DATE IN	SUSPENSE	ENGINEER	LOGGED IN	TYPE	APP NO.
4/07/2014		PRG	4/08/2014	WFX	PMAM1409855312

ABOVE THIS LINE FOR DIVISION USE ONLY

NEW MEXICO OIL CONSERVATION DIVISION
- Engineering Bureau -
1220 South St. Francis Drive, Santa Fe, NM 87505

ADMINISTRATIVE APPLICATION CHECKLIST

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

Application Acronyms:

[NSL-Non-Standard Location] [NSP-Non-Standard Proration Unit] [SD-Simultaneous Dedication]
[DHC-Downhole Commingling] [CTB-Lease Commingling] [PLC-Pool/Lease Commingling]
[PC-Pool Commingling] [OLS - Off-Lease Storage] [OLM-Off-Lease Measurement]
[WFX-Waterflood Expansion] [PMX-Pressure Maintenance Expansion]
[SWD-Salt Water Disposal] [IPI-Injection Pressure Increase]
[EOR-Qualified Enhanced Oil Recovery Certification] [PPR-Positive Production Response]

RECEIVED OCD
2014 APR -2 P 2:32

[1] **TYPE OF APPLICATION** - Check Those Which Apply for [A]

-WFX
-Legacy Reserves
240974

[A] Location - Spacing Unit - Simultaneous Dedication
☐ NSL ☐ NSP ☐ SD

Check One Only for [B] or [C]

[B] Commingling - Storage - Measurement
☐ DHC ☐ CTB ☐ PLC ☐ PC ☐ OLS ☐ OLM

[C] Injection - Disposal - Pressure Increase - Enhanced Oil Recovery
☑ WFX ☐ PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

WFX
-Cooper Jal Unit
217
30-025-09626

[D] Other: Specify _____

[2] **NOTIFICATION REQUIRED TO:** - Check Those Which Apply, or ☐ Does Not Apply

Pool
-Jalmat; Tan-Yates-7Rivers (Oil)
33820

[A] ☐ Working, Royalty or Overriding Royalty Interest Owners

[B] ☑ Offset Operators, Leaseholders or Surface Owner

[C] ☑ Application is One Which Requires Published Legal Notice

[D] ☐ Notification and/or Concurrent Approval by BLM or SLO
U.S. Bureau of Land Management - Commissioner of Public Lands, State Land Office

[E] ☑ For all of the above, Proof of Notification or Publication is Attached, and/or,

[F] ☐ Waivers are Attached

[3] **SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED ABOVE.**

[4] **CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

Note: Statement must be completed by an individual with managerial and/or supervisory capacity.

Martin Staelens		Production Engineer	4-2-14
Print or Type Name	Signature	Title	Date

mstaelens@legacylp.com
e-mail Address

LEGACY
RESERVES

April 3, 2014

New Mexico Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Re: Application for Authorization to Inject
Cooper Jal Unit #217
Jal Mat, Langlie Mattix Fields
Lea County, New Mexico

Ladies and Gentlemen:

Attached is the referenced application to convert the Cooper Jal Unit #217 to water injection into the Yates, 7-Rivers and Queen formations from 2998' – 3780'. Attached are the following:

1) The "Application for Authorization to Inject" Form C-108. (2 pp)
2) The "Injection Well Data Sheet". (2 pp)
3) Two maps with the first showing the wells and leases within two miles of the proposed injection well and a half mile radius around the proposed well. The second map clearly shows all wells within a half mile radius of the proposed well which defines the well's area of review. (2 pp)
4) A table of all wells within the half mile radius around the proposed injection well. Note there are no wells which have been plugged and abandoned within this half mile radius. (1 p)
5) An affidavit of publication signed by the publisher that notice of the application was published in a newspaper of general circulation in Lea County, New Mexico. A copy of the newspaper notice is also included. (1 p)
6) Current and proposed wellbore diagrams of the Cooper Jal Unit #217. (2 pp)
7) Geological data on the Cooper Jal Unit #217, including a log section. (4 pp)
8) Engineering data on the Cooper Jal Unit #217. (1 p)

If there are any questions regarding this application or if any additional information is needed, please contact me at (281) 465-8387 or by email at mstaelens@legacylp.com. Thank You.

Sincerely,

Martin Staelens
Production Engineer

Attachments as listed above

Legacy Reserves
303 West Wall, Suite 1400 • Midland, Texas 79701 • P.O. Box 10848 • Midland, Texas 79702
OFFICE 432-689-5200 • FAX 432-689-5297

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

FORM C-108
Revised June 10, 2003

APPLICATION FOR AUTHORIZATION TO INJECT

I. PURPOSE: ___X___ Secondary Recovery _____ Pressure Maintenance _____ Disposal _____ Storage
Application qualifies for administrative approval? ___X___ Yes _____ No

II. OPERATOR: Legacy Reserves Operating LP

ADDRESS: P.O. Box 10848, Midland, Texas 79702

CONTACT PARTY: Martin Staelens PHONE: 281.465.8387 ext. 224

III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection. Additional sheets may be attached if necessary.

IV. Is this an expansion of an existing project? ___X___ Yes _____ No
If yes, give the Division order number authorizing the project: R-4019, R-4020

V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.

VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail.

VII. Attach data on the proposed operation, including:

1. Proposed average and maximum daily rate and volume of fluids to be injected;
2. Whether the system is open or closed;
3. Proposed average and maximum injection pressure;
4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).

*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.

IX. Describe the proposed stimulation program, if any.

*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).

*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.

XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.

XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: Martin Staelens TITLE: Production Engineer

SIGNATURE: _____ DATE: 4-3-14

E-MAIL ADDRESS: mstaelens@legacylp.com

* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: _____

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

(1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.

(2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.

(3) A description of the tubing to be used including its size, lining material, and setting depth.

(4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

(1) The name of the injection formation and, if applicable, the field or pool name.

(2) The injection interval and whether it is perforated or open-hole.

(3) State if the well was drilled for injection or, if not, the original purpose of the well.

(4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.

(5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

(1) The name, address, phone number, and contact party for the applicant;

(2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;

(3) The formation name and depth with expected maximum injection rates and pressures; and,

(4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

Side 1

INJECTION WELL DATA SHEET

OPERATOR: Legacy Reserves Operating LP

WELL NAME & NUMBER: Cooper Jal Unit # 217

WELL LOCATION: 990' FSL & 2310' FWL (FOOTAGE LOCATION) | UNIT LETTER: 24 (SECTION) | T-24S (TOWNSHIP) | 36E (RANGE)

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 11" Casing Size: 8-5/8", 28#

Cemented with: 125 sx. *or* approx. 188 ft^3

Top of Cement: Surface Method Determined: Circ

Intermediate Casing

Hole Size: _____ Casing Size: _____

Cemented with: _____ sx. *or* _____ ft^3

Top of Cement: _____ Method Determined: _____

Production Casing

Hole Size: 7-7/8" Casing Size: 5-1/2", 14#

Cemented with: 400 sx. *or* approx. 600 ft^3

Top of Cement: 130 from Surf Method Determined: calc.

Total Depth: 2998'

Injection Interval

2998' To 3780'

Open Hole

INJECTION WELL DATA SHEET

Tubing Size: 2 3/8" 4.7#, J-55 tbg Lining Material: Internal Plastic Coating

Type of Packer: Arrowset 1X

Packer Setting Depth: 2940'

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

Additional Data

1. Is this a new well drilled for injection? _____Yes ___X___No

   If no, for what purpose was the well originally drilled? _____

   Oil Production

2. Name of the Injection Formation: Yates, 7-Rivers and Queen

3. Name of Field or Pool (if applicable): Jal Mat, Langlie Mattix

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. _____

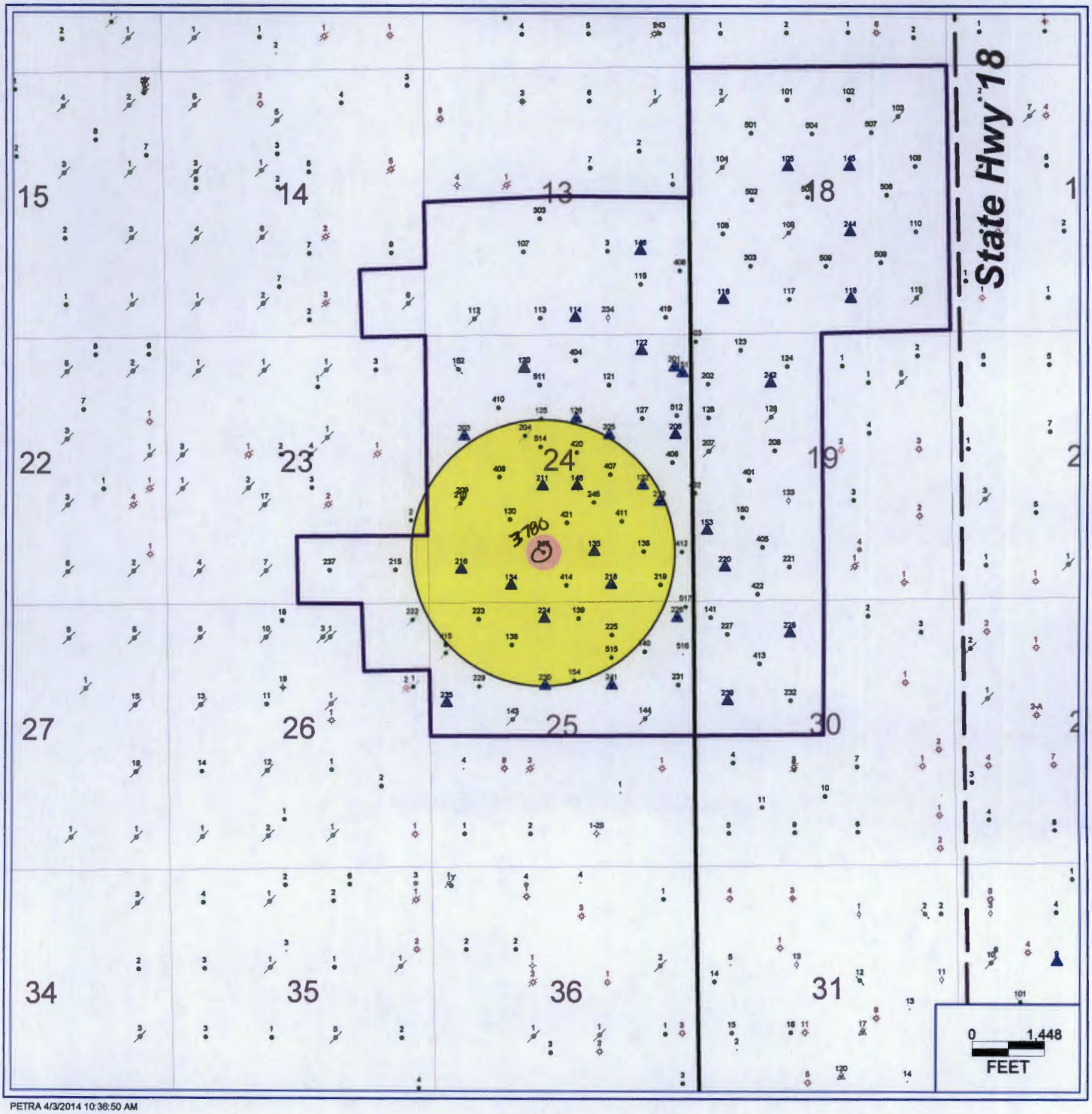
   NO

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

   Tansill (above Yates) @ ≈ 2900'. No known Tansill production in Cooper Jal Unit.

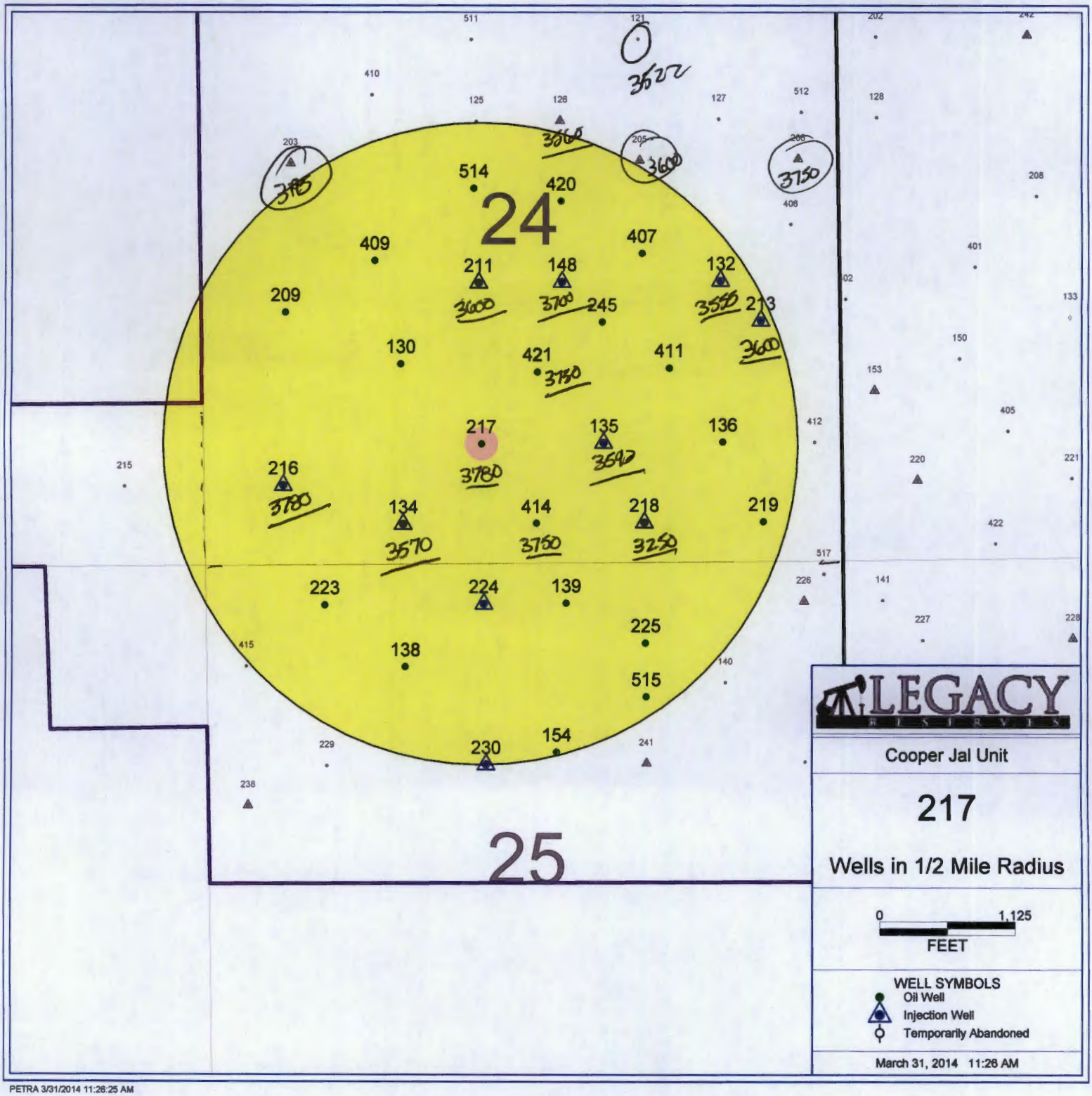
LEGACY RESERVES

Cooper Jal Unit
#217



PETRA 4/3/2014 10:36:50 AM

404 - 3750



LEGACY RESERVES

Cooper Jal Unit

217

Wells in 1/2 Mile Radius

0 1,125

FEET

WELL SYMBOLS

Oil Well

Injection Well

Temporarily Abandoned

March 31, 2014 11:26 AM

PETRA 3/31/2014 11:26:25 AM

Field: **Cooper Jal Unit**

	Location:
Footage:	990 FSL & 2310 FWL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,318'
KB:	3,328'
KB Calc:	10'
ck w/log?	Yes

Date	History
1-Mar-50	Initial completion 2998 - 3244' (Yates OH): No stimulation. IP=55 bopd,
	0 bwpd, & 64 Mcfgpd. (flowing)
26-Jan-54	C/O fill to 3244'
11-Sep-55	C/O fill to 3244'
15-Apr-57	C/O fill to 3244'
15-May-57	Placed well on rod pump system.
10-Apr-69	C/O fill from 3174 - 3244' (70')
2-Feb-73	Checked for fill (None Present)
5-Jul-75	C/O fill f/ 3040'-3244' (204'). Sqz'd 4 drums of scale inhibitor into OH. Acdz'd
	OH w/ 1,500 gals & re-sqz'd 4 drums of scale inhibitor. Before WO: 143 bopd
	& 64 bwpd After WO: 158 bopd & 114 bwpd
15-Jul-86	Tagged fill @ 3125' (119')
27-May-88	C/O fill from 3122 - 3244' (122') and jetwashed OH. Ran GR-CCL-CNL. Ran
	production equipment. Before WO: 19 bopd, 114 bwpd & 9 Mcfgpd. After
	WO: 21 bopd, 110 bwpd & 36.4 Mcfgpd
24-Nov-93	Repaired rod part. Ran new pmp & replaced 8 - 7/8" rod boxes & 17- 3/4" rod
	boxes. PWOP.
16-Feb-94	Replaced 10 bad jts of tbg. Returned well to production.
1-Mar-95	Ran bit & scraper to 2950'. Set pkr @ 2925' & acdz'd OH (2998 - 3244')
	w/5,000 gals 15% NEFE HCL & 5,000#'s rock salt in 6 stages. AIR=5 bpm @
	1300 psi. ISIP= 646 psi. P15min=vac. Ran bailer & tagged @ 3130'. Could
	not clean out any deeper than 3130'. Ran tbg., pmp & rods. Returned well to
	production. Before WO: 7 bopd, 6 bwpd, & 29 mcfpd. After WO: 15 bopd,
	141 bwpd & 19 Mcfgpd.
28-Nov-95	Repaired rod part. Returned well to production.
6-Jul-96	Replaced 1 bad jt of tbg. Returned well to production.
28-Jan-00	Test tbg w/standing valve. OK. Ran new pmp & replaced 10 -3/4" rod boxes &
	10 - 7/8" rod boxes. PWOP.
12-May-00	Replaced rod pmp. Returned well to production.
17-Oct-00	Replaced 50 jts tbg. Replaced rod pmp. Return well to production.
26-Jul-04	Changed out stuffing box and pumping tee.
27-Sep-05	POOH w/ rods, pump & tbg. Hydrotest tbg in hole to 7000# - found hole on
	top jt. RIH w/ notched collar & tagged at 3188', Clean Out to 3244'. RIH w/
	tubing, pump & rods. Well would not pump. C/O pump. PWOP.
24-Jun-10	POOH w/ rods, pump & laid down tubing string. RIH with 4 3/4" bit on 2 7/8"
	tbg. Cleaned out with Foam Air Unit f/ 2,960' to 3,244'. Found communication
	up the surface casing. RIH with 3 1/2" Frac string (Hydrotest - 7,000#). Set
	PKR at 2,888'. RU ProPetro, Pumped 1000 gals 15% NEFE. Foam Sand
	Frac'd (70 Quality) Yates with 104,000# 16/30 mesh sand (Brown) plus
	60,000# 16/30 resin coated sand. The rest of sand (45,000#) was not pumped
	due to blender failure. Fluid rate= 16 bpm. Nitrogen rate= 32 bpm Pavg=
	3,500#. ISIP= 4,450#. Laid down 3 1/2" WS, last joint & PKR were full resin
	coated sand. Found casing leak at 354'. Replaced 5 1/2" casing from 398' to
	surface. Could not screw casing onto collar. FIH w/ fluted collar & guide,
	could not screw onto collar. Pumped 65 sacks Class C cement, not circ'd.
	RIH w/ 4 3/4" Concave mill, worked tight spot at 406'. Test casing leak to
	500# - held. C/Out sand f/ 2,897' to 3,090'. Next day tagged at 3,045', 45'
	wntry. Cleaned out to 3,244'. POOH w/ bit. RIH w/ notched collar, clean out
	156' fill & 124' of fill. RIH w/ production string. Installed new PU. PWOP.
13-Aug-10	POOH with parted 57 - 3/4" (body break). Replaced rod. PWOP.

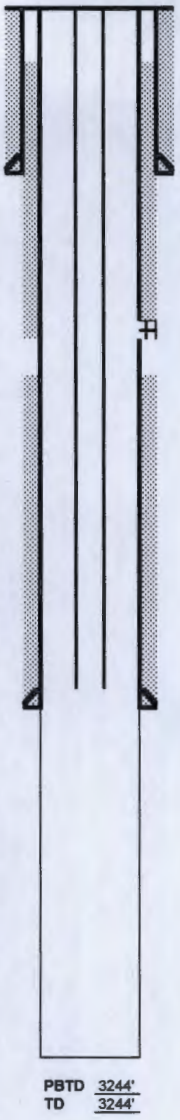
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
1	2-7/8" 6.4#, J-55, SM Sub.	4	4
82	2-7/8" 6.4#, J-55, Super Max tbg.	2,542	2,546
1	2-7/8" x 5-1/2" TAC	3	2,549
9	2-7/8" 6.4#, J-55, Super Max tbg.	285	2,834
1	2-7/8" x 3-1/2" SM Blast Joint	33	2,867
1	2-7/8" SN	1	2,868
1	2-7/8" Perf Sub	4	2,872
1	2-7/8" Kaven De-Sander	19	2,891
1	2-7/8" Mud Anchor	62	2,953

Rods	Rod Detail (top to bottom) Description	Footage	Depth
1	26' x 1-1/4" polish rod	22	22
1	1-1/4" x 1-1/2" x 14' liner	0	22
1	7/8" pony rods	4	26
39	7/8" steel rods	975	1,001
50	3/4" steel rods	1,250	2,251
24	1-1/2" sinker bars	600	2,851
1	2-1/2" x 2" x 20' with RHR rod pump	20	2,871
1	1-1/4" x 1' strainer	0	2,871

Pumping Unit:
Updated: 01/08/14 MLS

CJU #217

Wellbore Diagram



PBTD 3244'
TD 3244'

Reservoir:	Cooper Jal
Well ID Info:	CJU #217
API No:	30-025-09626
Init. Comp. Date:	3/1/1950

Hole Size:	11"
Conductor:	8-5/8", 28#, J-55
Set @	318'
Cement w/	125 sx
Circ:	Yes
TOC:	Surface

Hole Size:	7-7/8"
Prod. Liner:	5-1/2", 14#, J-55
Set at:	2998'
Cement:	400 sx
Circ:	No
TOC:	130' from surface by calc.

DV tool @ 1205' - pmp 200 sxs - TOC@ 130' f/ surf. by calc.

TOC @ 1945' by calc.

OH Interval: 2998'-3244'
OH ID: 4-3/4"
Yates @ 3016' Jal Mat

7-R @ 3238'

Queen @ 3610'

Field: **Cooper Jal Unit**

CJU #217

PROPOSED

Wellbore Diagram

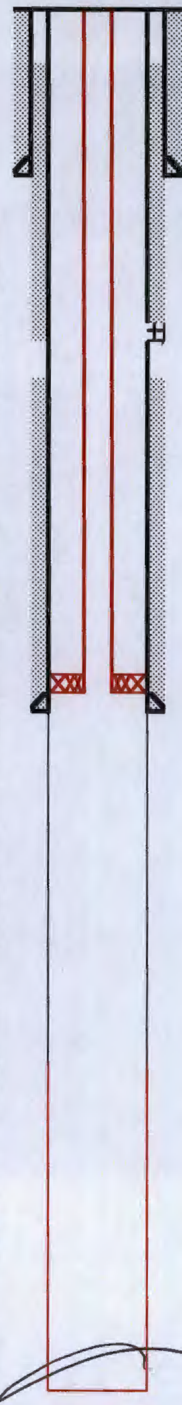
	Location:
Footage:	990 FSL & 2310 FWL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,318'
KB:	3,328'
KB Calc:	10'
ck w/log?	Yes

Reservoir: Cooper Jal

Well ID Info:	CJU #217
API No:	30-025-09626
Init. Comp. Date:	3/1/1950

Hole Size: 11"
Conductor: 8-5/8", 28#, J-55
Set @ 318'
Cement w/ 125 sx
Circ: Yes
TOC: Surface

Hole Size: 7-7/8"
Prod. Liner: 5-1/2", 14#, J-55
Set at: 2998' . 200 sx at the shoe
Cement: 400 sx
Circ: No
TOC: 130' from surface by calc.



DV tool @ 1205' pmp 200 sxs - TOC@ 130' f/ surf. by calc.

TOC @ 1945' by calc.

Inj. Packer 2,940'

OH Interval: 2998'-3244'
OH ID: 4-3/4"
Yates @ 3016' Jal Mat

7-R @ 3238'

Queen @ 3610'

PBTD 3780'
TD 3780'

Date	**History**
1-Mar-50	Initial completion 2998 - 3244' (Yates OH): No stimulation. IP=55 bopd, 0 bwpd, & 64 Mcfgpd. (flowing)
26-Jan-54	C/O fill to 3244'
11-Sep-55	C/O fill to 3244'
15-Apr-57	C/O fill to 3244'
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15-Jul-86	Tagged fill @ 3125' (119')
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24-Nov-93	Repaired rod part. Ran new pmp & replaced 8 - 7/8" rod boxes & 17- 3/4" rod boxes. PWOP.
16-Feb-94	Replaced 10 bad jts of tbg. Returned well to production.
1-Mar-95	Ran bit & scraper to 2950'. Set pkr @ 2925' & acdz'd OH (2998 - 3244') w/5,000 gals 15% NEFE HCL & 5,000#'s rock salt in 6 stages. AIR=5 bpm @ 1300 psi. ISIP= 646 psi. P15min=vac. Ran bailer & tagged @ 3130'. Could not clean out any deeper than 3130'. Ran tbg., pmp & rods. Returned well to production. Before WO: 7 bopd, 6 bwpd, & 29 mcfpd. After WO: 15 bopd, 141 bwpd & 19 Mcfgpd.
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28-Jan-00	Test tbg w/standing valve. OK. Ran new pmp & replaced 10 -3/4" rod boxes & 10 - 7/8" rod boxes. PWOP.
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17-Oct-00	Replaced 50 jts tbg. Replaced rod pmp. Return well to production.
26-Jul-04	Changed out stuffing box and pumping tee.
27-Sep-05	POOH w/ rods, pump & tbg. Hydrotest tbg in hole to 7000# - found hole on top jt. RIH w/ notched collar & tagged at 3188', Clean Out to 3244'. RIH w/ tubing, pump & rods. Well would not pump. C/O pump. PWOP.
24-Jun-10	POOH w/ rods, pump & laid down tubing string. RIH with 4 3/4" bit on 2 7/8" tbg. Cleaned out with Foam Air Unit f/ 2,960' to 3,244'. Found communication up the surface casing. RIH with 3 1/2" Frac string (Hydrotest - 7,000#). Set PKR at 2,888'. RU ProPetro, Pumped 1000 gals 15% NEFE. Foam Sand Frac'd (70 Quality) Yates with 104,000# 16/30 mesh sand (Brown) plus 60,000# 16/30 resin coated sand. The rest of sand (45,000#) was not pumped due to blender failure. Fluid rate= 16 bpm. Nitrogen rate= 32 bpm Pavg= 3,500#. ISIP= 4,450#. Laid down 3 1/2" WS, last joint & PKR were full resin coated sand. Found casing leak at 354'. Replaced 5 1/2" casing from 398' to surface. Could not screw casing onto collar. FIH w/ fluted collar & guide, could not screw onto collar. Pumped 65 sacks Class C cement, not circ'd. RIH w/ 4 3/4" Concave mill, worked tight spot at 406'. Test casing leak to 500# - held. C/Out sand f/ 2,897' to 3,090'. Next day tagged at 3,045', 45' wntry. Cleaned out to 3,244'. POOH w/ bit. RIH w/ notched collar, clean out 156' fill & 124' of fill. RIH w/ production string. Installed new PU. PWOP.
13-Aug-10	POOH with parted 57 - 3/4" (body break). Replaced rod. PWOP.

	Tubing Detail (top to bottom)		
Joints	**Description**	**Footage**	**Depth**
	2-3/8", 4.7# J-55 IPC tbg	2,939	2,939
1	2-3/8" x 5-1/2" Pkr	1	2,940

	Rod Detail (top to bottom)		
Rods	**Description**	**Footage**	**Depth**

Pumping Unit:
Updated: 03/31/14 MLS

Geological Description

Yates, Seven Rivers and Queen Formations, Artesia Group

Cooper Jal Unit #217

Geologic parameters

Average Depth: Top of Yates formation averages approximately 3000' subsurface.

Average Thickness: Gross thickness from top Yates to base Queen is approximately 700-800'. Net porous intervals vary from 30 to 100' in several horizons.

Reservoir and trap: Reservoir units in the Yates, Seven Rivers and Queen formations are arkosic sandstones with variable amounts of dolomite and anhydrite cements. Trapping is a combination of structure over low amplitude anticlines and stratigraphic pinchouts of porous units. Porosity varies laterally and vertically due to occlusion by anhydritic and calcareous cements.

Reservoir Quality: Porosity: 4%-18%; Permeability: 0.5mD to 100mD.

Advantages for water injection:

1) This well is a corner well of a 5-spot, 20 acre pattern which will have a producer in the center. The 20 acre pattern is an ideal size to achieve an efficient recovery for this type of water flood.

2) The injection interval is deep below the surface, allowing for generally low surface water injection pressures because of the great hydrostatic fluid column.

3) To our knowledge, there is no evidence of any faults to the surface in this area. It can be expected that the impermeable Salado and Castile salt and anhydrite layers between the Rustler and Yates formations will provide a sufficient barrier to any fluid migration to potential underground sources of drinking water.

4) The Yates, 7-Rivers, and Queen formations are sufficiently porous and permeable to allow for a high volume of water injection capacity without approaching or exceeding fracture pressures. A 15% HCL acid stimulation using up to 10,000 gallons over the entire perforated and open hole injection intervals is planned prior to initiating water injection.

Planned maximum injection rate: 2,000 BWPD

Planned maximum injection pressure: 1,200 psi

McCullough

GAMMA RAY-BOREHOLE COMPENSATED NEUTRON LOG

FILING NO.

C
WGR-BCN-9183

COMPANY TEXACO, INC.

WELL COOPER JAL UNIT #217

FIELD JALMAT

COUNTY LEA STATE NEW MEXICO

LOCATION 990'FSL & 2310'FWL

OTHER SERVICES:

SEC. 24 TWP. 24-S RGE. 36-E

PERMANENT DATUM [redacted] ELEV. 3320'

LOG MEASURED FROM KB

DRILLING MEASURED FROM KB

ELEVATIONS:
KB. 3328'
DF.
GL. 3320'

DATE	5-27-88		
RUN NO.	ONE		
TYPE LOG	GAMMA RAY-BOREHOLE COMPENSATED NEUTRON		
DEPTH—DRILLER	3244'		
DEPTH—LOGGER	3243'		
BOTTOM LOGGED INTERVAL	3241'		
TOP LOGGED INTERVAL	0'		
TYPE FLUID IN HOLE	WATER		
SALINITY PPM CL.			
DENSITY LB./GAL.			
LEVEL	FULL		
MAX. REC. TEMP. DEG. F.			
OPR. RIG TIME	2 HRS.		
RECORDED BY	HOSICK		
WITNESSED BY	MR. COVER		

RUN NO.	BORE HOLE RECORD BIT	FROM	TO	CASING RECORD SIZE	WGT.	FROM	TO
1				8-5/8"	28#	0	318'
				5-1/2"	14#	0	3006'

THIS HEADING AND LOG CONFORMS TO API RECOMMENDED STANDARD PRACTICE RP-33 (R)

EQUIPMENT DATA

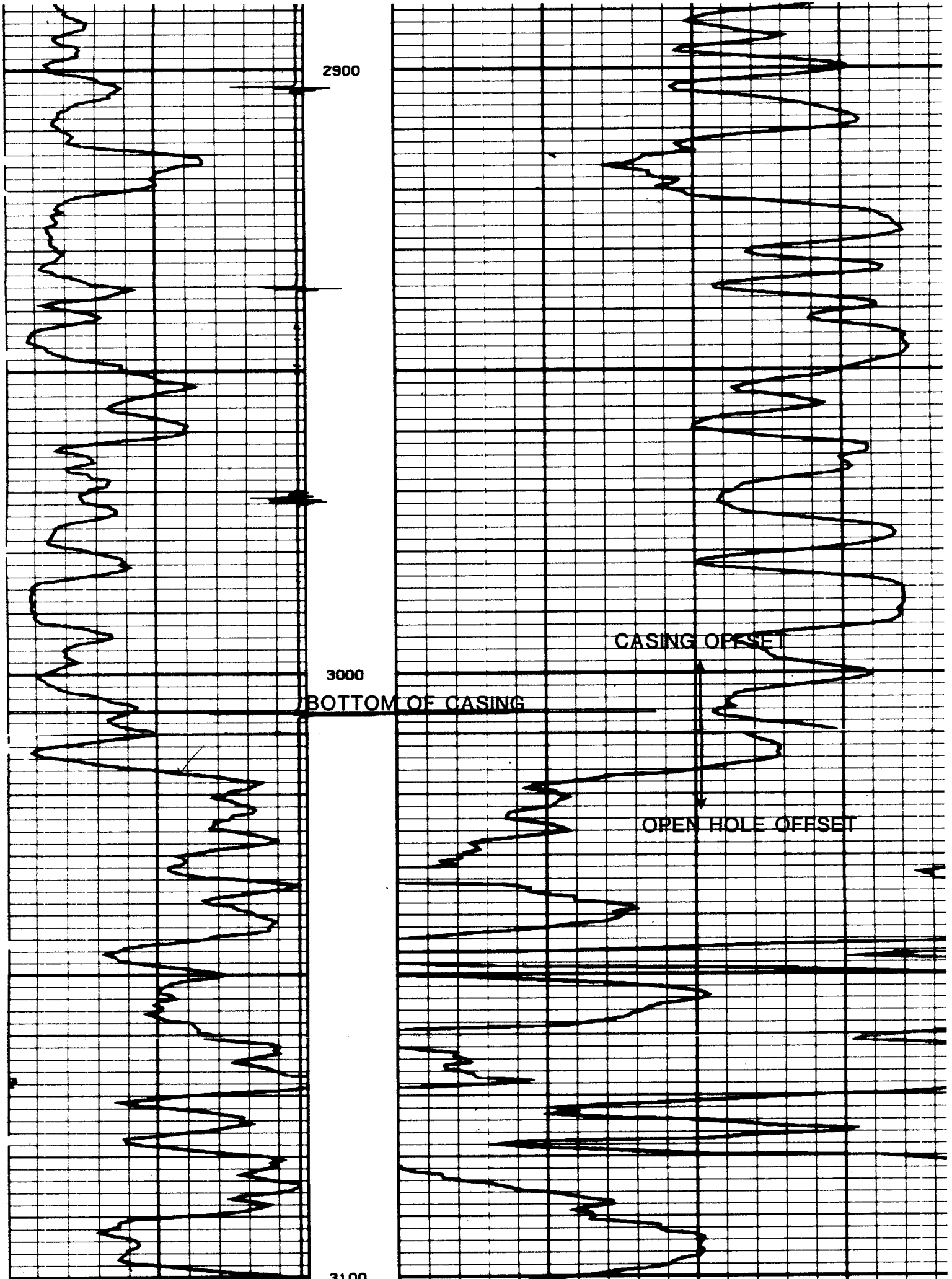
	GAMMA RAY	BOREHOLE COMPENSATED NEUTRON
RUN NO.	ONE	ONE
LOG TYPE		BOREHOLE COMPENSATED NEUTRON
TOOL MODEL NO.	5553-0-0	5553-0-0
DIAM.	2.75"	2.75"
DETECT. MODEL NO.	5568-25	836-32 & 836-33
TYPE	SCINT.	He-3
LENGTH	3"	
SOURCE MODEL NO.	7'	2A
SERIAL NO.		100
SPACING		
TYPE		AmBe
STRENGTH		20 CI.

