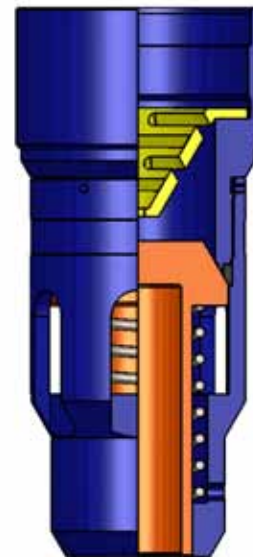
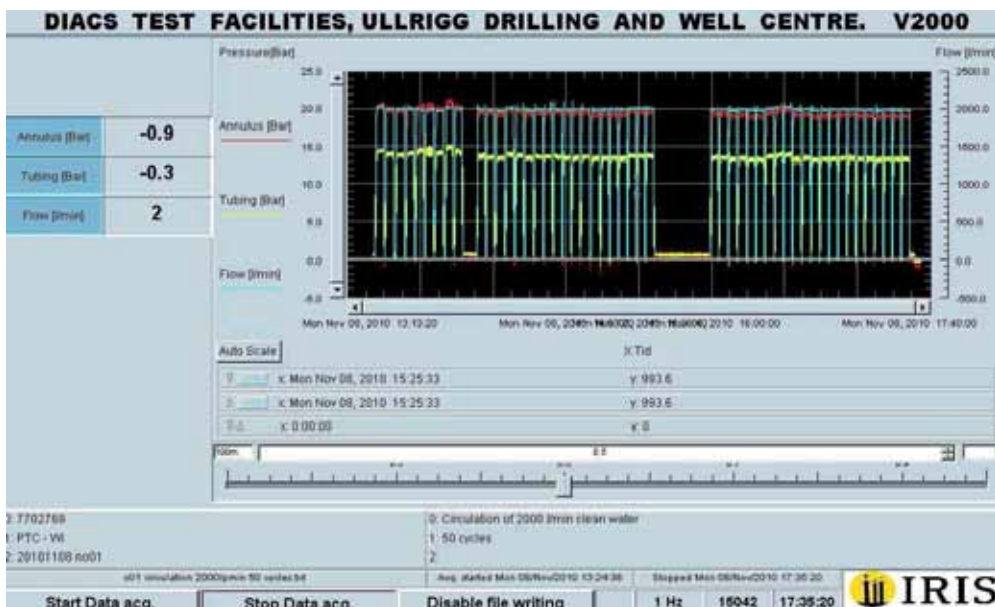
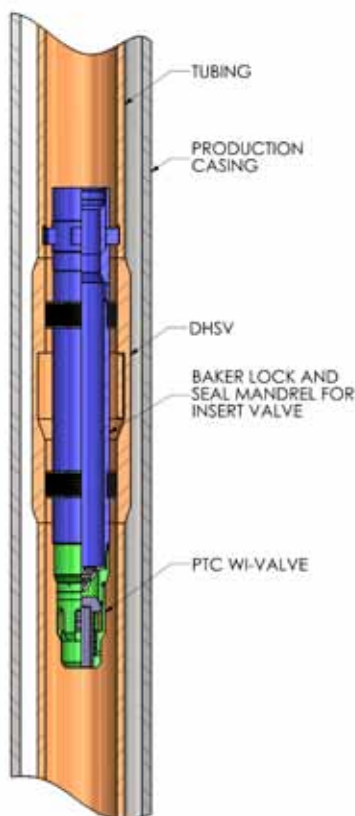


Replaced WRSCSSV with a WIV, Snorre A, Well P-12

The well P-12 on Snorre A is a water injector completed in January 1994. In 2008 the TRSCSSV was locked open and replaced by an insert safety valve, WRSCSSV.



During a RST logging intervention in May/June 2010 it was discovered that the WRSCSSV control line was blocked and consequently that the WRSCSSV could not be opened. However,



inflow testing of the WRSCSSV was OK. When the control line was blocked has not been possible to identify, but apparently sometimes between the 2008 and 2010 interventions. Consequently, it is most likely that the well has been on injection with the WRSCSSV in "closed" position. To continue injection with the well in this mode was not acceptable and during evaluation of alternative solutions to shutting the well in for workover, installation of a water injection valve was considered the preferred solution. A water injection valve is designed to allow for water injection but to close/seal for back production when injection is shut-off. The WIV is not designed with a flapper thus reducing or preventing the flapper to be damaged due to vibrations caused by the injection water flow.

The challenges from this input were several but the major discussion was whether the proposed and only available WIV on short delivery time was tested and approved for this application. Through discussions and meetings between TNE SST WT COMP, Snorre Well Intervention planning team and the supplier PTC the FAT test documentation and the available material quality discussions were thoroughly evaluated and approved. Thus a frequent inflow test program was required in accordance with exemption 87603, i.e. the valve should to be tested daily for the first 3 days,

weekly for the following 3 weeks and monthly trough-out the dispensation period.

Finally, the 4.437" PTC Water Injection Valve was assembled on a 5 1/2" Baker FVLDS WRSCSSV lock and seal mandrel and installed in the TRSCSSV insert valve profile.

The well is now back on water injection, injecting appr. 2500 Sm³/day.

Also, a qualification program based on ISO 10432 and WR 0534 was developed between Statoil, IRIS and PTC and the WIV has now been successfully tested and qualified at IRIS.



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