DATE IN 04/07/14	SUSPENSE	ENGINEER PRG	LOGGED IN 04/08/14	TYPE WFX	APP NO. pPRG1418334826

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]

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

[Cooper Jal Unit]

Legacy Reserves Oper.
CJU #404
30-025-32218

[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

[D] Other: Specify _____

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

[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 #404
Jal Mat, Langlie Mattix Fields
Lea County, New Mexico

Ladies and Gentlemen:

Attached is the referenced application to convert the Cooper Jal Unit #404 to water injection into the Yates, 7-Rivers and Queen formations from 3013' – 3655'. 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 #404. (2 pp)
7) Geological data on the Cooper Jal Unit #404, including a log section. (6 pp)
8) Engineering data on the Cooper Jal Unit #404. (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 # 404

WELL LOCATION: 510' FNL & 2310' FEL (FOOTAGE LOCATION) | UNIT LETTER | 24 SECTION | T-24S TOWNSHIP | 36E RANGE

WELLBORE SCHEMATIC

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 12-1/4" Casing Size: 8-5/8" 24#

Cemented with: 600 sx. *or* 960 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", 15.5#

Cemented with: 925 sx. *or* 1655 ft^3

Top of Cement: Surface Method Determined: circ

Total Depth: 3750'

Injection Interval

3013' To 3655'

Perforated ~~and 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: 2960'

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. _____

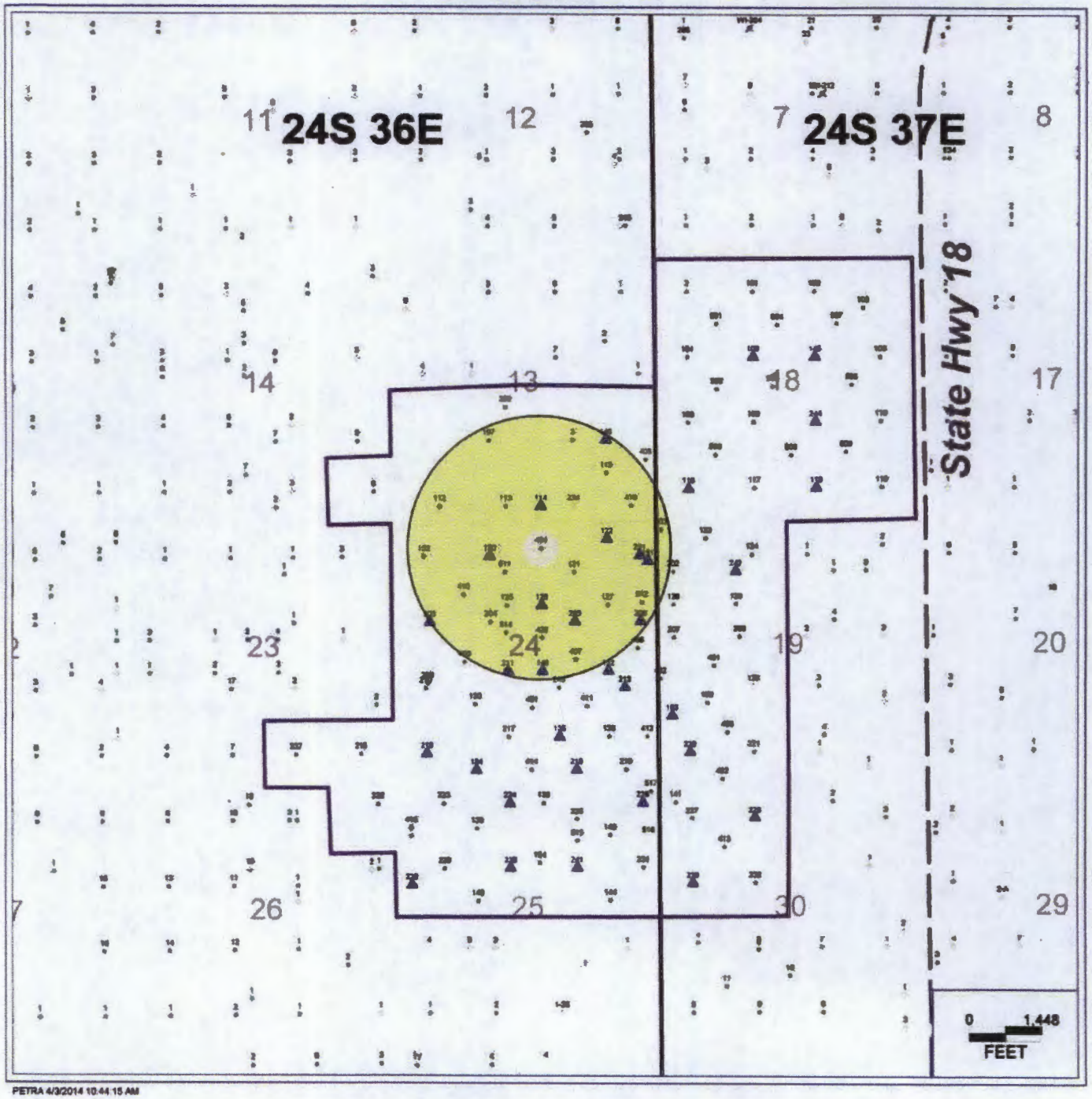
   NO

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

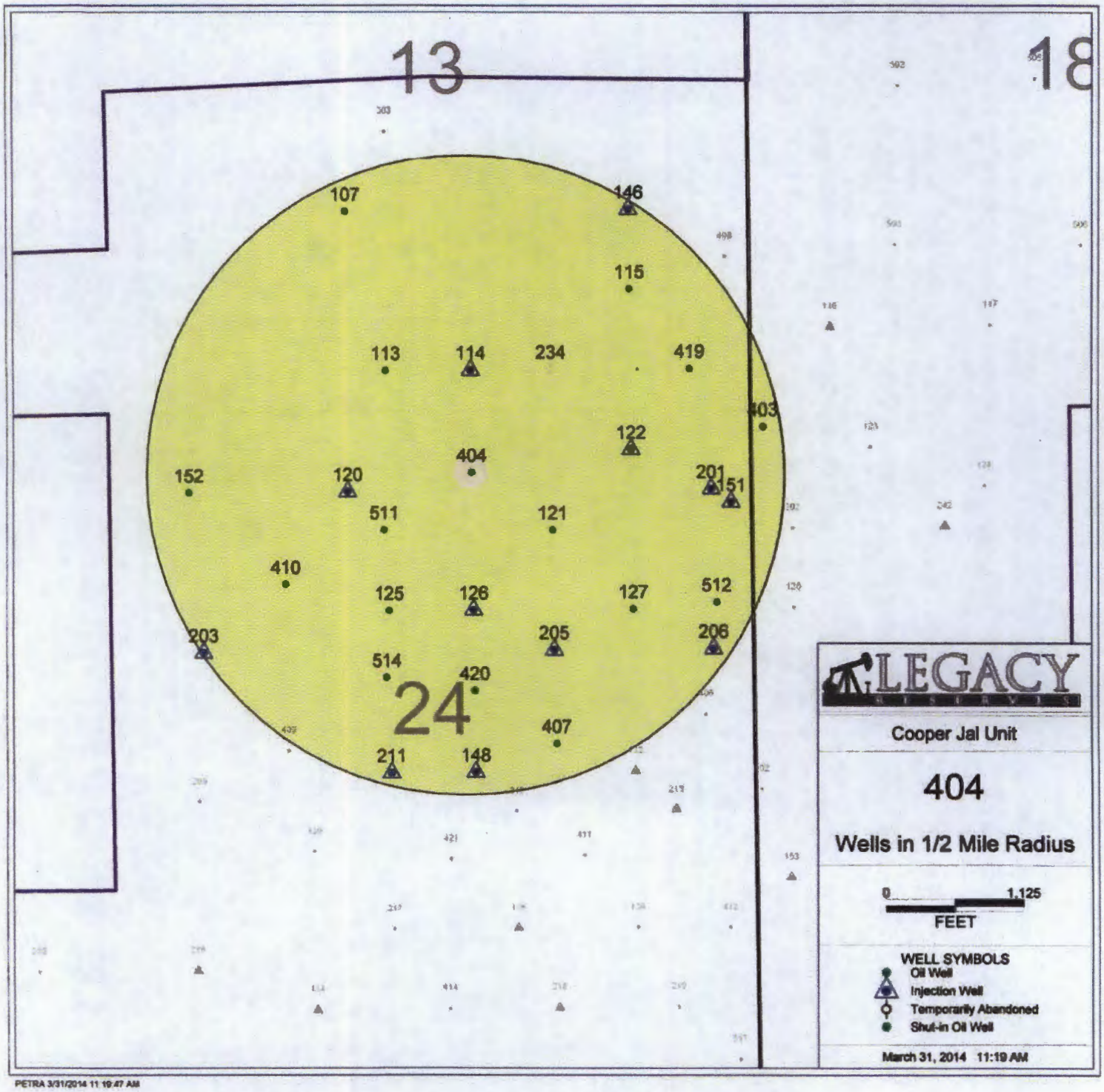
   Tansill (above Yates) @ ≈ 2900'. No known Tansill production in Cooper Jal Unit.

LEGACY RESERVES

Cooper Jal Unit
#404



PETRA 4/3/2014 10:44:15 AM



PETRA 3/31/2014 11:19:47 AM

TABLE OF WELLS WITHIN HALF-MILE RADIUS AREA OF REVIEW AROUND COOPER JAL UNIT #404
LEA COUNTY, NEW MEXICO

API Number	Operator	Lease Name	Well Number	COMP TYPE	Sec	Twp	Range	SPUD DATE	TD	STATUS
30025094960000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	113	OIL	24S	36E	13	10/21/1951	3615	A
30025095580000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	107	OIL	24S	36E	13	2/29/1952	3610	A
30025095590000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	114	INJ	24S	36E	13	9/3/1954	3526	A
30025095600000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	146	INJ	24S	36E	13	5/25/1950	3235	A
30025095610000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	234	INJ	24S	36E	13	5/8/1950	3228	TA
30025095660000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	115	OIL	24S	36E	13	4/20/1947	3505	A
30025096200000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	205	INJ	24S	36E	24	4/9/1950	3251	A
30025096210000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	206	INJ	24S	36E	24	4/18/1950	3230	A
30025096270000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	152	OIL	24S	36E	24	11/12/1935	3757	SI
30025096280000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	201	INJ	24S	36E	24	4/27/1950	3237	A
30025096300000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	203	INJ	24S	36E	24	10/5/1951	3195	A
30025096310000	LEGACY RESERVES OPERATING LP	HUNTER EDNA E	120	INJ	24S	36E	24	10/23/1951	3195	A
30025096320000	LEGACY RESERVES OPERATING LP	HUNTER EDNA E	125	OIL	24S	36E	24	8/6/1954	3655	A
30025096360000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	126	INJ	24S	36E	24	4/27/1954	3560	A
30025096370000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	127	OIL	24S	36E	24	5/13/1954	3541	A
30025096380000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	122	INJ	24S	36E	24	5/29/1954	3550	A
30025096420000	LEGACY RESERVES OPERATING LP	THOMAS	148	INJ	24S	36E	24	3/6/1954	3550	A
30025096450000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	121	OIL	24S	36E	24	12/8/1948	3520	A
30025097870000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	211	INJ	24S	36E	24	3/9/1950	3244	A
30025256820000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	151	INJ	24S	36E	24	10/15/1977	3650	A
30025322180000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	404	OIL	24S	36E	24	10/16/1993	3750	A
30025322860000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	403	OIL	24S	37E	19	11/13/1993	3750	A
30025325510000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	419	OIL	24S	36E	13	8/31/1994	3750	A
30025325690000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	407	OIL	24S	36E	24	7/29/1994	3750	A
30025328570000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	410	OIL	24S	36E	24	5/9/1995	3800	A
30025334580000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	420	OIL	24S	36E	24	7/19/1996	3825	A
30025391020000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	514	OIL	24S	36E	24	10/6/2008	3815	A
30025391030000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	512	OIL	24S	36E	24	9/23/2008	3745	A
30025391040000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	511	OIL	24S	36E	24	9/10/2008	3772	A

Field: **Cooper Jal Unit**

	Location:
Footage:	510 FNL & 2310 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,314'
KB:	3,325'
KB Calc:	11'
ck wilog?	N/A

Date	History
11-Nov-93	Selectively perforated 3423' - 3655' (70 holes) & frac'd w/ 63,200 gals
	x-link gel & 136,000# 16/30 sand. Selectively perforated 3013' - 3279'
	(196 holes) & frac'd w/ 43,000 gals x-link gel & 220000# 12/20 sd.
14-Jan-94	Rings, ball and seat were sand cut. Pump was plugged with sand.
9-Feb-94	Changed out pump.
1-Feb-94	Changed out pump.
28-Apr-94	Parted polish rod below clamp. Change pump.
11-Oct-95	HIT - jt above SN. Tag for fill - no fill.
1-Jan-98	Based in wtr decline - Langlie Mattix was TA'd in 1998. See 6/3/03 notes.
15-Dec-00	Pumped 500 gal 15% HCl to release stuck pump.
8-Jun-02	Tag fill at 3326'. CO w/ notch collar to 3386' - could not make more hole.
3-Jun-03	CO fill 3383' - 3390' & found CIBP at 3390' - no record of when set.
	Could not drill out. Beat down to 3685'.
24-Jun-03	Replaced K-Bars.
5-Mar-04	Body break in 21st 3/4" rod.
2-Feb-05	HIT - jt above SN.
30-Oct-06	HIT - jt above SN. Changed out 10 1" rods due to pitting.
1-Feb-07	HIT on jt 106. Burst 5 jts while hydrotesting.
18-Jul-10	Split in 109th jt & burst 113th jt.

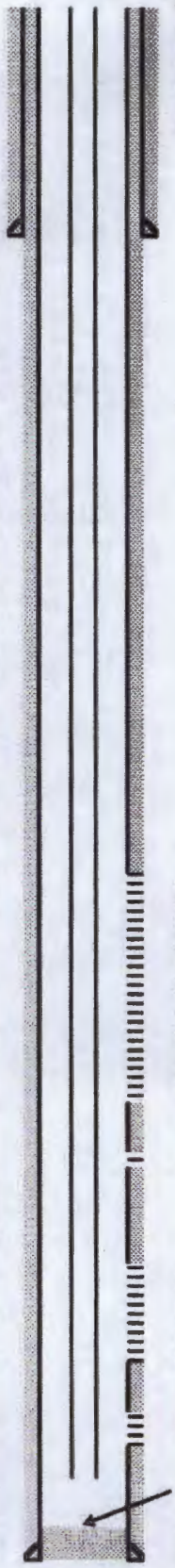
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
94	2-7/8" 6.5#, J-55 8rd	2,961	2,961
1	2-7/8" x 5-1/2" TAC	3	2,964
21	2-7/8" 6.5#, J-55 8rd	646	3,610
1	2-7/8" Blast Joint	31	3,641
1	1 - 2-7/8" SN	1	3,642
1	2-7/8" Perf Sub	4	3,646
1	2-7/8" Mud Anchor	31	3,677

Rods	Rod Detail (top to bottom) Description	Footage	Depth
1	26' x 1-1/4" polish rod w/ 7/8" pin	18.00	18.00
1	1-1/4" x 1-1/2" x 12' liner	0.00	18.00
67	1" Grade D rods	1,675.00	1,693.00
55	7/8" Grade D rods	1,375.00	3,068.00
24	1-1/4" K-Bars	600.00	3,668.00
1	2-1/2" x 1-3/4" x 20' RHBC pump	20.00	3,688.00
1	1 1/4" x 16' 50 slot Gas Anchor	0.00	3,688.00

Pumping Unit:
Updated: 12/18/13 MCB

CJU #404

Wellbore Diagram



PBTD 3682'
TD 3750'

Reservoir: Cooper Jal

Well ID Info:	CJU #404
API No:	30-025-32218
Spud Date:	10/19/1993

Hole Size: 12-1/4"
Surface Csg: 8-5/8" - 24#, WC-50 ST&C
Set @ 1180'
Cement - Lead: 400 sx Class C w/ 4% Gel + 2% CaCl (13.5 ppg) (1.74 c
Tail: 200 sx Class C w/ 2% CaCl2 (14.8 ppg) (1.32 cu ft/sx)
Circ: Yes (32 Sacks)
TOC: Surface

TOC: Circ to Surface

Hole Size: 7-7/8"
Prod. Csg: 5-1/2" - 15.5# WC-50, LT&C
Set @ 3750'
Cement - Lead: 575 sx Poz H w/ 6% Gel + 5% Salt + 1/4# Flocele (12.4
Tail: 350 sx Poz H w/ 2% CaCl2 (15.6 ppg) (1.18 cu ft/sx)
Circ: Yes (35 sx)

Field: **Cooper Jal Unit**

	Location:
Footage:	510 FNL & 2310 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,314'
KB:	3,325'
KB Calc:	11'
ck w/log?	N/A

Date	History
11-Nov-93	Selectively perforated 3423' - 3655' (70 holes) & frac'd w/ 63,200 gals
	x-link gel & 136,000# 16/30 sand. Selectively perforated 3013' - 3279'
	(196 holes) & frac'd w/ 43,000 gals x-link gel & 220000# 12/20 sd.
14-Jan-94	Rings, ball and seat were sand cut. Pump was plugged with sand.
9-Feb-94	Changed out pump.
1-Feb-94	Changed out pump.
28-Apr-94	Parted polish rod below clamp. Change pump.
11-Oct-95	HIT - it above SN. Tag for fill - no fill.
1-Jan-96	Based in wtr decline - Langlie Mattix was TA'd in 1998. See 6/3/03 notes.
15-Dec-00	Pumped 500 gal 15% HCl to release stuck pump.
6-Jun-02	Tag fill at 3326'. CO w/ notch collar to 3366' - could not make more hole.
3-Jun-03	CO fill 3383' - 3390' & found CIBP at 3397' - no record of when set.
	Could not drill out. Beat down to 3685'.
24-Jun-03	Replaced K-Bars.
5-Mar-04	Body break in 21st 3/4" rod.
2-Feb-05	HIT - it above SN.
30-Oct-06	HIT - it above SN. Changed out 10 1" rods due to pitting.
1-Feb-07	HIT on jt 106. Burst 5 jts while hydrotesting.
16-Jul-10	Split in 109th jt & burst 113th jt.