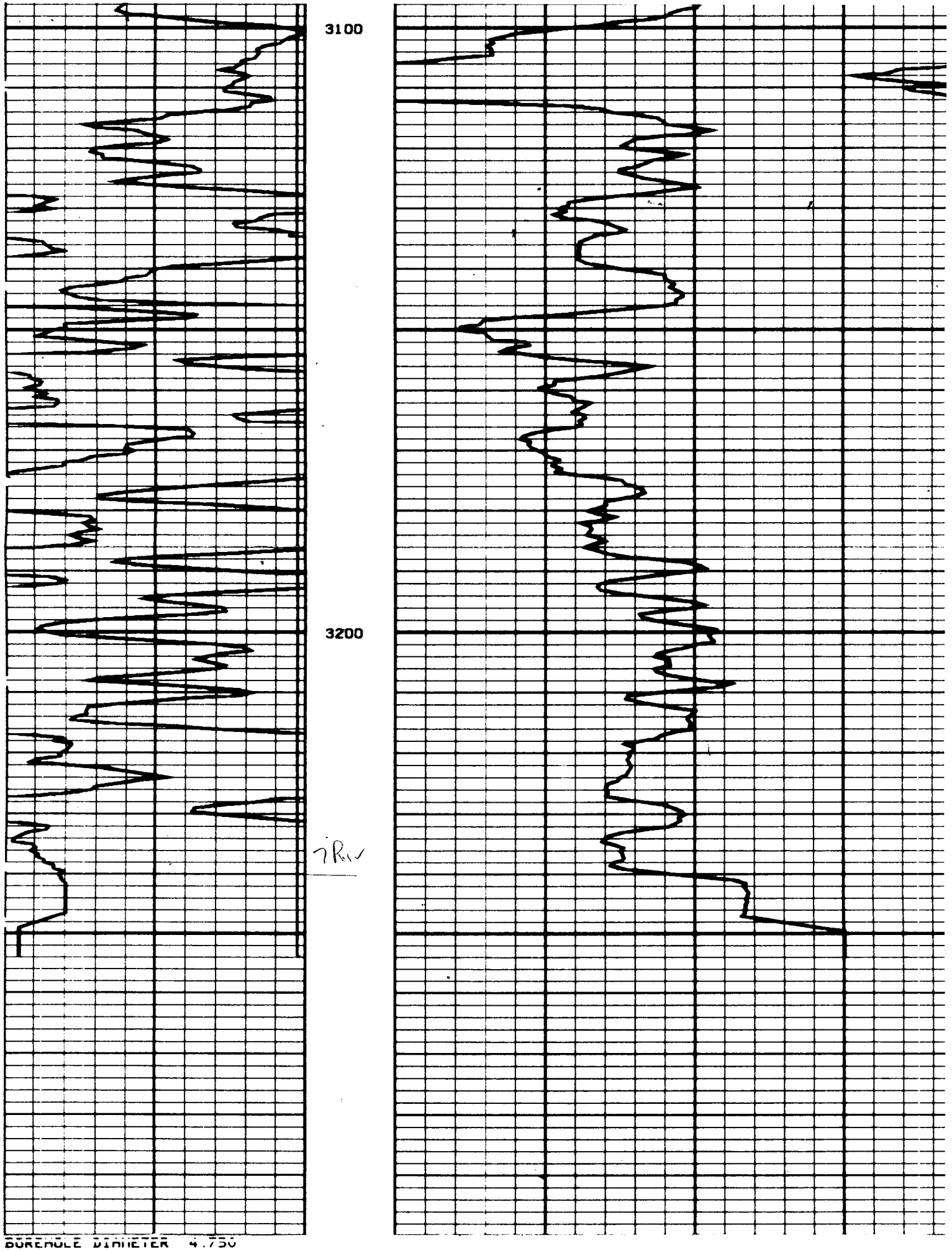
GENERAL

TRUCK NO.	84167	84167
TRUCK NO.	84167	84167
SERIAL NO.	7229	7229
MARKET NO.	11889	11889

LOGGING DATA

GENERAL DEPTHS FROM	TO	SPEED FT./MIN.	LOGGING DATA T.C. SEC.	SENS. SETTINGS	ZERO DIV. L. OR R.	API GR. UNITS PER LOG DIV.	T.C. SEC.	SENS. SETTINGS	ZERO DIV. L. OR R.
241'	0'				-0-	12.5			


2900
3000
BOTTOM OF CASING
CASING OFFSET
OPEN HOLE OFFSET
3100



BOREHOLE DIAMETER 4.750

CEMENT THICKNESS 0.000

ENGINEERING DATA

COOOPER JAL UNIT #217

Planned maximum injection rate: 2,000 barrels of water per day (BWPD)

Planned average injection rate: 800 barrels of water per day (BWPD)

Planned maximum injection pressure: 1200 pounds per square inch (psi)

Injection will be within an entirely closed system.

Produced water compatibility: Water will be injected into, and produced from the Yates, 7-Rivers and Queen formations. Make-up water will come from the lower Queen and Grayburg formations. All of these waters are compatible and are currently commingled at the surface without any compatibility issues.

TABLE OF WELLS WITHIN HALF-MILE RADIUS AREA OF REVIEW AROUND COOPER JAL UNIT #217
LEA COUNTY, NEW MEXICO

API Number	Operator	Lease Name	Well Number	COMP TYPE	Sec	Twp	Range	SPUD DATE	TD	STATUS
30025096430000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	130	OIL	24S	36E	24	4/2/1954	3550	A
30025096390000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	132	INJ	24S	36E	24	4/7/1954	3555	A
30025096440000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	134	INJ	24S	36E	24	6/25/1954	3570	A
30025096410000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	135	INJ	24S	36E	24	2/5/1954	3575	A
30025096400000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	136	OIL	24S	36E	24	4/21/1954	3540	A
30025096570000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	138	OIL	24S	36E	25	6/12/1954	3547	A
30025096610000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	139	OIL	24S	36E	25	5/8/1954	3565	A
30025096420000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	148	INJ	24S	36E	24	3/6/1954	3550	A
30025262840000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	154	OIL	24S	36E	25	4/19/1979	3655	A
30025096350000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	209	OIL	24S	36E	24	9/19/1954	3681	A
30025097870000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	211	INJ	24S	36E	24	3/9/1950	3244	A
30025096230000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	213	INJ	24S	36E	24	2/23/1950	3220	A
30025096340000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	216	INJ	24S	36E	24	5/12/1951	3210	A
30025096260000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	217	OIL	24S	36E	24	2/13/1950	3244	A
30025096240000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	218	INJ	24S	36E	24	8/1/1949	3250	A
30025096220000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	219	OIL	24S	36E	24	11/29/1949	3208	A
30025096480000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	223	OIL	24S	36E	25	11/3/1950	3188	A
30025096460000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	224	INJ	24S	36E	25	5/14/1950	3230	A
30025096500000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	225	OIL	24S	36E	25	12/14/1949	3188	A
30025096490000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	230	INJ	24S	36E	25	11/14/1950	3183	A
30025096250000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	245	OIL	24S	36E	24	11/16/1949	3208	A
30025325690000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	407	OIL	24S	36E	24	7/29/1994	3750	A
30025325700000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	409	OIL	24S	36E	24	8/11/1994	3750	A
30025328580000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	411	OIL	24S	36E	24	7/6/1995	3800	A
30025325710000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	414	OIL	24S	36E	24	8/21/1994	3750	A
30025334580000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	420	OIL	24S	36E	24	7/19/1996	3825	A
30025334590000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	421	OIL	24S	36E	24	7/27/1996	3800	A
30025391020000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	514	OIL	24S	36E	24	10/6/2008	3815	A
30025391010000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	515	OIL	24S	36E	25	10/16/2008	3801	A

29 Active wells

Field: **Jal Mat & Langlie Mattix (Yates, 7-Rivers, & Queen)**

CJU #130

Wellbore Diagram

	Location:
Footage:	1980 FSL & 1980 FWL
Section:	Sec. 24, T - 24S, R - 36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevation:
GL:	
KB:	3,330'
KB Calc:	
ok w/list?	n/a

Date	History
22-Apr-54	IC interval: 3470 - 3550' (7 RVRS OH). Frac'd w/4,000 gals & 6,000#'s sand. IP = 234 bopd (flowing)
30-Apr-71	Converted to injection well
4-Jun-73	Ran injectivity profile
15-Apr-93	C/O f/ 3618 - 62' (Iron Sulfide, Paraffin & Formation). Side jet & acidized OH (3470-3662') w/4,000 gals 15% NEFE HCl w/80 gals mutual solvent & 110 gals Checkersol using 1900#'s rock salt in 4 stages. Isolated 5 1/2" csg leak f/ 300-331'. Cmt sqz'd csg leak w/ 27 sxs cmt. Drld out & tst csg to 300 psi. OK. RIH w/ pkr on 2 3/8" CL tbg. Could not get PKR to pressure test @ 3440'. Reset pkr @ 3418'. Initiated injection at 203 bwpd @ TP=660 psi
2-Nov-93	Ran GR-CCL. Set BP @ 3365'. Perf'd Yates f/ 3046 -55', 3081 - 78', 3082 - 86', 3107 - 16', 3120'-42', & 3154 - 74' w/ 2 spf (142 -0.38" dia holes). Frac'd perfs w/ 54,012 gals 30# gel, 187,460#'s Brady sand, 41,040#'s 12/20 resin coated sand. AIR=34 bpm, PM=7200 - 2800 psi. C/O to 3365'. Returned well to production. IP = 81 bopd, 179 bwpd, & 24 Mcfgpd
10-Jun-94	C.O fill from 3052' - 3365'. Returned well to production.
23-Dec-94	C.O fill from 3167' - 3300'. Returned well to production
14-Feb-96	Tagged fill @ 3227'. Did not C/O fill. Lowered tbg 2 jts. Added rods & changed out pmp. PWOP.
16-Nov-01	Replaced 1 jt tbg. Pickled tbg w/1200 gals 2% acid. Swab back. Replaced 50 - 3/4" rod boxes & pmp. PWOP.
5-Jul-08	POOH w/rods & pump. Scanalogged tbg out hole: 33 yellow, 7 blue, 13 double green, 16 single green and 27 red. RIH w/ 4 3/4" mill tooth bit & 20 - 3 1/2" on 2 7/8" tbg & tagged cmt at 3384'. Drilled cmt & CIBP @ 3425'. RIH w/ 2nd mill tooth bit, drilled f/ 3654' to 3660' - recovered formation. Drilled f/3660' to 3690' in 3 1/2 day-time days, bit wore out. RIH w/ 3rd mill tooth bit, drilled f/ 3714' to TD @ 3795' in 11 1/2 hrs. Ran CNL f/ new TD @ 3795' to 3000'. OH shows at 3760'-90'. Perf'd Yates (3192'-99', 3219'-28' & 3234'-40') & 7-R (3281'-88', 3299'-3303', 3437'-3447' and 3452'-60'), 81 feet, 2 JHPF, 122 holes. Hydrotest 3 1/2" tubing in hole to 7000#, set 5 1/2" dual frac packer at 3375'. Frac'd Langlie Mattix (7-Rivers) perfs (3437'-3460') & open hole (3470'-3790') w/ 82,391 # 20/40 mesh sand. Pavg= 17546 at 25 bpm. ISIP= 1070#. Slick water frac'd Jalmat perfs (3046'-3303') w/ 27,758# 20/40 mesh sand. Pavg= 17546 at 25 bpm. ISIP= 1070#. Cleaned out frac sand to 3780'. RIH with new super max tubing, pump and rods. PWOP.
19-Oct-09	POOH w/ parted rod (4th - 7/8" body break). POOH w/ tubing & pump. RIH with tubing, pump and rods. PWOP.
31-Oct-09	POOH w/ parted (body break) 23rd - 7/8" rod. Laid rod string due pitting. RIH w/ tubing, pump & rods. PWOP.
5-Mar-10	POOH w/rods, pump was stucked. POOH w/tbg & pump. Laid down 3 badly pitted jts. RIH w/ tbg, pump & rods. PWOP.
7-Jul-10	POOH with parted 5th 3/4" rod, rods and pump. POOH with tubing - replaced 20 bad tubing joints. Hydrotest tubing - found hole on joint above SN. RIH with pump and rods. PWOP.
18-Apr-11	POOH w/rods, swab well down. POOH w/34 stands. Continue out of hole with tbg and remaining rods. RIH w/ plug, set plug @ 2947', load & test CSG, held, POOH w/pkr and plug. RIH w/4 3/4 bit to 3470'. POOH w/bit. Perf'd Yates f/ 3022'-3048', 3078'-82', 3086'-94', 3100'-07', 3120'-28', 3150'-54', 3174'-68', and 3225'-3208'. Perf'd 7-Rivers f/ 3346'-48', 3358'-68', & 3382'-3388'. RIH set wireline CIBP @ 3425', dump 10' of CMT on top, RIH w/pkr and test CIBP, held, POOH w/PKR, RIH w/frac string and PKR, set PKR @ 2882', nipple up frac stack, load and test CSG and frac stack, held. Frac well with 210,000 #'s sand and nitrogen; displace to bottom. ISIP @2300, 5 min @2140, 10 min @ 2080, 15 min @ 2040. Check PSI on well, 480 PSI, flow back 70 total BBLS w/trace of oil, ending PSI @ 280. 400 PSI, flow back 10 BBLS fluid w/2% oil cut, ending PSI of 170. 350 PSI, flow back 65 BBLS, ending oil cut of 20%, ending PSI of 70 PSI. 350 PSI, bleed well down, nipple down frac stack, release PKR, POOH laying down frac string. RIH w/bit and tag at 3275', clean out to CMT on top of CIBP @ 3415, circulate clean. RIH and tag @ 3415. POOH laying down 30 jts work string. Continue laying down work string, run after frac gamma ray. RIH w/production TBG testing to 7000 PSI, ND BOP, set TAC, NUWH, RIH w/ pump and rods, space well out, hang well on, well pumping
14-Nov-11	POOH with 2 1/2"x2"x 16' RWBC, RIH with 2 1/2"x2"x22' RWBC pump. PWOP
25-Nov-11	POOH with parted 78th - 3/4" rod (surface break due to pitting). PWOP.
22-Oct-13	Part in 7/8" pn

Joints	Tubing Detail (top to bottom) Description	Footage	Depth
75	2-7/8" Supermax	2,303	2,353
1	7/8" x 5-1/2" TAC - 2347	1	2,343
19	2-7/8" Supermax	600	2,954
1	2-7/8" Supermax [illegible]	31	2,995
1	2-7/8" seat nipple - 2996	1	2,996
1	7/8" x 4' [illegible]	4	3,000
1	7/8" x 20' [illegible]	20	3,020
4	2-7/8" Supermax [illegible]	126	3,146
	Note tubing and rod tally do not match.		
	[illegible] tubing depths [illegible]		

Rods	Rod Detail (top to bottom) Description	Footage	Depth
1	1-1/4" x 22' polish rod	22	22
1	1-1/4" x 1-1/2" polish rod liner	0	22
1	4' x 7/8" rod sub	4	26
54	7/8" rods	1,350	1,376
53	3/4" rods	1,325	2,701
1	1/2" x 2" x 16' RWBC pump	16	2,717

Purpose Unit

Updated: 3/10/14 MCB

Reservoir:	Jal Mat & Langlie Jal
Well ID Info:	CJU #130
API No:	30-025-08843
Int. Comp. Date:	4/22/1954

Hole Size: 11"

Surf. Csg: 8 5/8" - 28#, H-40

Set @: 300'

Cement w/: 150 sxs

Circ: Yes

TOC: Surface

Csg leak @ 300'-331'. Sqz'd w/27 sxs cmt

Hole Size: 7 7/8"

Prod. Csg: 5-1/2" - 14#, H-40

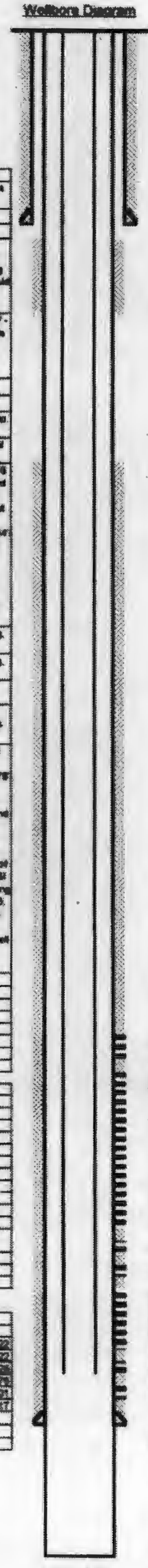
Set @: 3470'

Cement w/: 300 sxs

Circ: No

TOC @ 1850' by Calc

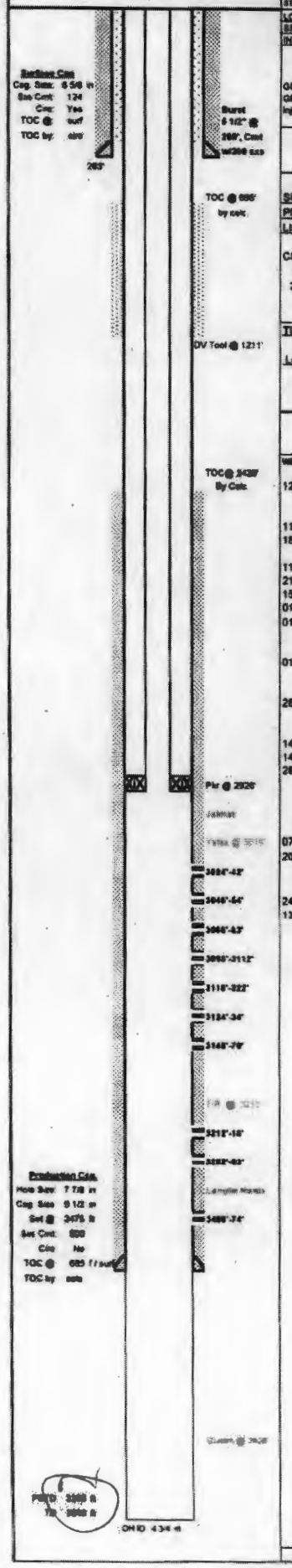
TOC: 1850' calc'd



PBTD 3782'

TD 3795'

WELLBORE SCHEMATIC AND HISTORY



LEASE NAME:	Cooper Jal Unit				WELL NO. 132 WIW
STATUS:	Active	Water Injector			API# 30-025-08639
LOCATION:	2310 FSL & 990 FEL Sec 24, T - 24S, R - 36E; Lea County, New Mexico				
SPUD DATE:	04/09/54	TD	3840	KB 3,315'	DF
INT. COMP. DATE:	09/12/54	PBTD	3285	GL 3,307'	

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-N from 0 - 3550' (4/25/54 Schlumberger)
GR-CBL-MSG-CCL from 2,000 - 3,300' (6-7-95 Halliburton)
Injection Profile (1-29-97 Houston, Inc.)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3019' 7-Rivers @ 3236' Queen @ 3629'

CASING PROFILE

SURF.	8 5/8" - 24#, J-55 set@ 283'. Cmt'd w/124 sxs - circ cmt to surf.
PROD.	5 1/2" - 14#, J-55 set@ 3475'. Cmt'd w/400 sxs - TOC @ 2430' from surf. DV tool @1211' - pmp 100 sxs - 5 1/2" - TOC@ 695' // surf by calc.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE : 3475 - 3840' (7 RVRS/Queen OH).

1-Jun-95 Perf'd Yates @ 3024'-43', 3066'-83', 3095'-3112', 3126'-33' & 3149'-70' w/ 2 spf (104 holes total)
26-Jan-09 Perf'd 7-R @ 3466'-74', 3227'-83', 3212'-16'; Perf'd Yates @ 3132'-70', 3124'-34', 3116'-22', & 3046'-64', 78 ft, 78 holes, 1 JSPF.

TUBING DETAIL 1/29/2009

Length (ft)	Detail
3	KB
2915	88 jts - 2 7/8" 6.5#, CL, J-55, 8rd EUE tbg.
3	1- 5 1/2" x 2 7/8" Baker Model AD-1 packer
2926	btm

ROD DETAIL

WELL HISTORY SUMMARY

12-May-54	Initial completion interval: 3475 - 3528' (7 RVRS/Queen OHs. Frac'd w/4,000 gals & 0 #'s sand. Burst csg @ 280', Cement sqz csg leak w/200 sxs (3 jobs) Tst OK @ 875 psi. Frac'd w/4,000 gals & 6,000#'s sand. IP = 173 bopd, 346 Mcfpd (flowing).
11-Apr-76	Acdz'd OH w/ 1,500 gals. Tight spot in csg @ 210'
18-Feb-85	C/O fill from 3473 -3555' (82' of fill). Deepened to 3640'. Acdz'd OH 3475 -3640' w/4,000 gals in 2 stages using 500# rock salt. Frac'd w/22,000 gals X-L gel & 56,000#'s 12/20 sand ramping to 6 ppg.
11-Mar-87	C/O fill to 3640'
21-Apr-87	C/O fill to 3628'
15-Apr-88	Tag fill @ 3628'
01-Oct-93	Administrative Order No. WFX-848. Approved Division Order No. R-4619 & R-4620 for Waterflood Expansion
01-Dec-93	CONVERTED TO INJECTOR: C/O from 3508 - 3640'. Acdz'd OH w/4,000 gals 20% NEFE combined with 110 gals UT-460 & 110 gals T-425 microflaw solvent & 1400#'s rock salt. AIR=3 bpm @ 900 psi. ISIP=680 psi. RIH w/ CL tbg & plr. Set plr @ 3370'. Noted plr is 105' above hole in csg. Inject @ 263 bwpd w/ TP=vacuum.
01-Jun-95	Ran GR-CBL-CCL. Perf (Jalmat) 2980 - 3178 (selectively). Acdz'd w/5,000 gals 15% NEFE HCL &250 RCN ball sealers in 6 stages. Ran 2 3/8" CL tbg & plr. Set plr @ 2962'. Tst plr. OK. Inject @ 481 bwpd w/ TP=680 psi. Converted to DHC injector w/ Pmax surf injection press = 990 psi.
26-Jun-00	C/O hard scale from 3145 - 3376'. Set CIBP @ 3300' and dmp 35' cmt on top. PBTD @ 3265'. Acdz'd perfs 3024'-3170' w/ 4,000 gals 15% NEFE/HCL & 2,000#'s rocksalt in 3 stages. AIR=4 bpm @1380 psi. ISIP=570 psi, P15 min= 140 psig. Ran plr on 2 3/8" CL tbg & set plr @ 2955'. Injecting @ 288 bwpd. TP=160 psi.
14-Feb-02	Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag fill @ 129' (3511' of fill)
14-Oct-03	Bladenhead Test failed. Bled CSG dn to 0 psi. SI for 15 min-press build up to 500#. Witnessed by OCD Rep-Buddy Hill.
28-Oct-03	POOH with 2 3/8" IPC tbg & 5 1/2" x 2 3/8" AD - 1 packer. Laid down 2 3/8" IPC tbg. Clean out to 3285'. POOH and laid down with 4 3/4" bit, 6 - 3 1/2" drill collars. RIH with redressed 5 1/2" x 2 3/8" AD-1 packer on reconditioned 90 - 2 3/8" IPC tubing to 2954'. Packer would not test. Set packer at 2925', would not test. POOH with injection string. Test casing to 500 psig - held. RIH with injection string to 2931'. Circulated annulus with 70 barrels of 2 % KCl & inhibited packer fluid. Set Packer with 20,000# tension. Test casing to 500 psig - held. Pulled pressure chart for OCD.
07-Nov-05	RIH with 1 1/4" sinker bar and tagged at 3,272' (PBTD).
20-Jan-09	POOH w/2 3/8" IPC tbg & 5 1/2" x 2 3/8" AD - 1 packer. RIH w/ 4 3/4" bit & DCs. Drilled cmt & CIBP @ 3300' C/O to 3640'. Lost Perf Gun in open hole. Fished Perf Gun. Perf'd 7-R @ 3466'-74', 3227'-83', 3212'-16'; Perf'd Yates @3124'-34', 3116'-22', & 3046'-64', 78 ft, 78 holes, 1 jspf, 120 degree phasing. Test annulus to 350 psig.
24-Apr-09	RU Gray WL. Tagged @ 37' w/ logging tool. RD wireline. Placed well on injection. Rate/Press: 781 bwpd.@#.
13-Apr-11	POOH with injection string. Cleaned out from 3,561' to 3,625' with 4 3/4" bit. Acidized with 20,000 gals 15% 90/10 blend plus 15,000# salt. ISIP= 560 psig. RIH with injection string. Set PKR at 2,925'. Pulled MIT chart for OCD.

PREPARED BY:	Larry S. Adams	D. Carrizales	UPDATED:	05-Aug-11

Field: Cooper Jal Unit

	Location:
Footage:	330 FSL & 1650 FWL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,310'
KB:	3,321'
KB Calc:	11'
ck w/log?	Yes

Date	History
18-Jul-54	OH frac 3463' - 3570' w/ 5000 gals Dowell PetroFrac & 7500# sand.
18-Sep-59	Changed status from flowing to rod pump.
22-Jun-73	Checked TD w/ tbg and re-activated well (well had been SI)
8-Nov-75	Acidize w/ 1500 gal.
15-Feb-79	Selectively Perforate 3031' - 3295', set RBP below and acidize perfs w/ 3000 gals 15% HCl & 3000 gals mud acid in 3 stages using BS. Frac'd perfs w/ 49000 gals X-L gel, 36000# 20/40 & 13500# 10/20 sd in 3 stages using 750# RS. CO 58' fill, recover RBP & RWTP.
11-Oct-82	CO 101' of fill to 3570'. Frac OH 3463' - 3570' w/ 6000 gal CO2, 23500# 20/4 sand & 13500# 10/20 sand.
21-Jan-89	CO fill f/ 3521' - 3555'.
9-Aug-94	CO fill f/ 3524' - 3570', set plr & acidize OH w/ 4200 gals 20% HCl + 1700# RS in 4 stages. Pull plr & acidize perfs + OH w/ 4200 gals 20% HCl & 2100# RS in 4 stages. Attempt to set plr at 2,990' & would not test. Re-set plr at 2959' & shut well in.
28-Feb-95	Lay injection line and place well on injection.
14-Feb-02	Tag fill at 3508' w/ sinker bar.
7-Nov-05	Tag fill at 3558' w/ sinker bar.
10-Jan-11	CO fill f/ 3460' - 3570' & acidized perfs + OH w/ 8500 gals + 15700# RS.

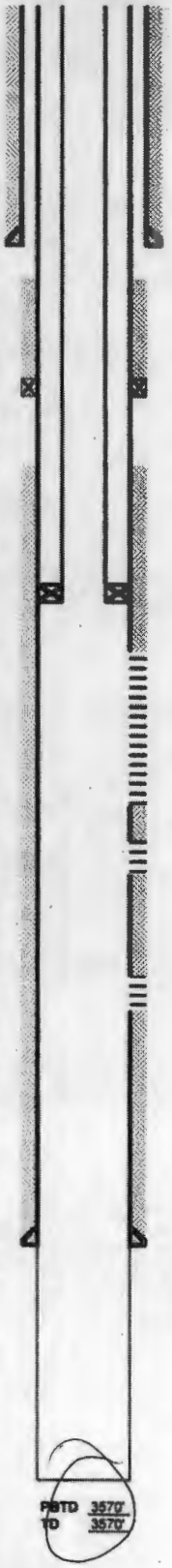
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
	KB	11	11
92	2-3/8" 4.7# Cmt Lined, J-55, w/ on/off tool	2,945	2,956
	1.78" ID Profile Nipple	1	2,957
	5 1/2" x 2 3/8" Baker Model AD-1 packer	3	2,960

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Pumping Unit:
Updated: 01/20/14 MCB

CJU #134

Wellbore Diagram



Reservoir: Cooper Jal
Well ID Info: CJU #134 WIW
API No: 30-025-09844
Spud Date: 8/29/1954

Hole Size: 12-1/4"
Surf. Csg: 8 5/8" - 28#
Set @ 286'
Cement w/ 150 sx cmt + 2 sx Calcium Chloride
Circ: Yes
TOC: Surface

TOC: 400' (Calc)

DV Tool at 1185' (Cement w/ 100 sx)

TOC: 1890' (Calc)

Plr at 2960' KB

Yates @

Perf: 3,031', 3034', 3037', 3040', 3042', 3069', 3071', 3074', 3078', 3081', 3084', 3087', 3107', 3109', 3111', 3113', 3115', 3135', 3142', 3153', 3155' & 3157' w/ 1 JSPF on 2/7/1979

Perf: 3223', 3225' & 3227' w/ 1 JSPF on 2/7/1979

T/R @ 3240'

Perf: 3291', 3293' & 3295' w/ 1 JSPF on 2/7/1979

Hole Size: 7 7/8"
Prod. Csg: 5 1/2" - 15.5#, J-55
Set @ 3,456'
Cement: 200 sxs
DV Tool: 100 sxs + 10% Gel

4-3/4" OH

PBTD 3570'
TD 3570'

Queen @

Field: Cooper Jal Unit

	Location:
Footage:	990 FSL & 1980 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,312'
KB:	3,318'
KB Calc:	6'
ck w/log?	Yes

Date	History
1-Mar-54	Initial completion interval: 3472 - 3575' (7 RVRS/Queen OH). Natural completion. IP= 51 bopd, 0 bwpd, & 72 Mcfgpd (flowing)
9-Sep-54	Frac w/ 4,000 gals lse oil & 4,000#'s sand.
15-Jun-73	Placed well on rod pump.
8-Oct-74	C/O fill to 3575'. Jetwash OH 3472 - 3575'.
11-Feb-75	Tagged for fill - No fill.
29-Aug-86	C/O OH 3490'-3575' (95' fill). Deepened to 3650'. Ran CBL. TOC @ 2726'. Acdz'd OH (3472'-3650') w/2,000 gals; Frac'd w/34,000 gals X-L gel carring 80,000#'s 12/20 sand in 2 equal stages. Max sand conc. of 7 ppg. C/O to 3650'.
30-Sep-86	Perf (Jalmat) f/ 3019'-3210' w/ 2 spf, (84 holes total) & 3285 - 3362' w/ 1 spf (21 holes total). Acdz'd all open perfs w/2,000 gals; Frac w/ 30,000 gals X-L gel carring 50,000#'s 12/20 sand in 2 equal stages using RS diversion. Max sand concentration 7 ppg. C/O to 3650'. Lost RBP in OH. Top @ 3530'. CONVERTED TO COMINGLED DOWNHOLE INJECTOR. (Jalmat & Langlie Mattix)
13-Feb-87	C/O OH fill from 3472 - 3524' (52' fill). PBTD @ 3524'.
9-Sep-87	C/O OH fill from 3496 - 3524' (28' fill). PBTD @ 3524'.
22-Jul-88	C/O OH fill from 3475 - 3524' (49' fill). PBTD @ 3524'.
1-Oct-93	Administration Order No-648. Approved Order No. R2019 & R-4020 for Waterflood Expansion.
15-Nov-93	Replaced 2 jts tbg & rod pmp. Placed well on production.
9-Jan-94	Ran 91 jts - 2 3/8" tbg & plkr. Set plkr @ 2956'.
5-Dec-94	LD rods & pmp (junk). C/O to 3524' (scale & formation). Tagged solid @ 3524'. Acdz'd perfs & OH w. 8,400 gals 20% NEFE HCl acid mixed w/ 170 gals xylene using 5,800#'s RS generating 8 stages. AIR=3 bpm PM=500-126 psi. ISIP= 280 psig. P5min= vacuum. Ran 2 3/8" CL tbg & plkr. Set plkr @ 2956'. Inject @ 933 bwpd. TP=vacuum.
2-Apr-99	Reset plkr @ 2925'. Tst csg & plkr @ 500 psi. OK. Initiate injection @ 580 bwpd. TP=580 psi.
14-Feb-02	Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag fill @ 3524' (137' of fill)
7-Nov-05	RIH with 1 1/4" x 5' sinker bar and tagged at 3,265'.
24-Mar-08	POOH w/ 2 3/8" IPC tbg & 5 1/2" AD-1 PKR. RIH w/ 4 3/4" bit & DCs, tagged @ 3157'. Cleaned out to 3530'. RIH w/ 5 1/2" AD-1 and 2 3/8" IPC tbg. Circulated w 70 bbls 2% KCl. Set PKR @ 2923', press annulus to 420 psig for 30 minutes.
10-Jul-08	Acid treat Jalmat & langlie Mattix with 3,096 gals 15% NEFE HCl. AIR= 4.5 bpm Pavg= 1590 psi. ISIP= 920 psi. Prior Rate/Press: 389 bpd @ 949 psi. After Rate/Press: 485 bpd @ 790 psi.
27-Apr-09	RU Gray Wireline. Tagged @ 2,952' w/ logging tool. RD wireline. Place well on injection. Rate/Press: 441 bwpd/904#.
18-Jan-11	POOH with injection string. Laid down AD-1 PKR. RIH with 4 3/4" bit. Cleaned from 3,480' to 3,530'. RIH with 5 1/2" Loc-Set PKR & set at 2,930'. Acid treat Jalmat & langlie Mattix with 11,500 gals 20% NEFE HCl (90/10, acid/Xylene). Diverted with 25,000# AIR= 6 bpm. Pavg= 1650 psi. ISIP= 1020 psi. RIH w/ IPC Tbg. MIT. Pull Chart for OCD. Prior: 321 bwpd @ 801#. After: 688 bwpd @ 500#.

