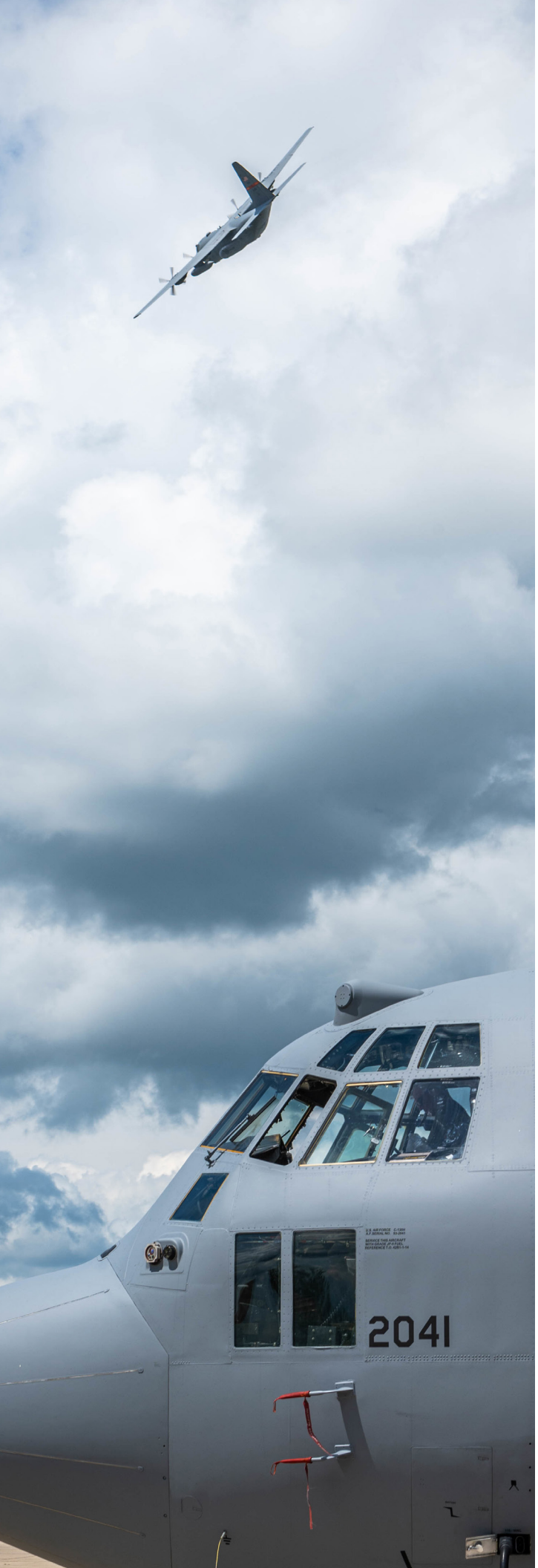
AFLCMC/RO

RAPID SUSTAINMENT OFFICE

Quarterly Report

January - March 2023



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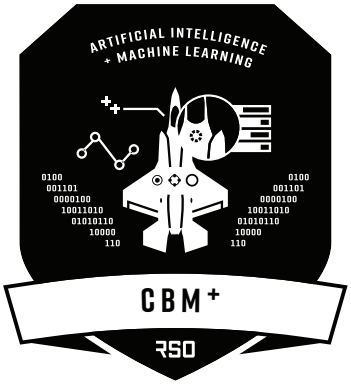
VISION

TRANSFORM THE ACQUISITION APPROACH AND SUSTAINMENT ENTERPRISE VITAL TO THE WORLD'S MOST ADVANCED AIR FORCE

OBJECTIVE

THROUGH ACQUISITION PROCESSES, INCREASE MISSION READINESS BY IDENTIFYING, APPLYING, AND SCALING TECHNOLOGY AND INNOVATIVE SOLUTIONS TO ADVANCE AND MODERNIZE SUSTAINMENT OPERATIONS OF THE UNITED STATES AIR FORCE

RSO TECHNOLOGY FOCUS AREAS



Artificial Intelligence & Machine Learning (AI/ML)

We apply AI and ML to optimize fleet maintenance, increase aircraft availability, and minimize aircraft downtime.

