

Attention: David Catanach, NMOCD
505-476-3466

From: Allen Kutch, BP
281-366-7955

RE: Proposed Jicarilla Contract 146-28 SWD Conversion, Rio
Arriba County, NM.

David, attached are the revised portions of our permit. Should be
seven pages. Please let me know if I am missing anything.

INJECTION WELL DATA SHEET

Side 1

OPERATOR: Amoco Production Company
 WELL NAME & NUMBER: Jicarilla Contract 146 Well 28
 WELL LOCATION: 1170 FSL & 1170 FWL M UNIT LETTER SECTION 25N 5W RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 12-1/4" Casing Size: 8-5/8"
 Cemented with: 315 sx. or ft3
 Top of Cmt: Surface Method Determined: circ

Intermediate Casing

Hole Size: Casing Size:
 Cement with: sx. or ft3
 Top of Cmt: Method Determined:

Production Casing

Hole Size: 7-7/8" Casing Size: 4-1/2"
 Cement with: 1170 sx. or ft3
 Top of Cmt: Unknown Method Determined:
 Total Depth: 5408'

Injection Interval
 Perforated 4577 ft to 4776

(Perforated or Open Hole; indicate which) (OVER)

INJECTION WELL DATA SHEET

Side 2

Tubing Size: 2 - 3/8" @ 4520' Lining Material: N/A

Type of Packer: Arrowset 1X

Packer Setting Depth: 4500'

Other Type of Tubing/Casing Seal (if applicable): N/A

Additional Data

1. Is this a new well drilled for injection? Yes X No

If no, for what purpose was the well originally drilled? Producing Gas Well

2. Name of the Injection Formation: Blanco Mesaverde

3. Name of Field or Pool (if applicable): Blanco Mesaverde

4. Has the well ever been perforated in any other zone(s)? List all such perforated: P. Cliffs 2914'-2958' Mesaverde 4577'4829 & 4934'-5252'
intervals and give plugging detail, i.e. sacks of cement or plug(s) used. C/C/R set @ 1800' in 4800'-29', Pt Lockout 4934'-5252' to be P&A'd

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area:

Jicarilla Contract 146 No. 28
Unit M Sec 9 T25N-R5W
Rio Arriba County, NM

Procedure:

1. MIRU SU. Record TP, CP and BH. ND tree, NO BOP.
2. POOH drifting tbg, visually inspecting.
3. Sqz Pictured Cliffs interval 2919' - 2972' with 100 sxs cmt.
4. RU air package. D/O sqz and test PC perms to 300 psi.
5. D/O CIBP at 4490' capped with 4 sacks cmt. Circulate clean to PBTD.
6. Make bit x scraper run.
7. RU electric line. Log CBL from PBTD to surface. Correlate to Dresser-Atlas Induction Gamma Ray log dated 11/3/79.
8. Set CICR at 4800'.
9. Sqz below CICR with 25 sxs cmt. POOH LD tbg.
10. RIA with following injection string:
 - a) Arrowset pkr
 - b) 1.78" ID F-nipple
 - c) New 2-3/8" IPC tbg to surface
11. Set pkr at 4500'.
12. Perform mechanical integrity test of backside to 300 psi for 30 minutes.
13. Perform step-rate test.

CURRENT WELLBORE DIAGRAM

Jicarilla Contract 146 - 28
Rio Arriba County, NM
Unit M Section 9 T25N - R5W

6-26-2001
ATK

KB: 10' above GL

PC Perfs:

2914' - 2930'
2952' - 2958'

Mesaverde Perfs:

4577' - 4829'

4934' - 5252'

8-5/8" 24# K55 @
295' w/ 315 sxs
Circ 20 sxs to sfc

SN @ 2929'

2-3/8" 4.7# J55 tbg @
2962'

CIBP @ 4490' capped w/
4 sxs cmt

4-1/2" 11.6# K55 @
5408' w/ 1070 sxs
Class B Lite, 6%
gel, followed by
100 sxs neat.

