



The Pipeliners Association of Houston Business Meeting

PSM/PSV Remediation

Presented by: Patrick Blomberg, P.E.
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Topics

Introduction

Regulatory Requirements

PSM Program Summary

PSV Workflow

Example Calcs

Arion



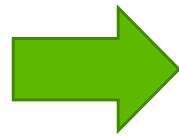
Patrick M. Blomberg, P.E.

Process Department Manager, Arion

- **BS ChemE from University of Texas at Austin**
- **14 Years Oil and Gas Experience**
- **Registered Professional Engineer in 10 states (TX, FL, UT, LA, NM, OK, WV, ND, OH, GA)**
- **Have performed PSM/PSI related work across multiple states**
- **Recent program of projects included over 1100 PSV calculations over 1.5 years for many onshore facilities**
- **Presently performing calculations for onshore and offshore facilities, 1300 PSVs offshore and 150 PSVs onshore**

PSM Regulatory Requirements for PSI

29 CFR 1910.119



Requires employers to implement safety programs that identify, evaluate, and control hazards

**Employee
Participation**

**Process Safety
Information
(PSI)**

**Process
Hazard
Analysis (PHA)**

**Operating
Procedures**

Training

Contractors

**Pre-startup
Safety Review
(PSSR)**

**Mechanical
Integrity (MI)**

**Hot Work
Permit**

**Management
of Change
(MOC)**

**Incident
Investigation**

**Emergency
Planning and
Response**

**Compliance
Audits**

Trade Secrets

PSM
Regulatory
Requirements
for PSI

Very difficult to operate safely without appropriate documentation

PSM applies to:

