

**North Dakota Gas Rate Case
Case No. PU-17-295
Technical Hearing
May 30 - June 1, 2018**

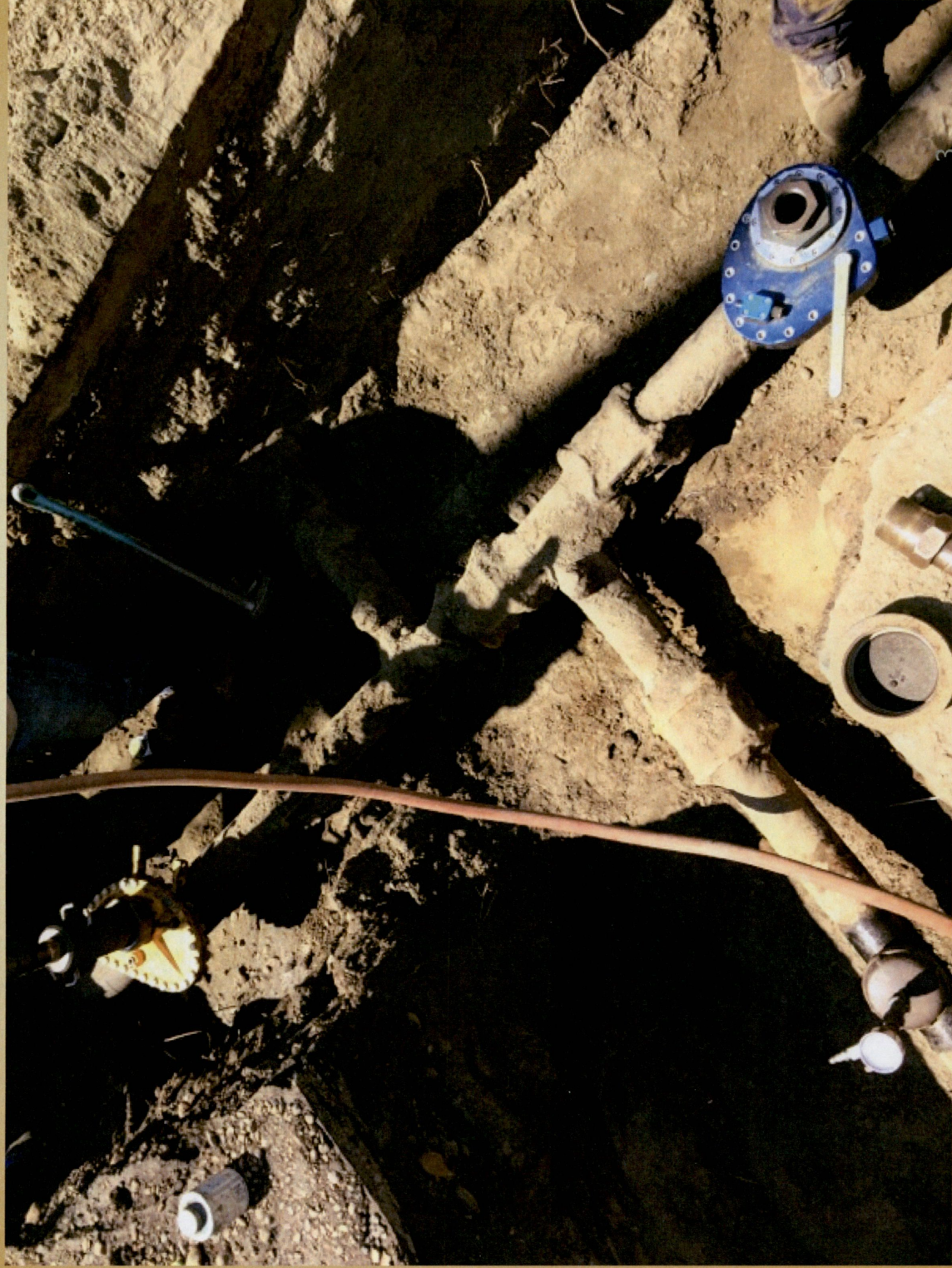
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Exhibit MDU-10**



Challenges of Operating a Safe & Reliable Gas System

- Aging Infrastructure
- Changing Regulations
- Unknown Attributes
 - Pre-Code vs. Post Code
- Increasing Costs

TYPICAL EARLY VINTAGE STEEL
MECHANICAL FITTING CONSTRUCTION



2018 Main & Service Line Replacement Projects

- Taylor - Early Vintage Steel Pipe
- Fairview - Early Vintage Steel & Plastic Pipe
- Gladstone - Early Vintage Steel & Plastic Pipe
- New Salem - Early Vintage Steel & Plastic Pipe
- Eldridge - Early Vintage Plastic Pipe
- Barlow - Early Vintage Plastic Pipe
- Cleveland - Early Vintage Plastic Pipe

System Safety & Integrity Program Drivers

- Recent Fatal Incidents
- PHMSA Integrity Management Program
- Aging Infrastructure
- Proactive vs. Reactive Approach
 - Industry wide
- Better Understand Threats
- More defined systematic approach to identified replacement projects
- Funding mechanism to avoid frequent rate cases

PHMSA Integrity Management Program (IM)

- Federal Requirement under PHMSA Pipeline Safety Regulations Part 192
- Objective to Develop a IM Model To Better Understand Distribution Systems & Identify Threats
- IM Eight Threat Categories:
 - Corrosion
 - Equipment Failure
 - Incorrect Operation
 - Outside Force
 - Natural Forces
 - Excavation
 - Joint Failure
 - Other

Montana-Dakota's System Safety & Integrity Program (SSIP)

- Structured Replacement Plan
 - Early Vintage Steel Pipe (EVSP)
 - Pre 1970
 - Early Vintage Plastic Pipe (EVPP)
 - Pre 1983 - Main Focus
 - Post 1982
 - Inside Meter Sets

SSIP Project Prioritization

- EVSP
- Higher Risk Pipe Identified By:
 - MDU DIMP Model
 - Subject Matter Expert Input

SSIP Project Prioritization

- EVPP
 - EVPP Study
 - Determine Presence of Low-Ductile Inner Wall Characteristics
 - Determine Life Expectancy of Specific Vintages
 - Results used to further develop DIMP Model

EVPP Study Project Selection

- Based On System Size & Vintage
 - Smaller Projects; 4000' - 13,000'
 - Eldridge - mainly 1971 pipe
 - Barlow - mainly 1981 pipe
 - Cleveland - mainly unknown vintage
 - Working with Industry Groups on R&D & Sampling
 - American Gas Association - Aldyl A White Paper
 - Gas Technology Institute- Operations Technology Development Consortium

SSIP 2019-2022 Projects

- SSIP 2019
 - Glen Ullin - EVSP/EVPP
 - Mandan Low Pressure - EVSP/EVPP
 - Dickinson Low Pressure- EVSP/EVPP
- SSIP 2020-2022
 - Mandan Low Pressure - EVSP/EVPP
 - Dickinson Low Pressure - EVPP/EVPP

SSIP Customer Benefits

- Safety
 - Excess Flow Valves
 - Unlocatable/Unknown Facilities (811)
- System Integrity & Reliability
- Construction Efficiencies



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