State of the Art (SOTA)
Manual
for Transfer Operations

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State of New Jersey
Department of Environmental Protection
Air Quality Permitting Program

State of the Art (SOTA)
Manual for Transfer Operations
Section 3.2

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3.2 SOTA MANUAL FOR TRANSFER OPERATIONS

3.2.1. Scope

These SOTA performance levels apply to the transfer of gasoline and other Volatile Organic Compound (VOC) liquids to marine vessels and trucks.

3.2.2. SOTA Performance Levels

For truck terminal and marine vessel operations that are equal to or greater than the following thresholds, the SOTA performance levels is 10 MILLIGRAMS VOC/LITER LIQUID TRANSFERRED.

A. Truck
   1. Gasoline transfer: 15,000 gallons per day
   2. VOC transfer other than gasoline: 2,000 gallons per day

B. Marine vessel transfer:
   1. Gasoline transfer: 6,000,000 gallons per year or 60,000 gallons per day
   2. VOC transfer other than gasoline: 10 Tons per year per source

For trucks, the SOTA performance level for both gasoline and VOC transfer for sources below the above thresholds is as follows:

A. Vapor balance, and
B. Submerged fill, and
C. No open vents

3.2.3. Technical Basis and References

The 10 milligram VOC per liter of liquid transferred limit was obtained from surveying over 30 New Jersey marine vessel permits, over 25 New Jersey truck terminal permits, similar operations in other states, and the marine vessel and gasoline transfer Maximum Achievable Control Technology (MACT) regulations.

The following technologies are available for achieving compliance with this SOTA Performance Level:

A. Enclosed flare thermal oxidizers with a minimum temperature of 1,500 °F, 0.5 second Residence time, 100 parts per million by volume (ppmv) on a dry basis of carbon monoxide (CO - corrected to 7% oxygen) and 98% efficiency.

B. Regenerable carbon absorption system with a minimum of 98 % efficiency, and a VOC output level of 10,000 ppmv as propane.

C. Condenser system using liquid nitrogen in the final stage.

3.2.4 Recommended Review Schedule

The recommended review schedule is every three years after the effective date of this manual. A review schedule of three years was selected for the following reasons:

Gasoline and VOC liquid transfer operations is a mature process, which has not experienced much change in the past few years. Therefore, a longer review cycle is warranted.