**Compressor
Stations**

Gas Plants

**Central
Processing
Facilities**

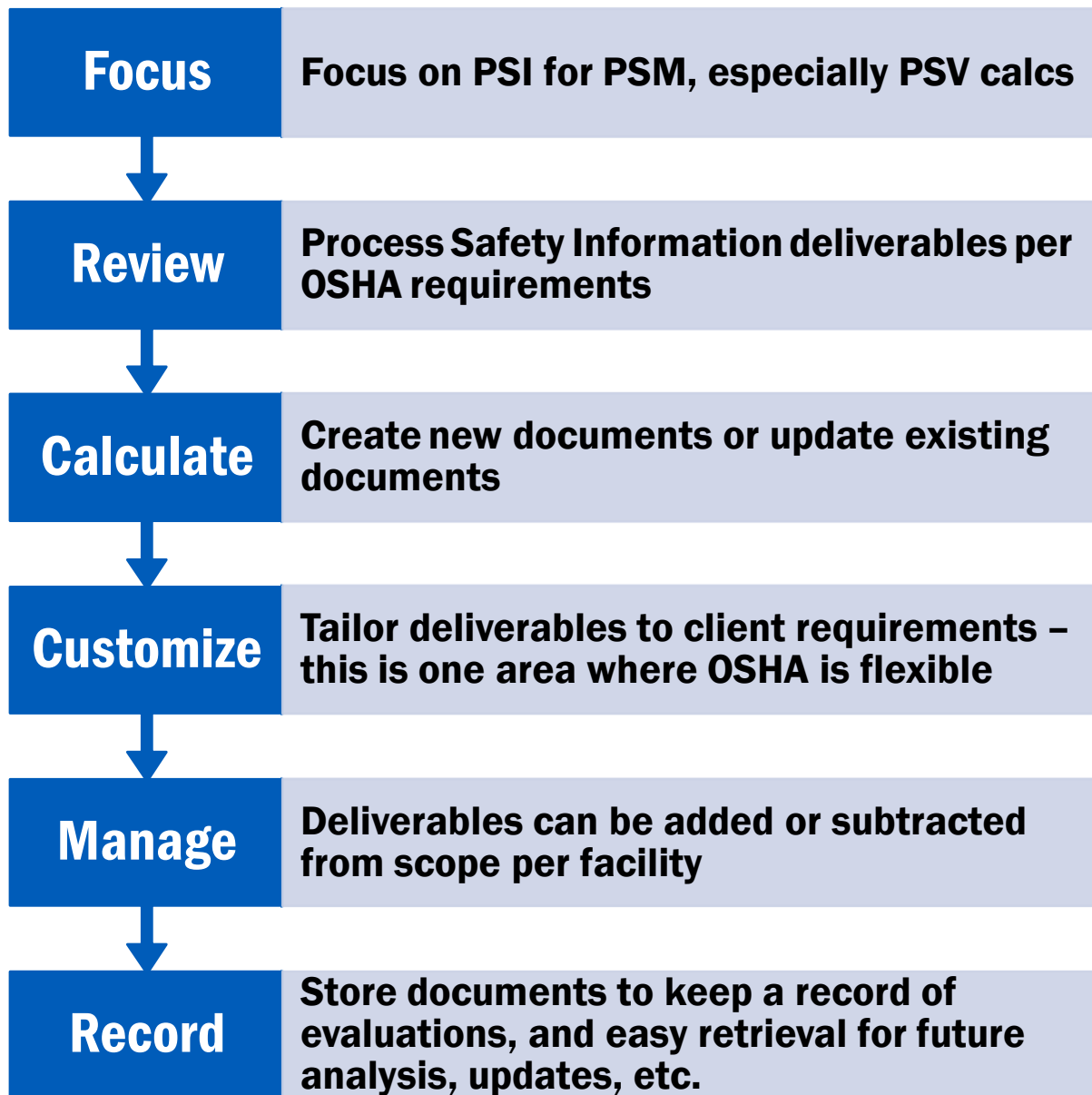
**Stabilizer
Plants**

**Offshore
Platforms**

Based on inventory of hazardous materials and number of hours manned

Periodic Audits should be performed to ensure information is kept up to date and readily available

