Station Design Considerations

Meter & Regulator Station Design
Design Data

- Minimum / Maximum Pressures
- MAOPS
- Design Pressures
- Test Pressures
- Minimum / Maximum Flows
- Future loads
- Gas Quality
Siting

- Preliminary station design
- Space requirements (lot)
- Electric, phone, other
- Fence, walls, gates (drive & man)
- Buildings, enclosures
- Vehicular protection
- Other land rights (including aerial, mining & building setbacks)
- Other Locations / Options
Siting
Station Layout

- Filters / separators
- Heaters
- Block valve setting(s)
- Meter setting(s)
- Regulator setting(s)
- Pressure recorder
- M & R building foundation(s)
- Telecommunication building
- Pipe supports & foundation(s)
Regulator Sizing & Selection

➢ Over-pressure protection
  ❖ Monitor regulation
  ❖ Relief valve(s)
  ❖ Shut-off valve(s)

➢ Parallel or Redundant Runs
  ❖ Run sequencing

➢ Token relief
Meter Selection

- Meter type
  - Orifice
  - Diaphragm
  - Rotary
  - Turbine
  - Ultrasonic
  - Other

- Single run

- Multiple runs
Inlet & Outlet Piping Sizing

- 40 mph (58.7 ft/sec)
- 60 mph (88 ft/sec)

Can you afford pressure loss?

Meter and Regulator Headers
- 13.6 mph (20 ft/sec)
- 20 mph (29.3 ft/sec)
Valves & Fittings

➢ ASME/ANSI CLASSES
  ◆ pressure, temperature rating
➢ Material grade (pipe: Grade B, X42, etc.)
➢ Wall thickness
➢ Valves
  ◆ Ball, gate, plug
    o Weld
    o Flanged
Regulator Control Lines

- Tap(s)
- Size
- Location
- Supply gas
By-Passes

- Station
- Meter run
- Regulator run
  - One valve
  - Two valves
  - Regulator
Station Pressure Drop

- Valves
- Heaters
- Separators
- By-pass
- Piping
Instrumentation

- Communication medium
- Sensors
  - Pressure transducers
  - Temperature transducer
  - Meter signal
- Pressure recorders
  - Mechanical
  - Electronic
Design for Installation

- Above / Below Grade
- Valve Hand Wheels
- Height of Building vs. Meter / Regulator Settings
- Ease of Replacement
  - Weight of equipment
- Future – Regulation / Meter Replacement
Design for Operation & Maintenance

- Space between settings
- Space between runs and building walls
- Height of settings
- Crane
Other Considerations

- R/W’s, Easements
- Permits
- Public concerns
- Environmental
- Costs
- Reliability
- Future
  - Growth vs. decline
Questions?