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

<b>Appropriation/Budget Activity</b> 3600: <i>Research, Development, Test &amp; Evaluation, Air Force / BA 7: Operational Systems Development</i>	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</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	-	2.322	3.629	7.673	0.000	7.673	6.740	6.180	8.983	9.148	Continuing	Continuing
675138: <i>ST System Development</i>	-	2.322	3.629	7.673	0.000	7.673	6.740	6.180	8.983	9.148	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

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

The Special Tactics (ST) System Development project focuses on modernization development for the Battlefield Air Operations (BAO) Kit. BAO Kit will develop, test, train, and modernize the existing and future Family of Systems (FoS) that provide a state-of-the-art Command, Control, Communications, Computer, Intelligence, Surveillance, and Reconnaissance (C4ISR) capability. It also provides a suite of systems for all Air Force Specialty Codes supporting the ST community within the Air Force Special Operations Command's (AFSOC's) Special Warfare operators. ST System Development focus on reducing the risk of fratricide and substantially reducing size and weight of the equipment carried through various core capabilities, which include but are not limited to: Human Machine Interface (HMI), Line of Sight (LOS) targeting, medical monitoring, and Machine-to-Machine (M2M) C4ISR System and all other ST capability needs.

This program will develop and enhance technologies for Special Warfare ST operators to recognize, identify, range, nominate, and designate targets during both day and night operations. BAO Kit will also significantly reduce the time required to find, track, fix targets, and engage the enemy by providing highly accurate target grid coordinates in three dimensions, generating target imagery both pre- and post-strike, and transmitting target data to Command and Control centers. BAO Kit systems are light, compact, and portable for use by dismounted Special Warfare ST operators. FY21 BAO Kit funding will provide significant improvements in operational capability, situational awareness, and precision lethality in the battle space while continuing to build and enhance the BAO Kit family of systems. This may be conducted through industry technology demonstrations, prototypes, and associated engineering support to posture the BAO Kit for technology insertion. These efforts will deliver enhanced capability for the dismounted soldier in terms of dramatic weight reduction and increase mission effectiveness across the conflict spectrum. BAO also supports AFSOC Tactical Command and Control (TAC C2) programs to develop and enhance communications systems and equipment essential for ST combat controllers, pararescue, combat weather operators, and tactical air controller parties within AFSOC to perform their mission. The ST operators use this equipment to gather and transmit assault zone suitability and weather data and to perform tactical airfield/assault landing/drop zone operations. Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements.

Program changes in progress. This applies to both PE 0207227F and 0408011F.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver special tactic weapon system capability. The use of such program funds would be in addition to the civilian pay expenses budgeted in program element 0605831F.

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The Special Tactics (ST) System Development activities also include studies, analysis, and risk-reduction activities to support both current and future program planning and execution.

This program is in Budget Activity 7, Operational System Development because this budget activity includes development efforts to upgrade systems that have been fielded or have received approval for full rate production and anticipate production funding in the current or subsequent fiscal year.

<b>B. Program Change Summary (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021 Base</b>	<b>FY 2021 OCO</b>	<b>FY 2021 Total</b>
Previous President's Budget	2.433	3.629	7.687	0.000	7.687
Current President's Budget	2.322	3.629	7.673	0.000	7.673
Total Adjustments	-0.111	0.000	-0.014	0.000	-0.014
• 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	-0.111	0.000			
• Other Adjustments	0.000	0.000	-0.014	0.000	-0.014

**Change Summary Explanation**

Required funding profile in FY20 has been rephased due to higher DoD priorities and low expenditure rates. FY21 funding profile covers known requirements in the BAO KIT FoS CDD.