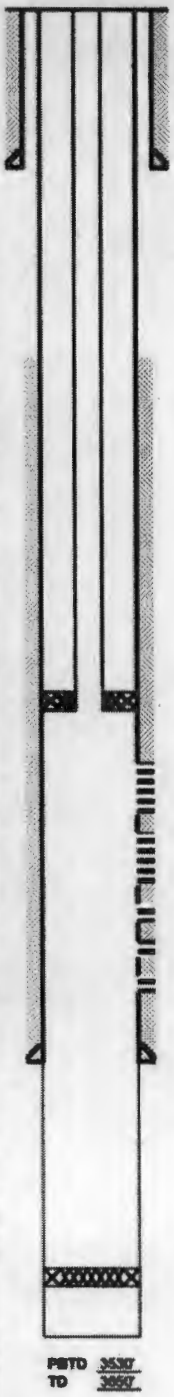
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
1	2-3/8" 4.7#, IPC, J-55, 8rd EUE tbg sub	10	10
1	2-3/8" 4.7#, IPC, J-55, 8rd EUE tbg sub	8	18
90	2-3/8" 4.7#, IPC, J-55, 8rd EUE tbg	2,900	2,918
1	On/Off Tool & Profile Nipple	1	2,919
1	2-3/8" x 5-1/2" Baker Model Loc-Set Packer	3	2,922

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Updated: 01/13/14 MLS

CJU #135

Wellbore Diagram



PBTD 3530'
TD 3650'

Reservoir:	Cooper Jal
Well ID Info:	CJU #135
API No:	30-025-08941
Init. Comp. Date:	3/1/1954
Hole Size:	11"
Surface Csg:	8-5/8", 28#, J-55
Set @	288'
Cement w/	125 sx
Circ:	Yes
TOC:	Surface
Hole Size:	7-7/8"
Prod. Csg:	5-1/2", 14# (39 jts.), 15.5# (69 jts.), J-55
Set at:	3472'
Cement:	400 sx
Circ:	No
TOC:	2726' from surface by cement bond log

plkr @ 2930'

3019'-3097'

3102'-3194'

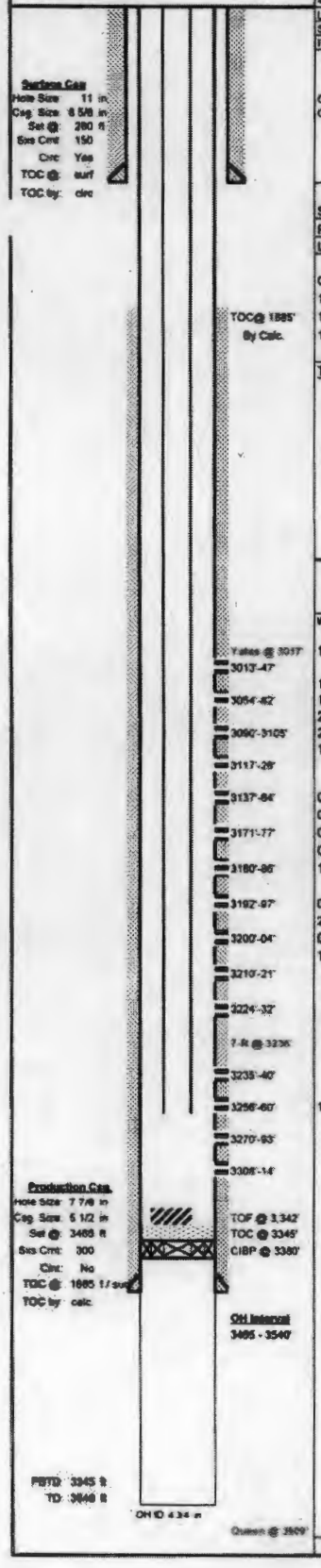
3201', 3207', 3210'
3285'-3302'

3356'-3362'

OH Interval: 3472'-3650'
OH ID: 4-3/4"

RBP pushed into OH to 3530'

WELLBORE SCHEMATIC AND HISTORY



LEASE NAME	Cooper Jal Unit					WELL NO	136
STATUS	Active	Oil				API#	30-025-09640
LOCATION	990 FSL & 990 FEL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico						
SPUD DATE		TD	3540	KB	3,308'	DF	
INIT. COMP. DATE	05/15/54	PBTD	3345	GL	3,302'		

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-N from 0 - 3536' (5-8-54 Schlumberger)
GR- CCL from 3498 - 2700' (11-15-93 Halliburton)

CORES, DST'S, or MUD LOGS:

HYROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3017' 7-Rivers @ 3235' Queen @ 3509'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 280' Cmt'd w/150 sxs - circ cmt to surf.
PROD.	5 1/2" - 14#, J-55 set@ 3465' Cmt'd w/300 sxs - TOC @ 1885' from surface.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE : 3465 - 3540'

15-Nov-93 **Perf'd Yates II' 3013'-47', 3054'-82', 3090'-3105', 3117'-28', 3137'-64', & 3171'-77', 2 spf @ 120 degree phasing (222 holes).**
17-Dec-09 **Perf'd Yates II' 3013'-47', 3054'-82', 3090'-3105', 3117'-28', 3137'-64', 3171'-77', 3180'-86', 3192'-97', 3200'-04', 3210'-21', & 322**
17-Dec-09 **Perf'd 7 Rivers II' 3235'-40, 3256'-60', 3270'-93', & 3308'-14'.**

TUBING DETAIL 11/18/2011

Length (ft)		Detail
2975	91	2 7/8" 8.5#, J-55, 8rd EUE tbg.
3	1	5 1/2" x 2 7/8" TAC
300	10	2 7/8" 8.5#, J-55, 8rd EUE tbg.
31	1	2 7/8" x 3 1/2" Super Max tbg.
1	1	2 7/8" SN
4	1	2 7/8" Perf Sub
19	1	2 7/8" Desander
31	1	2 7/8" BP Mud Anchor
3264		btm

ROD DETAIL 11/18/2011

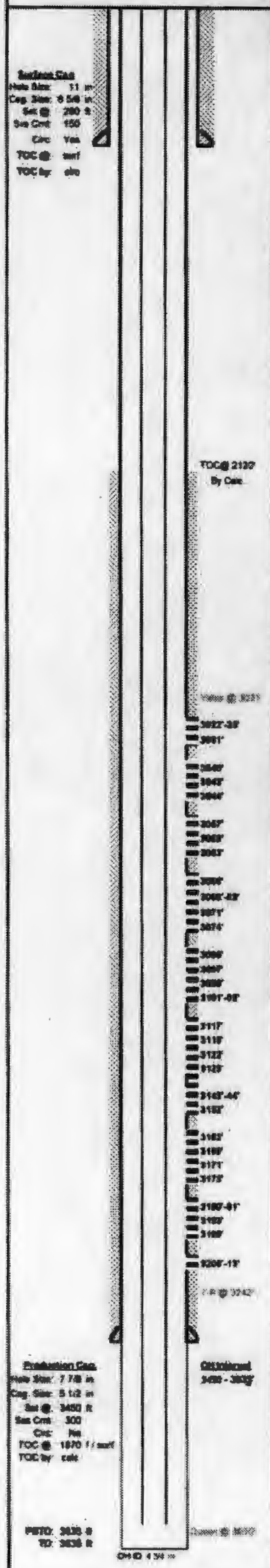
Length (ft)		Detail
20	1	26' x 1 1/4" polish rod w/ 7/8" Pin
0	1	1 1/4" x 1 1/2" x 14' liner
900	36	1" KD steel rods
975	39	7/8" KD steel rods
725	29	3/4" K-Bars
600	24	1 1/2" K-Bars
10	1	2 1/2" x 2" X 20' RHBC
0	1	1 1/4" x 16' Desander Sand Screen
3230		btm

WELL HISTORY SUMMARY

15-May-54	Initial completion interval: **3465 - 3540' (7 RVRS/Queen OH).** Frac'd w/4,000 gals lse oil & 6,000 #'s sand. **IP= 137 bopd, 0 bwpd, & 172 Mcfgpd (flowing)**
11-Jul-55	Re-frac OH w/15,000 gals lse oil & 30,000#'s sand
17-May-71	**CONVERTED WELL TO INJECTION:** C/O fill 3513 - 3537' (27' of fill). Installed injection tbg & plr. Placed on injection.
23-Mar-79	Attempted to tag fill w /SB. Could not get below 3183'. Plr @ 3396'.
28-Mar-79	Tag fill @ 3497' (40' of fill) with 1" sinker bar on SL. Did not C/O.
15-Nov-93	Ran GR-CCL log. **Set CIBP @ 3380'.** Dmp 35' of cmt on top of CIBP. (PBTD @ 3345'). **Perf'd 3013'-3177' (222 total - 0.56" dia holes).** Frac'd perfs w/45,192 gals X-L gel w/ 187,880#'s 12/20 sand & 41,140#'s resin coated sand. AIR= 35.4 bpm. PM=3,000-1607 psi. ISIP=1600 psi. C/O sd f/ 2467 -3345'. PWOP. **Pmp 113 bopd, 23 bwpd, & 33 Mcfgpd.**
05-Feb-94	Tag fill @ 3294' (51' of fill). Did not C/O. Hydrotest & replaced 1 jt tbg.
07-Aug-97	Had rod part. Acdz'd perfs w/2000 gals 15% acid & performed scale sqz. Repaired rod part. PWOP.
02-Sep-98	Inspect tbg & rods. Replaced 77 jts of tbg and rod boxes. Return well to production
03-Aug-99	Replaced pmp.
18-Oct-00	Acdz'd perfs 3013 - 3177' combined with sonic hammer using 2,000 gals 15% NEFE HCL. Scale eqz'd w/ 55 gals TH793. Return well to production. **After WO: 10 bopd, 39 bwpd, & 21 Mcfgpd.**
03-Jan-02	Change out pump. Pump 10 gals paraffin chemical down tubing before setting pump. Placed on production.
24-Aug-05	POOH with rods and pump. Tagged at 3296'. RIH with pump and rods. Load well with 12 bbls. PWOP.
03-Jul-07	Long stroke well.
14-Dec-09	POOH with rods, pump and tubing. RIH with 4 3/4" bit, tagged 3295'. Cleaned to 3301' - recovered sand, iron sulfide and metal. RIH with 4 3/4" shoe & 1 jt washpipe, cleaned out 3345' - recovered sand, iron sulfide, cmt, & part of 2 7/8" collar. RIH with bit - tagged at 3345'. RIH w/ AD-1 PKR & set @ 3210'. Set PKR @ 2960'. Circulate hole w 2% KCL. **Perf'd Yates II' 3013'-47', 3054'-82', 3090'-3105', 3117'-28', 3137'-64', 3171'-77', 3180'-86', 3192'-97', 3200'-04', 3210'-21', & 3224'-32'; Perf'd 7-Rivers II' 3235'-40, 3256'-60' and 3308'-14'.** Hydrotest 3 1/2" work string to 7000#. Set PKR @ 2950'. Frac'd Jalmat (Y & 7-R) with 183,863 #'s sand and 1.3 MMCF Nitrogen. AIR= ? Nitro rate= ? Pavg= 4116#. ISIP= 1432#. Next Day SITP= 900#. Flowed back 62 BW & 21 BO. Second Day SITP= 540#. Recovered 211 bbl, 19% oil cut. Third Day SITP= 460#. RIH w/ 4 3/4" bit - tagged @ 3170'. Could not circulate. RIH w/ notched collar - tagged &C/O f/ 3170' to PBTD @ 3345'. Hydrotest 2 7/8" tubing, pump & rods. PWOP.
16-Nov-11	POOH with production string. RIH with 4 3/4" bit, cleaned out from **2,900' to 3,342',** stared torqueing. **Lost 2 cones and recovered 3/4" bladed rod 28'.** Discontinue to drill out CIBP. RIH with tubing, pump and rods. PWOP.

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	08-Dec-11

WELLBORE SCHEMATIC AND HISTORY



LEASE NAME	Cooper Jal Unit			WELL NO	138
STATUS:	Active	Oil		API#	30-025-09657
LOCATION:	660 FNL & 1650 FWL, Sec 25, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE:		TD	3635	KB 3,310'	DF
INT. COMP. DATE:	06/29/54	PBTD	3635	GL 3,300'	

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-N from 103 - 3590 (6-28-54 Schlumberger)
Temp log/grad profile (6-7-73 WACO)

GR-CNL (9-30-85 Dresser Atlas)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3091' | 7-Rivers @ 3242' | Queen @ 3616'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 280' Cmt'd w/150 sxs - circ cmt to surf.
PROD.	5 1/2" - 15.5#, J-55 set@ 3450' Cmt'd w/300 sxs - TOC @ 1870' from surface by calc.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE: 3450 - 3635'

27-Sep-85 Perf'd Yates f/3022 -3212' w/ 2 spf (36 intervals, 72 holes)
16-Mar-10 Perf'd 7-Rivers f/3,365'-3371', 43'-50' & ,3266'-3288' (2 JHPF); Perf'd Yates f/ 3230'-3234', & 3220'-3226' (2 JHPF), 3203'-3210', 3197'-3200', 3190'-3195', 3178'-3186', 3169'-3175', 3159'-3166', 3151'3156', 3140'-3147', 3114'-3134', 3092'-31 3050'-3076' 3038'-3046' 3022'-3034' (1 JHPF)

TUBING DETAIL 05/05/11 / ROD DETAIL 05/05/11

Length (ft)		Detail	Length (ft)		Detail
2667	81	jts 2 7/8 TBG	16	1	Polish Rod
3	1	2 7/8 X 5 1/2 TAC	0	1	Liner
504	16	jts 2 7/8 8rd TBG	8	2	2' X 7/8 rod subs
31	1	2 7/8 X 3 1/2 blast joint	1025	41	7/8 rods
1	1	2 7/8 seat nipple	1850	74	3/4 rods
4	1	2 7/8 X4' TBG sub	450	18	K-bars
18	1	desander	20	1	2 1/2 X 2 X 20' RWBC pump
62	2	jts 2 7/8 TBG	3369		tbm
31	1	bull plug			
3521					

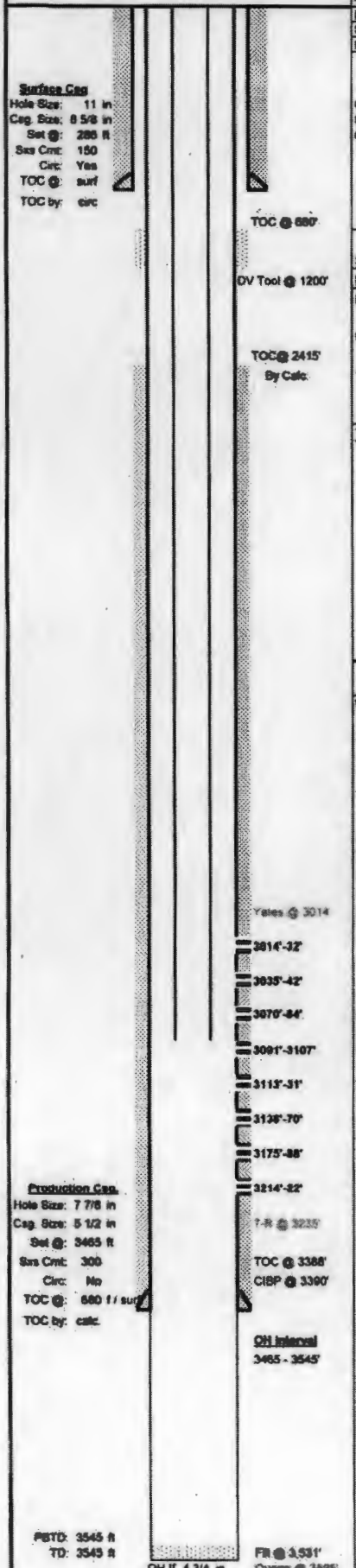
WELL HISTORY SUMMARY

29-Jun-54	Initial completion interval: 3450 - 3590' (7 RVRS/Queen OH). Frac'd w/5,000 gals lease oil & 8,000#'s sand IP= 245 bopd, 0 bwpd, & 306 Mcfgpd (flowing)
01-May-63	SI. Would not flow.
16-Jul-73	C/O fill to 3550'
08-Mar-74	Installed Bethlehem 228D - 100" L.S. Pumping unit
03-Sep-85	Deepened to 3635'. Acdz'd OH w/2,000 gals. Frac'd w/11,100 gals & 23,750 #'s 20/40 sand. (Screened out @ 5 ppg). C/O to 3635'. Refrac OH w/10,000 gals & 45,000#'s 12/20 sand (Max concentration 7 ppg)
27-Sep-85	Perf'd (Jalmat) 3022 - 3212' w/2 spf (36 intervals, 72 holes). Acdz'd perf's w/2,000 gals. Frac'd w/33,000 gals & 62,500#'s 12/20 sand (Max concentration 5 ppg)
01-Sep-87	C/O fill from 3545 - 3635'
29-Feb-88	Tagged fill @ 3634'
13-Dec-92	Hydrotest tbg. Found & replaced 1 bad jt. Replaced SN & polish rod. Returned well to production
05-Jan-95	Scanaloged tbg. Replaced 6 bad jts. Replaced pmp. Returned well to production
09-Jun-96	Hydrotest tbg. Found & replaced 1 bad jts. Returned well to production.
11-Dec-96	Hydrotest tbg. Found & replaced 10 bad jts. Replaced 20 rods & boxes. Returned well to production
29-Sep-97	Scanaloged tbg. Replaced 34 bad jts. Replaced pmp & 5 sinker bars. Returned well to production.
21-Feb-01	Replaced 1 bad jt tbg. Returned well to production.
12-Mar-10	POOH w/ prod string. Tagged @ 3,620'. Ran Press Gradient Tool, took measurement @ 500' interval. Tagged at 3622'. Set CIBP @ 3400' & PKR @ 3,365' - test to 500#. Ran GR/CCL & correlated W/ GR/CN. Perf'd 7-Rivers 3,365'-3371', 3,3 43'-50' & ,3266'-3288' (2 JHPF). Perf'd Yates f/ 3230'-3234', & 3220'-3226' (2 JHPF), 3203'-3210', 3197'-3200', 3190'-3195', 3178'-3186', 3169'-3175', 3159'-3166', 3151'3156', 3140'-3147', 3114'-3134', 3092'-3106' 3050'-3076', 3038'-3046', 3022'-3034' (1 JHPF). Hydrotest 3 1/2" work string to 7000#. Set PKR @ 2960' & 2930' - no test. Pumped in @ 3 1/4" BPM - 1000 psig. PKR held. Frac'd Yates & 7-Rivers (3022'-3371') with 197,923#'s plus 1.9 MM SCF Nitrogen. Pavg= 3399 psig. ISIP= 1823 psig. Shut in over weekend. SITP= 1000 psig. Flowed 77 bbls @ 3% oil cut. Next day SITP= 700 psig. Flowed 5 hrs. 6 bbls @ 5% oil cut. RIH with notched collar had 245' of frac sand. POOH with RBP. Cleaned out from 3616' to 3635' with AIR Unit. RIH with tubing, pump and rods. PWOP
03-May-11	POOH w/ 6 rods, parted on box. RIH fish rods, attempt to unseat pump, back rods off, strip rods and TBG out of hole. RIH w production TBG testing. RIH with pump and rods, hang well on, respace well, well pumping
16-Jan-13	POOH w/ 7 rods, broken coupling. RIH fish rods, attempt to unseat pump, back off rods. POOH w/ rods & 20 K-Bars. POO tbg to fluid, swab fluid back to casing. POOH w/ tbg. RIH w/ tbg, pump & rods. PWOP

PREPARED BY	Larry S. Adams	Domingo Carrizales	UPDATED	19-May-11

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	139
STATUS	Active	Oil		API#	30-025-09661
LOCATION:	330 FNL & 2310 FEL, Sec 25, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE:		TD 3545	KB 3,314'	DF	
INT. COMP. DATE:	05/26/54	PBTD 3545	GL		

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-N from 0 - 3544' (5-20-54 Schlumberger)
Injectivity Profile (6-5-73 WACO)
GR-CCL (9-13-93 Halliburton)

CORES, DST'S or MUD LOGS:

HYROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3014' 7-Rivers @ 3235' Queen @ 3595'

CASING PROFILE

SURF.	8 5/8" - 24#, H-40 set@ 286' Cmt'd w/150 sxs - circ cmt to surf.
PROD.	5 1/2" - 14#, H-40 set@ 3465' Cmt'd w/200 sxs - TOC @ 2415' from surf. DV tool @1200' - pmp 100 sxs -
LINER	None 5 1/2" - TOC@ 680' f/ surf by calc.

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE : 3465 - 3545'

11-Sep-93 Perf'd Jalmat w/ 2 spf 3014'-32', 3035'-42', 3070'-84', 3091'-3107', 3113'-31', 3138'-70', 3175'-88', & 3214'-22' (252 holes total - 0.56" dia.)

TUBING DETAIL 10/8/2012

Length (ft)		Detail
2620	81	2-7/8" J-55 6.5# EUE 8rd
4	1	5 1/2" x 2 7/8" TAC
295	9	2-7/8" J-55 6.5# EUE 8rd
4	1	2 7/8" x 4' Lift Sub
1	1	2 7/8" x 24' WB
4	1	2 7/8" x 4' Lift Sub
20	1	2 7/8" x 20' Spirit Desander
131	4	2-7/8" J-55 6.5# EUE 8rd new MA
1	1	2-7/8" BP
3080		

ROD DETAIL 10/8/2012

Length (ft)		Detail
16	1	1-1/4" X 26' Polished Rod w/7/8" Pin
0	1	1-1/4" X 1-1/2" X 16' Liner
16	4	4', 4', 4', 4' - 7/8" Pony Rod
900	36	7/8" Steel Rods
1400	56	3/4" SteelRods
600	24	1-1/2" K-Bars
4	1	2 1/4" X 4' Plunger
2938		

WELL HISTORY SUMMARY

26-May-54	Initial completion interval: 3465 - 3545' (Queen OH). Frac'd w/4,000 gals Dowell Stratofrac w/ 6,000#'s sand. AIR= 12.6 bpm at 1200 psig. IP= 157 bopd
28-Jul-54	48 bopd, 0 bwpd, & GOR=1,072 (flowing on 15/64" choke)
22-May-57	Frac'd OH w/17,000 gals, 25,000#'s 20/40 sand, 5,000#'s 10/20 sand. AIR=29 bpm @ 2700 psi. Before WO: 7 bopd, 7 bwpd & GOR= 8320. After WO: 31 bopd, 0.2 bwpd, & GOR=2947
18-May-71	CONVERTED TO INJECTION: Tag btm @ 3539'. Did not C/O. Ran injection equipment & initiated injection.
05-Jun-73	Ran injection profile. Tag TD @ 3538'
23-Mar-79	Attempted TD check w/ 1 1/4" sinker bar - couldn't get below 2888'.
28-Mar-79	Ran 1" sinker bar - tagged TD @ 3482' (56' of fill)
12-Aug-88	C/O, Side jet and acdz'd OH w/2,000 gals
29-Mar-93	C/O, Side jet and acdz'd OH w/4,000 gals
11-Sep-93	Set CIBP @ 3390' & dmp 35' cmt on top. PBTD = 3355'. Perf'd (Yates/7RVRS) using 4" csg gun, 120 deg phasing w/ 2 spf 3014'-32', 3035'-42', 3070'-84', 3091'-3107', 3113'-31', 3138'-70', 3175'-88', & 3214'-22' (252 holes - 0.56" dia.) Frac'd perfs (3014 - 3222) w/48,600 gals, 134,000#'s 12/20 sand. AIR=35 bpm @ 2300 psig. ISIP= 78 psig. C/O sand to 3330'. Ran production equipment. After WO: 57 bopd, 330 bwpd, & 25 Mcfgpd.
16-Nov-93	Hydrotest tbg. Found & replaced 2 bad jts. Returned well to production.
03-Mar-95	Replaced 1 bad jt tbg. Returned well to production.
13-Apr-95	Replaced rod pmp. Returned well to production.
02-Dec-97	Replaced all 3/4" rods & 7/8" rod boxes. Hydrotested tbg - no bad jts. Returned well to production.
18-Dec-00	Tag btm @ 3355'. Replaced pmp. Returned well to production.
27-Feb-02	Long stroke pump.
09-Sep-02	Tally out of hole with tubing string - found a split jt. Hydrotest tubing in hole. Well would not pump - found scale and sand on MAJ. Placed well on production.
18-Jul-03	POOH with rods and pump. Found top joint with 2 foot split. Reset TAC, RIH with pump and rods. PWOP.
24-Jun-04	POOH with rods and pump. RIH with larger pump and rods. PWOP.
18-Feb-05	POOH with rods and pump. Scanalog tubing: 72 - Blue, 20 - Green, & 4 - Red. RIH with production string - didn't hold pressure. Hydrotest tubing to 6000# - found 1 split #20 joint. PWOP.
25-Mar-11	POOH with production string.RIH with 4 3/4" bit, rig up AIR UNIT. Tagged at 3,280',cleaned ot to 3,388'. Test casing to 500#. Found hole between 353' to 416'. While backing of CSG, parted 2' from service. Could not back of casing. Cement squeezed with 150 sxs Class C. Circ'd cmt to surf. Frac'd down 4 1/2" work string w/ 105,000# 16/30 brown sand & 41,250# resin coated sand plus 1.267 MMCF N2. ISIP= 2280#. Flowed well back for two days. Laid down 4 1/2" work string. C/O frac sand from 3149' to 3278'. PWOP.
15-Apr-11	Pulled out w/pump, nipple down wellhead, unset TAC, pulled out w/tbg, (pump was stuck w/sand, recovered 10' of sand in M.A.). RIH with tbg, set TAC, pulled 16,000# tension nipple up wellhead, ran in w/pump, hung well on, rigged up Rapid Transport, pumped 5 bbls load and test, checked pump action, good, put well on production. Checked pump action, good.
21-Nov-11	POOH with production string. RIH with 4 3/4" bit, tagged @ 3208'. Drilled CIBP @ 3390' and Drilled out to TD @ 3,545'. Hydrotest tubing to 7000# - okay. RIH with plunger and rods. PWOP.
08-Oct-12	POOH with rods, pump and tubing. Ran BHP Survey, tagged at 3,531'(14' of fill). Hydrotest tbg to 6000# - 52th (split). Busted busted 3 joints. RIH with plunger and rods. Replaced 30 - 3/4" flat couplings & bottom 4 joints MA due to holes, PWOP.
4-Mar-13	POOH w/ parted 90th rod (3/4" coupling). Fish rods. RIH w/ new 3/4" coupling. RIH w/ rods, checking all rod couplings.PWOP.

PREPARED BY: Larry S. Adams D. Camizales UPDATED: 09-Oct-12

Field: **Cooper Jal Unit**

	Location:
Footage:	2310 FSL & 2310 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,318'
KB:	3,328'
KB Calc:	10'
ck w/log?	Yes

Date	History
9-Aug-46	Initial completion interval: 3465 - 3550' (7 RVRS/QUEEN OH). Frac'd w/
	4,000 gals lse oil & 5,000#'s sand. IP= 227 bopd, 0 bwpd, & 194 Mcfgpd
	(flowing).
15-Oct-56	Refrac'd OH w/ 19,000 gals lse oil & 33,000#'s sand.
25-Aug-59	Set CIBP @ 3375' & dmp'd 5 sxs cmt on top. Perf'd (Yates) intervals w/ 2
	spf 3222-30', 3235-39', & 3296 - 3306' (44 holes total). Frac'd perf's
	w/15,000 gals lse oil & 23,300#'s sand.
14-Jun-71	CONVERTED TO LANGLIE MATTIX INJECTOR: Drld out CIBP @ 3375'
	& C/O to TS @ 3540'. Ran pkr on 2 3/8" CL tbg. Set PKR @ 3391'
	Initiated injection. Note- Yates perf's are not sqz'd & above pkr.
1-Oct-79	SI Well. Discovered 350 psi annulus pressure. Bled off presssure in 3
	days.
26-Nov-79	Set BP @ 3350' & cmt sqz'd perf 3222 - 3306' w/ 200 sxs @ 1000 psi.
	D/O & tst sqz to 1000 psi. OK. D/O CIBP and C/O open hole from 3465 -
	3550'. RIH with pkr on 2 3/8" CL tbg. Set pkr @ 3391' and placed well on
	injection.
14-Oct-84	Acdz'd OH w/1,000 gals.
11-Mar-86	C/O & side-jet wash OH. Acdz OH w/2,000 gals. Found csg leaks @ 170'
	& old sqz'd perfs 3222'-3306. Perf'd 2 holes @ 260' & sqz'd with 250 sxs
	- circ cmt to surface. Sqz'd cmt into old perfs 3222 - 3306' w/ 250 sxs.
	D/O and tst csg (0-3400') to 600 psig. Lost 20 psig in 30 minutes.
	Returned well to injection.
25-Feb-88	Tst csg to 400 psi. Good tst. Acd'z OH w/ 3000 gals. Did not C/O. Ran
	new flourline tbg. Returned well to injection.
10-Mar-88	Step rate tst indicates frac pressure (surface) is 1020 psi.
18-Jul-91	Failed MIT. Shut-in well. (Sqz'd perfs 3222 - 3306' leaking)
14-Oct-93	Set CIBP @ 3354' & dmp 35' cmt on top. Perf w/ 2 spf (.56" dia hole -120
	deg phasing) 3018'-3042', 3045' -54', 3059'-3066', 3070'-89', 3100/-14',
	3127'-42', & 3146'-74' (232 holes total). Frac w/45,360 gals gel w/r
	carrying 184,140#'s 12/20 Brady sand & 40,900#'s 12/20 resin coated
	sand. AIR=34 bpm, PM=3800 - 2100 psi, ISIP=1600 psi. C/O sand f/
	3085'-3316'. Ran tubing pump and rods. After WO: 26 bopd, 286 bwpd,
	& 33 Mcfgpd.
16-Mar-01	Set CIBP @ 2975 on WL. Circ well w/salted brine. Spot 35 sxs cmt f/
	2975 - 2700'. WOC. Tag TOC @ 2680'. Perf 6 holes @ 1400'. Sqz 50
	sxs cmt into perfs to 850 psi. WOC. Tag TOC @ 1145'. Perf 6 holes @
	400'. Sqz 150 sxs cmt into perfs to 750 psig. WOC. Tag TOC @ 145'.
	Spot cmt plug f/ 30' to surface. Cut off wellhead & cap 5 1/2" casing.
	Installed Dry hole marker & C/O Location. NMOCD notified - well P&A'd
	3-21-2001.
16-Mar-11	Ran in w/4 3/4" bit 3 drill collars tagged cmt @ 92', picked up swivel drilled
	from 175' to 452', circ'd well clean, test casing to 450#, ran in with bit,
	tagged @ 1109, picked up swivel drilled from 1150' to 3700' in 8 days
	circulated well clean. Perf'd 7-Rivers f/ 3439'-3442', 3431'-3434', 3380'-
	3383', 3360'-3365', 3290'-3307' & 3248', Perf'd Yates f/ 3236'-3242', 3220'-
	3233', 3192'-3195' & 3182'-3190', ran w/ 5 1/2" composite plug & set @
	2960', ran in w/ 3 1/2" Shoe, 11-3 1/2" jt, 3 1/2" Float Collar, 92 3 1/2" Jts,
	test tbg to 7000 psi, test good, nipple down BOP landed tbg, set end of
	shoe @ 2,958'. Pumped 110 bbls broke circulation, pumped 30 BBLS
	lime water, 5 BBLS fresh, 185 sks cmt install 3 1/2" wiper plug, flush w/
	25 bbls, circulated 2.5 BBLS cmt to pit, ran in w/2-3/4" bit on 2 3/8" tbg,
	tagged float collar @ 2930', drilled up float collar, shoe, tagged composite
	plug made 8" stop making hole, pulled 14 jts. Pulled out w/bit, ran in w/mill,
	tagged plug 2956', drilled up plug, ran in w/10 jts, circ'd well clean, pulled
	out w/tbg, ran in w/3-1/2" arrow set 1X 2-3/8" work string test to 5000 PSI,
	set @ 2928, press to 360 psi, test good. Acidized perf 3018-3442',
	released from Pkr w/on & off tool, pulled and laid work string, ran in
	w/ 2-3/8" IPC tbg test to 6,000 psig, test good. Circulated 45 BBL packer
	fluid, latch to 3-1/2" Pkr test to 400 PSI test good.
21-Jun-12	Inj Profile shows: fill @ 3496', 42% into 30' of T. Yates, 43% well
	distributed f/ M. Yates to B. Yates & 15% into M. 7-R. Rate: 996 BW @
	950#.

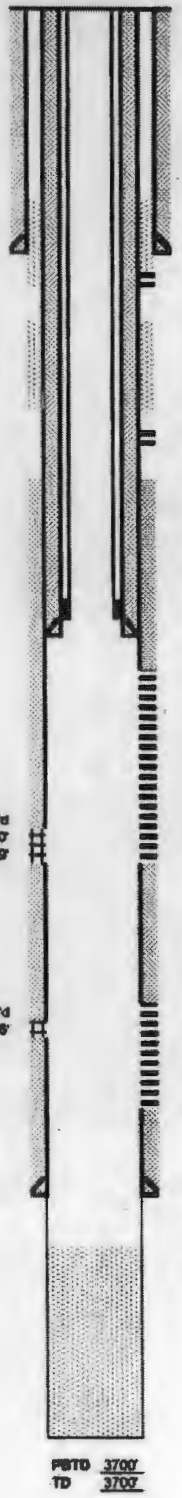
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
93	2-3/8" IPC Tbg	2,927	2,927
1	3-1/2" Arrow Set 1-X Packer	1	2,928

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Pumping Unit:
Updated: 04/16/14 MLS

CJU #148
(Also labeled #212)

Wellbore Diagram



Reservoir:	Cooper Jal
Well ID Info:	CJU #148 WIW
API No:	30-025-09642
Spud Date:	3/6/1954
Logs:	GR-N from 50-3553' (3-28-54 Schlumberger)
Cores:	Cored 3005' - 3230'. Avg. Por. = 21.1% Avg. Perm. = 37 md. Avg. Sw = 36.9%

Hole Size: 12-1/4"
Surf. Csg: 8-5/8" - 28#, J-55
Set @ 279'
Cement w/ 135 sx cmt
Circ: Yes
TOC: Surface

Perf'd 6 holes @ 400'

TOC: Unknown

DV Tool at 1209' pmp 150 sxs

Perf'd 6 holes @ 1400'

TOC: 1085' (by Calc.)

Hole Size: 4.887" (Drift of 5-1/2" prod casing)
Liner: 3-1/2"
Set @ 2,956'
Cement: 185 sxs
TOC: Surface

Inj Tbg Pkr @ 2928'

Yates @ 3018'
3018'-3042'
3045'-3054'
3059'-3066'
3070'-3089'
3100'-3114'
3127'-3142'
3146'-3174'
3182'-3190'
3192'-3196'
3220'-3233'
3236'-3242'
PKR @ 3344

Hole Size: 7-7/8"
Prod. Csg: 5-1/2" - 15.5#, J-55
Set @ 3,465'
Cement: 200 sxs thru shoe; TOC @ 1885' from surf by calc
DV Tool: 150 sxs thru DV tool @ 1209'; TOC unknown

3248'-3252'
3290'-3307'
3360'-3365'
3380'-3380'
3431'-3434'
3439'-3442'

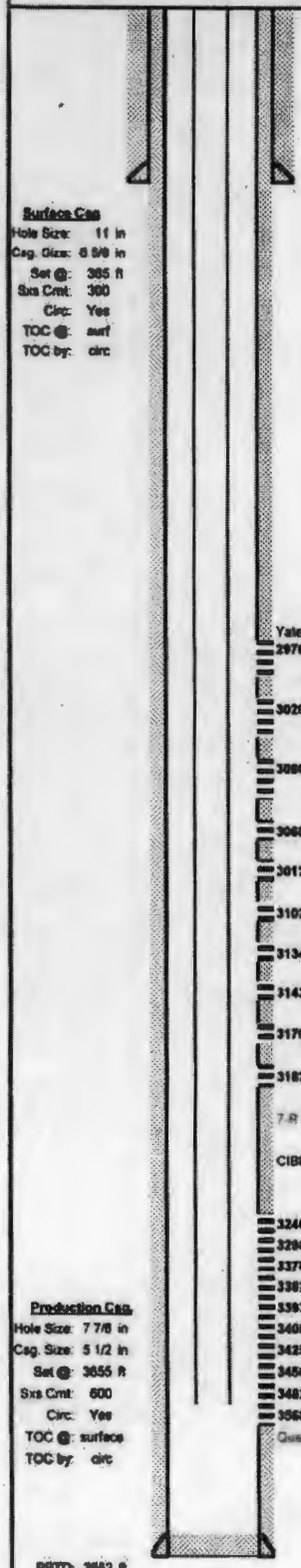
OH Interval - 3465'-3700'
OH ID: 4-3/4"

Fill @ 3496'

Queen @ 3715

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	154
STATUS:	Active	Oil		API#	30-02526284
LOCATION:	1550 FNL & 2400 FEL, Sec 25, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE:	TD 3656		KB 3,304'	DF	
INT. COMP. DATE: 05/11/79	PBTD 3652		GL 3,296'		

GEOLOGICAL DATA

ELECTRIC LOGS:
Forxo Guard (Resistivity) Log (4-30-79 WELEX)
GR-CND (4-30-79 Welex)

CORES, DST'S, or MUD LOGS:
GR-N (5-1-79 Welex)
GR-CCL (8-29-88) Schlumberger.