PSM Program Summary



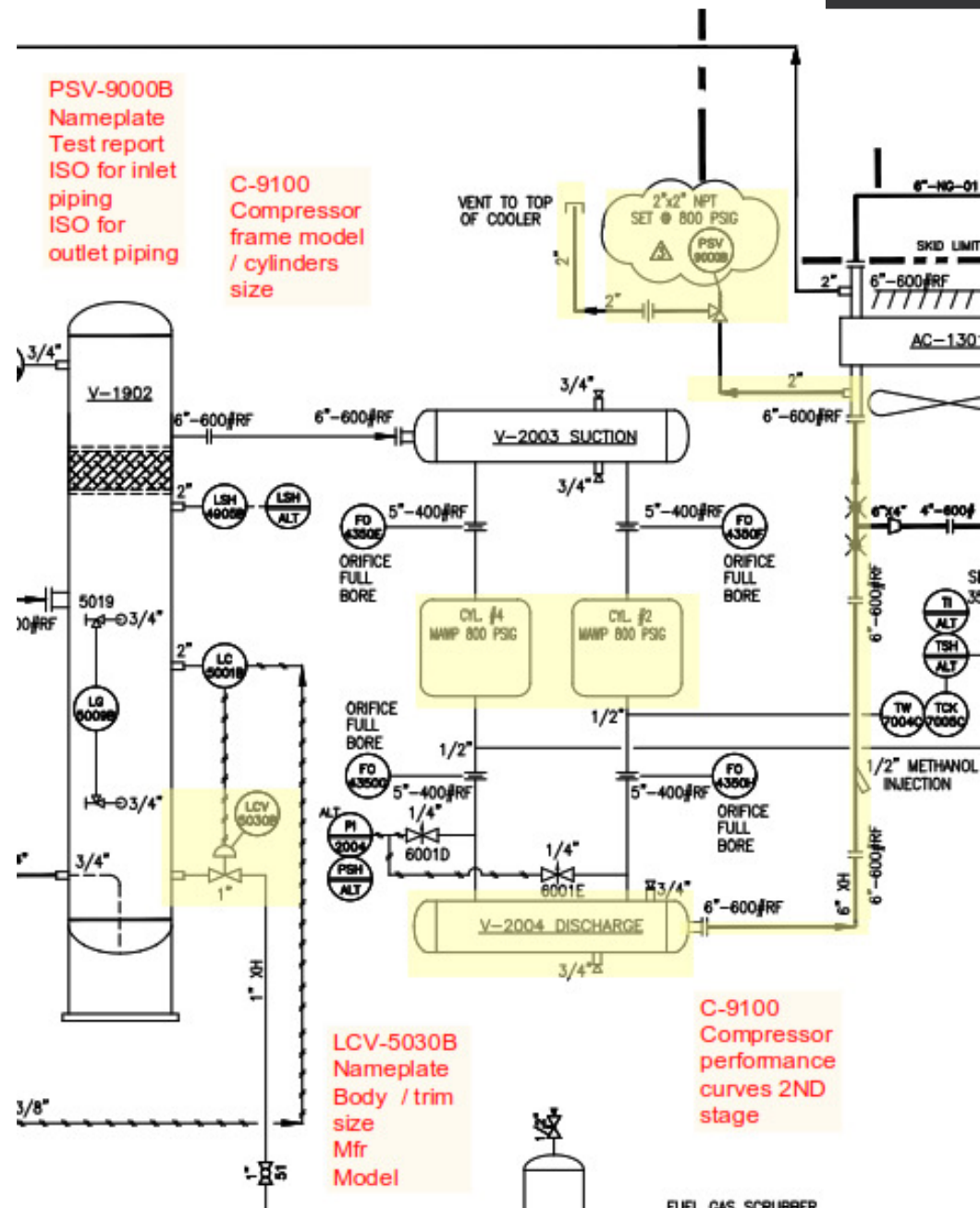
Process Flow Diagram (PFD)
Process Description
P&IDs
Electrical Area Classification Drawings
Cause & Effects
Electrical One-Lines
Operating Procedure
Basis of Design
Safety Equipment Layout
PHA documents and close-out Report
Heat and Material Balance
PSV Calculations
Flare Study
Consequence of Deviation
Plot Plan (General Arrangement)
Critical Equipment List
PSV Register
SP Item List
MEL (Instruments, Strainers, Control Valves, Actuated Valves, Mech Equip)
Control Narrative
IO List



Do your PSVs
look like this?

PSV Workflow

- **Pre-Site Visit Work**
 - Review Available documentation
 - Heat and Material Balances
 - PSV registers
 - PFDs/P&IDs
 - Equipment Lists
 - Compressor and Pump vendor information
 - Marked up P&IDs for site-visit and reviewed with team



PSV Workflow



Site Visit Work (If necessary)

Walk Down Highlighted Items

- Take photos
- Redline P&IDs if necessary
- Note inaccessible items
- Sketch Isometrics
- Capture nameplate information



Post-Site Visit

Consolidate information
Organize Photos

PSV Workflow

Perform PSV Calcs

- **Analyze scenarios**
- **Use advanced tools that import data directly into calculation files**
- **Provide summary lists of deficiencies**
- **Provide recommendations for remediation**

Remediation Work Packs






















- **Provide Redlined P&IDs for approval**
- **Provide Isometric drawing for proposed fixes**

