Methane Blowdown & Leak Mitigation Technologies on Pipelines & Compressor Station

Northern Natural Gas Company
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Methane Emission Reduction Initiative 2018

- STAR I – Leak identification and repair (EPA STAR)

- STAR II – Methane conservation

- STAR III - (not part of the MERI* but for EPA STAR reporting only)
  
  * Methane Emission Reduction Initiative
STAR I – Leak identification and repair (EPA STAR)

- Facility Emission Inspection (FEI)
- LiDAR (Light Detection and Ranging)
- Compressor rod packing
- Compressor unit valves
- Pneumatics intermittent and continuous
STAR II – Methane conservation

- Reroutes
- Pressure reduction using TBS, farm tap, interconnects
- In line compression
- ESD (emergency shut down)
- Flares
- Stopples
- Temporary compression
STAR III (not part of the MERI but for EPA STAR Transmission reporting only)

- Pressure Reduction (safety considerations)
- Hot taps
- Clock springs
- Patches
- Full-wrap saddle
Methane Blowdown & Leak Mitigation Technologies on Pipelines & Compressor Stations

- LIDAR – Light Detection and Ranging
- Stopples
- Temporary Compression
- Dump Valves
- Relief Valves
- Portable Flare
- Yale Closures
- Re-Route
- In-line compression
LIDAR – Light Detection and Ranging
Optical Unit – Infrared and Visual
Field Investigation – Leak Indication Verified
Action Item 61476
05/25/17 08:44 AM - Mike Flynn
Investigated leak detection zzzzz line, found xxxxx pipeline valve setting leaking on the north side of the leak indication. yyyyy and wwww pipeline companies will be notified of the found leaks on their facilities.
STOPPLE Bypass - Internal view of the plugging head
**Stopple:** isolates a section of pipeline without losing service to the whole system

### Basic Items

- Cut the pipe open
- Install a high-pressure plug
- Attach a temporary bypass line
Smaller-diameter pipeline stopple bypass
Temporary Compression

• Three 300-hp portable compressors
• Evacuated 42 miles of 20-inch-diameter piping at a valve tie-over
• The B-line gas was pumped to the C-line service
• 590 psig to 430 psig using system demand
• 430 to 50 psig using portable compression
• Remaining 50 psig was vented

Starting gas – 20,440.8 Mcf
Gas released – 2,030.4 Mcf
Gas loss avoided – 18,410.4 Mcf

During an evacuation a combination of parallel and multi-staging is used as suction pressure decreased
Three 300-hp compressors in parallel operation
Separator Dump Valves
Separator Dump Valve
In-Line Compression
Relief Valves
Relief Valve - Blowdown
Portable Flares
Yale Closures
Reroutes
Questions