HYROCARBON BEARING ZONE DEPTH TOPS:
Yates @ 2975' 7-Rivers @ 3195' Queen @ 3574'

CASING PROFILE

SURF.	8 5/8" - 24#, K-55 set@ 365' Cmt'd w/300 sxs - circ cmt to surface.
PROD.	5 1/2" - 15.5#, K-55 set@ 3655' Cmt'd w/600 sxs - cmt circulated to surface.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE :
11-May-79 **Perf'd 7-Rivers f/ 3246 - 3570' 1 spf (19 holes total)**
08-Jul-99 **Perf'd Yates f/2976 - 3006', 3026 - 46' & 3080 - 94' w/ 2 spf (116 holes total).**

TUBING DETAIL 11/13/12

Length (ft)		Detail
0		KB
2780	92	2 7/8" 6.5#, J-55, 8rd EUE tbg.
3	1	5 1/2" x 2 7/8" TAC
580	19	2 7/8" 6.5#, J-55, 8rd EUE tbg.
4	1	2 7/8" Tubing Sub
24	1	2 7/8" Tubing Barrel
4	1	2 7/8" Tubing Sub
20	1	2 7/8" De-sander
121	4	3" Mud Anchor
3536		btm

ROD DETAIL 11/14/12

Length (ft)		Detail
18	1	26' x 1 1/2" P R w/ 7/8" Pin
16	1	8', 8' x 1" pony rods
1075	43	1" steel rods
1675	67	7/8" steel rods
600	24	1 1/2" sinker bars
1	1	1' x 1" lift rod
4	1	2 1/4" X 4' RHBC Plunger
0	1	16' x 1" GA
3,395		

WELL HISTORY SUMMARY

11-May-79	IC: 3246 - 3570' (7-R/Q). Acdz'd w 4,500 gals & Frac'd w/40,000 gals carrying 34,000#'s 20/40 sand & 15,000#'s 10/20 sand in 2 equal stages. Max sand concentration reached was 2 ppg. IP=264 bopd, 24 bwpd, & 113 Mcfgpd (pmpg).
18-Jun-83	Replaced 1 jt tbg.
15-Nov-86	DSI 72 hr. pressure build-up.
10-Aug-88	C/O fill from 3505 - 3614' (109'). Acdz'd w/2,500 gals 15% NEFE HCL dropping 25 ball sealers. Before WO: .7 bopd, 12.7 bwpd & 2.6 Mcfgpd. After WO: 11.2 bopd, 82 bwpd & 10 Mcfgpd
14-Dec-95	Cut parrafin in top 1,000' of tbg. Acdz'd perfs 3246 - 3570' w/3,000 gals 20% NEFE HCL in 3 stages w/ 2 - 1,000# rock salt blocks. AIR=3 bpm @ 650 psi. Returned well to production.
08-Jan-96	Change out rod pump.
08-Jul-99	Set CIBP @ 3200'. Tst csg @ 550 psi, Good tst. Perf'd 2976'-3006', 3026'-46' & 3080'-94' w/ 2 spf - 120 degree (116 holes total) Ran dmp baller & dmp 35' of cmt on top of CIBP. PBTD @ 3165'. Acdz'd 3,000 gals 15% NEFE HCL using 2,000#'s RS in 4 stages. AIR=3 bpm @ 2,000#. ISIP=840#, P15min=480#. Frac w/16,249 gals X-link fluid carrying 52,000#'s 16/30 brady sand. AIR=30 bpm @ 1432#. ISIP=1021#, P15min=950#. C/O sand to 3195'. PWOP.
21-Sep-99	Change out rod pump.
28-Feb-02	Hydrotest in hole. Replaced 1 jt tbg.
29-Oct-02	Hydrotest in hole. Replaced 3 jt tbg. Placed well on pump.
10-Apr-03	Set a Bethlehem 228 pumping unit.
21-Jul-06	Long stroke well.
04-Dec-06	POOH w/rods, pump & tbg. Hydrotest tbg in hole to 7000# - found split 92nd & pin hole on 1st jt. PWOP.
07-Feb-11	POOH w/rods, pump & tbg. RIH w/ 4 3/4" bit, tagged at 3,130'. Clean out to CIBP at 3,200'. RIH w/ 5 1/2" PKR, tagged tight spots at 3,130'. Test casing to 500#. Perf'd Yates f/ 3170'-80', 3182'-93', 3134'-40', 3142'-46', 3102'-30', 3,012'-26' & 3,060-70', 82', 160 holes. RIH 5 1/2" PKR on 4 1/2" work string. Set PKR at 2,675', test annulus to 500#. Foam Sand Frac'd w/ 100,000 # 16/30 sand ProPetro line busted close to Frac Valve. Pumped only 1st stage. Had oil shows on flow back. POOH w/ 4 1/2" WS & PKR. Clean out frac sand f/ 3,150' to CIBP @ 3,200'. Hydrotest 2 7/8" production string to 7,000 #. RIH with pump and rods. PWOP.
12-Aug-11	Long Stroke Well.
29-Aug-11	POOH & laid down67- 3/4" rods. POOH w/ tubing. Hydrotest to 7000# - burst 99th & 98th joints. Ran Press Gradient. PWOP.
22-Nov-11	POOH with plunger, rods and tubing. Hydrotest tubing to 7000# - burst 1 joint. RIH with plunger and rods. PWOP.
02-Dec-11	POOH with plunger, rods and tubing. RIH with 4 3/4" bit to 3181', drilled CIBP @ 3,200'. Drilled & C/O to 3,665'. Ran Pressure Gradien, tagged @ 3,670'. Hydrotest tubing in hole to 7,000# - good. RIH w/ plunger and rods. PWOP
28-Dec-11	POOH with rods and parted belowcage on plunger. POOH with tubing. RIH with tubing, pump & rods. PWOP.
09-Jan-12	POOH w/ rods, pump & tbg. Hydrotest tbg - found split on # 101 joint. RIH w/ tbg, pump & rods. Replaced K-Bars couplings. PWOP.
13-Feb-12	POOH with unsrewed 12th - 1" rod and parted 50th - 7/8" rod. RIH with pump and rods. PWOP.
07-Mar-12	Change out polished rod.
19-Mar-12	Long stroke well - some pump action. POOH with Prod string. Hydrotest tubing to 7000# - split on 100th jt. PWOP.
08-Aug-12	POOH with parted 72th - 7/8" (body break). Replaced broken rod. Evident of real small pits. PWOP.
23-Aug-12	POOH w/ rods, plunger, & tubing. Ran BHP Survey, tagged @ 3,652'. Hydotest tbg - split on 7th jt. RIH w/ plunger & rods. PWOP.
13-Nov-12	POOH w/ rods & plunger, parted 2 7/8" tbg below slips. Fished tbg. Hydrotest tbg to 6000# - pin hole on 24th above WS. PWOP.

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	28-Nov-12

Well **Jet Mat & Langlie Mattix**

	Location
Quarter	2280 FSL & 760 FWL
Section	Sec. 24, T - 24S, R - 36E
Block	
Survey	
County	Lea, New Mexico
API	
Lease	
	Elevations
GL	3,530'
KB	13,542'
DF Calc.	12'
KB offset	n/a

C.JU #299

Wellbore Diagram

Spud:	Notes: T-Rivers, & Queen
Well ID Info:	C.JU #299
API No.	30-025-31535
Init. Comp. Date	10/8/1998

Hole Size:	17"
Surf. Csg:	8 5/8" - 24.70# J-55
Set @:	1,512'
Cement w/	800 sxs
Circ:	Yes
TOC:	Surface

TOC @ 420' by Calc

Hole Size:	7 7/8"
Prod. Csg:	5-1/2" - 14#, J-55
Set @:	3650'
Cement w/	850 sxs
Circ:	No
TOC:	420' calc'd

Date	History
9-Oct-94	IC. Perf'd 7-Rivers @ 3042'-48' w/ 4 spf (28 holes). Acid'd w/ 250 gals mud acid. Frac'd w/1,000 gals lse oil carrying 4,000#'s sand. Refrac'd w/6,000 gals lse oil carrying 8,000#'s sand. Perfs Queen @ 3623 - 29' w/4 spf (24 holes). Acid'd perfs 3623'-29' below PKR w/ 500 gals 4 frac'd w/10,000 gals lse oil carrying 10,000#'s sand. PWD tstgd, 2 bwpd, 0, 105 Mcfpd
20-Jun-98	Set BP @3500'. Perf'd Yates II 3234 - 40' w/4 spf (48 holes). Acid'd perfs w/500 gals 7 Frac'd w/10,000 gals lse oil & 16,000#'s sand. Set BP @ 3212'. Perf'd Yates II 3183 - 96' w/ 4 spf (104 holes). Acid'd perfs w/500 gals & Frac'd w/10,000 gals lse oil & 16,000#'s sand. Removed BP @ 3212'. Placed well on production. 0bw27 bopd, 0 bwpd, 0, 436 Mcfpd (flowing)
31-Jul-98	Well Shut-in.
9-Feb-99	Perforate BP @ 3212' & C/O to 3500'. Perf'd L.M. (7-Rivers, & Queen) @ 3460', 69, 70, 82, 86, 3500', 3502', 3529', 3535, 3553', 3584', 3592' w/ 1 spf (12 holes). Acid'd w/1,250 gals 20% HEFE HCL. Frac'd perfs (3460'-3529') below plg @ 3500' w/30,000 gals gelled H2O carrying 16,500#'s 16/30 sd & 31,000# 20/40 sand. Tagged fill @ 3500'. After WO, 31 bopd & 13 bwpd
20-Mar-78	C/O fill from 3570 - 3660' (3H). Isolated 6 wash'd perfs, 3169 - 3247' w/1,000 gals 15% HEFE HCL. Tst production from perfs 3169'-3247' @ 31 bopd & 12 bwpd. Returned well to production. After WO, 35 bopd & 27 bwpd.
22-Jun-87	Tagged fill @ 3630'.
12-Oct-99	Replaced 1 jt tbg. Run new prop & rods. Returned well to production. (Cut paraffin out of tbg)
22-Apr-97	LD rod string & pump (134 - 3/4" & 18 - 7/8" rods). Bull plugged tbg & rigged down. Well SI/I pf 22-97).
28-Oct-02	Made 2 attempts to recover SN & MAJ without success. Hydrotest in hole. Replaced parted rod the next day.
7-Nov-02	Change out pump. Load & test well to 500 psig. Pumped up.
31-Jul-03	Exchange o Lufkin 320 D with a Bethlehem 228 pumping unit. Left pumping.
14-Mar-05	POOH reverseing 2 7/8" tbg. 54 - blue, 39 - double green, 17 - single green & 6 - red. Pulled & recovered SN & Perf tbd Anchor. C/O tbd cellar & shoe. RIH w/ 28 - 3 1/2" DCs & 4 3/4" button bit. Dropped ball to 3,772'. Ran CNL log fr 3,772' to 2,500'. Hydrotest 3 1/2" WS to 7,000#. Prod'd (L. M.) Perfs (3460-3580') & OH (3600'-3772') w/ 39,999# 12/20 mesh sd. Pmpd: 43BW, 40#> 20 BPM, 65#> 14BW. Perf 7-Rivers (3382'-3385'), 1 JHPF, 20 holes. Yates (3117'-3570') 1 JHPF, 62 holes. Acid'd 7-Rivers w/ 6 bbls. Set Pkr above Yates perfs, spot sd to 3140. Acid'd (3142'-3125') w/ 2,000 gals 20% & 110 BS's. Frac'd (Lower& Perfs Yates & 7 Rivers (3570'-3385') w/ 46# HQD plus 111,000# 20/40 mesh sd. AIR= 20.4 bpm. Pmpd= 19070, 150#> 1000. It took 2 days to C/O frac sand. POOH w/ frac packers. PWOP
13-May-05	POOH with rods, pump and tubing. Cleaned out with notched collar, using air foam unit from 3,764' to 3,772'. PWOP
15-Jun-05	POOH w/ rods & tubing, pump stuck in bleed port. RIH with tubing , pump and rods. PWOP.
21-Oct-05	Backed off stuck pump in bleed port. There was severe pitting on bleed & mule shoe joints. POOH with rods and tubing. RIH with notched collar, tested free valve to 3764' RIH w/ tubing, swage & rods. Press to 500# PWOP
14-Nov-05	POOH w/ parted 30ne 7/8" swaging broadly. Latched on 1/4" rods. Lined & test pump & tubing to 500#. PWOP.
13-Mar-06	POOH with Parted K-Bar bight above pumps and rod string. POOH with tubing and shortened pump. RIH with tubing, pump and rods. Laid down 11 - 3/4" rods due to pitting. PWOP.
17-Jul-06	Moved PU to Texas/New Mexico state line, shut down (building on permit). Replaced parted 6' - 7/8" pony rod. POOH with rods, and pump. RIH with pump and rods replaced 57 - 3/4" couplings due to pits. PWOP.
24-Oct-06	POOH w/ rods & pmp. Tagged at 3589'. POOH w/tbg. Laid down 19 - 3/4" rods & 3 - 3 7/8" tbg. RIH w/tbg , pmp & rods. PWOP
16-Jan-07	POOH with rods parted at Cn/Cr Tool. POOH with tubing. RIH with tubing, pump and rods.
13-Jun-08	POOH with rods and tubing. Placed corrosion stick in BP&N. RIH with tubing , pump and rods. PWOP.
2-Mar-09	POOH with parted rod, pump and tubing. Laid down all K-Bars due to pitting. RIH with tubing, pump and rods. PWOP
14-Sep-09	POOH with parted 1 1/8th - 3/4" joint (body break due to pitting), laid down pump. RIH with pump & rods. PWOP.
3-Nov-10	POOH w/ rods, pump & tubing. Hydrotest tubing to 7000 psig. found hole on 114th jt. Bent 2 jts. RIH w/ pump & rods. PWOP
6-May-11	Pulled out w/ rods, parted 84 rods down body break, ran in w/ fish tool, caught fish, tried to unseat pump, stripped rod out, rigged up RAS. Hydro Tester ran in w/fsg tool to 7000 psi, test good, ran in w/pony rod w/o sn. Press test pump to 3500 PWOP
19-Oct-12	POOH w/ parted 1618th - 3/4" (body break) due to pitt. POOH w/ rods, pump & tbg. Hydrotest tbg. LD 65 - 2/8" rods & 18 - 7/8" rods. PWOP.
20-Dec-12	POOH with parted 184th - 3/4" due to pitting. Laid down 8 - 3/4" due to pitting. RIH with pump and rods. PWOP
9-Jan-13	POOH w/ rods, pump & tubing. Hydrotest tubing to 6000 psig. found hole on 109th jt. & split on 88th jt. RIH w/ pump & rods. PWOP
15-Jan-13	POOH w/ rods, parted 7th rod (split coupling). RIH w/ tbg, pump & rods. PWOP
29-Jul-13	MIRU Chester WSU. POH w/rods and pump. NUBOP. POH w/tbg. LD and recover 41 subjoints 2 7/8" non-upset tbg with GB tbg (on suspension tbg, found severe OD over pitting on most tbg collars). RU testers, test tbg in the hole (bleated down). PU pump and RIH w/rods. Hang well on. PTP. RDMO
5-Sep-13	Rod parted. MIRU PU. POH with parted rods. Ran in with fishing tool and got part. POH with rods and pump. Pick up pump and run rods in the hole. Well has good pump action. RDMO
17-Sep-13	Parted rods. MIRU PU. POH with parted rods. Ran fishing tool and got part. POH with rod. PU pump and run rods in hole. Well has good pump action. RDMO

Joints	Tubing Detail (Run in bottom) Description	Footage	Depth
101	2 7/8" x 2.441 8.5# EUE/8rd/Blue	3,131	3,131
1	2 7/8" x 5 1/2" T-AC	3	3,134
11	2 7/8" J-55 8.5# Smooth/Blue	339	3,473
1	2 7/8" x 2 1/2" x 31' Mud Joint	31	3,504
1	2 7/8" x 2 1/2 seat nipple	1	3,505
1	2 7/8" x 4' Tbg sub	4	3,509
1	2 7/8" x 30' Gasanchor	30	3,539
1	2 7/8" x 64.6' BPMA	66	3,621

Joints	Rod Detail (Run in bottom) Description	Footage	Depth
1	1 1/4" x 26' w/8' slm - polish rod	26	26
1	1 1/4" x 1 1/2" x 12' - spiral rod liner	8	34
83	3/4" rods	2,075	2,109
68	7/8" rods	1,700	3,809
6	1 1/2" K-Bars	150	3,959
1	2 1/2" x 2 x 36' RHBC pump w/1-1/4" x 8' G.A.	16	3,991

Pump Unit Modified: 10/15/2013

PBTD 3512'
TD 3772'

Field: **Cooper Jal Unit**

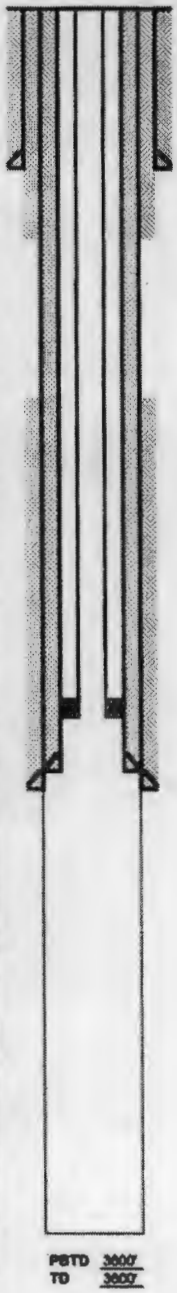
	Location:
Footage:	2310 FSL & 2310 FWL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,312'
KB:	3,325'
KB Calc:	13'
ck w/log?	Yes

Date	History
4-Apr-50	Initial completion 3001 - 3244' (Yates OH). No stimulation. IP=56 bopd, 0
	bwpd, & 53 Mcfgpd. (flowing)
9-Sep-54	Frac OH w/2,000 gals lse oil carrying 3,000#'s sand. Re-frac OH w/14,000
	gals lse oil carrying 18,000#'s sand.
14-Jul-57	C/O to 3244' & place on pmp.
22-Feb-59	C/O to 3244'. (No report on location of fill)
17-Nov-70	CONVERTED TO INJECTOR. C/O fill to 3244'
7-Jul-89	C/O fill from 3030 - 3244' (214'). Acdz'd OH w/4,000 gals 15% NEFE HCL in
	4 equal stages diverting w/500# rock salt blocks. Ran PKR on 2 3/8" CL tbg.
	Placed well on injection @ 445 bwpd, TP=875 psi.
11-Jan-94	RIH 4 3/4" bit, 12 - 3 1/2" OD DCs. Tagged @ 3235', getting returns out of
	bradenhead. Found holes in 5 1/2" csg. At 320' to 350'. Sqzd w/ 150 sacks
	class "c" w/2% CaCl. Circ'd w/ 22 sxs cmt. Drilled & test sqzd to 500#-held.
	Tagged junk at 3255'. Drilled junk & deepened well to new TD of 3600'. Ran
	GR-MSFL-DLL, GR-DSN-SDL & GR-Borehole Compensated Sonic Logs.
	Acdz'd OH w/ 8,400 gals 20% NEFE HCL. Well DHC Injection (Jal & L-M).
	Began injection @ 339 bwpd @ 450 psig.
4-May-95	Ran injection profile. Results: 73% fluid - 3080 -70', 11% fluid - 3300-11', &
	16% fluid - 3528-43'.
6-Mar-97	Tagged fill @ 3536'. (62') Dumped sand in OH & PB tl 3538 - 3420'. Dmp cmt
	tl 3420-3400'. Acdz'd OH (3001'-3400') w/4,000 gals 15% using N2 foam as
	diverter using coiled tubing. AIR (fluid)=1.2 bpm. Ran PKR on 2 3/8" CL tbg.
	Set PKR @ 2952'. Test casing - good test. Initiated injection @ 486 bwpd,
	TP=250 psi.
14-Feb-02	Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag fill @ 3048' (352' of fill).
23-May-02	Wash w/surfactant H2O. 3 passes & wash w/acid. Pump w/1240 gals. Pmp.,
	flush w/ acid. Flow Bk. Put on Inj @ 200 BWPD.
1-Oct-03	Administrave Order No. WFX-648. Approved Division Order No.R-4019 & R-4020 for Waterflood Expansion.
17-Nov-03	POOH w/ 2 3/8" IPC tbg & AD-1 pkr. RIH w/ 4 3/4" bit, 6 3 1/2" DCs & tagged
	@ 3148'. C/O to 3400'. Located 5 1/2" csg fr between 325' to 356'. Sqz'd
	w/200 sx Class C Neat w/2% CaCl. Hesitation sqz - final press was 330 psig,
	dropped 200# in 5 minutes. Drilled cmt fr 230' to 300'. Test sqz to 500 psig -
	bled to 300# in 5 minute. Recovered RBP. RIH w/ 5 1/2" Baker AD-1 Tension
	packer and set 2901'. Pressure annulus to 500 psig. Pull pressure chart for
	OCD filing.
29-Jan-04	POOH w/ 2 3/8" IPC tbg & lay down AD-1 pkr. RIH w/ 4.45" Junk Basket &
	CCL on W/L. Found end of csg @ 3001'. RIH w/Composite Bridge Plug & set
	@ 2980'. RIH w/72-4" Lnr. Cmt w/ 200 sx Class C Neat cmt, circ'd w/ 34 bbls
	cmt. Test 5 1/2" csg to 500# - did not held. D/O wiper plug, float shoe, &
	tagged Composite Bridge Plug @ 2970'. Test 4" lnr to 500# - held. Composite
	Bridge Plug & tagged @ 3400'. Circ'd clean & laid down work string & BHA.
	RIH w/ 4" Baker Model AD-1 PKR. Hydrotest tbg to 5000#. Locate PKR @
	2962', circ annulus w/ 50 bbls of inhibited 2% KCl wtr. Set PKR & test
	annulus to 500# - held. PBTD @ 3400'. Pulled chart for OCD.Prior rate &
	press. S/I. After rate & press: 230 BWPD @ 420 psig.
25-Mar-04	Pumped 30 bbls surfactant water. Acidized with 1000 gals 15% NEFE acid
	@ 2.5 BPM. Flushed with 12.5 bbls water. Prior rate & pressure: 268
	BWPD @ 700 psig. After rate & pressure: 255 @ 500 psig.
4-Dec-04	Before Rate & Press: 279 bwpd at 820 psig. RIH w/1 1/4" Perf-Clean Tool on
	1 1/4" CT. Washed OH (2975'-3400') w/ surfactant 2% KCl fresh water. Made
	3 passes. TP= 3500#, Annulus Press= 100#. Acidized O H (2975'-3400') w/
	4,200 gals 15% NEFE HCl. Made 3 passes. TP= 3700psig, Annulus Press=
	960#, ISIP= 770#. After Rate & Press: 208 bwpd @ 500 psig.
8-Nov-05	RIH with 1 1/4" x 5' sinker bar and tagged at 3,092'.
18-Apr-08	POOH w/inj String & AD-1 PKR. RIH w/3 1/4" on 2 3/8" tbg, tagged fill @
	3107'. Bit kept plugging up. RIH w/Notch Collar. C/O tl 3107' to 3251', circ'd
	form. & oil. Next day tagged at 3251'. C/O to 3400'. RIH w/ 4" AD-1 PKR on
	2-3/8" CL tbg. Discovered cracks in cement line through out tubing string.
	Laid down 91 joints CL tubing. RIH w/ AD-1 PKR on new 2 3/8" IPC tubing.
	Set PKR at 2,923', pressure annulus to 420 psig for 30 minutes. Pulled chart
	for OCD.
21-May-08	Acidized Jalmat w/ 71 bbls 15% NEFE HCl acid 3000# rock salt & d 29 Tons
	of CO2. Rate = 7.8 bpm @ 2827 psi. ISIP = 751 psig. Before Rate & Press.
	253 bwpd at 733 psig. After Rate & Press. 341 bpd @ 680 psi.
20-Jan-09	POOH w/ injection string & AD-1 PKR. RIH with 3 1/4" on 2 3/8" tbg, tagged
	bridge @ 3089'. Cleaned out tl 3372' to 3,582'. Recovered 80% sand & 20%
	formation. Cleaned from 3450' to 3600'. Hydrotest tubing - no holes. Test
	annulus to 560#.
27-Apr-09	RU Gray Wireline. Tagged @ 3,058' with 1" sinker bar. RD wireline. Placed
	well on injection. Rate/Press: 539 bwpd/750#.
18-Mar-11	Nipple up BOP, pulled out w/ tbg, ran in w/1.992 spear, tagged @ 3110', laid
	down 4" pkr, ran in w/3-1/4" bit, 6 2-3/8" drill collars on 2 3/8" work string,
	tagged bridge @ 3110' and 3365', circulated down to TD @3600', circulated
	well clean. Set PKR at 2911'. RU Rising Star acidized open hole 3001-3600'
	w/20,000 gals 15% acid 90/10, 14,000 lbs salt. Laid down 2-3/8" work string,
	ran in w/2-3/8 IPC tbg, nipple down BOP. Circulated w/45 BBLS packer fluid,
	pressure test to 400 PSI on chart record test good

Joints	Tubing Detail (top to bottom) Description	Footage	Depth
1	2-3/8" 4.7#, IPC, J-55, Tbg sub	6	6

CJU #211

Wellbore Diagram



PBTD 3600'
TD 3600'

Reservoir:	Cooper Jal
Well ID Info:	CJU #211
API No:	30-025-09707
Init. Comp. Date:	4/4/1950

Hole Size:	11"
Surface Csg:	8-5/8", 29.75#, J-55
Set @	302'
Cement w/	125 sx
Circ:	Yes
TOC:	Surface

Hole Size:	7-7/8"
Prod. Csg:	5-1/2", 14#, J-55
Set at:	3001'
Cement:	400 sx
Circ:	No
TOC:	895' from surface by calc.

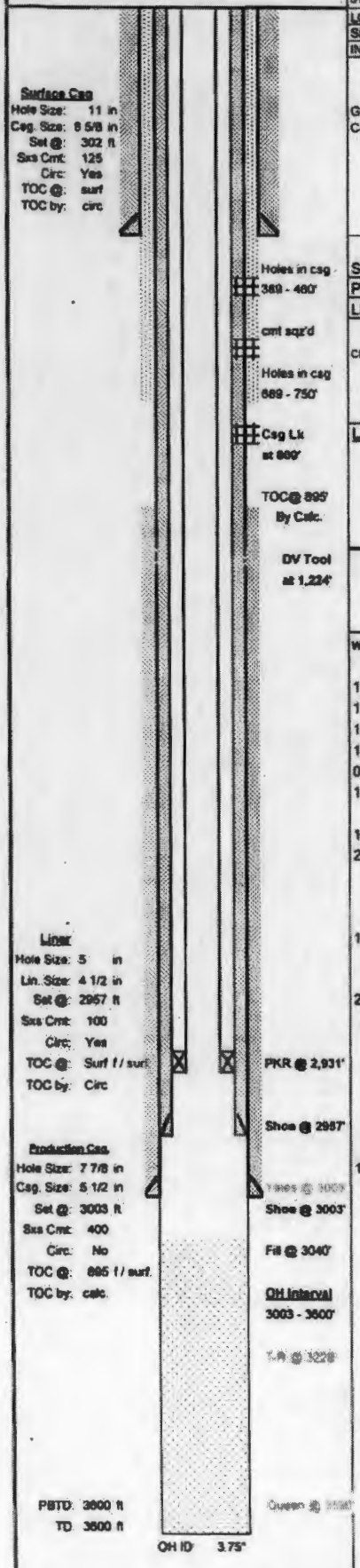
Hole Size:	7-7/8"
Liner:	4", 10.46#, Hydril F J.
Set at:	2970'
Cement:	200 sx Class C
Circ:	Yes
TOC:	Surface

pkr @ 2911'

OH Interval: 3001'-3400'
OH ID: 4-3/4"
Yates @ 3015'

TVD @ 3600'

WELLBORE SCHEMATIC AND HISTORY



LEASE NAME	Cooper Jal Unit			WELL NO	213 WIW
STATUS:	Water Injector			API#	30-025-09623
LOCATION:	1980 FSL & 660 FEL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE:		TD 3600	KB 3,311'	DF	
INT. COMP. DATE:	03/16/50	PBTD 3600	GL 3,306'		

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-N (3-13-50 Lane Wells)
Casing Inspection Log (10-7-94 Halliburton)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3003' 7-Rivers @ 3228' Queen @ 3560'

CASING PROFILE

SURF.	8 5/8" - 29.75#, J-55 set@ 302' Cmt'd w/125 sxs - circ cmt to surface.
PROD.	5 1/2" - 14#, J-55 set@ 3003' Cmt'd w/400 sxs - TOC @ 895' from surface by calculation.
LINER	4 1/2" - 14# J-55 set at 2,957'. Cmt'd with 100 sx - TOC at Surf by circulation

CURRENT PERFORATION DATA

CSG PERFS

OPEN HOLE: 3003 - 3600'

Liner DETAIL

2922	87	4 1/2" 11.6# SJ Thread	
2	1	4 1/2" Float Collar	
31	1	4 1/2" 11.6# SJ Thread	
2	1	4 1/2" Float Shoe	
2957			

Tubing DETAIL 2/10/2012

6	1	2 3/8" J-55 4.7# EUE 8rd IPC Sub
2930	92	2 3/8" J-55 4.7# EUE 8rd IPC Tubing
3	1	4 1/2" x 2 3/8" Arrow Set Nickle Platted
2939		w/ On-Off Tool & w/ 1.78 F Profile

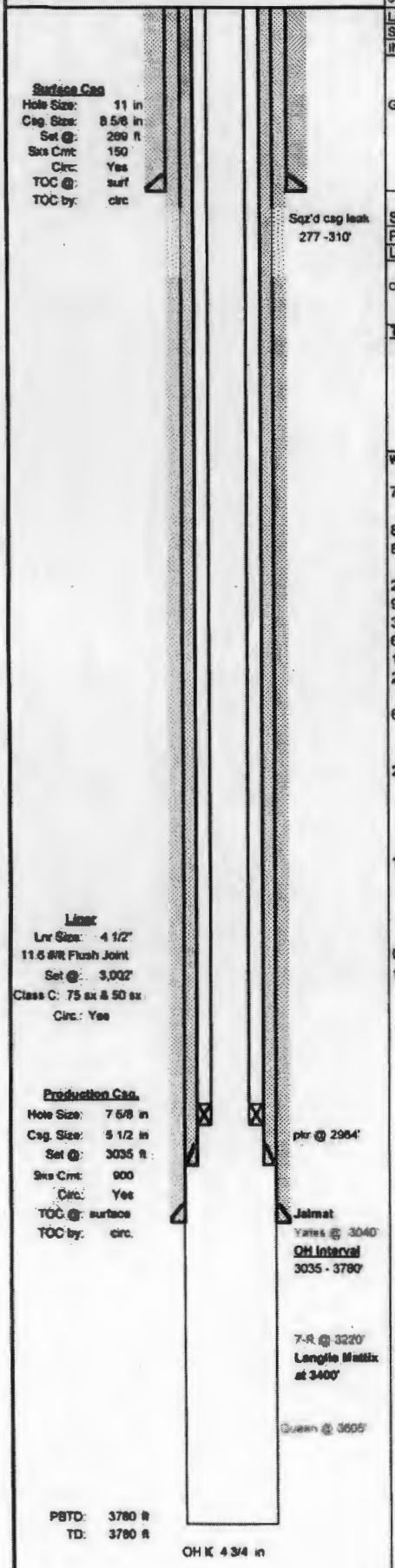
WELL HISTORY SUMMARY

16-Mar-50	Initial completion 3003 - 3220' (Yates OH): No stimulation. IP=68 bopd, 0 bwpd, & 76 Mcfgpd. (flowing)
11-Nov-54	C/O fill to 3220'
14-Aug-56	C/O fill to 3220'
17-Jul-68	C/O fill to 3220'
07-May-71	CONVERTED TO INJECTOR: C/O various bridges from 3096 - 3220'
17-Jul-87	C/O various bridges f/ 3096 - 3195' & fill (FeSO4, CACO3 & Formation) f/ 3205 - 3220'. Returned to injection at 860 bwpd with TP=600 psi.
14-Jan-89	Replaced tubing with new cement lined tubing string. Returned to injection.
26-Sep-94	Isolated 5 1/2" csg leak f/389'-421'. Cmt sqz'd csg leak w/ 150 sxs circulating cmt out 5 1/2" x 8 5/8" annulus. D/O & casing. Bad tst. Spot 50 sxs cmt across 389'-421' & sqz to 800 psi. WOC. D/O & tst csg. Bad tst. Ran Casing inspection log which showed holes in casing f/ 400 - 446', 492 - 498', & possible csg part 1225'-1230'. Attempt to cmt SQZ'd casing w/ 60 sxs cmt. D/O & tst csg. Bad test. Set CIBP @ 2,960' on WL. Dumped 50' cmt on top of CIBP. WOC. Tag TOC @ 2912'. TA'd well.
18-Apr-95	Circ well w/ gelled brine. Spot 25 sxs cmt from 2400 - 2200'. WOC. Tagged TOC @ 2180'. Spot 35 sxs cmt from 1350'-1013'. Spot 90 sxs cmt from 800' to surface. Cut off wellhead & cap casing. Installed Dry hole marker & cleaned location. NMOCD notified - well P&A'd 4-20-1995.
29-Dec-11	Drilled surface cement plug with 4 3/4" bit to 800 feet in 12 days. Press test Csg - failed. Drilled 2nd plug from 1,027' to 1,365' in 2 days. Drilled 3rd plug from 2,205' to 2,450'. Drilled 4th plug from 2,924' to top CIBP @ 2,960'. Drilled on CIBP and pushed to 3242'. Drilled CIBP and 5' of new formation. Drilled formation w/ 4 3/4" button bit from 3,247' to 3,433 in 5 days. Drilled w/ new 4 3/4" Milled Tooth bit f/ 3,436' to new TD 3,600' in 6 days. Logged well w/ GR-CCL & Csg Inspection Log. Set Composite Plug @ 2,958'. Test plug to 800 psig - good. RIH with 4 1/2" Liner to 2,957'. Pumped 50 sx - stop to mixer. Waited on cement. Pumped 100 sx Class C. Circulated 29 sxs, 7 bbls cmt to reverse pit. RIH with 3 7/8" bit. Drilled Floar Collar, float shoe and Comp. Plug - tagged at 3,600'. RIH with 4 1/2" Arrow Set on 2 3/8" IPC at 2,931'. Performed MIT to 500# - okay. Acidized open hole with 18,000 gals 15% Star Acid (90% acid, 10% xylene). AIR= 5.8 bpm. ISIP= 1020#. Pmax= 2,921#.
14-Jun-12	Tagged fill @ 3040' with 1 3/8" sinker bar rod tool.

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	22-Jun-12

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit					WELL NO	216 WIW
STATUS	Active	Water Injector				API#	30-025-09634
LOCATION:	660' FSL & 660' FWL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico						
SPUD DATE:		TD	3210	KB	3,336'	DF	
INT. COMP. DATE:	08/07/51	PBTD	3210	GL	3,324'		

GEOLOGICAL DATA

ELECTRIC LOGS: GR-N (8-4-51 Lane Wells) Caliper (5-26-51 Halliburton)

CORES, DST'S or MUD LOGS:

HYROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3040' 7-Rivers @ 3220' Queen @ 3605'

CASING PROFILE

SURF.	8 5/8" - 29#, 10V & 32#, 8V, J-55 set@ 269' Cmt'd w/150 sxs - circ cmt to surf.
PROD.	5 1/2" - 17#, J-55 set@ 3035' Cmt'd w/900 sxs - circulated cmt to surface.
LINER	4 1/2" 11.6 #/ft Fush Joint set at 3,002' Cemented w/ 75 sx class C star lite plus 50 sx class C cmt, circulated to surf.