Our most prominent application of AI is within our **Condition Based Maintenance Plus (CBM+) Program Office**. This technology employs AI that enables us to improve maintenance data quality and evaluate large sets of aircraft sensor data and maintenance history to predict component failures. These applications empower our CBM+ program office to save thousands of maintenance hours every year.

Advanced Manufacturing

The RSO's **Advanced Manufacturing Program Office (AMPO)** scales organic capability and serves as the Air Force's focal point for the application of AM in matters related to acquisition and sustainment.

The AMPO executes four major functions:

- Technology Assessment
- Airworthiness Certification Support
- Product Support Management
- Deployment Across the Enterprise

Vision

Empowering supply chain management and scaling AM capabilities across the Department of the Air Force to ensure continuous Warfighter advantage and readiness anytime, anywhere in the world.

Accelerating Innovation and Modernization to Scale (AIMS)

The AIMS Team drives and leads the rapid adoption of sustainment-centric technologies to improve readiness and positively impact costs, be that in-garrison, or in both a contested and non-contested deployed environment, while exploiting modern tools to increase expertise, eliminate waste, enhance situational awareness, and produce and restore mission-critical materiel for the Air Force.

The AIMS Team discovers, develops, matures, and modernizes sustainment technologies within the following focus areas:

AUTOMATION & ROBOTICS

We apply automation and robotics to eliminate maintenance tasks that are repetitive, labor-intensive, or hazardous, making it possible to accomplish these tasks safely and efficiently with a high degree of accuracy.

DATA & DIGITAL ENVIRONMENTS

We standardize maintenance and sustainment data collection to serve as a connector of data sources across the Air Force. Our process is to collect the data, identify what's useful, turn it into a functional format, and then leverage it to inform smart and proactive decisions.

AUGMENTED & VIRTUAL REALITY

Augmented and Virtual Reality (AR/VR) technology creates an immersive environment for Airmen to train and execute more efficiently and effectively. The immersive access to digital resources allows the Air Force to predict, analyze, and solve problems faster, leading to a decrease in sustainment costs and increase in Airmen readiness. The AR/VR Product Team aims to continuously collaborate with users, characterize problems, and design and scale turn-key technological solutions that benefit the entire sustainment enterprise.

RAPID & AUSTERE MAINTENANCE ENVIRONMENTS

We provide Airmen with effective tools, leveraging modern, cross-cutting technologies to reduce the Air Force's logistical footprint in conjunction with enhancing mission capability and readiness. We are focused on rapidly implementing emerging and solution-oriented sustainment technologies and modernization within austere environments.

KEY ENGAGEMENTS

1-2 FEB 2023
Military Additive Manufacturing Summit, Orlando, FL

23 FEB 2023
RSO CBM+ Enterprise Integration Governance Council, Wright-Patterson AFB OH

27-30 MARCH 2023
Logistics Officer Association Symposium, St. Louis, MO

12-14 | 1-2 | 7-9 | 23 | 20-24 | 27-30

12-14 JAN 2023
Joint Defense Manufacturing Council, Virtual

7-9 FEB 2023
BLADE/Advana Sensor Data Deep Dive, Washington, DC

20-24 MARCH 2023
Additive Manufacturing User's Group, Chicago, IL

RSO SPOTLIGHT

RSO AMPO DELIVERS IN THE CLUTCH

The RSO AMPO recently rose to the occasion to quickly 3D-print vital blocks and wedges to get a non-mission capable C-5 flying again. The Antero 800NA polymer components were installed by a team of maintainers and engineers at Travis Air Force Base.

Traditionally, replacement components for the C-5 are expensive and time-consuming to produce, requiring specialized tooling and long lead times. Additive manufacturing allowed for the creation of these parts in a cost-saving and efficient manner, within 21 days of the C-5 being designated as non-mission capable.

The AMPO is leveraging modern technology to keep Air Force platforms ready. Its rapid response is a huge win for the Air Force's additive manufacturing mission.