<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<b>Title:</b> Human Machine Interface (HMI)	0.569	0.848	1.799
<b>Description:</b> HMI is a system of systems that provides integrated operator interface between all the machine components by using unified visual and auditory displays and controls, such as head-mounted displays, tactical earplug connectivity with man pack or handheld communications, integrated tactical computing solution, and power generation and management systems.			
<b>FY 2020 Plans:</b>			
- Capability support digitally aided combat close air support operations. Plan to develop and operate tests or full spectrum certification (Joint Interoperable Test Command (JITC), Air Force System Interoperability Test (AFSIT), and Authority to Operate (ATO)).			
- Continue to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.			

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
<p>- Continue communications development: will upgrade HMI efforts which reduced the Size, Weight, and Power (SWAP) required to be carried by the Special Tactics Community. Specifically includes wireless technology.</p> <p>- Continue maturation of available technology for future dismounted communication contract in order to meet the requirements of the user.</p> <p><b>FY 2021 Plans:</b></p> <p>- Will continue to support digitally aided combat close air support operations. Plan to develop and operate tests or full spectrum certification (Joint Interoperable Test Command (JITC), Air Force System Interoperability Test (AFSIT), and Authority to Operate (ATO)).</p> <p>- Will continue to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.</p> <p>- Will continue communications development: will upgrade HMI efforts which reduced the Size, Weight, and Power (SWAP) required to be carried by the Special Tactics Community. Specifically includes wireless technology.</p> <p>- Will require maturation of available technology for future dismounted communication contract in order to meet the requirements of the user.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></p> <p>Rephased funds in FY21 allows for increased development capabilities for Machine -to-Machine Interface (M2M). Current FY21 funding allows for the increased development of the Special Tactics Capability Development Document (CDD).</p>				
<p><b>Title:</b> Line of Sight</p> <p><b>Description:</b> Line of Sight (LOS) targeting enables the Special Warfare ST operators to find, fix, track, target and, engage the enemy at close range during day or night operations by providing highly accurate target coordinates in three dimensions. LOS generates vital imagery both pre and post-strike at a fraction of the weight and is more efficient than legacy equipment carried by the operator. Non Line of sight (XLOS) targeting device exploration and development will help capture future capabilities to the Special Tactics community. XLOS devices allow for a remote expendable reporting environmental sensor that enhances AFSOC Special Operation Weather Team's (SOWT) ability to provide timely, accurate, and critical deep battle space weather reconnaissance and intelligence.</p> <p><b>FY 2020 Plans:</b></p> <p>- Continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community.</p> <p><b>FY 2021 Plans:</b></p> <p>- Will continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community.</p> <p><b>FY 2020 to FY 2021 Increase/Decrease Statement:</b></p>		0.082	0.122	0.259

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>	<b>FY 2019</b>	<b>FY 2020</b>	<b>FY 2021</b>
Rephased funds in FY21 allows for increased development capabilities for Line of Sight. Current FY21 funding allows for the increased development of the Special Tactics CDD.			
<b>Title:</b> Machine-to-Machine (M2M) Software Development	1.671	2.659	5.615
<b>Description:</b> A suite of map-centric software applications that enables M2M transfer of precision targeting, information management, C4ISR (Command, Control Communications, Computers, Intelligence, Surveillance, and Reconnaissance), and Situational Awareness (SA) information. Provides the Special Warfare ST operators the ability to find, fix, track, target, and engage the enemy which greatly reduces the kill chain and drastically decreases the possibility of fratricide by enhancing the operator's SA on the battlefield.			
<b>FY 2020 Plans:</b> - Continue to explore requirements to address future FoS capability gaps. - Continue research and developmental efforts to support requirements in BAO FoS CDD, which includes but is not limited to Assault Zones, Fires, Weather, Personnel Recovery, and Enabling Capabilities.			
<b>FY 2021 Plans:</b> - Will continue to explore requirements to address future FoS capability gaps. - Will continue research and developmental efforts to support requirements in BAO FoS CDD, which includes but is not limited to Assault Zones, Fires, Weather, Personnel Recovery, and Enabling Capabilities.			
<b>FY 2020 to FY 2021 Increase/Decrease Statement:</b> Rephased funds in FY21 allows for increased development capabilities for Machine-to-Machine (M2M. Current FY21 funding allows for the increased development of the Special Tactics CDD.			
<b>Accomplishments/Planned Programs Subtotals</b>	2.322	3.629	7.673

