

28th Bomb Wing

Rapid Innovation Fund & Additive Manufacture Rapid Repair Facility Status Report



Brian L. James
Lead Engineer
23 June 2015

UNCLASSIFIED

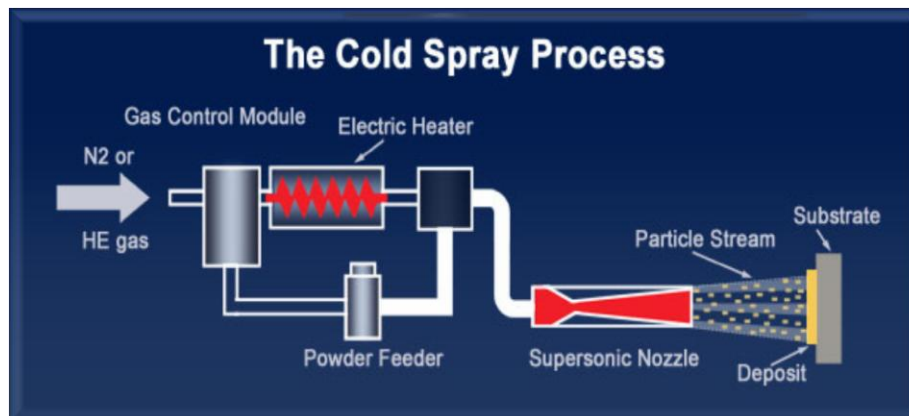


Air Force Rapid Innovation Fund



Project Overview

- Project Overview
- RIF Team
- Key Deliverables
- Component Qualification
- AMRRF



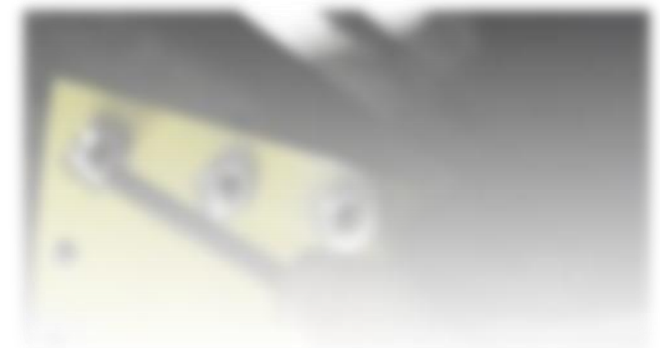


Air Force Rapid Innovation Fund



Project Overview

Develop, qualify, and field a cold spray repair and preventative maintenance capability that will be capable of repairing aircraft structural components and wear surfaces or applying sacrificial material to prevent field maintenance.





Air Force Rapid Innovation Fund



RIF TEAM



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Air Force Rapid Innovation Fund



Key Deliverables

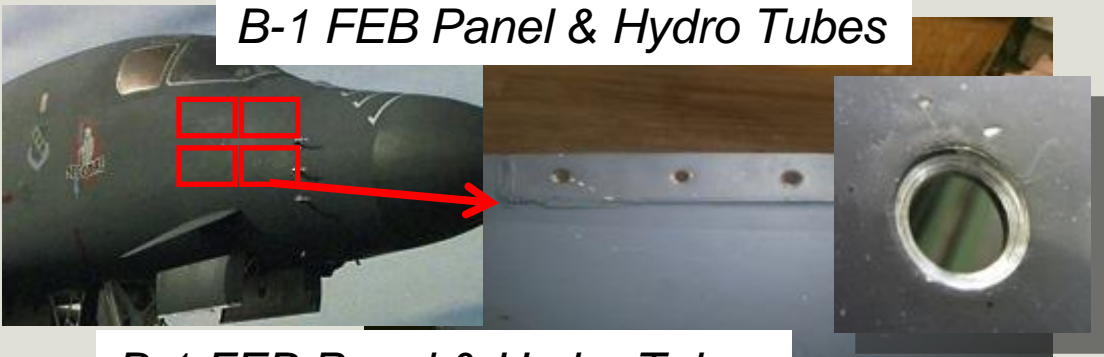
- Cold Spray process development & test reports
- Maintenance procedures documents
- Portable high pressure cold spray repair systems
- Operational test and training
- Expanded application opportunities report
- Final implementation report



