

CASE STUDY

Protecting Our Nation's Deterrent

The Challenge

With daily operations at Minot Air Force Base, North Dakota, and regular deployments to Northern Europe and Alaska, B-52s are no strangers to cold weather challenges. In these frigid temperatures, the aircraft has a long history of difficulty starting due to ice forming in the engine inlets and air valves. When these components are not securely sealed, ice builds up leading to engine damage, lost manhours for maintenance, and delayed takeoffs which affect the command's combat capability and lethality.

Air Force Global Strike Command (AFGSC) maintainers work to insulate the aircraft's engines from the sub-freezing air and moisture, but existing equipment posed several challenges.

- **Plastic engine plugs become brittle** in extreme cold weather and dislodge in high winds.
- **Current engine covers do not sufficiently prevent moisture** from settling in engine inlets.
- **10 engines were damaged from 2021-2023**, resulting in **\$17 million** worth of repairs.
- **160 manhours** were lost to warming and replacing frozen parts of the engines within that same 2021-2023 timeframe.

AFGSC sought out a new solution that would fully seal the engine pod, inlets, and exhaust, allow visible inspection, and make cold weather maintenance a more efficient process.

To support prototyping efforts, AFGSC enlisted the help of STRIKEWERX, innovation hub of the Cyber Innovation Center (CIC).

"We chose the STRIKEWERX design sprint because it can give us new ideas and new solutions. We received a lot of good input and industry expert suggestions that we hadn't thought of out in the field, in order to get our problem solved."

-U.S. Air Force Master Sgt. Adam Vasas, AFGSC Project Champion, Logistics Innovation Branch

The Solution

STRIKEWERX led a five-day design sprint, bringing together a team of business, industry, and government to define the challenge, understand its needs, and then design and test a prototype.

Transhield Inc. was awarded a total of \$175,000 in funding to create a custom solution. The result would fully cover the engine pod while meeting required specifications, including upgraded polyurethane materials, a more secure seal to prevent water intrusion and corrosion, a hose adapter to hook heaters up to the engines and preheat them overnight prior to engine start, and drainage for ice melt. The initial design was sent for field testing at Minot AFB and after incorporating feedback from Airmen and subject matter experts, Transhield delivered 12 covers to support cold weather operations in these extreme climates.

STRIKEWERX was instrumental in coordinating with vendors to organize and execute demonstrations for Air Force stakeholders, keeping leadership engaged, ensuring key features were addressed, and speeding up the delivery of a crucial piece of equipment that was put into immediate use by the warfighter.

The Result

The solution was scaled across the entire B-52 fleet at Minot AFB. AFGSC applied for and was awarded \$1.2 million in Operational Energy Savings Account (OESA) funds to purchase 96 additional covers for the remainder of the fleet at Minot AFB.

The entire 5th Bomb Wing bomber fleet at Minot AFB is now protected and leadership has reported improved performance. Engines protected by the new covers are starting more easily and consistently, on-time takeoff rates have improved, and the global strike capability of the command's bombers remains poised to deter adversaries, 24 hours a day, in any weather.

Our command's strength is its responsiveness and agility to strike anywhere in the world at any time. That means we must mitigate several factors including things as mundane as weather conditions, and an innovative solution from the business world helps our Airmen better accomplish this continual task.

-U.S. Air Force Master Sgt. Adam Vasas, AFGSC Project Champion, Logistics Innovation Branch

Outcomes and Future Impact



AFGSC
awarded
\$1.2M
in Operational
Energy Savings
Account funds



96
additional covers
purchased for
entire fleet



Improved
take-off
rates

