Purpose-Fit Portable Multi-Phase Production Measurement System

Presentation created by James Cron
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Conception
Key Points

• Measurement system design occurred over several iterations.
• Final design and modifications for the measurement skid were made with delivery in summer 2008.
• **Key vessel indices:**
  – *Design/Welding code:* Per ASME B31.3 design code, w/ 10% X-ray radiography of welds
  – *Coating:* Vessel and Piping will be internally coated.
• **Separating System**
  Accuflow Jr. multiphase metering system, consisting of:
  – 10” diameter pipe separator
  – 2” diameter gas flow line
  – 1” diameter liquid flow line
Key Points

- Trailer custom made by Prairie Trailer in Minot, ND.
- Measurement skid was mounted on trailer and positioned.
- Software was used to mock up the outside building, position of windows, etc.
- Final design was reviewed by builder, electrician and Ward Williston Safety Coordinator.
Construction
Key Points

- Building construction was the source of largest delay due to resources.
- Building and electrical labor and materials both sourced locally (Ron Gustafson Builder, Bottineau Lumber and Northland Electric).
- Heated hoses, major valves procured from Jasper Engineering from Bismarck.
- Minor materials procured from Eng Hardware of Sherwood and various oil field supply stores in Mohall and Westhope.
- Pulling vehicle purchased from Theel Motors in Bottineau.
- Foam applied to bottom of trailer for insulation.
- Live oil samples were collected and analyzed.
Completion
Key Points

• First test in December of 2008.
• Shake out lasted several months.
• Trailer snowed in for nearly two months.
• Total of 9 wells have been tested over various time periods (24 hours to two weeks).
• Overall results very good. Field people have acclimated well and testing cycle time and hookup have been reduced.
Project Observations

• Overall design works well; using the corriolis meter offers repeatable results.
• Results have offered significant insights (individual well production and oil cuts) that have impacted development plans.
• Opportunity exists to standardize and reduce costs for other skids.
• Low points have been the heated hose performance and gas metering accuracy. Both have resulted in lessons learned for hose procurement and measurement facility design.