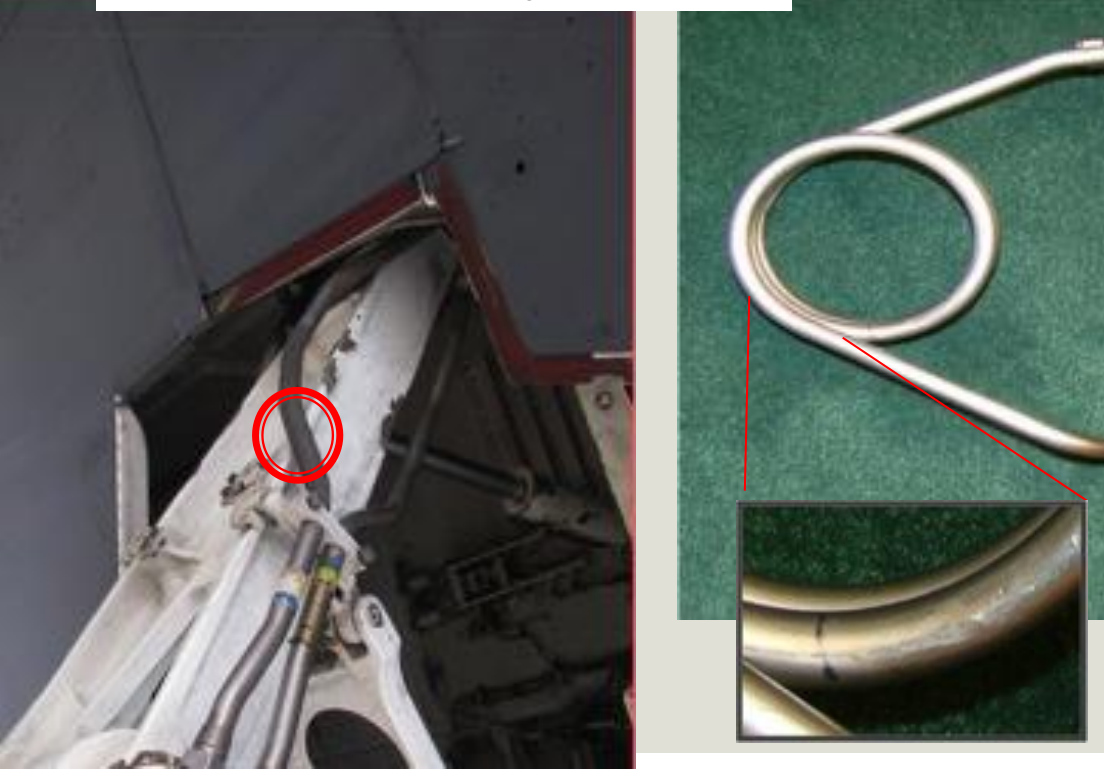


Candidate Part Qualificati SSN 21 TD-63 Actuator

B-1 FEB Panel & Hydro Tubes



B-1 FEB Panel & Hydro Tubes



C-5 Match Set Housing



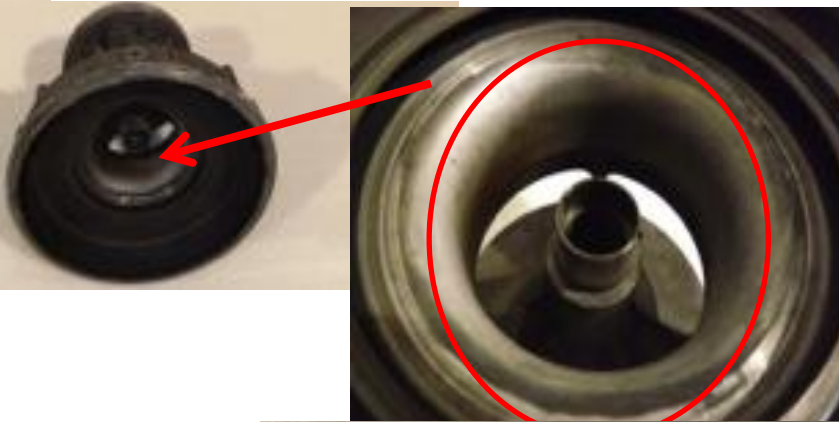
Epoxy Replacement

- *General Qualification*
- *Cold Spray meets or exceeds current epoxy repair standards*

