

Operator Name: Petroleum Development Corp 004
Well Name: DANLEY 12-28
Job Description: Codell Refrac/ New Niobrara w/ Super LC
Date: December 6, 2004



Proposal No: 179961347A

WELL DATA

RESERVOIR DATA

Formation	Codell/Niobrara
Formation Type	Sandstone
Depth to Middle Perforation	6,816 ft
Fracture Gradient	0.90 psi/ft
Bottom Hole Fracture Pressure	6,134 psi
Bottom Hole Static Temperature	226 ° F

PERFORATED INTERVAL

DEPTH(ft)		Shots per Foot	Perf Diameter (in)	Total Perfs
MEASURED	TRUE VERTICAL			
6,724 - 6,730	6,724 - 6,730	2	0.25	12
6,901 - 6,907	6,901 - 6,907	2	0.25	12

Total Number of Perforations	24
Total Feet Perforated	12 ft

TUBULAR GEOMETRY

				<u>Top</u>	<u>Bottom</u>
Casing	3 1/2" O.D.	(2.992" I.D)	9.3 #	0	7,048
Pump Via		Tubing			

BHST has been supplied by the customer.

Please confirm casing and perforation depths with customer rep. on location.

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FLUID SPECIFICATIONS

Acid: 15% HCl

500 Gallons

Components:

5 gpt	Ferrotrol 300L	Iron Control Product
3 gpt	CI-25	Corrosion Inhibitor
1 gpt	NE-940	Non-Emulsifier

Acid Flush: Claytreat Water

2,915 Gallons

Components:

1 gpt	Claytreat 3C	Clay Stabilization Product
1 gpt	Inflo-102	Surface Tension Reducer
0.25 gpt	NE-940	Non-Emulsifier
50 ea	BioSealers	Ball Sealer

Pad: VISTAR 22 - Pad

30,000 Gallons

Components:

5.5 gpt	VSP-1	Gelling Agent
1.1 gpt	XLW-14	Crosslinker
1 gpt	Claytreat 3C	Clay Stabilization Product
1 gpt	Inflo-102	Surface Tension Reducer
0.5 gpt	GBW-23L	Gel Breaker
0.35 gpt	BF-9L	Buffers/Ph Control Product
	(Buffer to 10.45 - 10.50 pH)	
0.25 gpt	NE-940	Non-Emulsifier

Proppant: VISTAR 22 - 1-2 PPG

43,000 Gallons

Components:

5.5 gpt	VSP-1	Gelling Agent
2 ppt	GS-1A	Gel Stabilizer
1.1 gpt	XLW-14	Crosslinker
1 gpt	Claytreat 3C	Clay Stabilization Product
1 gpt	Inflo-102	Surface Tension Reducer
0.5 gpt	GBW-23L	Gel Breaker
0.35 gpt	BF-9L	Buffers/Ph Control Product
	(Buffer to 10.45 - 10.50 pH)	
0.25 gpt	NE-940	Non-Emulsifier

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FLUID SPECIFICATIONS (Continued)

Proppant: VISTAR 22 - 3-4 PPG

79,000 Gallons

Components:

5.5 gpt	VSP-1	Gelling Agent
1.25 ppt	GBW-5	Gel Breaker
	(Last 4,000 gallons of job)	
1.1 gpt	XLW-14	Crosslinker
1 gpt	Claytreat 3C	Clay Stabilization Product
1 gpt	Inflo-102	Surface Tension Reducer
1 ppt	GS-1A	Gel Stabilizer
	(First 14k Gal. of 3 ppg Stage)	
1 ppt	High Perm CRB-LT	Gel Breaker
	(Last 10,000 gallons of job)	
0.5 gpt	GBW-23L	Gel Breaker
0.35 gpt	BF-9L	Buffers/Ph Control Product
	(pH 10.45 - 10.50 during 3ppg; 10.6 during 4ppg)	
0.25 gpt	NE-940	Non-Emulsifier

Flush: CLAYTREAT WATER

2,415 Gallons

Components:

5 ppt	GBW-5	Gel Breaker
	(FIRST 1,000 GALLONS)	
1 gpt	Claytreat 3C	Clay Stabilization Product
	(FIRST 1,000 GALLONS)	

Proppants

334,000 lb 100% Sand, White, 20/40

16,000 lb 100% Super LC, 20/40

Water should be Greeley city water.

