Exhibit R-2, RDT&E Budget Item Justification: FY 2018 Air Force											Date: May 2017	
Appropriation/Budget Activity 3600: *Research, Development, Test & Evaluation, Air Force* / BA 5: *System Development & Demonstration (SDD)*					R-1 Program Element (Number/Name) PE 0604706F / *Life Support Systems*							
COST ($ in Millions)	**Prior Years**	**FY 2016**	**FY 2017**	**FY 2018 Base**	**FY 2018 OCO**	**FY 2018 Total**	**FY 2019**	**FY 2020**	**FY 2021**	**FY 2022**	**Cost To Complete**	**Total Cost**
Total Program Element	-	7.904	7.520	9.060	0.000	9.060	8.987	8.689	18.841	19.046	Continuing	Continuing
65412A: *Life Support Systems*	-	7.904	7.520	9.060	0.000	9.060	8.987	8.689	18.841	19.046	Continuing	Continuing
Quantity of RDT&E Articles	-	-	-	-	-	-	-	-	-	-		

Note

This program, BA 05 PE 0604706F, project 65412A, Next Generation Ejection Seat, is a new start.

A. Mission Description and Budget Item Justification

This program upgrades and fields aircrew flight equipment and airman combat systems. Air Force acquisition teams lead the upgrade and fielding of new equipment/ systems by assessing deficiencies in existing equipment, identifying and assessing existing products or developing new technology, and conducting required Safe-to-Fly tests and certifications. Program efforts include, but are not limited to, the following projects: directed energy protective equipment; flight helmets and visors; oxygen breathing systems for aircrew; radios and locator beacons; support equipment; nuclear flash blindness protection; night vision devices; noise reduction devices; anti-gravity (anti-G) suits; flame resistant, retardant and blast/ballistic protective gear; aircraft seating; impact protection equipment; flotation devices; parachutes; ejection seats; and other aircrew/life support/airman combat systems required by the warfighter.

BA 5 - 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)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Previous President's Budget	8.187	7.520	9.034	0.000	9.034
Current President's Budget	7.904	7.520	9.060	0.000	9.060
Total Adjustments	-0.283	0.000	0.026	0.000	0.026
• 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	-0.016	0.000			
• SBIR/STTR Transfer	-0.267	0.000			
• Other Adjustments	0.000	0.000	0.026	0.000	0.026

Change Summary Explanation

No Significant Changes

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
Title: Aircrew Performance Studies/Technology Projects	1.975	2.595	4.335	-	4.335
Description: Air Force Life Cycle Management Center's Aircrew Performance Branch is the single USAF focal point for Aircrew Flight Equipment (AFE) Safe-to-Fly (STF) testing certification, addressing Safety Investigation Board (SIB) recommendations, along with studies and analysis. In addition, funding is for projects that are responses to real-time capability gaps identified by the warfighter which may be satisfied quickly by procuring and qualifying commercial-off-the-shelf (COTS) products and/or performing minor development efforts. Previous successful STF efforts may evolve into enduring capabilities as other users / MAJCOMs seek to incorporate these STF assets into their inventory. The Cold Weather Aviation System (CWAS), Aircrew Body Armor (ABA), BA-X Low Profile Parachute (LPP) and Nuclear Flash Blindness Goggles (NFBG) are currently the active STF programs within Life Support Systems (LSS). Funds may be used to address associated emerging requirements. ***FY 2016 Accomplishments:*** Started integration testing of CWAS AF Elements. Purchased LPP test assets and started integration testing. Partnered with AFRL to mature the current industry base of nuclear flash protection. ***FY 2017 Plans:*** Complete CWAS integration testing. Test Ballistic Aircrew Helmet and ABA improvements for reliability and acceptability for introduction to Air Force inventory. Perform STF testing and certification of COTS products. Address SIB recommendations. Formulate an acquisition strategy for next generation aircrew laser eye protection technology to address new and evolving threats and next generation peacetime radio technology to replace Vietnam Era PRC-90 radios. ***FY 2018 Base Plans:*** Perform STF testing and certification of COTS products. Continuation of test for Ballistic Aircrew Helmet and ABA improvements for reliability and acceptability for introduction to Air Force inventory. Address SIB recommendations. Formulate an acquisition strategy for next generation nuclear flash blindness technology. Continue the development efforts of aircrew laser eye protection (ALEP), radio modernization and improvement of parachute/flotation devices.					
Title: Integrated Aircrew Ensemble (IAE)	5.879	4.800	3.800	-	3.800
Description: The Integrated Aircrew Ensemble (IAE) is a multi-layer battle ready system of protective clothing, survival equipment, and anti-G protection equipment worn by aircrew members. The ensemble can layer up to seven (7) components allowing for flexible combinations depending on aircraft type, mission, and threat. Each					

