

Procedure No HH – PR – O46

Hours
2

EQUIPMENT NO: FREQUENCY: As Required. Carried out by rig team

DESCRIPTION OF TASK: Formation Integrity Testing

SPECIAL PROVISIONS:

Observe Safe Working Practices at all Times

1. ONLY A PERSON OF SUITABLE TECHNICAL COMPETENCY CAN PERFORM THIS TASK.
2. ALL NECESSARY WORK PERMITS MUST BE OBTAINED BEFORE COMMENCEMENT.
3. BEFORE COMMENCING WORK ENSURE:
 - a. Programme available and TBTs carried out
 - b. All personnel are aware of their responsibilities in the context of this procedure
 - c. The maximum FIT value has been verified by the Drilling Engineer
 - d. The equipment has the relevant certification
 - e. Pressure measurement equipment is in calibration and the scale of reading is appropriate to the test requirements
 - f. All high pressure lines are pressure tested to a minimum of 10% over maximum FIT pumping pressure
 - g. Areas containing high pressure are barriered off

4. OVERRIDE REQUIREMENTS:

- Pressure required for FIT in psi
- Required FIT in ppg
- Current Mud Weight in ppg
- True Vertical Depth of shoe in ft

OBJECTIVE: Set up equipment to fulfil programme for test.

BEFORE PROCEEDING ENSURE THE FOLLOWING ARE AVAILABLE:

Correct Tools

Test Equipment

Essential Replacement Parts

**OPERATION
AND
PROCEDURE:**

Formation Integrity Test (FIT)

Example FIT procedure is given below. This is a guide only and is subject to detailed well design. In any event all design and operations will be conducted in line with HHDL Well Design Planning and Operating Standards, which have been examined by the Independent Well Examination and submitted to the Health & Safety Executive (Wells Division).

An FIT is a method to test the strength of the geological formation and the cement integrity at the casing shoe by increasing Bottom Hole Pressure (BHP) to designed pressure. FIT is normally conducted to ensure that formation below a casing shoe will not be broken while drilling the next section with higher BHP or circulating gas influx in a well control situation.

The FIT is a dynamic test subject to the well status (depth, mud weight etc.) at the time.

The formula below demonstrates you how to calculate required FIT pressure.

Pressure required for FIT = (Required FIT – Current Mud Weight) × 0.052 × True Vertical Depth of shoe



Where:

- Pressure required for FIT in psi
- FIT in ppg
- Required Current Mud Weight in ppg
- True Vertical Depth of shoe in ft

Note: FIT pressure must be rounded down to the nearest psi.

1. Following the setting and cementing of a previous casing string (e.g. 13-3/8", 9-5/8", 7" etc.)
2. Drill out shoe track and 10ft of new formation, circulate bottom up and collect cuttings sample to confirm that new formation is drilled to. Pull the drill string into the casing.
3. Circulate. Confirm mud weights are even around the well.
4. Chart record all pressures during pumping
5. Close annular preventer or pipe rams, line up a pump, normally a cement pump, and circulate through an open choke line to ensure that surface line is fully filled with drilling fluid.
6. Stop the pump and close a choke valve.
7. Gradually pump small amount of drilling fluid into well with constant pump stroke. Record total pump strokes, drill pipe pressure and casing pressure. Pump until casing pressure reaches the pressure required for the FIT. Hold pressure for two minutes to confirm pressure held.
8. Bleed off pressure and open up the well. Proceed drilling operations.

End of FIT

REINSTATEMENT: ENSURE EQUIPMENT IS RETURNED TO FULL OPERATIONAL STATE BEFORE SIGNING OFF PERMIT I.E. OVERRIDES OFF, ISOLATIONS REMOVED, SHIFT SUPERVISOR INFORMED.

DEFECTS NOT RECTIFIED:

ALL COMPLETE: YES/NO

DATE:

SIGNATURE: