

## ACTIVE-FLI QUICKLY DELIVERS VALUABLE, REAL-TIME WELL INSIGHTS

**APPLICATION:** Active-FLI pressure and temperature gradient survey, casing collar locator survey and bottom hole pressure and temperature monitoring.

**LOCATION:** Onshore, Texas, USA

### THE CHALLENGE

Well-SENSE was commissioned by a leading operator to perform a pressure (P) and temperature (T) gradient survey, a casing collar locator (CCL) survey and bottom hole pressure and temperature monitoring within a 1,500 ft. well near Houston. The well contained a combination of steel and fibreglass casing which FLI was required to locate, along with confirmation of total well depth. The results would be used to enhance the operator's well intelligence for future operations.

### METHOD AND RESULTS

For this project Well-SENSE employed a single-mode fibre along with Active pressure, temperature and CCL sensors in the probe, plus its own miniature surface recording device. Active sensor data was delivered in real time via the fibre-optic line throughout the project.

During the probe's descent Active-FLI provided an accurate pressure and temperature gradient survey for the entire wellbore. The bottom hole temperature data matched a prior logging run within 0.1 degrees Fahrenheit and the bottom hole pressure reading was within 4% of the anticipated hydrostatic pressure.

Whilst descending through the well, the CCL survey confirmed the depth of the steel and fibreglass casing joints, along with the total accessible depth of the well which was shallower than expected by about 57 feet. The CCL data also identified and confirmed the location of multiple geophone sensors mounted behind the fibreglass casing.

At the wellsite, rig up time was less than one hour and the P/T/CCL run-in-hole data was collected in real time during the FLI probe's descent into the well. The raw data during the descent was delivered to the customer approximately one hour after reaching total depth (TD). Real-time logging of the bottom hole readings continued for five hours after reaching TD and a preliminary analysis and report were sent to the customer immediately after the logging operation. Total rig up and down

time was approximately two hours, a step change when compared to other methodologies. A complete report was submitted within 24 hours following the end of data acquisition.

### CONCLUSIONS

Accurate, reliable and real-time downhole data was delivered by FLI in a greatly reduced timeframe, alongside improved safety, efficiency and cost savings.

During FLI rig up, probe deployment and data acquisition, the wellsite footprint and operational risks were reduced with fewer personnel and no requirement for a

wireline logging system and associated hoisting equipment. Environmental impact was reduced due to the lack of lubricants, fuel operated vehicles, power and shipping requirements for the technology.

Overall, the ease of use and ability for rapid deployment of FLI was demonstrated.

The operator confirmed FLI's success by validating the results with existing well data and embedding the new data gathered into their well intelligence. The pressure and temperature gradient survey and CCL log will be used as a reference for other logging runs in the well in the future.



The Active-FLI probe contains internal sensors plus fibre-optic line. Data is captured by a small surface recorder box.



FLI is compact, lightweight and portable.

