Case study: California

SureVIEW WIRE system extended life of nearby wells

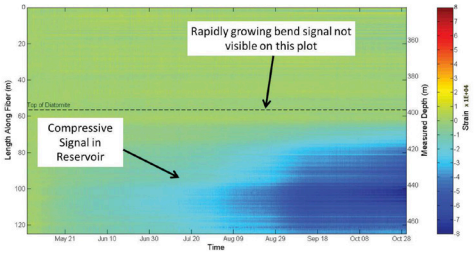
An operator was experiencing significant formation trouble in a reservoir near Bakersfield, California. A combination of subsidence and the presence of a shearing zone was continually compromising the completed wells, often resulting in well loss. Repeated trial-and-error efforts to enhance structural integrity in the wellbore were not successful.

With the prospect of continued large-scale losses in the reservoir, the operator turned to Baker Hughes, who suggested implementing the Baker Hughes SureVIEW™ Well Integrity Real-time Evaluation (WIRE) system. The SureVIEW WIRE system uses a highly sensitive fiber optic cable that can detect and differentiate minute strain changes in the well, including those resulting from compaction, shearing forces, buckling, and tubular deformations, thus helping personnel to identify and diagnose in-well conditions.

The SureVIEW WIRE fiber-optic line was prepared at a Baker Hughes facility before being shipped to the wellsite, ensuring top-quality splices and minimizing rig time. Once onsite, it was run into the well along the outside of the casing to a depth of 1,536 ft (468 m), so the Baker Hughes team could closely observe wellbore conditions across the Diatomite and Tulare geological interface. The SureVIEW WIRE system was then cemented in place and brought online.

As the SureVIEW WIRE system relayed data back to surface, it became clear that there was a strong correlation between the compaction signal the SureVIEW WIRE system was measuring and the voidage (injection minus production) due to near-wellbore production and injection activities. Using this information, the operator was able to effectively zero out the compaction and extend the life of all nearby wells by making adjustments to the near wellbore injection program. Prolonging the life of wells also meant they could save additional dollars with reduced drilling expenditures.

The operator has continued to use the Baker Hughes SureVIEW WIRE system, while also installing a second system to extend this solution to a greater part of the fiber. The systems have helped the operator reduce well loss and increase overall asset and fiber value.



Axial strain evolution of 400 ft (122 m) of casing

Challenges

- Identify damage due to subsidence and geological shearing
- Generate and test potential solutions to wellbore problems

Results

- Extended well life for all nearby wells, reducing future drilling costs
- Reduced operational hours by eliminating the need for intervention to assess well integrity
- Installed the SureVIEW WIRE structural integrity management system
- Obtained real-time measurements of compaction and casing deformation
- Provided a direct, in-situ picture of well integrity Revealed interference on the wellbore caused by nearby production and injection activities