Multi-Domain Operations

From Vision to Reality

Every Airman in the Fight!

February 26-28, 2020 | Orlando, FL | AFA.org
The U.S. Air Force’s combat-proven F-35A is the most lethal, survivable, and connected fighter in the world. With stealth, advanced sensors, and networked data links, the F-35 can go where no fighter can go, see what no fighter can see and share unprecedented information with the joint, multi-domain fighting force. Supersonic speed. Fighter agility. Increased range. Extended mission persistence. Flexible weapons capacity. From the highest-end, sensitive missions to permissive battlespace. On the first day to the last. The F-35 gives the U.S. Air Force a decisive advantage, ensuring our men and women in uniform can execute their mission and return home safe every time, no matter the threat. Learn more at F35.com/airforce


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F-35 LIGHTNING II

NORTHROP GRUMMAN | BAE SYSTEMS | PRATT & WHITNEY

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**Every Airman in the Fight!**

February 26-28, 2020 | Orlando, FL | AFA.org
Welcome

On behalf of the Air Force Association and our 96,000 members worldwide, welcome to the 36th annual Air Warfare Symposium.

This year’s symposium is themed “Multi-Domain Operations—From Vision to Reality.” We are excited to welcome distinguished leaders in innovation from Fortune 100 companies, the defense industry, and from the Air Force and the Space Force to offer profound insights that promise to help propel even faster innovation.

With serious threats facing our nation as few times in its history, forums such as this one are more essential than ever. We are glad you have chosen to be a part of it.

General David Goldfein and Chief Master Sergeant of the Air Force Kaleth Wright will participate in a joint session on inspirational leadership, marking their final session together for an AFA audience after their decades of service to our Air Force. AFA is pleased to welcome the 25th Secretary of the Air Force, The Honorable Barbara Barrett for her first speech at an AFA event. We are also thrilled to have with us Elon Musk, founder and CEO of SpaceX.

Once again, AFA will host as part of the symposium the Spark Tank Finals, the culminating event of a months-long competition. Six Air Force teams will pitch innovative ideas to Air Force senior leadership and guest judges.

While you’re with us, we encourage you to explore our 60,000-square foot technology exposition – our largest expo hall ever at an Air Warfare Symposium–where more than 80 top companies will showcase the latest in cutting-edge air, space, and cyber technology.

We owe special thanks to Air Force, Space Force, civic, and industry leaders for their continued generous support and participation which help us make events like this successful. In particular we are grateful for AFA’s Martin Harris Chapter for their vision in establishing the first Air Warfare Symposium in 1985.

At AFA, we believe we are all Airmen for Life and we stand proudly by your side throughout your Air Force journey, both in and out of uniform. It is a privilege for us to host professional development events like our Air Warfare Symposium to better serve the Total Force family and to promote a dominant Air Force and Space Force.

Over the course of the next few days, we invite you to stop by AFA’s foyer booth to learn more about how the Air Force Association can serve you. And while you’re there, please become an AFA member at a special discounted symposium rate.

We hope you enjoy the next few days! Thank you for being here.

Sincerely,

Gerald R. Murray
Chairman of the Board

Bruce "Orville" Wright
President
The Air Force Association thanks the following companies for their generosity as sponsors of the Air Warfare Symposium.

As of February 13, 2020. For updated information, please refer to our mobile website at www.afa.org/awsmobile
### Wednesday, February 26, 2020

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<th>Event / Speaker</th>
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<tr>
<td>8:00 a.m. - 8:00 p.m.</td>
<td>Gatlin Registration Desk</td>
<td>Symposium Registration</td>
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<tr>
<td>6:00 p.m. - 8:00 p.m.</td>
<td>Gatlin A-B-C</td>
<td>Welcome Reception (Ticket Required)</td>
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### Thursday, February 27, 2020