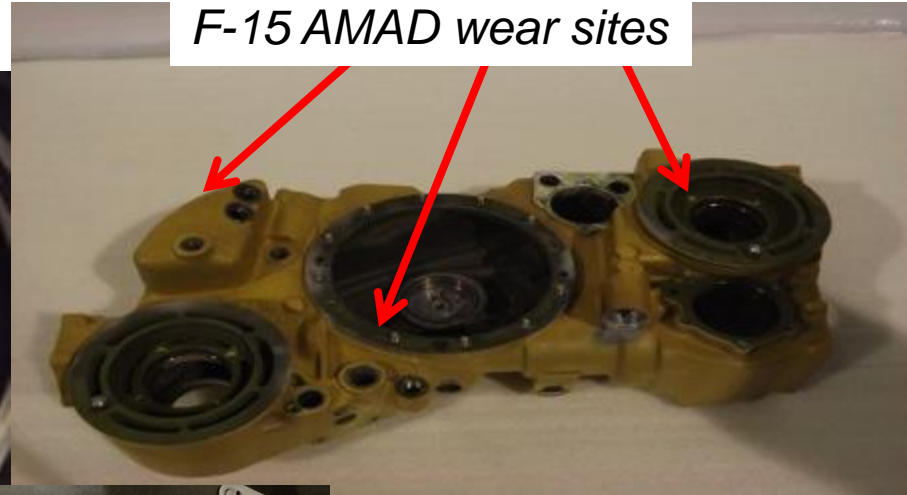


Candidate Part Qualificati SSN 21 TD-63 Actuator

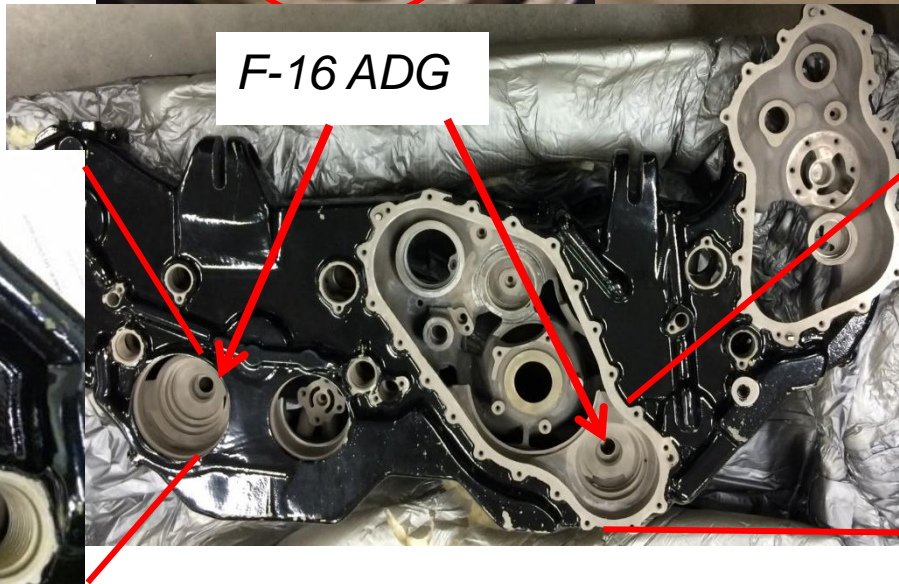
F-16 Air Inlet wear sites



F-15 AMAD wear sites



F-16 ADG





28BW Additive Manufacture Rapid Repair Facility



AMRRF Objective

Establish a facility to develop, qualify, and field additive manufacturing technologies to manufacture or repair structural and non-structural components and wear surfaces of aircraft and base support equipment.





