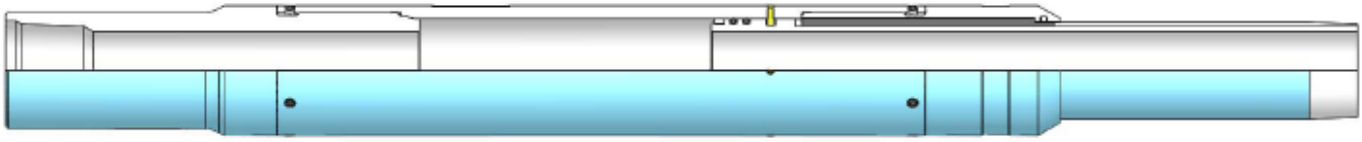
Drilling Expansion Joint



In wells where different types of heat media are used to assist in production, there will usually reside thermal expansion and contraction movements of the well bore tubular. As heat is applied to the well, the tubular exposed to the heat will expand. As this heat is reduced, the tubular will cool and contract. If these tubulars are not allowed to move, these stresses will reside within the tube's material and create damage. Tubular that are not allowed to move freely can collapse with compressive loads, and part with tensile loads. Installing an Expansion Joint (EXP) within a confined tubular string, will allow movement of that tubular string, which would otherwise have been damaged from the induced stresses.

In General, the EXP consists of an inner tube inside an outer tube. The outer tube will connect to the upper section of the tubular string, and the inner tube will connect to the lower portion of the tubular string. The EXP is designed so that the inner tube can side up and down inside the outer tube without becoming dislodged. The EXP designed movement lengths will vary depending on the application required. The Seal Assemblies that reside in these EXP will also vary on the requirements of specific wells.

When an EXP is required to be installed with tubing or casing that requires the ability to hold torsional movement, then a Drilling Expansion Joint (DEJ) would be installed. The DEJ is installed in casing strings that are deployed in open hole. This will allow the casing string to be rotated into the well to achieve a predetermined depth. The rotation of the DEJ will also allow manipulation of other tools down hole, that require mechanical movements to be functioned or set. Multiple DEJs can be installed in a wellbore, especially when packers are used to isolate different zones downhole. The DEJs also contain shear pins systems to ensure they are in an opened position when the liner is set. The DEJs are also used in completion tubing strings. They are used when the tubular string requires rotation, like setting other mechanical manipulation tools downhole. The torsional strength of the DEJ is equivalent to the tubing string run with, as well as other strength characteristics. The DEJ will hold torque at any opened position of its expansion designed length.

The length of thermal expansion and contraction can range from 0.5m to 3.0m per DEJ. More than one can be installed if more expansion lengths are required. The seal assemblies are thermally rated to seal under high temperatures and pressures.

APPLICATION:

- For use in vertical or horizontal thermal wells (CSS or SAGD).
- For use in wells where the tubular string is confined and requires thermal growth movements.
- Can be used in open hole or cased hole wells.
- For use in wells where torque transfer is required through the DEJ.

FEATURES:

- Seal assemblies with debris cleaning capabilities.
- Up to 3-meter movement within each DEJ.
- Same strength characteristics as the casing or tubing being run with.

BENEFITS:

- Reliable sealing under high temperatures and pressures, during movements.
- Eliminates extensive damages to tubular strings from induced stresses.

CORE DESIGN

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3908 - 71 Avenue | Leduc, Alberta T9E 0R8 | (780) 986-4049 | coredesignltd.com