CURRENT PERFORATION DATA

CSG. PERFS:

OPEN HOLE : 3035 - 3780'

TUBING DETAIL ########## **ROD DETAIL**

Length (ft)		Detail
0 KB		
2983	98	2 3/8" 4.7#, ceramic coat, J-55, 8rd EUE tbg.
3	1	4 1/2" x 2 3/8" Baker AD-1 packer
2988' btm		

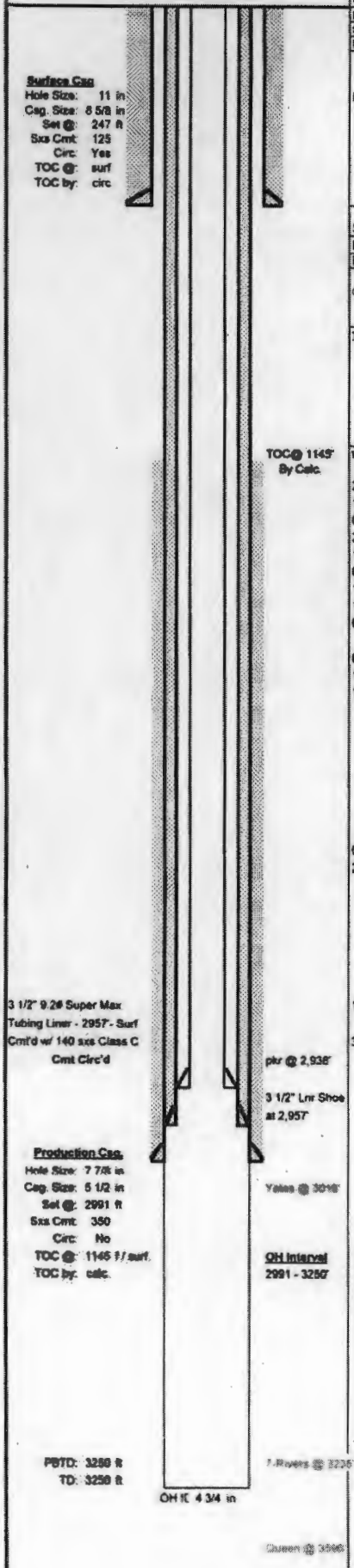
WELL HISTORY SUMMARY

7-Jun-51	Initial completion **3035 - 3210' (Yates OH):** Hydra-Frac w/1,500 gals Kerosene, 400#'s NAPALM Soap & 800#'s **Ottawa sand. IP=165 bopd, 0 bwpd, & 159 Mcfgpd. (flowing)**
8-Dec-52	Refrac OH (3035 - 3210') using 12,000 gals lse oil & 12,000#'s sand.
8-Aug-57	Refrac OH (3035 - 3210') using 20,000 gals lse oil carrying 40,000#'s sand using 6,800#'s mothballs for diversion. AIR=15.8 bpm (3 - 600# blocks)
28-Jun-71	**CONVERTED TO INJECTOR:** C/O stuck tubing. C/O fill to 3210'.
9-Nov-79	Tag fill w/1" sinker bar @ 3055' (155').
30-Jan-85	Isolated 5 1/2" csg leak from 277 - 310'. Sqz cmt csg leak with 400 sxs. C/O to 3210'.
6-Apr-88	Replaced tbg w/new flourolined yellow band tbg. Tst csg to 340 psi. OK.
14-Feb-02	Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag fill @ 3044' (166' of fill).
23-May-02	Wash & Work down w/18 bbls Acid to 3150' Acidize w/1260 gals. 15% to 3062' unable to C/O. Flush w/15 bbls 15% acid. ISIP= 1180#. **Injecting @ 450# @ 250 BPD**
6-Nov-03	Cleaned out f/ 3130' to 3210' - TD. RIH w/ Injection string - could not test 2 3/8" Fluoroline lined tubing. Replaced w/ and hydrotest 2 3/8" IPC tubing to 7000 psig. Located 5 1/2" Baker Model AD - 1 at 2995'. Circulated with 70 barrels of 2% KCL with packer fluid. Set packer and and test annulus to 500 psig. Pulled chart for OCD filing.
29-Nov-04	**Rate & Press: 125 bwpd at 1000#.** POOH w/ 2 3/8" IPC tubing and 5 1/2" AD-1 packer. RIH w/ 4 3/4" mill, 10 - 3 1/2" drill collars on 2 7/8" work string. Tagged at 3,190', cleaned out & drilled out to 3,214'. RIH w/ 4 3/4" button bit. Drilled to new TD at 3,780' using 5 drill bits. Ran compensated Neutron log f/ 3,780' to 2,900'. Washed w/ surfactant water & acidized with 6,000 gals 15% NEFE acid via Perf-Clean Tool. RIH with injection string, circulated annulus with inhibited packer fluid. Set packer 2,988'. Could not obtain MIT due to a casing leak. **Shut in well.**
11-Jan-05	**Shut in.** POOH w/ injection PKR & IPC tbg. Set a CIBP at 3,015'.RIH w/ 4 1/2" float shoe &d float collar on 74 - 4 1/2" **LNR 11.6 #/ft to 3,002'.** Cemented w/ 75 sacks class C star lite plus 50 sacks class C cement, circulated to surface. Drilled out cement float collar & shoe. Test liner to 1000# - held. Drilled out CIBP at 3,015', **cleaned out to 3,779' RIH with new 2 3/8" tubing. Ceramic Coat tubing and packer to 2,983'.** Circulated with packer fluid. Pressure annulus to 500# - held. Pulled pressure chart for NMOCD. Placed well on injection: **491 bwpd at 460#.**
08-Nov-05	RIH with 1 1/4" x 5' sinker bar and **tagged at 3,780' (TD).**
15-Mar-11	POOH with injection string and PKR. RIH with 3 3/4" bit, **tagged @ 3,175'.Cleaned out to 3,780'.** RIH with injection PKR & set @ 2,964'. Acidized with 20,000 gallons 90%/10% 15% HCL & xylene. AIR = 6 bpm. Blocked with 18,000# rock salt.Pavg= 1280 psi ISIP = 380 psig. Test injection string to 7000 psig.

PREPARED BY: Larry S. Adams D. Carrizales UPDATED: 26-Jan-05

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit				WELL NO	218 WIW
STATUS	Active	Water Injector			API#	30-025-09624
LOCATION:	330 FSL & 1650 FEL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico					
SPUD DATE:	06/01/49	TD	3250	KB	3,325'	DF
INT. COMP. DATE:	10/25/49	PBTD	3250	GL	3,315'	

GEOLOGICAL DATA

ELECTRIC LOGS

Ejectolog Tracer (MicroCaliper) (11-11-76 Cardinal Surveys Co.)

CORES, DST'S or MUD LOGS

HYROCARBON BEARING ZONE DEPTH TOPS

Yates @ 3016' 7-Rivers @ 3235' Queen @ 3566'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 247' Cmt'd w/125 sxs - circ cmt to surf
PROD.	5 1/2" - 15.5#, J-55 set@ 2991' Cmt'd w/350 sxs - TOC @ 1145' from surface by calculation.
LINER	3 1/2" -9.2#, Super Max set @ 2,957'. Cmt'd w/ 140 sxs Class C - circ'd 6 bbls cmt.

CURRENT PERFORATION DATA

CSG. PERFS

OPEN HOLE : 2991 - 3250'

TUBING DETAIL 1/31/2011

ROD DETAIL

Length (ft)		Detail
	7	KB (as used in 12/97 workover)
2936	92	2 3/8" IPC J-55 4.6#, Super Max tbg.
3	1	3 1/2" x 2 3/8" Baker PC, AD-1 packer
2946'	btm	

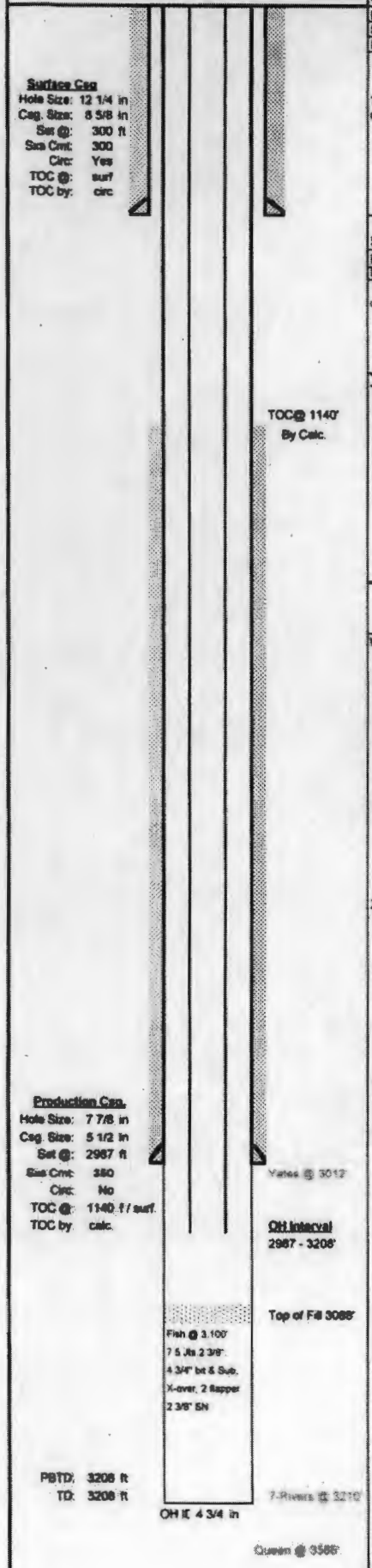
WELL HISTORY SUMMARY

25-Oct-49	Initial completion 2991 - 3250' (Yates OH): No stimulation. IP=64 bopd, 0 bwpd, & 82 Mcfgpd. (flowing)
12-Jun-53	C/O fill to 3241', Hydra-Frac OH w/1,500 gals
08-Jul-65	C/O fill from 3005 - 3248' (243'). Had salt bridge from 3005 - 3244'.
29-Apr-71	CONVERTED TO INJECTOR: C/O fill from 3221 - 3238' (17')
11-Nov-76	Ran injection profile. Tagged fill @ 3084' (166'). No C/O.
01-Dec-76	C/O fill 3084 - 3250' (66'). Jetwashed OH. Encountered tight spot in OH @ 3120'
15-Jan-86	Replaced cmt lined tubing & pkr.
14-May-88	Acdz'd OH w/1,000 gals 15% NEFE HCL in 2 equal stages using 300#'s rock salt down IPC tbg.
02-Dec-97	C/O fill (paraffin, formation & formation sand) f/ 3083 - 3250' (167'). Acdz'd OH using sonic hammer tool w/ 5,000 gals 15% NEFE HCL. AIR=1 bpm @ 750 psi. Ran pkr on 2 3/8" tbg. Set pkr @ 2947'. Initiated injection.
09-Jul-98	Performed csg/pkr tst per NMOCD guidelines @ 500 psi for 30 min. Test OK.
14-Feb-02	Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag fill @ 3059' (191' of fill).
18-Nov-04	POOH w/ 94 - 2 3/8" IPC tbg & 5 1/2" AD-1 pkr. RIH w/4 3/4" bit & 6 - 3 1/2" DCs. Tagged at 3,057', drilled to 3250'. Recovered formation, sand & parafin. RIH w/Perf-Clean Tool, jet clean w/surfactant water f/ 2,991' to 3,250'. Tbg Press= 3000#, csg press= 50#. Acidieze: stage I. 25 bbls 15% NEFE f/3,250' to 3,186' TP= 3000#. CP= 990#, stage II 25 bbls 15% NEFE f/3,186'-3,126' @ 2.5 BPM TP=3000#, CP=900#; stage III 25 bbls 15% NEFE f/ 3,126' to 3,061' @ 2.5 BPM. TP= 3000#, CP= 900#; Stage IV 25 bbls 15% NEFE f/3,061'-2,991' @ 2.5 bpm. TP= 3000#, CP= 950#. ISIP @ 5 min= 667#. C/O to 3,250'. POOH & laid down Perf-Clean Tool & work string. Hydrotest injection string (2 3/8" IPC) to 7,000#. Circ'd annulus w/ inhibited PKR fluid. Set AD-1 PKR at 2,893'. Performed MIT to 540# for 30 minutes. Pulled press chart for 30 minutes. Pulled press chart for NMOCD.OCD Field Rep was not present to witness the test. **Prior Rate & Press: 280 bwpd @ 900 psig. After Rated & pressure: 164 bwpd @ 300 psig.**
08-Nov-05	RIH with 1 1/4" x 5' sinker bar and tagged at 3,100'.
27-Mar-08	POOH w/ 94 - 2 3/8" IPC tubing & 5 1/2" AD-1 packer. RIH w/ 4 3/4" bit & 6 - 3 1/2" drill collars. Tagged at 3,067', drilled to 3250'; next day tagged at 3250'. RIH w/ 5 1/2" AD-1 PKR on 2 3/8" Duo tbg. Set PKR @ 2895'. Pressure annulus to 400#. Bled off 400# in 3 minutes, reset PKR at 2890' & 2860'. Press test annulus - bled off both times. RIH with RBP test casing at 2890', 2875', 2865' & 2830', would not test. Found leak under wellhead. RIH w/ 5 1/2" AD-1. Test @ 1698', 773', & 75 no test. Found hole at 756'. Set Composite Plug @ 2964'. RIH hydrotesting (7000#) 3 1/2" Shoe. Float Collar & 89 jts liner to 2,957'. Pumped 100 sxs Class C cmt. tailed w/ 14 sx Class C. Circ'd 6 bb;s cement/ Cut & welded 3 1/2" bell nipple. RIH w/ 2 3/8" bear claw bit, tagged @2932'. Drilled shoe, float collar & composite plug, tagged at 3,250'. RIH w/ 3 1/2" Arrow-Set PKR on 2 3/8" IPC tubing. Circ'd annulus w/ Pkr fluid. Set PKR @ 2,938', test to 480#. Pulled chart for OCD.
18-Jun-08	Foam CO2 Acid treat U. 7-R (3235'-3250') & Yates (3016'-3235') zones w/ 3000 gals 15% HCl acid plus 35 Tons CO2. AIR= 8 b AIR= 8 bpm. Pavg= 3,000#. PWOI. Prior Inj Rate/Press: 230 bpd @ 920#; After Rate/Press: 365 bpd @ 880#.
31-Jan-11	POOH with PKR. RIH with bit to 3,250'. RIH with PKR and set at 2,936'. Acidized with 13,000 gals 15% NEFE 90/10 acid/xylene AIR= 6 bpm. Pavg= 2,520'. ISIP= 870 psig. Performed MIT, pull chart for OCD.

PREPARED BY: Larry S Adams Domino Camzales UPDATED 08-Mar-11

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO	219
STATUS	Active	Oil		API#	30-025-09622
LOCATION:	330 FSL & 860 FEL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE:	TD	3208	KB	3,309'	DF
INT. COMP. DATE: 12/24/49	PBTD	3208	GL	3,299'	

GEOLOGICAL DATA

ELECTRIC LOGS:

Trac III (10-12-76 Cardinal Surveys Co.)
GR-N (12-22-49 Co. unknown)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3012' 7-Rivers @ 3210' Queen @ 3585'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 300' Cmt'd w/300 sxs - circ cmt to surf.
PROD.	5 1/2" - 14#, J-55 set@ 2987' Cmt'd w/350 sxs - TOC @ 1140' from surface by calculation.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS

OPEN HOLE :
2987 - 3208'

TUBING DETAIL 01-Dec-11

Length (ft)		Detail
2330	75	2 3/8" 8rd tubing
3	1	TAC
405	13	2 3/8" 8rd tubing
31	1	S M 2 3/8" Blast Jt
1	1	s.n.
4	1	2 3/8" lift sub
20	1	2 3/8" de-sander
2	2	2 3/8" cavity b.p.
2796		

ROD DETAIL 01-Dec-11

Length (ft)		Detail
16	1	P.R.
0	1	liner
8	1	8' X 7/8 sub
800	32	7/8 rods string
1200	48	3/4 rods string
725	29	1" weight bars
12	1	2" x 1 1/2" x 20' pump w/ 12" s.n.
2783		

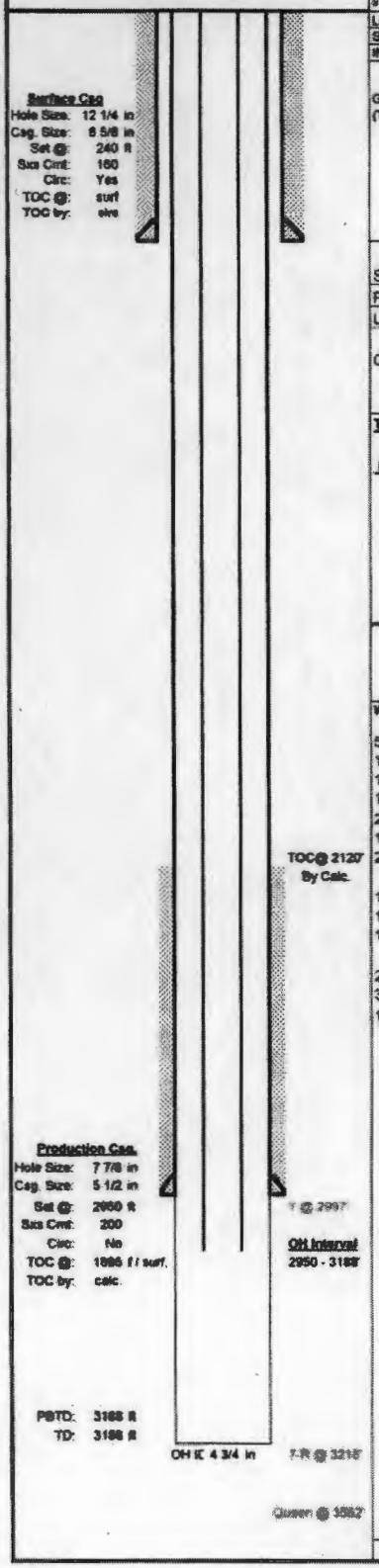
WELL HISTORY SUMMARY

24-Dec-49	Initial completion **2987 - 3208' (Yates OH): No stimulation. IP=58 bopd, 0 bwpd, & 90 Mcfgpd. (flowing)**
10-Mar-59	C/O fill to 3208'.
20-Jul-66	C/O fill from 3065 - 3195' (130').
07-Oct-74	C/O fill to 3208'.
17-Mar-76	Tag fill @ 3200'
08-Dec-87	C/O fill rom 3130 - 3150' (20') with bailer. **Could not get below 3150 due to ledge.**
28-Dec-04	POOH w/ rods, pump & tubing. Tagged at 3130'. Laid down mud anchor. RIH w/new Super Max Blast Joint. PWOP
18-May-07	POOH with rods & pump. Changed out Pump. RIH with rods. PWOP
04-Aug-09	POOH w/rods & pump. Note: 7/8" & 3/4" rods sowed box wear, btm half of 3/4" rods showed severe box wear. Laid 3/4" rods. POOH w/tbg. Hydrotest tbg w/bailer in hole - busted 88th, 85th & 80th joints. Tagged @ 3,129', bailed to 3,298'. Tubing parted : **Left 7.5 jts, 4 3/4" bit & sub, X-over, 2 flapper & 2 3/8" Sitting Nipple.** RIH w/ **Bulldog** Over Shot Socket, Bumper Sub. Hydraulic Jars on 2 3/8" tbg. **Tagged @ 3,100' - no recovery.** RIH w/ Concave Mill on BHA- tagged @ 3,101'. No recovery. RIH w/ 2 3/8" production tbg, pump & rods. PWOP.
23-Feb-11	POOH with rods, pump and tubing . RIH with 4 3/4" Concave Mill, tagged at 3,085'. Cut 1 inch of fish, went in with overshot. Ma various attempts to recover fis in open hole for five days - no recovery. RIH with 5 1/2" Arrow Set PKR on 4 1/2" work string. Set at 2,912'. Foam (70% Q - N2) Sand Frac open hole with 100,000# 16/30 mesh sand. Screen out occurred half way through Frac. Tagged frac sand inside 4 1/2" at 1,790'. Cleaned out with notch collar to 2,906' (top of PKR). RIH with open end tubing to clean sand. Cut PKR SN @ 2,912'. Free point at 2,510'. 4 1/2" parted on 70th joint. It took 8 days to clean out frac sand and recover 4 1/2" workstring. Cleaned frac sand in open hole to 3,088'. RIH with production string. PWOP.
05-Apr-11	POOH w/ rods and pump, pump good, POOH w/ tbg, tag PBTD @ 2995', bottom jt, below de-sander filled with frac sand, other 3 jts no sand, GIH w/ tbg assembly, NU wellhead, GIH w/ pump and rods, seat pump, space out, hang on, load and test tbg to 500# OK, pump 30 bbls down backside, well pumping ok.
30-Nov-11	POOH with rods, pump and tubing. Tagged at PBTD 3070'. Ran Pressure Gradient Survey, tagged at 3030'. Hydrotest tubing to 7000# - okay. RIH with pump and rods. PWOP. Top of Fish @ 3,088'.
07-Dec-11	Long Strke well.
06-Mar-13	POOH w/ rods and pump. Replaced pump. RIH w/ rods and pump. PWOP.

PREPARED BY: Larry S. Adams Dominga Carrizales UPDATED: 21 Dec 11

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME:	Cooper Jal Unit				WELL NO.	223
STATUS:	Active	Oil			API#	30-025-09648
LOCATION:	330 FNL & 990 FWL, Sec 25, T - 24S, R - 36E, Lea County, New Mexico					
SPUD DATE:	11/02/50	TD	3188	KB	3,318'	DF
INT. COMP. DATE:	12/05/50	PBTD	3188	GL	3,310'	

GEOLOGICAL DATA

ELECTRIC LOGS: GR-N from surface - 3187'
(Temp. Survey) Gamma-Trol (3-15-79 Cardinal Surveys Company)

CORES, DST'S or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 2997' 7-Rivers @ 3218' Queen @ 3562'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 240' Cmt'd w/160 sxs - circ cmt to surf.
PROD.	5 1/2" - 14#, J-55 set@ 2950' Cmt'd w/200 sxs - TOC @ 1895' from surface by calculation.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS:

OPEN HOLE: 2950 - 3188'

TUBING DETAIL 7/19/10

Length (ft)		Detail
2752	86	2 3/8" 4.7#, J-55, 8rd EUE tbg.
3	1	5 1/2" x 2 3/8" TAC
288	9	2 3/8" tbg w/ turn down collars
30	1	2 3/8" x 2 7/8" Blast Joint
1	1	2 7/8" SN
4	1	2 3/8" Perf Sub
31	1	2 7/8" 6.5#, J-55, 8rd EUE tbg
3109	btm	

ROD DETAIL 7/19/10

Length (ft)		Detail
16	1	22' x 1/1/4" polish rod w/ 7/8" Pin
0	1	10' x1 1/2" x1 1/4" PR liner
725	29	7/8" K-40 rods
2175	87	3/4" K-40 rods
150	6	7/8" K-40 rods
12	1	2" x 1 1/4" X 12' rod pump with RHR
0	1	1" gas anchor
3080	btm	

WELL HISTORY SUMMARY

5-Dec-50	**IC: 2950-3188' (Yates OH):** Shot 3020-3165' w/250 qts. Nitro. **IP=65 bopd, 0 bwpd, & 72 Mcfgpd. (flowing)**
13-May-54	C/O fill to TS @ 3188'.
1-Jan-62	Well SI most of year.
1-May-75	C/O fill f/3018'-3188' (170'). **Before WO: 19 bopd, 19 bwpd, GOR=1264 After WO: 28 bopd, 24 bwpd, GOR=1416**
28-Sep-76	Tagged for fill. None found.
16-Mar-78	C/O fill & calcium sulfate f/3044'-3188' (144'). Spotted scale converter in OH. Acdz'd OH w/ 1,500 gals. Pump scale sqz.
20-Mar-79	C/O fill to 3188' (TD). Acdz'd OH w/ 2,000 gals. Frac'd w/50,000 gals carrying 68,000#'s 20/40 sand in 3 stages. **Before WO: 17 bopd & 21 bwpd. After WO: 137 bopd & 131 bwpd.**
1-Apr-79	C/O fill from 3038 - 3178' (140').
10-Jun-85	C/O to 3037'. Recovered fish lost in OH.
15-Apr-89	C/O fill from 3058 - 3188' (130') & jet wash OH. Acdz'd OH w/2,500 gals 15% NEFE HCL in 3 stages diverting w/750#'s rock salt between stages. **After WO: 28 bopd, 44 bwpd, & GOR=807 (pumping)**
24-Jun-96	Replaced 32 jts of 2 3/8" tbg. Changed out bad some 3/4" & 7/8" rod boxes. Ran new pump.
3-Apr-04	POOH with rods, pump, and tubing. Laid down bad rods: 7 - 7/8" & 44 - 3/4". PWOP.
19-Jul-10	POOH with rods, pump, and tubing. Hydrotest tubing 8,000 psig - found hole on joint above SN. RIH with pump & rods. PWOP

PREPARED BY: Larry S. Adams Domingo Carrizales UPDATED: 04-Aug-10

Field: **Cooper Jal Unit**

	Location:
Footage:	330 FNL & 2310 FWL
Section:	Sec. 25, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,297'
KB:	3,309'
KB Calc:	12'
ck w/log?	No

Date	History
2-Jun-50	Initial completion: 2970 - 3230' (Yates/ 7 RVRS OH). No stimulation. IP=52
	bwpd, 0 bwpd, & 0 Mcfgpd. (flowing)
16-Jun-71	CONVERTED WELL TO INJECTOR.
14-May-89	Found casing leak at 350'-418'. Squeezed with 150 sxs Class H neat cement.
	Pmax=1035 psig, AIR=2 bpm. Second squeeze (350'-418'): 50 sxs Class C
	w/4% calcium, Pmax=750 psig. Clean out open hole with side jet. Acidized
	with 4,000 gallons 15% HCl acid. Pulled MIT - 300 psig.
9-Jul-93	C/O fill (paraffin & iron sulfied) f/3085'-3235'. Jet wash across OH twice.
	Acdz'd OH (2970'-3230') w/4,200 gals 15% NEFE HCL 200 bbls Chloride-
	dioxide, & 42 gals citric acid using 1000# mesh salt to divert. AIR=3 bpm @
	1025 psi. ISIP= 967#. Ran pkr on 2 3/8" CL tbg. Set pkr @ 2881'. Tst csg.
	Ok. Initiated injection @ 168 bwpd, TP=680 psi.
8-Dec-97	C/O fill from 3052 - 3230' (78'). Ran sonic hammer tool and acid wash OH
	(2970 - 3230') w/ 130 bbls produced water. Ran pkr and acdz'd OH w/ 3,800
	gals 15 % NEFE HCL in 3 stages using 1000#'s rock salt between each
	stage. AIR=4 bpm @ 1232 psig. Ran pkr on 2 3/8" CL tbg. Set pkr @ 2896'.
	Tst csg. Ok. Initiated injection @ 400 bwpd.
14-Feb-02	Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag fill @ 3043' (187' of fill).
30-Aug-04	POOH with 2 3/8" IPC tubing and 5 1/2" x 2 3/8" Baker. RIH with 4 3/4" bit,
	6 -3 1/2" drill collars on 2 7/8" work string. C/O to 3230'. Laid down BHA. RIH
	with 5 1/2" x 2 7/8" Full Bore Pkr to 2883'. Set packer and test backside to
	500 psig. Lost 80 psig in 2 minutes. Dropped standing valve, test tubing to
	500# - lost 100# in 5 minutes. POOH with Full Bore PKR. RIH w/ 5 1/2" x 2
	3/8" Baker Model AD-1 packer on 2 3/8" IPC tubing to 610'. Test casing leak
	to 450# - lost 70# in 30 minutes. Move and set PKR two more time - lost
	pressure each time. Hydrotest 2 3/8" IPC tubing to 6000# except the top 20
	joints due scale built up. Set packer at 2892' - test annulus to 400# - lost 30#
	in 30 minutes.
7-Sep-04	Ran MIT at 420# for 30 mn - held. Pulled press chart for NMOCD. Placed
	well on injection: 300 BWPD at 600 psig.
7-Dec-04	Prior rate & press: 330 bwpd @ 1000#. RIH w/ 1 1/4" Perf-Clean Tool on
	1-1/4" coiled tubing. Weached OH f/2900' to 3021'. CTP=4000#, Annulus.
	Acidized f/2970'-3098', could not get below 3098'. After rate & press: 200
	bwpd @ 600#
8-Nov-05	RIH with 1 1/4" x 5' sinker bar and tagged at 3,078'.
11-Mar-08	POOH w/ 2 3/8" IPC tbg & 5 1/2" x 2 3/8" Baker. RIH w/4 3/4" bit , 6 -3 1/2"
	drill collars on 2 7/8" work string. Tagged fill at 3053', cleaned out to 3,230'.
	RIH with 5 1/2" AD-1 PKR on 2 3/8" cement lined tubing. Set PKR at 2,856'.
	H5 test.
22-May-08	Acidized Jalmat w/72 bbls 15% NEFE HCl acid, divert w/3000# rock salt.
	Rate = 4.5 bpm @ 1363 psi. ISIP = 1040 psi. Before Rate & Press: 254 bpd
	@ 931 psi. After Rate & Press: 270 bpm @ 560 psi.
16-Jun-09	POOH & laid dn 2 3/8" CL tbg & AD-1 PKR. RIH w/4 3/4" bit on 2 3/8" IPC,
	tagged @ 3030'. RIH w/5 1/2" AD-1 PKR 2 3/8" IPC tbg. Set PKR @ 2839'.
	Pull press chart for OCD. Prior 320 BWPD @ 1100#; after 340 BWPD @
	1000#.
18-Jan-11	POOH with 2 3/8" IPC tubing and 5 1/2" x 2 3/8" Baker. RIH with 4 3/4" bit,
	6 -3 1/2" drill collars on 2 7/8" work string. C/O from 3,075' to 3,230'. Circ'd
	iron sulfite and scale. Hydrotest work string to 7,000 psig, set Loc-Set PKR
	at 2,840'. Acidized with 170 bbls 20% NEFE (90/10, acid/Xylene). Diverted
	with 13,750# RS. PKR failed. Ran new PKR. Acidized with 170 bbls acid.
	AIR= 6 bpm. Pmax= 2,140 psig. Pavg= 1,650 psig. ISIP= 1,350 psig.
	Hydrotest injection string to 5,000 psig. MIT to 400 psig. Pull chart for OCD.
	Prior rate & press: 310 bwpd @ 1145#. After rate & press: 458 bwpd @ 920#.

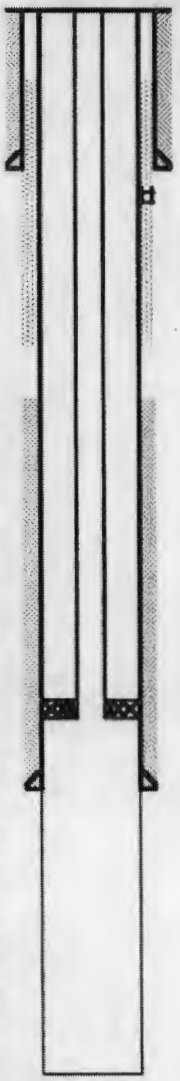
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
90	2-3/8" 4.7#, IPC, J-55, 8rd EUE tbg	2,835	2,835
1	2-3/8" x 5-1/2" Baker PC, AD-1 Packer	3	2,838

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Pumping Unit:
Updated: 01/20/14 MLS

CJU #224

Wellbore Diagram



PBTD 3230'
TD 3230'

Reservoir:	Cooper Jal
Well ID info:	CJU #224
API No:	30-025-08648
Init. Comp. Date:	6/2/1950

Hole Size:	11"
Surface Csg:	8-5/8", 28#, J-55
Set @	292'
Cement w/	100 sx
Circ:	Yes
TOC:	Surface

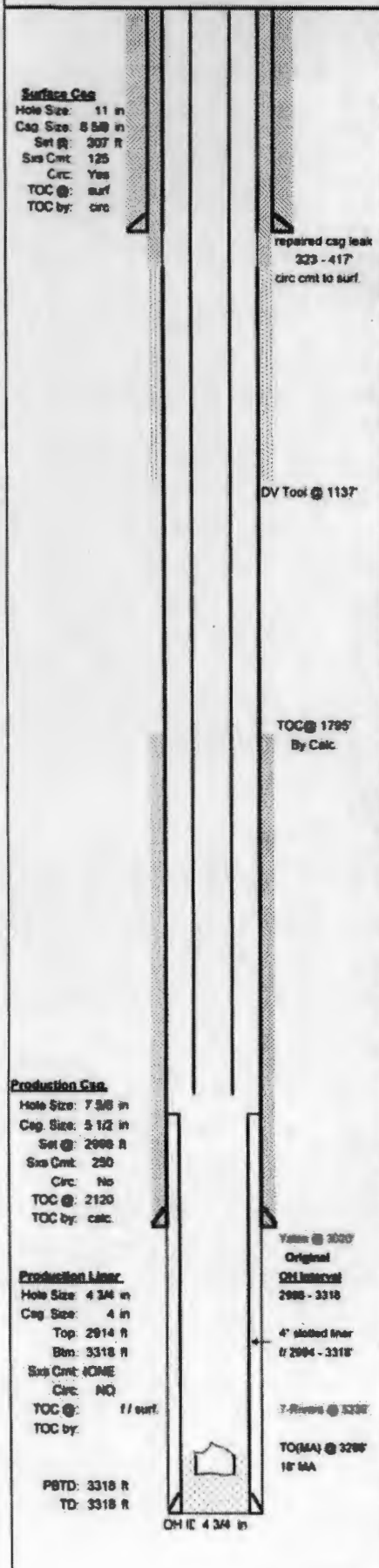
Hole Size:	7-7/8"
Prod. Csg:	5-1/2", 14#, J-55
Set at:	2970'
Cement:	200 sx
Circ:	No
TOC:	1920' from surface by calc.
	DV tool @ 1225' - prop 200 sxs - TOC @ 140' ft/surf by calc.

pkr @ 2839'

OH Interval: 2970'-3230'
OH ID: 4-3/4"

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit		WELL NO. 225
STATUS:	Active	Oil	API# 30-025-09650
LOCATION:	660 FNL & 1650 FEL, Sec 25, T - 24S, R - 36E, Lea County, New Mexico		
SPUD DATE:	TD 3318	KB 3,310'	DF
INT. COMP. DATE: 01/09/50	PBTD 3318	GL 3,301'	

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-N from 2700 - 3208' (12-22-49)
Trac III Profile Survey (10-8-76) Cardinal Surveys Co.

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3020' 7-Rivers @ 3230' Queen @ 3575'

CASING PROFILE

SURF.	8 5/8" - 32#, J-55 set@ 307' Cmt'd w/125 sxs - circ cmt to surf. 5 1/2" - TOC@ 450' f/ surf by calc.
PROD.	5 1/2" - 15.5#, J-55 set@ 2996' Cmt'd w/200 sxs - TOC @ 1795' f/ surf by calc. DV tool @1174' - pmp 150 sxs -
LINER	4" - 10.64#, J-55 FJ slotted liner set from 2994 - 3318' Not cmt'd in-place.

