

F-22 A Reduced intervention start-up time

Introduction

Oseberg Sør has reduced the time for intervention for startup of new wells by 2 days using new pre-installed tubing shear open unloading (UNL) and gas lift valves (GLV).

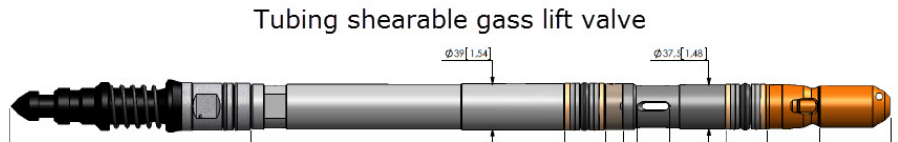
Background

Based on the goal to have intervention less start-up of new wells, Oseberg has looked at different solutions. On Oseberg Sør all oil producers have gas lift and normally all wells is completed with 3 SPM with dummy valves installed. After all test had been performed, and the well handed over to operation, intervention scope has been to replace the dummy valves with two UNL and one GLV – a total of six runs during startup of the well. Petroleum Technology Company (PTC) has developed a new tubing shear open UNL and GLV. The valves have been run in UK sector with success but not in Norway. The time saved by pre installing the new PTC valves is estimated to approximately 2 days of intervention.

A Life of Field simulation* was performed and the depth for the 3 SPM was decided. The UNL and GLV were pinned to shear during the tubing pressure test. Shear value accuracy had +/- 5% margin. There was no operational risk as the vendors do systematic workshop compatibility. Wireline KOT is the same used as for non-shear open valves. The risk assessment that followed uncovered the highest risk to be mixing the SPM's with the unique tubing shear open valves. PTC together with SPM supplier (Weatherford) made detailed information on each assembly (Weatherford/PTC serial number and planned setting depth) before it was sent offshore. Completion engineer checked the information and noted the SPM serial number and depth in both tally and DOP.



Tubing shearable unloading valve



Tubing shearable gas lift valve

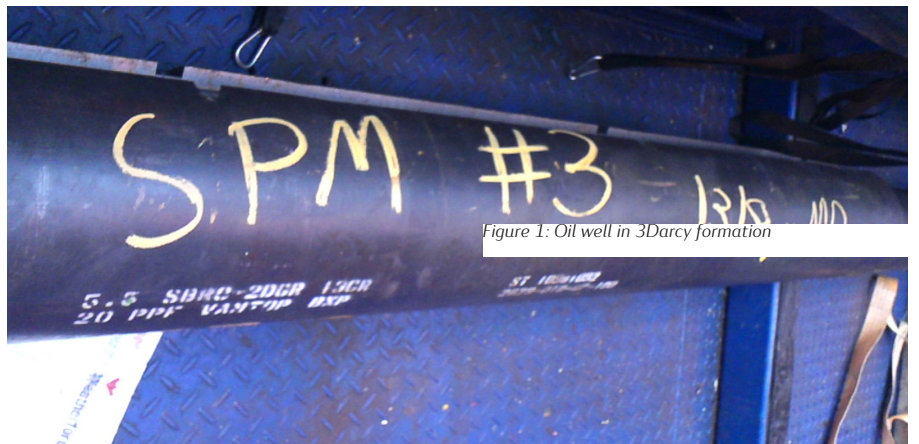


Figure 1: Oil well in 3Darcy formation

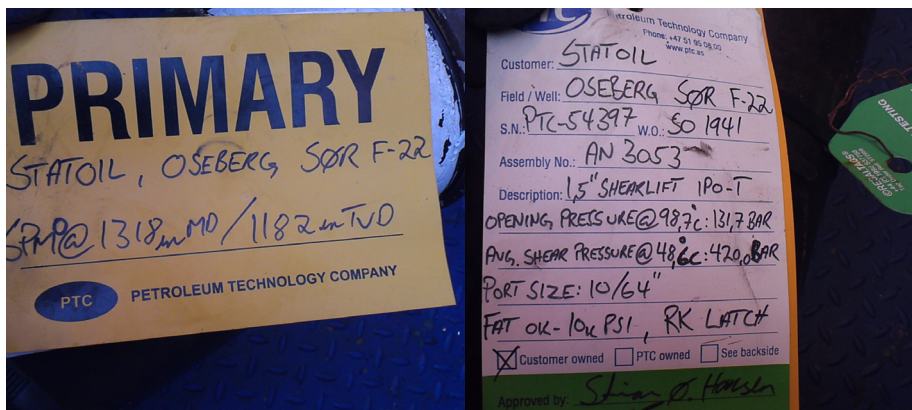
Figure 4: Each SPM is clearly marked with depth according corresponding to pinning of unloading- or gas lift valve

When the completion was installed the test sequence was as follows.

1. Set Production Packer.
2. Pressure test A-annulus.
3. Pressure test Tubing against deep glass plug. UNL and GLV sheared at this point.
4. Inflow test DHSV.
5. Set 7" x 10 3/4" ASV by pressurising hydraulic setting line.
6. Inflow test ASV by pressurising tubing and A-annulus above Production Packer simultaneously.
7. Drop ball and pressure test shallow plug to 345 bar.

A problem of setting the production packer made the need for a deep plug (run on WL) to re-set the production packer and shearing of the valves earlier than planned. The production packer was tested through a collapsed burst disk and point 4-7 above went according to plan. Oseberg Sør plan to use the PTC valves on future oil producers to save time and cost.

* Simulation which objective is to establish gas lift design which caters for all anticipated conditions. Maximise production, and eliminate or minimise need for intervention to change out valves. Life of Field uses multiple data-points to gas lift design resulting in a more robust design.



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