GTS Regulator Stations Review Program™

October 2019

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Vice President
1. Introduction
2. Station Upsets
3. Best Practices
4. GTS RSRP
• Founded in 1998

• Office locations:  
  - Atlanta, GA
  - Walnut Creek, CA
  - Los Angeles, CA
  - Phoenix, AZ
  - Chico, CA

• Serve clients nationally – most recently CA, GA, FL, VA, IL, AZ, TN, NC, KY, CO, TX, MI, IN, PA, WV, NY
Station Upsets
Pipelines Carry the Load

Stations Control the Flow!
Station Upsets

Potential Consequences to:

- Public Safety
- Asset Safety
- Employee Safety

Station Malfunctions

- Neglected Corrective Work
- Improper Preventive Maintenance
- Poor Design
- Incorrect Guidance
- Human Error
- Incorrect Set-Points
Possible Factors

Neglected Corrective Work
- Work Management System in effect?
- Work assigned to individuals?
- Tags/work tickets are closed, cause(s) identified and documented, future improvements implemented?

Improper Preventive Maintenance
- Work performance (time expenditure and physical asset reviews) is occasionally reviewed?
- Maintenance guidance/requirements are documented and followed

Poor Design
- Are maintenance personnel a part of station designs?
- Makeshift solutions are needed when routine work is performed?
- Obsolete equipment is in operation?

Incorrect Set Points
- Will you be reporting many MAOP exceedances?
- Standard set point philosophy is in place and followed?
- Are as-left pressure settings checked against established set points?

Human Error
- Is there a culture of root cause investigation and continuous improvement?
- Are procedures followed?
- Do you have tribal training?

Improper Guidance
- Is a standard in place that provides guidance for station operations during construction?
- Process hazard analysis in place?
Best Practices
AGA – Leading Practices to Reduce the Possibility of a Natural Gas Over-Pressurization Event:
1. Design of Distribution Systems & Regulator Stations
2. Operating Procedures & Practices
3. Human Factors
4. Managing the Risk of an Over Pressurization Event

NTSB Recommendations - P-18-006, 007, 008, 009
- Station designs quality & responsibility
- Asset knowledge
- Management of Change use
- Stations modifications risk management

Terry Wireman – Benchmarking Best Practices for Maintenance, Reliability & Asset Management
Updated for ISO 55000
GTS RSRP
Emphasis on obtaining **Asset Knowledge** and storing that knowledge in enterprise systems and making it available for use.

**Process** based to ensure repeatability

Emphasis on the utilization of a **Work Management** System (P, T, P)
Station Health Score

Asset Health Score Origin

• Asset Health Scores have a foundation in Asset Management standards which precede ASME B31.8S. The intent is to provide asset managers the optics to:
  o Understand the health of an asset
  o Compare different assets and different asset classes in an objective, consistent manner
  o Allow for an objective path forward to maintain assets. Move maintenance from reactive to proactive.

Example – Stations Health Scorecard

Notes:

1. To obtain an overall station score, the categories are weighted, and a score is calculated.

2. The data and stations shown are fictitious
### Station Health Score

<table>
<thead>
<tr>
<th>Station</th>
<th>Recognition &amp; Response to AOC</th>
<th>Equipment Issues</th>
<th></th>
<th></th>
<th>Overpressure Protection</th>
<th>Design &amp; Operational Deficiencies</th>
<th>Total Score</th>
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</thead>
<tbody>
<tr>
<td>4Th &amp; Elm Station</td>
<td>2.00</td>
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</table>

**Weighting:**
- Recognition & Response to AOC: 5%
- Equipment Issues: 15%
- Overpressure Protection: 15%
- Design & Operational Deficiencies: 20%
- Total Score: 100%
Don’t hesitate to consider an expert consultant’s assistance to progress your effort further. Or, even just to commence the program and gain valuable momentum.

Plan out your program structure before you take any steps. This will help you avoid rework, frustration, and added cost.

If you have already taken steps in this effort, this webinar may have provided additional knowledge & a helpful roadmap. Perhaps you want an independent review of your started or planned effort. Reach out to an experienced consultant to assist.
For Questions

Contact Joe Medina: joemedina@gtsinc.us

Questions?