Descale EA-36 flowline on DP-A to achieve STOG of 300bpd by November 2018

Background/Business Case

Currently EA-36 which is High Pressure (HP) well flows through the Multi Phase Flow Meter (MPFM) rather than through the HP production header. This is because of an observed production gain of circa 1000bpd when the well flows through the MPFM. Consequently, a deferment of 1000bpd is usually incurred during monthly well tests when the well is taken off the MPFM for a period of 7-10 days. Analysis shows that the Flow Line Pressure (FLP) spikes when the well lined up to the production headeran indication that the flowline may be restricted. Recently, significant amounts of scale were removed from a diverter valve on the flowline confirming that indeed, the flowline is restricted. There is therefore an opportunity to permanently increase production by circa 1000bpd by de-blocking the flowline of EA-36 using descaling solvents and freeing up the MPFM for well tests without any associated deferments.

| | • | _ | |
|-------|------|-----|-------|
| Ura | act. | וכו | 00 |
| - 110 | ect | ш | La.I. |

| | <u>Milestones</u> | <u>Timeline</u> | Action Party | |
|---|--|-----------------------|---------------------|--|
| • | Data Gathering | 1st Sept - 10th Sept. | Belema | |
| • | Work Scoping costing | 10th Sept15th Sept | Belema/Nnamdi | |
| • | Develop execution strategy | 15th Sept 20th Sept. | Belema/Nnamdi | |
| • | Secure Approval for budget & associated shutdown | | | |
| | | 20th Sept 30th Sept | Chris Ugochukwu | |
| • | Mobilize vendor to site | 24th Oct 26th Oct | Belema/Nnamdi | |
| • | Execute descaling | 26th Oct 29th Oct | Belema/Idara/vendor | |
| | Monitor performance | 29th Oct 30th Nov. | Belema/Ubong | |

High Level Timeline

| | | The rever Timemie |
|---|-------|-------------------|
| • | L0/L1 | -15th Sept. 2018 |
| • | L2 | - 30th Sept. 2018 |
| • | L3 | - 24th Oct. 2018 |
| • | L4 | - 26th Oct. 2018 |
| • | L5 | - 30th Nov. 2018 |
| | | |

Benefits Forecasted

- Production gain of circa 1000bpd net oil for 10days every month.
- Circa 300 bpd STOG on EA-36 and elimination deferment during monthly well test when EA-36 is taken off the MPFM
- Eliminate back-pressure effect on EA-36.
- Avoid degradation of EA-36 flowline integrity.
- Return EA-36 to its normal operating header without production loss.

Critical Success Factors

- There is a 40% chance that descaling EA-36 alone may not give the desired solution as other wells (EA-20 and EA-26) also show similar behaviour
- Getting the right mix of solvents and efficacy of descaling solvents
- Successful approval to carry out descaling activity on the run.
- Reduction of expected gain due natural well decline between period of analysis to execution

Team Members

- Sponsor: Meshach Maichibi
- Project Lead: Belema Agala
- BI Lead: Akaka Alphonsus

Project Members

- Nnamdi Abuah
- Ubong Umoh
- Andy Iboi
- Idara Ekwere Bassev Ikpeme

Copyright of Shell International RESTRICTED CONFIDENTIAL