Cooling Device (NIWCD)	1	2019	4	2019
Contract Close Out	4	2019	1	2020
Aeromedical Equipment Testing/Studies/Minor Development	1	2020	4	2025
<i>Multi-Modal Threat Detection and Mitigation</i>				
Multi-Modal Threat Detection and Mitigation	3	2020	4	2022

Note

Multi-Modal Threat Detection and Mitigation Congressional Add improperly aligned to BPAC 654910. Funding is being executed out of BPAC 652895.