What's in your tackle box?

By STEVE ADAMS, SCOTT MALONE,
JIM PATTERSON & RUSSELL STEVENS
Norris/A Dover Company

Picture this: Your rig is 50 miles from the nearest supply store or service center and you've just called out to your tool pusher for a specific fishing tool — does he have all the necessary tools in his box to tackle the job at hand?

For example, your fishing job may be performed in tubing sizes ranging from $1^{1}/_{4}$" through $4^{1}/_{2}$" and include rod body breaks, pin shoulders, couplings, polished rods and/or pump fishing necks. This could mean as many as 15 different tools and over 100 different slip and/or slip unit combinations may be needed for the job. Because most experienced tool pushers know the field conditions and requirements in which they operate, it is not necessary for them to have every size and combination of fishing tool available, but most carry the essential tools needed for the parameters of the job.

Fishing jobs can be simple and relatively inexpensive, or extremely difficult and very expensive. Not only is there the expense of lost production, rig time and the like, but there is the cost of fishing tool rental and possibly replacing or repairing various components of the tool that may be damaged during the job. Poorly maintained tools or inexperienced tool pushers may not be able to retrieve your fish. This implies that the success of your fishing job hinges on the availability and the integrity of the fishing tools, as well as the skill of the tool pusher who is "fishing." Therefore, it is extremely important that even the most experienced tool pushers follow the manufacturer's recommended procedures concerning the storage, transportation, makeup, fishing and breakout of these tools in order to insure a successful fishing job.

In the March/April issue of *Well Servicing*, "Fishing for Dollars" discussed the types of fishing tools used for various fishing applications. In this article, we address the proper care and use of these tools and how to evaluate their condition prior to use. Specifying the right fishing tools, insuring their good working condition and using proper make-up and breakout procedures is sure to save time and money during your next fishing job.

Storage & transportation

Fishing tools should be cleaned and protected with oil, grease or a diesel bath to prevent rust (both internally and externally). Thread protectors should be applied to

all pin ends to maintain thread integrity. Fishing tools should be stored in a box that protects the tools from physical contact with one another, or with other metallic surfaces. (A box with individual compartments for each fishing tool or component is recommended.) Fishing tools and their components should never be allowed to "roll" around in a tool box or in the bed of a truck.

Makeup

Prior to use, inspect your fishing tools for damage. **Figure 1** shows an example of cracks in the wickered slips. Wickered slips should be free of cracks and the wickers should have sharp edges — not rounded. **Figure 2** shows the inside of an overshot bowl. Note that from point A to point B, the V-seat is bent inward allowing the slip unit **(Figure 3)** to pull out through the bottom of the bowl. The V-seat should be concentric around the entire circumference on the inside diameter of the bowl in order to properly secure the slip unit when engaging a fish.

The sucker rod threads and the shoulder of the top bushing should be clean and show no signs of damage. The pin shoulder and the bushing shoulder require friction to maintain proper make-up and should remain clean and dry (no lubrication). In contrast, a small amount of thread lubricant should be applied to the pin threads to help reduce the interference between threads. Thread lubricants need to be smooth, without fillers, have a grease-like consistency and contain corrosion inhibitors (like Topco SRL) to facilitate proper makeup and breakout.

Connections should be free running and made up by hand, without resistance, to shoulder contact. Fishing tool connections do not require extra makeup torque, from the hand-tight shouldered contact position, as long as the threaded connection "snaps" together at the shouldered contact position during makeup. The shouldered area should be clean and dry.

Figure 1

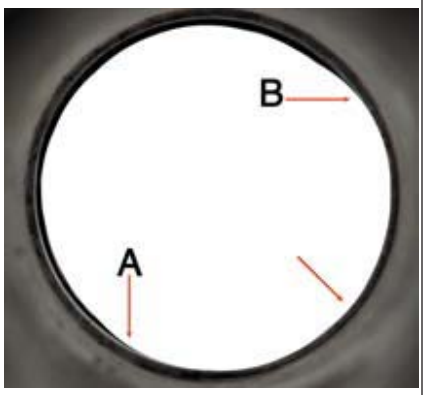

Figure 2

Unlike the sucker rod thread connection that has 10 threads per inch **(Figure 4)**, the threads connecting the top bushing and bowl of fishing tools have 16 threads per inch **(Figure 5)**. This helps the fishing tools maintain proper makeup without becoming loose during the fishing operation.

To facilitate breakout, an adjustable wrench like a Cresent® wrench can be placed on the wrench flat of the top bushing and a friction wrench can be placed over the internal thread area of the bowl. Pipe wrenches should ***never*** be used in makeup or breakout. If a pipe wrench is placed on a bowl,

Figure 3

Figure 4

Figure 5

other than on the internal thread area, damage will occur and the fishing tool's integrity is destroyed.

Fishing

The tool pusher is as important to the job as the fishing tool itself. Experienced tool pushers know how to fish various types of breaks by using techniques they have learned from other experienced tool pushers. Once the fish is engaged by the fishing tool, a slow, steady pull is required to retrieve the broken part. The fishing tool should never be "jarred" when trying to unseat the pump. If a slow, steady pull fails to unseat the pump, an experienced tool pusher knows he must pull a predetermined amount of tension in the rod string and set the brake for approximately 10 to 15 minutes before trying again to unseat the pump. After repeating this process several times, if the pump fails to unseat, the experienced tool pusher now realizes he has a "stripping" job on his hands.

Breakout

Once the "fish" is landed, the top bushing must be disengaged from the bowl in order to facilitate the removal of the fish back through the top of the fishing tool. In order to disengage the wickered slip or slip unit from the fish, the fishing tool should be placed up off the ground on a block of wood **(Figure 6)**. At this point, either strike the fish, or place another block of wood on top of the bowl and strike the wood in order to drive the fish out through the top of the fishing tool **(Figure 7)**. Do not directly strike the fishing tool with the hammer or allow any contact with any hard material substance that might cause damage to the fishing tool.

Figure 6

Figure 7

By following these simple guidelines, you will have a greater chance of successfully "fishing" your well. So know what's in your "tackle box" before you go out to the well and you will be sure to catch your "fish."