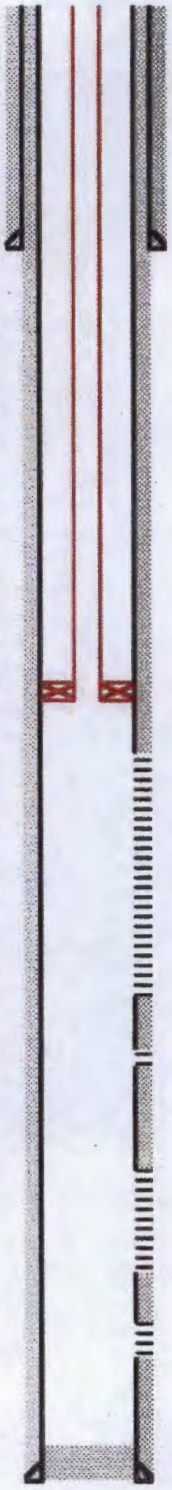
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
	2-3/8", 4.7# J-55 IPC tbg	2,960	2,960
1	2-3/8" x 5-1/2" Plr	7	2,967

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Pumping Unit:
Updated: 12/18/13 MCB

CJU #404
PROPOSED

Wellbore Diagram



PBTD 3692'
TD 3750'

Reservoir:	Cooper Jal
Well ID Info:	CJU #404
API No:	30-025-32218
Spud Date:	10/16/1993
Hole Size:	12-1/4"
Surface Csg:	8-5/8" - 24#, WC-50 ST&C
Set @	1180'
Cement - Lead:	400 sx Class C w/ 4% Gel + 2% CaCl (13.5 ppg) (1.74
Tail:	200 sx Class C w/ 2% CaCl2 (14.8 ppg) (1.32 cu ft/sx)
Circ:	Yes (32 Sacks)
TOC:	Surface

TOC: Circ to Surface

Plr set at +/- 2960'

Yates @ 3005'

3013'-3016'
3018'-3024'
3029'-3041'
3049'-3069'
3083'-3094'
3104'-3106'
3109'-3113'
3115'-3122'
3131'-3138'
3142'-3145'
3167'-3171'
3204'-3213'
3219'-3222'
3219'-3222'

7-R @ 3223'

3272'-3279'

3423'-3429'
3454'-3459'
3485'-3488'
3502'-3205'
3511'-3515'
3557'-3560'

Queen @ 3600'

3591'-3596'
3649'-3655'

Hole Size:	7-7/8"
Prod. Csg:	5-1/2" - 15.5# WC-50, LT&C
Set @	3750'
Cement - Lead:	575 sx Poz H w/ 5% Gel + 5% Salt + 1/4# Flocele (12.4
Tail:	350 sx Poz H w/ 2% CaCl2 (15.6 ppg) (1.18 cu ft/sx)
Circ:	Yes (35 sx)

Geological Description

Yates, Seven Rivers and Queen Formations, Artesia Group

Cooper Jal Unit #404

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

HALLIBURTON
LOGGING SERVICES, INC.

SPECTRAL DENSITY
DUAL SPACED
NEUTRON CSNG LOG

COMPANY TEXACO E AND P INC.
WELL COOPER JAL UNIT NO.
FIELD TANSILL YATES SEVEN-
COUNTY LEA STATE NM

COMPANY TEXACO E AND P INC

WELL COOPER JAL UNIT NO 404

FIELD TANSILL YATES SEVEN RIVERS
QUEEN GRAYBURG

COUNTY LEA STATE NM

API NO 30-025-32218
LOCATION
510 FNL AND 2310 FEL
UNIT B

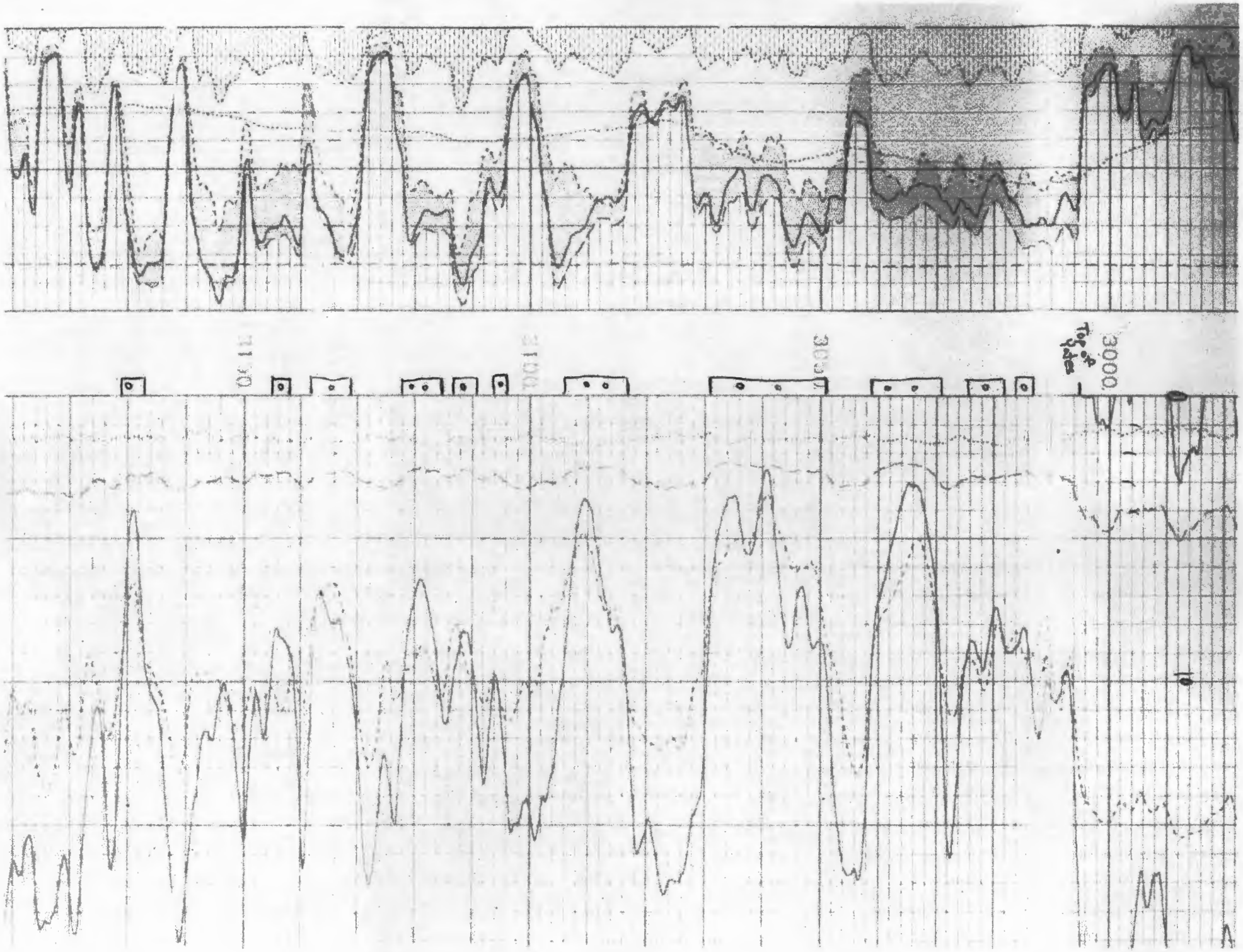
OTHER SERVICES
DLL-MSFL
FMS

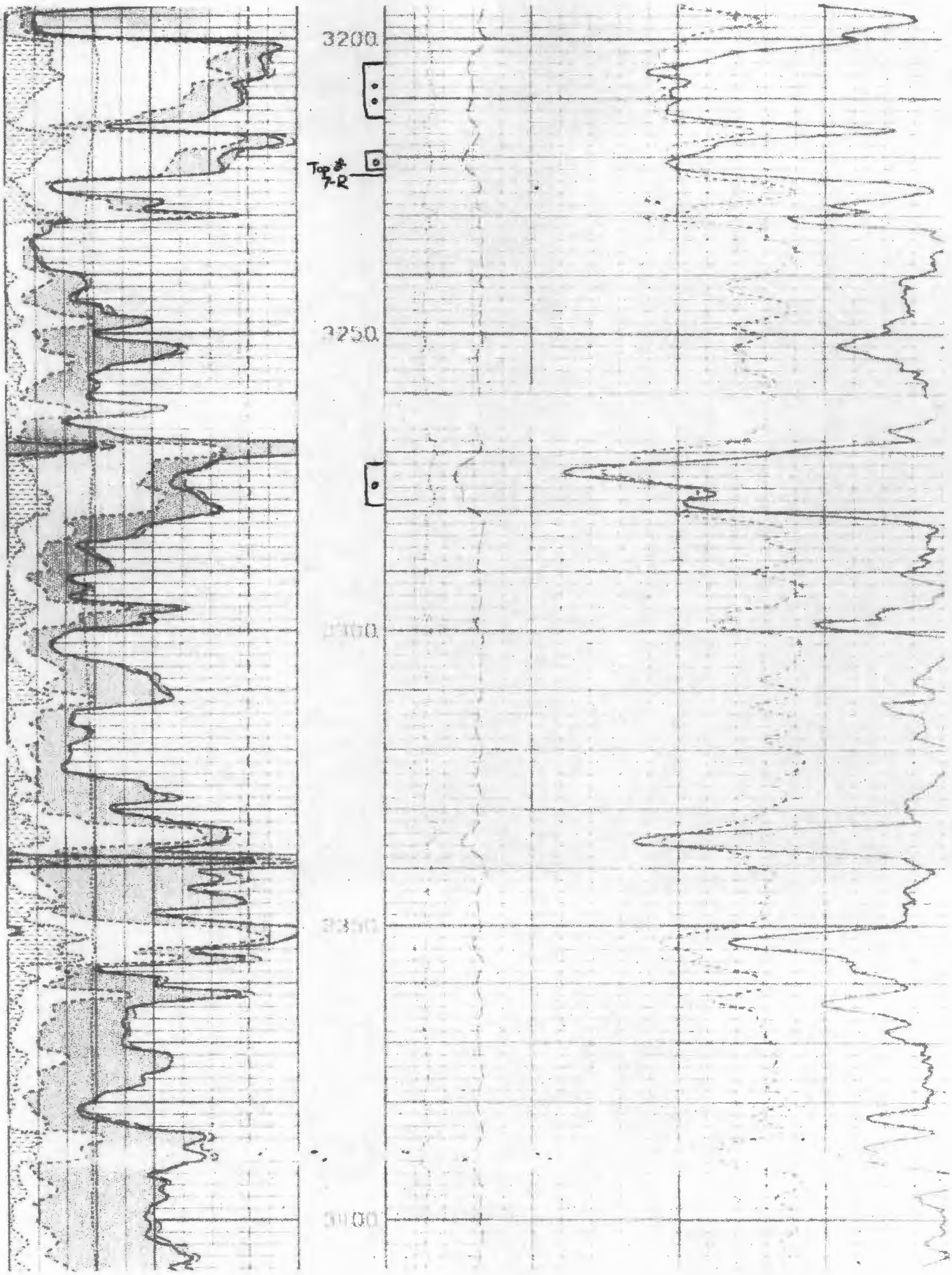
SECT 24 TWP 24-S RGE 36-E

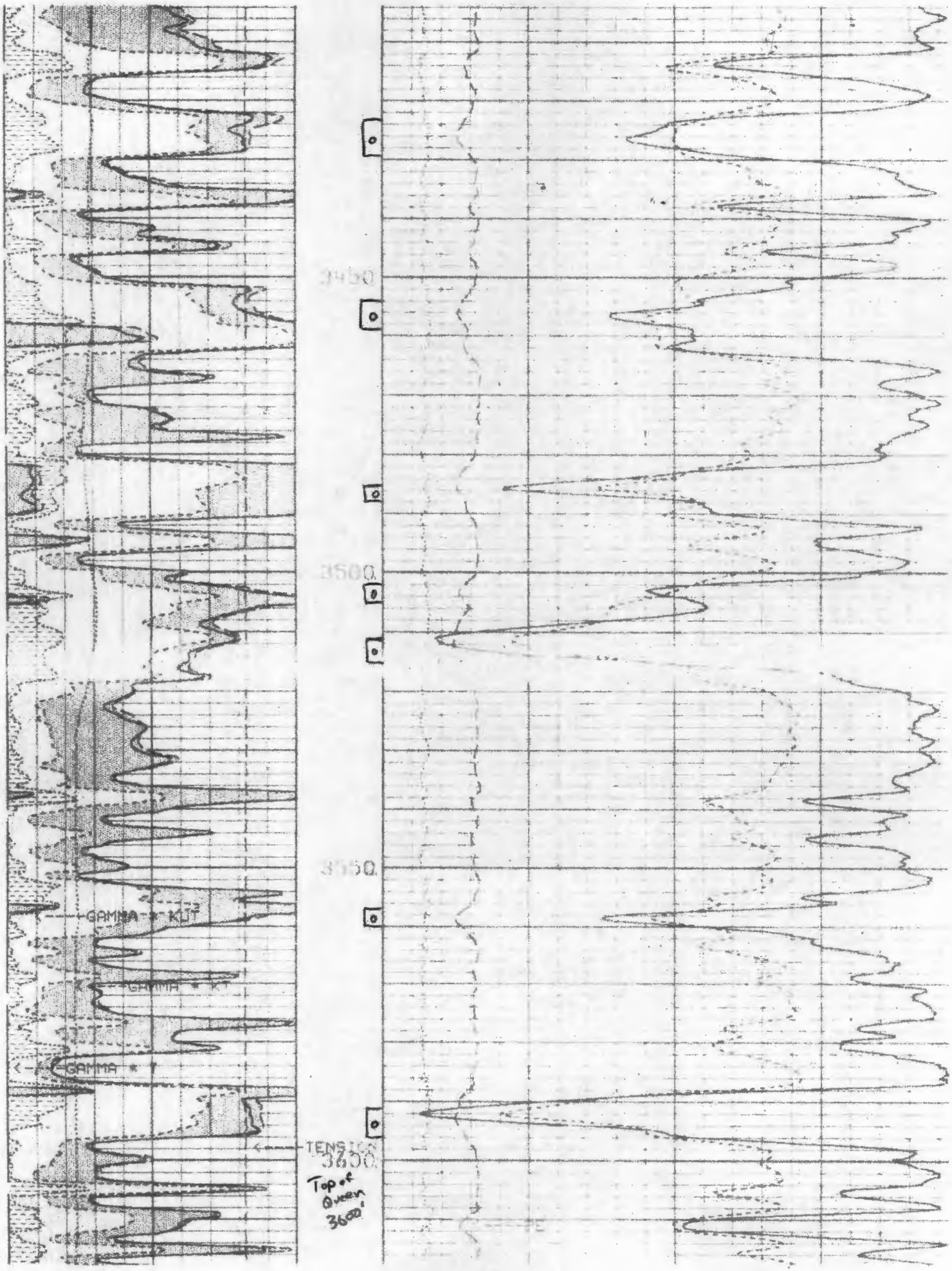
PERMANENT DATUM G L ELEV 3314
LOG MEASURED FROM K B 11 FT ABOVE PERM DATUM
DRILLING MEASURED FROM K B

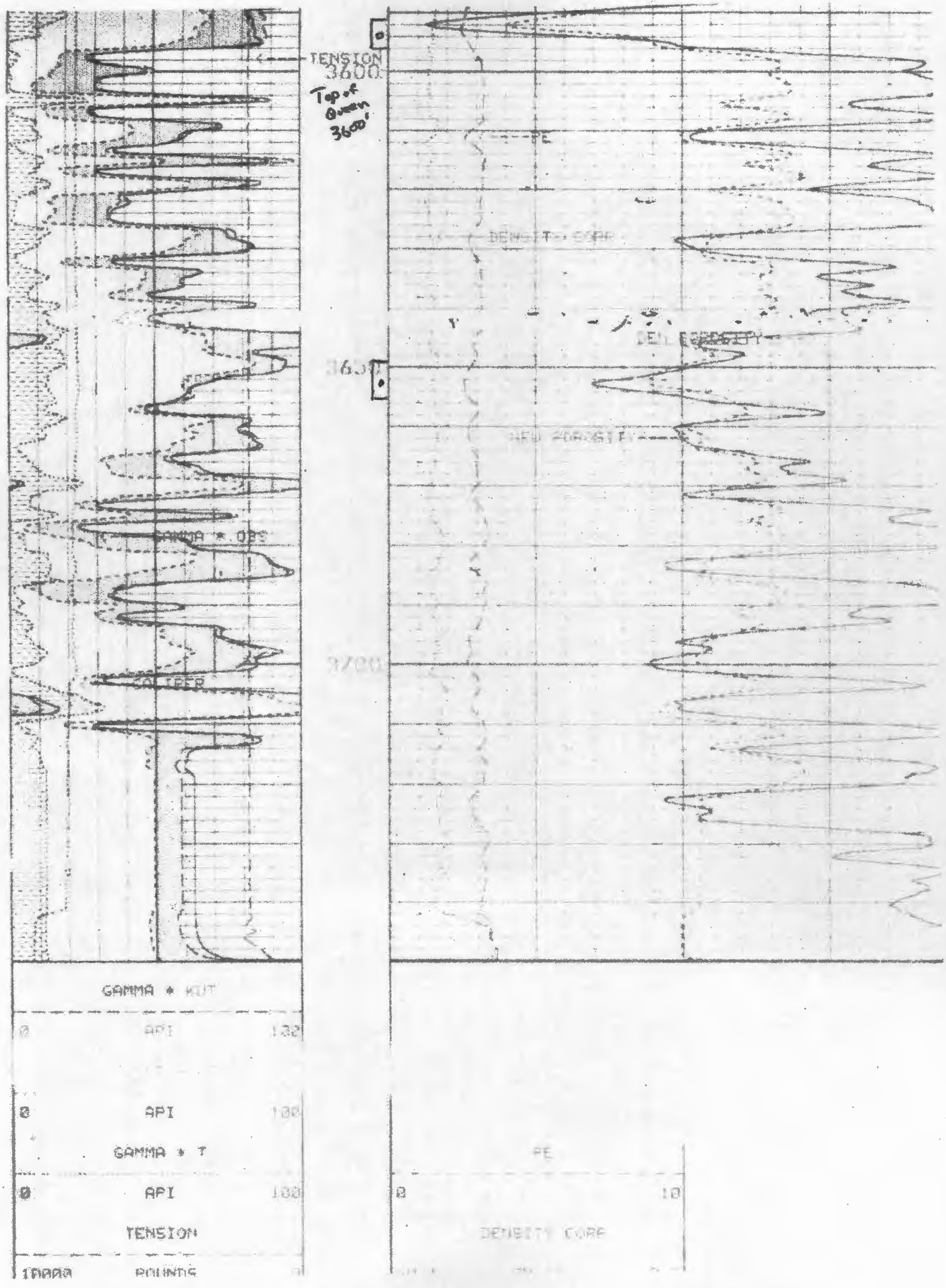
ELEV K B 3325
D F 3324
G L 3314

DATE	10/21/93			
RUN NO.	ONE			
DEPTH-DRILLER	3751			
DEPTH-LOGGER	3746			
BTM. LOG INTER	3745			
TOP LOG INTER	SURFACE			
CASING DRILLER	8.625@1180	@	@	@
CASING-LOGGER	1183			
BIT SIZE	7 875			
TYPE FLUID IN HOLE	BRINE			
DENS. : VISC.	10.0 :29 0	:	:	:
PH : FLUID LOSS	9 5 :NA	:	:	:
SOURCE OF SAMPLE	MUD PIT			
RM @ MEAS. TEMP	0.15 @55	@	@	@
RMF @ MEAS. TEMP.	0.15 @55	@	@	@
RMC @ MEAS. TEMP.	NA @NA	@	@	@
SOURCE RMF:RMC	MEAS. :MEAS.	:	:	:
RM @BHT	0.08 @100	@	@	@
TIME SINCE CIRC.	NA			
TIME ON BOTTOM	10:45 AM			
MAX. REC TEMP.	100 @TD	@	@	@
EQUIP.: LOCATION	7670 :HOBBS	:	:	:




3200
Top of 7-R
3250
3300
3350
3400


GAMMA * KUT
GAMMA * KT
GAMMA * T
TENSION
3450
3500
3550
3650
Top of Queen 3600'


TENSION
3600
Top of Queen 3600'
PE
DENSITY CORR
DEN POROSITY
3650
NEU POROSITY
GAMMA * OBS
3700
CALIPER
GAMMA * KUT
0 API 100
0 API 100
GAMMA * T
0 API 100
TENSION
10000 POUNDS
PE
0 10
DENSITY CORR

ENGINEERING DATA

COOOPER JAL UNIT #404

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.

