

# Case Study

# Abrasive Perforating

Abrasive Perforating Test thru Multiple Strings

Case Study No. 3202

## BACKGROUND:

There are several locations, in the Gulf of Mexico, that currently have low volume potential reserves trapped behind multiple casing strings. A test utilizing abrasive perforating technology was undertaken to determine the feasibility of conducting thru tubing re-completions to capture these currently stranded volumes.

## TEST PROCEDURE:

The test fixture was built by installing 2 7/8" tubing inside of 7 5/8" casing inside of 10 3/4" casing, eccentrically welded to simulate a best and worst case scenario. The Abrasive Perforating BHA was chained with a tool clamp to the top of the fixture with the jets aligned to punch holes along a short and long axis. Perforating began working from bottom up by pumping slurry consisting solely of sand and water. The pump rate varied while prop concentration and prop type was constant with a maximum pump time of 20 minutes.

	Test 1	Test 2
<b>Pump Rate</b>	1 bpm 159 Lpm	1.5 bpm 289 Lpm
<b>Perforating Head</b>	1.9 in 48.3 mm	1.9 in 48.3 mm
<b>Proppant Size</b>	100 Mesh	100 Mesh
<b>Proppant Concentration</b>	1 ppg 119.8 kg/m <sup>3</sup>	1 ppg 119.8 kg/m <sup>3</sup>
<b>Injection Pressure</b>	3000 psi 21 MPa	6000 psi 41.4 MPa
<b>Punch Thru Time – Short Side</b>	2:30	0:26
<b>Punch Thru Time – Long Side</b>	17:44	2:27
<b>Strings Penetrated</b>	3	3
<b>Average Perf Diamenter</b>	0.46 in 11.7 mm	0.48 in 12.2 mm

## RESULTS:

The results of the test concluded that it is possible to achieve reasonable sized perforations through multiple casing strings. A total of seven individual tests were completed with five independent variables. In one case, one of the perforations was cut in less than 30 seconds.

## TEST FIXTURE



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