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE 2996 - 3318
Isolated behind 4" slotted liner

TUBING DETAIL 18-Oct-12

Length (ft)		Detail
2592	81	2 3/8" 8rd
3	1	5 1/2" X 2 3/8" TAC
416	13	2 3/8" 8rd EUE
32	1	2 3/8" x 2 7/8" SM Blast Joint
1	1	s.n.
4	1	lift sub w/ SCCC
20	1	desander w/ SCC
93	4	2 3/8" 8rd cavity b.p.
3161		

ROD DETAIL 18-Oct-12

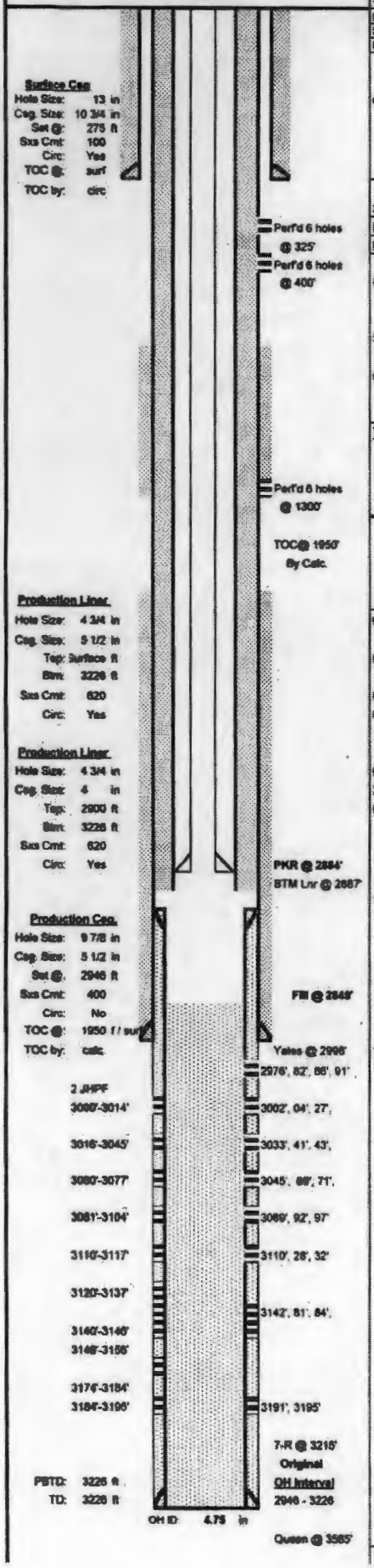
Length (ft)		Detail
14	1	1 1/4" x 16' Polished rod w/ 7/8" Pin
0	1	1 1/4" 1 1/2" x 10' Polished rod Liner
18	5	2', 2', 4', 4', 6' - 3/4" pony subs
2400	96	3/4" k rods
600	24	7/8" k rods
16	1	2" x 1 1/2" x 16' pump w/ 1" x 1' GA
3048		

WELL HISTORY SUMMARY

9-Jan-50	IC: interval: **(Yates OH) 2996 - 3188':** No stimulation. **IP = 49 bopd, 0 bwopd, & 91 Mcfgpd (flowing)**
21-Jul-54	**Deepened to 3318'.** Frac'd w/14,000 gals lse oil carrying 21,000#'s sd. AIR=19.5 bpm, Pmax=1500#. Spinner survey indicated all of trtmnt went in old hole above 3130'. New hole not treated. **After WO: 74 bopd, 0 bwpd, & GOR=12,428.**
25-Aug-54	Attmpt to isolate various intervals in OH w/Lynes straddle plr & frac. Plr stuck & frac unsuccessful. **Left fish in hole TOF @ 3188'.**
28-Aug-73	**Fished Lynes straddle plr & C/O to 3318'.** PWOP. **After WO: 16 bopd, 0 bwpd, & GOR=3880**
6-Dec-73	Producing 60 bopd & 0 bwpd (pumping)
21-Feb-74	Installed 228D pumping unit. After larger PU installation - IP=103 bopd & 0 bwpd.
8-Oct-74	Producing 98 bopd & 47 bwpd (pumping)
20-Oct-75	Producing 67 bopd & 68 bwpd (pumping)
27-Jan-76	Tagged btm @ 3095' (223' of fill). Did not C/O. Producing 31 bopd & 106 bwpd
14-May-83	Found **5 1/2" csg leak @ 323-417'. Cmt sqz'd leak w/125 sxs cmt - circ cmt to surface up 5 1/2" x 8 5/8" csg annulus.** C/O fill from 3084 - 3318'. Installed 4" slotted liner - not cmt'd inplace.
14-Aug-85	C/O fill to 3318'.
15-Jan-01	Tagged btm @ 3303' (15' of fill). Ran sonic hammer & acid washed slotted liner from 2994 - 3303' w/ 4,500 gals 15% NEFE HCL @ 4 bpm & 600 psi. Placed well on production. **After WO: 14 bopd, 92 bwpd, & 21 Mcfgpd.**
23-Dec-02	Long stroke well & lower 10 feet to light tagged.
12-Oct-06	POOH with rods and parted pump (@ top cage). POOH with stuck tubing, parted at MA (left 18' in hole). **TOF @ 3286'.** RIH with tubing, pump and rods. Replaced 12 - 7/8" & 18 - 3/4" rod boxes due to pitting. PWOP.
14-Feb-11	POOH with rods, pump and tubing. C/O with 3 1/4" bit from3,290' to top of fish @ 3,292'. Attempt to recover fish, no recovery. Foam Sand Frac'd down 4 1/2" workstring with 210,630# (50% Prop Net) 1.6 MMscf N2. AIR = 44.5 bpm. Pavg= 2,306 psig . ISIP= 1,686 psig. Flowed well back for 2 days.Cleaned out frac sand. RIH with Prod string. PWOP.
6-Apr-11	POOH w/ rods, ND wellhead, POOH w/tbg, dumped sand and fiber from all jts of tbg cavity below de-sander, test all tbg to 7000# - ok, set TAC w/ 16,000#, NU wellhead, GIH w/ pump and rods, seat pump, space out and hang on, load and test tubing to 500 lbs, ok, well pumping good.
23-May-11	Stripped out well. Hydrotest tubing to 6,000# - good. RIH with pump and rods. PWOP.
4-Oct-11	POOH with parted 21th - 3/4" rod. Laid down 3 - 3/4" rods (bent and or corked). PWOP.
1-Dec-11	POOH with rods, pump and tubing. Tagged at 3,220', **bailed to 3,280'.** Ran Pressure Gradient Survey. Hydrotest tubing in hole to 6,000#. RIH with pump and rods. PWOP.
16-Oct-12	POOH with rods, pump, and tubing. Ran BHP Survey, **tagged at 3,156'.** Hydrotest tubing - busted 18th joint. PWOP.

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit	WELL NO	230 WIW
STATUS	Injector	API#	30-025-09649
LOCATION:	1650 FNL & 2310 FWL, Sec 25, T - 24S, R - 36E; Lea County, New Mexico		
SPUD DATE:	TD 3226	KB 3,307'	DF
INT. COMP. DATE: 02/06/51	PBTD 3226	GL 3,302'	

GEOLOGICAL DATA

ELECTRIC LOGS: GR-N (11-8-79 WELEX)

CORES, DST'S or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 2996' 7-Rivers @ 3215' Queen @ 3585'

CASING PROFILE

SURF. 10 3/4" - 42#, J-55 set@ 275' Cmt'd w/100 sxs - circ cmt to surf.

PROD. 5 1/2" - 15#, J-55 set@ 2946' Cmt'd w/400 sxs - TOC @ 1950' from surface by calculation.

LINER 4" - 10.46#, J-55, FJ csg set from 3226 - 2900'. Cmt'd w/620 sxs - circ cmt out TOL.

CURRENT PERFORATION DATA

CSG. PERFS:

OPEN HOLE : 2946 - 3226
original OH isolated w/4" liner

5-Nov-79 Perf'd Yates @ 2976', 2982', 2986', 2991', 3002', 3004', 3027', 3033', 3041', 3043', 3045' 3069', 3071',3089', 3092' 3097', 3110', 3128', 3132', 3142' 3180', 3184', 3191', 3195' w/ 1 spf (24 holes total)

01-Apr-11 Perf'd Yates: @3000'-14', 3016'-45', 3060'-77', 3081'-3104', 3110'-31', 3120'-37', 3140'-46', 3148'-56', 3174'-84', & 3184'-3195', 142 feet, 284 holes.

TUBING DETAIL 4/4/2011 **ROD DETAIL**

2864	92	2 3/8" supermax IPC Tbg with turn down collar
10	2	2 3/8" supermax IPC Tbg Subs with turn down collar
3	1	3 1/2" Arrowset PKR
2877		

WELL HISTORY SUMMARY

06-Feb-51 Initial completion interval: (Yates OH) 2946 - 3186': trt (3030 - 3183') w/ 250 qts nitro. IP = 60 bopd, 0 bwopd, and 66 Mcfgpd (pumping).

06-Jul-79 C/O fill from 3031 - 3183'. Deepened to 3226'.

05-Nov-79 C/O fl3102'-3226'. Installed 4" liner. Perf'd (Yates) 2976'- 3195' w/1 spf (24 holes). Acdz'd perfs w/4,500 gals 15% HCl and 25 BSs in 3 stages. AIR=2.6 bpm @ 1800 psi. Frac'd w/51,000 gals gel wtr carrying 36,000#'s 20/40 sand & 18,000#'s 12/20 sd in 3 stages. AIR=20 bpm @ 3200#. After WO: 24 bopd, 52 bwpd, & GOR=740

07-Dec-93 Replaced 1 bad jt and 2 bad collars in 2 3/8" tbg string. Ran new pmp and rods. Returned to production.

22-Jun-99 Set CIBP @ 2900'. Dmp 35' cmt on top of CIBP. PBTD @ 2865'. Circ pkr. Fluid. Tst csg. Would not tst. Well TA'd.

08-Mar-01 Tag PBTD @ 2875'. Circ well w/ gelled brine mud. Spot 25 sxs cmt from 2900'-2400'. WOC. Tag TOC @ 2300'. Perf'd 6 holes @ 1300'. Sqz'd 50 sxs cmt into perfs @ 1300 ft @ 1 1/2 bpm & 1300#. SIP=1050 psi. WOC. Tag TOC @ 1050'. Tst csg to 1700 psi. OK. Perf'd 6 holes @ 400'. Pressured to 1700#. No pmp in rate. Perf'd 6 holes @ 325'. Pressured to 1700 psi No pmp in rate. Spotted 50 sxs cmt from 450' to surf. Removed wellhead. Cap casing. Installed Cap casing. Installed Dry hole marker & cleaned location. NMOCD notified - well P&A'd 3-6-2001.

15-Mar-11 Re-Enter Well. Drilled cement from surface to 465', test casing - okay. Drilled cement plug from 1050' to 1360' , Test casing to 500# - lost 100# in 30 minutes. Drilled cement plug from 2,300' to 2,610' and 2,890' to CIBP. Drilled CIBP with 3 1/4" bit. Left 3 cones in hole. RIH with 4 3/4" concave mill, milled 1 foot off of liner. RIH with 3 1/4" mill to 3,213', left 3 cones in hole. RIH with composite plug and set at 2,925'. RIH with 3 1/2" 9.2#/ supermax liner at 2,887'. Pumped 20 bbls lime water followed 200 sxs Class C cement, circ'd to surf. RIH with 2 3/4", drilled float collar, shoe and cement to 2,907. Drilled out composite plug, to 3,226'. Perf'd Yates from 3,000'-3,014', 3016'-3045', 3060'-3077', 3081'-3104', 3110'-3117', 3120'-3137', 3140'-3146', 3148'-3156', 3174'-3184', & 3184'-3195', 142 feet, 284 holes. Acidized with 15,000 gallons 15% HCl 90%/10% acid/Xylene at 6 bpm. Divert with 10,000# rock salt. Pavg= 2450#. ISIP= 760#. RIH with injection string. MIT well. Pulled pressure chart for OCD.

14-Jun-12 Tagged fill @ 2848' with 1 3/8" sinker rod tool.

PREPARED BY: Larry S. Adams Domingo Carrizales | UPDATED: 13-Jun-11

Field: Cooper Jal Unit

CJU #245 (131)

	Location:
Footage:	990 FNL & 1650 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,316'
KB:	3,325'
KB Calc:	7'
ck w/log?	Yes

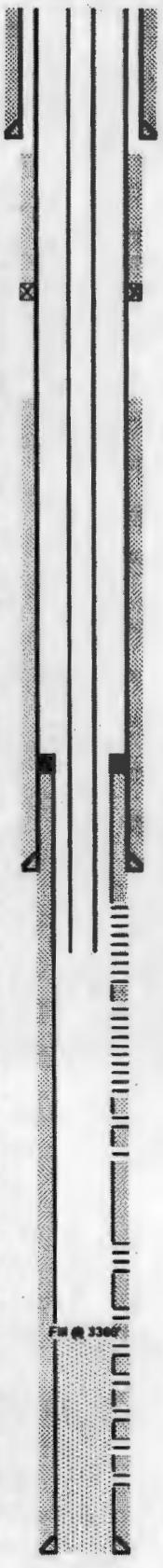
Date	History
17-Dec-49	OH complete 2993' - 3208' - no stimulation.
19-Jun-53	Cleaned out.
1-Oct-56	Cleaned out and placed on pump.
1-Feb-59	Cleaned out.
9-Mar-61	Deepend to 3560' and run 4-1/2" liner to 2871'. Sqz 100 sx around liner.
	Perf 3359' - 3400' w/ 2 SPF & frac'ed w/ 15000 gals and 1 ppg sand.
27-Jul-72	Found HIC 2' f/ surface - repair with Fibrglass Epoxy Patch.
12-Nov-74	Perf 3010' - 3291'. PB w/ sand to 3,300' & acidize w/ 4000 gal 15% & BS.
10-Dec-74	Frac perfs at 3010' - 3291' w/ 40,000gals w/ 1.5 ppg sand. PBTD: 3300'.
21-Dec-79	Re-numbered well from CJU #131 to CJU #245 well.
8-Jul-89	Acidize perfs at 3010' - 3291' w/ 3000 gal 15% & 1200# RS in 3 stages.
4-Sep-92	Set CIBP at 3,350' w/ cmt to 3,300'. Perf 3,105' - 3,135' w/ 6 SPF & frac
	perfs at 3010' - 3192' w/ 56,000 gal 30# Spectra Frac gel & 231,200#
	12/20 Brady sand & 16,900# 12/20 Resin sand.
16-Oct-92	CO frac sand f/ 3034' - 3310'. Weld outer patch on csg at 2' below GL.
12-Mar-02	Change out rods, tbg & pump.
19-Sep-05	DO CIBP & CO to PBTD of 3,560'. RWTP.
26-Sep-05	Rings torn on plunger.
4-Oct-05	Tag fill at 3,539'. Long stroke pump & RWTP.
13-Oct-05	Long stroke pump & RWTP.
9-Jul-07	Hole in joint above SN.
11-Sep-07	Hole in jt 6 & 8 above pump. Busted 3 jts while hydrotesting.
25-Aug-08	Body Break in 47th - 3/4" rod. Replaced plunger.
19-Jul-09	Tag fill at 3,534'. Ran pressure bomb - 271# @ 3000'. Burst jt #94.
21-Mar-11	CO fill to 3564' & perf 3000' - 3344'. Frac well & screened out w/
	154,000# sand pumped. CO to PBTD of 3,560' & RWTP.
1-Sep-11	Upsize from 1-3/4" pump to 2-1/4" pump.
10-Sep-11	Rod part at 2nd rod from surface.
15-Sep-11	Box break #36-7/8" rod. Run new KD 7/8" and 3/4" rods.
5-Oct-11	Change out 35 rod boxes due to wear and pitting. Install RG on 3/4" rods.
7-Oct-11	Change out 42 - 7/8" boxes (wear & pitting). Replace all 3/4" rods.
22-Nov-11	Hydrotest to 7000# & found hole in jt above TAC.
30-May-12	Hydrotest to 7000# & found split in 85th jt.
3-Oct-12	Tag fill at 3,360'. Hydrotest & had split in 12th jt. Replace 30 x 7/8" cplgs.
6-Nov-12	LD MA due to pits. Hydrotest - split on 9th jt f/ WB. WB was cut inside.
1-Feb-13	Box break on 87th rod. Change out 26 x 3-4" boxes.
15-Feb-13	Broken coupling on 37th rod.

	Tubing Detail (top to bottom)		
Joints	Description	Footage	Depth
80	2 7/8" 6.5#,SM tbg.	2,525	2,525
1	2 7/8" 6.4#, EUE 8rd tbg.	3	2,528
10	2 7/8" 6.4#,SM J-55, 8rd EUE tbg.	315	2,843
1	2 3/8" 6.4#, Lift Sub.	4	2,847
1	2 1/2" x 1 3/4" x 24' working barrel w/ SS	24	2,871
1	2 7/8" Lift Sub	1	2,872
1	2 7/8" x 20' Spirit D-Sander	20	2,892
1	2 7/8" 6.4#, J-55, 8rd EUE tbg, mule shoe	120	3,012

	Rod Detail (top to bottom)		
Rods	Description	Footage	Depth
1	26' x 1/1/4" polish rod w/ 7/8" pin	21.00	21.00
1	1 1/4" x 1 1/2" x 16' liner	0.00	21.00
2	6', 4' - 7/8" pony rods	10.00	31.00
35	1" KD steel rods	875.00	906.00
51	7/8" steel rods	1,275.00	2,181.00
26	1 1/2" sinker bars	650.00	2,831.00
1	1" Lift Sub	1.00	2,832.00
1	2 1/4" x 4' Grooved plunger w/ 2 1/2" SV	4.00	2,836.00

Pumping Unit:
Updated: 1/13/14 MCB

Wellbore Diagram



PBTD 3560'
TD 3560'

Reservoir: Cooper Jal
Well ID Info: CJU #245 (131)
API No: 30-025-08825
Spud Date: 11/10/1949

Hole Size: 10-3/4"
Conductor: 8-5/8", 28#
Set @ 205'
Cement w/ 125 sx
Circ:
TOC: Surface

TOC: 334' (Calc)

DV Tool at 1,191' (cement w/ 150 sx)

TOC: 1850' (Calc)

TOL @ 2,871'

Hole Size: 7-7/8"
Prod. Csg: 5-1/2" 14#
Set @ 2,993'
Cement: 200 sx at shoe & 150 sx at DV Tool

Tbg @ 3012'
Perf 3,000' - 3,009' w/ 2 SPF - 3/21/2011
Perf 3,010' - 3,018' w/ 1 SPF - 11/12/1974
EOT @ 3,012'
Perf 3,044' - 3,060' w/ 1 SPF - 11/12/1974
Perf 3,019' - 3,069' w/ 2 SPF - 3/21/2011

Perf 3,077' - 3,092' w/ 2 SPF - 3/21/2011
Perf 3,093' - 3,104' w/ 1 SPF - 11/12/1974
Perf 3,105' - 3,135' w/ 6 SPF - 8/31/1992
Perf 3,136' - 3,154' w/ 2 SPF - 3/21/2011
Perf 3,155' - 3,161' w/ 1 SPF - 11/12/1974
Perf 3,162' - 3,168' w/ 2 SPF - 3/21/2011

Perf 3,176' - 3,184' w/ 1 SPF - 11/12/1974

Perf 3,200' - 3,220' w/ 1 SPF - 11/12/1974

T-R @ 3228'

Perf 3,271' - 3,273' w/ 2 SPF - 3/21/2011
Perf 3,276' - 3,291' w/ 1 SPF - 11/12/1974

Perf 3,340' - 3,344' w/ 2 SPF - 3/21/2011

Perf 3,359' - 3,362' w/ 2 SPF - 3/9/1961

Perf 3,370' - 3,372' w/ 2 SPF - 3/9/1961

Perf 3,397' - 3,400' w/ 2 SPF - 3/9/1961

Perf 3,449' - 3,453' w/ 2 SPF - 3/9/1961

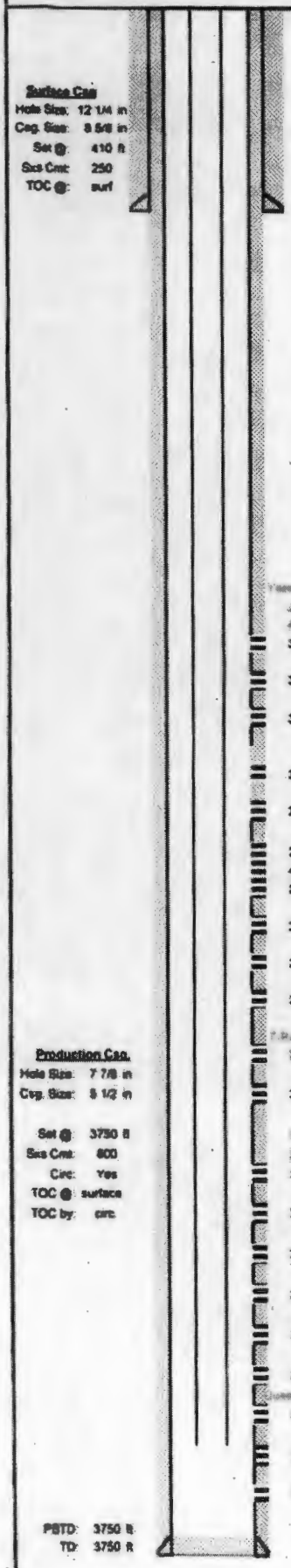
Perf 3,479' - 3,486' w/ 2 SPF - 3/9/1961

Hole Size: 4-7/8"
Prod. Liner: 4-1/2" - 10.5#
Liner Set at: 3560'
Cement: 100 sx (squeeze around liner)

Queen @ 3600'

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	407
STATUS:	Active	Oil		API#	30-025-32569
LOCATION:	2540 FSL & 1640 FEL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE:	07/29/94	TD 3750	KB 3,325'	DF	
INT. COMP. DATE:	10/01/94	PBTD 3750	GL 3,314'		

ELECTRIC LOGS

GR-DLL-MSFL (8-9-94 Halliburton)
GR-DSN-CSNG (8-9-94 Halliburton)
GR-FWS (8-9-94 Halliburton)
GR-CCL from 3683 - 2800' (7-27-96 Halliburton)

GEOLOGICAL DATA

Core 1: 3275 - 3335' (recovered 60')
Core 2: 3335 -67' (recovered 32')
Core 3: 3367 - 3401' (recovered 34')
Core 4: 3401 - 14' (recovered 13')

CORES, DST'S, or MUD LOGS

Core 5: 3415 - 75' (recovered 60')
Core 6: 3475 - 3535' (recovered 60')
Core 7: 3535 - 75' (recovered 35')

HYDROCARBON BEARING ZONE DEPTH TOPS

Yates @3019' 7-Rivers @ 3240' Queen @ 3611'

CASING PROFILE

SURF. 8 5/8" - 24#, WC-50, ST&C set@ 410'. Cmt'd w/250 sxs - circ cmt to surface.
PROD. 5 1/2" - 15.5#, WC-50, LT&C set@ 3750'. Cmt'd w/800 sxs - circ cmt to surface.
LINER None

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE:

01-Oct-94 **Perf'd Jalmat** f/ 3144 - 3172' w/ 4 spf (112 holes total)
01-Oct-94 **Perf'd L. M.** f/ 3400'-04', 20'-26', 44'-48', 3473'-82', 3503'-11', 3523'-48', 3611'-16', 3649'-54', & 3670'-78' 2 JHPF (72', 144 hol
Isolated below CIBP @ 3350'
26-Jul-96 **Perf'd Jalmat** f/ 3036 - 40', 3048 -58', 3066 - 78', 3104 - 14' w/ 4 spf (160 holes total).
Note: Langlie Mattix perfs info came from Form C-105 dated 5/8/95 and perfs pick on Halliburton's Spectral Density Dual Spaced Neutron Spectral Gam
26-Aug-08 **Perf'd 7-R** f/ 33352'-56', & 3286'-98'; **Perf'd Y** f/ 3236'-39', 3221'-23', 3180'-88', 30'-34', 60'-68', & 3130'-34', 36 feet, 108 holes

TUBING DETAIL 3/14/12

Length (ft)		Detail
3286	106	3 1/2" J-55, 8rd EUE tbg.
6	1	2 7/8" Tbg Sub
41	1	3 1/2" Stator
31	1	2 7/8" J-55, 8rd EUE tbg.
3	1	2 7/8" j-55 TAC
3367	btm	

ROD DETAIL 3/14/12

Length (ft)		Detail
15	1	16' x 1 1/4" polish rod (7/8" pin)
14	2	6', 8' - 1" steel pony rods
3275	131	7/8" New KD steel rods
34	1	Rotor
3338		btm

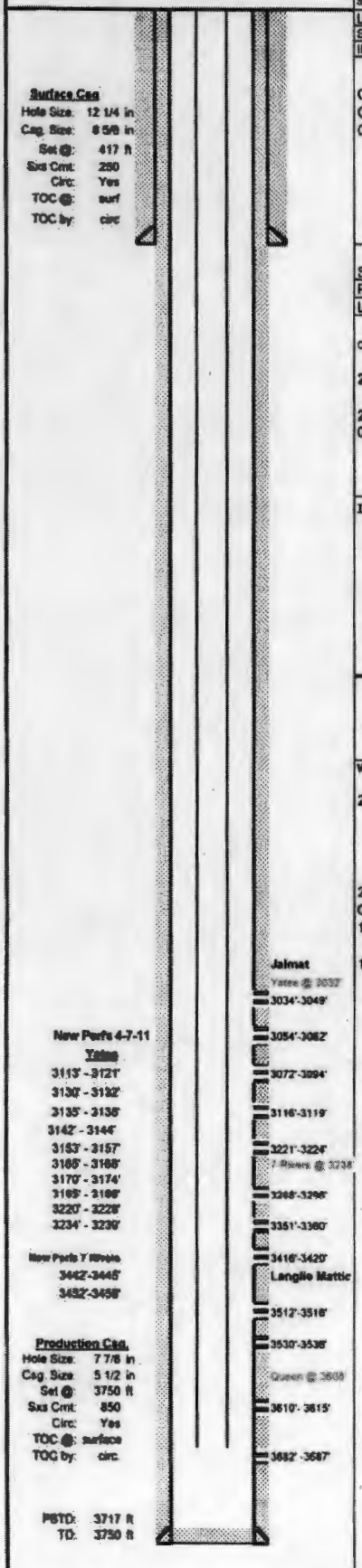
WELL HISTORY SUMMARY

1-Oct-94 **Perf'd Jalmat** f/ 3144 - 3172' w/ 4 spf (112 holes total) Frac'd w/43,000 gals XLG 2% KCL carrying 220,000#'s 12/20 sand. PM=1 660 - 1089 psi, AIR=30 bpm, & ISIP = 1497 psi. PWOP. IP = 80 bopd, 149 bwpd, & 79 Mcfgpd. Perf'd **Langlie Mattix** f/ 3400'-04', 3420'-26', 3444'-48', 3473'-82', 3503'-11', 3523'-48', 3611'-16', 3649'-54', & 3670'-78' w/ 2 JHPF (72 ft 144 holes). Frac'd Langlie Mattix f 29,000 gals XLG 2% KCl carrying 136,000#'s 16/30 sand. **No test noted.**
5-Dec-94 Changed out rod pump & gas anchor.
######### Repaired rod part & changed out rod pump.
26-Jul-96 Ran GR-CCL f/ 3683'-2800'. **Set CIBP @ 3350'.** Dump 10' cmt on top. PBTD=3340'. **Perf'd Yates** f/ 3036'-40', 3046'-58', 3066'-78', 3104'-14' w/ 4 spf (160 holes). Acdz'd perfs 3036'-3114 w/3,000 gals 15% NEFE HCL dropping 240 - 7/8" RCN ball sealers. AIR= 7.5 bpm at 850 psi. ISIP=vacuum. **After WO: 47 bopd, 54 bwpd, & 17 Mcfgpd.**
10-Feb-97 Change out rod pump.
19-Aug-98 Tagged btm @ 3340' - no fill. Tst tbg. Good tst. Replaced rod pump.
02-Nov-98 Replaced rod pump.
20-Mar-01 Changed out rod pump, 15 - 3/4" rod boxes, & 5 - 7/8" rod boxes.
27-Jun-01 Tagged fill @ 3302' (22'). Change out pump, 43 - 3/4" rod boxes, 42 - 7/8" rod boxes, & 7 - 1" rod boxes.
21-Mar-03 Tally out of hole flipping tubing. Hydrotest tubing going hole.
######### Rod Part 3/4" body break rod # 92 f/ surface. Replaced 19- 3/4" rods. Upsize pump to 1 1/2" ins. X 24' f/ CJU # 413.
30-Apr-04 POOH w/ rods & pump. Scanalog tubign out of hole. Replaced 40 green and 4 red w/ new joints of 2 7/8" tubing. PWOP.
13-Oct-06 Changed out polish rod liner.
18-Aug-08 POOH w/rod, pump & tbg. RIH w/4 3/4" bit 6 - 3 1/2" DCs. Tagged @ 3200'. Had trouble w/swivel & Reverse Unit. D/O cmt & CIBP. C/O to 3670' - recovered scale & frac sand. C/O to 3750'. Tagged 36' of fill - over night. Ran GR-CCL f/ 3714' to 2800'. **Perf'd 7-R** f/ 3335'-56', & 3286'-98'; **Perf'd Yates** f/ 3236'-39', 3221'-23', 3180'-88', 3130'-34', 36 feet, 108 holes. RIH w/ 5 1/2" PKR on 2 7/8" W/O (hydrotest to 7000#). Set PKR @ 2984'. Treat Jal & LM w/ 10,500 gals 15% HCl NEFE & 150 tons CO2. Divert w/ 12,500# RS. AIR= 10 bpm. Pavg= 3350#. ISIP= 600 psi# well back. PWOP. IP: 12 BO, 22 MCF & 271 BW.
09-Jan-09 POOH w/ rods, pump & tubing - found hole on 1st jt above SN. Hydrotest tbg 7000# - okay. RIH w/ pump & rods. PWOP.
03-Jun-09 POOH w/ rods, pump & tbg. RIH w/ Gray WL Tag Bar. Tagged @ 3668'. RIH w/ Press Gradient Tool. Took press survey at 500' increments. Hydrotest tbg to 7000# - found hole on jt above SN. RIH w/ pump & rods. PWOP. Press @ 3066' = 335 psig
01-Jul-09 POOH with rods, pump and tubing. Hydrotest tubing to 7000# - burst 28th joint. RIH with pump and rods. PWOP.
09-Jul-09 POOH w/ rods, plunger & tbg & work barrel, laid down 7 jts - 2 7/8" tbg. Laid down 10-3/4" rods. Spaced out plunger. PWOP.
07-Sep-11 POOH with rods, pump & tubing. Took gradient survey. Hydrotest tubing to 7,000# - good. RIH with plunger & rods. PWOP.
17-Feb-12 POOH with unscrewed 114th rod. PWOP.
22-Feb-12 POOH w/ production string. Laid down tubing. Hydrotest tubing w/ Stator to 7,000 psig psig - good. RIH w/ rods & Rotor.PWOP.
14-Mar-12 POOH rods, Rotor, tubing , and Stator. RIH with Stator, tubing, Rotor and rods. PWOP.

PREPARED BY: Larry S. Adams Domingo Carrizales UPDATED: 21-Mar-12

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit					WELL NO	409
STATUS	Active		Oil			API#	30-025-32670
LOCATION:	2500 FSL & 1450 FWL, Sec 24, T - 24S, R - 36E; Lea County, New Mexico						
SPUD DATE:	08/11/94	TD	3750	KB	3,343'	DF	3,342'
INT. COMP. DATE:	10/01/94	PBTD	3717	GL	3,331'		

GEOLOGICAL DATA

ELECTRIC LOGS

GR-CCL (5-21-95 Halliburton)
GR-DLL-MSFL-CSL from 3750 - 2800' (8-19-94 Halliburton)
GR-DLT-CNL-CSNG from 3750 - surface (8-19-94 Halliburton)

CORES, DST'S, or MUD LOGS

HYDROCARBON BEARING ZONE DEPTH TOPS

Yates @ 3032' 7-Rivers @ 3238' Queen @ 3608'

CASING PROFILE

SURF.	8 5/8" - 24#, WC-50, ST&C set@ 417'. Cmt'd w/250 sxs - circ cmt to surface.
PROD.	5 1/2" - 15.5#, WC-50, LT&C set@ 3750' Cmt'd w/850 sxs - circ cmt to surface.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS

OPEN HOLE

28-Oct-94 **Perf'd Jalmat (Yates) f/ 3034'-49, 3054'-62', 3072'-94', 3116'-19', & 3221'-24'**
Perf'd Jalmat (7-Rivers) f/ 3288'-96' w/ 2 spf (118 holes)
28-Oct-94 **Perf'd Langlie Mattix f/ 3351'-60', 3416'-20', 3512'-16', 3530-36', 3610'-15' & 3682'-87' w/ 2spf (66 holes)**
07-Apr-11 **Perf'd Yates f/3113'-21', 3130'-32', 3135'-38', 3142'-44', 3153'-57', 3165'-68', 3170'-74', 3185'-88', 3220'-28' & 3234'-3239', 2 JHPF, 47 ft,**
Perf'd Seven Rivers from 3442'-3445', & 3452'-3456', 2 JHPF,97 feet

TUBING DETAIL 4/18/11

Length (ft)		Detail
0		KB
2700	85	2 7/8" 6.5#, J-55, 8rd EUE tbg.
3	1	5 1/2" x 2 7/8" TAC
283	9	2 7/8" 6.5#, J-55, 8rd EUE tbg.
1	1	2 7/8" SN
4	1	4' x 2 7/8" 6.5#, J-55, 8rd EUE tbg sub
120	1	3 1/2" Mud Anchor
3111	btm	

ROD DETAIL 4/18/11

Length (ft)		Detail
20	1	26' x 1 1/4" polish rod w/ 7/8" Pin
0	1	1 1/4" x 1 1/2" x 14' liner
2	1	2' - 7/8" Pony Sub
825	33	1" D-90 rods
1025	41	7/8" D-90 rods
950	38	3/4" D-90 rods
250	10	1 1/2" sinker bars
20	1	2 1/2 " x 1 3/4" X 20' RHBC rod pump
0	1	1 1/4" gas anchor
3092		btm

WELL HISTORY SUMMARY

28-Oct-94 **Perf'd Langlie Mattix; 7-Rivers f/ 3351 - 60', 3416 - 20', 3512-16', 3530-36'; Queen f/ 3610-15', & 3682-87' w/2 spf (66 holes today). Frac'd with 29,000 gals XLG 2% KCL carrying 136,000#'s 16/30 brady sand. Perf'd Jalmat f/ 3034'-3296' w/2 spf (118 holes). Frac'd with 43,000 gals XLG 2% KCL carrying 220,000#'s 12/20 sand. AIR=30 bpm @1315 psig. ISIP= 1310#. Pump test perfs (3034'-3296') for 24 hrs. recovering 58 bopd, 69 bw & 71 Mcfgpd. Commingled perfs. IP=60 bopd, 107 bwpd, & 170 Mcfgpd (pumping).**
28-Feb-95 Tagged fill @ 3695'. Changed out MA
07-Feb-97 Replaced 1 jts 2 7/8" tbg. Visually inspected rod string.
12-Dec-06 POOH with rods, pump and tubing. Tagged fill at 3589'. RIH with 4 3/4" bit, **bailed form 3200' to 3700'.** Recovered scale and sand. Acidized with 750 gals 15% acid. RIH with produciton string. PWOP.
15-Jul-10 Long stroke well. Good pump action, temporily. Load well and test to 500 psig. Bled to 0 psig. POOH with rod, pump and tubing. Hydrotest to 7,000 psig - found split joint above SN. RIH with pump and rods. PWOP.
05-Apr-11 POOH with rods, pump and tubing. RIH with PKR, set above Perfs. Test casing to 500 psig -held.Tagged fill at 3690'. RIH with 4 3/4" bit, bailed form 3690' to 3717'. See diagram for new perfs. RIH with CIBP on wireline, **set @ 3,286'.** RIH **Perf'd Yates f/3113'-21', 3130'-32', 3135'-38', 3142'-44', 3153'-57', 3165'-68', 3170'-74', 3185'-88', 3220'-28' & 3234'-3239', 2 JHPF, 47 feet and Perf'd Seven Rivers from 3442'-3445', & 3452'-3456', 2 JHPF, 9 feet. Set CIBP @ 3,286', 10' cement.**
RIH with 5 1/2" PKR on 4 1/2" Frac String, set PKR above all perfs. Foam Acid Frac'd with 7,500 gals 15% NEFE acid. Frac'd with 120,000#'s sand, 60% resin coated. ISIP= 1380#, P15min= 1130#. Flowed back for two days. POOH w/ 4 1/2" work string.
Not mentioned - D/O of CIBP. Clean out f/ 3,590' to 3,717'. RIH w/ production string. PWOP.
19-Dec-11 **Changed out polished rod liner.**

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	05-Jan-12

Field: **Cooper Jal Unit**

	Location:
Footage:	1800 FSL & 1425 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,314'
KB:	3,327'
KB Calc:	13'
ck w/log?	yes

Date	History
27-Jul-95	Selectively perf 3443' - 3620' & acidize w/ 2000 gal 7-1/2% HCl.
	Frac w/ 38,000 gal 35# x-link gel & 162,000# 16/30 brady sd. PWOP.
23-Aug-95	Set RBP at 3,397' & perf 3099' - 3111' & frac w/ 43,000 gal 30# x-link
	& 220,000# 12/20 Brady. Retrieve RBP & RWTP.
5-Sep-96	Perf 3,046' - 3,298' w/ 4 SPF. Use RBP & pkr to acidize perfs 3142' -
	3298' w/ 2000 gals 15% & 180 BS. Acidize perfs at 3046' - 3086' w/ 2000
	gals 15% & 180 BS. TOH w/ pkr & RBP. RWTP.
10-Oct-97	Set CIBP at 3,400' & dump 35' cement.
6-Jun-98	CO fill 3357' - 3365' & RWTP.
29-Nov-99	Replaced 1 jt tbg & re-dressed pump.
19-Mar-02	Replaced pump jt & re-dressed pump.
8-Oct-08	DO CIBP at 3,400' & cont to 3,796'. Perf 3632' - 3770', 3288' - 3583' &
	3026' - 3040' w/ 3 SPF. Acidize all perfs w/ 9600 gal 15% NEFE HCl.
	11700# RS & 109 Tons CO2. RWTP.
29-Jul-09	Tag fill a 3,756', run pressure bomb & found hole in it above SN.
8-Sep-09	Body break on 74th rod.
15-Oct-09	Body break on 75th 3/4" rod. LD 52 - 3/4" rods due to pitting.
20-Oct-09	Tag btm at 3,730' - did not clean out.
2-Nov-09	Tag btm at 3,726' - did not clean out.
30-Nov-09	Hydrotest tbg - 1 bad jt and 3 split jts.
26-May-11	Body break on 111th 3/4" rod. Had to strip out pump.
13-Jun-11	Box break on 77th 7/8" rod. LD 48 - 3/4" rods.
15-Jun-11	Fish Polish Rod.
30-Sep-11	Long stroke well.
20-Oct-11	Dropped segment of well head slip while POOH to run BHP survey.
26-Oct-11	Body break on 7/8" rod. Replaced 3/4" rods w/ 50% 1" & 50% 7/8".
7-Jan-12	Parted K-bar at top of lift sub. MA full of iron sulfide. Replace 12 K-bars.
31-Jan-12	Long stroke pump.
4-Apr-12	Hydrotest tbg - everything test ok.
27-Feb-13	Body break in 113th rod. Btm K-bars had split coupling.
19-Sep-13	Replaced 67 - 7/8" & 21 - 3/4" FHSM Boxes.
26-Sep-13	Rod Part. Scan tbg 1 YB, 5 BB & 108 GB.
19-Dec-13	Test tbg - 3 jts failed. SN was pitted.
5-Feb-14	Body break in 75th rod. LD 35-7/8", 94 -3/4" & 4-1-1/2" due to pitting.