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
component design is unique but engineered as a single integrated ensemble to improve mobility by reducing bulk, reducing aircrew fatigue from thermal stress using new breathable materials, and increasing overall system performance. The ensemble components are: 1) outer flight layer, 2) Environmental Protection Layer (EPL) with gloves, 3) Chemical Biological Radiological Layer (CBRL) with glove inserts, 4) Life Preserver Unit (LPU), 5) Counter Chest Pressure Bladder (CCPB), 6) survival vest, and 7) G-suit. ***FY 2016 Accomplishments:*** Started First Article Testing (FAT) of the finalized design of IAE and proved out the maturity of the production line. ***FY 2017 Plans:*** Start Low Rate Initial Production (LRIP) and begin Operational Testing ***FY 2018 Base Plans:*** Complete Low Rate Initial Production (LRIP) and Operational Testing. Begin modification planning for the IAE Rotary/Fixed Wing variant.					
Title: Advanced Concept Ejection Seat ***Description:*** Ejection Seat upgrade for B-2 ***FY 2016 Accomplishments:*** Started qualification testing of the ACES II SSIP. ***FY 2017 Plans:*** Continue qualification testing of the ACES II SSIP for B-2. ***FY 2018 Base Plans:*** Complete Qualification testing of the ACES II SSIP for B-2.	0.050	0.125	0.125	-	0.125
Title: Next Generation Ejection Seat ***Description:*** The new ejection seat escape system shall safely accommodate greater variation in aircrew minimum/maximum weights, a minimum aircrew sitting height of 31 inches, and the use of Helmet Mounted Displays. It shall reduce the risk of injuries to the arms and legs (especially limb flail), neck, and spinal column throughout the entire ejection event. ***FY 2016 Accomplishments:***	0.000	0.000	0.800	-	0.800

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C. Accomplishments/Planned Programs ($ in Millions)	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total
N/A ***FY 2017 Plans:*** N/A ***FY 2018 Base Plans:*** Award EMD contract to begin qualification testing of selected seat.					
Accomplishments/Planned Programs Subtotals	7.904	7.520	9.060	-	9.060

D. Other Program Funding Summary ($ in Millions)

Line Item	FY 2016	FY 2017	FY 2018 Base	FY 2018 OCO	FY 2018 Total	FY 2019	FY 2020	FY 2021	FY 2022	Cost To Complete	Total Cost
• OPAF:BA04: Line Item # 842990: *Items Less Than $5 Million (Safety and Rescue Equipment)*	61.106	25.499	27.084	8.469	35.553	30.205	28.553	25.131	157.672	Continuing	Continuing

Remarks

E. Acquisition Strategy

The majority of efforts funded in this project employ a streamlined acquisition approach. Whenever practical, Government-Off-The-Shelf/Commercial-Off-The-Shelf (GOTS/COTS) items are tested and evaluated as candidates for solutions to user needs. This normally involves characterization, verification, and qualification testing to ensure GOTS/COTS equipment is properly certified and adapted for military purposes. However, acquisition strategies may be carried out at the project level for traditional Engineering and Manufacturing Development (EMD), e.g., Integrated Aircrew Ensemble (IAE) and Aircrew Laser Eye Protection (ALEP) Block III.

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.