

FRACTURE TREATMENT REPORT

30-039-27591

Operator: Great Western Drilling Co. Well Name: Nordhaus Federal #9
Date: 8-Jun-04
Field: Ballard Pictured Cliffs Location: 19/25N7W County: Rio Arriba State: NM
Stimulation Company: Key Pumping Service Supervisor: Paul Thompson

Stage #: 1/2 Pictured Cliffs

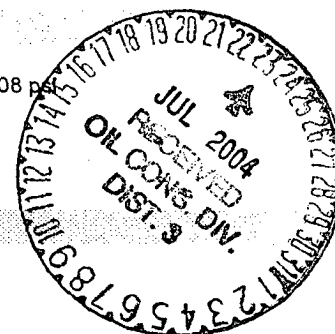
Sand on location: Design: 5000# / 60,000# Weight ticket: 5,080# / 60,460 Size/type: 40/70 Az / 20/40 Brady

Fluid on location: No. of Tanks: 1 Strap: 20 Amount: 400 Usable: 360

Perforations: Depth: 2146 - 2180' Total Holes: 68 PBTB: 2286' KB
Shots per foot: 2 spf EHD: 0.36" Loggers TD

Breakdown: Acid: 500 gal of 15% HCl
Balls: None
Pressure: 500 psi Rate: 3.5 BPM
Formation broke at 2608 psi

Stimulation: ATP: 1650 psi AIR: 35 BPM
MTP: 2608 psi MIR: 37 BPM



	Sand Stage	Pressure	Rate	BHTP	Foam Quality
ISIP:	pad	1540	36.6		70.0
5 min:	1.0 ppg 40/40	1578	34.5	1437	71.0
10 min:	1.0 ppg 20/40	1549	34.4	1467	71.0
15 min:	2 ppg	1628	35.9	1492	70.0
	3 ppg	1715	36.9	1531	71.0
	4 ppg	1612	35.2	1484	71.0

Job Complete at: 1245 hrs. Date: 6/8/2004 Start flow back: 1445 hrs
Total Fluid Pumped: 263 bbls with 380 psi
Total Sand Pumped: 5000# 40/70 Total Sand on Formation: 65,000
60,000# 20/40
Total Nitrogen Pumped: 276,106 SCF

Notes:

All frac fluid was Bloomfield City water with 2% KCl, biocide, and 20#/1000 gal guar gel, crosslinker, surfactant, foamer, enzyme and encapsulated breakers. Nolte plot was slightly positive throughout the sand stages until near the end of the 4 ppg stage when the treating pressures broke back 500 psi from 1750 psi to 1250 psi. The frac gradient based on the ISIP was 0.68 psi/ft. Installed the flow back manifold and opened the well to the pit at 1445 hrs 6/8/04 through a 1/4" choke.