Flowline Audit Overview

Industry Operations Meeting

April 26th 2016

COLORADO
Oil & Gas Conservation Commission
Department of Natural Resources

Ellice Hazard, E.I.T.
Integrity Engineer

AGENDA

1. Background Information
2. Flowline Audit Goals
3. Flowline Audit – 2016 Plan
4. Flowline Audit – 2017 and Beyond

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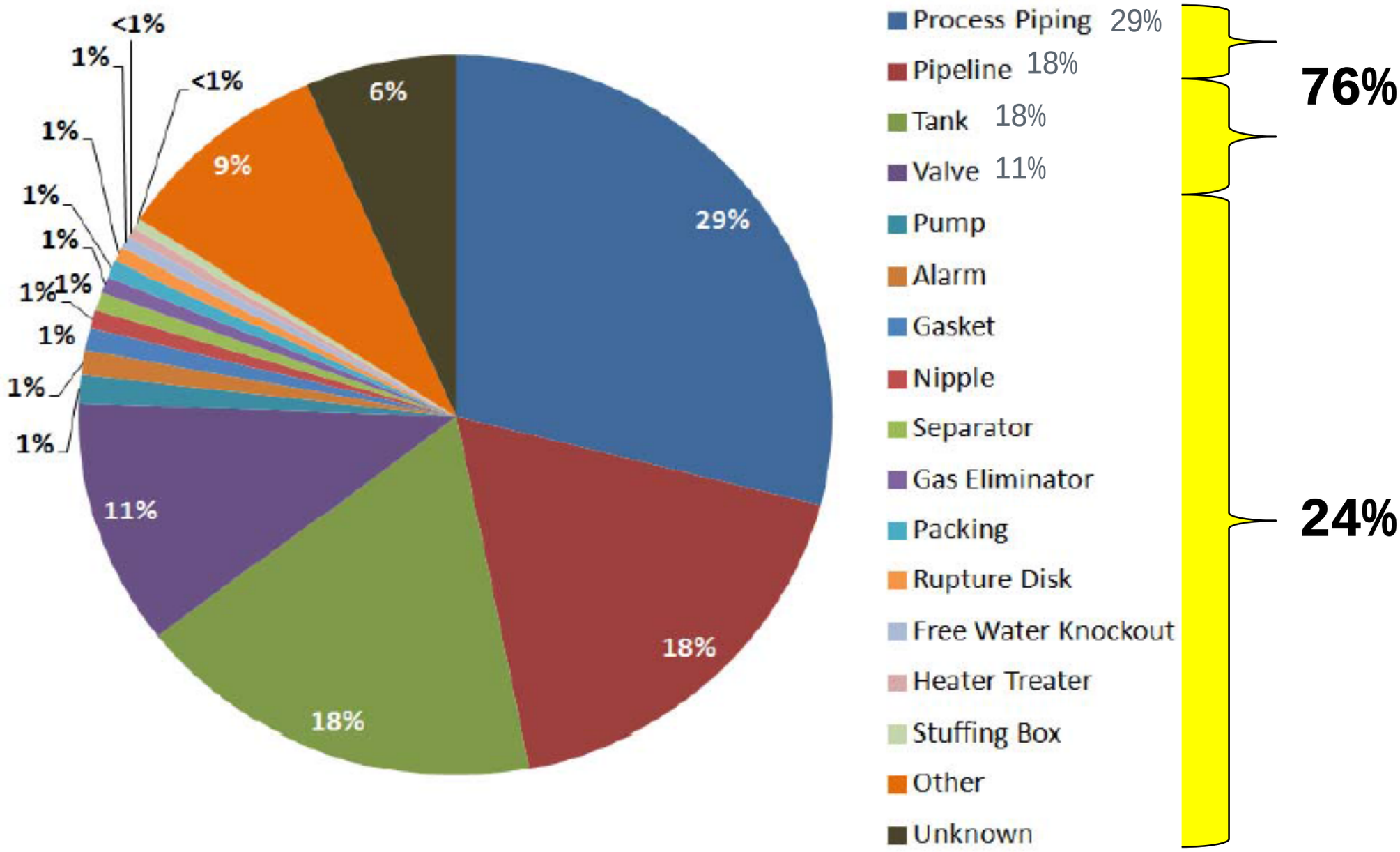
Spills by Equipment Type

Figure 4-5: Spills by Equipment Type (Percent of Total)



