Technically Advanced Tools and Services for Downhole Fishing

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Fishing Services provides a full line of cased-hole, open-hole and thru-tubing downhole fishing tools that are expertly applied at the well site by knowledgeable fishing tool supervisors that are among the best in the business. Fishing Services' personnel have more than 1,500 years of advanced land and offshore fishing experience, ensuring customers will receive the best tools, equipment and service in the industry.

Our strategically located, full-service Fishing Services facilities operate around the clock, seven days a week to service customers in the U.S. and internationally.

Ensuring Safe Operations

- Open- and cased-hole fishing services
- Cutting and milling services
- Thru-tubing services
- Casing exit systems
- Foam units
- Remote-controlled power swivels
- Circulation systems
- High-torque wash pipe
- Packer services
- Fishing jar services

Fishing Services’ technically advanced mills, cutters, casing exit systems and other downhole fishing tools are manufactured by KNIGHT Manufacturing to ensure a quality product and outcome, every time. Examples of Fishing Services’ commitment to new product design, development and manufacturing include the Excalibur™ single-trip whipstock, Advantage™ casing exit system and innovative thru-tubing indexing tool.
Fishing Services’ line of proprietary one-trip casing exit systems have performed at a 95% first-run success rate. The X-1 Single-trip Whipstock System—part of Fishing Services’ Excalibur™ Casing Exit line of tools—provides a cost-effective and efficient means to exit cased wellbores. X-1 systems have been run successfully in single-string casing exits, multiple-string exits and multi-lateral well applications. The X-1 system has proved to have superior performance with top-drive, kelly-drive, power swivel or downhole motor drive power.

The X-1 whipstock comes in a stiffback concave and anchor that can be configured to exit multi-lateral as well as single exits. The X-Slide comes standard in 1.5, 1.9, 2.4 of 3 degree concaves. The X-1 Slide design proves advantageous with Fishing Services’ “Armor Cutter” mill design since it allows maximum cutting speed during the casing exit. The stiffback style lets Fishing Services’ personnel to exit the hole at any angle or direction—even low-side exits.

**X-1 SYSTEM ADVANTAGES**

- The X-1 system offers a simple design to ensure quick and easy setup and hassle-free operation.
- Tapered angle allows powerful exit from casing, while maximizing window length for ease of tripping drill string assemblies.
- Stiffback bottom-trip design allows activation of the anchoring mechanism to be triggered with a bridge plug or any false-bottom form.
- Bi-directional slips on the anchor system will not permit the whipstock to slide or rotate once it is set in the casing.
- Hook slot design allow for easy retrieval of the whipstock.
- The unique threaded back at the top of the concave allows a second method of retrieval using a die collar.

**X-Finder Window Re-entry System**

Fishing Services’ patent-pending X-Finder Window Re-entry System offers a cost-effective and efficient way to locate and re-enter existing windows in cased wellbores. The X-Finder system mechanically locates an existing window—both the top and bottom—then installs a properly aligned and secured whipstock as a re-entry guide. The window can then be entered or exited with full-gauge tools.

**THE X-FINDER SYSTEM ADVANTAGES**

- X-Finder Window Re-entry System can locate up to six windows.
- Assembly length of approximately 30 ft. allows for easier snubbing.
- Flow control sub allows for well control prior to and immediately following anchor setting.
- Whipstock anchors securely in place, allowing milling operations or running of shouldered tools without fear of dislodging the whipstock.
- X-Finder system is easy-to-retrieve with retrieving hook and requires a straight pull to release anchor.

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Setting the Safety Standards

As with all equipment in Fishing Services’ arsenal, the X-1 whipstock system is designed, fabricated and tested to safely meet demanding wellbore environments. All X-1 whipstock systems are fabricated from 4140/4145 HT SR to ensure utmost performance and resistance against wear.

To give customers or operators a deeper sense of security while setting the X-1 whipstock, it has been designed to shear at three distinct stages:

- **Stage 1** – The bottom plunger first shears to allow the setting tension to be applied to the anchor.
- **Stage 2** – The setting weight is applied in stages to allow the bi-directional slips to further set in the casing. A slight tension may be applied to check for set.
- **Stage 3** – The final calculated shear of the shear bolt holds the anchor in place and eliminates any tendency for movement of the slide.

**X-Junction™ System**

Knight Oil Tools’ proprietary X-Junction System makes it possible for our fishing services experts to tie back any liner in a lateral well that has fallen a significant distance from the main wellbore and cover a non-lined, unprotected open hole, regardless of which company cut the window.

- Ease of use through self-alignment
- Secured using hydraulic packers and hangers
- Designed to easily frac a well with a PBR
- Works with any window
- Can be tied back to existing drop-off liner
- Can complete two laterals per well
- Extends liner to TD
- Torque to the junction equal to the liner connection is possible
- System equipment does not hang in the window
- Hydraulic anchors and complete system are retrievable
- Can be used with any whipstock and re-attach to any liner
- With rig assist, all cleanout is motor and coiled tubing friendly
- Full gauge equipment can be run to clean out liner or sump
- Re-perforating with Tubing Conveyed Perforating is possible
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