

## Completion Solutions

# Swellpacker® System Helps Eliminate Risks During Deepwater Tie-back String Installation

Location: North America: Well Construction

**Challenge** – A deepwater US Gulf of Mexico operator decided to run a 7 5/8-in. casing tie-back string to sting into a polished bore receptacle (PBR) during well completion. The operator needed to isolate any tie-back annular pressure from the surface while also anchoring the tie-back string into the PBR. Anchoring the tie-back into the PBR is required because of the temperature variations that occur during production operations. The liner had been cemented earlier during the well's drilling phase. The tie-back casing was essential to the completion.

### Challenge Summary

- Obtain annular pressure isolation
- Provide adequate anchoring force to keep the tie-back in the PBR during production
- Eliminate the cost of tie-back casing drillout

**Solution** – Typically, the tie-back string is “tacked” (cemented) into the PBR. Next, the casing string, with a wiper plug landing collar and the tie-back seal assembly attached, is run to depth. The tie-back seal assembly is then inserted into the PBR and tested for integrity. The casing and seal assembly is then raised above the PBR and cement is circulated down the casing into the tie-back/casing annulus followed by a wiper plug. Next, the wiper plug is landed on the landing collar and a pressure increase on the surface indicates the plug has landed. After waiting-on-cement, a drilling assembly is run inside the tieback casing, and the wiper plug, landing collar, and cement inside the seal assembly is drilled out.

After considering the operator's challenge, Halliburton recommended the operator run a 5-meter Swellpacker® system instead of performing a cementing operation. Utilizing a Swellpacker system would help enable an effective



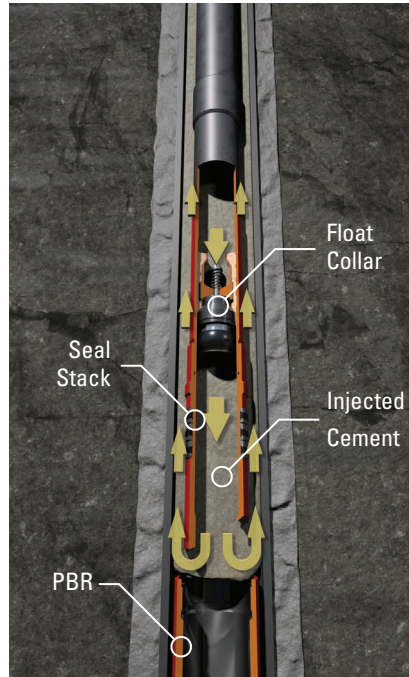
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annular seal to be obtained, thereby helping to eliminate the risk of sustained casing pressure occurring between the tie-back casing and the intermediate casing. The Swellpacker system would also enable an anchoring force to keep the seal assembly in the PBR during well production.

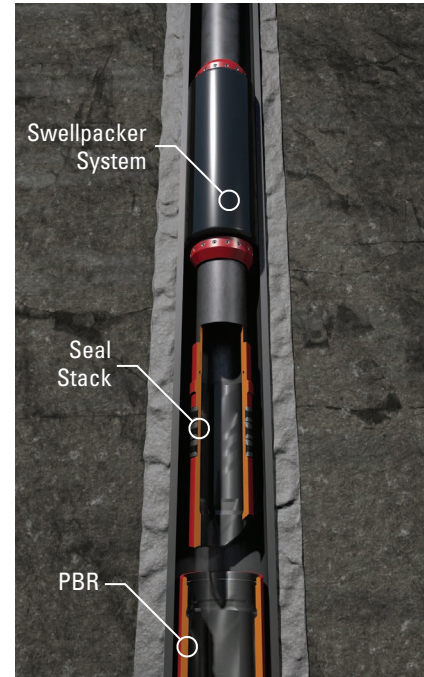
### Solution Profile

- Help eliminate the risk associated with performing a cement job in a deepwater environment
- Help eliminate the risk of stinging into the PBR with wet cement in the annulus
- Help eliminate the need for a cleanout trip to drillout cement and casing attachments

**Result** – A 7 5/8-in. casing tie-back string was installed with a 7 5/8-in. × 10-in. OD × 5-meter Swellpacker system located just above the tieback seal assembly. The casing was run in water-based mud. Once the tieback string was on depth, the string was lowered into the PBR and pressure tested to ensure string integrity. Then the tie-back was raised to remove the seals from the PBR and 20 bbl of synthetic-based mud was circulated into the annular area around the Swellpacker system. The tie-back was lowered back into the PBR, and normal operations commenced while the Swellpacker system swelled to affect a seal. Once the Swellpacker system was fully operational (5 to 9 days), the Swellpacker system held 5,539 psi and provided an anchoring force of 155,000 lb.



Conventional Method



Swellpacker System

Using the Swellpacker system rather than cementing the tie-back in place saved significant rig time since a trip to drill cement was not required. In addition, the Swellpacker system helped eliminate the risk of not obtaining an effective seal when stinging into a PBR with wet cement in the casing annular area.

CHALLENGES	SOLUTIONS	RESULTS
Isolating the tie-back seals	Swellpacker® system run on the tie-back casing that provided a secondary isolation seal for the PBR to prevent sustained casing pressure should the tie-back seals leak	Swellpacker® system was fully operational after 5-9 days
Anchoring the tie-back seals	Designed a Swellpacker system that provided <b>155,000 lbs. of anchoring force</b> to keep the tie-back seals engaged during temperature fluctuations occurring during production	There was <b>no movement of the tie-back liner</b> during the 5,539 psi pressure test
Reduce risk and save rig time	Ran a Swellpacker system to replace usual cement job, <b>helping to eliminate the risk of stinging into PBR through wet cement</b> , and time associated with drilling out cement	Operator was able to <b>save over one day of rig time</b> for an estimated savings of \$1-2 million