



CASE STUDY: AVIATION FIRE SAFETY

Nebraska Airport Fire Brigade Demonstrates Effectiveness of Fluorine-Free Firefighting Foam in Real-World Emergency

Challenge:

Suppressing a High-Risk Fuel Tank Fire Using Fluorine-Free Foam

Solution:

Perimeter Solutions' SOLBERG® 3% MIL-SPEC Synthetic Fluorine-Free Foam

Real-World Emergency Response

In the early morning hours of December 4, 2024, a fire broke out at a fuel tank farm at a refinery close to a Nebraska airport. A rail car was being used to fill the fuel tanks, and it is believed that static electricity caused one of the hexane tanks to start on fire.

The local fire department was called, but the only extinguishing agent they had available was water. For flammable and combustible liquids, including hexane, a Class B firefighting foam is required. Class B foams are designed for rapid extinguishment and when applied they create a secure foam blanket that smothers the flames and prevents reignition.

Failure to contain the fire quickly could have triggered a far more dangerous situation, with another hexane tank and two JP-4 (jet fuel) tanks nearby at risk of ignition. With the incident escalating quickly, the decision was made to contact the local airport's fire brigade.

"The airport crew responded immediately, bringing their Rescue 1-2 engine – a 1,500-gallon ARFF [Airport Rescue and Firefighting] striker carrying 200 gallons of foam. Assistant Fire Chief Colby Warner was on-site, and his volunteer crew applied foam to the adjacent tanks to keep them cooled until we arrived," said Woody Wittstruck with the airport fire brigade. "Once we were on scene and had everything set up, that's when the foam started flowing."

Once foam application began, Wittstruck says the team successfully knocked down the fire within 15–20 minutes and fully extinguished it within 45 minutes. This included administering a critical reapplication to prevent reignition.

Overcoming Skepticism

Wittstruck is a military and firefighter veteran with more than 40 years of experience. When he started firefighting, the foam solution of choice in the military was based on legacy technology. “We were trained on protein foams and later used 6%, then 3% AFFF [aqueous film-forming foam] formulations, and based on my experience, you couldn’t beat the protein foams we used to extinguish fires,” said Wittstruck.

Initial exposure to fluorine-free foams during training sessions he attended at Texas A&M and Dallas-Fort Worth Airport (DFW) didn’t change his mind. Wittstruck said the fluorine-free foams he tested couldn’t form a serviceable blanket, which would put his crew and others in danger. “I’m an old school firefighter, and when I first saw these fluorine-free solutions applied, I and some of my fellow fire chiefs thought, why don’t we just go back to the protein foam?”

But when the federal mandate to transition to fluorine-free firefighting foam was issued, his department moved forward with making the switch. They evaluated foams from various providers but made the decision to use SOLBERG® 3% MIL-SPEC Synthetic Fluorine-Free Foam (SFFF). One of the deciding factors for Woody and his team was that SOLBERG MIL-SPEC was on the Department of Defense Qualified Products List (QPL). It was the first fluorine-free foam concentrate to be added to the QPL, in fact, when it was introduced in late 2023. In addition to being listed on the Department of Defense QPL, SOLBERG 3% MIL-SPEC SFFF is ICAO Level B and C certified, meets B227432—the Boeing specification for evaluating airplane maintenance methods, and is GreenScreen Certified Silver®.

Before the introduction of SOLBERG 3% MIL-SPEC SFFF, airports across the country used the protein and aqueous film-forming foam (AFFF) solutions that Woody had used throughout his career.

Another factor in the decision to use SOLBERG MIL-SPEC was that it was being used by the fire brigade at a local Air Force base, meaning that Woody’s airport foam and the equipment used to apply it would be compatible. The two groups could now work together with the same foam.

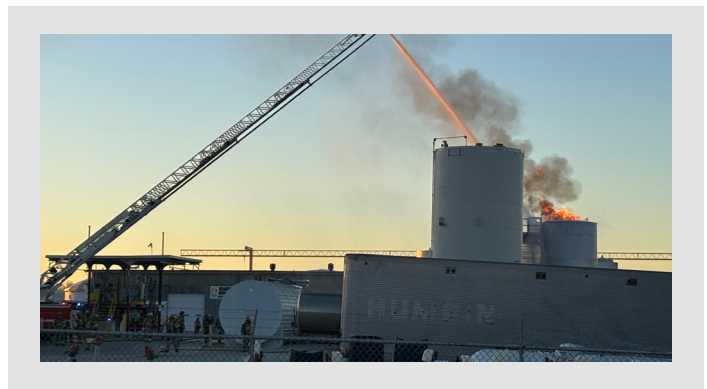
They completed the transition in November of 2024. Wittstruck says that his team fortunately doesn’t have to use foam very often, typically testing their trucks every quarter to ensure they are ready to battle any fire that occurs. Just weeks after completing the switch to SOLBERG MIL-SPEC, however, the December fuel tank incident served as an unexpected and high-stakes real-world test.

“When we sprayed the foam, the blanket it created was exceptional. It reacted well, and that eliminated any reluctance or apprehension I had about using fluorine-free foam to battle active fires,” Wittstruck said. “I am the first one to admit that I was skeptical about the effectiveness of fluorine-free foam, but after seeing it in action, I think it performs great, and I am now an advocate. There’s no drop-off compared to the protein foams from the past.”

Conclusion

This Nebraska airport’s fire team learned firsthand that modern fluorine-free foam, when properly selected and deployed, can match or exceed expectations rooted in decades of legacy foam experience. The successful response using SOLBERG 3% MIL-SPEC on the refinery fire reinforced the importance of training, interagency coordination, and remaining open to new technologies—even for the most seasoned professionals.

For more information on transitioning to SOLBERG 3% MIL-SPEC SFFF for aviation or industrial firefighting, contact your Perimeter Solutions representative.



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FOR MORE INFORMATION

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