Well Control Plan for Under Rig Floor Logging in the Gulf of Thailand

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Overview

- Concept
- Under Rig Floor Logging Condition
- Under Rig Floor Open Hole Components
- Rig Up/Sequencing
- Well Control Measurements
- Under Rig Floor Logging Results
Under Rig Floor Logging Concept

- To improve our drilling efficiency by move out the logging operation from the drilling path.
- Perform the wireline operation and drilling operation simultaneously.
Drilling Time Breakdown on an Average Well

- **Wireline logging ~15.5 HRS**
- **Plan to work offline**

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**Time breakdown**

- **SKID**: 0.5 hours
- **12-1/4" HOLE**: 4.5 hours
- **9-5/8" CSG**: 3.5 hours
- **DRILL OUT**: 6.5 hours
- **8-1/2" HOLE**: 11 hours
- **7" CSG**: 14 hours
- **DRILL OUT**: 10.5 hours
- **6-1/8" HOLE**: 30 hours
- **COND HOLE**: 7 hours
- **POH FOR LOG**: 6.5 hours
- **LOG**: 9 hours
- **ADD LOG**: 9.5 hours
- **2-7/8" TBG**: 0 hours
- **CMT TBG**: 0.5 hours
- **RELEASE**: 0.5 hours

**Total Time Breakdown**

- **40 HRS**
- **70 HRS**

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*Note: The diagram above illustrates the time breakdown of different drilling stages.*
What conditions are required?

- Batch drilling.
- Predictable hole stability and well control environment.
- A mind-set that repeatability and process standardization are possible both on the rig and in the office.
Benefit of Under Rig Floor Logging

- Less rig time to drill a well.
- Less rushing to pick the tubing X-nipple locations in each well after the log is obtained.
- Tool problem has less impact to operation
- Extra wireline logs may be run with no rig time impact
"How does it work?"
"How does it work?"

Skid over to next well and start URF logging ops on previous well.

URF Open Hole Logging
“How does it work?”

**URF Open Hole Logging**

Q: What do we do if well control concerns are an issue?

A: Log on the rig floor and then run tubing.
“How does it work?”

We are logging the previously drilled production hole here.

We are drilling the next production hole here.

We are logging the previously drilled production hole here.
Under Rig Floor Open
Hole Components

- Diverter Sheave to center over well
- Pressure Control and Riser System
- Hydraulic Control system for well control equipment
- Work Platforms for access the valves
- Trip Tank for URFL operation
“A-Frame Installation”

URF Open Hole Logging

Upper A-frame

Lower A-frame

Mating plate

BOP Deck

Vertical Access ladder
“How does it work?”

While Drilling 6-1/8” Hole

URF Open Hole Logging
“How does it work?”

While Drilling

URF Open Hole Logging

BOP Deck

Drilling BOP’s above

BOP Riser

Temporary BOP Assembly

Wellhead

Wellhead Deck
“How does it work?”

Rigging Up for URF

URF Open Hole Logging

A-frame Swivel
Sheave above

BOP
Deck

Temporary BOP Assembly

Wellhead

Wellhead
Deck
Sequencing

Well 1 | Well 2 | Well 3 | Well 4 | Well 5 | Well 6
---|---|---|---|---|---
Time 0 | Valve A | Valve B | Valve C | | |
Time 1 | Drill | | | | |
Time 2 | Log | Drill | | | |
Time 3 | Run Tubing | | | | |
Time 4 | ND Valve A | Log | Drill | NU Valve A | | |
Time 5 | Run Tubing | | | | |
Time 6 | ND Valve B | Log | Drill | NU Valve B | | |
Time 7 | Run Tubing | | | | |
Time 8 | ND Valve C | Log | Drill | NU Valve C | | |
Time 9 | | Run Tubing | | | |

Red = Rig Floor Activities – Critical path
Green = URF Activities

Three 12” Ball Valves & Times for moving them
Well Control Measurement

- Go/No Go Chart
- Roles and Responsibilities
- Well Control Decision Tree
- Evacuation Plan
“Go/No Go” Chart

- Barite Sag, Mud Properties, Kick Tolerance
- Swab Gas
- Hole Condition
- Well Control Incidents
- Weather

- 22 criteria for “Go/No Go” decision out comes
Well Control Decision

- Philosophy
- Understand the priorities
- Secure the well
- Kill the well
Well Control Decision

Trees

- Secure well for URFL
- Cable out of the well
- Cable free in hole
- Cable stuck in hole
- Cut cable in hole
Decision Trees lead to Well Control Response

- Skid Rig back to well
  - Retrieve wireline tool
  - Trip in hole
  - Fishing the wireline tool
  - Bull Head
- Bull Head
Under Rig Floor Logging Results

Total savings (Jun 07 – Jul 09)

- Saving 40.4 Rig days
- Open Hole 76 wells from 10 platforms
- Cased Hole 31 Wells (CBL, TTP, TMDL)
- Capability of performing both open hole and cased hole log
- 5 Rigs Capability (3 Tender Assist Rigs, 2 Jack Up Rigs)
Q&A