Overview

- Senate bill 2013-02.
  - Directed to adopt a priority-based approach for inspecting oil and gas locations.
  - Focus on high priority locations.
- Report published February 2014.
- Pilot implementation in FY 2014-2015.
- **Full implementation FY 2015-2016.**

Integrity Group

- ***Integrity Engineering Supervisor – Mark Schlagenhauf***
- ***Integrity Engineer – Ellice Hazard***
- ***Integrity Inspector – Joe MacLaren***

Flowline Priority Based Model Factors

1. Population density - 10%
2. Environmental risks – 20%
3. # of Spills (last 5 years) on location – 13%
4. Years in Service – 35%
5. # of Integrity-Related Corrective Actions – 10%
6. Time since last inspection – 12%

RF score = ((Population * 10%) + (Environmental * 20%) + (Last Inspection * 12%) + (Years in Service * 35%) + (Spills * 13%) + (Corr. Actions * 10%)) * 20

Some Rules Applied to Flowlines

1. 1100 Series Rules - Installation, reclamation, operations, maintenance, repair, and abandonment of Flowlines
2. Rule 604.c.(2).F – Leak Detection Plan
3. Rule 605 d. – fasten, maintain, and inspect pipes, valves, and fittings regularly

- Flowline Operator Guidance

Purpose of Flowline Audit

- Help Operators take reasonable precautions to:
  - Prevent damage to Flowlines
  - Prevent failures that cause spills and releases
  - Help Operators identity systematic Flowline issues
- Identify and address instances of non-compliance

Ways the COGCC Identifies Issues:

- Form 19 Spill Reports
  - Incident descriptions – Include specific equipment and point of failure
  - Root Cause Analysis
  - Describe measures taken to prevent the problem(s) from occurring
- Flowline Audit
- Field Inspections

Flowline Audit – 2016 Plan

- Verify Compliance with 1101.e.(1)
  - Select Operators For Audit
  - Audit 10% of Operator's Flowlines for most recent pressure test
  - Flowlines chosen by Operator
- Rule 605.d – Flowline Integrity Management Program
- Failure to comply: may issue warning letter (No NOAVs)

No Records?

- Newly acquired assets
  - Exercise due diligence →Ask for pipeline records
- If no previous records found:
  - Contact COGCC (Ellice Hazard)

Variance from 1101.e.(1)

- Variance Request Submitted?
  - Comply with rules until Variance has been approved
- Approved Variance
  - Provide annual reports verifying that COAs have been met

Flowline Audit – 2017 and Onward

- Verify compliance with 1101.e.(1)
- Select Operators for Audit
- Priority Factor Scores used for COGCC to select Flowlines for Audit:
  - Top 33% of Flowlines susceptible to audit
  - Highest 10% will be audited
- Rule 605.d – Flowline Integrity Management Program
- Rule 1102 e. – Emergency Response Plan

Emergency Response Plan

- Rule 1102 e. - For PHMSA regulated gathering lines
  - Some Class 2 lines
  - Class 3 & 4 lines
- Send Emergency Response Plan to:
  - COGCC
  - County Sheriff
  - Local Government Jurisdiction

Additional Audit Items

- Pressure Testing Methods and Procedures
- Leak Detection Plan and Best Management Practices for Flowlines within Designated Areas
- Annual Temperature, pressure, and flow rate data (including annual maximum) for the well and associated Flowlines
- Fluid type, Flowline diameter, and approximate Flowline length

Additional Audit Items (Cont'd)

- Piping and Instrumentation Diagrams for Flowlines
- Documentation (energy equations or process data) verifying that Flowlines exempt from pressure testing per Rule 1101.e.(2) do not reach 15 psig using engineering calculations
- Maps and/or GIS data of Flowlines (shape files or other geo-database format)
- Mechanical Conditions

Additional Audit Items (Cont'd)

- Verification that conditions of variance approval have been met
- Any repair records and root cause analysis
- Summary of corrosion protection plan and maintenance records
- Flowline Abandonment Procedures
- Verification of membership with One Call

Continuously Monitored Lines

- Schematics from the Supervisory Control and Data Acquisition (SCADA) system during normal operating conditions.
- Alarm Rationale (alarm type, set point, action, priority, response time) and procedures for handling alarms.
- Process Monitoring Data from the SCADA system.

Pressure Test Details

- Associated Well API
- Flowline Type
- Flowline Material
- Flowline line pressure
- Maximum anticipated operating pressure
- Fluid Type
- Pressure Test Fluid
- Approximate line length

Submitting Pressure Test Results

- Data submission
  - Filled line pressure
  - Data points at least 5 minute increments from start until end of test
- Graph/Chart Submission
  - Appropriate pressure range
- See Flowline Guidance for more details on pressure testing requirements

What Makes a Passing Test?