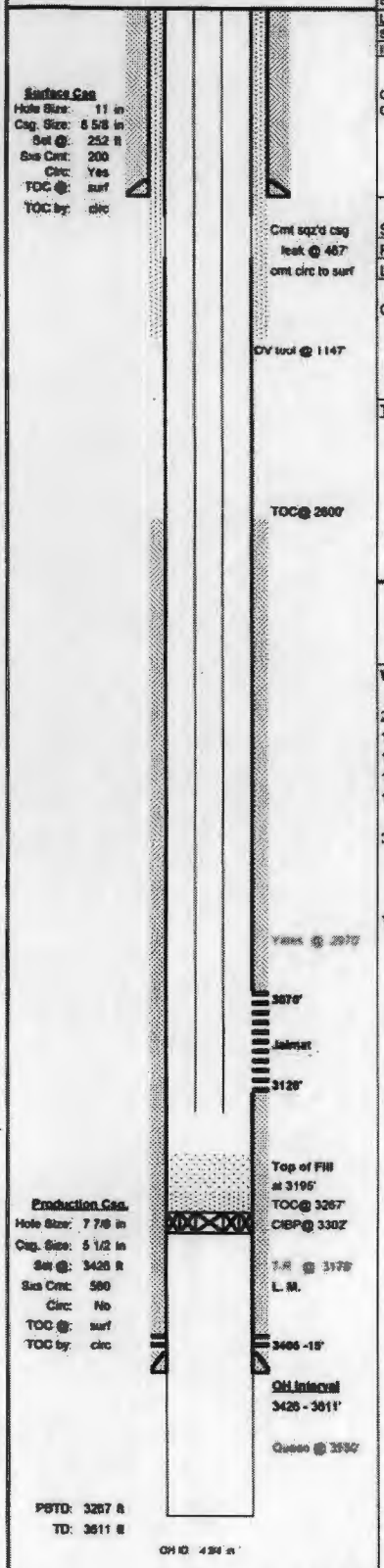
TABLE OF WELLS WITHIN HALF-MILE RADIUS AREA OF REVIEW AROUND COOPER JAL UNIT #404
LEA COUNTY, NEW MEXICO

API Number	Operator	Lease Name	Well Number	COMP TYPE	Sec	Twp	Range	SPUD DATE	TD	STATUS
30025094960000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	113	OIL	24S	36E	13	10/21/1951	3615	A
30025095580000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	107	OIL	24S	36E	13	2/29/1952	3610	A
30025095590000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	114	INJ	24S	36E	13	9/3/1954	3526	A
30025095600000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	146	INJ	24S	36E	13	5/25/1950	3235	A
30025095610000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	234	INJ	24S	36E	13	5/8/1950	3228	TA
30025095660000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	115	OIL	24S	36E	13	4/20/1947	3505	A
30025096200000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	205	INJ	24S	36E	24	4/9/1950	3251	A
30025096210000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	206	INJ	24S	36E	24	4/18/1950	3230	A
30025096270000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	152	OIL	24S	36E	24	11/12/1935	3757	SI
30025096280000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	201	INJ	24S	36E	24	4/27/1950	3237	A
30025096300000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	203	INJ	24S	36E	24	10/5/1951	3195	A
30025096310000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	120	INJ	24S	36E	24	10/23/1951	3195	A
30025096320000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	125	OIL	24S	36E	24	8/6/1954	3655	A
30025096360000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	126	INJ	24S	36E	24	4/27/1954	3560	A
30025096370000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	127	OIL	24S	36E	24	5/13/1954	3541	A
30025096380000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	122	INJ	24S	36E	24	5/29/1954	3550	A
30025096420000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	148	INJ	24S	36E	24	3/6/1954	3550	A
30025096450000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	121	OIL	24S	36E	24	12/8/1948	3520	A
30025097870000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	211	INJ	24S	36E	24	3/9/1950	3244	A
30025256820000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	151	INJ	24S	36E	24	10/15/1977	3650	A
30025322180000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	404	OIL	24S	36E	24	10/16/1993	3750	A
30025322860000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	403	OIL	24S	37E	19	11/13/1993	3750	A
30025325510000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	419	OIL	24S	36E	13	8/31/1994	3750	A
30025325690000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	407	OIL	24S	36E	24	7/29/1994	3750	A
30025328570000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	410	WSW	24S	36E	24	5/9/1995	3800	A
30025334580000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	420	OIL	24S	36E	24	7/19/1996	3825	A
30025391020000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	514	OIL	24S	36E	24	10/6/2008	3815	A
30025391030000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	512	OIL	24S	36E	24	9/23/2008	3745	A
30025391040000	LEGACY RESERVES OPERATING LP	COOPER JAL UNIT	511	OIL	24S	36E	24	9/10/2008	3772	A

29 active wells – all

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	107
STATUS:	Active	Rod Pump - Gas		API#	30-025-09558
LOCATION:	1650 FSL & 1980 FWL, Sec 13, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE:		TD 3611	KB 3,327'	DF	
INT. COMP. DATE:	08/26/52	PBTD 3267	GL 3,316'		

GEOLOGICAL DATA

ELECTRIC LOGS:
GR-N (3-23-52 Lane Wells)
CBL-GR-MSG-CCL from 3400 - 1500 ft (11-2-94 Halliburton)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 2970' 7-Rivers @ 3178' Queen @ 3550'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 252' Cmt'd w/200 sxs - circ cmt to surf.
PROD.	5 1/2"-15.5#, J-55 set@ 3426' Cmt'd w/200 sxs - TOC @ 2600' f/ surf. DV tool @1147' - pmp 200 sxs - Sqz csg @ 467'.
LINER	None — TOC@ suf by circ.

CURRENT PERFORATION DATA

CSG. PERFS: 3070-3120' w/ 4 spf (200 -0.56" holes)
3405 - 3415' (Isolated below CIBP)

OPEN HOLE 3426 - 3611'
Isolated below CIBP

TUBING DETAIL 8/12/04

	Length (ft)		Detail
2986	92	92 jts - 2 7/8" 6.5#, J-55, 8rd EUE tbg.	
3	1	1- 5 1/2" TAC	
96	3	3 jts - 2 7/8" 6.5#, J-55, 8rd EUE tbg.	
1	1	1 - 2 7/8" OD - S.N.	
4	1	2 7/8" Perf Sub	
31	1	1 - 2 7/8" J-55 MA	
3123		btm	

ROD DETAIL 8/13/04

Length (ft)		Detail
26	1	1 1/4" x 22' polish rod w/ 7/8" pin
0	1	1 1/4" x 1 1/2" x 12' liner
20	4	3 -6' & 1-2', 7/8", D78 pony rods
1050	42	43 - 7/8", D78 rods
1800	72	72 - 3/4", D75 rods
175	7	7 - 1 1/4", sinker bars
16	1	2" x 1 1/4" X 15' pmp (No RHR)
0	1	1 1/4" x 6' gas anchor
3087' btm		

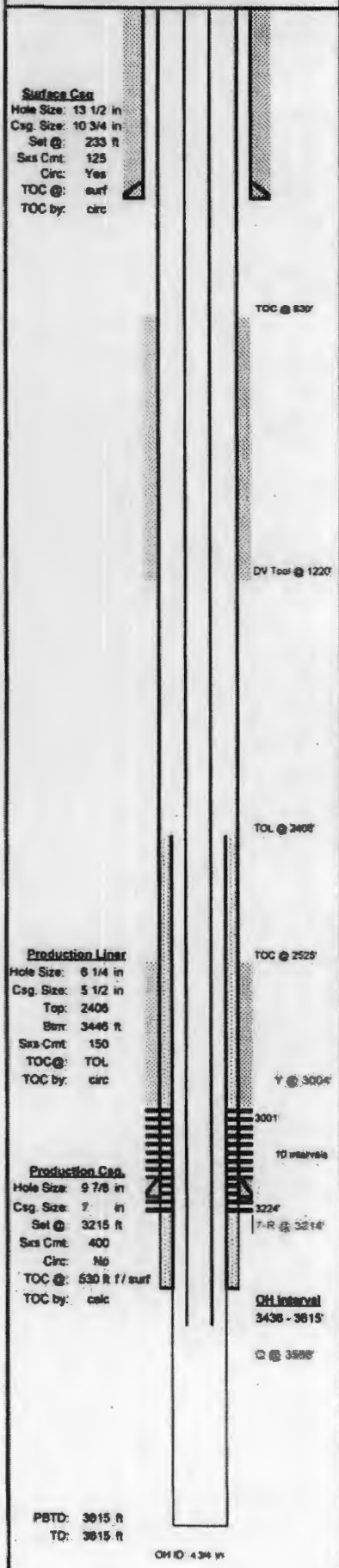
WELL HISTORY SUMMARY

26-Aug-52	Initial completion interval: 3426 -3611' (7 RVRS/Queen - OH). **IP=0 bopd, 0 bwpd, 4.4 MMcfgpd@AOF.** ISITP=932 psi.
1-Jan-56	Attempted to prod. into int. gas line. Well press too low; showing little light oil. Well flwd by heads into csg head gas line.
1-Jan-58	Shut-in. (Reclass. LM oil)
15-Feb-73	Converted to injector. C/O to TD @ 3611' & **Perf'd 7 RVRS f/3405 -3415.** Acdz'd w/1,500 gals
14-Jul-78	Sqz'd csg leak @ 446' w/ 160 sxs. Had circulation to surfac. SI braden head and sqz'd cmt to SIP=700 psi. WOC. Drld out & tst to 1000 psi. OK.
3-Nov-94	Ran bit & scraper to 3400'. Ran CBL-GR-CCL f/3400 - 1500'. Found TOC @ 2600'. Set CIBP@ 3302' & dmp 35' cmt on top. PBTD= 3267'. Spot 500 gals 10% acetic acid f/3120 -3070'. **Perf'd using 4" csg gun f /3070-3120' w/ 4 spf (200 - 0.56" holes)** Frac well w/ 70,000 gals & 233,280#'s 12/20 sand. PM=3740 - 2150 psi. AIR=40 bpm. ISIP=900 psi, P15min= 250 psig. C/O sand from 2862'-3262' (PBTD). Placed well on production. **Pmp: 0 bopd / 58 bwpd / 367 Mcf.**
12-Aug-04	POOH with rods and pump. Pumped 20 bbls of produced water with 5 gallons of de-emulsifier. **Tagged bottom at 3195.** Found hole 2 joints above SN. Hydrotest tubing in hole to 7,000# - test good. Set TAC with 18,000# tension. Swabbed well f/ 2900' to 2900', recovered 12 bbls of water with some iron sulfide. RIH pump & rods. PWOP. Laid down 8 - 7/8" and 34 - 3/4" rods due to wear. Note: Found 2 joints with external erosion located across perforations!

PREPARED BY: Larry S. Adams UPDATED: 17-Aug-04

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit					WELL NO	113
STATUS	Active		Oil			API#	30-025-09496
LOCATION:	330 FSL & 2310 FWL, Sec 13, T - 24S, R - 36E, Lea County, New Mexico						
SPUD DATE:		TD	3615	KB	3,334'	DF	
INT. COMP. DATE:	12/02/51	PBTD	3615	GL	3,327'		

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-N-CCL from 3513 - 2600' (12-8-93 Halliburton)

CORES, DST'S, or MUD LOGS:

HYROCARBON BEARING ZONE DEPTH TOPS:

Based of Salt - 2630' Yates @ 3004'
7-Rivers @ 3214' Queen @ 3568'

CASING PROFILE

SURF.	10 3/4" - 40#, J-55 set@ 233' Cmt'd w/125 sxs - circ cmt to surf.
PROD.	7"- 17#, J-55 set@ 3345' Cmt'd w/200 sxs - TOC @ 2525' f/ surf by calc. DV tool @1220' - pmp 200 sxs.
LINER	5 1/2"- 14#, J-55 set from 2406' - 3446' Cmt'd w/150 sxs circ out TOL. 7" Csg TOC@ 530' by calc.

CURRENT PERFORATION DATA

CSG. PERFS: 3001'-3224' OPEN HOLE 3436 - 3615'

TUBING DETAIL 07/13/12

Length (ft)		Detail
7		K.B.
2885	87	2 7/8" 6.5#, J-55, 8rd EUE tbg.
3	1	5 1/2" x 2 7/8" TAC
594	18	2 7/8" 6.5#, J-55, 8rd EUE tbg.
24	1	2 7/8" x 2 1/4" x 25' WB
4	1	2 7/8" Perf sub
31	1	2 7/8" Mud Anchor joint
3548		btm

ROD DETAIL 07/13/12

Length (ft)		Detail
20	1	1 1/4" x 22' polish rod w/ 7/8" Pin
0	1	1 1/4" x 1 1/2" x 14'
20	4	2', 4', 6', 8' - 1" Pony Rods
1050	42	1" steel rods
1200	47	7/8" steel rods
625	25	3/4" steel rods
600	24	1 1/4" K-Bars
4	1	2 1/2" x 4 insert plunger
3519		btm

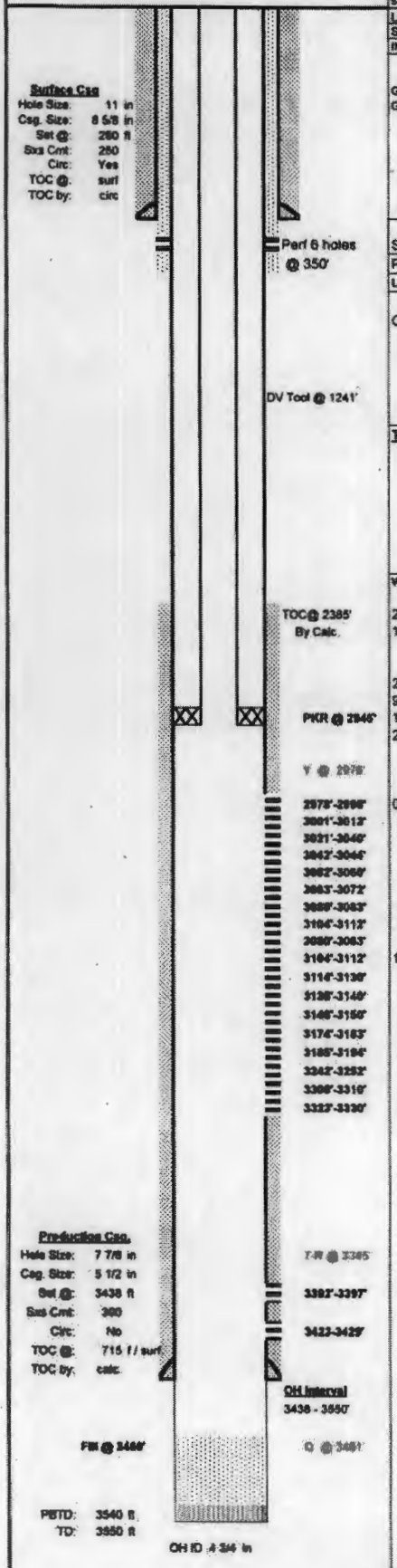
WELL HISTORY SUMMARY

2-Dec-51	**IC interval: 3446 -3615' (7RVS/Queen - OH). IP=96 bopd, 0 bwpd & 122 Mcfgpd (flowing), tSITP=700 psi.**
15-Feb-55	C/O and Frac w/ 6,000 gals lse oil & 8,000#'s sand
5-Aug-58	C/O fill from 3493 - 3605'
22-Dec-69	C/O fill from 3500 - 3610'
26-Mar-74	Installed 228D Pumping Unit
16-Mar-77	Installed new 2 7/8" tbg
24-May-77	Installed 456D Pumping Unit
14-Sep-87	C/O to 3615'
6-Dec-93	C/O to 3615'. Ran GR-N-CCL f/ 3513'-2600' (Noted - will not perf Langlie Mattix zone). Set RBP@ 3367'. **Perf'd (Jalmat/ Tansill/Yates/7RVR) f/ 3001'-3224', 10 intervals w/ 300 - 0.46" dia holes, 150' of net pay.** Frac perfs 3001'-3224' w/ 34,568 gals 30# crosslinked gel carring 130,000#'s 12/20 brady sand. Screened out on 10ppg sand, 121,500#'s in formation C/O sand. Ran tbg & rods. Pmp well to recover frac load f/ 12-19-93 through 3/28/94. Sanding problems and 0 bopd.
29-Mar-94	C/O sand w/ foam to top of RBP@ 3367'. Rls RBP & POOH. RIH & tag TD @ 3615'. Ran production equipment. PWOP. **IP= 4 bopd, 239 bwpd, 110 Mcfgpd.**
09-Oct-02	Replaced Pump. Replaced Bethlehem 228 Pumping unit w/ a Lufkin 320 D. E. 120" stroke. Move Bethlehem to CJU # 209.
03-Mar-03	Parted 7/8" pony rod below polished rod. Replaced and place well on pump.
14-Jul-03	Rod parted 22 joints f/ surface. POOH w/ rods & pump. Tallied out of hole tbg. Laid down 7 joints of tubing and 7 - 1 1/4" K-Bars. RIH with 2 1/4" working barrel and tubing. RIH with 2 1/4" plunger on rod string. PWOP.
16-Dec-03	Parted 1" rod (body break) 12 rods from surface. Replaced rod and place well on pump.
16-Jan-04	POOH with and laid down rods string and pump. RIH with pump and new rod string. PWOP.
30-Jan-06	Parted 3/4" rod (97th - body break) due to wear. POOH with rods and pump. Tagged at 3586', POOH with tubing. Changed out tubing pump. RIH with tubing pump, tubing, plunger and rods. Loaded up tubing and test to 500#. PWOP.
17-Aug-10	POOH with parted 91th - 3/4" rod (box break). POOH with rods, pump and tubing. Hydrotest tubing to 7,000 psig. Changed out 39 boxes due to wear. RIH plunger and rods. PWOP.
11-Jul-12	POOH w/ parted 31th - 1" rod (broken coupling). POOH w/ rods, pump & tubing. Laid down 3 - 3/4" & 20 - 1" rods - flat. PWOP.

PREPARED BY: Larry D. Adams Pecos Consulting UPDATED: 25-Jul-12

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit					WELL NO.	114
STATUS	Water Injector					API#	30-025-09569
LOCATION	330 FSL & 2310 FEL, Sec 13, T - 24S, R - 36E; Lea County, New Mexico						
SPUD DATE:		TD	3550	KB	3,327'	DF	
INT. COMP. DATE:	09/21/54	PBTD	3540	GL	3,320'		

GEOLOGICAL DATA

ELECTRIC LOGS:
GR-N from 3200 - 3526' (9-20-54 The Western Co.)
GR-N from 2900 - 3493' (12-18-64 Welex)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 2978' 7-Rivers @ 3345' Queen @ 3481'

CASING PROFILE

SURF.	8 5/8" - 20#, J-55 set@ 280' Cmt'd w/250 sxs - circ cmt to surf.
PROD.	5 1/2" - 15.5#, J-55 set@ 3438' Cmt'd w/200 sxs - TOC @ 2385' f/ surf by calc. DV tool @ 1241' - pmp 100 sxs.
LINER	None TOC@ 715 by calc.

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE : 3438 - 3550'

3423 - 29' w/ 2 spf (14 holes)
Perf'd Yates f/ 2978'-2998', 3001'-3013' 3021'-3040', 3042'-3044', 3052'-3060', 3063'-3072', 3080'-3083', 3104'-3112', 3080'-3083', 3104'-3112', 3114'-3130', 3138-3140', 3146'-3150', 3174'-3183', 3185'-3194' 3242'-3252', 3306'-3310' and 3323'-3330', 2 JHPF; Perf'd 7-Rivers f/ 3392'-3397', 2 JHPF.

