

Expro Excellence

# Expro Delivers Successful Unconventional Gas Flowback in HPHT, High H<sub>2</sub>S Environment

Well Flow Management | Well Testing



## Objectives and background

- Multi-stage Frac operations were performed on 3 x wells, followed by long-term well testing to assess the formation potential for further development
- This marked a strategic shale gas fracturing campaign in the Middle East, presenting several challenges:
  - Unexpectedly high H<sub>2</sub>S levels (over 10%) were encountered during the initial well flowback to the open pit
  - High post-fracturing wellhead pressure (7,500 psi), 15K rated frac plugs, and an H<sub>2</sub>S wellbore environment

## Expro Excellence

- A closed loop flowback and well testing system and chemical injection setup were integrated to remove H<sub>2</sub>S
- Sour liquids were collected in surge tanks and transferred to treatment tanks, where H<sub>2</sub>S scavenger was injected
- Treated flowback liquids were stored in a storage farm
- Sweet liquids were transferred, filtered, and re-injected into the C annulus of Well 3 for disposal, ensuring no risk of casing damage
- A 90ft high vertical flare stack replaced the horizontal flare, supported by a gas dispersion simulation study with various scenarios
- A second choke manifold was added behind the main choke manifold to mitigate choke washout risks
- A SONAR™ Meter was clamped on the pipe to closely monitor Coiled Tubing return, maintaining a balance of "1 bbl in and 1 bbl out."
- A knock-out vessel replaced the 3-phase separator
- An emergency flowback line was added to enable circulation and safe Coiled Tubing retrieval in case the main flowback line was obstructed or eroded by return chunks or proppant

## Value to the client

- Delivered a safe and efficient unconventional gas well flowback operation in the Middle East
- Deployed a fully closed-loop solution to handle challenging HPHT conditions with H<sub>2</sub>S levels exceeding 10%
- Completed 43 fracturing stages across three wells without any premature screen-out
- Operated for 370 days without any non-productive time (NPT) or health, safety, and environmental (HSE) incidents

### Bespoke solution



### Landmark campaign

