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Exhibit R-2, RDT&E Budget Item Justification: PB 2020 Air Force										Date: February 2019		
Appropriation/Budget Activity 3600: Research, Development, Test & Evaluation, Air Force I BA 7: Operational Systems Development					R-1 Program Element (Number/Name) PE 0408011F I Special Tactics / Combat Control							
COST (\$ in Millions)	Prior Years	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost
Total Program Element	-	7.726	2.433	3.629	0.000	3.629	7.687	6.750	6.191	9.000	Continuing	Continuing
675138: ST System Development	-	7.726	2.433	3.629	0.000	3.629	7.687	6.750	6.191	9.000	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. This program is part of the overarching Battlefield Airmen Modernization (BA-Mod) Program. 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) Battlefield Airmen. Efforts in ST System Development focus on reducing the risk of fratricide and substantially reducing size and weight of the equipment carried through three core capabilities, which 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 Battlefield Airmen 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 Battlefield Airmen. FY20 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.

This program element may include necessary civilian pay expenses required to manage, execute, and deliver special tactic capabilities. The use of such program funds would be in addition to the civilian pay expenses budgeted in program elements 0605826F, 0605827F, 0605828F, 0605829F, 0605830F, 0605831F, 0605832F, 0605898F, and 0605833F.

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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.						
As directed in the FY 2018 NDAA, Sec 825, amendment to PL 114-92 FY 2016 NDAA, Sec 828 Penalty for Cost Overruns, the FY 2018 Air Force penalty total is \$14.373M. The calculated percentage reduction to each research, development, test and evaluation and procurement account will be allocated proportionally from all programs, projects, or activities under such account.						
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 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total
Previous President's Budget		8.090	2.541	6.203	0.000	6.203
Current President's Budget		7.726	2.433	3.629	0.000	3.629
Total Adjustments		-0.364	-0.108	-2.574	0.000	-2.574
• 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		-0.364	-0.108			
• Other Adjustments		0.000	0.000	-2.574	0.000	-2.574
Change Summary Explanation						
Funding decreased due to higher DoD priorities in FY19. Required funding profile in FY20 has also now been rephased due to higher DoD priorities. FY21 funding profile covers known requirements.						
C. Accomplishments/Planned Programs (\$ in Millions)				FY 2018	FY 2019	FY 2020
Title: Human Machine Interface (HMI)				1.891	0.340	0.830
Description: 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.						
FY 2019 Plans:						

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
<ul style="list-style-type: none"> <li>- Capability supports 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)).</li> <li>- Continue to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.</li> <li>- Continue communications development: Upgrade HMI efforts which reduced the Size, Weight, and Power (SWAP) required to be carried by the Special Tactics Community. Specifically includes wireless technology.</li> <li>- Requires maturation of available technology for future dismounted communication contract in order to meet the requirements of the user.</li> <li>- 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.</li> </ul> <p><b>FY 2020 Plans:</b></p> <ul style="list-style-type: none"> <li>- Capability will 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)).</li> <li>- Will continue to explore and define requirements for implementation of the Iridium waveform granting DoD dedicated airtime.</li> <li>- 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.</li> <li>- Will require maturation of available technology for future dismounted communication contract in order to meet the requirements of the user.</li> <li>- 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.</li> </ul> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding decreased due to higher DoD priorities in FY19. Required funding profile resumes in FY20</p>				
<p><b>Title:</b> Line of Sight</p> <p><b>Description:</b> Line of Sight (LOS) targeting enables the ST Battlefield Airmen 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</p>		0.273	0.001	0.002

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<b>C. Accomplishments/Planned Programs (\$ in Millions)</b>		<b>FY 2018</b>	<b>FY 2019</b>	<b>FY 2020</b>
AFSOC Special Operation Weather Team's (SOWT) ability to provide timely, accurate, and critical deep battle space weather reconnaissance and intelligence.				
<b>FY 2019 Plans:</b> <ul style="list-style-type: none"> <li>- Continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community.</li> <li>- 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.</li> </ul>				
<b>FY 2020 Plans:</b> <ul style="list-style-type: none"> <li>- Will continue to explore and develop future Non Line of sight (XLOS) targeting device capabilities for Special Tactics community.</li> <li>- 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.</li> </ul>				
<b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding decreased due to higher DoD priorities in FY19. Required funding profile resumes in FY20				
<b>Title:</b> Machine-to-Machine (M2M) Software Development  <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 ST Battlefield Airmen 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.		5.562	2.092	2.797
<b>FY 2019 Plans:</b> <ul style="list-style-type: none"> <li>- Explore requirements to include future FoS capability gap.</li> <li>- 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.</li> <li>- 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.</li> </ul>				
<b>FY 2020 Plans:</b> <ul style="list-style-type: none"> <li>- Will continue to explore requirements to address future FoS capability gaps.</li> </ul>				