TUBING DETAIL 3/2/2012

2 3/8 X 5 1/2 arrowset 1 X PKR
1.78 F profile nipple
on off tool
89 jts 2 3/8 IPC 8rd TBG
2', 8', 10', 2 3/8 8rd IPC TBG subs
PKR @ 2945

ROD DETAIL

WELL HISTORY SUMMARY

21-Sep-54	Initial completion interval: 3438 -3550' **(7 RVRS/Qn OH)**. IP =90 bopd, 0 bwpd, & 101 Mcfgpd (flw'd - no stimulation).
16-Dec-64	**Perf'd 7-Rivers** f/ 3423 - 29 w/ 2 spf (14 holes). Frac OH w/ 10,000 gals lse oil, 10,000#'s 20/40 & 10,000#'s 10/20 sand, at AIR= 31.6 bpm & 1400 psi. Plug back to 3440' w/ sand & Frac perfs 3423-29' w/ 5,000 gals lse oil, 7,500#'s 20/40 sand and 2500#'s 1020 sand @ 24 bpm & 1700 psi.
29-Jul-71	**Converted to Injector**. C/O from 3482 - 3540'. RIH with pkr on 2 3/8" CL tbg. **Set pkr @ 3375'.** Initiated injection.
9-Nov-79	Made TD check with 1" sinker bar. Measured TD at 3516' (34' of fill).
12-Jan-91	C/O fill using bailer from 3521 - 3535'. Ran 5 1/2" pkr on 2 3/8" cmt lined tbg. Set pkr. @ 3371'. Return to injection.
21-Mar-00	TOOH & LD pkr. & 2 3/8" CL tbg. Set CIBP w/ WL @3400'. Spot 75 sxs cmt on CIBP. WOC. Tag TOC @ 2697'. S Spot 25 sxs cmt from 1300 - 1100'. WOC. Tag TOC @ 1090'. Perf'd 6 shots@350'. Pmp 120 sxs cmt down 5 1/2" and circ to surf through 5 1/2 x 8 5/8" annulus. Installed Dry hole marker & cleaned location. **NMOCD notified - well P&A'd 3-22-2001**
02-Mar-11	Pick up 4 3/4 bit and 3 1/2 D.C., tag CMT @ 10', drill out CMT to 32', **DRLG from 32' to 3540'** took 8 days, circulate clean, POOH laying down D.C.'s and 4 3/4 bit. Perf'd Yates f/ 2978'-2998', 3001'-13' 3021'-40', 3042'-44', 3052'-60', 3080'-83', 3104'-12', 3114'-30', 3138-40', 3145'-50', 3174'-83', 3185'-94' 3242'-52', 3306'-10', 3323'-30', & 3392'-97', 2 JHPF. Perf'd 7-Rivers f/ 3342'-3330', 2 JHPF. POOH laying down D.C.'s and 4 3/4 bit, set pkr at 3420', load and test CSG, held. Injection rate of 6 BPM @ 2200 psig, establish 30 BBLS acid, drop 50 sacks block, had 12 sacks block on formation, well pressured up to 5000 psig, could no longer pump into formation. Release PKR, POOH with PKR, perforate. **Set PKR at 2946'**, load and test CSG, held, establish injection rate of 6 BPM at 1200 PSI, pump 15,336 gallons acid dropping ballsealers @ 6 BPM @ AVG PSI of 1100 psig, displace to bottom PERF, ISIP @ 400 psig. POOH laying down workstring, RIH w/ new on and off tool, circulate PKR fluid, run MIT test, held, job complete.
18-Jun-12	Injection Profile shows: **fill @ 3460'**, 57% into Y-3/Y-4, 18% into Lower 7-R and 25% in to Queen in fill. **Rate:590 BPD @ 850#.**

PREPARED BY:	Larry S. Adams	UPDATED:	17-Jun-11

Field: **Cooper Jal Unit**

	Location:
Footage:	660 FNL & 1980 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,315'
KB:	3,326'
KB Calc:	11'
ck w/log?	Yes

Date	History
11-Nov-51	Hydrafrac OH 3000' - 3195' w/ 1500 gal Kerosene & 800# Ottawa Sand
13-Dec-54	Deepen to 3604' & ran 4" FJ Liner. Perf 3500' - 3516' & frac w/ 500 gal mud acid & 6000 gal lse oil + 6000# sand.
7-Oct-71	Gatechdvty perforate 3011' - 3270' & 3408' - 3492'. Acidize perfs w/ 5828 gal 20% acid in 3 stages w/ BS. Dual Inject w/ pkr at 3314' & pkr at 2820'
14-Oct-88	Dual injection equipment plugged up. Well SI.
23-May-94	Fish dual pkr - junk possibly left in hole. CO to 3574' & add perfs at 3,156' - 3,176'. RWTI
14-Feb-02	Tag fill at 3046' w/ sinker bar.
11-Aug-04	CO to 3575' - had iron carbonate scale in returns.
3-Dec-04	CO w/ CT to 3574' & acidize w/ 4200 gals 15% in 3 stages.
7-Nov-05	Tag fill at 3559' w/ sinker bar while running BHP survey.
1-May-06	CO to 3578'.
10-Jul-08	Acidize w/ 3080 gals 15% NEFE HCl & 35 Tons CO2
29-Apr-11	CO to 3577' & acidize w/ 17000 gals 90/10 & 14000# RS
1-May-14	CO to 3577' & acidize w/ 10000 gals 15% HCL & 9200# RS.

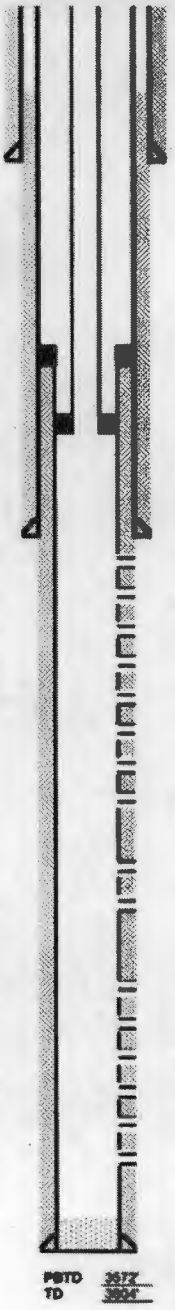
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
3	2-3/8" 4.7#, IPC, J-55, 8rd subs (6', 4', 2').	14	14
94	2-3/8" 4.7#, IPC, J-55, 8rd tbg.	2,900	2,914
1	4" x 2 3/8" Baker Model AD-1 packer	3	2,917

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Pumping Unit:
Updated: 09/24/14 MLS

CJU #120

Wellbore Diagram



Reservoir:	Cooper Jal
Well ID Info:	CJU #120
API No:	30-025-08831
Spud Date:	10/29/1951

Hole Size:	10-3/4"
Conductor:	8-5/8" - 29.75#
Set @	315'
Cement w/	150 sx Neat Cmt
Circ:	Yes (20 sx)
TOC:	Surface

TOC: 284' (By sinker bar)

TOL @ 2,854'

PKR at 2,917'

Hole Size:	7-7/8"
Prod. Csg:	5-1/2" - 15.5# & 17#
Set @	3007'
Lead Cement:	500 sx Portland + 10% Gel
Tail Cement:	100 sx Neat Cement

Yates @ 3007'

Perf 3,011' - 3,021' - 10/7/1971

Perf 3,030' - 3,036' - 10/7/1971

Perf 3,054' - 3,078' - 10/7/1971

Perf 3,092' - 3,100' - 10/7/1971

Perf 3,112' - 3,120' - 10/7/1971

Perf 3,148' - 3,154' - 10/7/1971

Perf 3,156' - 3,176' - 5/23/1994

Perf 3,196' - 3,204' - 10/7/1971

7-R @ 3216'

Perf 3,212' - 3,216' - 10/7/1971

Perf 3,262' - 3,270' - 10/7/1971

Perf 3,408' - 3,412' - 10/7/1971

Perf 3,418' - 3,424' - 10/7/1971

Perf 3,433' - 3,439' - 10/7/1971

Perf 3,456' - 3,460' - 10/7/1971

Perf 3,482' - 3,492' - 10/7/1971

Perf 3,500' - 3,516' - 12/13/1954

Queen @ 3572'

Hole Size:	4-3/4"
Prod. Liner:	4", 9.5# FJ
TOL:	2654'
Liner Set at:	3604'
Cement:	45 sx Neat Cement
TOC:	TOL

PBTD	3577'
TD	3604'

Field: Cooper Jal Unit

	Location:
Footage:	990 FNL & 1650 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,304'
KB:	3,314'
KB Calc:	10'
ck w/log?	N/A

Date	History
2-Jan-49	Open hole complete 3017' - 3520'. Acidize w/ 500 gals & 90 OH jet shots.
1-Jan-55	Frac OH w/ 10,000gal oil at 1 ppg w/ 500# RS in 2 stages.
16-Jan-73	Tag fill @ 3126' (394' of fill). Did not clean out.
23-Feb-73	Clean out fill to 3,520'.
9-Jul-74	CO fill f/ 3040' - 3520'. Deepen well to 3555'.
5-Feb-75	CO to 3556' & drill to 3560'. Run 4-1/2" liner and cement. Did not get cmt
	to TOL. Sqz top of liner w/ 300 sx. Selectively perforate 3,423' - 3,522'.
	Acidize perfs w/ 2500 gal 15% & 72 BS. Well Swabbed down. Frac perfs
	w/ 40,000 gal & 30,000# 20/40 - 12,000# 10/20 using 75 BS.
25-Sep-75	CO sand & scale 3480' - 3580'. Scale sqz & acidize w/ 1500 gal 15%.
17-Jan-78	Selectively perf 3018' - 3292' & acidize w/ 4000 gal 15% & 49 BS. Frac w/
	40,000 gal gel wtr & 31,500# 20/40 - 9,000# 10/20 & 20 BS in 3 stages.
11-Feb-87	Tag fill @ 3511' (49' of fill)
31-Dec-97	Set CIBP at 3400' w/ 35' cmt to 3365'.
1-Jun-05	DO cmt & CIBP. Drill new hole to 3,750'. Frac perfs at 3423' - 3522' &
	OH 3560' - 3750' w/ 59,925# 16/30 sd and 1,437 BF. Frac pers at
	3018' - 3292' w/ 15,200# 16/30 sd and 1,095 BF. CO sand & RWTP.
12-Aug-05	Parted Box - rod # 83. Changed pump and replaced all 3/4" & 7/8" Boxes.
24-Jan-06	Pump change.
28-Feb-06	HIT - 92nd jt f/ surface. Burst 7 jts below TAC while testing to 6000 psi.
7-Nov-06	Parted pin - rod #8. LD 20 -7/8" & 17 - 3/4" rods due to pitting.
7-Apr-08	Parted on/off tool.
8-Jun-11	Parted at pull rod and had hole in blast jt.
12-Jan-13	Change out blast jt & pump. Replaced cplgs on K-bars & 30-3/4" rods.
24-Jan-13	Found split in 109th jt from surface.
27-Dec-13	Test tbg & found hole in jt above SN

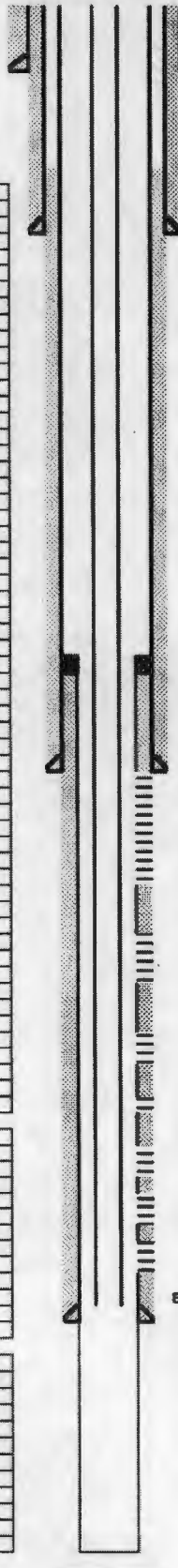
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
86	2-7/8" 6.5#, J-55 Super Max	2,714	2,714
1	2-7/8" x 4-1/2" TAC	3	2,717
20	2-7/8" 6.5#, J-55 Super Max	790	3,507
1	1 - 2-7/8" SN	1	3,508
1	2-7/8" Perf Sub	4	3,512
1	2-7/8" Mud Anchor	31	3,543

Rods	Rod Detail (top to bottom) Description	Footage	Depth
1	22' x 1-1/4" polish rod w/ 7/8" pin	16.00	16.00
1	1-1/4" x 1-1/2" x 12' liner	0.00	16.00
5	4' - 7/8" pony rods	20.00	36.00
86	7/8" KD-90	2,150.00	2,186.00
47	3/4" steel rods	1,175.00	3,361.00
6	1-1/4" K-Bars	150.00	3,511.00
1	2-1/2" x 2" x 16' RHBC pump	16.00	3,527.00
	1 1/4" x 8' Sand Screen 50 slot	0.00	3,527.00

Pumping Unit:
Updated: 2/10/14 MCB

CJU #121

Wellbore Diagram



Reservoir: Cooper Jal

Well ID Info:	CJU #121
API No:	30-025-09645
Spud Date:	12/9/1948

Hole Size: 17-1/2"
Conductor: 13-3/8" - 68#, J-55
Set @ 30'
Cement w/ 30 sx Class C w/ CaCl2
Circ: Yes
TOC: Surface

TOC: 985' (Calc)

Hole Size: 12-1/4"
Surf. Csg: 9 5/8" - 40#, J-55
Set @ 1179'
Cement w/ 550 sx Poz H w/ 6% Gel
Circ: Yes
TOC: Surface

TOL @ 2,965'
Hole Size: 8-5/8"
Prod. Csg: 7" - 20#, J-55
Set @ 3,017'
Cement: 350 sx Poz H w/ 6% Gel
TOC: 689' by calc.
Yates @ 3014'

Perf 3018', 3024', 3027', 3032', 3045', 3048', 3065', 3069', 3073', 3077', 3099', 3102', 3104', 3123', 3125', 3127', 3142', 3145', 3147', 3177', 3179' & 3181' w/ 1 SPF - 1/10/1978

Perf 3215', 3218', 3221', 3223', 3232', 3234' & 3236' w/ 1 SPF - 1/10/78

7-R @ 3238'

Perf 3281', 3283', 3287', & 3292' w/ 1 SPF - 1/10/78

Perf 3423', 3432' & 3434' w/ 1 SPF - 1/29/1975

Perf 3,458' - 3,472' w/ 1 SPF - 1/29/1975

Perf 3,490' - 3,500' w/ 1 SPF - 1/29/1975

Perf 3,512' - 3,522' w/ 1 SPF - 1/29/1975

EOT @ 3543'
Hole Size: 6-1/8"
Prod. Liner: 4-1/2" - 10.5#, H-40
TOL: 2965'
Liner Set at: 3560'
Cement: 400 sx Class C + sqz top of liner w/ 300 sx
TOC: TOL

Queen @ 3681'

3-7/8" OH 3,560' - 3,750'

PBTD 3750'
TD 3750'

Field: Cooper Jal Unit

	Location:
Footage:	330 FNL & 990 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,311'
KB:	3,321'
KB Calc:	10'
ck w/log?	Yes

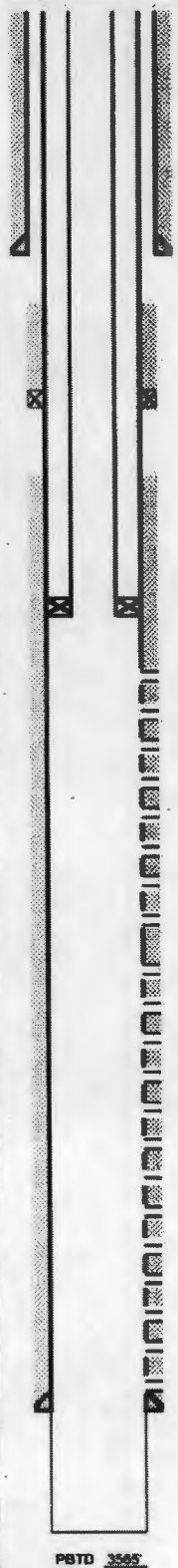
Date	History
18-Jun-54	Open hole complete 3465' - 3552'
9-Jun-56	Place well on rod pump.
5-May-71	Convert well to injector.
10-Feb-84	CO to TD & ran new tbg.
4-Dec-93	CO 6' of fill to TD & acidize 3465' - 3552' w/ 4200 gal 20% HCl & 1900# RS. Perf 3020' - 3307' at 2 SPF & acidize w/ 4200 gal 20% & 300 BS.
14-Feb-02	Tag Fill at 3056' w/ SL.
10-Sep-03	Found HIC from 78' - 109'. Backed off at 149' & screwed on new csg. CO fill to 3477'. Perf 3324' - 3461' & acidize all perfs w/ 3000 gal 15%.
31-Oct-03	Redress leaking pkr.
2-Dec-04	Jet was w/ CT - 2 passes. Acidize 3511' - 3020' w/ 4200 gal in 3 passes.
7-Nov-05	Tag Fill at 3469' w/ SL.
21-Apr-09	Tag fill at 3336' w/ WL.
20-Jun-12	Tag fill at 3220' w/ WL.
7-May-14	In preparing for cleanout, found HIC between 44'-75'. Squeezed 13 bbls cement and sealed HIC
5-Jun-14	Cleaned out well to 3565', acidized with 10,000 gals 15% NeFe acid and 10,000 lbs rock salt, and put well back on injection.

Joints	Tubing Detail (top to bottom) Description	Footage	Depth
93	2 3/8" IPC tbg.	2,931	2,931
	5 1/2" x 2 3/8" Baker Model AD-1 packer	3	2,934

Rods	Rod Detail (top to bottom) Description	Footage	Depth

CJU #122

Wellbore Diagram



PBTD 3565'
TD 3565'

Reservoir:	Cooper Jal
Well ID Info:	CJU #122 WIW
API No:	30-025-09838
Spud Date:	6/1/1954

Hole Size:	12-1/4"
Surf. Csg:	8 5/8" - 32#
Set @	280'
Cement w/	150 sx cmt + 2 sx Calcium Chloride
Circ:	Yes
TOC:	Surface

9/4/2003 - HIC at 78' - 109'. Backed off casing at 149' & ran new.

TOC: 600' (Calc)

DV Tool at 1200' (Cement w/ 100 sx)

TOC: 2273' (Calc)

Plr at 2934'

Yates @ 3013'

Perf 3,020' - 3,052' (2 SPF) - 12/4/1993

Perf 3,069' - 3,089' (2 SPF) - 12/4/1993

Perf 3,103' - 3,120' (2 SPF) - 12/4/1993

Perf 3,133' - 3,146' (2 SPF) - 12/4/1993

Perf 3,152' - 3,182' (2 SPF) - 12/4/1993

Perf 3,152' - 3,182' (2 SPF) - 12/4/1993

Perf 3,188' - 3,196' (2 SPF) - 12/4/1993

Perf 3,237' - 3,245' (2 SPF) - 12/4/1993

7-R @ 3247

Perf 3,297' - 3,307' (2 SPF) - 12/4/1993

Perf 3,324' - 3,329' (2 SPF) - 9/8/2003

Perf 3,341' - 3,343' (2 SPF) - 9/8/2003

Perf 3,360' - 3,366' (2 SPF) - 9/8/2003

Perf 3,370' - 3,372' (2 SPF) - 9/8/2003

Perf 3,376' - 3,382' (2 SPF) - 9/8/2003

Perf 3,385' - 3,388' (2 SPF) - 9/8/2003

Perf 3,406' - 3,406' (2 SPF) - 9/8/2003

Perf 3,420' - 3,421' (2 SPF) - 9/8/2003

Perf 3,430' - 3,435' (2 SPF) - 9/8/2003

Perf 3,436' - 3,444' (2 SPF) - 9/8/2003

Perf 3,452' - 3,455' (2 SPF) - 9/8/2003

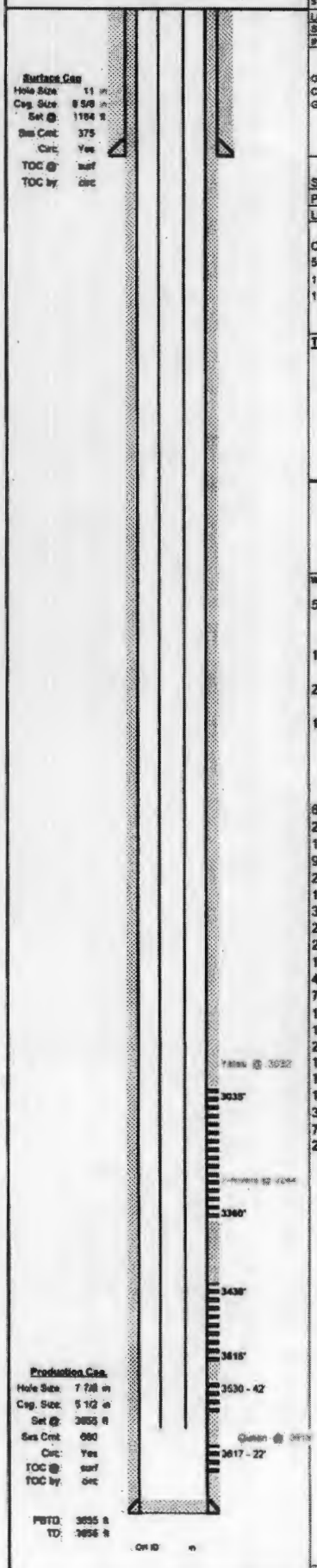
Perf 3,458' - 3,461' (2 SPF) - 9/8/2003

Hole Size:	7 7/8"
Prod. Csg:	5 1/2" - 14#, H-40
Set @	3,486'
Cement:	200 sxs
DV Tool:	100 sxs

Queen @ 3510'

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	125
STATUS:	Active	Oil		API#	30-025-09632
LOCATION	1650 FNL & 2310 FWL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico				
SPUD DATE	TD	3656	KB	3,335	DF
INT. COMP. DATE	09/05/54 PBTD	3655	GL	3,320	

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-CCL (6-5-87 Rotary Wireline)
Caliper log (8-20-54 Halliburton)
GR-N (8-22-54 The Western Co.)

