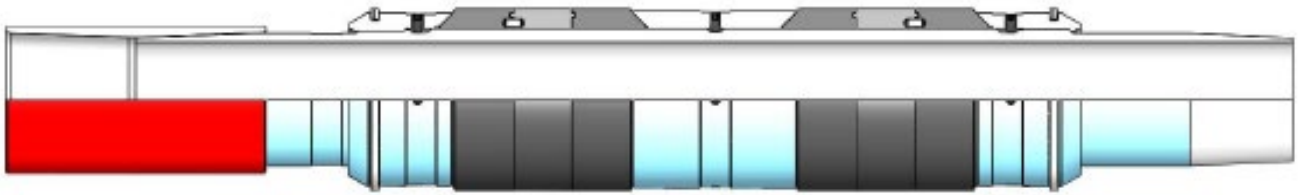


Completion Expansion Packer



When wells use steam to enhance oil production, thermal expansion and contraction of materials in these wells can cause many problems. The most common problem is the movement of casing and tubing that would otherwise be contained. Many of these wells use a completion packer, which are permanently set in the well. The completion tubing, connected to the packer and to the wellhead, must be able to expand and contract with temperature changes. Expansion joints are typically run within the completion tubing string to allow for this thermal movement.

Since many of the seals in packers and expansion joints are elastomeric materials, they can fail due to the extreme steam temperatures. Also, setting the expansion joints in the open position (cold) can be difficult using pup joints. If the required open amount is not achieved when being set, or the expansion joint fails to close/open when subjected to temperature changes, the tubing string can be damaged.

The Completion Expansion Packer (CEP) is a tool that combines the completion packer and the expansion joints and uses only steel manufactured seals that withstand the most extreme temperatures. When the well is drilled and the intermediate casing is run and cemented in place, a Polished Bore Receptacle (PBR) is placed within this casing string located above the cementing floats. When the completion string is placed in the well, the CEP is run on the bottom of the completion string and landed inside this PBR joint. As the tubing expands and contracts, the CEP travels within the PBR maintaining a seal, even under movement.

The seals are preset at surface to a calculated setting which will have to be overcome before movement of the seal within the PBR can occur. This calculated load is determined by the type of completion tools and tubing being used in the completion string. This will ensure that movement of the seals will take place before damage can occur to the completion/tubing string above the CEP. The CEP is designed with casing scrapers and corrosive materials to avoid seal sticking. The seals are preset with positive memory to enhance seal capability even under movement.

APPLICATION

- Vertical and horizontal steamed wells that require completion tubing string sealing and moving capabilities.

FEATURES

- No elastomeric materials used for sealing. All seals are steel and will not wash.
- Less seals required than typical completion strings would use.
- Seal movement is predetermined above ground. Seals are not pressure set at unknown forces.
- The CEP seals within the larger casing, allowing for larger tubing sizes to be run.
- No permanent packers required to be set inside casing. Less chance of casing damage or milling/fishing operations.

BENEFITS

- Easy installation.
- No expansion joints or permanent packers required to be installed.
- Tubing joints or coiled tubing can be used for completion, since no rotation is required to set or retrieve the CEP.



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