Example Calcs

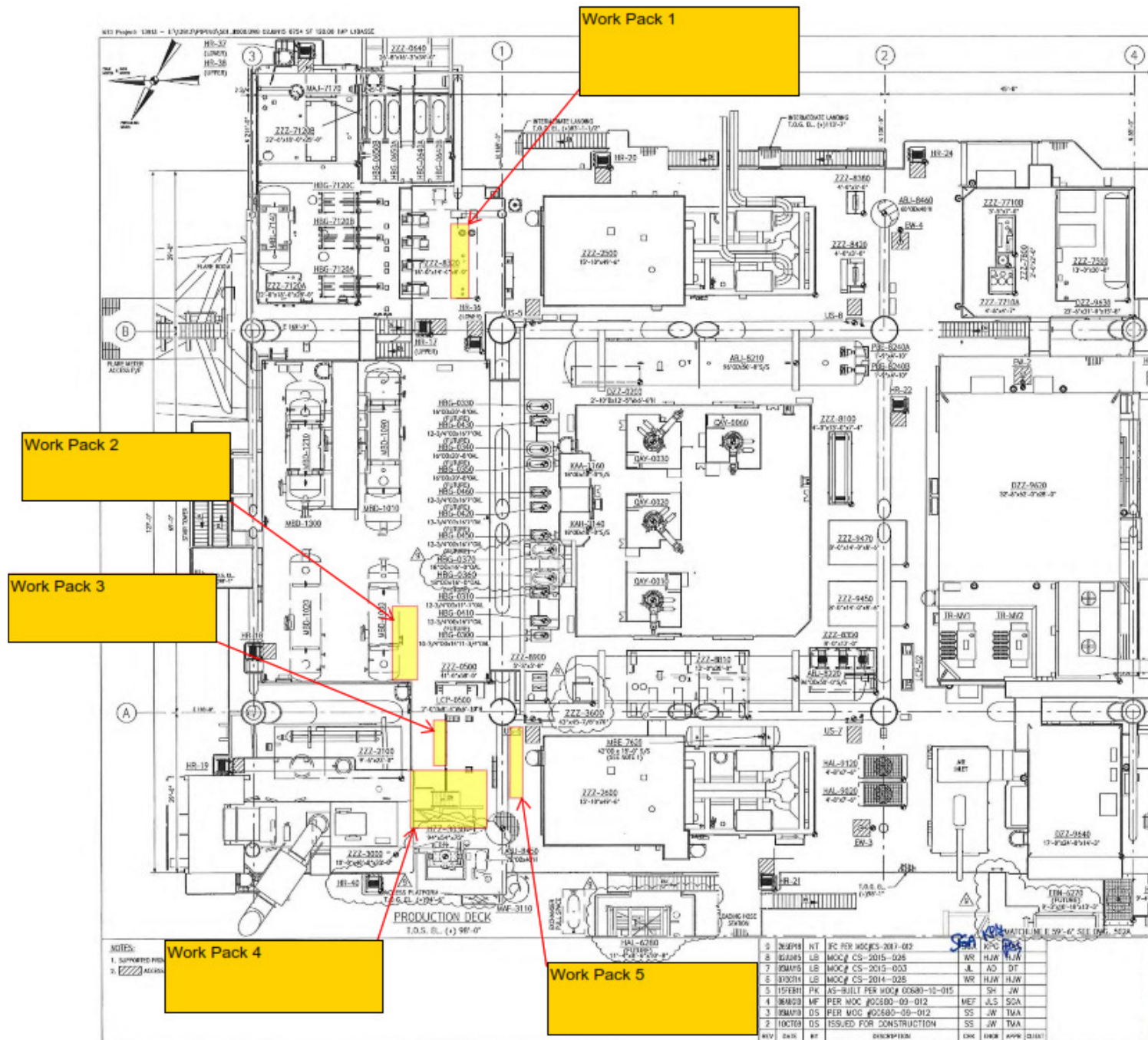
Open Separate PDF file – about a 15 minute run through of excel based software and appropriate documentation

What do you do with the calculation when finished?

