




Fishing Techniques for Drilling Operations



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Fishing

- The process of removal of equipment that has become stuck or removed from the borehole is called fishing.
- During spring-pole cable tool days, a hook connected by a rope to the pole was used to recover lost tools.
- Fishing tools are as old as drilling tools.

Types of Fish

- Tubular
 - Drill Pipe
 - Drill Collars
 - Casing
 - Logging Tools
 - Test Tools
 - Tubing
- Miscellaneous
 - Wire Line
 - Hand Tools
 - Tong Parts
 - Slip Segments
 - Bit Cones
 - Chains
 - Junk

Catch Types

- Screw-in Connection
- Outside Grab
 - Overshots and Die Collars
- Inside Grab
 - Spears and Taper Taps
- Swallow
 - Junk Basket and Poor Boy Basket

Well Control

- Outside catch and washover assemblies generate larger swab and surge pressures and thus must be run in and out of the hole at more moderate speeds.
- Well control always takes precedence over other operations, including fishing.

Bit Cones and Small Junk

- If mudded up
 - Magnet
- If not mudded up
 - Used bit below two junk subs
- If no hole can be made
 - Mud up and run junk basket
- Basket Unsuccessful
 - Wash past with used bit
- If no hole can be made
 - Mill junk with concave mill

“Twist Off”

- **Do not attempt to catch fish without mud.**
- If top of fish is clean dress circulating, releasing overshot with mill guide, slips or grapples, pack off rubber, and cut lip guide
- Run below jar and bumper sub assembly
- Condition hole
- Engage Fish

Causes of Stuck Pipe

- Cuttings and Cavings
 - Pipe may not move either way and circulation may be restricted or absent
- Keyseat
 - Pipe more likely to move downward than upward and circulation almost always present
- Differential Sticking
 - Up & down movement restricted but full circulation is generally present

Freeing Stuck Pipe

- Above 400 meters try surface jars
- Differential sticking spot a lighter fluid
- Run stuck-pipe log or freepoint device
- Back off with string shot
- Screw in with jar-bumper sub assembly
- Disengage and washover if necessary
- Sidetrack, skid, or abandon

Milling

- Types of mills
 - Flat bottomed
 - Concave
 - Watermelon
 - Tapered
 - String
 - Pilot
 - Bladed
- High speed and high weight do not yield high R.O.P.
- Insert magnets in possum belly and keep them clean
- Inspect and clean stack as need

“Know When to Quit”

- For wells planned above 1500 meters, when the cost of fishing is equal to one-half the cost of drilling to the same point again, the rig should be skidded in the case of oil wells or sidetracked in the case of gas wells.

Fishermen

- *“Always choose the fisherman with the most gray hairs.”*
- **Problem:** Operators are at the mercy of the fishing company.
- **Solution:** Offer a cash incentive to the onsite fisherman and to the fishing company if the fish is banked within a set time period.

The Drilling Team

- Engineering must approve tool and procedure selection and control the well.
- Geology must prepare an evaluation of the well's progress as a prospect.
- Accounting must keep day to day costs and projections to advise the operations people who must choose what course to follow.

My Advice

- Never attempt to retrieve a fish without mud in the hole.
- Run a stuck-pipe log first so that the recovery operation can be planned properly.
- After dressing an irregular fish top, run a pilot mill if subsequent back off is needed.
- When jarring with the swivel attached, secure the hook with duct tape, sash cord, or rubber tie-downs.