Buffer loading should be adjusted to achieve a pH between 10.45 & 10.5.

RECORD AT LEAST 1 X-LINK TIME DURING 2 PPG STAGE AT AMBIENT TEMPERATURE (DO NOT IMMERSE IN HOT BATH).

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PROCEDURE

Treatment Procedure for: Codell/Niobrara w/ Super LC

Rig up to treat the Codell formation via Casing at a rate of 24 bpm and an average surface treating pressure of 5000 psi.

Pump as scheduled below:

1. Conduct safety meeting with all location personnel.
2. Pressure treating lines to operator's specifications.
3. Pump 500 gals Claytreat Water w/ 50 Biosealers.
4. Pump 500 gals 15% HCl.
5. Pump 2764 gals Claytreat Water to breakdown Niobrara. S/D and surge balls off perms. Wait approx. 15 minutes for balls to fall.
6. Pump 30000 gals VISTAR 22 - Pad as a pad to initiate the fracture and establish sufficient fracture width to accept proppant.
7. Pump 18000 gals VISTAR 22 - 1-2 PPG with 1 ppg 100% Sand, White, 20/40.
8. Pump 25000 gals VISTAR 22 - 1-2 PPG with 2 ppg 100% Sand, White, 20/40.
9. Pump 34000 gals VISTAR 22 - 3-4 PPG with 3 ppg 100% Sand, White, 20/40.
10. Pump 41000 gals VISTAR 22 - 3-4 PPG with 4 ppg 100% Sand, White, 20/40.
11. Pump 4000 gals VISTAR 22 - 3-4 PPG with 4 ppg 100% Super LC, 20/40.
12. Flush to the top perforation with +/- 2764 gals CLAYTREAT WATER.
13. Recover fluid and test well as necessary.

Note:

1) The purpose of the breakdown is to ball off Codell in order to breakdown Niobrara with acid. A spacer w/ Biosealers will be pumped ahead of the acid in order to ball off Codell and have acid just above the Niobrara. The acid will then be pumped into the Niobrara to breakdown the formation. Please review the procedure with customer rep. on location prior to pumping in order to verify desired volume of spacer.

2) Please be prepared to pump acid and acid flush at same rate as frac treatment.

3) Please have 100 Biosealers on location in order to have excess. PDC will only be charged for actual number of Biosealers used

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FRACTURE TREATMENT SCHEDULE

INPUT PARAMETERS

TVD Depth (Mid Perforation) 6,816 ft
 MD Depth (Mid Perforation) 6,816 ft
 Perforations Number 24
 Perforation Diameter 0.250 in
 Bottom Hole Frac Pressure 6,134 psi
 Bottom Hole Static Temperature 226 ° F

				<u>Top</u>	<u>Bottom</u>
Casing	3 1/2" O.D.	(2.992" I.D.)	9.3 #	0	7,048

CALCULATED RATES, PRESSURES & HHP REQUIREMENTS

	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>
Surface Treating Pressure (psi)	5,049	4,622	4,789
Slurry Rate (bpm)	24.0	24.0	24.0
Proppant Rate (lbs/min)	3,415	965	2,560
Slurry Hydraulic Horsepower	2,970	2,719	2,817

PROCEDURE

stage	Fluid		Proppant			
	Type	Volume (gal)	Conc. (ppa)	Type	Stage (lbs)	Cum (lbs)
1	Claytreat Water	500		Breakdown Spacer		
2	15% HCl	500		Acid		
3	Claytreat Water	2415		Breakdown		
4	VISTAR 22 - Pad	30000	0.00	Pad	0	
5	VISTAR 22 - 1-2 PPG	18000	1.00	100%Sand, White, 20/40	18000	18000
6	VISTAR 22 - 1-2 PPG	25000	2.00	100%Sand, White, 20/40	50000	68000
7	VISTAR 22 - 3-4 PPG	34000	3.00	100%Sand, White, 20/40	102000	170000
8	VISTAR 22 - 3-4 PPG	41000	4.00	100%Sand, White, 20/40	164000	334000
9	VISTAR 22 - 3-4 PPG	4000	4.00	100%Super LC, 20/40	16000	350000
10	CLAYTREAT WATER	2415	0.00	Flush	0	350000
Total		157830				350000

