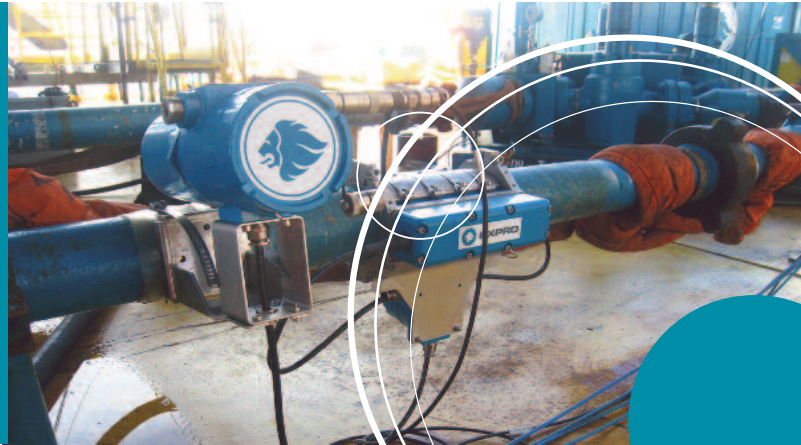




/ Expro Excellence Meters

Sonar surveillance to facilitate gas well clean up



Objectives

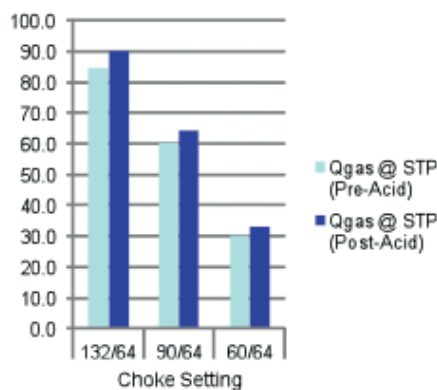
- Expro was contacted by a major operator in Asia to perform a series of well surveillance operations during the acid treatment of four offshore wells
- The client was interested in detecting gas break out during well clean-up operations and determining when flowing conditions changed from liquids to gas
- Additionally, the client was interested in the steady state gas production rate before and after the well was stimulated at several choke settings in order to understand the deliverability of the well
- Flow velocity data is a safety critical measurement to ensure the flow velocity does not exceed ANSI B31.3 guidelines

Expro Excellence

- Expro used both PassiveSONAR™ and ActiveSONAR™ to provide an indication of the cross over flow changes - the PassiveSONAR meter reported liquid to bubbly liquids to gas changes and the ActiveSONAR reported the gas rates
- One 4" clamp-on ActiveSONAR flow meter was installed on the well test pipe work upstream of the choke and desander unit and recorded real-time liquid and gas rates during and after well unloading
- The ActiveSONAR meter, positioned upstream of the sand filter, recorded the gas flow rate for approximately 50 hours before, during and after the acid treatment – during this time changes were made to the choke setting with the meter tracking changes in flow velocity

Value to client

- The ActiveSONAR meter recorded liquid flow rates during the unloading operation, which quickly switched to gas rates of up to 237 feet per second, confirming the well was on steady gas production
- The gas flow data indicated the acid treatment resulted in an increase in the gas rate of 5-8% - this rate of change would not have been quantifiable by a differential pressure across the choke method
- The ability of the ActiveSONAR meter to switch over from liquid measurement to gas measurement almost immediately offered significant advantages, as did the high turndown ratio to measure low and high gas velocities
- During the clean up, an unexpected flow rate decrease detected by the ActiveSONAR meter indicated debris trapped downstream of the sand filter – this would have caused damage to any in-line flow meter, such as traditional wet gas or multiphase flow meter



Flow rates pre- and post-acid

- No production shutdown
- No pressure drop or permanent pressure loss
- Reduces HSE risk
- Compact: can be transported by helicopter
- Can be installed and commissioned in one hour

Contact

For further information, please visit:
www.exprometers.com/contact
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