PBTD: 5320'
TD: 5408'

PROPOSED WELLBORE DIAGRAM

Jicarilla Contract 146 - 28
Rio Arriba County, NM
Unit M Section 9 T25N - R5W

6-26-2001
ATK

KB: 10' above GL

PC Perfs
(sqzd):

2914' - 2930'
2952' - 2958'

Mesaverde Perfs:

4577' - 4776'

4806' - 5252'
(sqzd)

8-5/8" 24# K55 @
295' w/ 315 sxs
Circ 20 sxs to sfc

2-3/8" 4.7# J55 IPC tbg @
4500'

F-Nipple @ 4499'

Pkr @ 4500'

CICR @ 4800'

4-1/2" 11.6# K55 @
5408' w/ 1070 sxs
Class B neat

PBTD: 5320'
TD: 5408'

Jic Contract 146 - 28.doc

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Permit # _____

Well Completion and Operation Data

Type Injection Well: (EOR/SWD/HC Storage) (New/Conversion)Injection: (Continuous/Cyclic) Cyclic

Approximate # days operating/year 90
 Rate (B/D): Average 250 Maximum 2500
 Wellhead pressure (psi): Average 1000 Maximum 1500
 Fluid: TDS 5432 Sp. Gr. 1.005 Analyses included: (yes/no)
 Source (formation name) Dakota, Gallup, Mesaverde, Chacra, PC, Fruitland Coal
 Will anything be added to the water to be injected? (yes/no)
 What will those additives be? no

Geologic Data (all references to depths are below land surface)

Injection Interval: Top 4577; Bottom _____; Effective Thickness _____
 Formation name Cliffhouse Lithology sandstone
 Porosity (%) 12 Current Reservoir Pressure 840 Date 1/15/80
 Current Fluid Level in Well _____ ft. Date _____
 Permeability (md) 0.1
 Drill Stem Test Included: (YES) (NO)

Confining Zones: Thickness between injection zone and USDW 2050'
 Lithology Sand and shale
 Cumulative shale 1980': thickest shale zone 3830-4577' (interval)
 Faults: Are there any faults in the area of the well which penetrate the injection interval? (Yes/No) No

Well Data: (all references to depths are below land surface)

Surface Elevation: 6727GL (KB/GL) Total (Depth/Plugged Back Depth) 6271 / 488
 Date Drilled or to be drilled 10-25-79
 Type logs available on (this well/offset well): (By reference/included)
 Induction/GR, CDL, CDN filed previously

Construction:	Size (in)	Depth Interval	Sacks of Cement	Hole Size	Cement Interval	How Determined
Surface Csg.	<u>8-5/8</u>	<u>295</u>	<u>315</u>	<u>12 1/4</u>	<u>Surface</u>	<u>Circulation</u>
Intermediate Csg.	<u>4-1/2</u>	<u>5408</u>	<u>1170</u>	<u>7-7/8</u>	<u>unknown</u>	
Long String Csg.	<u>4-1/2</u>	<u>5408</u>	<u>1170</u>	<u>7-7/8</u>	<u>unknown</u>	
Liner	<u>2-3/8</u>	<u>4520</u>				
Tubing	<u>2-3/8</u>	<u>4520</u>				

Packer type and depth Weatherford
 Arrowset 1X @4500'

Other Perforated Intervals Pictured Cliffs 2914' - 2958', Point Lookout 4934' - 5252' (to be P&A'd)
Menefee 4806'-29'

Operator Amoco Production Company
Completion Date: 1/15/81

Well Name Picarilla Cont 146 Well # 28
 1170 S 1170 W
 Ft. F L & Ft. F L
SW 1 Section 9 Twp. 25N Rg. 5W

Formation(s) Top/Bottom
from PBTD to surface:

<u>ictured Cliffs</u>	<u>2919'</u>	<u>/</u>	<u>2972'</u>
esaverde	4576'	/	5330'

Tubing Size: 2-3/8 In.
Weight: 4.7 lb./Ft.
Length: 4510' Ft.

Packer Type: Arrowset 1X
Set at: 4520' KB Ft.

Formation(s) perforated above packer:

Pictured Cliffs 2914' to 2958'
 ' to ' '

Formation(s) perforated below packer:

Cliffhouse 4577 ' to 4776
 _____ ' to _____
 _____ ' to _____

Open hole below production casing
from n/a to

Formation(s) present in open hole:
n/a

Hole Size:	12-1/4	In.
Casing Size:	8-5/8	In.
Weight:	24	lb/ft
Length:	285	Ft.
Cement Type:	Class B	
Amount:	315	Sx.
Additives:	2% CaCl ₂	
Casing set at:	295 KB	Ft.
Top of Cement:	Surface	Ft.
Method of Determination:	Circulated 20 sxs cmt to surface	

Hole Size: 7-7/8 In.
Casing Size: 4-1/2 In.
Weight: 11.6 lb/Ft.
Length: 5398 KB Ft.
Cement Type: Class B
Amount: 1070 + 100 ne8x.
Additives: 6% Gel, 2# tuff p1
Casing Set at: 5408 KB Ft.
Top of Cement: To be determined Ft.
Method of
Determination: CBL

PBTD: 4880' KB
TD: 6271' KB

NOTE: All depths are to be from ground level. If KB depths are used make notations on diagram & give height of KB above ground level.