CORES, DST'S, or MUD LOGS:

HYROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3032' 7-Rivers @ 3244' Queen @ 3616'

CASING PROFILE

SURF.	8 5/8" - 24#, J-55 set@ 1164' Cmt'd w/375 sxs - circ cmt to surf.
PROD.	5 1/2" - 14#, J-55 set@ 3655' Cmt'd w/680 sxs - circ cmt to surf
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE :

5-Sep-54 **Perf'd (L. M.) Queen f/ 3617-22' w/4 spf (24 holes); Perf'd (L. M.) 7-Rivers f/ 3530'-42' w/ 4 spf (52 holes)**

11-Jul-73 **Perf'd (Jalmat) 7-Rivers f/ 3438-40', 46-54', 62-64', 76-78' & 3511-15' w/ 1 spf (18 holes).**

19-May-87 **Perf'd (Jalmat) Yates f/ 3035',40,44,48,52,57,62,64,68,74,80,84,88,92,98, 3102',20,26, 37', 50', 56', 68', 76', 90', 96', 3202', 08', 13', 18,25, 30,40,51, 3269', 74,87,94,96,98, 3356',58 & 60 w/ 2 spf (84 holes).**

TUBING DETAIL 02/25/11

Length (ft)		Detail
2900	93	2 7/8" 6.5#, J-55, 8rd EUE tbg.
3	1	5 1/2" x 2 7/8" TAC
620	20	2 7/8" 6.5#, J-55, 8rd EUE tbg.
1	1	2 7/8" SN
4	1	2 7/8" x 4" Perf Sub
32	1	2 7/8" x 3 1/2" MA
3560		btm

ROD DETAIL 02/25/11

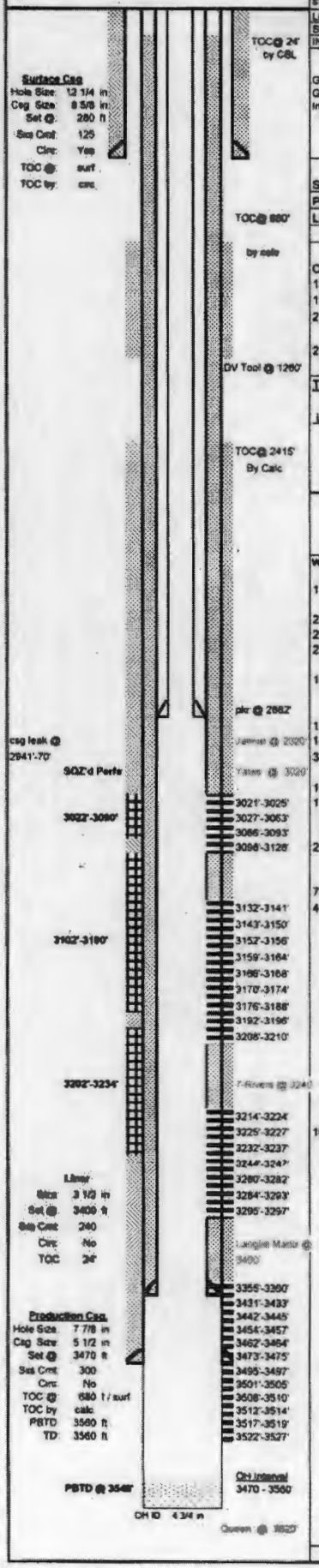
Length (ft)		
18	1	22' x 1 1/4" polish rod w/ 7/8" pin
0	1	1 1/2" x 1/4" x 14' liner
10	2	2', 8' - 1" Pony Rods
1225	49	1" steel rods
1250	50	7/8" steel rods
900	36	3/4" steel rods
100	4	1 1/2" K-Bars
1	1	1' - 1" Pony Rod
20	1	2 1/2" x 2" x 20' RWBC Pump
8	1	w/ 1 1/4" x 8' GA
3624		

WELL HISTORY SUMMARY

5-Sep-54	**Perf'd (L. M.) Queen f/ 3617-22' w/4 spf (24 holes): Frac'd w/3,000 gals oil / 4,500#'s sand. Swab - 59 bo & 15 bw. Set CIBP @ 3592' & dmp 10' cmt on top. Perf'd (L. M.) 7-Rivers f/ 3530 - 42' w/4 spf (52 holes): Acdz'd w/500 gals. Frac'd w/ 6,000 gals oil and 6,000#'s sand. IP= 600 bopd, 0 bwpd, & 802 Mcfgpd (flowing)**
11-Jul-73	C/O fill 3532 - 82' (150' of scale & formation). **Perf'd (Jal) 7-Rivers f/ 3438-40', 46-54', 62-64', 76-78' & 3511-15' with spf (18 holes). Acdz'd perfs 3530 - 42 w/1000 gals. Acdz'd perfs 3438-3515' w/2000 gals.**
21-Oct-74	C/O to 3582'. Frac LM(3438 -3542') w/40,000 gals x-l gel / 37,000#'s 20/40 sand & 10,000#'s 10/20 sand - max conc. 1.5 ppg in 3 stages using 500#'s rocksalt as diverter. Found tight spot in csg @ 3436'. Ran swedge 3438 - 46'.
19-May-87	Drilled out CIBPs at 3,582' & 3,592' and cleaned out to 3,655'. Acdz'd 3438'-3622' w/500 gals. Frac'd w/10,000 gals X-L gel & 22,500#'s 20/40 mesh sand (max conc. - 5 ppg). C/O sand 3640'-55'. **Perf'd Yates (Jalmat)f/ 3035',40, 44,48,52,57,62,64,68,74,80,84,88,92,98, 3102',20,26, 37', 50', 56', 68', 78', 90', 96', 3202', 08', 13', 18', 25', 30', 40,51, 3269', 74,87,94,96,98, 3356',58 & 60 w/ 2 spf (84 holes).** Acidized w/ 5,000 gals. Frac'd w/ 40,000 gals X-L gel + 75,000# 12/20 sand. (2 stages, BS as block, max conc= 5 ppg). AIR= 25 bpm. Pmax= 4,000#.C/O to 3,655'.
6-May-88	Tag fill @ 3619'
20-Sep-94	Changed out 6 bad rod couplings. Return well to production.
19-Apr-95	Replaced 1 jt of tbg. Return well to production.
9-Apr-96	Replaced 2 jts of tbg. Return well to production.
20-Sep-96	Replaced 1 jt of tbg. Return well to production.
10-Oct-97	Well had 1300' FL above pmp. C/O w/ bailer f/ 3592 - 3655'. LD 2 3/8" tbg. RIH w/2 7/8" tbg, pmp & rods. PWOP.
3-Sep-02	Parted (body break) @ 128 rod. Did not change out pump.
22-Jan-03	Parted (body break) @ 112 rod. Did not change out pump.
24-Jan-03	Parted (body break) @ 137 rod., right above the K-Bars. Did not change out pump.
11-Feb-03	Pulled 114 jts - tubing string. Hydrotest in hole, replaced 8 jts & SN. Changed out pump.
4-Apr-03	Parted below K-Bars. Changed out pump.
7-Apr-03	Parted (B B) @ 117 rod. Laid dn 54 3/4" rods due to electrolisis. Replaced 40-3/4", 6-7/8", & 9 1" rods. PWOP.
10-Apr-03	Changed out to Lufkin 320 Pumping Unit.Long stroke - 120", 9 SPM. Return well to production.
13-Jun-03	Replaced parted rod (111th 3/4" rod). Placed back on pump.
20-Jun-03	POOH w/ rods (Bad rods: 10-1", 49-7/8", & 27-3/4") & pump. Changed out tubing w/ new 2 7/8" tubing. PWOP.
13-Dec-05	POOH w/ rods, pump & tbg. Hydrotest tbg in hole to 6000#. RIH w/ pump & rods. Load & test pump to 500#. PWOP.
16-Aug-06	POOH with rods (Bad rods: 9-1" & 8-3/4") and pump. RIH with pump and rods. Load & test pump to 500#. PWOP.
11-May-07	POOH w/ rods, pump & tbg. Hydrotest tbg to 7000# - found hole on jt above SN. Laid down 2 jts due to pitting. PWOP.
3-Jun-08	POOH with rods, pump and tubing. Hydrotest tubing to 6000# in hole. RIH with pump and rods. PWOP.
7-Jun-10	POOH with parted 126th 3/4" body break. Laid down 7 - 3/4" rods due to pitting. PWOP.
24-Feb-11	POOH w/ rods, pump & tubing. Found hole joint above SN. Hydrotest tubing to 7000# in hole. RIH w/ pump & rods. PWOP.

PREPARED BY: Larry S. Adams Domingo Cerrizales UPDATED: 25-Mar-11

WELLBORE SCHEMATIC AND HISTORY



LEASE NAME	Cooper Jal Unit				WELL NO.	126 WIW
STATUS	Active	Water Injector			API #	30-025-09638
LOCATION	1650 FNL & 2310 FEL Sec 24, T - 24S, R - 36E, Lea County, New Mexico					
SPUD DATE:		TD	3560	KB	3,320'	DF
INT. COMP DATE:	05/13/54	PBTD	3560	GL	3,311'	

GEOLOGICAL DATA

ELECTRIC LOGS:
GR-N (5-11-54 Schlumberger)
GR-CCL ((2-3-87 Rotary Wireline)
Injection Profile (4-21-95 Houston Int.)

CORES, DST'S or MUD LOGS:
Borehole Analysis Casing Insp Log (2/7/08 CNG/GR/CCL (2/7/08 Gray WL)
Radial Bond GR/CCL (2/29/08 Gray WL) Injection Profile (3/14/08 Gray WL)

HYROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3020' 7-Rivers @ 3240' Queen @ 3620'

CASING PROFILE

SURF	8 5/8" - 24#, J-55 set@ 280' Cmt'd w/125 sxs - circ cmt to surf.
PROD	5 1/2" - 14#, J-55 set@ 3470' Cmt'd w/200 sxs - TOC @ 2415' from surf. DV tool @1206' - pmp 100 sxs -
LINER	3 1/2" - 9.5# Flush Max @ 3,400', Cmt'd w/ 170 sx Cl C w/6% gel, tailed w/ 70 sx Cl C w/ 2% gel. Circ'd 4 bbls cmt.
	5 1/2" - TOC@ 680' f/ surf by calc

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE 3470 - 3560' Behind Liner

18-Feb-87	Perf'd Yates f/3022,28,32,41,45,52,57,59,71,75,78,84,86,90, 3102,06, 12', 29', 35', 51'- 56', 67', & 3190'
18-Feb-87	Perf'd Seven Rivers: from: 3202,17,19,21,23,32, & 34 w/2 spf (60 holes total).
29-Feb-08	Perf'd 7-Rivers f/3522'-27', 17'-19', 12'-14', 08'-10', 01'-05', 01'-05', 3495'-3497', 73'-75', 62'-64', 3454'-57', 3442'-45', 3431'-33' & 3360'-3360'.
29-Feb-08	Perf'd Yates f/ 3295'-3297', 84'-83', 80'-82', 44'-47', 32'-37', 25'-27', 14'-24', 3208'-10', 3192'-96', 76'-86', 70'-74', 3166'-68', 59'-64', 52'-56', 43'-50', 3132'-41', 3096'-3126', 86'-93', 27'-63', & 3021'-3025', Total Holes= 215. 1 JHPF.

TUBING DETAIL 3/4/2008 **ROD DETAIL**

Length (ft)		Detail
9	KB	
3005	96	2 3/8" 4.7#, IPC, J-55, 8rd EUE tbg.
3	1	5 1/2" x 2 3/8" Baker Model AD-1 packer
3017		btm

WELL HISTORY SUMMARY

13-May-54	Initial completion interval: 3470 - 3560' (7 RVRS/Queen OH). Frac'd w/4,000 gals oil & 6,000#'s sand. IP=480 bopd,0 bwpd & 672 Mcfgpd (flowing)
25-Jun-74	C/O fill from 3530 - 60' (30')
25-May-75	C/O to TD @ 3560'. Acdz'd w/4,000 gals in 3 stages.
22-Aug-75	C/O to 3560'. Acdz with 1,500 gals (During job, after rock salt blocks). Frac with 34,000 gals X-L gel, 30,000#'s 20/40 sand and 10,000#'s 10/20 sand (3 stages, with rock salt blocks, max conc. 1.5 ppg). Clean out to 3560'.
18-Feb-87	C/O L M OH 3470'-3560' (90'-5ft). Set BP @ 3394'. Perf Yates (Jalmat) f/ 3022,28,32,41,45,52,57,59,71,75,78,84,86,90, 3102'-06', 3102, 06, 12, 29, 35, 51, 56, 67, 90, 3202,17, 19, 21, 23, 32, & 34 w/2 spf (60 holes). Acdz'd Jal (3022-3234') w/ 4000 gals. Fracd w/ 33,600 gals X-L gel & 50,000#'s 12/20 sd (2 stages with BS, max conc. 5 ppg). Rls BP, C/O to 3560'.
11-Jan-89	Tag fill @ 3529'. Did not Clean out.
1-Oct-93	Administrative Order No. WFX-646. Approve Division Order No. R4019 & R-4020 for Waterflood Expansion.
3-Nov-93	C/O f/ 3488'-3560'. Set plkr @ 3394' & acdz OH w/4,200 gals 20% NEFE HCL mixed w/ 220 gals Unichem TW425 mutual solvent. AIR=4 bpm. ISIP=vac. RIH w/plkr on CL tbg. Set plkr @ 2923'. Tst plkr. OK. Notified NMOCCD. SI.
19-Dec-93	WELL CONVERTED TO INJECTION - injecting into zones (3022 - 3234' & 3470 - 3560') at 316 bwpm, ISIP=vac.
17-Sep-97	POOH w/plkr & tbg. Found hole in 3rd jt f/ surface. Repaired leaking tbg head spacer spool. Ran Sonic Hammer tool w/ 5,000 gals 15% NEFE HCL & mutual solvent. Ran Baker AD-1 plkr on 93 jts of 2 3/8" CL tbg. Set plkr @ 2905'. Test PKR - OK. Initiated injection @ 265 bwpd.
2-Jun-05	POOH w/ pkr & tbg. Could not hydrotest cement lined tubing. RIH with new 2 3/8" IPC tubing and packer to 2,913'. Circulated with 70 bbls of packer fluid. Set packer. MIT annulus to 500 psig for 30 minutes did not test. Set PKR at 2,882'. MIT passed. Pulled pressure chart for OCD.
7-Nov-05	RIH with 1 1/4" sinker bar and tagged at 3,089'.
4-Feb-08	POOH w/ 2 3/8" IPC Tbg & 5 1/2" AD-1 PKR. RIH w/ 4 3/4" & 3 1/2" DCs on 2 7/8" TBG.Tagged @ 3,084', C/O to 3,560'. Recovered scale & iron sulfide. RU Gray , ran Csg Insp log f/3,455' to surf & CNG/CCl f/3,551' to 2,400'. Hydrotest 2 3/8" IPC TBG set PKR @ 2,864'. Could not get a press test . POOH w/inj. string, PKR had a piece on rubber missing. Re-ran inj string - could not get a pressure test. Test csg w/RBP & PKR - could not get press test. RIH w/injection string. Could not get a press test. Hydrotest tbg string to 7000#. Found csg lk f/ 447' to 320'. Free Point showed csg free @ 132'. Laid down inj string. RIH w/ 3 1/2" Shoe, 1 joint and Float Collar. Landed Shoe @ 3,400'. Cemented w/ 170 sx Class C, w/ 6% gel; tailed w/ 70 sx Class C w/ 2% gel. Circ'd w/ 4 bbls cmt. Weld Flange on liner/csg. RIH w/ 2 3/4" Mill Tooth bit - drilled cmt f/ 2,900' to 3,545' w/ 5 bits. Recovered a bolt on the last bit. Ran Radial Bond Gamma Ray/CCL f/ 3,527' to surf. TOC @ 24'. Perf'd 7-Rivers f/ 3522'-3527', 17'-19', 12'-14',, 08'-10', 01'-05', 3501'-05', 3495'-3497', 3473-75', 62'-64', 54'-57', 42'-45', 3431'-33' & 3355'-3360'; Perf'd Yates f/ 3295'-3297', 3284'-93', 3260'-82', 3244'-47', 3232'-37', 25'-27', 14'-24', 3208'-10', 3192'-96', 76'-86', 70'-74', 66'-68', 59'-64', 52'-56', 42'-50', 3132'-41', 3096'-3126', 3086'-93', 3027'-63', & 3021'-3025'. Total Holes= 215, 1 JHPF. RIH with 3 1/2" Arrow Set 1X PKR on 2 3/8" IPC tbg. Set PKR @ 3008'. Pulled Press Chart for OCD.RIG up Cuetro: Pumped 1442 gals of 15% NEFE HCL acid. Initial rate @ 0.25 bpm, final rate= 2.0 bpm. Before Treatment: 150 bwpd at 1000 psig. After treatment: 338 bwpd @ 806 psig.
10-Jan-11	POOH with 2 3/8 IPC injection string and 3 1/2" Arrow Set 1X PKR.RIH with 2 3/4" bit. Cleaned out from 3,205 to 3,545'. Circ'd iron sulfite and scale.Hydrotest tubing in hole to 6000 psig. Acidized with 330 bbls 20% NEFE acid (90/10). Diverted with 6,750# RE. AIR= 6 bpm. Pmax= 5,050 psig. Pavg= 3,050 psig. ISIP= 1280 spig. Hydrotest injection string to 5,000 psig. MIT to 400 psig for 30 minutes. Pull chart for OCD. Prior injection: 70 bwpd @ 861 #; after injection: 400 bwpd @ 750 #.

