

Tennessee Pollution Prevention Partnership Success Story



Vought Aircraft Industries, Inc.
1431 Vultee Blvd
Nashville, TN 37217
615-361-2000
www.voughtaircraft.com



1-800-734-3619
www.tp3.org

Elimination of Large, No. 2 Fuel Oil Storage Tank from Service

The Member

Aircraft manufacturing operations have been conducted at Vought Aircraft Industries, Inc.'s Nashville site since the early 1940's, when a predecessor company opened the plant to build bombers in support of the war effort. Today, the Nashville site builds commercial and military aircraft components, including wings, wing panels, stringers, spars, and empennages. Its customers include Airbus, Gulfstream, Cessna, and Lockheed Martin. The plant employs approximately 900 people, and has a total footprint of greater than 2 million square feet under roof. The facility is fully committed to 100% compliance with all environmental laws and regulations, and continually seeks opportunities to eliminate or reduce waste and emissions.

The Story

A large, No. 2 fuel oil aboveground storage tank (500,000 gallons capacity) had been in service at Vought for many years. The No. 2 fuel oil served as a backup fuel for the facility's boilers, which are fired primarily on natural gas.

Since use of the fuel oil had not been required for many years, and since sufficient propane was available in the event of a natural gas curtailment, Vought made the decision in early 2009 to permanently remove the fuel oil storage tank from service. The project would result in a number of environmental benefits and cost savings to Vought:

- Oil spill potential for the facility would be greatly reduced.
- Periodic, non-destructive tank integrity testing costs (required by EPA's oil spill prevention planning

rules) would be avoided. Periodic, informal tank inspections would no longer be required.

- Potential sulfur dioxide (SO₂) emissions from the facility would be significantly reduced.
- Storage of a large quantity of combustible material would be eliminated, resulting in a safer facility.
- Additional facility footprint would become available.
- Revenue for the facility could be generated by selling the fuel oil and scrap steel.

The Success

The tank was emptied, cleaned out, and demolished in May 2009. As a result, oil storage capacity of the facility was reduced by 500,000 gallons, resulting in a significant reduction in spill potential. The facility's Title V air permit was voluntarily amended to remove No. 2 fuel oil as a backup boiler fuel, resulting in a significant reduction in potential sulfur dioxide (SO₂) emissions and the associated annual emissions fees.

The Pollution Prevented

Potential sulfur dioxide (SO₂) emissions from the facility were reduced by 35 tons per year (tpy), and the associated annual emissions fees were reduced by approximately \$1,000. The total volume of oil storage (and associated spill risk) at the facility was reduced by 500,000 gallons. Approximately 110,000 pounds of scrap steel were fully recycled.

December 2009

Vought Aircraft Industries, Inc. – Nashville, TN
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Pollution Prevention Estimates

The facility's Title V air permit previously allowed the facility to burn No. 2 fuel oil as backup fuel for the boilers in the event of natural gas curtailment. The facility was permitted for 1,645,747 gallons per year. After the large, No. 2 fuel oil storage tank was permanently removed from service, the facility voluntarily requested that the permit be amended to remove fuel oil. The reductions in potential sulfur dioxide (SO₂) emissions and associated annual emissions fees are calculated as follows:

Old Permit: Allowable No. 2 Fuel Oil Usage = 1,645,747 gal/yr
Allowable No. 2 Fuel Oil Sulfur Content = 0.3 wt%
Allowable Natural Gas Usage = 813.8 mmcf/yr

New Permit: Allowable No. 2 Fuel Oil Usage = 0
Allowable Natural Gas Usage = 813.8 mmcf/yr (unchanged)

Reduction in Potential SO₂ Emissions:

No. 2 Fuel Oil – SO₂ Emission Factor = 142S lb/1,000 gal = (142) * (0.3) = 42.6 lb/1,000 gal
Natural Gas – SO₂ Emission Factor = 0.6 lb/mmcf

(From AP-42, 5th ed., Sections 1.4 and 1.3)

Old Permit:
 $(1,645,747 \text{ gal/yr}) * (42.6 \text{ lb/1,000 gal}) / (1,000 \text{ gal}) * (\text{ton}/2,000 \text{ lb})$
= 35.1 tons per year (tpy)

New Permit:
 $(813.8 \text{ mmcf/yr}) * (0.6 \text{ lb/mmcf}) * (\text{ton}/2,000 \text{ lb}) = 0.2 \text{ tpy}$

Reduction = (35.1 – 0.2) tpy = 34.9 tpy (approx. 35 tpy)

Reduction in Annual Emissions Fees:

$(35 \text{ tpy}) * (\$28/\text{ton}) = \980 (approx. \$1,000)