

# MSF Liner Hanger Packer

## First systems deployed in Russia

### Background

Careful analysis of well construction design in the West Siberia oil fields is required due to the challenging conditions, reservoir depths, and pressures. These highly deviated wells include multistage fracturing completions in challenging, high-priority fields and demand improved reliability of liner top packers.

A 4½-in. P110 horizontal liner x 7-in. N80 casing is a common well completion design in much of the region. Typically, the operator sees top liner packer leakage in 10-20% of the total amount of wells, and the average quantity of wells is approximately 300 wells per year. High risks of top packer leakage have generally been attributed to insufficient set-down forces applied to the packer element at the deviated liner top. As a result, the customer had more than 1 million rubles increase in costs and production remained on standby.



### Case study facts

**Location:** Russia

**Customer:** Rosneft

### Products

- 3 systems of MSF liner hanger packers 4½-in. 13.5# x 7-in. 23-29# with five stages frac sleeves

### General well information

- MD 3,800 – 4,100 m
- TVD 2,600 – 2,900 m
- 4½-in. liner length 600 – 800 m

### Solution

In order to avoid the potential issues with getting weight down to deviated liner top that conventional compression set systems may face in these applications, a tension set liner hanger packer was suggested as a more suitable solution. NOV Completion Tools recommended our new MSF liner hanger packer available in the 4½-in. size with HNBR element for tieback operations and fracturing as an improved and more efficient method of isolating the liner top in these applications.

The liner top packer setting depth was 3,100 - 3,300 m, and each liner installation included five ball-drop frac sleeves and annular isolation with hydraulic open-hole packers.

Standard hydraulic activation of slip subassembly and packer element was performed by dropping ball to landing collar and increasing pressure within drill string. Next, tension was applied using 65k-lb overpull to verify successful deployment of the entire assembly and fully expand the liner top packer element. Setting down of drill string to top packer was a final axial movement verification. Successful annulus pressure test by 130 bar confirmed liner isolation. Running tool was hydraulically released with pressure increasing up to expected predetermined value 200 bar as per standard procedure.

All three MSF liner hanger packers provided by NOV have been successfully set on the first attempt. High reliability of NOV equipment has been field proven on deviated wells and allowed customer to reduce costs and NPT.

### Results

- New liner hanger technologies have been successfully applied in Western Siberia oilfields.
- Technical solution of NOV Completion Tools completely met customer demands and increased efficiency and reliability.
- Decreased NPT.