QUARTER HIGHLIGHTS

UNDER SECRETARY OF THE AIR FORCE VISITS THE RSO

We welcomed Honorable Gina Ortiz Jones, then the Under Secretary of the United States Air Force, in January 2023 for an immersion into our technology focus area teams and a brief tour of our Hangar-01 facility. Hon. Jones received an overview of our CBM+ Program Office, viewed a demo of one of our AIMS Team's augmented reality technology developments, and scanned some additive manufactured parts with a hand-held scanner, as she learned more about the RSO AMPO.

RSO DESCENDS ON THE LOGISTICS OFFICER ASSOCIATION (LOA) SYMPOSIUM

The RSO attended and exhibited at LOA 2023 in March 2023. Additionally, our CBM+ and AIMS Teams presented the RSO's mission and some of our current sustainment technologies in development.

Heath Wiseman discussed how the RSO is modernizing and synthesizing technologies to create the high-tech maintenance experience that Airmen expected when they joined the Air Force.

During two individual sessions, Lt. Col. Michael Lasher highlighted our Condition Based Maintenance Plus (CBM+) Program Office and its mission to apply predictive maintenance across the Air Force.

NOTABLE TEAM ACCOMPLISHMENTS

- Received its second signed Safe-Use Determination (SUD) from the Technology Assessment Process (TAP) for a polymer material; Additionally, the AMPO submitted its first AM metal to the updated TAP process for review and SUD determination/issuance
- Attended the Military Additive Manufacturing Summit in Tampa, FL to align the Services' additive manufacturing efforts, promote new capabilities, and highlight current program progress
- Completed the first edition of the new Cold Spray Design Rule Book which outlines common practices and lessons learned; publication can be accessed from the AMPO

SUPPORTING HAF/A4'S PROVIDED "ABILITY-TO" STATEMENT:

- Counteract parts obsolescence issues by capitalizing on a network of advanced manufacturing & repair technologies/tools/equipment, reverse engineering capabilities, and advanced non-destructive inspection techniques, provided at the point of mission generation and throughout the supply chain (e.g. additive manufacturing, 3D printing, cold spray, composite materials/repairs, etc.)

SUPPORTING SECRETARY OF THE AIR FORCE'S OPERATIONAL IMPERATIVES:

#5 Defining optimized resilient basing, sustainment, and communications in a contested environment

- Deployed Predictive Analytics and Decision Assistant (PANDA) releases 4.0.1 and 4.0.2

SUPPORTING HAF/A4'S PROVIDED "ABILITY-TO" STATEMENTS:

- Capitalize on analytical/decision tools, to include ingesting existing, untapped data resident on/in weapon systems, to better understand and predict aircraft, munitions, and equipment condition during operation, and prior to induction into major inspection/maintenance
- Modernize and digitize maintenance processes

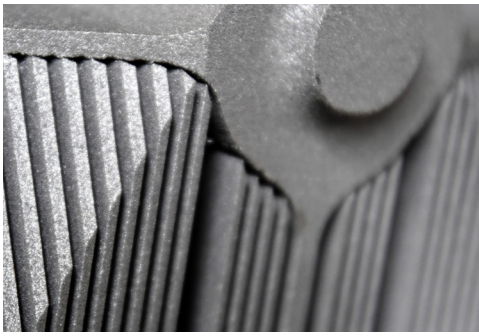
- Lighthouse Team – Conducted a successful Maintenance Evaluation Team event at Nellis AFB, demonstrating capability to the Strike Aircraft Maintenance Unit maintainers for feedback; Capabilities presented included new Lighthouse Integration Technology Engine (LITE) and Aircraft Infrastructure Readiness System (AIRS) features
- Augmented & Virtual Reality Team – Kicked off a partnership with the 437th Maintenance Group at Joint Base Charleston AFB as an additional Summit location for the Maintenance Augmented Reality System (MARS), a technology that provides maintainers with real-time access to amplified work instructions and remote support to shorten upskill time and accelerate maintenance efficiency

SUPPORTING HAF/A4'S PROVIDED "ABILITY-TO" STATEMENTS:

