

# Technical Challenge No 5; February 2001

## Example: 1. Hole instability and pack off

**Mud Wt:** 1.06 S.G.

**Mud System:** OBM 80/20

**Hole size:** 17 1/2"

**Well Profile:** Vertical

**Rig Type:** Semi submersible

**Circulation Rate:** 950 GPM

Drilled 17 1/2" hole to 1096m. Initial mud weight 1.13 S.G, reduced to 1.06 S.G. In an attempt to increase penetration rate.

Circulated 15 mins. Ran wireline survey whilst continually working the string. Hole drags increasing. Recover survey. Hole packed off.

Unable to rotate or circulate. No jar in string.

Worked pipe for 3 hrs. String came free with 200 KIPS overpull. Pumped Hi - vis pill around. Large quantities of cavings in returns.

Increased mud weight to 1.09 S.G. Drilled ahead to 1105m.

Hole packed off on a connection. No rotation. No circulation. Continue to work pipe.

### QUESTIONS

- Q1:  What caused the stuck pipe?
- Q2:  How could the stuck pipe situation have been avoided?
- Q3:  What would be the most appropriate method of freeing the pipe in this situation?
- Q4:  What mud changes on future wells should be recommended to prevent reoccurrence?

### ANSWERS CASE HISTORY #1

- A1:  Packing off due to cavings.
- A2:  The mud weight should not have been reduced to increase penetration rate. Penetration rate should have been increased possibly by selecting a more appropriate bit. Once instability starts increasing the mud weight will not always quickly cure the problem.
- A3:  Gradual build up of overpull on pipe, working overpull and pump pressure to disturb the pack off, followed by cleaning hole with viscous pills and maximum circulation rate while working the pipe once the pack off was disturbed. A jar in the string would have helped. Jar in opposite direction to how the string became stuck.
- A4:  The programmed mud weight should have been maintained. The hydraulics programme requires investigation to allow increasing the circulation rate.

Additional Comments