Drilling and Milling Instructions

Drilling and Milling Recommendations for EZ DRILL® Tools

The following drilling and milling recommendations apply to the EZ DRILL tools listed below:

- EZ DRILL Squeeze Packers
- EZ DRILL SV Squeeze Packers
- EZ DRILL SVB Squeeze Packers
- EZ DRILL SV Openhole Packers
- EZ DRILL Bridge Plugs
- EZ PAC-N-PIC Bridge Plugs

These packers and plugs are composed primarily of cast iron, which has poor impact properties but good abrasive resistance and compressive strength. Therefore, these materials should generally be drilled rather than milled. In some situations, however, milling may be the only feasible option, so milling recommendations are also included in this section.

Drilling Recommendations

The best drilling technique varies with conditions and equipment, therefore, operators might consider modifying the following recommendations to generate better results. Before deviating from these recommendations, however, carefully examine the effect such changes would have on drilling rate. Unless the changes would immediately increase the drilling rate, follow the recommendations below.

- **Preferred Bit type**—short- or medium-toothed hard-formation bit (IADC Codes 2-1, 2-2, 2-3, 2-4, and 3-1)
- **Rotary Speed**—75 to 120 rev/min
- **Pump Rate**—1/2 to 4 bbl/min
- **Weight**—5,000 to 7,000 lb for the first 4 to 5 in. of packer/plug and 2,000 to 3,000 lb/in. of bit diameter for the rest of the tool (Example: For a 4 3/4-in. bit, use 9,500 to 14,250 lb)
- **Other Equipment**—drill collars to provide weight and stability

If circulating fluid down the workstring during drilling, place a junk basket above the bit. If using reverse circulation during drilling, remove the nozzles from the bit and ensure that any equipment in the drillstring has an ID large enough to allow cuttings to pass.

Variations in weight, speed, and pump rate can help increase the drilling rate and reduce bit tracking. Bit tracking occurs when the teeth of the bit strike the same spot repeatedly, creating an indentation in the drillable component rather than breaking up the component.
Milling Recommendations
The best milling technique varies with conditions and equipment, therefore, operators might consider modifying the following recommendations to generate better results. Before deviating from these recommendations, however, carefully examine the effect such changes would have on milling rate. Unless the changes immediately increase the milling rate, follow the recommendations below.

- **Preferred Mill**—bladed junk mill
- **Rotary Speed**—60 to 150 rev/min
- **Pump Rate**—sufficient to maintain a minimum annular velocity of 120 ft/min (minimum mud viscosity should be 60 cp)
- **Drilling Weight**—5,000 to 8,000 lb
- **Other Equipment**—Drill collars to provide weight and stability

If circulating fluid down the workstring during milling, place a junk basket above the bit. If using reverse circulation during milling, remove the nozzles from the bit and ensure that any equipment in the drillstring has an ID large enough to allow cuttings to pass.