- Have a common operating picture and push information across multiple "battlespaces" from enterprise logistics/ sustainment to integrated base defense
- Reduce the materiel footprint required to establish an operational foothold and generate missions by developing modernized, modular, flexible, multi-capable and interoperable support equipment
- Train and experience our workforce faster and more effectively to bring their proficiency levels higher, sooner (e.g. Virtual Training, AR/VR)
- Optimize sortie generation and operational logistics capability & capacity through automation, robotics, etc.
- Distribute and provide secure, on-demand, and mobile access to information (tech data, forms, mission data, engineering documents, schematics, and tech orders) and logistics systems at the point of use
- Leverage and capitalize on accurate maintenance and logistics information from the field and depot that will allow the sustainment enterprise to more effectively plan activities to reduce downtime and increase aircraft and materiel availability
- Modernize and digitize maintenance processes

SUPPORTING SECRETARY OF THE AIR FORCE'S OPERATIONAL IMPERATIVES:

#5 Defining optimized resilient basing, sustainment, and communications in a contested environment
#7 Readiness of the Department of the Air Force to Transition to a Wartime Posture Against a Peer Competitor



BY THE NUMBERS

As of April 2023

AM

Total parts delivered

4,677

Individual AM part numbers delivered

465

Total AM parts flying

311

Individual AM part numbers flying

174

Completed Technical Data Packages

336

Completed repair data packages

35

CBM+

Aircraft platforms fielded

16

C-5, KC-135, C-130, C-17, B-1, B-2, B-52, AC/MC-130, F-15, RC-135, HH-60, F-16, A-10, EC/HC-130, CV-22, U-2

Aircraft actively monitored across the USAF

3,110

eRCM removals since implementation (April 2019)

1233

Sensor Based Algorithm maintenance alerts issued resulting in **338** scheduled maintenance actions completed since implementation (October 2018)

531

Active users registered in PANDA

723

Aircraft platforms transistioned to the Predictive Analytics and Decision Assistant (PANDA)

16

B-1, F-15, B-2, B-52, KC-135, C-5, C-130, AC/MC-130, EC/HC-130, F-16, C-17, A-10, RC-135, HH-60, CV-22, U-2

Primary features delivered as part of PANDA release 4.0.1 and 4.0.2 (3 and 17 February 2023)

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COMPANY HIGHLIGHTS

This report highlights two companies in support of our Pathways to scale pipeline phase

ElectronInks delivered the latest iteration of its 3D circuit board printer to Tyndall and Robins AFBs. This printer incorporates feedback provided from users during the last phase of testing, resulting in a larger printer with improved capability for creating printed circuit boards. The next phase of the product lifespan will determine what modifications need to be made to the printer to further enhance printing capability.

Trac9 demonstrated its rapidly deployable paint booth structure, the Advanced Aircraft Maintenance Shelter (ADAMS), for the Air Force at Hurlburt Field during the week of 23 January 2023. Airmen from Air Force Special Operations Command Bioenvironmental and Fabrication shops test painted within the structure, with many of them determining that ADAMS far exceeded other paint booths in which they have operated.

ADAMS is not limited to just paint booth applications. Its basic components can also be configured to help fulfill a variety of mission needs - from sleeping shelters to command and control compounds.

PARTNERSHIPS


Keystone
Synergistic Enterprises


MACHINA LABS


OPTOMEC


PACIFIC AIR FORCES


PLATFORM ONE
SMOKEY
WATERFALL, ONLY YOU CAN PREVENT


PAVCON


Perfect Point


pvilion


UNITED STATES SPACE FORCE
DEPARTMENT OF THE AIR FORCE
MMXIX


redshred®


re2
ROBOTICS


ReliaCoat
Technologies


SARCOS


SOUTHIE
AUTONOMY


SPACE SCIENCES CORP


Stanford
University


LUNA


ALBERS
GROUP


TESSERACT


TITAN
ROBOTICS


TRACO


TRAXyL


University of Dayton
Research Institute


U.S. AIR FORCES IN EUROPE


UNITED STATES
ARMY


UNITED STATES
SPECIAL OPERATIONS COMMAND


UNITED STATES
NAVY


UNITED STATES
NAVAL SPECIAL WARFARE COMMAND


VEXTEC


WILDER
SYSTEMS

CUSTOMERS

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