xSight optimization service confirmed fish attachment, prevented workstring damage

xSight™ smart intervention optimization service were used for a high-risk deepwater Gulf of Mexico workover project. The objective was to remove a retrievable high-pressure/high-temperature isolation packer set at 26,254 ft (8,002 m) measured depth (MD) to allow the operator to abandon and recomplette the well above a failed gravel pack. The operator used the downhole data acquisition tools to measure the force being applied to the fish in real time. This was a major concern since the extreme depth and well profile meant that surface gauges would be inaccurate. On the first run—to retrieve the seal assembly and anchor latch—the benefit of xSight real-time measurements was highlighted immediately. Upon tagging up on the seal assembly, the downhole real-time data measured more than 40,000 lb (18,144 kg) of force being applied on the fish before the surface gauge indicated the seal assembly was engaged. Without these readings, the rig would have continued to set down weight and could have easily damaged the weaker 2 3/8-in. regular connection used in the fishing bottom hole assembly (BHA).

After identifying the large discrepancy, the operating team, including xSight engineers, used real-time xSight service readings as the primary verification instrument and the other gauges as a backup. They verified that the seal assembly was engaged with the type “D” spear and rotated the seal assembly under tension 12 to 13 rounds to release the anchor latch. At surface, it took more than 24 full rotations before the downhole sensors measured any torque going through the BHA to the seals. At exactly 36 rounds at surface,
the torque fell off to zero while the tension reading dropped sharply and measured a tension of ~300 lb (136 kg) force still acting on the toolstring. This additional weight was due to the seal assembly (expected weight was 275 lb [125 kg] downhole) hanging from the spear. The additional weight confirmed the seal assembly had been released correctly and verified the successful retrieval before pulling out of hole.

After removing the seal assembly, the team removed the isolation packer. The downhole sensor sub and SC-1™ packer retrieval tools were picked up and run in hole. The xSight service again identified that the packer was engaged before anything could be seen at surface. The xSight service measured all of the downward and upward shear indications, confirming the packer was in the release position. After picking up to 65,000 lb (29,484 kg) overpull, the last shear indication was identified. The workstring overpull fell off and the work string began moving up hole. The team again used the xSight service to measure the additional weight of the packer hanging from the retrieval tool. After picking up slightly, the team confirmed an additional 1,800 lb (816.5 kg) of tension hanging from the BHA. The xSight downhole readings verified the packer had come free from the casing and was attached to the workstring. Without this confirmation, the operator would likely have damaged the workstring, potentially pushing it to the point of failure.

After 36 rotations the fish was released, as indicated by the sudden drop of overpull on the xSight tool.

After fish is successfully released, reading shows 300 lb increase in tension.