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<th>Time</th>
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<th>Event / Speaker</th>
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<tr>
<td>7:00 a.m. - 7:00 p.m.</td>
<td>Gatlin Registration Desk</td>
<td>Symposium Registration</td>
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<tr>
<td>7:00 a.m. - 8:00 a.m.</td>
<td>Gatlin Foyer</td>
<td>Morning Coffee</td>
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<td>8:00 a.m. - 8:10 a.m.</td>
<td>Gatlin D-E</td>
<td>Air Warfare Symposium Welcoming Remarks</td>
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<td>8:10 a.m. - 8:40 a.m.</td>
<td>Gatlin D-E</td>
<td>Secretary of the Air Force Remarks</td>
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<td>8:45 a.m. - 9:30 a.m.</td>
<td>Gatlin D-E</td>
<td>Panel: Global Operational Perspectives on MDO</td>
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<td>9:30 a.m. - 10:00 a.m.</td>
<td>Gatlin A-B-C</td>
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<td>10:00 a.m. - 10:30 a.m.</td>
<td>Gatlin D-E</td>
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<td>10:30 a.m. - 11:30 a.m.</td>
<td>Gatlin D-E</td>
<td>A Conversation with the Chief of Staff and Chief Master Sergeant of the Air Force</td>
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<td>MOSAIC Warfare: Actualizing Multi-Domain Operations</td>
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<td>1:50 p.m. - 2:35 p.m.</td>
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<td>3:00 p.m. - 3:45 p.m.</td>
<td>Gatlin D-E</td>
<td><strong>Industry Perspectives: Fostering a Culture of Innovation</strong></td>
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<td>Mark C. Cherry, Vice President and General Manager, Phantom Works, Boeing Defense, Space &amp; Security</td>
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<td>Thomas H. Jones, Sector Vice President and General Manager, Airborne Sensors &amp; Networks, Northrop Grumman’s Mission Systems</td>
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<td>LTG Michael Williamson, USA (Ret.), Vice President, Tactical &amp; Strike Missiles, Lockheed Martin Missiles &amp; Fire Control</td>
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<td>3:50 p.m. - 4:20 p.m.</td>
<td>Gatlin D-E</td>
<td><strong>Joint All-Domain Operations</strong></td>
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<td>Gen James M. Holmes, Commander, Air Combat Command</td>
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<td>4:25 p.m. - 5:10 p.m.</td>
<td>Gatlin D-E</td>
<td><strong>Panel: USAF Current Operations</strong></td>
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<td>Lt Gen Richard W. Scobee, Chief, Air Force Reserve</td>
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<td>Maj Gen Kevin A. Huyck, Director of Operations, Headquarters Air Combat Command</td>
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<td>Maj Gen Kirk S. Pierce, Air National Guard Deputy Director</td>
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<td>6:00 p.m. - 7:45 p.m.</td>
<td>Family Pool Deck</td>
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Embraer Defense & Security is a leader in Latin America’s aerospace and defense industry. Embraer provides military aircraft such as the A-29 Super Tucano and the C-390 Millennium, and also has a full range of integrated solutions that are present in more than 60 countries. embraer.com.br

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ForeFlight MFB is an advanced version of the ForeFlight Mobile electronic flight bag that supports global flight operations of government and military pilots with access to US Department of Defense Digital Flight Information Publications (DF-FLIP). ForeFlight MFB gives military, government, and OOD pilots the tools they need for flight planning, weather, briefing, filing, checklist, and more – all in a user-friendly interface that simplifies planning, flying, and flight logging workflows. www.foreflight.com

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Georgia Tech Research Institute (GTRI) develops advanced technological solutions and large-scale system prototypes to address the most difficult problems in national security, economic development and overall human betterment. Positioned within Georgia Tech, our core research areas include complex and agile systems engineering, sensor design and integration, information management and cyber security, and defense technology development. www.gtri.gatech.edu

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The integrated Communications Systems Group (ICSG), A Division of Mathtech Inc., is 50 years old and is a certified small business. Our production intercom system the AN/AYQ-27, is flight qualified and has application across fighter, attack, trainer, helicopter, and cargo aircraft platforms. ICSG designed and developed the AN/YQG-27 ICS which incorporates the latest SWAP-C initiatives. We can demonstrate our wireless intercommunication assets for aircrews, ground-crows and loadmasters today. www.icsg.us

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L3Harris Technologies is an agile global aerospace and defense technology innovator, delivering end-to-end products and services that meet customers’ current and future needs. The company provides advanced space and commercial technologies across air, land, sea, space and cyber domains. L3Harris has approximately $17 billion in annual revenue, 50,000 employees and customers in 130 countries. L3Harris.com

Leidos

Leidos is a Fortune 500® information technology, engineering, and science solutions and services leader working to solve the world’s toughest challenges in the defense, intelligence, homeland security, civil, and health markets. The company’s 32,000 employees support vital missions for government and commercial customers. Headquartered in Reston, VA, Leidos reported annual revenues of approximately $10.17 billion for the fiscal year ended 12/29/17. www.leidos.com.

