In Noble County, Oklahoma, a downhole tool failure had prevented the execution of a primary cement job. Without the isolation provided by cement, the tendency in an openhole is to generate only one fracture. However, both the operator and Halliburton agreed that some type of diversion in the annulus was needed in an attempt to get multiple stimulated intervals for each stage along the lateral.

Halliburton recommended employing its proprietary AccessFrac® Service as a diversion technique to temporarily seal off the initially created fracture and promote additional fracture creation. In fact, in this instance, Halliburton designed the job to use two diversion processes within each stage in an attempt to create three individual stimulated fractures. That would virtually recreate what would be accomplished if cement was in place.

In this case, use of the AccessFrac Service performed even better than anticipated. It achieved a more effective stimulation and the well produced 46% more oil in the first 60 days than the average of wells within a 10-mile radius (based on publicly available data). Its average and cumulative production also indicated the well was more productive when compared to data for similar wells in the same vicinity.

<table>
<thead>
<tr>
<th>CHALLENGES</th>
<th>SOLUTIONS</th>
<th>RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary cement job not completed</td>
<td>AccessFrac Service employed to ensure diversion of treatment within stages</td>
<td>Multiple fractures within each stage achieved</td>
</tr>
<tr>
<td>No cement in 90% of lateral</td>
<td>Each stage isolated using composite frac plug (14 stages executed)</td>
<td>46% more oil produced in first 60 days than average of wells within 10 miles</td>
</tr>
<tr>
<td>Isolation in annulus still needed to separate stages for multiple stimulation</td>
<td>Radioactive tracer used to trace each stage to verify diversion was effective</td>
<td>Cumulative production also higher than wells in nearby vicinity</td>
</tr>
</tbody>
</table>


**CASE STUDY**

**14 stages completed, multiple fractures achieved within each interval**

**More oil produced** than wells within 10-mile radius

**Biodegradable** diverting materials withstand rigors of fracturing

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**Halliburton AccessFrac Service can deliver:**

- Volume production increases
- Better wells
- Turnkey operations
- Complete solutions
- Collaborative relationships
- Easy, safe, reliable, low-risk fractures and re-fractures

**For volume production increases and better wells, turn to Halliburton.**

Our AccessFrac services can help you maximize reservoir contact area and improve long-term production. The Service can help optimize multi-zone limited-entry fracturing treatments and enable the placement of highly conductive proppant packs in complex fracture networks. Enhanced proppant distribution can even result in using less proppant per stage. And Halliburton's diverter material is self-degrading and environmentally friendly.

The advantages far outweigh the risks. Talk to us about all your fracturing needs.

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**46% more oil** in the first 60 days than similar wells

More oil produced than wells within 10-mile radius

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