AMRRF Overview

- AMRRF Facility
- Equipment
- Authorities
- Funding
- Implementation
- Current Status
- Timeline





28BW Additive Manufacture Rapid Repair Facility



AMRRF Location – North Side of MXS Building 7520



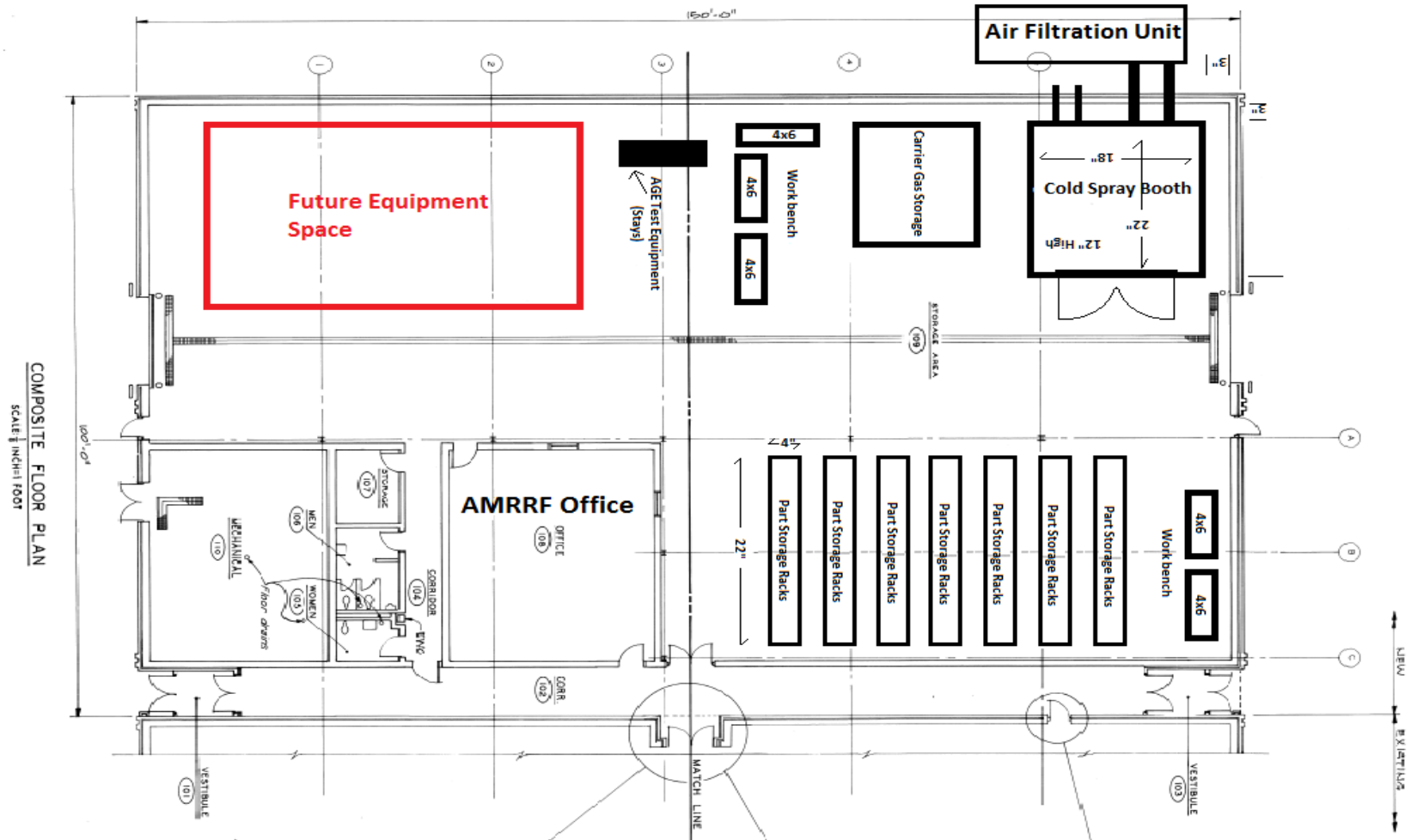
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AMRRF Layout – North Side of MXS Building 7520