Lockheed Martin

Headquartered in Bethesda, Maryland, Lockheed Martin is a global security and aerospace company that employs more than 105,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services. www.lockheedmartin.com

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At LR Tech, we strive to improve atmospheric sounding and remote sensing by providing reliable, automated, and cost-effective solutions. Our Fourier Transformed Infrared Spectrometer technology provides real-time ultra high resolution spectral information on slow or fast occurring phenomenon, as well as target / flares / material launch signatures, either in stable laboratory or in heavy vibration airborne environments. We also produce high emissivity blackbodies for calibration process. lrttech.ca

LTC Partners

LTC Partners is a versatile administrator of large-scale insurance and benefits programs. We are a provider of both the Federal Long Term Care Insurance Program and BENEFEDS (a secure enrollment and premium administration platform) under the oversight of the U.S. Office of Personnel Management (OPM). LTC Partners is located at Pease International Tradeport in Portsmouth, NH. We are a wholly owned subsidiary of John Hancock Life & Health Insurance Company. For more information, visit ltcpartners.com.

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Martin-Baker is the world’s longest established and most experienced manufacturer of ejection seats & related equipment. The Company has also developed a range of crashworthy & crash-attenuating seats for head-up display-equipped, supersonic & multi-seat aircraft. Martin-Baker has headquarters in Denham (England) & the United States as well as locations in France, Italy & Australia. Backed by over 70 years of experience, Martin-Baker has saved over 7,500 aircrew lives in 84 Air Forces around the World. www.martin-baker.com

MBDA Missile Systems, Inc.

MBDA Missile Systems is the world’s largest company that specializes only in missiles and missile systems. With over 11,000 employees, 3,000 missiles produced and $4b in revenue in 2013 – MBDA products are used by over 90 armed forces worldwide. www.mbdasystems.com

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Northrop Grumman  Booth #401
Northrop Grumman is a leading global security company providing innovative systems, products and solutions in autonomous systems, cyber, C4ISR, strike, and logistics and modernization to customers worldwide. For more information please visit www.northropgrumman.com.

Omega Air  Booth #345
Omega remains the only provider of contract aerial refueling services with its fleet of specially-modified aircraft to serve as tanker platforms. For more than 19 years, Omega has maintained a 99% mission completion rate for the U.S. Navy, Marine Corps and allies and recently added the V-22 and E-2 to its list of receivers. Omega has also acquired one former Dutch KDC-10 boom-capable tanker and expects it to come online in summer 2020: omegaairrefueling.com

Parker Aerospace  Booth #630
Parker Aerospace is a global leader in the research, design, integration, manufacture, certification, and lifetime service of flight control, hydraulic, fuel and inertia, fluid conveyance, thermal management, lubrication, and pneumatic systems and components for aerospace and other high-technology markets. The company supports the world's aircraft manufacturers, providing a century of expertise and innovation for commercial and military aircraft. www.parker.com

Parsons  Booth #106
Parsons (NYSE: PSN) is a leading disruptive technology provider for the future of global defense, intelligence and critical infrastructure with capabilities in defense space, connected infrastructure and smart cities. Please visit parsons.com, and follow us on LinkedIn and Facebook to learn how we’re making an impact. www.parsons.com

Patriot Escalibur  Booth #832
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Persistent Systems  Booth #939
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Phantom Products is a third generation, family-owned American Made lighting company - we design, build, and sell the BEST lights for military, law enforcement, off road, and emergency lighting. All of our lights are made on the Space Coast of Florida. Some of our products are only intended for use by the U.S. Military (including the National Guard/Reserves/ Homeland Security) as well as police, fire, and EMS agencies. Our goal is for you to return home safely to your family. www.phantomlights.com

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Rugged Science  Booth #737
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SCI Technology, Inc.  Booth #112
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SimiGen  Booth #931
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Space Dynamics Laboratory  Booth #634
SDL has been solving the technical challenges faced by the military, science community, and industry since 1959. SDL’s solutions include improved data gathering and analysis tools for all branches of the military and powerful remote and in-situ sensing solutions—with an emphasis in electro-optical sensing in the near UV to far IR. www.sdl.usu.edu

Specular Theory, Inc.  Booth #637
Specular Theory is a SBR awarded company that creates industry-leading VR/AR immersive courses and software applications for USAF and commercial aircrew training that is distributed across a user-friendly, adaptive and open platform. Our mission is to develop the highest quality, most effective and cost efficient training programs that produce better pilots, technicians and crew more rapidly than any other competition in the world. Stop by booth #637 to try our demo and learn more! speculartheory.com