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	27-Jan-11

Field: Cooper Jal Unit

	Location:
Footage:	1650 FNL & 990 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,303'
KB:	3,312'
KB Calc:	9'
ck w/log?	Yes

Date	History
29-May-54	Treat OH f/ 3460' - 3541' w/ Dowell Stratofrac & 6000# sand.
13-Nov-58	CO 6' of frac sand and placed well on rod pump.
25-Aug-71	CO to 3537' & convert well to injector.
1-Sep-93	Set CIBP at 3389' w/ cmt to 3354' & perf 3019' - 3229'. Frac perfs w/
	63,000 gal Spectra Frac G-3000 & 255,340# 12/20 Brady Sand.
	CO sand f/ 2500'-3347' & place on prod.
24-Sep-13	Pump for 4 days, & tag fill at 3181'. CO to 3288', run pump and sanded
	up. Continue clean/pump sand multiple times and place on production.
16-Jul-94	Bail sand 3246' - 3389'.
24-Jan-95	Tag fill at 3312' - Did not CO.
19-Mar-97	Tag fill at 3305' - Did not CO.
17-Dec-99	Tag fill at 3302' - Did not CO.
20-Apr-00	Pull pump & rods, spot 500 gal acid in tbg. Run pump & rods.
16-Apr-02	Repair stuck pump.
13-Dec-02	Stuck pump. CO bridge at 3146' and cont to 3245'. Drop 20 acid sticks.
9-Jan-04	Tag fill at 3230' - Did not CO.
5-Aug-04	Tag at 3233' & Bail to 3,246' - couldn't make more hole - recv'd 20' scale.
8-Oct-04	Unseat pump & pump 50 bbl prod wtr w/ 10 gal surfactant. RWTP.
24-Nov-04	Tag at 3229' & Bail to 3,246' - couldn't make more hole - recv'd 26' scale.
28-Dec-04	Replace sand screen with perf sub and run blast joint.
9-Nov-07	Repair pump and rods.
23-Mar-11	Clean out with concave mill to 3,354'. Perf Yates f/ 3048' - 3239'. Perf
	7-Rivers f/ 3242' - 3296'. Foam sand frac w/ N2 & 155,000# 16/30.
30-Sep-11	Long stroke well.
11-Nov-11	Drill out CIBP at 3354' & clean out to 3541'.
10-Jul-12	Run pressure gradient log & repair HIT.
27-Aug-12	Body break in 4th 7/8" rod and replaced 2 x 1" rods.
27-Nov-12	Body break in 6th 7/8" rod. LD 7 x 7/8" & 10 x 3/4" rods (wear & pits).
22-Jul-13	Rods unscrewed at 2300'. Pump was stuck due to sand.
29-Jul-13	Test tbg - found small collar leak. Repaired and returned to production.

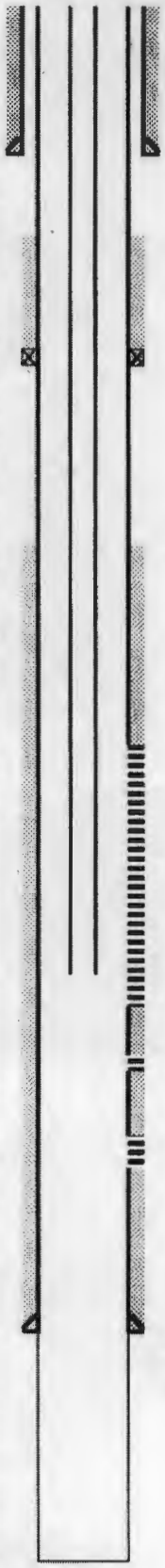
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
94	2 7/8" 6.5#, J-55, 8rd EUE tbg	2,963	2,963
1	5 1/2" x 2 7/8" TAC	3	2,966
1	2 7/8" 6.5#, J-55, 8rd EUE tbg	61	3,028
1	2 7/8" Super Max Blast Joint	32	3,060
1	2 7/8" SN	1	3,061
1	2 7/8" Perf Sub	4	3,065
1	2 7/8" Desander	32	3,097
2	2 7/8" tubing with Bull Plug MA	63	3,160

Rods	Rod Detail (top to bottom) Description	Footage	Depth
1	26' x 1 1/4" polish rod w/ 7/8" pin	16.00	16.00
1	1 1/4" x 1 1/2" x 14' liner	0.00	16.00
1	8' x 7/8" grade D pony rod	8.00	24.00
57	7/8" D steel rods	1,425.00	1,449.00
38	3/4" D steel rods	950.00	2,399.00
24	1 1/2" sinker bars	600.00	2,999.00
1	2 1/2" x 2" X 20' RHBC pump	20.00	3,019.00
	1 - 1/14" Strainer	0.00	3,019.00

Pumping Unit:
Updated: 01/10/14 MCB

CJU #127

Wellbore Diagram



Reservoir:	Cooper Jal
Well ID Info:	CJU #127
API No:	30-025-08837
Spud Date:	5/13/1954

Hole Size: 12-1/4"
Conductor: 8-5/8", 24#
Set @ 290'
Cement w/ 150 sx
Circ: Yes
TOC: Surface

TOC: 675' (Calc)

DV Tool at 1205' (Cement w/ 100 sx)

TOC: 2406' (Calc)

Yates @ 3019'

8/19/93 - Perf'd (2 SPF) - 3019'-21', 26'-48', 64'-77', 90'-94', 3105'-16', 3130'-41', 46'-76', 83'-87', 94'-98' & 3216'-29'

3/23/11 - Perf'd - 3048'-57', 59'-64', 77'-90', 94'-98', 3114'-30', 41'- 43' 3192'-94', 3204'-08', 11'-13', & 31' - 39'

EOT at 3160'

7-R @ 3234'

3/23/11 - Perf'd - 3242'-46'

3/23/11 - Perf'd - 3284'-98'

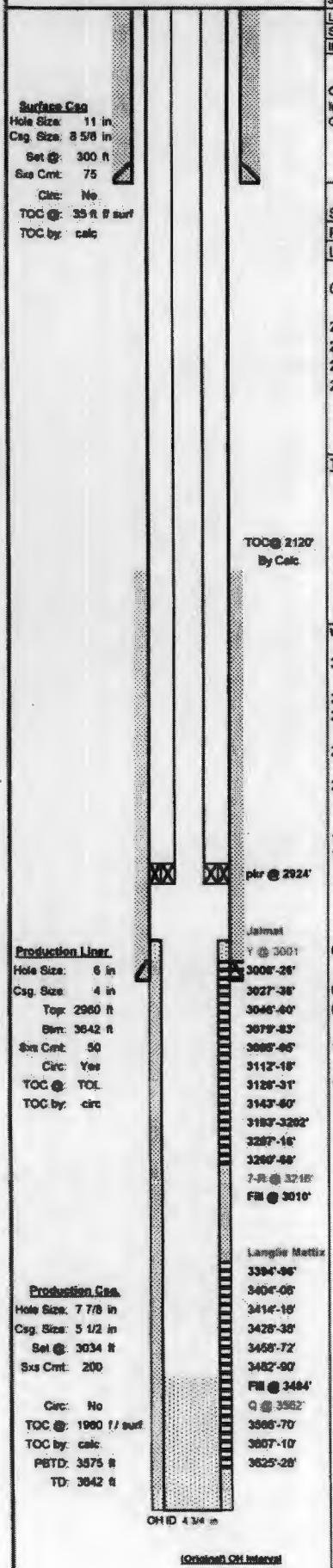
Hole Size: 7-7/8"
Prod. Liner: 5-1/2", 14#
Set at: 3460'
Cement: 200 sx
DV Tool: 100 sx +10% Gel

PBTD 3541'
TD 3541'

Queen @

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit					WELL NO (Formerly No. 203) 146 WIW
STATUS	Active	Water Injector				API# 30-025-09560
LOCATION:	1650 FSL & 990 FEL, Sec 13, T - 24S, R - 36E; Lea County, New Mexico					
SPUD DATE:		TD	3642	KB	3,334'	DF
INT. COMP. DATE:	06/30/50	PBTD	3575	GL	3,326'	

GEOLOGICAL DATA

ELECTRIC LOGS:
GR-N from 2100 - 3641' (9-1-71 Dresser Atlas)
Injection Profile (4-28-95 Houston, Inc.)
GR-CCL from 3640 - 2800' (6-1-94 Halliburton)

CORES, DST'S or MUD LOGS:

HYROCARBON BEARING ZONE DEPTH TOPS:
Yates @ 3001 7-Rivers @ 3216' Queen @ 3562'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 300' Cmt'd w/75 sxs - TOC @ 35' // surf by calc.
PROD.	5 1/2" - 14#, J-55 set@ 3034' Cmt'd w/200 sxs - TOC @ 1980' from surface by calculation.
LINER	4" - 9.11#, FJ-40 set from 2980 - 3642' Cmt'd w/50 sxs - cmt circ out TOL @ 2980'

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE : 3433 - 3591'
Selectively isolated behind 4" liner

21-Sep-71 Perf'd Yates // 3008'-26', 3046'-60', 3079'-83', 3112'-16', 3126'-31', 3143'-50', 3193'-3202', 3207'-16' & 3260'-16',
21-Sep-71 Perf'd 7-Rivers // 3260'-68', 3394'-96', 3404'-06',3414'-16', 3426'-36', 3456'-72', & 3482'-90'
21-Sep-71 Perf'd Queen // 3586'-70', 3607'-10' & 3625'-28'
24-May-94 Perf'd Yates // 3027'- 3036' & 3085'-3095'
3027 - 36' w/ 2 spf (20 holes total) 3068 - 3268' w/1 spf (80 holes total)
3085 - 95' w 2 spf (20 holes total) 3394 - 3628' w/ 1 spf (48 holes total)

TUBING DETAIL 5/14/2008 **ROD DETAIL**

Length (ft)	Detail
11	KB
2921	95 jts - 2 3/8" 4.7#, IPC, J-55, 8rd EUE tbg.
3	1- 4" x 2 7/8" Baker Model AD-1 packer
2935	btm

WELL HISTORY SUMMARY

30-Jun-50 Initial completion interval: 3034 - 3235' (Yates/7RVRS OH). Acidz'd w/1,000 gals. IP=54 bopd, 0 bwpd, 61 Mcfgpd (flowing)
25-Feb-71 Production: 305 Mcfgpd @ FTP=121 psig
21-Sep-71 CONVERTED TO INJECTOR: Drld from 3235 - 3642'. Underreamed OH from 4 3/4" to 6". Installed 4" liner. Perf'd (Jalmat) 3008 -3268' and (Langlie Mattix) 3394 - 3628'. Acdz'd w/5,360 gals 20% HCL.
28-Sep-87 Attempt to pull dual inj. equip. C/O & acdz'd. Unable to recover fish (30' - 2 3/8" 4.7# EUE, 8rd CL tbg, Baker AD-1 PKR. flow controller & 1jt - 2 3/8" 4.7# EUE, 8rd cmt L/T w/bull plug.). TOF@ 3164'. Ran tbg & pkr. Set Pkr @ 2921'. PWOP.
24-May-94 Recoverd all of fish lost in 9/87. C/O to 3575' pushing pkr rubber below btl. PBTD @ 3575'. Test liner top - communication. Ran GR-CCL from 3640 - 2800'. Perf'd 3027 - 36' and 3085 - 95'. Ran pkr on 2 3/8" IPC tbg. Set pkr at 2951'. Initiated injection @ 937 bwpd, TP=400 psi.
14-Feb-02 Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag fill @ 2971' (671' of fill).
19-Feb-04 POOH w/ 2 3/8" IPC injection string & 5 1/2" Packer. RIH w/ 3 5/16" bit & 6 - 2 3/8" drill collars on 2 3/8" work string. Tagged at 3318', C/O to 3642' - recovered iron sulfide, scale, & rubber. Circulate clean. RIH /h 5 1/2" full bore packer to 2940'. Circ'd w/ 70 bbls 2% KCl water plus packer fluid. Set packer w/ 20 points & test backside to 500 psig - held. Pulled pressure chart for OCD. Prior rate & pressure:183 BWPD @ 500 psig. After rate & pressure: 126 BWPD at 0 psig. Maximum allowable pressure - 600 psig.
08-Dec-04 Prior rate & press: 94 BWPD @ 80 psig. RIH w/ 1 1/4" Perf-Clean Tool on 1 1/4" CT. Washed out perfs w/ 2% KCl (surfactant water). Acidized perfs w/ 4,200 gals 15% NEFE acid. Flushed w/ 10 bbls. After rate & Press: 185 bwpd @ 0#.
08-Nov-05 RIH with 1 1/4" x 5' sinker bar and tagged at 3,010'.
09-May-08 Bled down #/400 psi to 0 psi. POOH w/2 3/8" IPC tbg & 5 1/2" AD-1 PKR. RIH w/2 3/8" Notch Collar. Tagged fill @ 3124'. Cleaned out to 3642'. RIH with 2 3/8" IPC tbg with 5 1/2" AD-1 PKR. Circulated with PKR fluid, pull Press Chart for OCD.
18-Jun-08 Foam CO2 Acid Treat Queen (3586'-3628') & 7-R (3260'-3490') w/3000 gals 15% NEFE HCl dropping 3000# RS. AIR= 5 bpm. Pavg= 1450 psig. Prior Rate/Press: 420 bpm @ 350#. After Rate/Press: 400 bpm @ 140 psig.
19-Jun-12 Injection Profile shows: fill at 3,484', 44% into 7-Rivers, and 40% into Yates 2. Rate 736 BPD @ 660 psig.

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 & 6,000#'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 perfs 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 flourine tbg. Returned well to injection.
10-Mar-88	Step rate tst indicates frac pressure (surface) is 1020 psi.
16-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 wtr
	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/gelled 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 2958', 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 @ 2926, 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#

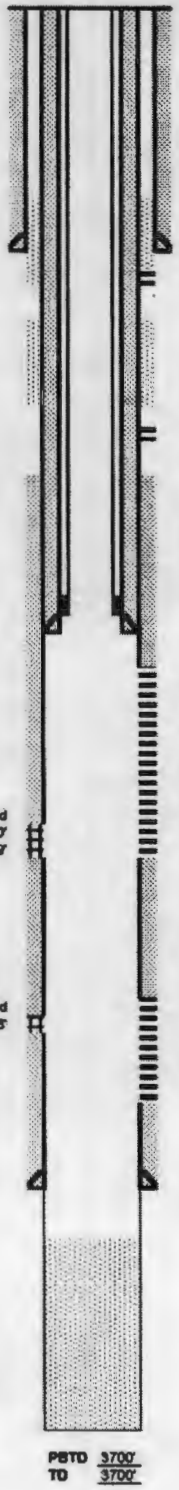
	Tubing Detail (top to bottom)		
Joints	Description	Footage	Depth
93	2-3/8" IPC Tbg	2,927	2,927
1	3-1/2" Arrow Set 1-X Packer	1	2,928

	Rod Detail (top to bottom)		
Rods	Description	Footage	Depth

Pumping Unit:
Updated: 04/16/14 MLS

CJU #148
(Also labeled #212)

Wellbore Diagram



PBTD 3700'
TD 3700'

Reservoir:	Cooper Jal
Well ID Info:	CJU #148 WIW
API No:	30-025-09842
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 @ 2,966'
Cement: 185 sxs
TOC: Surface

Inj Tbg Pkr @ 2926'

Yates @ 3018'
3018'-3042'
3045'-3054'
3059'-3066'
3070'-3089'
3100'-3114'
3127'-3142'
3146'-3174'
3182'-3190'
3192'-3195'
3220'-3233'
3236'-3242'
7-R @ 3244'

Hole Size: 7-7/8"
Prod. Csg: 5-1/2" - 15.5#, J-55
Set @ 3,465'
Cement: 300 sxs thru shoe; TOC @ 1085' 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 @ 3615'

Field: **Cooper Jal Unit**

	Location:
Footage:	771 FNL & 170 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,304'
KB:	3,316'
KB Calc:	12'
ck w/log?	Yes

Date	History
10-Nov-77	Perf 3572' - 3606' & acidize w/ 1500 gal 15% HCl & 15 BS. Perf 3296' - 3530' & acidize w/ 5000 gal 15% HCl & 54 BS. Frac all perfs w/ 60,000 gals gelled wtr, 44,000# 20/40 sd, 40,000# 10/sd & 36 BS.
18-Oct-79	Acidize perfs w/ 1500 gal + Scale inhibitor
10-Nov-87	Tag fill at 3,606' & did not clean out. Acidize w/ 2000gal 15% + 1000# RS.
30-Jan-93	Tag fill at 3,603'. Perf 3460' - 3480' & frac w/ 35658 gal Spectra G-3000 & 53,000# 12/20 Brady Sand (Screened out on 9ppg stage). CO & RWTP.
23-Aug-93	Tag at 3610' & convert to Injector.
8-Nov-05	RIH w 1-1/4" x 5' Sinker Bar and Tag @ 3630'
19-Mar-08	CO to 3662'.
15-May-09	RU Gray Wireline. Ran injection profile. Placed well on injection.
	Rate/Press: 894 bwpd @ 806#.
22-Sep-11	Run Injection profile and tag up at 3,622'. No entry in perfs at 3604' - 3606'.

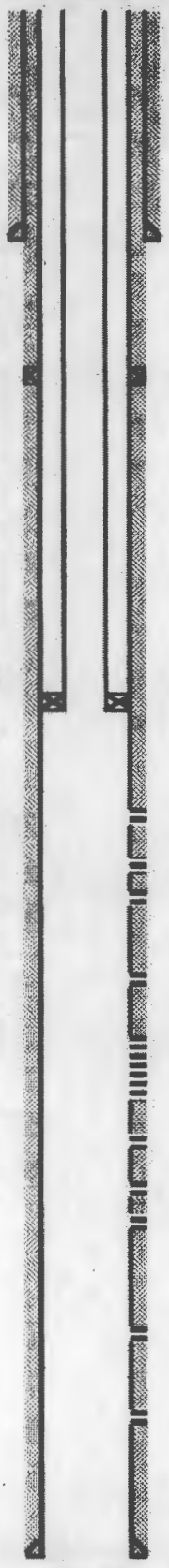
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
	KB	12	12
101	2 3/8" 4.7#, CPL, J-55, 8rd EUE tbg	3,228	3,240
1	5 1/2" x 2 7/8" Baker Model AD-1 packer	3	3,243

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Pumping Unit:
Updated: 1/3/14 JDA

CJU #151W

Wellbore Diagram



Reservoir:	Cooper Jal
Well ID Info:	CJU #151W
API No:	30-025-25882
Spud Date:	10/15/1977

Hole Size: 12-1/4"
Surf. Csg: 8 5/8", 24#, K-55
Set @ 373'
Cement w/ 275sx Class C w/ 2% CaCl + 1/4#/sk Flocele
Circ: Yes (70 sx)
TOC: Surface

TOC: Surf (Circ 60 sx to surface from 2nd stage)

DV Tool at 1300' (Cement w/ 215 sx)

TOC: 1300' (Circ 170 sx to surface from 1st stage)

Yates @ 3021'

Packer at 3240'

7 Rivers @ 3248'

Perf 3,296' - 3,300' (5 Holes) - 11/10/1977

Perf 3,356' - 3,360' (5 Holes) - 11/10/1977

Perf 3,371' - 3,374' (4 Holes) - 11/10/1977

Perf 3,437' - 3,442' (6 Holes) - 11/10/1977

Perf 3,461' - 3,463' (3 Holes) - 11/10/1977
Perf 3,460' - 3,480' @ 8 SPF (160 Holes) - 8/23/1993
Perf 3,469' - 3,472' (4 Holes) - 11/10/1977

Perf 3,499' - 3,506' (7 Holes) - 11/10/1977

Perf 3,520' - 3,522' (3 Holes) - 11/10/1977

Perf 3,526' - 3,530' (5 Holes) - 11/10/1977

Perf 3,572' - 3,576' (5 Holes) - 11/10/1977

Queen @ 3,603'