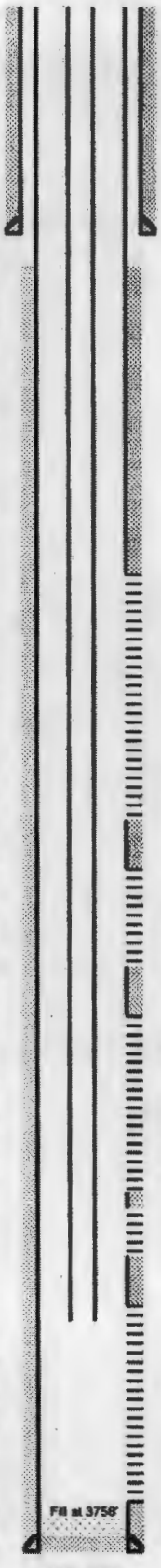
	Tubing Detail (top to bottom)		
Joints	Description	Footage	Depth
91	2 7/8" 6.5#, J-55, 8rd EUE tbg.	2,883	2,883
1	5 1/2" x 2 7/8" TAC	3	2,886
24	2 7/8" 6.5#, J-55, 8rd EUE tbg.	679	3,565
2	2 7/8" IPC tbg.	65	3,630
1	2 7/8" SN	1	3,631
1	2 7/8" Perf Sub	4	3,635
1	Mud Anchor	32	3,667

	Rod Detail (top to bottom)		
Rods	Description	Footage	Depth
1	26' x 1 1/4" x 1 1/2" polish rod	26.00	26.00
1	1 1/4" x 1 1/2" x 14' liner	0.00	26.00
3	6' - 7/8" pony rods	18.00	44.00
39	7/8" rods (Norris 90)	975.00	1,019.00
96	3/4" rods (Norris 90)	2,400.00	3,419.00
12	1-1/2" Sinker Bars (Norris 90)	300.00	3,719.00
1	Pump	20.00	3,739.00

Pumping Unit:
Updated: 02/10/14 MCB

CJU #411

Wellbore Diagram



PBTD 3796'
TD 3800'

Reservoir:	Cooper Jal
Well ID Info:	CJU #411
API No:	30-025-32958
Spud Date:	7/8/1995

Hole Size:	11"
Surface Csg:	8-5/8" - 24#, CF-50 ST&C
Set @:	391'
Cement:	250 sx Class C w/ 2% CaCl2 (14.8 ppg, 1.34 yield)
Circ:	Yes (50 Sacks)
TOC:	Surface

TOC: 500' (Temp Survey)

Yates @ 3022'

Perf 3,026' - 3,040' w/ 3 SPF - 10/1/2008
Perf 3,046' - 3,054' w/ 4 SPF - 9/5/1996
Perf 3,062' - 3,070' w/ 4 SPF - 9/5/1996
Perf 3,075' - 3,086' w/ 4 SPF - 9/5/1996
Perf 3,099' - 3,111' w/ 4 SPF - 8/23/1995
Perf 3,116' - 3,120' w/ 3 SPF - 10/1/2008
Perf 3,124' - 3,131' w/ 3 SPF - 10/1/2008
Perf 3,134' - 3,136' w/ 3 SPF - 10/1/2008
Perf 3,142' - 3,154' w/ 4 SPF - 9/5/1996
Perf 3,157' - 3,162' w/ 3 SPF - 10/1/2008
Perf 3,166' - 3,172' w/ 3 SPF - 10/1/2008
Perf 3,178' - 3,188' w/ 3 SPF - 10/1/2008
Perf 3,190' - 3,192' w/ 3 SPF - 10/1/2008
Perf 3,210' - 3,215' w/ 3 SPF - 10/1/2008
Perf 3,219' - 3,226' w/ 4 SPF - 9/5/1996

7-R @ 3240'

Perf 3,282' - 3,288' w/ 3 SPF - 10/1/2008
Perf 3,292' - 3,296' w/ 4 SPF - 9/5/1996
Perf 3,310' - 3,317' w/ 3 SPF - 10/1/2008
Perf 3,335' - 3,340' w/ 3 SPF - 10/1/2008
Perf 3,348' - 3,352' w/ 3 SPF - 10/1/2008
Perf 3,356' - 3,382' w/ 3 SPF - 10/1/2008

Perf 3,400' - 3,405' w/ 3 SPF - 10/1/2008
Perf 3,422' - 3,426' w/ 3 SPF - 10/1/2008
Perf 3,431' - 3,435' w/ 3 SPF - 10/1/2008
Perf 3,443' - 3,448' w/ 4 SPF - 7/21/1995
Perf 3,456' - 3,458' w/ 3 SPF - 10/1/2008
Perf 3,466' - 3,469' w/ 3 SPF - 10/1/2008
Perf 3,474' - 3,486' w/ 3 SPF - 10/1/2008
Perf 3,476' - 3,480' w/ 4 SPF - 7/21/1995
Perf 3,507' - 3,511' w/ 4 SPF - 7/21/1995
Perf 3,526' - 3,530' w/ 4 SPF - 7/21/1995
Perf 3,535' - 3,539' w/ 4 SPF - 7/21/1995

Perf 3,557' - 3,563' w/ 3 SPF - 10/1/2008
Perf 3,576' - 3,578' w/ 3 SPF - 10/1/2008
Perf 3,583' - 3,589' w/ 3 SPF - 10/1/2008

Queen @ 3614'

Perf 3,616' - 3,620' w/ 4 SPF - 7/21/1995
Perf 3,628' - 3,632' w/ 3 SPF - 10/1/2008
Perf 3,636' - 3,639' w/ 3 SPF - 10/1/2008
Perf 3,654' - 3,659' w/ 3 SPF - 10/1/2008
Perf 3,678' - 3,682' w/ 3 SPF - 10/1/2008
Perf 3,684' - 3,690' w/ 3 SPF - 10/1/2008
Perf 3,696' - 3,698' w/ 3 SPF - 10/1/2008
Perf 3,706' - 3,710' w/ 3 SPF - 10/1/2008
Perf 3,718' - 3,722' w/ 3 SPF - 10/1/2008
Perf 3,728' - 3,730' w/ 3 SPF - 10/1/2008
Perf 3,740' - 3,747' w/ 3 SPF - 10/1/2008
Perf 3,770' - 3,778' w/ 3 SPF - 10/1/2008

Hole Size:	7-7/8"
Prod. Csg:	5-1/2" - 15.5# CF-50, LT&C
Set @:	3800'
Cement - Lead:	850 sx (35:65) Poz:H w/ 6% Gel + 5% Salt (12.8 ppg)
Tail:	250 sx (50:50) Poz:H w/ 2% Gel + 5% Salt (14.2 ppg)
Circ:	No

Field: Cooper Jal Unit

	Location:
Footage:	330 FSL & 2550 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,312'
KB:	3,324'
KB Calc.	12'
ck w/log?	Yes

Date	History
1-Oct-94	Selectively perf 3357'-3617' w/ 2 spf (76 holes). Frac w/ 29,000 gals 2% KCl
	XLG & 136,000# 16/30 Brady sand. Selectively perf 3146 - 3174 w/ 4 SPF
	(112 holes) & frac w/ 43,000 gals 2% KCl XLG and 220,000# 12/20 sand.
7-Nov-94	Change out rod pump.
18-Oct-95	Change out rod pump.
16-Sep-96	Selectively perf 3028'-3113' w/ 4 spf (232 holes) & acidize w/ 4000 gals 15%
	NEFE HCl & 300 BS.
22-Nov-96	Set CIBP @ 3,300' w/ 35' cmt to 3265'
12-Jun-99	CO fill to 3,265' & change out pump.
1-Oct-02	Change out worn pump and rods.
31-May-03	Busted 2 jts & had hole 11 jts f/ SN. Change out couplings & 21 rods.
4-Feb-04	DO CIBP & clean out to 3,713'. Commingle all perfs.
17-Feb-04	Change out sand screen & RWTP.
29-Apr-04	Test tbg - busted 3 jts and found 2 jts with holes.
25-Jun-04	Scan tbg & showed sever rod wear. Run 38 jts new tbg, 70 Blue & 6 yellow.
18-Jul-05	Test tbg & found 1 hole 71 jts above SN.
22-Aug-05	Pull pump & shear tool parted. CO w/ notch collar to 3713' & RWTP.
28-Sep-05	L/D btm jt of tbg & RWTP.
23-Jan-06	Test tbg & found split in 96th jt.
30-Jun-06	Tag fill at 3,650' w/ tbg - did not clean out.
27-Aug-07	Change out pump.
14-Jul-08	CO to 3717' w/ notched collar.
24-Mar-09	Run Stator on tbg and rotor on rods - changed out 110 boxes.
23-Mar-10	Rod part due to stress crack. Replaced polish rod.
3-Dec-10	POOH & left TAC in hole. Tag at 3,619' & could not push downhole. RWTP.
19-Nov-11	Tbg parted above WH slips. Test tbg & burst 3 jts. RWTP.
24-Jul-12	Test tbg and found leaks.
22-Jan-13	Test tbg - hole in 98th jt & burst 6 jts.
29-Jul-13	Replaced gear drive.
12-Aug-13	Replace all tbg w/ new tbg.

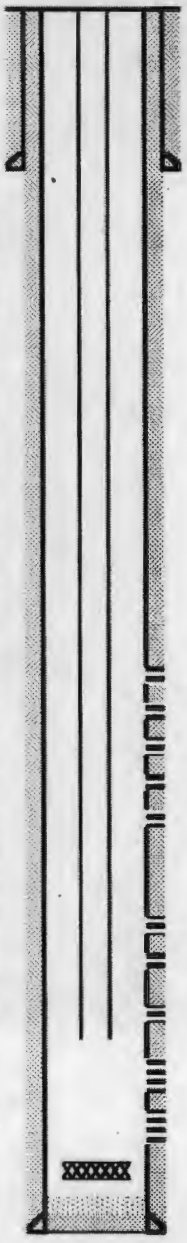
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
110	2-7/8" 6.5#, J-55, 8rd EUE tbg	3,445	3,445
1	2-7/8" Lift Sub	4	3,449
1	3-1/2" Stator	35	3,484
1	2-7/8" SN	1	3,485
1	2-7/8" 6.5#, J-55, 8rd EUE tbg	31	3,516
1	2-7/8" x 5-1/2" TAC w/10,000# Tension	3	3,519

Rods	Rod Detail (top to bottom) Description	Footage	Depth
1	16' x 1-1/4" polish rod	16	16
1	1" steel KD rod	25	41
2	4' & 6' x 1" KD Pony Rods	10	51
135	1" steel KD rod	3,400	3,451
137	1" Rotor	28	3,479

Pumping Unit:
Updated: 02/12/14 MCB

CJU #414

Wellbore Diagram



PBTD 3717'
TD 3750'

Reservoir:	Cooper Jal
Well ID Info:	**CJU #414**
API No:	30-025-32571
Init. Comp. Date:	10/1/1994

Hole Size:	12-1/4"
Surface Csg:	8-5/8", 24#, CF-50 ST&C
Set @	430'
Cement w/	250 sx Class C w/2% CaCl2 (14.8 ppg, 1.34 cf/sx)
Circ:	Yes
TOC:	Surface

Tansill @ 2927'

Yates @ 3020'
3028'-3036'

3042'-3050'

3059'-3084'

3100'-3113'

3146'-3174'

7-R @ 3245'

3357'-3362'

3479'-3487'

3507'-3513'

EOT @ 3,519'

3527'-3539'

Queen @ 3606'
3610'-3617'

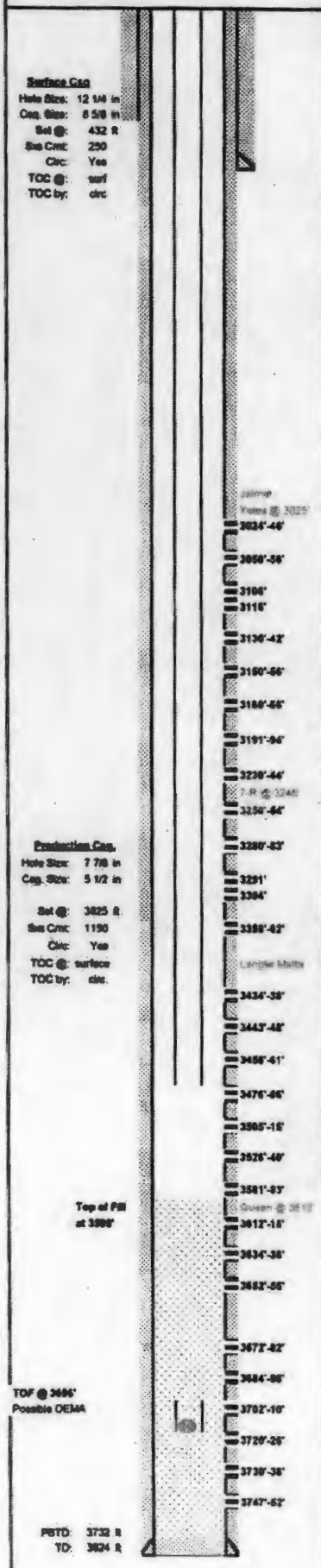
TAC Fish @ 3619'

Fill at 3660'

Hole Size:	7-7/8"
Prod. Csg:	5-1/2", 15.5#, CF-50 LT&C
Set at:	3750'
Cement:	540 sx Class H w/gel (12.8 ppg, 1.94 cf/sx)
	350 sx Class H (15.6 ppg, 1.18 cf/sx)
Circ:	Yes
TOC:	Surface

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME:	Cooper Jal Unit			WELL NO.	420
STATUS:	Active	Oil		API#	30-025-33458
LOCATION:	2310 FNL & 2310 FEL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE:	07/16/96	TD	3824	KB	3,329' DF
INT. COMP. DATE:	08/07/96	PBTD	3732	GL	3,313'

GEOLOGICAL DATA

ELECTRIC LOGS:
PE,CNL,LDT,ML, SFL, BCS, & GR (7-25-96 Schlumberger)
GR-CCL from 3730 - 2730' (8-1-96 Schlumberger)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:
Tansil @ 2875' Yates @ 3025' 7-Rivers @ 3246' Queen @ 3610'

CASING PROFILE

SURF.	8 5/8" - 24#, WC-50, ST&C set@ 432'. Cmt'd w/250 sxs - circ cmt to surface.
PROD.	5 1/2" - 15.5#, WC-50, LT&C set@ 3825' Cmt'd w/1150 sxs - circ cmt to surface.
LINER.	None

CURRENT PERFORATION DATA

CSG PERFS:
01-Aug-96 **Perf'd Jal f/3050'-56', 66'-90', 3108'-3111', 50'-56', 91'-94', 3230'-34', 3294'-3304', & 3356'-62' w/ 4 spf (232 holes)**
05-Oct-05 **Perf'd K. M. f/ 3747'-52', 3730'-36', 3720'-26', 3702'-10', 3684'-98', 3672'-82', 3652'-55', 3634'-36', 3612'-18' 3581'-83', 26'-40', 05'-15', 3476'-86', Perf'd Jal f/3280'-83', 32'-54', 26'-44', 3130'-42' & 3024'-46', 145 holes.**
12-Oct-05 **Perf'd 7-Rivers f/ 3456'-61', 3443'-48', & 3434'-38', 12 feet, 2 JHPF.**
18-Sep-08 **Ran GRN/CCL. Perf'd 7-Rivers/Jal f/ 3291'-3300', 3 JSPF. Perf'd Yates/Jal f/ 3160'-66', & 3106'-16' 3 JSPF.**

OPEN HOLE:

TUBING DETAIL — 5/16/2012

Length		Detail
3440	111	3 1/2" J-55, 9.3# Supermax Tbg
8	1	3 1/2" J-55, Supermax Sub
34	1	3 3/4" Stator
31	1	3 1/2" J-55, Supermax Tbg
3	1	2 7/8" x 5 1/2" TAC
3516		

ROD DETAIL — 5/16/2012

Length		Detail
12	1	1 1/4" x 16' Polish Rod w/ 7/8" Pin
0	1	1 1/4" x 1 1/2" x 14' liner
8	1	8'- 1" pony rod
3425	137	1" steel rods
34	1	1 1/2" Rotor
3478		

WELL HISTORY SUMMARY

01-Aug-96 Ran GR-CCL from 3730 -2730'. **Perf'd f/ 3050'-56', 3066'-90', 3108'-11', 50'-56', 91'-94', 3230'-34', 3294'-3304', 3356'-62', w/ 4 spf (232 holes).** Frac w/ 51,000 gals 30# borate carrying 258,000#'s 12/20 brady sand. **Pump tst 24 hrs - 36 bopd, 253 bwpd, 33 Mcfgpd.**
04-Jun-97 Converted well from PC pump system to rod pump system.
30-Sep-98 L/D production equipment. Set CIBP @ 3000' Displaced csg with packer fluid & tst to 500 psi. **Well TA'd 10-1-98.**
14-Nov-03 RIH w/ Sand Line Drill Bailer & tagged CIBP @ 2994'. Drilled out & **pushed down CIBP to 3696'.** RIH w/ 108 - 2 7/8" tubing string. RIH with 2 1/2" x 2 1/4" x 4' plunger and 135 steel rods. PWOP. **Well test: 29 BOPD, 232 BWPD, & 12 MCFPD.**
15-Apr-04 POOH w/ rods, pump, & tubing. Hydrotest tubing in hole to 7,000#, found hole on the 74th joint. RIH with pump and rods. PWOP.
12-Jul-04 POOH w/ rods & pump. Scanalog tbg out of hole. Found 1 yellow, 26 blue, 60 green, & 21 red due to pitting. RIH w/Super max (80) tbg. Shut in due to defective collars. Finish running in hole w/ Supermax tbg.Tagged fill @ 3670'. RIH w/ pump & rods. PWOP
30-Sep-05 POOH w/ prod string. RIH w/ 4 3/4" bit & 10 - 3 1/2" DCs on 2 7/8" tbg, tagged at 3668'. **C/O to 3762',** recovered scale, cast iron **Perf'd L. M. f/ 3612'-18', 3581'-83', 26'-40', 05'-15', 3476'-86', JAL f/ 3280'-83',50'-54', 35'-44', 3130'-42' & 3024'-46',** 145 holes. Spot and acidized Langlie Mattix (3476'-3747') w/ 3500 gals 15% NEFE. Diverted with 150 BSs, excellent ball action (Pmax= 6500#). Frac'd LM (3476'-3747') w/ 35K gals XL gel & 81,500# 16/30 mesh sand. Pavg= 2450# @ 31 bpm. ISIP= 1532#. Did not pump 6 ppg. Spot and acidized Jalmat (3050'-3362') with 1000 gals NEFE 15% acid. Frac'd Jalmat with 29K gals 30# XL gel plus 65,000# 16/30 mesh sand. Pmax= 2075# @ 30 bpm. ISIP= 1484#. POOH with frac packers. Cleaned out with notch collar to 3764'. Perf'd 7-R f/ 3456'-61', 3443'-48', and 3434'-38', 12 feet, 2 JHPF. RIH with 2 7/8" super max tubing, pump and rods. PWOP.
26-Oct-05 POOH w/ rods & stuck pump. POOH w/ tubing. RIH with tubing plunger and rods.
30-May-05 Replaced parted 106th - 3/4" rod (body part). POOH with rods and plunger. RIH with plunger and rods. PWOP.
20-Jul-06 POOH with parted 114 - 3/4" (body break). Replaced rod. PWOP.
7-Aug-06 POOH w/ Plunger & Standing Valve. Plunger had severe scaring. RIH w/ 3 additional jts.**Tagged possible fish @ 3694'.** Attempt to screw onto fish, twice - failed. RIH with production string. PWOP.
9-Sep-06 POOH w/rods, pump, & tbg. RIH w/4 3/4" cut-rite shoe & wash pipe. Tagged fish @ 3595'. Recovered fish (2 7/8" OEMA). RIH w/ 4 3/4" bit - tagged fill @ 3636'. **C/O to 3696'** - encountered junk. **Top of junk @ 3696'.** Recovered frac sand & scale. **Ran GRN/CCL. Perf'd 7-Rivers/Jal f/ 3291'-3300', 3 JSPF: Perf'd Yates/Jal f/ 3160'-66', & 3106'-16' 3 JSPF.** RIH & set PKR @ 2965'. Foam CO2 Acid Frac w/5000 gals 15% NEFE HCl acid plus 78 Tons CO2 @ 10.2 bpm. Pave= 2107'. Flowed back, recovered water, CO2 & oil (12% - 15%). Hydrotest prod tbg in hole, plunger & rods. **After W/O Test: 17 BOPD, 31 MCF & 428 BWPD.**
08-Jan-10 POOH w/ rods & plunger. **Tagged fill @ 3647'.** POOH w/ tubing. Hydrotest tubing in hole to 7000#. RIH w/ plunger & rods. PWOP.
30-Sep-10 POOH with rods and plunger. Laid down 28 - 3/4" rods and 16 - 1 1/4" K-Bars. RIH with plunger and rods. PWOP.
24-Jun-11 Fished polished rod, rods and plunger. RIH with new plunger and rods. PWOP.
29-Sep-11 Replaced parted parted polished rod. E=Re-spaced well. PWOP.
01-Feb-12 POOH laying rod string and plunger. Ran Press survey, **tagged at 3,595'.** RIH with tubing, rotor and new rods. PWOP.
14-May-12 POOH with rods and rotor. POOH with tubing, joint #111 was parted. Recover fish (28' of 34' Stator). Recovered the rest of fish. Hydrotest tubing in hole to 7,000# - good. Ran in hole rotor on rods. PWOP.

PREPARED BY: Larry S. Adams D. Gonzales UPDATED: 23-May-12

Field: **Cooper Jal Unit**

	Location:
Footage:	1575 FSL & 2525 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,318'
KB:	3,335'
KB Calc:	17'
ck w/log?	Yes

Date	History
12-Dec-96	Ran GR-CCL f/ 3684-2684'. Perf'd Jal f/ 3061-63', 3066-68', 73-90',
	3139-36', 48-54', 69-72', 82-84', 3298-3308', & 3353-56' w/4 spf (192 holes).
	Frac w/ 52,000 gals 30# borate XL 2% KCL carrying 268,000#'s 12/20 brady
	sand. Pump 1st 24 hrs - 27 bopd, 113 bwpd, 43 Mcfgpd.
3-Jul-97	C/O fill from 3482 - 3630' (148'). Returned to production.
13-Feb-98	Changed out TAC, SN and rod pump.
18-Jan-99	Changed out 10 - 3/4" rod boxes, 10 - 7/8" rod boxes and rod pump.
5-Jan-00	Changed out MA and pump.
19-Jan-04	POOH with rods and pump. RIH with upsized pump(1 1/4" to 1 1/2") and
	rods. PWOP.
26-Jul-04	POOH w/ rods & pump. Scanaloged tbg out of hole: 16 yellow, 67 blue, 10
	green (31% to 40% wall loss), 8 green (41% to 50% wall loss), & 6 red.
	RIH w/1 blast jt, 13 yellow band, TAC, 3 yellow, 67 blue, 11 double band, &
	14 single band tbg. Tagged bottom at 3590'. RIH w/ pump & rods. PWOP.
23-Sep-05	POOH w/ rods, pump & tubing. RIH w/ 4 3/4" bit, 10 - 3 1/2" drill collars.
	Tagged at 3523', cleaned out to 3715'. Drilled f/ 3715' to 3780', circulated
	frac sand. Perf'd L, M, f/ 3742'-48', 16'-24', 05'-08', 3674'-94', 54'-56',
	36'-38', 3616'-22', 3586'-88', 32'-46', 3512'-20', 3483'-93', 3452'-59',
	3044'-52' & 3024'-40', 2 SPF, 180 degree phase, 224 holes. Hydrotest
	3 1/2" WS to 7000#. Acidized perfs 3452'-3748' w/ 4,000 gals 15% NEFE
	acid. Diverted with 200 ball sealers - balled out 4 times (Pmax= 4200#).
	Frac'd with 121,080# 16/30 sand. Pavg= 2394# at 26.8 bpm. ISIP= 1922#.
	RIH with Notch Collar and tagged at 3780'. RIH with pump and rods. PWOP.
18-Nov-06	POOH w/ rods & pump. Tagged at 3756'. POOH w/ tbg. RIH w/ tbg, pump
	& rods. Long stroke pmp. Re-spaced well & check pmp action. PWOP.
21-Nov-06	POOH with rods. Tagged at 3755'. POOH with tubing and stucked pump.
	RIH with tubing, pump and rods. Load pump, would not pump. Long stroke -
	would not pump. Shear off tool. POOH with rods and tubing. Left fish: 1 1/4"
	x 8' - 50 Sand Screen @ 3756'. PWOP. Well would not pump. Changed out
	pump. PWOP.
18-Dec-07	POOH with rods. Tagged fill at 3755'. POOH with tubing and pump. RIH
	with tubing, pump and rods. PWOP.
25-Feb-10	POOH with rods, pump and tubing. Ran Pressure Gradient Tool, took
	reading @ 500' interval. Tagged @ 3,753'. PWOP.
17-Nov-11	POOH with rods and parted shear tool. Ran Pressure Gradient Tool., took
	reading @ 500' interval, tagged at 3,762'. Hydrotest tubing in hole to 7000
	psig - found split 85th joint. RIH with pump and rods. PWOP.
3-Jun-12	POOH with rods, pump and tubing. Hydrotest tubing to 7000 psig - found
	split on 85th joint. RIH with pump & rods. PWOP.
6-Jun-12	POOH with rods, pump and tubing. Hydrotest tubing to 7000 psig - found
	split on 116th joint. RIH with pump & rods. PWOP.
6-Aug-12	POOH with rods, pump and tubing. RIH with Pressure Gradient Survey,
	tagged at 3,745'. Hydrotest tubing - found 1 hole. PWOP.
13-Dec-12	POOH with rods, pump and tubing. Hydrotest to 7000# - found split on 114th
	joint. RIH with pump and rods. PWOP.

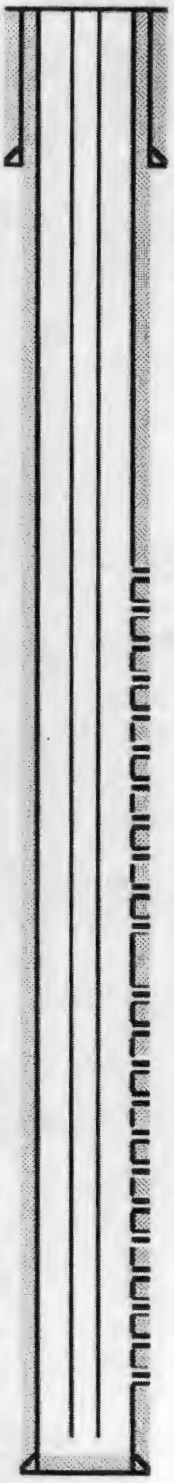
Tubing Detail (top to bottom)			
Joints	Description	Footage	Depth
93	2-7/8" 6.5#, J-55, 8rd EUE tbg	2,980	2,980
1	2-7/8" x 5-1/2" TAC	3	2,983
23	2-7/8" 6.5#, J-55, 8rd EUE tbg	755	3,738
1	2-7/8" Blast Joint	31	3,769
1	2-7/8" SN	1	3,770
1	2-7/8" Perf Sub	4	3,774
1	2-7/8" BP Mud Anchor	31	3,805

Rod Detail (top to bottom)			
Rods	Description	Footage	Depth
1	26' x 1-1/4" spray metal PR w/ 1" pin	18	18
4	3', 3', 3', 9' - 1" Fiberglass pony rods	18	36
35	1" Fiberglass rods	1,313	1,349
43	7/8" steel rods	1,075	2,424
27	3/4" steel rods	675	3,099
26	1-1/2" K bars	650	3,749
1	26-K Shear Tool	1	3,750
1	2-1/2"x2"x24' PAP 80 rng pmp w/1-1/2"x8'-50 SS	24	3,774
1	1-1/4" x 8' gas anchor	0	3,774

Pumping Unit:
Updated: 01/07/14 MLS

CJU #421

Wellbore Diagram



Reservoir:	Cooper Jal
Well ID Info:	CJU #421
API No:	30-025-33489
Spud Date:	6/27/1996

Hole Size:	12-1/4"
Conductor:	8-5/8", 24#, WC-50, ST&C
Set @	404'
Cement w/	250 sx (1.32 cu ft/sk)
Circ:	Yes
TOC:	Surface

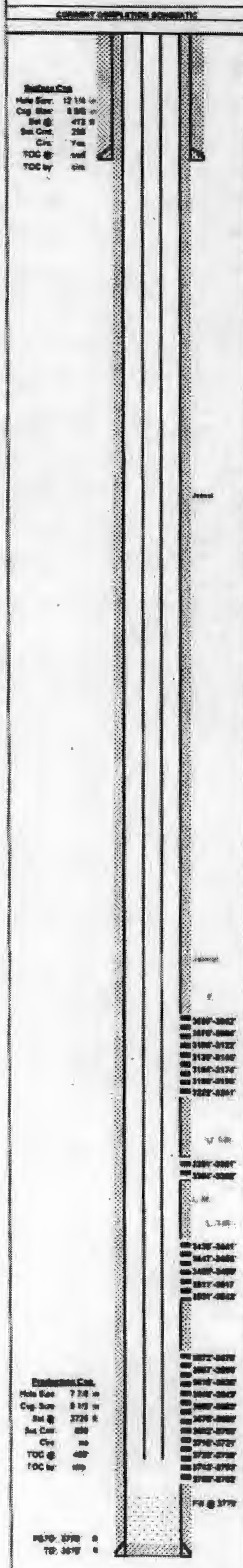
Hole Size:	7-7/8"
Prod. Liner:	5-1/2", 15.5#, WC-50, LT&C
Set at:	3800'
Cement:	800 sx, Class H (12.8 ppg, 1.94 cu ft/sk)
	350 sx, Class H (15.6 ppg, 1.18 cu ft/sk)
Circ:	Yes
TOC:	Surface

Tubing @ 3023'
3024'-40'
3044'-52'
3061'-63'
3066'-68'
3073'-90'
3139'-36'
3148'-54'
3169'-72'
3182'-84'
T.R. @ 3242'
3298'-3308'
3353'-56'
3452'-59'
3483'-93'
3512'-20'
3532'-46'
3586'-88'
Queen @ 3614'
3616'-22'
3636'-38'
3654'-56'
3674'-94'
3705'-08'
3716'-24'
3742'-48'

PBTD 3780'
TD 3800'

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit	WELL NO.	314
STATUS	Active	Oil	API# 30-025-38102
LOCATION	[illegible] FNL & 2334 FWL, Sec 24, Unit J, T-24-S, R-36-E, Lea County, New Mexico		
SPUD DATE	[illegible]	TD 3815'	KB 3310.8' / DF [illegible]
INT. COMP. DATE		PBTD 3779'	GL 3299' / KB 11.8'

GEOLOGICAL DATA

ELECTRIC LOGS

CNL - from 3750' - 1150' (10-20-08 Gray Wireline)

Cement Top @ 410' Log from 3779' - 22' (10-20-08 Gray Wireline)

CORES, DST'S or MUD LOGS

Driller's show

HYDROCARBON BEARING ZONE DEPTH TOPS

Tansill @ 2886' — Yates @ 2978' — Upper 7 Rivers @ 3230' — Lower 7 Rivers @ 3500' — Queen @ 3588'

CASING PROFILE

SURF. 8 5/8" - 24#, Grade 55, LT&C set@ 412'. Cmt'd w/250 sxs Class C w/ 2% CaCl - circ'd w/ 84 sx cmt to surface

PROD. 5 1/2" - 15.5#, Grade 55, LT&C set@ 3779' Cmt'd w/ 300 sxs Class H w/ 5% Salt + 300 sxs Class H w/ 5% Salt - did not circ cmt to surface.

LINER. None

CURRENT PERFORATION DATA

CSG. PERFS. — OPEN HOLE

08-Oct-08 Perf'd (L. M.) (Q) @ 3758'-62', 43'-53', 30'-39', 18'-21', 3692'-3708', 3679'-86', 59'-63', 40'-43', 19'-26', 3587'-90' & 3572'-75'
Perf'd (L. M.) 7-Rivers, @ 3531'-43', 11'-17', 3480'-89', 47'-54', 36'-41', 3354'-62', & 3291'-3300';
Perf'd Jalmat (Y) @ 3222'-3241', 3188'-3195', 54'-74', 30'-46', 08'-22', 3070'-3094' & 3030'-3062', 262', 380 (0.45") holes
Note: Q & 7-R @ 2 spf, Y @ 1 spf, 120 degrees.

09-Dec-08 Ran GR/CCL log. Perf'd 7-Rivers @ 3354'-3362', & 3291'-3301', 2 spf Perf'd Yates @ 3222'-3241', 3188'-3195', 54'-74', 30'-46', 08'-22', 3070'-3094', & 3030'-3062', 262', 380 (0.45") holes. Note: Q & 7-R @ 2 spf, Yates @ 1 spf, 120 degrees.

