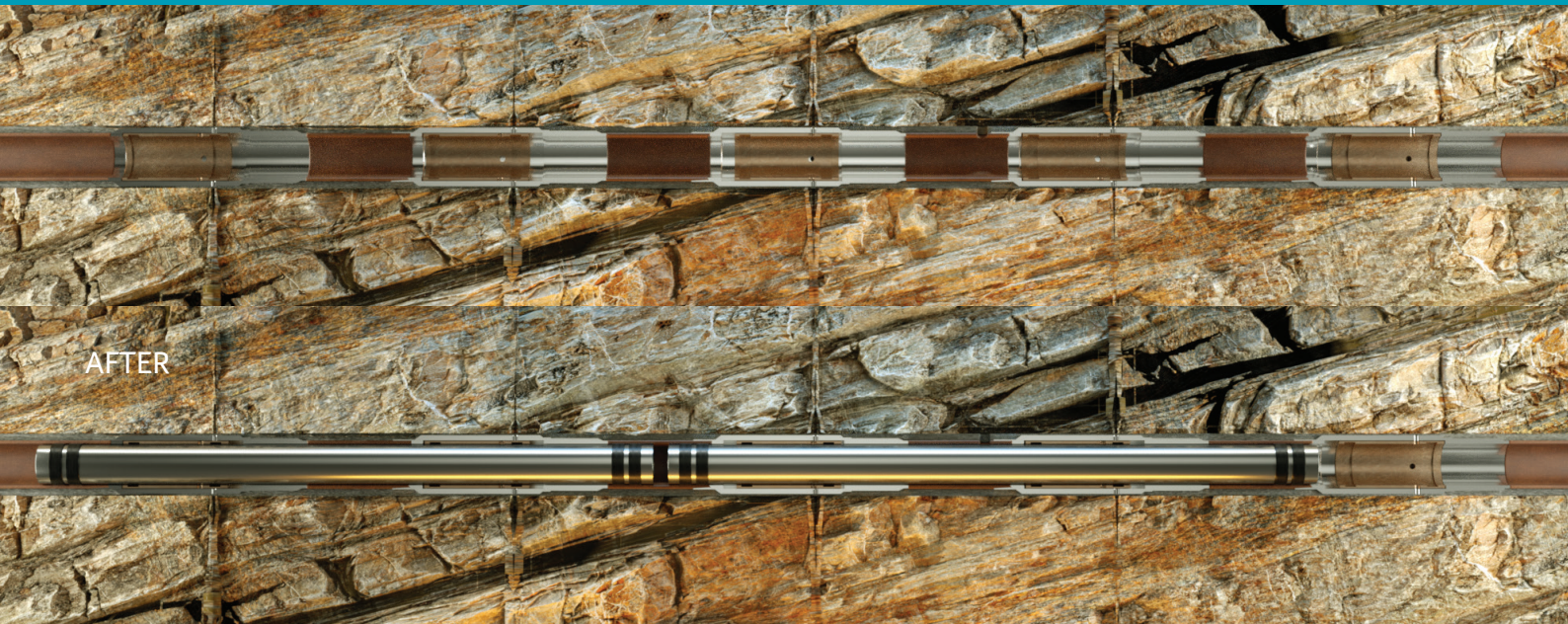


# ReLine MNS



## Hybrid frac through ReLine MNS

### PROBLEM

While fracturing a 38 stage completion, no ball signatures were seen for stages 2-5 indicating possible casing integrity issues. After evaluation, a hole was discovered in the casing between frac sleeve 35 and 36 and sleeve 36 appeared to be partially open.

### SOLUTION

- 2 ReLine MNS liners were deployed across a 1,355 ft interval covering the upper 7 frac sleeves isolating the partially shifted sleeve and damaged casing
- These 7 frac sleeves were drilled out to 3.800" ID to pass the 3.5" OD ReLine MNS system
- The ReLine MNS system was configured to expand and seal across various ID restrictions in the wellbore
- Frac sleeves did not have to be milled out to full casing drift ID
- Sleeves 6-31 (26 stages) were fractured conventionally with dropping balls below both casing patches
- Guns were used to perforate 5 stages across the 1,355 ft patch interval to allow a diverter style frac treatment to stimulate the remaining wellbore

### RESULTS

- Both ReLine MNS liners were successfully deployed and expanded in one trip each with no shoe drill out required, keeping the frac sleeves below free of debris
- The well was successfully stimulated with conventional methods below the patch and with diversion techniques across the patch
- 31 total stages were pumped across both patches from 40 BPM at 6,000 PSI allowing 6,000,000 lb of sand to be placed in the formation

### PROJECT DETAILS

**Location:** Colorado  
**Date:** February 2015  
**Well Measured Depth:** 15,883 ft  
**KOP:** 5,790 ft  
**Inclination:** 90° F  
**Casing:** 4-1/2" 11.60#  
**Total Patch Interval:** 1,355 ft  
**Patch #1 Length:** 580 ft

**Patch #2 Length:** 775 ft  
**Installed Patch ID:** 3.259"  
**Frac Rate:** 40 BPM  
**Treating Pressure:** 6,000 PSI