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TSS Solutions Booth #927
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Varjo Technologies Booth #832
Varjo Technologies is a Finnish company with US headquarters based in Arlington, VA. Our industry-leading, enterprise-grade VR/AR headsets enable high-precision simulation and training by merging the real and digital worlds seamlessly together in unmatched visual fidelity. And, our powerful integrated stereo eye tracking system features accuracy below one degree of visual angle, giving trainers and other professionals access to extremely precise eye data analytics. www.varjo.com

Veterans United Home Loans Booth #933
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The Honorable Barbara Barrett  
Secretary of the Air Force

Barbara M. Barrett is the 25th Secretary of the Air Force and leads the affairs of the Department of the Air Force, comprising the U.S. Air Force and U.S. Space Force. She is responsible for organizing, training, equipping and providing for the welfare of 685,000 active duty, Guard, Reserve and civilian Airmen and their families.

Gen Charles Q. Brown Jr.  
Commander, Pacific Air Forces; Air Component Commander for U.S. Indo-Pacific Command; and Executive Director, Pacific Air Combat Operations Staff

Brown is responsible for Air Force activities spread over half the globe in a command that supports more than 46,000 Airmen serving principally in Japan, Korea, Hawaii, Alaska and Guam.

Mark C. Cherry  
Vice President and General Manager, Phantom Works, Boeing Defense, Space & Security

Cherry oversees an advanced research and development organization responsible for engaging customers through cutting-edge visual modeling and simulation; innovating cross-cutting concepts and technologies; prototyping solutions and entering new markets.

Maj Gen Kimberly A. Crider  
Mobilization Assistant to the Commander, Air Force Space Command

Crider assists the commander to organize, train, equip and maintain space forces by contributing to the development of strategy, long-range plans and concept of operations, as well as the activities ensuring the command builds and employs effective space forces.

Lt Gen David A. Deptula, USAF (Ret.)  
Dean, AFAs Mitchell Institute for Aerospace Studies

Deptula is a recognized leader and pioneer in conceptualizing, planning and executing national security operations.

Maj Gen Michael A. Fantini  
Director, Air Force Warfighting Integration Capability

Fantini leads advanced efforts for design, integration and capability development across the Total Force.

Gen David L. Goldfein  
Chief of Staff of the Air Force

Goldfein serves as the senior uniformed Air Force officer responsible for the organization, training, and equipping of 685,000 Active Duty, Guard, Reserve, and civilian forces serving in the U.S. and overseas.

Dr. Timothy P. Grayson  
Director, Strategic Technology Office

Dr. Timothy Grayson is Director of the Strategic Technology Office (STO) at DARPA. In this role, he leads the office in development of breakthrough technologies to enable warfighters to field, operate, and adapt distributed, joint, all-domain combat capabilities at continuous speed.

Gen Jeffrey L. Harrigian  
Commander, U.S. Air Forces in Europe; Commander, U.S. Air Forces Africa; Commander, Allied Air Command

Harrigian is responsible for the air and missile defense of 29 NATO Alliance member nations while commanding U.S. airpower across 104 countries in Europe, Africa, Asia and the Middle East, the Arctic, Atlantic, and Indian Oceans.

Gen James M. Holmes  
Commander, Air Combat Command

Holmes is responsible for organizing, training, equipping and maintaining combat-ready air, space, cyber and intelligence forces for rapid deployment and employment while ensuring strategic air defense forces are ready to meet the challenges of peacetime air sovereignty and wartime defense.

Maj Gen Kevin A. Huyck  
Director of Operations, Headquarters Air Combat Command

Huyck is responsible to the Commander, ACC, on all matters pertaining to the direct operational planning, training, command and controlling functions to deploy and employ regular and Reserve component combat air forces.

Thomas H. Jones  
Sector Vice President and General Manager, Airborne Sensors & Networks, Northrop Grumman Mission Systems

Jones has executive responsibility for all division operations, including a wide range of C4ISR capabilities with a focus on evolving to multi-function sensor capabilities for domestic and international customers.
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Elon Musk  
Chief Engineer, SpaceX  

Musk leads Space Exploration Technologies (SpaceX), where he oversees the development and manufacturing of advanced rockets and spacecraft for missions to and beyond Earth orbit.