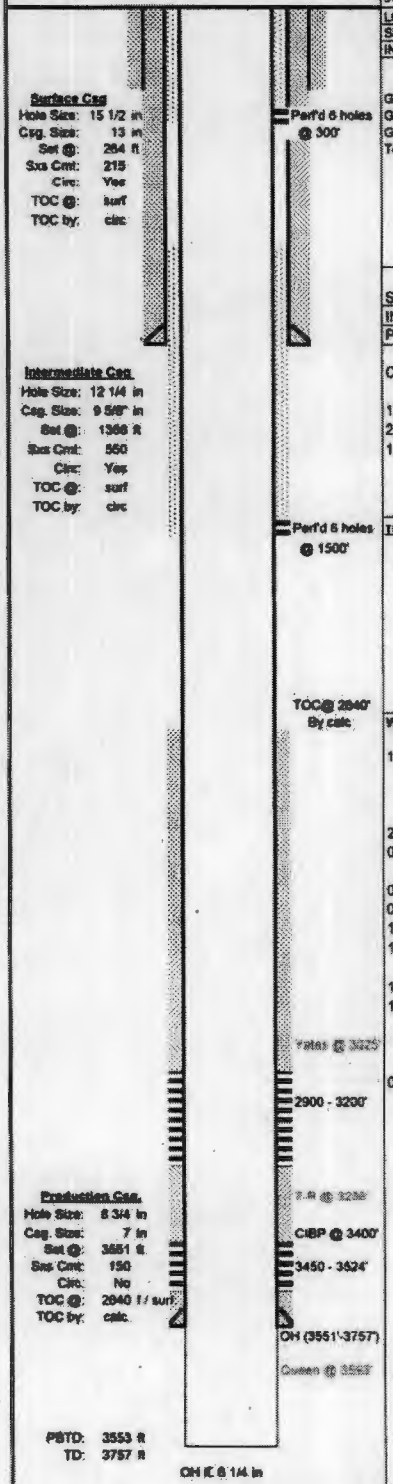
Perf 3,604' - 3,606' (5 Holes) - 11/10/1977

Hole Size: 7 7/8"
Prod. Csg: 5 1/2", 15.5#, J-55
Set @ 3,656'
Cement Lead: 315 sx Class C + 3% Econolite
Tail: 210 sx C:Poz(50:50)+2% Gel+9# Salt+1/4# Flocele
DV Tool: 215 sx Class C + 3% Econolite

PBTD 3662'
TD 3662'

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	152 (No.s 243 & 308)
STATUS	Oil			API#	30-025-09627
LOCATION	660 FNL & 660 FWL, Sec 24, T - 24S, R - 36E; Lea County, New Mexico				
SPUD DATE:	11/13/35	TD	3757	KB 3,346'	DF
INT. COMP. DATE:	01/13/36	PBTD	3553	GL 3,327'	

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-N from 60 - 3532' (1-5-55 Halliburton)
GR-N from 2900 - 3570' (10-17-77 WELEX)
GR-N from 1000 - 3410' (12-27-49 Lane Wells)
Temp Survey from 2900 - 3200' (1-12-55 Worth Well Surveys)

CORES, DST'S, or MUD LOGS:

Conventional Cores (Field Analysis) from 3443 - 3757'

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3025' 7-Rivers @ 3238' Queen @ 3593'

CASING PROFILE

SURF.	13" - 50#, J-55 set@ 264' Cmt'd w/215 sxs - circ cmt to surf.
INTR.	9 5/8" - 36#, J-55 set@ 1386' Cmt'd w/550 sxs - circ cmt to surface.
PROD.	7" - 24#, J-55 set@ 3551' Cmt'd w/150 sxs - TOC @ 2640' from surface by calculation.

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE : 3551'-3757'

13-Jan-36 **Perf'd Yates f/ 2900'-3200' w/1 spf every 6' (51 holes).**
24-Jan-55 **Re-perf'd Yates f/ 3020 - 3160' w/ 4 spf (156 holes total)**
18-Oct-77 **Perf'd 7-Rivers f/ 3450'-54', 3460'-66', 3474'-76', 3481'-83', 3488'-96', 3516'-24' w/ 1 spf (30 holes total).**

TUBING DETAIL **ROD DETAIL**

WELL HISTORY SUMMARY

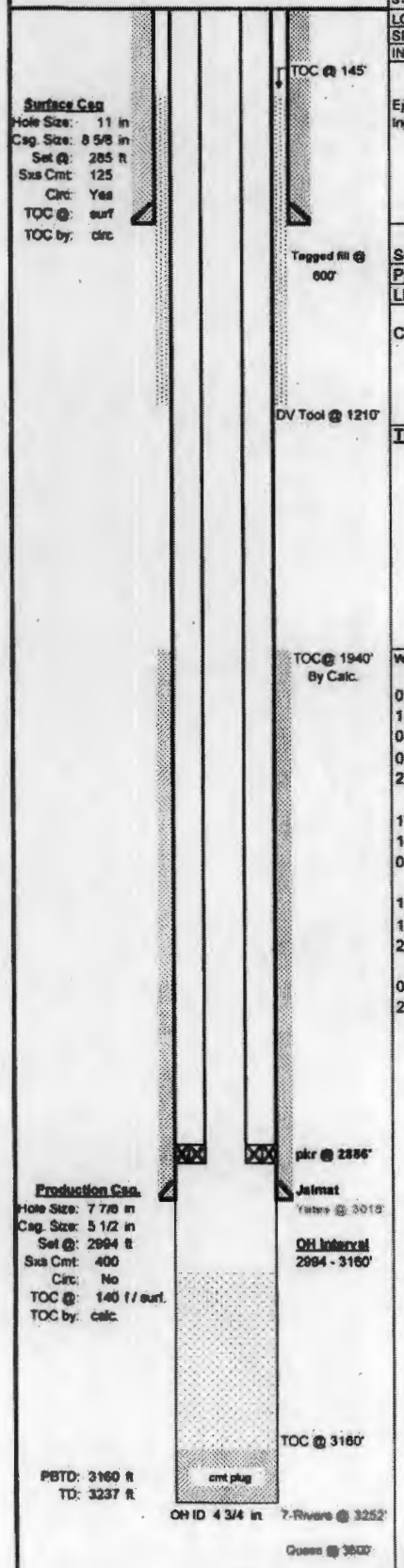
13-Jan-36 Tst OH interval 3508-3630' w/3,000 gals acid & swab test prior to setting 7" casing. Flowed oil. Set & cmt'd 7" csg @ 3551'. Drld out shoe & OH to 3757' (TD). Swab OH & tst. Plug back OH from 3757 - 3553' w/ 50 sxs cmt. **Perf'd Yates f/ 2900'-3200' w/1 spf every 6' (51 holes). No stimulation - IP=0 bopd, 0 bwpd, & 2,000 Mcfgpd, FTP= 200 psig.**

24-Jan-55 Temp. survey indicated gas entry @ 3050 - 3130'. **Re-perf'd Yates f/ 3020 - 3160' w/ 4 spf (156 holes total)**
05-Mar-56 Set CIBP @ 3250' w/ 5' of cmt on top. Frac'd Perfs 2900 -3200' w/12,000 gals lse oil & 18,000#'s sand. AIR=13 bpm at 2000 psig. After WO: 1220 Mcfgpd @ TP=200 psi.
07-Jan-70 Well unable to flow into high pressure gas line.
01-Dec-70 Well S.I. & T.A.'d
18-Apr-76 Placed well on rod pump.
18-Oct-77 C/O to 3553'. Logged well. **Perf'd 7-Rivers f/ 3450 - 3524' w/ 1 spf (30 holes total).** Acdz'd perfs w/3,000 gals. Discovered communication behind pipe.
17-Jun-95 **Producing 0 bopd, 70 bwpd, & 7 Mcfgpd. Well shut-in.**
19-Feb-01 Set CIBP @ 3400'. Spot 40 sxs cmt from 3400 -3200'. WOC. Tag Toc @ 3200'. Spot 60 sxs cmt from 3,000' - 2700'. WOC. Tag TOC @ 2700'. Perf'd 6 holes @ 1500'. Spot 75 sxs cmt above perfs. WOC. Tag TOC @ 1187'. Perf'd 6 holes @ 300'. Pmp 110 sxs cmt down 7" csg and circ to surface up 7" x 9 5/8" annulus. Cut off wellhead and cap casing. Installed Dry hole marker & cleaned location. **NMOCD notified - well P&A'd 2-22-2001.**
05-Nov-08 **Start work on 11/14/08.** RIH w/6 1/4" bit & DCs, tagged cmt at surf. Drilled out to 300'. Drilled f/969' to 1480', down to 1534'. Drilled to 1627'. Circ'd formation cmt & metal, fell out at 1630'. Drilled f/2750' to 3206', drilled to 3257'. Drilled CIBP at 3,400' to 3,771'. RIH w/6 1/8" mill tooth, tagged @ 1492', 1556', 1627'. Could not work through tight spot @ 1627'. RIH w/ 2 7/8" tubing to 1650'. RIH w/6 1/4" mill, milled f/1492' to 1640'. Recovered metal shaving & excessive amout of formation. RIH w/ 6 1/4" mill, milled from 1627' to 1633', recovered metal shaving and cement. RIH with 4 3/4" bit, tagged, rotated thru at 1580', 1600', 1627', 1654' & 1684'. Tagged at 1654'(tight spot). POOH with bit. RIH with shoe joint on 2 7/8" tubing. Rotated thru tight spot @ 1654' & 1684'. Could not pull out with same. Laid down drill collars & work string. Moved off PU.

PREPARED BY: Larry S. Adams UPDATED: 30-Dec-08

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	201
STATUS:	Active	Water Injector		API#	30-025-09628
LOCATION:	660 FNL & 330 FEL, Sec 24, T - 24S, R - 36E; Lee County, New Mexico				
SPUD DATE:	TD	3237	KB 3,316'	DF	
INT. COMP. DATE: 05/02/50	PBTD	3160	GL 3,306'		

GEOLOGICAL DATA

ELECTRIC LOGS: Ejecto Log Tracer (3-17-78 Cardinal Surveys Co.)
Injection Profile (9-14-81 Technical Surveys Company)

CORES, DST'S or MUD LOGS:

HYROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3018' 7-Rivers @ 3252' Queen @ 3600'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 285' Cmt'd w/125 sxs - circ cmt to surf.
PROD.	5 1/2" - 14#, J-55 set @ 2994' Cmt'd w/200 sxs - TOC @ 1940' f/ surf by calc. DV tool @ 1210' - pmp 200 sxs - 5 1/2" - TOC@ 140' f/ surf by calc.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS:

OPEN HOLE : 2994 - 3160'

TUBING DETAIL 5/20/2009

Length (ft)	Detail
0	KB
890	29 jts - 2 3/8" 4.7#, IPC Super Max TBG
1993	65 jts - 2 3/8" 4.7#, IPC, J-55, 8rd EUE tbg - turn down collars.
3	1- 5 1/2" x 2 3/8" Baker Model "A-1" packer
2886	btm

ROD DETAIL

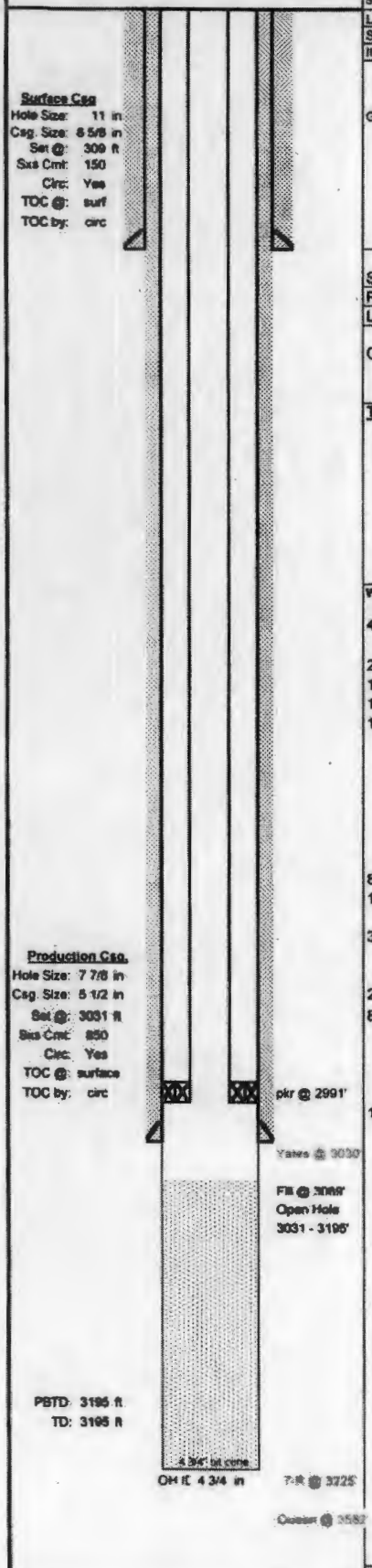
WELL HISTORY SUMMARY

02-May-50	Initial OH completion 2994 - 3237' (Yates OH). No stimulation. IP=67 bopd, 0 bwpd, & 76 Mcfgpd (flowing)
18-Mar-58	C/O fill from 3070 - 3237' (167')
01-Apr-62	Cumulative production: 155,008 Bo & 772,569 Mcfg
03-Oct-62	Frac'd OH w/30,000 gals lse oil carrying 75,000#'s sand and 1,000#'s moth balls. PB open hole w/cmt to 3157'.
21-Sep-71	CONVERTED TO INJECTOR: Had to kill well - flowing oil. C/O fill to 3157'. Ran pkr on 2 3/8" CL tbg. Set pkr @ 2929'. Placed well on injection.
17-Mar-78	Tagged fill @ 3153' (4'). Not C/O.
14-Sep-81	Ran injection survey. Tagged fill @ 3147' (10'). Not C/O.
05-May-88	C/O fill from 3098 - 3153' (55'). Side jet wash OH. Drilled out cmt plug in OH w/ 4 3/4" bit to 3160'. Installed new cmt lined tubing. Initiated injection @ 1,000 bwpd, TP=20 psi.
18-Jul-90	Made tag run - No fill. Tst csg to 300 psi. Good tst. Returned well to injection.
14-Feb-02	Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag inside tbg @ 1706' (1531' above TD).
29-Sep-05	POOH w/ 91 - 2 3/8" cement lined tbg & 5 1/2" x 2 3/8" Baker AD-1 Tension packer. Redressed packer & hydrotest tubing in hole. Repalced 3 bad joints. Pressure test annulus to 400 for 30 minutes. Pulled pressure chart for OCD.
08-Nov-05	RIH with 1 1/4" x 5' sinker bar and tagged at 600'.
20-May-09	POOH laying 91 jts 2 3/8" CL tbg. Found hole on 74th jt. Hydrotest tbg to 5000#. Ran 5 1/2" AD-1 PKR on 94 jts, 2 3/8" IPC tubing. Pulled H-5 chart for OCD. Did not tag or clean out. **Before Rate/Press: 580 bwpd @ 683#. After Rate/Press: 1000 bwpd @ 610#.**

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	26-May-09

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit					WELL NO	203 WIW
STATUS:	Active		Water Injector			API#	30-025-09630
LOCATION:	1980 FNL & 760 FWL, Sec 24, T - 24S, R - 36E, Lea County, New Mexico						
SPUD DATE:	10/05/51	TD	3195	KB	3,345'	DF	
INT. COMP. DATE:	10/21/51	PBTD	3195	GL	3,334'		

GEOLOGICAL DATA

ELECTRIC LOGS: GR-N (10-1-51 Lane Wells)

CORES, DSTS, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3030' 7-Rivers @ 3225' Queen @ 3582'

CASING PROFILE

SURF.	8 5/8" - 29.75#, J-55 set@ 309' Cmt'd w/150 sxs - circ cmt to surf.
PROD.	5 1/2" - 14# ,J-55 set @ 3031'. Cmt'd w/850 sxs - cmt circ to surface
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS:

OPEN HOLE : 3031 - 3195'

TUBING DETAIL 3/15/2011

Length (ft)	Detail
	2 3/8 x 5 1/2 arrowset 1 x PKR
	1.78 F profile nipple
	on off tool
	90 jts 2 3/8 IPC 8rd TBG
	2', 4', x 2 3/8 IPC TBG subs
	PKR @ 2944'

ROD DETAIL

WELL HISTORY SUMMARY

4-Oct-51	Initial completion **3031 - 3195' (Yates OH).** Hydrafrac OH w/1,5000 gals kerosene, 500#'s Nuogel Napalm, & 400#'s Ottawa sand. **IP=254.6 bopd & 0 bwpd (flowing). API gravity=37.5**
28-Jul-90	C/O fill from 3058 - 3190' (42'). Ran pkr on 2 3/8" tbg. Set pkr @ 2949'. **Initiated injection @ 395 bwpd, TP=850 psi.**
10-Apr-91	Ran new pkr & 2 3/8" CL tbg. Set pkr @ 2991'. Tst csg to 300 psi. Good tst. Placed well on injection.
14-Feb-02	Tag TD using SL unit (1 1/4" x 5' sinker bar). Tag fill @ 3036' (154' of fill). Left Sinker Bar stuck (@ 3036'). TOF @ 3031'.
18-Nov-04	POOH w/ 2 3/8" cement lined tbg & 5 1/2" AD-1 packer. RIH w/ 1 1/4" fishing tool on 2 7/8" work string 6 - 3 1/2" drill collars. Tagged at 3,031' , did not recover sinker bar. Cleaned out w/ 4 3/4" bit to 3,192', forced sinker bar to bottom at 3,192'. PUH to 3,000', tagged bridges at diff depth to 3,192'. Recovered sinker bar but left 1 cone off 4 3/4" bit in hole. Washed open hole w/ 2% KCL H2O using 1 1/4" Perf-Clean Tool, could not go below 3,089'. Washed open hole (3,031'-3,195') w/ 2% water using 1 1/4" Perf-Clean Tool in 3 stages. TP=3200# CP=50#. Acidized OH in 4 passes w/ 15% NEFE acid. Hole begin collasping - tagged @ 3,100' to 3088'. TP= 2656 psig. CP= 940 psig. RIH w/ 4 3/4" bit, C/O to 3,194'. Hydrotest 2 3/8" IPC tbg in hole to 5,000#. Spotted AD-1 PKR at 2,989'. Circulated annulus w/PKR fluid. Set packer & test annulus to 420# for over 30 minutes - held. Pulled chart for NMOCD. **Prior rate & press: 127 bwpd at 900 psi. After rate & press: 166 bwpd at 80 psig.**
8-Nov-05	RIH with 1 1/4" x 5' sinker bar and **tagged at 3,111'.**
15-May-08	POOH w/ 2 3/8" cement lined tbg & 5 1/2" AD-1 packer. RIH w/4 3/4" fishing tool on 2 7/8" work string. **Tagged fill @ 3089'. Cleaned out to 3195'.** Hydrotest injection string to 4000 psi - busted 2 jts. Circ with packer fluid. Pulled Press chart for OCD.
3-Jul-08	POOH w/ 2 3/8" cement lined tbg & 5 1/2" AD-1 packer. The tbg got plugged w/ cement. RIH w/ 2 3/8" IPC tubing to 2,977'. Could not circulate. POOH & laid down PKR. RIH with Notch Collar on 2 7/8" WS, tagged at 3072'. Cleaned out to 3195', circulated with rubber, formation and lined cement. RIH with 2 3/8" IPC tubing. **Set PKR @ 2977'.** Performed MIT for OCD.
23-Apr-09	RU Gray Wireline. Tagged @ 3,049' w/ logging tool. RD wireline. Placed back on inj. **Rate/Press: 230 bwpd/1003#.**
8-Mar-11	NDWH, NUBOP, release PKR, POOH w/ PKR, RIH w/ 4 3/4 bit and 6-3 1/2 D.C.'s and tag at 3065', rig up swivel, clean out to 3165', circ clean, tag @ 3195', POOH laying down D.C.'s and 4 3/4 bit, RIH w/ pkr testing workstring, **set PKR @ 2944'.** load and test CSG, held. Establish injection rate of 6 BPM @ 1600 PSI, pump 12,000 gallons acid dropping 10,000 #'s salt block @ 6 BPM @ Pavg - 1330#, ISIP - 1310#, P5min- 1130#, P10min-1080#, P15min-1040# to 1040#, POOH laying down workstring. RIH w/ off and on tool testing tbg to 6000 PSI, circulate pkr fluid, run MIT for OCD, held.
14-Jun-12	**Tagged fill at 3069'** with 1 3/8" sinker rod tool.