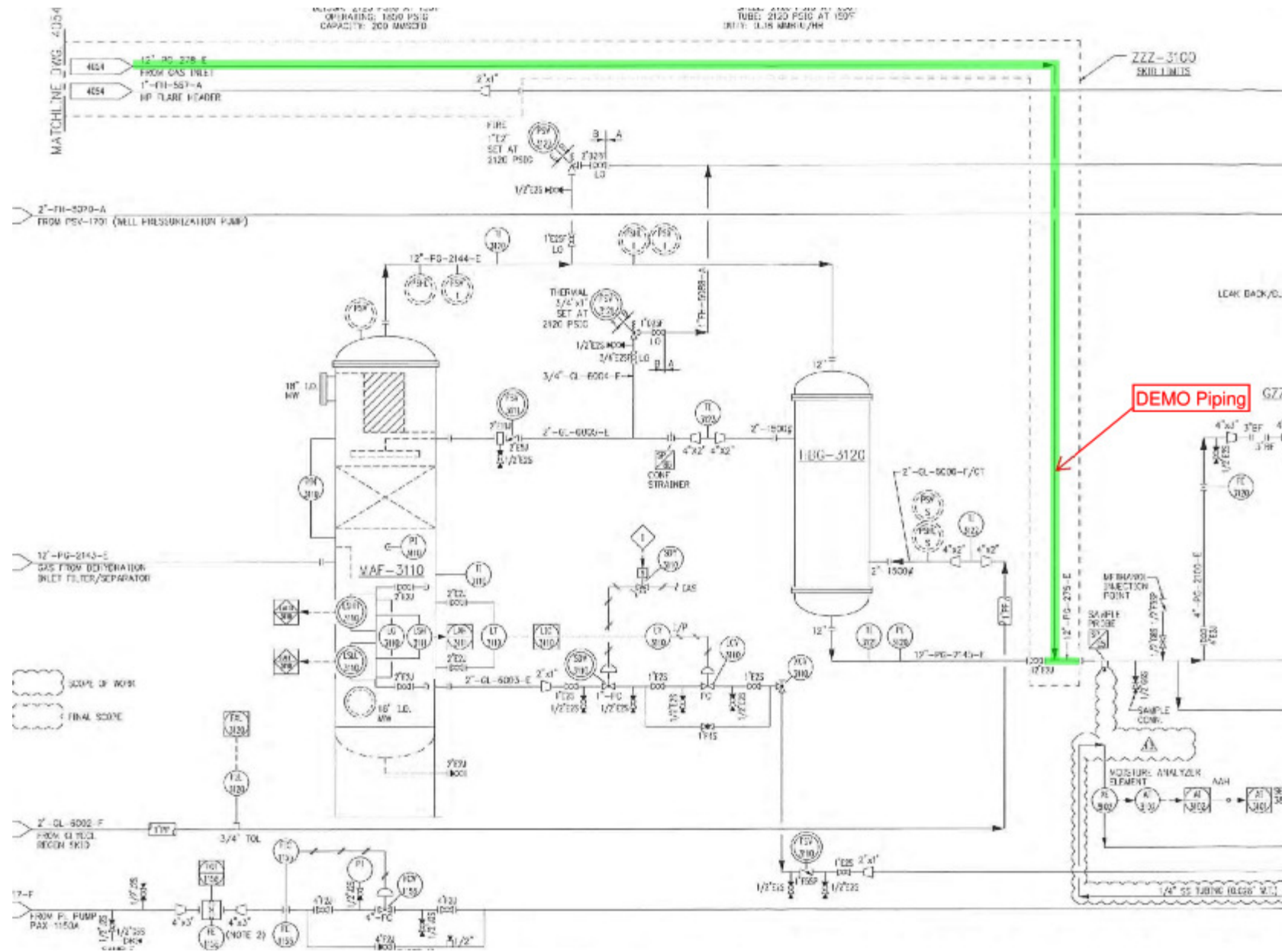
- **Store the documentation**
- **Ensure it is properly labeled and accessible for audits**
- **Ensure the operators and engineers responsible for the site have access**

 PSV-0010
 PSV-0020
 PSV-0030
 PSV-0060
 PSV-0100
 PSV-0101
 PSV-0110
 PSV-0111
 PSV-0140
 PSV-0141
 PSV-0150
 PSV-0151
 PSV-0160
 PSV-0161
 PSV-0170
 PSV-0171
 PSV-0300
 PSV-0301
 PSV-0310
 PSV-0311
 PSV-0351

