



**ATP 685P**

**QUEENSLAND**

**TARDRUM 1**

**WORKOVER PROGRAM**

**Pump Test Program**

**1 September 2003**

**Revision 0**

**SAMSON-INTERNATIONAL (AUSTRALIA) PTY LTD**

**Prepared by Upstream Petroleum Pty Ltd, 2003**

## Introduction

This well pump test program is to be read as part of the Tardrum-1 Workover Program Revision 6, with modifications only to the program section commencing after the Progressive Cavity Pump has been installed and function tested, and the well pump test is ready to commence.

Actual measured completion equipment depths shall be utilised in computing pump/well performance and reporting.

## 1 WORKOVER PROGRAM

Note- no cold gas venting is permissible, flare to be lit or pilot flame burning whenever flowing gas to the pit.

1. Hook up the well annulus valve to a gas meter run and bypass manifold and open/flow the well to the flare pit, with minimal back pressure, establish gas rate with PCP stopped.
2. Test run the PCP taking pumped fluid via the wing valve to the 30 bbl 2-compartment gauge tank (capacities calculated versus depth). Measure the fluid rate and tubing head pressure and check the pump performance against the manufacturer's pump curves at various rates commencing low (30-50bpd, or as near as feasible) and increasing (to 300bpd maximum, or as near as feasible- the design limit originally set for the PCP system as presently installed). Record test results on a report form separate to the DFOR.
3. Obtain an initial annulus fluid level with the Echometer. To avoid explosive desorption, back pressure will be held on the annulus once the fluid level is determined to be below 1000m/3280ft (water depth was at this depth when flowing the well in April 2003). Back pressure will initially be set at 100psi (PCP may need to be slowed or stopped to allow this to build up once water level is below 1000m). If need be, due to observed gas flow rate changes, back pressure may be increased in steps, probable maximum is 400psi. Measure gas flow rate regularly to identify changes, and monitor back pressure. Record progressive results, including pump parameters, on a report form separate to the DFOR.
4. Pump water out of the well via the tubing using the PCP, commencing at low rates. Use the lowest rate seen on pump test to be feasible, that lowers the water level (as observed by Echometer). Monitor the annulus well fluid levels using the Echometer and slowly draw down the fluid level until it is at/or below the lowest C6 perforation at 4019.3' (1225.1mRT), or as near as feasible. The water should be piped to the gauge tank so that the rate of dewatering can be measured throughout the dewatering process.
5. Flow the produced water from the tank to the flare pit to maximise evaporation. Flarepit overflow should be routed by gravity flow to the evaporation pit. Any excess water that exceeds 1000 ppm total chlorides and cannot be contained in existing pits must be trucked off location for disposal at an approved site, or water production stopped by shutting down the pump. Water should initially be sampled every hour and the salinity of the water measured to determine the proportions of well kill,

stimulation and formation fluids being produced, as well as its acceptability for disposal to the environment.

6. Adjust the pump speed to maintain a constant fluid level at or below the lowermost C6 perforation once the fluid level is drawn down. Observe returned fluids closely for evidence of solids/coal fines, and adjust rate/back pressure accordingly.
7. Measure the flows of water and gas from the well for 12 hours and if the pump is performing correctly shut in the well and rig down/release the workover rig. Note- proceed with caution if significant solids/coal fines are present in the produced fluid.
8. Take two gas samples from the choke manifold in the 20 litre evacuated sample bombs provided, once the water being pumped out of the well is determined to be formation water. Also take 2 each 1 litre water samples in glass containers, and send for analysis, as required after consultation with Samson.
9. Once the rig is demobilized from the wellsite, start the PCP and continue to test the well whilst maintaining the liquid level at or below the lowermost C6 perforation using the Echometer. Regular and frequent site monitoring will be required throughout the flow test period.
10. Take two further samples of produced gas after stable gas flows have been achieved into evacuated containers, and every two weeks thereafter as required after consultation with Samson, until the completion of the flow test. Send all samples for chromatographic analysis.
11. At test end, consult with Samson as to well suspension for later production or otherwise.

Note: Flow tests extending beyond 1 month require Ministerial approval, to be applied for via the QDNRM if after 2 weeks on test, in consultation with Samson, it appears there is potential for such approval to be required, due to continuing change in gas and/or water production.

