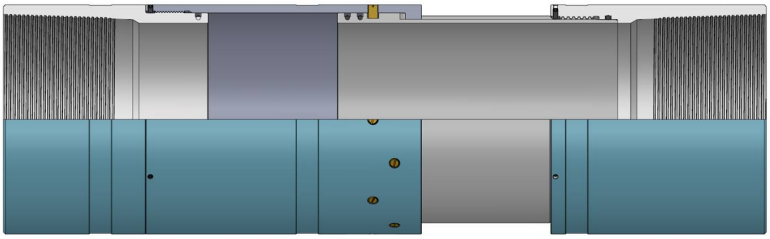
Expansion Casing Coupling



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.

After the cement has cured around a cemented liner, it places the casing string into a ridged state. When this cemented casing string is subjected to heat, the thermal expansion created, is converted to a compressive load. This compressive load can cause buckling to the tubes and failures to the connections. The Expansion Casing Coupling (ECC) is an EXP that is designed to provide expansion to each individual casing joint in the wellbore. Typically, the ECC is run on every casing joint that make up an intermediate casing string (build section) that is to be cemented into the wellbore. The ECC contain keys that transfer torque through the ECC regardless of it opened position to provide rotation to the liner. The seal system provides a gas tight seal regardless of its opened position. The ECC also contains a series of shear pins that keep the ECC in an opened position when the liner is being installed and cemented into place. These pins will shear when the thermal loads exceed the predetermined set force of the pins and then allows movement of the ECCs. The ECC design protects the sliding area cavity from becoming contaminated with cement, that would otherwise interfere with the ECC movements. Depending on the well, another Core Design Tool that provides protection to cemented liners from thermal damage is the Casing Tension Anchor (CTA). Refer to "Casing and Tubing" for more information on this tool.

The ECCs can also be installed in other tubular strings that are not cemented into place. Liners installed in open hole wells with unconsolidated sands will have unknown thermal loads at unknown locations of the liner. The ECC can provide thermal expansion throughout the entire liner length.

APPLICATION:

- For use in vertical or horizontal thermal wells (CSS or SAGD).
- For use in liners that are cemented in place and are subjected to thermal movements.
- For use in wells where a non cemented tubular string is confined and requires thermal growth movements.
- For use in wells where torque transfer is required through the EXP.

FEATURES:

- Gas tight seal assembly providing sealing in any opened position.
- Capability of holding torque at any opened position.
- Same strength and characteristics as casing coupling being replaced.
- Predetermined shear forces that start the function of the ECC.

BENEFITS:

- No additional tools or casing running procedures required. ECC installed on casing prior to delivery to rig.
- Eliminates extensive damages to tubular strings from induced stresses.

CORE DESIGN

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