

Hydraulic pipeline flushing

Client:

Chevron Nigeria Ltd

Location:

Offshore Niger Delta, Nigeria

Equipment:

Harven P6.20 flushing unit

Pamas s40

Project Background

Proserv Nigeria was contracted by Chevron Nigeria Ltd through FMC Technologies Nigeria to flush new and existing hydraulic pipelines to support a second BOP on board the Pacific Boma drillship.

Solution

The customer requirements for this project were to flush multiple 25.4 mm (1 in) pipelines with a 5% stack magic fluid solution at a flow rate greater than 60 L/min (15.85 gal US/min) to achieve a NAS 6 cleanliness level with a maximum system working pressure of 344.73 bar (5,000 psi).

To meet the customer's requirements a trial run was conducted at our Trans Amadi Facility in Nigeria, to establish if two identical pumping units could be coupled in parallel to meet the flow rates required by the client, as none of our current flushing rigs could individually deliver the required level of output flow rate.

Two Harben flushing rigs, each capable of delivering 38 L/min (10.03 gal US/min) were coupled together in parallel through a high pressure common manifold. A series of flow and pressure tests were then run, to establish suitability with the customer's requirements. The results of the test showed that the flow rate exceeded the client's requirement of 60 L/min (15.85 gal US/min) and all within the maximum working pressure of the system, making this an acceptable alternative solution.

Following this successful trial, Proserv was awarded the contract with Chevron Nigeria Ltd. In addition, standard stock 3 micron filters were also used within the flushing rig instead of the 10 micron filters, as per the procedure.

All samples were taken and tested by our technicians with the Pamas S40 unit as per the flushing procedure. The estimated duration for this project was two weeks, but the project was completed by our team within 10 days.

Conclusion

The decision to run two pumps in parallel with base testing allowed us to meet the client's specifications and timetable.

Due to the large bore size of the pipe being flushed, flow rates of 90 L/min @ 170 bar (23.77 gal US/min @ 2,465.64 psi) were achieved on site, all well within the specifications requested by the client.

The high flow rates achieved, along with the more efficient 3 micron filters allowed us to record fluid cleanliness levels of NAS 4, well above the NAS 6 levels required.

Benefits

- Good and efficient cleaning
- Shows Proserv adaptability and initiative to provide solutions where no other options are available
- Now allows us to provide a flushing equipment package that exceeds our previous maximum flow rates of 38 L/min