Gen Terrence J. O’Shaughnnessy  
Commander, North American Aerospace Defense Command (NORAD) & UNITED STATES Northern Command (USNORTHCOM)  

As NORAD Commander, O’Shaughnnessy conducts aerospace warning/control, and maritime warning in the defense of North America. In his USNORTHCOM role, he partners to defend and secure the U.S. and its interests.

Heather Penney  
Senior Resident Fellow, Mitchell Institute for Aerospace Studies  

Penney is a senior resident fellow for the Mitchell Institute for Aerospace Studies, where she conducts extensive research on cutting-edge defense policy with a focus on the leveraging the critical advantage that only aerospace power affords.

Maj Gen Kirk S. Pierce  
Deputy Director, Air National Guard  

Pierce assists the Air National Guard Director in formulating, developing and coordinating all policies, plans and programs affecting more than 106,700 Air National Guard members and civilians in more than 1,800 units throughout the 50 States, the District of Columbia, Puerto Rico, Guam and the Virgin Islands.

Dr. Will Roper  
Assistant Secretary of the Air Force for Acquisition, Technology and Logistics  

Roper is responsible for and oversees Air Force research, development and acquisition activities totaling an annual budget in excess of $60 billion for more than 550 acquisition programs.

Maj Gen B. Chance Saltzman  
Deputy Commander, U.S. Air Forces Central Command, and Deputy, Combined Force Air Component Commander, U.S. Central Command, Southwest Asia  

Saltzman is responsible for the command and control of air operations in a 20-nation area of Central and Southwest Asia, including the Resolute Support Mission and Operation Inherent Resolve.

Lt Gen Richard W. Scobee  
Chief of Air Force Reserve, Headquarters U.S. Air Force and Commander, Air Force Reserve Command  

Scobee serves as the principal adviser on reserve matters to the Secretary of the Air Force and Air Force Chief of Staff and has full responsibility of organizing, training, and equipping over 70,000 Reserve Citizen Airmen around the world.

Col Lance H. Spencer, USAF (Ret.)  
Client Executive Vice President – AT&T  

Spencer leads the AT&T business for the Air Force and Space Force, Combatant Commands and Defense Agencies. He is responsible for identifying, aligning and developing AT&T and partner capabilities to meet Air Force, DoD, Joint and Coalition global operating needs to improve operational availability, cyber security, resiliency and cost.

Lt Gen David T. Thompson  
Vice Commander, U.S. Space Force  

Thompson is responsible to the Chief of Space Operations in carrying out space missions and integrating space policy, guidance, coordination and synchronization of space-related activities, and issue resolution for the Department of the Air Force.

Lt Gen John F. Thompson  
Commander, Space and Missile Systems Center  

Thompson is responsible for approximately 6,000 employees nationwide and an annual budget of $7 billion for research, design, development, launch, acquisition, and sustainment of satellites and their associated command and control systems.

LTG Michael Williamson, USA (Ret.)  
Vice President, Tactical & Strike Missiles, Lockheed Martin Missiles & Fire Control  

Williamson is responsible for leading the corporation’s endeavors in the areas of Hypersonics, Close Combat Systems, Strike Systems/Cruise Missiles, Precision Fires/Combat Maneuver Systems and Advanced Programs.

CMSAF Kaleth O. Wright  
Chief Master Sergeant of the Air Force  

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Submitted by: TSgt Brett M. Kiser

Battery Cell Extraction Tool

A tool that aids in the removal of battery cells from a C-17 storage battery. Making the process faster, more precise and prevents damage to serviceable battery cells while creating a safer work environment for our Airmen.

Submitted by: MSgt Robert D. Tingle and MSgt Roy E. Puchalski

Digital Airmen - Robotic Process Automation

Robotic Process Automation allows the Air Force an opportunity for digital Airmen to use software with artificial intelligence and machine learning capabilities to handle high-volume, repeatable tasks saving manpower, time, and resources.

Submitted by: Capt Melinda Monahan and TSgt Cherrod J. Overbey

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Submitted by: CMSgt Gabriel L. Flagg, MSgt Gabriel A. Valenzuela, and TSgt Benjamin E. Angley

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Find, Fix, Finish...Enhancing 5th gen fighter kill chain training through use of a low-cost, highly mobile software-defined radio-based emitter, capable of replicating multiple surface threat systems.

Submitted by: Capt David Coyle, 1st Lt Daniel A. Treece, Mr. Wylie Standage-Beier, and Mr. Charles Buchanan

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