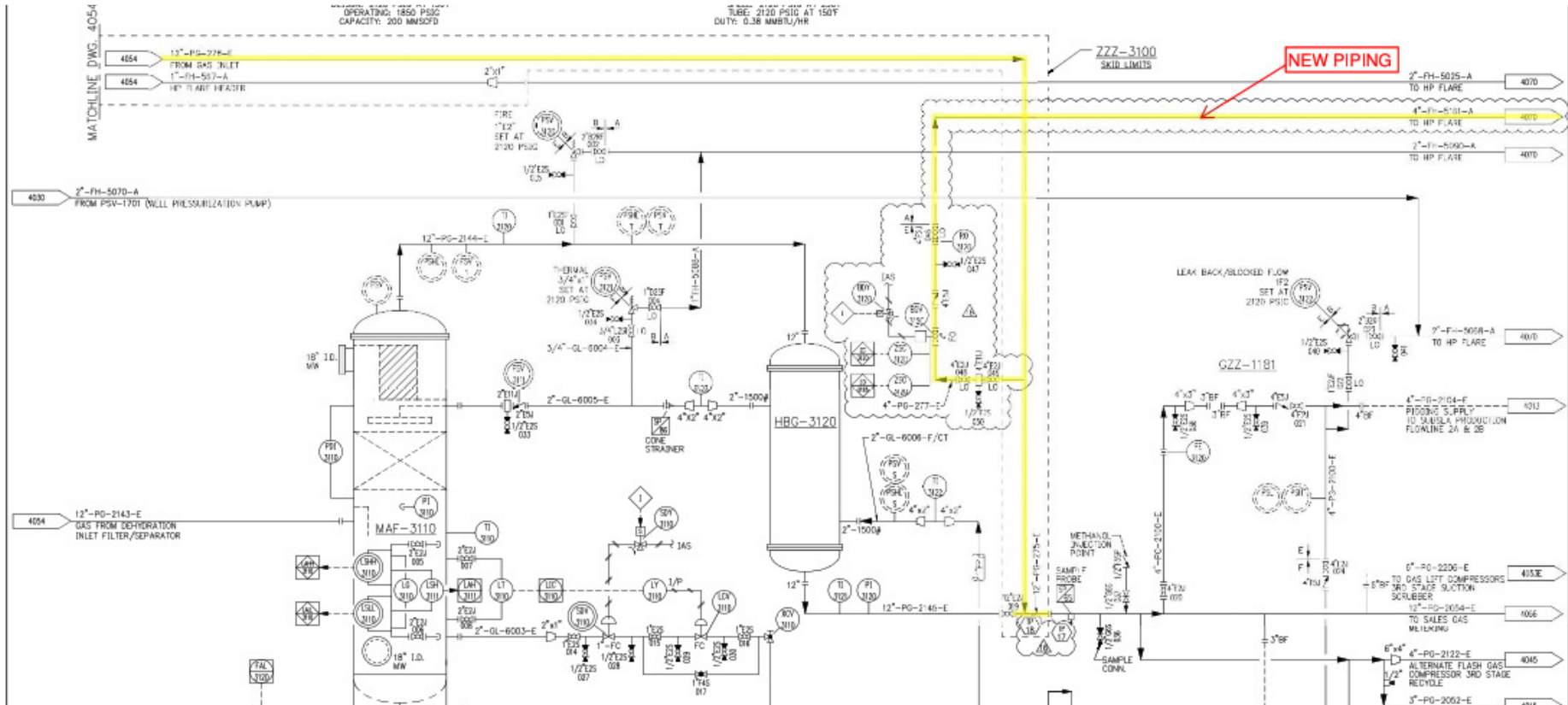
Remediation Work Pack



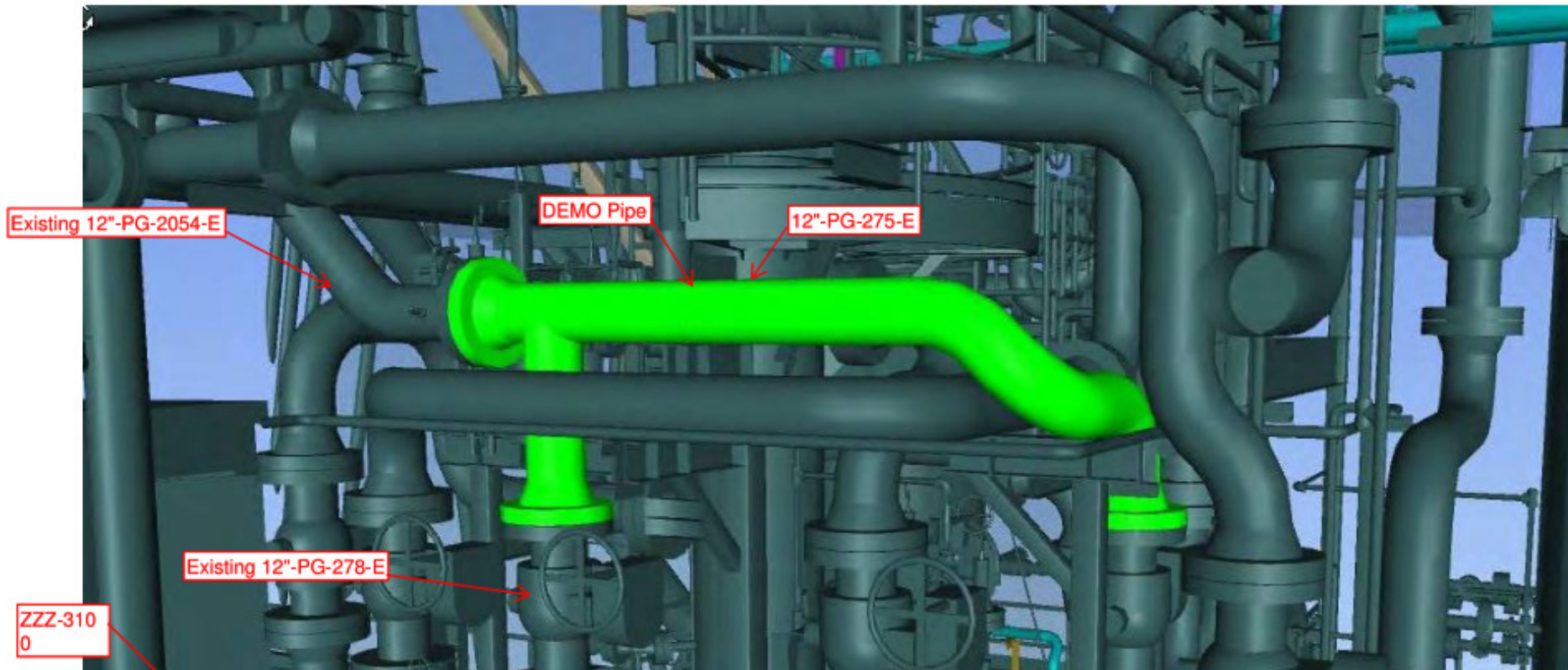
Remediation Work Pack



Remediation Work Pack



Remediation Work Pack



Also include:

- Isometric Drawings
- Installation Details
- Cut Sheets

In Summary



- Why – Keep your people and facilities safe!
- When – if you have an audit coming up, have had process changes, or notice deficiencies
- How:
 - Review PSI deliverables
 - Perform a site visit to gather data if needed
 - Perform Calculations or update Documents
 - Remediate Identified Issues
 - Store the data and documents

Why Arion?

- Arion is a full service multidiscipline EPCm contractor
- Significant Onshore and Offshore capabilities and experience
- Covers Pipeline, Upstream, Midstream and Downstream
- Relationship focused, with accountability, respect and trust
- Performance oriented (our goal = always on budget and on-schedule)
- Safe, Predictable, Reliable, High Quality Projects
- Innovative Project Execution Strategies



*Our purpose is to deliver successful projects every time
by revolutionizing the process
through Accountability, Respect, Trust and Innovation.*

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