

# Drilling the Ahmadi and Wara shales with FLC 2000® Technology Delivers Value in the West Kuwait Oil Field

## Middle East

### CHALLENGE:

- ▶ Drilling through notorious problematic shale formations
- ▶ Drilling through multiple formations in one interval
- ▶ Wellbore instability in previous attempt resulted in stuck pipe leading to a sidetrack
- ▶ Control ECD in narrow drilling window

### SOLUTION:

- ▶ Low-invasion drilling fluid with FLC 2000 additive used for the sidetrack
- ▶ Establish and maintain level FLC 2000 technology in the drilling fluid system prior to reaching the problematic formations

### RESULT:

- ▶ Upper hole section drilled with no fluid losses or drilling issues
- ▶ Sidetrack drilled to planned TD

### CHALLENGE

Wellbore instability is often encountered while drilling Kuwait. Formations consisting of shales and vugular limestone frequently result in total lost circulation leading to hole collapse and differential sticking. In particular, the Ahmadi and Wara shales are notorious for shale sloughing and hole collapse. In one well, the 16-in. upper hole section exposed a range of problematic formations with destabilizing effects such as stuck pipe. On the first attempt to drill the well, the team experienced stuck pipe, leading to several fishing attempts and ultimately requiring a sidetrack.

### SOLUTION

In the sidetrack hole, the operator elected to use a low-invasion drilling fluid formulated with FLC 2000 technology to control the pressure differential between the formation fluids and the drilling fluid in the wellbore. The drilling fluid design ensured no significant rheological changes would exacerbate the equivalent circulating density (ECD) challenges in the narrow drilling window.

### RESULT

For the operator, using a low-invasion drilling fluid formulated with FLC 2000 was the key to successfully drilling the upper hole section through the troublesome formations. The low invasion drilling fluid completely mitigated fluid losses and related hole problems previously experienced in this section, thus delivering value to the operation. The upper hole section was drilled to total depth (TD) without losses or drilling issues.