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C. Accomplishments/Planned Programs (\$ in Millions)										FY 2018	FY 2019	FY 2020
<p>- 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.</p> <p>- 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.</p> <p><b>FY 2019 to FY 2020 Increase/Decrease Statement:</b> Funding decreased due to higher DoD priorities in FY19. Required funding profile resumes in FY20</p>												
Accomplishments/Planned Programs Subtotals										7.726	2.433	3.629
D. Other Program Funding Summary (\$ in Millions)												
Line Item	FY 2018	FY 2019	FY 2020 Base	FY 2020 OCO	FY 2020 Total	FY 2021	FY 2022	FY 2023	FY 2024	Cost To Complete	Total Cost	
• OPAF 03 Line Item 837100: Tactical C-E Equipment	16.644	61.389	52.094	-	52.094	44.269	66.330	19.315	25.664	Continuing	Continuing	
• OPAF 04 Line Item 842990: Personal Safety and Rescue Equipment	9.630	10.118	6.299	-	6.299	2.506	2.330	2.371	2.414	Continuing	Continuing	
Remarks												
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.												
F. Performance Metrics												
Please refer to the Performance Base Budget Overview Book for information on how Air Force resources are applied and how those resources are contributing to Air Force performance goals and most importantly, how they contribute to our mission.												

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Exhibit R-3, RDT&E Project Cost Analysis: PB 2020 Air Force												Date: February 2019			
Appropriation/Budget Activity 3600 / 7						R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>				Project (Number/Name) 675138 / <i>ST System Development</i>					
Product Development (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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
Human Machine Interface (HMI)	C/Various	Various : Various	-	1.891	Oct 2017	0.303	Oct 2018	0.823	Oct 2019	-		0.823	Continuing	Continuing	-
Line of Sight	SS/ Various	Phsyical Optics Corporation : Torrance, CA	-	0.273	Nov 2017	0.001	Nov 2018	0.001	Nov 2019	-		0.001	Continuing	Continuing	-
Machine-To-Machine (M2M) Software Development	C/CPFF	Systems Research & Applications Corp : Dayton, OH	-	4.913	Mar 2018	1.723	Feb 2019	2.147	Feb 2020	-		2.147	Continuing	Continuing	-
Subtotal			-	7.077		2.027		2.971		-		2.971	Continuing	Continuing	N/A
Test and Evaluation (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 Agency Support	Various	46 TS : Eglin AFB, FL	-	0.266	Oct 2017	0.205	Oct 2018	0.275		-		0.275	Continuing	Continuing	-
Subtotal			-	0.266		0.205		0.275		-		0.275	Continuing	Continuing	N/A
Management Services (\$ in Millions)				FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 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 Management Administration	Various	Various : Various, NV	-	0.383	Oct 2017	0.201	Oct 2018	0.383		-		0.383	Continuing	Continuing	-
Subtotal			-	0.383		0.201		0.383		-		0.383	Continuing	Continuing	N/A
			Prior Years	FY 2018		FY 2019		FY 2020 Base		FY 2020 OCO		FY 2020 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals			-	7.726		2.433		3.629		-		3.629	Continuing	Continuing	N/A
Remarks															

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Exhibit R-4, RDT&E Schedule Profile: PB 2020 Air Force										Date: February 2019																			
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	FY 2018				FY 2019				FY 2020				FY 2021				FY 2022				FY 2023				FY 2024			
	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
ST System Development																												
Human Machine Interface (HMI)																												
Line of Sight																												
Machine-To-Machine Software Development																												

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Exhibit R-4A, RDT&E Schedule Details: PB 2020 Air Force		Date: February 2019
Appropriation/Budget Activity 3600 / 7	R-1 Program Element (Number/Name) PE 0408011F / <i>Special Tactics / Combat Control</i>	Project (Number/Name) 675138 / <i>ST System Development</i>

Schedule Details

Events by Sub Project	Start		End	
	Quarter	Year	Quarter	Year
<i>ST System Development</i>				
Human Machine Interface (HMI)	1	2018	4	2024
Line of Sight	1	2018	4	2024
Machine-To-Machine Software Development	1	2018	4	2024