TUBING DETAIL [illegible]

Length (ft)		Detail
0		KB
[illegible]	92	2 7/8" 6.5#, J-55, Super Max tbg.
4	1	2 7/8" x 5 1/2" TAC
730	23	2 7/8" 6.5#, J-55, Super Max tbg.
31	1	2 7/8" x 3 1/2" x 31' Blast Jt
1	1	2 7/8" x 1.10' SN
4	1	2 7/8" Perf Sub
63	1	2 7/8" SPMA
3739		

ROD DETAIL [illegible]

Length (ft)		Detail
22	1	26' x 1 1/4" polish rod w/ 7/8" Pin Spray Metal
0	1	1 1/4" x 1 1/2" x 14' Liner
2	1	2 - 7/8" pony rods
1175	47	7/8" New KD Rods rods
[illegible]	77	7/8" New KD Rods rods
[illegible]	20	7/8" New KD Rods rods
1	1	on/off Tool
20	1	2 1/2" x 1 1/2" X 20' pump w/ HVR
0	1	1 1/4" x 1 1/2" x 20' Gas Anchor De-Sander
[illegible]		

WELL HISTORY SUMMARY

08-Oct-08 Ran Compensated Neutron Log (9/24/08) from 3724' (PBTD) to 1150'
Perf'd (L. M.) (Q) @ 3758'-62', 43'-53', 30'-39', 18'-21', 3692'-3708', 3679'-86', 59'-63', 40'-43', 19'-26', 87'-90', & 3572'-75'
Perf'd (L.M.) (7-Rivers) @ 3531'-3543', 11'-17', 3480'-3489', 47'-54', 36'-41', 3354'-3362', & 3291'-3301' Perf'd Jalmat (Yates) @ 3222'-3241', 3188'-3195', 54'-74', 30'-46', 08'-22', 3070'-3094', & 3030'-3062', 262', 380 (0.45") holes. Note Q & 7-R @ 2 spf, Y @ 1 spf, 120 degrees. Foam Acid Frac'd Lardo Matrix with 10,500 gals 15% NEFE acid plus 120 Tons CO2. Diverted with 12,400# rocks salt. AIR= 13 bpm. Pavg= 3180#. ISIP= 500#. Well Flowed - 5% to 12% oil cut. RIH with tubing, pump and rods. PWOP.

9-Dec-08 POOH with rods, pump and tubing. RIH with WL plug and PKR. Set RBP @ 3417' and PKR @ 3385'. Test to 1000# - leaked off 50# in 5 mins. Reset RBP @ 3414' - test to 1000# (Okay). Ran GR/CCL log. Perf'd 7-Rivers @ 3354'-3362', & 3291'-3301', 2 spf. Perf'd Yates @ 3222'-3241', 3188'-3195' 3154'-3174', 3130'-3146', 3108'-3122', 3070'-3094', & 3030'-3062', 1 spf, 120 degree. Frac'd Yates & 7-Rivers down casing w/ 175,000# sand, total Nitrogen= 1.5 MMSCF. AIR= 29 bpm. Nitro Rate= 53 bpm Pavg= 2565 psig. ISIP= 1500 psig. Flowed back - recovered 63 bbls, (3% oil cut) fluid in 7 hrs. Next day: SITP= 800#. Flowed 112 bbls (30% oil cut) in 10 hours. Third Day: recovered 138 bbls (30% oil cut) in 10 hrs. Fourth Day: recovered 52 bbls (30% oil cut) in 5 hrs. Next day SITP= 540#. RIH w/ Ret Tool, tagged sand at 3314'. POOH w/ RBP. RIH with 4 3/4" bit, tagged fill at 3751'. C/O to PBTD @ 3779'. Hydrotest tubing to 7000#. RIH w/ pump & rods. PWOP.
Test Before: 7 BOPD, 38 BWPD and 7 MCFPD. Test After: 78 BOPD, 179 BWPD and 76 MCFPD.

3-Mar-10 POOH with rods, pump and tubing. Striped out of hole with rods & pump. RIH with tubing, pump and rods. PWOP.

PREPARED BY:	Jim Kidd	Domingo Carrizales	UPDATED:	24-Mar-10

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC

LEASE NAME	Cooper Jal Unit		WELL NO		515
STATUS	Active	Oil	API#	30-025-39101	
LOCATION	1100 FNL & 1800 FEL, Sec 25, Unit J, T-24-S, R-36-E, Lea County, New Mexico				
SPUD DATE	12/12/08	TD 3801		[illegible] 3316'	[illegible] 3306'
INT. COMP. DATE	11/08/08	PBTD 3743		GL 3297'	KB 11'

GEOLOGICAL DATA

ELECTRIC LOGS

Spectral PE-Density, CNL- from 3731' - 100' (10-28-08 Weatherford)

Dual Laterolog- from 3749' - 410' (10-28-08 Weatherford)

Cement Top Log from 3634' - 100' (10-28-08 Gray Wireline)

CORES, DST'S, & MUD LOGS

APPROXIMATE MARKER ZONE DEPTH TOPS

Tansill @ 2906' Yates @ 3072' Upper 7 Rivers @ 3228' Lower 7 Rivers @ 3460' Queen @ 3592'

CASING PROFILE

8 5/8" - circ'd w/ 59 sx cmt to surf

SURF.	8 5/8" - 24#, Grade 55, LTSC set@ 1157'. Cmt'd w/250 sxs Class C w/ 2% CaCl tail w/260 sx Class C w/ 2% CaCl -
PROD.	5 1/2" - 15.5#, Grade 55, LTSC set@ 3790'. Cmt'd w/ 220 sxs Class H w/ 5% Salt + 300 sxs Class H w/ 5% Salt -
LINER	None — 5 1/2" - did not circ cmt to surface

CURRENT PERFORATION DATA

CSG PERFS — OPEN HOLE

05-Nov-08 Perf'd (L. M.) (Q) # 3725-38', 3688-3705', 3670-80', 3659-64', 3623-50', 3605-10', 3586-94', 3594-72', & 3564-3572'
Perf'd L. M. (7-Rivers) # 3482-94', 63-70', 33-44', 18-27', 06-10', 3395-98', 3386-92', 37-42', 16-23', & 3248-3286'
Perf'd Jal (Yates) # 3182-3202', 3154-60', 44-50', 11-40', 02-08', 3082-3096', 63-69', & 34-56', 338', 518 (0.45") holes.
Note: Q & 7-R @ 2 spf, Y @ 1 spf, 120 degrees.

26-Jan-10 Perf'd Jalmat: 7-Rivers # 3316-3343', & 3246-3262', 1 JSPF
Perf'd Y # 3182-3214', 3143-77', 10-43', 3087-3110', 3063-3080', 22-56', & 2988-3022', 1 JSPF, 187 holes (0.45") holes.

TUBING DETAIL 2/8/10			ROD DETAIL 2/8/10		
Length (ft)		Detail	Length (ft)		Detail
0		KB	22	1	26' x 1 1/4" polish rod w/ 7/8" Pin Spray Metal
2795	90	2 7/8" 6.5#, J-55, Super Max tbg.	8	1	1 1/4" x 1 1/2" x 14' Liner
4	1	2 7/8" x 5 1/2" TAC	20	4	2', 4', 6', 8' - 7/8" Sub Rod
680	22	2 7/8" 6.5#, J-55, Super Max tbg.	1325	53	7/8" New KD Rods rods
31	1	2 7/8" 6.5#, J-55, SM Blast Joint	1570	60	3/4" New KD Rods rods
1	1	2 7/8" SN	575	23	1 1/2" K-Bars
4	1	2 7/8" Perf Sub	1	1	on/off Tool
18	1	2 7/8" Cavin De-sander	20	1	2 1/2" x 2" X 20' pump w/ HVR w/ 1 1/4"x8' GA
94	3	2 7/8" OPMA	[illegible]		
3629					

WELL HISTORY SUMMARY

05-Nov-08 Ran Compensated Neutron Log (10/28/08) from 3742' (PBTD) to 1150'
Perf'd (L. M.) (Q) # 3725-38', 3688-3705', 3670-80', 3659-64', 3623-50', 3605-10', 3586-94', 3594-72', & 3564-3572'.
Perf'd (L.M.) 7-Rivers @3482-94', 63-70', 33-44', 18-27', 06-10', 3395-98', 3386-92', 37-42', 16-23', & 3248-3286'.
Perf'd Jal (Y) # 3182-3202', 3154-60', 44-50', 11-40', 02-08', 3082-3096', 63-69', & 24-56', 338', 518 (0.45") holes.
Note: Q & 7-R @ 2 spf, Y @ 1 spf, 120 degrees. Foam Acid Frac'd Lanlie Mattix with 5,000 gals 15% NEFE acid plus 60 Tons CO2. Diverted with 5,000# rock salt. AIR= 8.5 bpm. Pavg= 3140# Pmax= 5044# ISIP= 830#. Foam Acid Frac Jalmat (Y & 7-R) w/ 7,000 gals 15% NEFE plus 90 Tons CO2. Divert with 10,000# rock salt. Pavg= 4345#, ISIP= 881#. AIR= 10 bpm. Well flowed for 4.5 hours. Kill wells. POOH with frac PKRs. RIH with tubing, pump & rods. PWOP.
Test (11/28/08) 6 bopd, 17 mcfpd & 26 bwpd.

5-Jan-10 POOH with rods, pump and tubing. Hydrotest tubing to 7000# - found hole on jt above SN. RIH with pump and rods. PWOP.

26-Jan-10 POOH with production strings. Ran CCL. Perf'd Jalmat: 7-Rivers # 3316-3343', & 3246-3262', 1 JSPF. Perf'd Yates # 3182-32[illegible] 3143-77', 10-43', 3087-3110', 3063-3080', 22-56', & 2988-3022', 1 JSPF 192 ft, 187 holes (0.45") holes. RU BJ. Frac'd Jalmat (2988-3342') with 105,000# Super LC 16/30 sand and 105,584# Brown 20/40 plus 1,621 MMCF Nitrogen. Slurry rate= 16 bpm. Foam rate= 58 bpm. Pavg= 3727#. Dropped 100 Bio Balls ISIP= 2880#. Next day Press. SITP= 740#. Flowed 9 hrs - 56 BF, 2% oil cut. 2nd day Press. SITP= 380#. Flowed 6 hrs - 48 BF, 15% oil cut. Cleaned out with Air Unit from 3187' to RBP at 3380'. POOH with RBP. RIH with notched collar, cleaned out sand from 3728' to PBTD @ 3742'. Hydrotest tubing to 7000#. RIH with pump and rods. PWOP.

PREPARED BY:	Jim Kidd	Donnigo Carrasco	UPDATED:		01-Mar-10

Geological Description

Yates, Seven Rivers and Queen Formations, Artesia Group

Cooper Jal Unit #217

Geologic parameters

Average Depth:	Top of Yates formation averages approximately 3000' subsurface.
Average Thickness:	Gross thickness from top Yates to base Queen is approximately 700-800'. Net porous intervals vary from 30 to 100' in several horizons.
Reservoir and trap:	Reservoir units in the Yates, Seven Rivers and Queen formations are arkosic sandstones with variable amounts of dolomite and anhydrite cements. Trapping is a combination of structure over low amplitude anticlines and stratigraphic pinchouts of porous units. Porosity varies laterally and vertically due to occlusion by anhydritic and calcareous cements.
Reservoir Quality:	Porosity: 4%-18%; Permeability: 0.5mD to 100mD.

Advantages for water injection:

1) This well is a corner well of a 5-spot, 20 acre pattern which will have a producer in the center. The 20 acre pattern is an ideal size to achieve an efficient recovery for this type of water flood.

2) The injection interval is deep below the surface, allowing for generally low surface water injection pressures because of the great hydrostatic fluid column.

3) To our knowledge, there is no evidence of any faults to the surface in this area. It can be expected that the impermeable Salado and Castile salt and anhydrite layers between the Rustler and Yates formations will provide a sufficient barrier to any fluid migration to potential underground sources of drinking water. The attached page from the New Mexico Office of the State Engineer shows very few water wells within the ½-mile radius. The water wells are drawing from an aquifer in the 140-180 foot depth and the proposed injector is sufficiently cased and cemented in order to isolate the well from this fresh water zone.

4) The Yates, 7-Rivers, and Queen formations are sufficiently porous and permeable to allow for a high volume of water injection capacity without approaching or exceeding fracture pressures. A 15% HCL acid stimulation using up to 10,000 gallons over the entire perforated and open hole injection intervals is planned prior to initiating water injection.

Planned maximum injection rate: 2,000 BWPD

Planned maximum injection pressure: 1,200 psi

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Well Drill Dates & Depths)

(R=POD has been replaced and no longer serves this file, C=the file is closed) (quarters are 1=NW 2=NE 3=SW 4=SE) (quarters are smallest to largest) (NAD83 UTM in meters) (in feet)

WR File Nbr	Sub basin	Use	Diversion (acre ft per annum)	Cnty	POD Number	Code	Grant	Source	q q q 6416 4	Sec	Tws	Rng	X	Y	Distance	Start Date	Finish Date	Depth Well	Depth Water
CP 01174		MON	0	LE	CP 01174 POD1				2 4 2	24	24S	36E	668517	3564680	0				
				LE	CP 01174 POD2				2 4 2	24	24S	36E	668517	3564680	0				
				LE	CP 01174 POD3				2 4 2	24	24S	36E	668517	3564680	0				
				LE	CP 01174 POD4				2 4 2	24	24S	36E	668517	3564680	0				
CP 00103		PLS	3	LE	CP 00103				3 4 4	13	24S	36E	668366	3565227*	567		07/31/1963	152	
CP 01188		MON	0	LE	CP 01188 POD1				2 1 4	24	24S	36E	668131	3564233	590				
				LE	CP 01188 POD2				3 2 4	24	24S	36E	668359	3564067	632				
CP 00521		DOL	3	LE	CP 00521				2 2	23	24S	36E	666865	3564903*	1666				
CP 00564		DOL	3	LE	CP 00564			Shallow	2 2	23	24S	36E	666865	3564903*	1666	03/07/1977	03/10/1977	180	160
CP 01132		GEO	0	LE	CP 01132 POD1				1 3 2	25	24S	36E	668082	3562905	1827				
				LE	CP 01132 POD2				1 2 4	25	24S	36E	668471	3562698	1981				

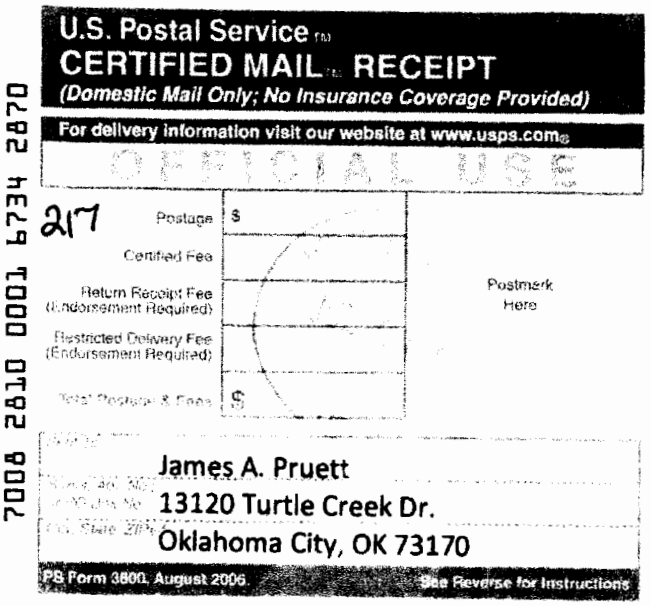
Record Count: 11

UTMNAD83 Radius Search (in meters):

Easting (X): 668517 **Northing (Y):** 3564680 **Radius:** 2000

Sorted by: Distance

***UTM location was derived from PLSS - see Help**



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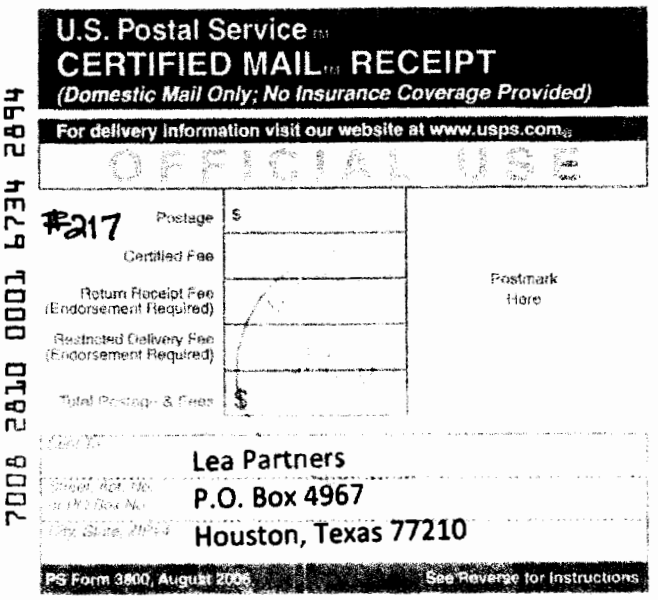

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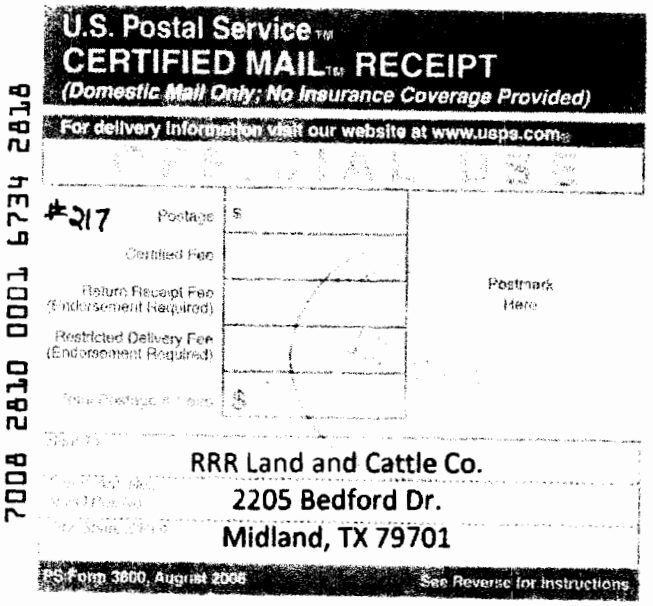

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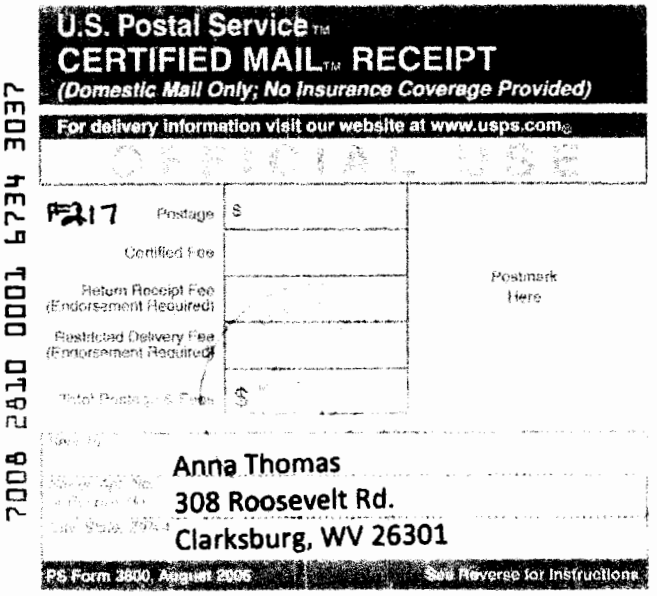

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Anna Thomas
308 Roosevelt Rd.
Clarksburg, WV 26301
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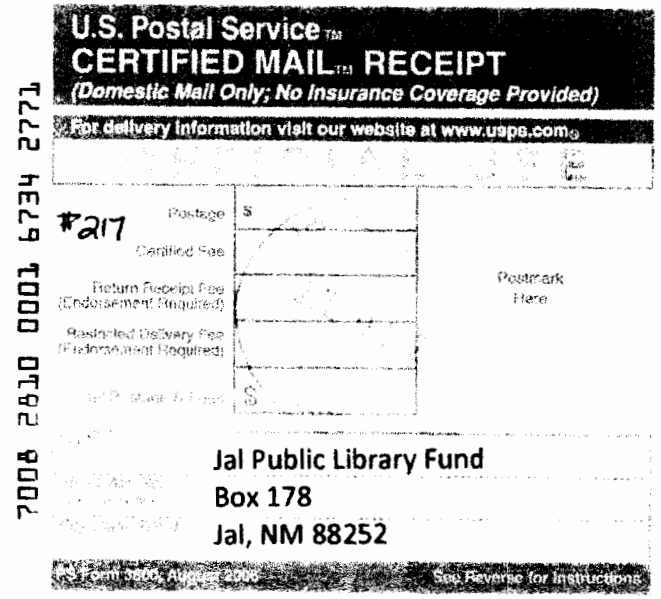

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Affidavit of Publication

State of New Mexico,
County of Lea.

I, DANIEL RUSSELL
PUBLISHER
of the Hobbs News-Sun, a newspaper published at Hobbs, New Mexico, do solemnly swear that the clipping attached hereto was published in the regular and entire issue of said newspaper, and not a supplement thereof for a period

of 1 issue(s).
Beginning with the issue dated
March 06, 2014
and ending with the issue dated
March 06, 2014

PUBLISHER
Sworn and subscribed to before me
this 6th day of
March, 2014

Notary Public

My commission expires
February 28, 2016
(Seal)

OFFICIAL SEAL
YEZENIA CALDERON
NOTARY PUBLIC - STATE OF NEW MEXICO
My commission expires: 2-28-16

This newspaper is duly qualified to publish legal notices or advertisments within the meaning of Section 3, Chapter 167, Laws of 1937 and payment of fees for said publication has been made.

LEGAL NOTICE
March 6, 2014

NOTICE OF APPLICATION FOR FLUID INJECTION WELL PERMIT

APPLICANT: Legacy Reserves Operating LP
P.O. Box 10848
Midland, Texas 79702

CONTACT: Martin Staelens (281) 465-8387

Legacy Reserves Operating LP is applying to the New Mexico Oil Conservation Division for a permit to inject fluid into a formation which is productive of oil and gas. Injection will be into the Yates, 7-Rivers, and Queen zones of the Jal Mat and Langlie Mattix fields. This well is in a water flood and is a corner well in a 5-spot pattern where the central producer is producing oil and water from all three of these zones.

The applicant proposes to inject fluid into the Yates, 7-Rivers, and Queen formations in the Cooper Jal Unit, well number 217. The proposed water injection well is located 990' FSL, 2310' FWL, Section 24, Township 24 South, Range 36 East, approximately 6 miles north of Jal, New Mexico in Lea County. Water will be injected into strata in the subsurface depth interval of 2998' to 3780' for the purpose of secondary oil recovery. The proposed maximum permitted water injection rate is 2,000 barrels of water per day (BWPD) at a maximum pressure of 1,200 pounds per square inch (psi).

LEGAL AUTHORITY: Statewide Rules and Regulations of the New Mexico Oil Conservation Division.

Requests for a public hearing from persons who can show they are adversely affected, or requests for further information concerning any aspect of the application should be submitted in writing, within fifteen days of publication, to the New Mexico Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505.
#28828

67110800 00131969
LEGACY RESERVES OPERATING LP
PO BOX 10848
MIDLAND, TX 79702

C-108 Review Checklist: Received 04/08/14 Add. Request: 06/20/14 Reply Date: 07/01 & 07/02/14 Suspended: — [Ver 13]

5.9 Compliance Issues

PERMIT TYPE: (WFX) / PMX / SWD Number: 932 Permit Date: 08/20/14 Legacy Permits/Orders: R-4019/R-4020 R-9983

Well No. 217 Well Name(s): Cooper Jal Unit

API : 30-0 25-09626 Spud Date: 02/13/1950 New or Old: Old (**UIC Class II Primacy 03/07/1982**)

Footages 990 FSL/2310 FWL Lot — or Unit N Sec 24 Tsp 24S Rge 36E County Lea

General Location: 6 miles North of Jal Pool: Two | Jalmat: Tan-Yates-SR 33820 / Langlie Mattix: SR-Q-GR Pool No.: 37240

BLM 100K Map: Jal Operator: Legacy Reserves Operating OGRID: 240974 Contact: Martin Stoekens

COMPLIANCE RULE 5.9: Total Wells: 1560 Inactive: (9) Fincl Assur: Yes Compl. Order? No **IS 5.9 OK?** Ok **Date:** 08/28/14

WELL FILE REVIEWED ✓ Current Status: Inactive wells > 10 for last two months ~~Producer in Jalmat and SR-Q~~ Langlie Mattix - no production

WELL DIAGRAMS: NEW: Proposed ○ or **RE-ENTER:** Before Conv. ✓ After Conv. ✓ Logs in Imaging: None

Planned Rehab Work to Well: Deepen well to include upper portion of Queen - not producing from Langlie Mattix

Well Construction Details:	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Stage Tool	Cement Sx or Cf	Cement Top and Determination Method
Planned — or Existing ✓ **Surface**	11 / 8 5/8	0 to 318		125	Circulated to surface
Planned — or Existing ✓ **Interm/Prod**	7 7/8 / 5 1/2	0 to 2998	DV@1205	400	Calc: 130' BGS/Tail
Planned — or Existing — **Interm/Prod**	—	—	—	—	Calc 1945' BGS/Head
Planned — or Existing — **Prod/Liner**	—	—	—	—	—
Planned — or Existing — **Liner**	—	—	—	—	—
Planned ✓ or Existing ✓ (OH) **PERF**	existing 4 1/2 2998 to 3244 / 2998 to 3780		Inj Length 782		

Injection Stratigraphic Units:	Depths (ft)	Injection or Confining Units	Tops
Adjacent Unit: Litho. Struc. Por.		—	—
Confining Unit: Litho. Struc. Por.	—	Tansill	—
Proposed Inj Interval TOP:	2998	Yates - SR	3238
Proposed Inj Interval BOTTOM:	3780	Queen	3610
Confining Unit: Litho. Struc. Por.	—	[Capitan]	~~3600~~
Adjacent Unit: Litho. Struc. Por.			

Completion/Operation Details: Final

Drilled TD 3244 PBTD —

NEW TD 3780 NEW PBTD —

NEW Open Hole ✓ or NEW Perfs ○

Tubing Size 2 3/8 in. Inter Coated? Yes

Proposed Packer Depth 2940 ft

Min. Packer Depth 2898 (100-ft limit)

Proposed Max. Surface Press. 1200 psi

Admin. Inj. Press. 600 (0.2 psi per ft)

AOR: Hydrologic and Geologic Information

POTASH: R-111-P ~~Noticed?~~ NA **BLM Sec Ord** No **WIPP** ~~Noticed?~~ NA **SALT/SALADO** T: — B: — **CLIFF HOUSE** NA

FRESH WATER: Aquifer ~~Ogallala~~ Alluvial / Capitan Max Depth 180 / +3900 **HYDRO AFFIRM STATEMENT By Qualified Person** ✓

NMOSE Basin: Capitan **CAPITAN REEF:** thru ✓ adj ○ NA ○ **No. Wells within 1-Mile Radius?** 1 FW Analysis No

Disposal Fluid: Formation Source(s) Above Yates/SR-Q & Lower GB Analysis? Historical On Lease ✓ Operator Only ○ or Commercial ○

Disposal Int: Inject Rate (Avg/Max BWPD): 800/2000 Protectable Waters? No Source: Historical System: Closed ✓ or Open ○

HC Potential: Producing Interval? Yes Formerly Producing? — Method: Logs/DST/P&A/Other Water flood in two zones 2-Mile Radius Pool Map ✓

AOR Wells: 1/2-M Radius Map? Yes Well List? Yes Total No. Wells Penetrating Interval: 29 Horizontals? ϕ

Penetrating Wells: No. Active Wells 29 Num Repairs? ϕ on which well(s)? — All Cooper Jal Unit Wells Diagrams? Yes

Penetrating Wells: No. P&A Wells ϕ Num Repairs? ϕ on which well(s)? — Diagrams? NA

NOTICE: Newspaper Date 03/06/14 Mineral Owner Fee - Legacy Surface Owner Fee / RR Cattle N. Date 07/1/14

RULE 26.7(A): Identified Tracts? Yes Affected Persons: Pruett / Jal Public Lib / Lea Potners / Ana Thomas N. Date 07/1/14

Permit Conditions: Issues: None - depth indicates structure - above Capitan

Add Permit Cond: None / surface pressure limited to 0.2 psi/ft gradient.

Goetze, Phillip, EMNRD

From: Mindy Cassard <mcassard@legacylp.com>
Sent: Tuesday, July 01, 2014 3:05 PM
To: Goetze, Phillip, EMNRD
Cc: Martin Staelens
Subject: Injection Permit - Cooper Jal Unit #217 API #30025096260000
Attachments: Supplement documents to complete - 217 convert to inj.pdf; Certified Receipts - convert to inj 217.pdf

Mr. Goetze,

Attached is the additional requested information for the Injection Permit for well #217 Cooper Jal Unit API #30025096260000.

The attached documents include the following:

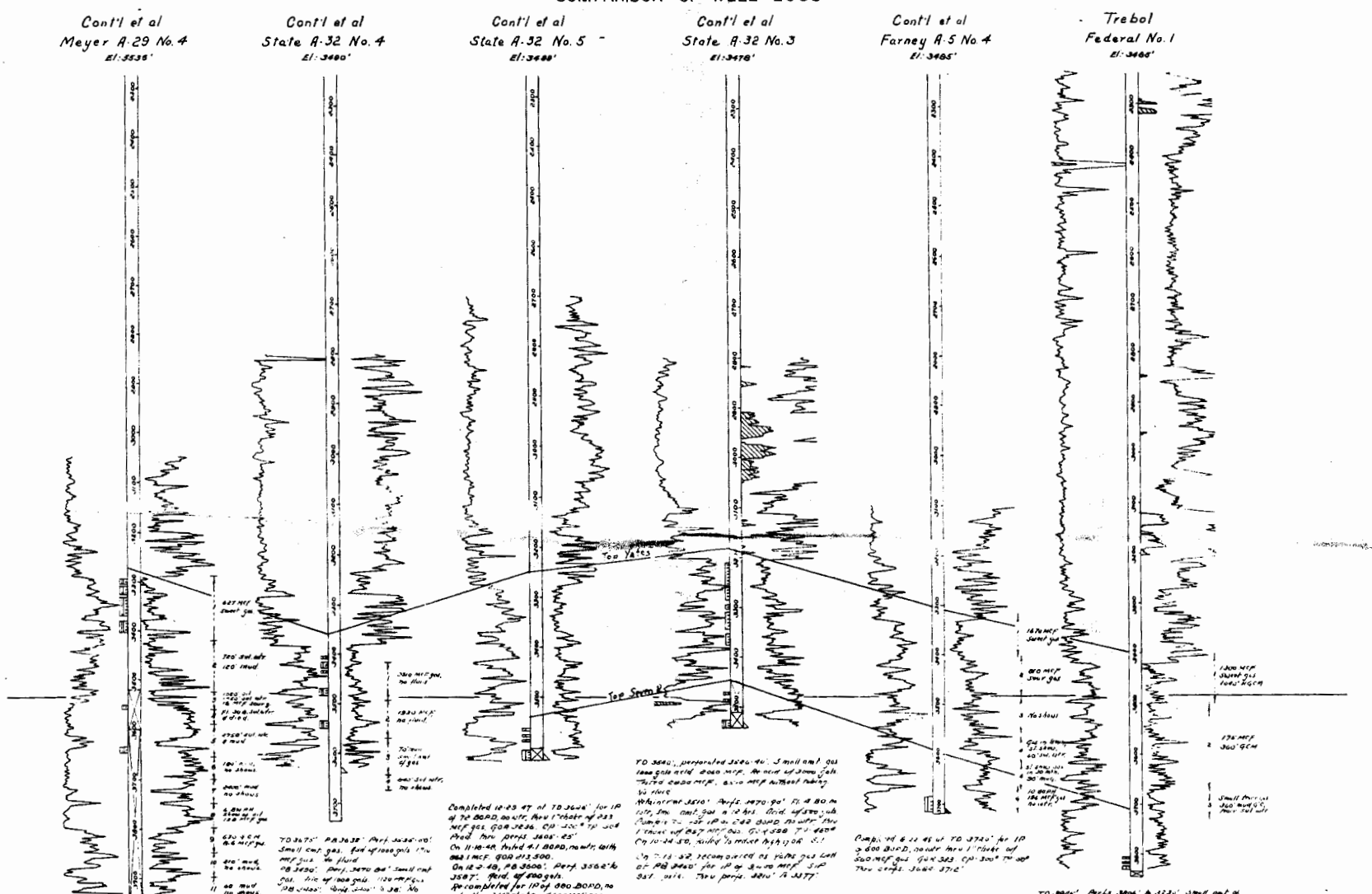
- Wellbore Diagram for all the offset wells
- Corrected offset well list
- Edited Geological Summary
- List of Active and Inactive water wells from New Mexico Office of State Engineer.
- Certified receipts of notification to offset surface owners

Please feel free to contact Martin Staelens at 281.465.8387 or mstaelens@legacylp.com with any questions or clarification.

Thank you,
Mindy Cassard
Legacy Reserves LP
The Woodlands, Texas
281.465.8387 office

API WELL #	Well Name	Well #	Operator Name	Type	Stat	Surf_Owner	UL	Sec	Twp	Rng	N/S	E/W	Total Depth	Order_No		
30-025-09620-00-00	COOPER JAL UNIT	205	LEGACY RESERVES OPERATING, LP	I	A	P	G	24	24 S	36 E	1980 N	1650 E	3600	WFX-648	IPI-380	Original depth (OD)
30-025-09621-00-00	COOPER JAL UNIT	206	LEGACY RESERVES OPERATING, LP	I	A	P	H	24	24 S	36 E	1980 N	330 E	3750	WFX-888		**Deepened from 3230 on 5/11/20**
30-025-09623-00-00	COOPER JAL UNIT	213	LEGACY RESERVES OPERATING, LP	I	A	F	I	24	24 S	36 E	1974 S	662 E	3600	R-4020		
30-025-09624-00-00	COOPER JAL UNIT	218	LEGACY RESERVES OPERATING, LP	I	A	P	O	24	24 S	36 E	330 S	1650 E	3250	R-4020		
30-025-09628-00-00	COOPER JAL UNIT	201	LEGACY RESERVES OPERATING, LP	I	A	P	A	24	24 S	36 E	660 N	330 E	3237	R-4020		
30-025-09630-00-00	COOPER JAL UNIT	203	LEGACY RESERVES OPERATING, LP	I	A	P	E	24	24 S	36 E	1980 N	760 W	3195	R-4020		NOI for SRT in 11/2005
30-025-09631-00-00	COOPER JAL UNIT	120	LEGACY RESERVES OPERATING, LP	I	A	P	C	24	24 S	36 E	660 N	1980 W	3604	R-4020		
30-025-09634-00-00	COOPER JAL UNIT	216	LEGACY RESERVES OPERATING, LP	I	A	P	M	24	24 S	36 E	660 S	660 W	3780	R-4020		**Deepened from 3210 on 1/26/20**
30-025-09636-00-00	COOPER JAL UNIT	126	LEGACY RESERVES OPERATING, LP	I	A	P	G	24	24 S	36 E	1650 N	2310 E	3560	WFX-648	IPI-380	
30-025-09638-00-00	COOPER JAL UNIT	122	LEGACY RESERVES OPERATING, LP	I	A	P	A	24	24 S	36 E	330 N	990 E	3625	WFX-648		Also WFX-671
30-025-09639-00-00	COOPER JAL UNIT	132	LEGACY RESERVES OPERATING, LP	I	A	F	I	24	24 S	36 E	2310 S	990 E	3555	WFX-648	IPI-380	Also WFX-671
30-025-09641-00-00	COOPER JAL UNIT	135	LEGACY RESERVES OPERATING, LP	I	A	P	O	24	24 S	36 E	990 S	1980 E	3593	WFX-657	IPI-380	DHC-5590; deepend 2014
30-025-09642-00-00	COOPER JAL UNIT	148	LEGACY RESERVES OPERATING, LP	I	A	P	J	24	24 S	36 E	2310 S	2310 E	3700	R-4019		OD; drilled in 2011
30-025-09644-00-00	COOPER JAL UNIT	134	LEGACY RESERVES OPERATING, LP	I	A	P	N	24	24 S	36 E	330 S	1650 W	3570	WFX-657	IPI-383	**Proposed deepening to 3780 on 3/6/201**
30-025-09787-00-00	COOPER JAL UNIT	211	LEGACY RESERVES OPERATING, LP	I	A	P	K	24	24 S	36 E	2310 S	2310 W	3600	WFX-648	IPI-380	**Tagged fill at 3555; PB in 1997; deepene**
30-025-25682-00-00	COOPER JAL UNIT	151	LEGACY RESERVES OPERATING, LP	I	A	P	A	24	24 S	36 E	998 S	170 E	3650	WFX-648		OD

COMPARISON OF WELL LOGS



EXH. NO. 24