HALLIBURTON

Petroleum Development Corp
Box 26
Bridgeport, West Virginia 26330

Danley 12-28
Wattenberg Field
Weld County, Colorado
United States of America
S:28 T:6N R:64W
API/UWI 05-123-19473

Hybrid Niobrara Cost Estimate down 3 1/2in Casing

Prepared for: Jesse Silva
August 22, 2008
Version: 1

Submitted by:
Ramsey King
Halliburton
2990 Weld County Rd 27
Brighton, Colorado 80601



HALLIBURTON

Well Information**Danley 12-28 Niobrara Refrac**

Well Name: Danley

Well #: 12-28

Tubulars

Name	Measured Depth (ft)	Outer Diameter (in)	Inner Diameter (in)	Linear Weight (lbm/ft)
3 1/2 in Casing	0 - 7500	3.5	2.992	9.2

Perforations

Interval Name/ Depth (ft)	Shot Density (spf)	# of Perfs	Phase (DEG)	Hole Diam. (in)
Niobrara B Perforation Interval / 6720 - 6730	3	30	60	0.42

Daily Workover report

Well Name: Danley 12-28

Job Type: Fracture Treatment

Date: 9/2/2008, Report #: 6.0,

Click on the 'New' button to start a new daily report.

[illegible]

Operation last 24 hours	
1	2
3	4
5	6
7	8
9	10
11	12
13	14
15	16
17	18
19	20
21	22
23	24
25	26
27	28
29	30
31	32
33	34
35	36
37	38
39	40
41	42
43	44
45	46
47	48
49	50
51	52
53	54
55	56
57	58
59	60
61	62
63	64
65	66
67	68
69	70
71	72
73	74
75	76
77	78
79	80
81	82
83	84
85	86
87	88
89	90
91	92
93	94
95	96
97	98
99	100

Well Name	Well Number	Report Start Date	Report End Date
Danley 12-28	99958	9/2/2008 06:00	9/2/2008 08:00

Operations Summary

260s both tbg/csg, 0#s surface csg, blew well down, circulated gas out, dropped PCS full port standing valve and chased to seatnipple w/1.516 broach, isolate well, RDMO.

Operations Next Report Period

Other In Hole			
Description	Top (ftKB)	Btm (ftKB)	Run Date



Petroleum Development Corporation
 Danley 12-28
 SWNW Sec28 T6N R64W
 Weld County, CO

Current Wellbore Schematic: NOT TO SCALE

7/16/2008

API#: 05-123-19473

Program/Acquisition

Lyco

Job Type/Intent

Nio Refrac

GL Elevation: 4698'

KB Elevation: 4707'

Surface Casing:

8 5/8" 24# J-55 set @ 735'
 w/515sx

Top of Cement:
 surface

Production Casing:

3 1/2" 9.2#

Top of Cement:
 6198' + cmted 3800' - 3170'

Other: (Liner, Casing Patch, etc.)

Other Cement: (squeeze, plug, etc)

Longstring Cement:

150 sxs 50:50 poz

150bbls spacer

160sx G

0

Perforations:

Old:	Codell: 6900' - 6910'
	Cod RF: 6901' - 6907' 2spf
	NioB: 6724' - 6730' 2spf
	0
New:	0
	NioB: 6720' - 6730' 3spf
	0
	0

Current Tubing In Hole:

no info
0
0

PBTD: 7048'

Casing TD: 7130'

Procedure/Intent:

PU production tbg, RIH with additional jts to clean out to PBTD, TOOH with production string. RIH with bit & scraper to PBTD, POOH with bit & scraper. Pressure test casing to 5000psi, if casing tests, frac down casing. RIH with Nuex & perforate the Nio where indicated (See Density log). RIH with RBP, set @ 6770'. Prepare well for breakdown and stimulation on following day.

8-16-2000 TO AWARDS
 PDC/Lyco 100% INTEREST
 IN SPRING UNIT 8 1/2 NW 1/4
 Lyco ASSIGNED PDC ALL
 INTEREST IN 2003

OK TO GO AFTER
 8-1-08

Final Land Approval:

Date: 7.28.08

Final Completion Approval:

Date: 7-16-08