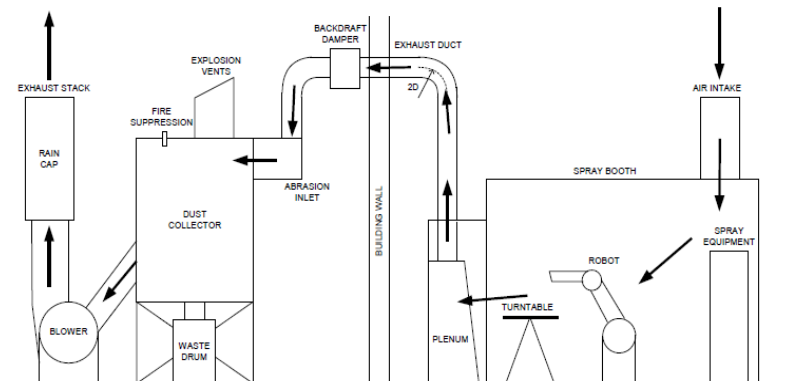
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Equipment

- **(2) Generation III Cold Spray Units delivered in FY15**
 - Ellsworth AFB Gen III July 2015
 - Dyess AFB Gen III Aug 2015
- **(1) Cold Spray Booth and Dust Collection System delivered in FY15**
 - Funded by Ellsworth AFREP (Approximately \$241,000)





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Authorities

- AFCP P4 Initiative
- Rapid Innovation Fund (RIF)
- Memorandum of Understanding (MOU)
 - 28 BW and SDSM&T
 - 28 BW and Moog, Inc.
 - 28 BW POCs – Mr. Brian L. James
 - Defines party requirements, responsibilities,
- Air Force Repair Enhancement Program (AFREP)
 - Execution Architecture
 - Avenue for O&M ROI





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Funding

- **Rapid Innovation Fund (RIF)**
 - 18 month funding (Equipment & Services)
 - Fund the first 6-to-8 months operating expenses
 - Provides cold spray system and consumables
 - Potential funding extension for additional 18 months (FY15)
- **Ellsworth AFREP & SD State GOED**
 - \$250K support for infrastructure (booth & dust collection)
 - Funding (\$49,999/max) should be available from SD State GOED*
 - * Expect GOED final approval by July 15th for facility infrastructure
- **Self-Sustaining by March 2016**



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Implementation

- **Initial Operational Capability (October 2015)**
 - Contractor Managed Facility
 - Initial Training
- **Phase I (Ground Equipment Refurb)**
 - Use cold spray during annual refurb
 - Corrosion, wear, etc.
 - Training military technicians contractor supervised
- **Phase II (Aircraft Component Repair)**
 - Qualified components from RIF
 - Additional components



28BW Additive Manufacture Rapid Repair Facility



Current Status

- **AMRRF Timeline**
 - **Rapid Innovation Fund (RIF) Awarded – September 2014**
 - **Building 7520 (North Bay) established as Additive Manufacturing Rapid Repair Facility (AMRRF) by 28 BW Leadership – March 2015**
 - **Statement-of-work (SOW) submitted to 28 CE/Engineering and 28 Contracting office – May 2015**
 - **Facility Support Equipment Selected and placed on order (Funded using AFREP funding credits) – May 2015**
 - **Cold Spray Booth and Air Filtration System put on contract (Funded using AFREP funding credits) EDD ~15 October 2015 – June 2015**





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Current Status

- **AMRRF Timeline (Continued)**
 - Carrier Gas BPA awarded – July 2015
 - AMRRF Contractor Office Location Selected – June 2015
 - Establishment of MOU with 28 BW & Moog, Industries (VRC, Inc. will be subcontracted to provide personnel support) – July 2015
 - Gen III High Pressure Cold Spray Equipment Delivered to Ellsworth AFB – 30 July 2015
 - Gen III High Pressure Cold Spray Equipment Delivered to Dyess AFB – 30 November 2015





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Timeline

