Utilizing VRT/VRU Configuration to Reduce Storage Tank Flash Emissions

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Flashing Losses from Storage Tanks

- Flashing from tanks occurs when oil/condensate dumps from a pressurized vessel to atmospheric storage tanks.
- Emissions depend on composition of oil/condensate.
- VOC emissions may range from 57-90%\(^1\).
- Methane emissions may range from 1-20%\(^1\).

1. Based on data and analysis gathered from APC’s Austin Chalk operations.
Using a VRU directly on Tank Vent

Historically compressors (VRUs) have been connected directly to tank vents to capture losses.

Safety and Efficiency Concerns

- Oxygen introduced to compressor presents explosion hazard
- Compressor recycle time during tank gauging and loading operations
Adding the Vapor Recover Tower (VRT)

- Add separation vessel between heater treater or low pressure separator and storage tanks that operates at or near atmospheric pressure
  - *Operating pressure range: 1 psi to 5 psi*

- Compressor (VRU) is used to capture gas from VRT

- Oil/Condensate dumps from VRT to Storage tanks
Adding the Vapor Recover Tower (VRT)

- VRT reduces pressure drop from approximately 50 psi to 1-5 psi

- Reduces flashing losses

- Captures more product for sales
  
  - Anadarko Netted between $7 MM and $8 MM from 1993 to 1999 by utilizing VRT/VRU configuration
Adding the Vapor Recover Tower (VRT)

- **Equipment Capital Cost:** $11,000

- **Different size VRTs available based on oil production rate**
  - 20” x 35’
  - 48” x 35’

- **Anadarko has installed over 300 VRT/VRU since 1993 and continues on an as needed basis**
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DISCUSSION & QUESTIONS