<b>D. Other Program Funding Summary (\$ in Millions)</b>											
<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 03 Line Item 837100: <i>Tactical C-E Equipment</i>	52.656	52.094	29.094	-	29.094	66.266	19.290	25.631	26.160	Continuing	Continuing
• OPAF 04 Line Item 842990: <i>Personal Safety and Rescue Equipment</i>	18.809	6.299	2.505	-	2.505	2.328	2.368	2.411	2.456	Continuing	Continuing

**Remarks**

**UNCLASSIFIED**

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**E. Acquisition Strategy**

BAO Kit awarded a contract in FY16 to complete M2M software development. This effort will include system engineering, design, integration, and fielding support for M2M software. Due to the rapidly changing threat environment, the acquisition program manager has the authority to redirect funding as necessary to meet current slated and emerging requirements. The above efforts may change based on the need to support current Air Force mission requirements. Wright Patterson AFB, OH manages the contract effort.

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2021 Air Force												Date: February 2020			
Appropriation/Budget Activity				R-1 Program Element (Number/Name)					Project (Number/Name)						
3600 / 7				PE 0408011F / <i>Special Tactics / Combat Control</i>					675138 / <i>ST System Development</i>						
Product Development (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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
Product Development	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Human Machine Interface (HMI)	C/Various	Various : Various	-	0.303	Oct 2018	0.303	Oct 2019	1.745	Oct 2020	-		1.745	Continuing	Continuing	-
Line of Sight	SS/ Various	Physical Optics Corporation : Torrance, CA	-	0.001	Nov 2018	0.001	Nov 2019	0.002	Nov 2020	-		0.002	Continuing	Continuing	-
Machine-To-Machine (M2M) Software Development	C/CPFF	Systems Research & Applications Corp : Dayton, OH	-	1.612	Feb 2019	2.919	Feb 2020	4.535	Feb 2021	-		4.535	Continuing	Continuing	-
<b>Subtotal</b>			-	1.916		3.223		6.282		-		6.282	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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
Test and Evaluation	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Test Agency Support	Various	46 TS : Eglin AFB, FL	-	0.205	Oct 2018	0.205	Oct 2019	0.582	Oct 2020	-		0.582	Continuing	Continuing	-
<b>Subtotal</b>			-	0.205		0.205		0.582		-		0.582	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2019		FY 2020		FY 2021 Base		FY 2021 OCO		FY 2021 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
Management Services	C/CPAF	Not specified. : TBD	-	-		-		-		-		-	Continuing	Continuing	-
Program Management Administration	Various	Various : Various, NV	-	0.201	Oct 2018	0.201	Oct 2019	0.809	Oct 2020	-		0.809	Continuing	Continuing	-
<b>Subtotal</b>			-	0.201		0.201		0.809		-		0.809	Continuing	Continuing	N/A



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<b>Exhibit R-4, RDT&amp;E Schedule Profile:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>	<b>Project (Number/Name)</b> 675138 / <i>ST System Development</i>

	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
<b><i>ST System Development</i></b>																												
Human Machine Interface (HMI)																												
Line of Sight																												
Machine-To-Machine Software Development																												

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<b>Exhibit R-4A, RDT&amp;E Schedule Details:</b> PB 2021 Air Force		<b>Date:</b> February 2020
<b>Appropriation/Budget Activity</b> 3600 / 7	<b>R-1 Program Element (Number/Name)</b> PE 0408011F / <i>Special Tactics / Combat Control</i>	<b>Project (Number/Name)</b> 675138 / <i>ST System Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<b><i>ST System Development</i></b>				
Human Machine Interface (HMI)	1	2019	4	2025
Line of Sight	1	2019	4	2025
Machine-To-Machine Software Development	1	2019	4	2025