

# Magnus<sup>®</sup> Rotary Steerable System

## Successfully Drills Vertical and High Dogleg Curve Sections in a Permian Well

### Objectives

- Drill a full curve section with a high dogleg severity (DLS) in a horizontal well in the Permian Basin.

### Our Approach

- Weatherford deployed the Magnus rotary steerable system (RSS), HyperLine<sup>™</sup> drilling motor, and HEL<sup>™</sup> hostile-environment-logging measurement-while-drilling (MWD) system to drill the curve section in a Permian well.
- The HEL MWD system transmitted real-time data to enable high-performance directional drilling and good-quality surveys.
- Driven by the high-performance HyperLine drilling motor, the Magnus RSS kicked off from vertical at 8,990 ft (2,740 m) and worked at surface speeds from 30 to 40 rpm, downhole speeds of up to 200 rpm, and penetration rates up to 100 ft/hr (30 m/hr).
- The team adjusted within these parameters to target the planned DLS of 9°/100 ft (30 m) using a BIAS percentage (or control force exerted by the pads to push the bit) between 60 and 100%.
- The Magnus RSS achieved a maximum DLS of 9.89°/100 ft (30 m) at the bottom of the curve section.
- The full section was completed at a depth of 10,290 ft (3,136 m) with an inclination of 70° and an azimuth of 183°.

### Value to Customer

- The Magnus RSS, HyperLine drilling motor, and HEL MWD system enabled the customer to steer with precision, attain an ROP 35% higher than a motor, and drill the planned trajectory in its entirety while achieving the planned dogleg requirement of 9°/100 ft (30 m).



The Weatherford Magnus RSS features a push-the-bit design with three pads controlled independently of each other by separate motor drive assemblies.

#### LOCATION

Reeves County, Delaware Basin, U.S.

#### WELL TYPE

Onshore, horizontal, oil

#### FORMATION

Wolfcamp

#### TOOL AND HOLE SIZE

6-3/4 in. and 8-3/4 in.

#### MAXIMUM DOGLEG SEVERITY

9.89° per 100 ft (30 m)

#### INCLINATION AT LANDING POINT

70°

#### SECTION DEPTH

- In: 6,915 ft (2,108 m) MD
- Out: 10,290 ft (3,136 m) MD

#### PRODUCTS/SERVICES

- Drilling services
- Magnus RSS
- HyperLine drilling motor
- HEL MWD system