- Pressure deviation less than 10% (Per Flowline Guidance)
- Stabilization within last five minutes of test (+/- 1% of test pressure)
- **NOTE**: provide comments about the pressure test, including abnormal changes that may have occurred
- Failed Pressure Test:
  - List actions taken upon failure

Pressure Test Example

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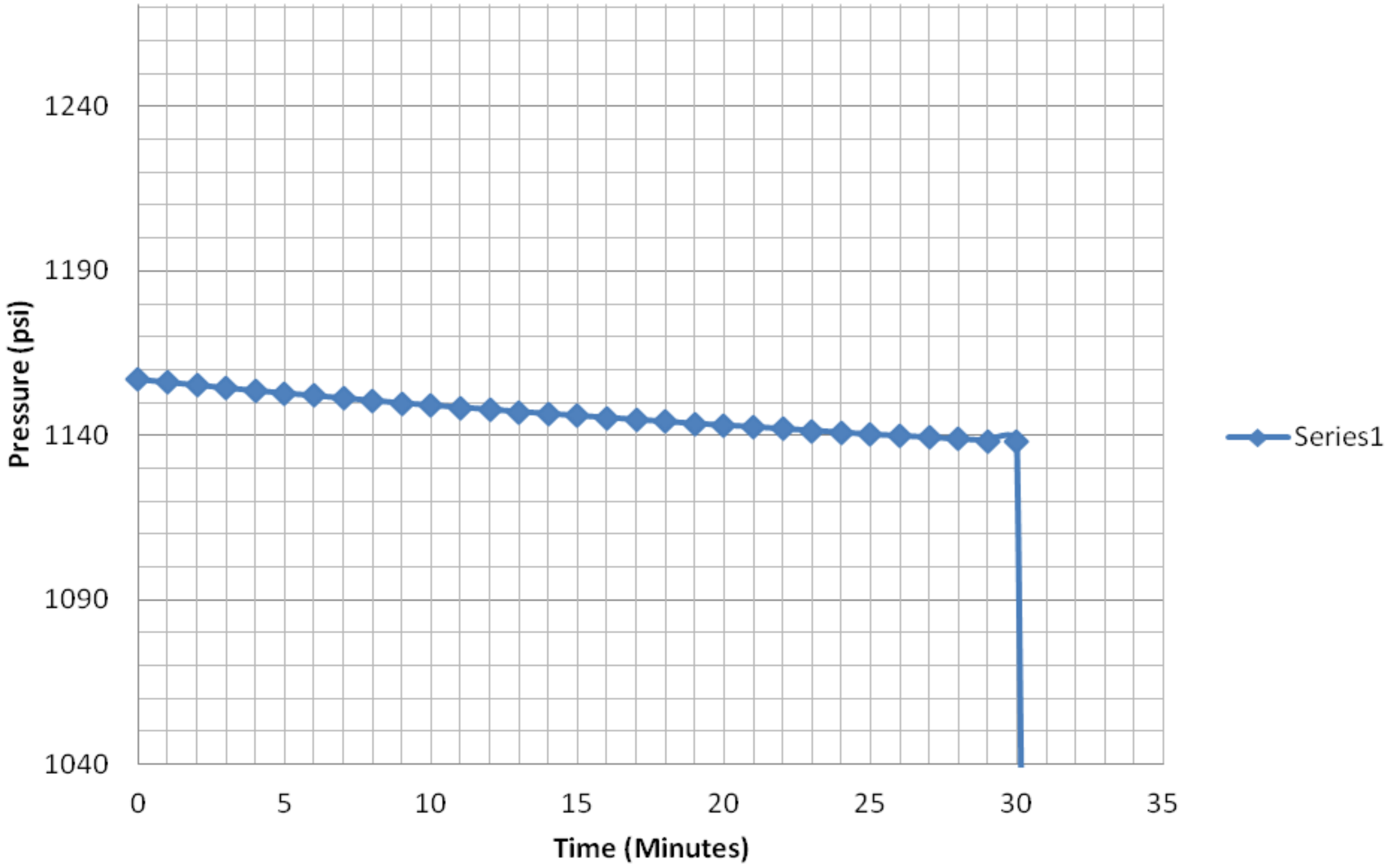
Good Example - Pressure Test Graph



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Questions??

colorado.gov/cogcc
Ellice.Hazard@state.co.us

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