



Training report

Fishing Operations

by

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'From the petroleum industry's earliest days, when tools stuck downhole, drilling stopped. Money and time evaporated. An oil well fishing expert took over'

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Fishing definition

In petroleum sector, fishing is the technique used to remove any stuck object in the wellbore. Three cases are encountered when it comes to fishing:

- open hole, when the fish is not inside a casing
- cased hole, when the fish is inside casing;
- through-tubing, when it is necessary to fish through the restriction of a smaller pipe size, it is also called "tubing".

A "fish" can be as a stuck pipe, broken pipe, drill collars, bits, bit cones, dropped hand tools, sanded-up or mud-stuck pipe, stuck packers, or other junk in the hole.

Washover runs, overshot runs, spear runs, wireline fishing and jar runs are among the many fishing techniques developed to deal with the different varieties of fish.

The key element in fishing includes an understanding of the dimensions and nature of the fish to be removed also well bore conditions should be taken into consideration.

Fishing tools

During our internship at DOSCO we found numerous fishing tools. They are listed below:

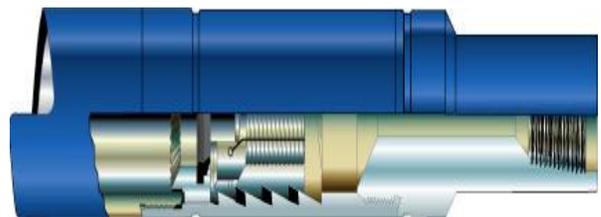
a- Overshots

The overshoot is the basic **outside** catch tool and is probably the most popular of all fishing tools. Overshots are used to externally engage, pack off, and pull a fish. They are designed with a helical groove in the bowl, and a grapple or slip made to fit in is now almost universally used.

Most overshots consist of a bowl, top sub, guide grapple or slip, control, pack-off, stop and perhaps some additional accessory. The overshoot bowl is turned with a taper on an internal helical spiral and the grapple which is turned with an identical spiral and taper, is fitted to it.



overshoot at DOSCO



b- Releasing Spears

Spears are used to catch the **inside** of a pipe or other tubular fish. When it is difficult to use an overshot, spears are used. However, spears are more useful than overshots for fishing jobs such as pulling liners and packers, picking up parted or stuck casing.



The spear is a versatile tool. It can be run in the string above an internal cutting tool or in combination with other tools, saving a trip into the hole. Milling tools may be run below the spear to open up the pipe so the spear can enter and catch.

c- Reverse Circulation Junk Basket

Bowen Reverse Circulation Junk Baskets are designed to effectively catch junk by utilizing the reverse circulation principle. Small junk objects may be successfully deflected into this Junk Basket and retrieved, which would not be fished out by other junk baskets.

This are used to retrieve all types of junk that accumulates at the bottom of a well. This junk may be such objects as rock bit cones, broken slips, bits of wireline, various hand tools, slivers and debris from twisted-off drill strings, milling cuttings, etc.

In operation, the circulating fluid is jetted outwardly and downwardly against the full circumference of the hole, where it is deflected in a manner that directs all objects into the long hollow barrel of the basket.



Jarring stuck pipe or tools

A complete jarring string consists of an appropriate catching tool or screw-in sub, a bumper sub, an oil jar, the desired drill collars, an accelerator jar and the work string. The overshot or spear on the bottom catches or engages the fish. The bumper jar is for jarring downward, either to dislodge the fish or to help release the catching tool. The oil jar gives an upward blow, the drill collars furnish the weight necessary for a good impact, and the accelerator speeds up the jarring movement and compensates for the travel in the oil jar, while saving the pipe from compressive stresses.

Bumper jar is a mechanical slip joint. In addition to delivering impact blows to fish, bumper jars are used above catching tools, such as overshots and spears. If the tools tapered grapples or slips become stuck on the mandrels or in the bowls, they may be jarred down off the tapers by bumper sub. This releases the tool from the fish.



Mills

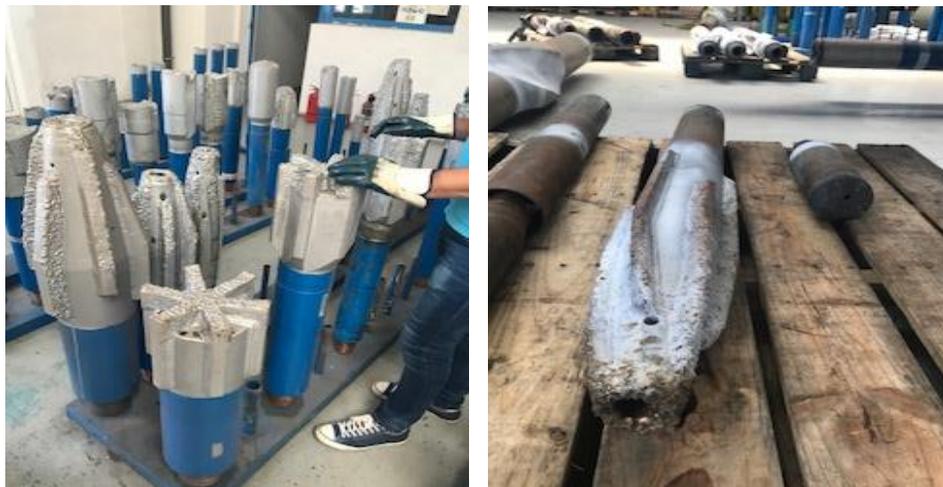
Junk Mills are used to mill away metal objects in the hole that cannot be retrieved with grappling tools or junk baskets.

Cement Mills are designed to excel at drilling through cement or drillable plugs. These mills contain hundreds of carbide chips for cutting and offer ample circulation area to carry away cuttings.

Taper Mills ream out restrictions, collapsed casing and liner sections and debur whipstock window and casing. The lower end of these mills, with its small diameter, enters the collapsed section of casing or liner..

String Mills are excellent for reaming spots in casing and extending windows of whipstocks.

Pilot Mills are design for milling casing, liners, rotary shoes or large-ID tubing. With inserts staggered along the cutting blades, these mills can achieve high penetration rates with minimal wear.



When a fishing professional is unable to determine which fishing tool might work best to retrieve the fish, an **impression block** is used to get an impression of the fish and allow the professional to know with what exactly he or she is dealing.

Fishing a well may take days to complete, and during this time, drilling cannot occur, although the operator is still responsible for drilling fees. Some drilling contractors offer fishing insurance, making operators not responsible for rig fees during fishing operations.

About DOSCO

We enjoyed our internship at DOSCO. In fact DOSCO has more than 35 years experience of providing its customers with rentals supplies and services within the oil and gas industry. DOSCO offers services in drilling wells and exploration, production tests, work over jobs and environment protection.

DOSCO's fishing division provides a full line of cased hole and open hole tools run by experienced workers.

The fishing Division provides the oil and gas industry with a complete line of tools and services including:

- Internal and external wellbore tubular catching
- Professional milling services
- Large range of mills
- Wash-over tools
- Hydraulic fishing jar services
- Internal hydraulic casing cutting equipment
- Wellbore clean out services
- Side-track systems

DOSCO has:

- Taper Mills, for milling in tight spots in tubes; recommended for liner
- Viper Mills; for milling internally or externally of a plugged tubular fish
- Cement Mills; for light milling like float collars
- String Mills; for cleaning out casings and liners
- Super Junk Mills
- Impression Block; to determine the position and the top of the fish
- Junk magnet to remove small debris with magnetic properties.

References

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