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	14-Jun-12

Field: Cooper Jal Unit

	Location:
Footage:	1980 FNL & 1650 FEL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,306'
KB:	3,319'
KB Calc:	11'
ck w/log?	Yes

Date	History
30-Apr-50	Drill to 3,251' & OH complete - no stimulation.
5-Dec-54	CO 197' fill. Frac well w/ 12,000 gal Dowell Sandfrac & 16,000# sand.
1-Apr-62	Place well on rod pump.
21-Sep-71	CO sand to 3251' & Convert well to injector.
16-Mar-78	Ran injection profile. Tag fill at 3177' - did not CO.
7-Oct-84	Tag fill at 3063' - did not CO.
15-Oct-89	CO f/ 3038' to 3251' & acidize w/ 4000 gal 15% & 1000# RS in 2 stages.
11-Jan-94	CO f/ 3068' to 3251' & deepen with 4-3/4" bit to 3600'. Acidize w/ 8400 gal 20% NEFE & 5000# RS in 5 stages. RWTI.
14-Feb-02	Tag fill at 3040' w/ SL.
8-Nov-05	Tag fill at 3078' w/ SL.
31-Jan-11	CO well to 3600' & acidize w/ 20,000 gal 90/10 15% & 35,000# RS.

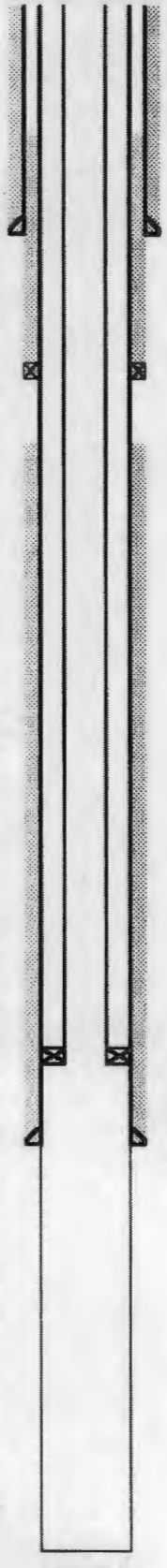
Joints	Tubing Detail (top to bottom) Description	Footage	Depth
	KB	11	11
91	2 3/8" 4.7#, IPC, J-55, 8rd EUE tbg.	2,936	2,947
	5 1/2" x 2 3/8" Arrowset packer	3	2,950

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Pumping Unit:
Updated: 01/10/14 MCB

CJU #205 WIW

Wellbore Diagram



Reservoir:	Cooper Jal
Well ID Info:	CJU #205 WIW
API No:	30-025-09620
Spud Date:	4/9/1950

Hole Size:	12-1/4"
Surf. Csg:	8 5/8" - 28#
Set @	300'
Cement w/	125 sx
Circ:	Yes
TOC:	Surface
TOC:	120' (Calc)

DV Tool at 1196' (Cement w/ 200 sx)

TOC: 1936' (Calc)

Plr at 2950' KB

Hole Size:	7 7/8"
Prod. Csg:	5 1/2" - 14#
Set @	2,488'
Cement:	200 sxs
DV Tool:	200 sxs

Yates @ 3024'

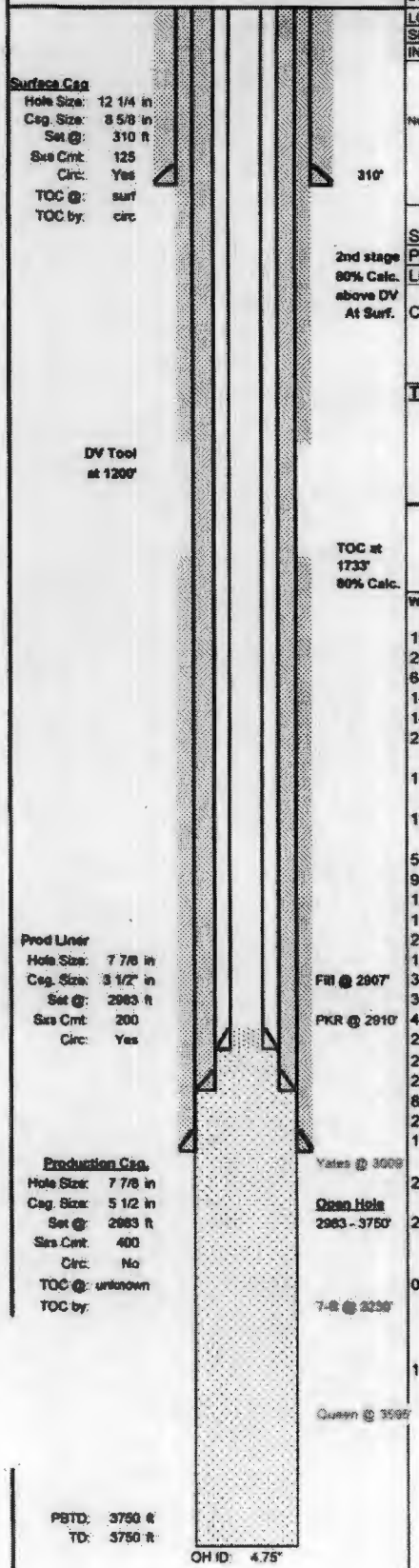
7-R @ 3049'

Queen @ 3510'

PBTD 3600'
TD 3600'

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	206
STATUS	Active	Injector		API#	30-025-09621
LOCATION	1980 FNL & 330 FEL, Sec 24, T - 24S, R - 36E; Lee County, New Mexico				
SPUD DATE:	TD 3750	KB 3,310'	DF 3,310'		
INT. COMP. DATE: 05/04/50	PBTD 3750	GL			

GEOLOGICAL DATA

ELECTRIC LOGS: None Listed

CORES, DST'S, or MUD LOGS:

HYROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3009' 7-Rivers @ 3230' Queen @ 3595'

CASING PROFILE

SURF.	8 5/8" - 28#, J-55 set@ 310' Cmt'd w/125 sxs - circ cmt to surf.
PROD.	5 1/2" - 14#, J-55 set@ 2983' Cmt'd w/200 sxs - TOC @ 1733' 80% Calc. DV tool @1200' - pmp 200 sxs -
LINER	3 1/2" - 9.2 #/ft set @ 2932' Cmt'd w/ 200 sxs Class C - Cmt Circ'd 5 1/2" - TOC @ surf, 80% calc.

CURRENT PERFORATION DATA

CSG. PERFS:

OPEN HOLE : 2983 - 3750'

TUBING DETAIL 6/1/2011

8	3	2', 2', 4' - 2 3/8" IPC TBG SUB
2900	91	2 3/8" IPC TBG
3	1	2 3/8" X 5 1/2" Arrowset 1
2911		

ROD DETAIL

WELL HISTORY SUMMARY

19-May-46	Initial completion interval: (Yates/OH) 2983 - 3230': No stimulation. IP = 54 bopd (flowing)
20-Apr-61	Put on pump.
6-Mar-61	Producing 10 bopd & GOR=5880
1-Mar-62	Monthly Production: 141 bopm & 1,179 Mcfgpm
1-Apr-62	Cumulative Production: 111, 295 bbls oil & 589,535 Mcfg.
25-Jan-63	Frac'd OH (2983 - 3230') w/40,000 gals lsae oil & 100,000#'s 20/40 sand & 1,000#'s moth balls. Could not C/O after frac below 3070', so put on pump.
11-May-63	Never recovered load oil from previous frac due to unsuccessful pumping. Attempted to air-mist drill & run 4" FJ liner. Could not drlg below 3096' so set 4" liner from 2838 - 3096'.
19-Feb-73	Tag fill at 3066 inside 4" liner. Circ clean to 3116 & fished all of 4" liner (258') out of hole. Reverse circ sand clean to 3235' & jet washed OH.
5-Jul-73	Producing 11 bopd & 1 bwpd
9-Jun-74	Producing 36 bopd & 10 bwpd
12-Jul-74	C/O fill from 3100 - 3230' (130')
10-Sep-74	Producing 70 bopd & 13 bwpd
2-Apr-75	Producing 100 bopd & 6 bwpd
12-May-75	C/O fill from 3123 - 3230' (70')
3-Aug-75	Pumping 24 hrs. 129 oil & 0 wtr.
3-Sep-76	Producing 58 bopd & 109 bwpd
4-Aug-77	Producing 62 bopd & 119 bwpd
2-Oct-78	Producing 58 bopd & 143 bwpd
20-Dec-93	Replaced 1 jt 2 3/8" tbg & installed new rod pmp
24-Jun-94	Replaced 18 - 3/4" rod boxes
8-Feb-95	Repair rod part. Replaced 30 - 3/4" rod boxes. Change out pmp.
25-Jan-97	C/O fill from 3103 - 3230' (127'). Re-ran prod equip replaced 46- 3/4" rods & couplings.
15-Dec-97	C/O fill rom 3110 - 3230' (120'). Washed 4 3/4" OH from 2983 - 3230'. Acdz'd thru Sonic Hammer entire OH w/ 3,000 gals 15% NEFE HCL.AIR=4.3 bpm, PM=1700 - 1374'. ISIP=Vacuum
25-Jun-99	POOH w/ prod equipment. **Set CIBP @ 2820'** on tbg. Loaded well with pkr fluid. Dmp 35' cmt on top of CIBP. TOC and 2,785'. Test csg to 500 psi. Good tst. **Well TA'd 6 - 26- 99.**
24-Feb-11	RIH w/ 4 3/4" bit, tagged at 2,795'. Drilled cement plug and CIBP, cleaned out to 3,230'. Hydrotest tubing & set PKR @ 2,925'. RIH w/PKR on work string & set @ 2,925'. Test casing to 500# - Held. Acidized w/ 12,000 gals diverting w/ 15,000# rock salt. AIR= 6 BPMPavg= 750# ISIP= 0#. RIH with injection string (2 3/8" IPC TBG). Pull Press Chart for OCD.
02-May-11	POOH w/ injection string. RIH w/ 4 3/4" bit. **Deepen well to 3,750' in 11 days.** Acidized open hole w/ 20,000 gals 15%, 90%/10%, acid/xylene at 6.6 bpm. Diverted w/ 15,000#'s RS. Pavg=1150#, ISIP= 400 psig. MIT failed. Isolate casing @ 325 to 355'. RIH with 95 jts, 3 1/2" 9.2 #/ft, supermax lnr, set at 2,932'. Cemented with 200 sxs Class C cement. RIH with bit, drilled float collar & float shoe & composite plug. Cleaned out to 3,706'. RIH w/ injection string. Pulled MIT for OCD.
14-Jun-12	Tagged fill @ 2907' with 1 3/8" sinker rod tool.

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	14-Jun-12

Field: **Cooper Jal Unit**

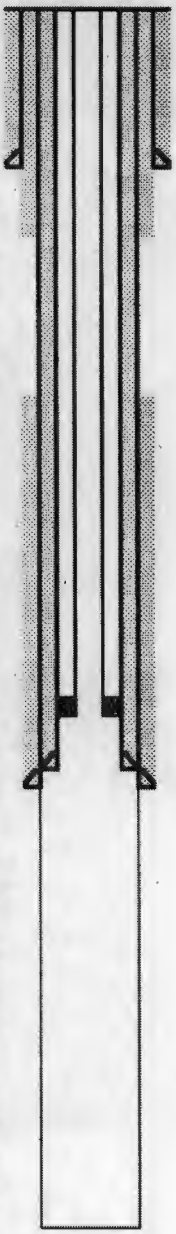
	Location:
Footage:	2310 FSL & 2310 FWL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,312'
KB:	3,325'
KB Calc:	13'
ck w/log?	Yes

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-99	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%. 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).
	Begin injection @ 339 bwpd @ 450 psig.
4-May-95	Ran injection portile. 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 # 3536 - 3420'. Dmp cmt
	# 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	Administrtave Order No. WFX-848. 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 lk 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 f/ 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.
26-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: 288
	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 f/ 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 f/ 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	Nippie 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 3385', 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:	30-025-09787
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

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

Field: **Cooper Jal Unit**

CJU #234

	Location:
Footage:	330 FSL & 1650 FEL
Section:	13, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,315'
KB:	3,325'
KB Calc:	10'
ck w/log?	n/a

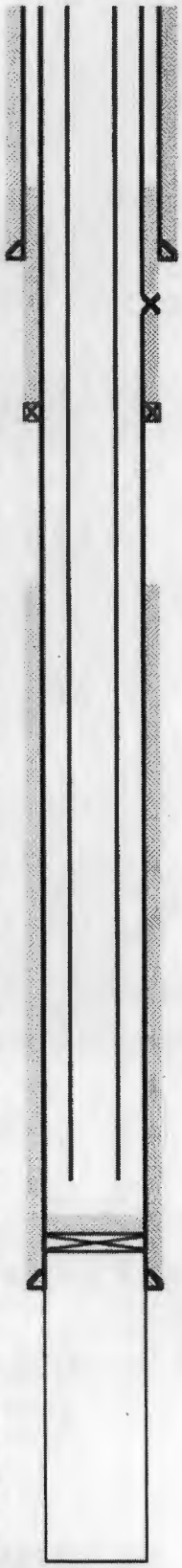
Date	History
6-Jun-50	Initial completion interval: (Yates/7 RVRS, OH) 2,985 - 3,226'. No stimulation. IP = 48 bopd, 0 bwopd, & 54 Mcfgpd (flowing)
1-Jun-65	TA'd well.
1-Aug-71	Convert to injector. C/O to 3150' (hole continued to cave in and bridge).
1-Sep-81	Ran injection profile. Fill tagged at 3101'. Did not C/O fill.
4-Feb-02	RIH with 1 1/4" x 5' sinker bar and tagged at 2,980'.
2-May-02	RIH w/ CT & tag at 2985'. CO to 2989' - could not CO deeper.
9-Nov-05	RIH with 1 1/4" x 5' sinker bar and tagged at 2,973'.
25-Jan-11	CO to TD w/ 4-3/4" bit - recovered oil & paraffin. Acidize w/ 10,000 gal 15% 90/10 acid & 17,500# RS, RWT).
14-Mar-12	Repair HIT / pkr leak.
15-Nov-13	Found Hole in csg at 414' - 429'. Perf 4 holes at 440' & cmt sqz to 500#. Tag cmt at 20' & DO. Broke out of cmt at 448'. Test to 500 psi and broke back with fluid coming around wellhead.

Joints	Tubing Detail (top to bottom) Description	Footage	Depth
92	2-3/8" 4.7#, IPC, J-55, 8rd EUE	2,890	2,890

Rods	Rod Detail (top to bottom) Description	Footage	Depth

Pumping Unit:
Updated: 12/9/13 MCB

Wellbore Diagram



PBTD 3228'
TD 3228'

Reservoir:	Cooper Jal
Well ID Info:	CJU #234
API No:	30-025-09561
Spud Date:	6/6/1950

Hole Size: 11"
Surf. Csg: 8 5/8" - 28#, J-55
Set @ 304'
Cement w/ 125 sxs
Circ: Yes
TOC: Surface

TOC: 85' (Calc)

Found Hole in Csg @ 414' - 429' - 11/15/2013

DV Tool at 1161' (Cement w/ 200 sx)

TOC: 1930' (Calc)

Open Ended Tbg at 2,890'

CIBP at 2940' w/ cmt to 2905'

Yates @ 2985

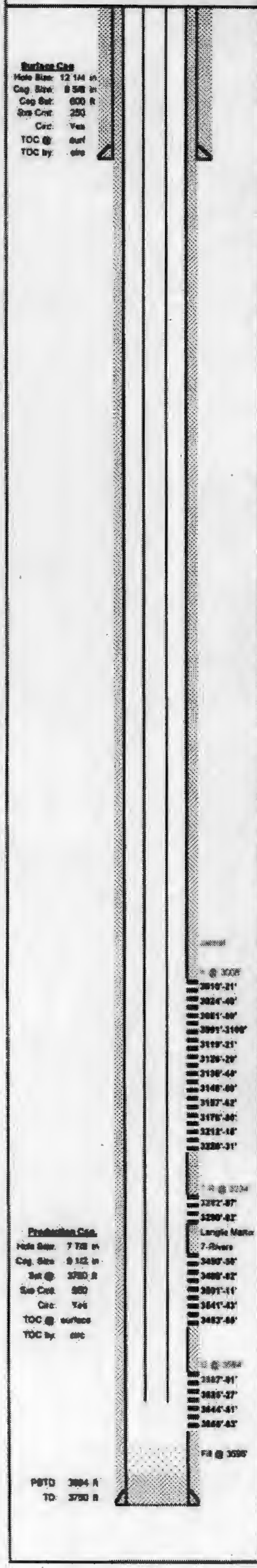
Hole Size: 7 7/8"
Prod. Csg: 5 1/2" - 14#, J-55
Set @ 2985'
Cement: 200 sxs
DV Tool: 200 sxs

7-R @ 3212'

Queen @ 3585'

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit	WELL NO.	403
STATUS:	Active Oil	API#	30-025-32286
LOCATION:	150 FNL & 100 FWL, Sec 19, T - 24S, R - 37E; Lea County, New Mexico		

SPUD DATE:	11/13/93	TD	3750	KB	3,319'	DF	
INT. COMP. DATE:	02/11/94	PBTD	3694	GL	3,308'		

GEOLOGICAL DATA

ELECTRIC LOGS:

GR-DLL-MSFL (11-20-93 Halliburton)
GR-SDL-DSN-CSNG (11-20-93 Halliburton)
GR-FWS (11-20-93 Halliburton)
Computer Analyzed Log (11-20-93 Halliburton)
GR-CCL (11-28-93 Halliburton)
GR-CCL (10-9-97 Schlumberger)

CORES, DST'S or MUD LOGS:

Core 1: 2995 - 3055' (60' recovery)
Core 2: 3055 - 3115' (60' recovery)
Core 3: 3115 - 3175' (60' recovery)
Core 4: 3175 - 3235' (60' recovery)

HYROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3008' — 7-Rivers @ 3234' — Queen @ 3584'

CASING PROFILE

SURF.	8 5/8" - 24#, WC-50, ST&C set@ 400'. Cmt'd w/250 sxs - circ cmt to surface.
PROD.	5 1/2" - 15.5#, WC-50, LT&C set@ 3750' Cmt'd w/950 sxs - circ cmt to surface.
LINER.	None

CURRENT PERFORATION DATA

CSG. PERFS: OPEN HOLE:

24-Nov-93 Perf'd L M f/3450'-56', 3480'-92', 3501'-11', 41'-43', 53'-55', 3587'-91', 3625'-27', 44'-51', & 3655'-63' w/ 2 spf (110 holes)
24-Nov-93 Perf'd Jalmat f/3010'-21', 3024'-40', 3051'-60', 3091'-3109', 3119'-21', 3126'-29', 3138'-44', 3148'-50', 3153'-55' 3157'-62', 3178'-80', 3212'-18', 3228'-31', 3282'-87', & 3290'-92' w/ 2 spf (222 holes total)

TUBING DETAIL 12/22/2011

Length (ft)		Detail
10		KB
3620	111	2 7/8" J-55 6.5# 8rd tubing
4	1	3 1/2" Lift Sub
30	1	2 7/8" Stator
31	1	2 7/8" J-55 6.5# 8rd tubing
4	1	5 1/2" x 2 7/8" TAC
3599		

ROD DETAIL 12/22/2011

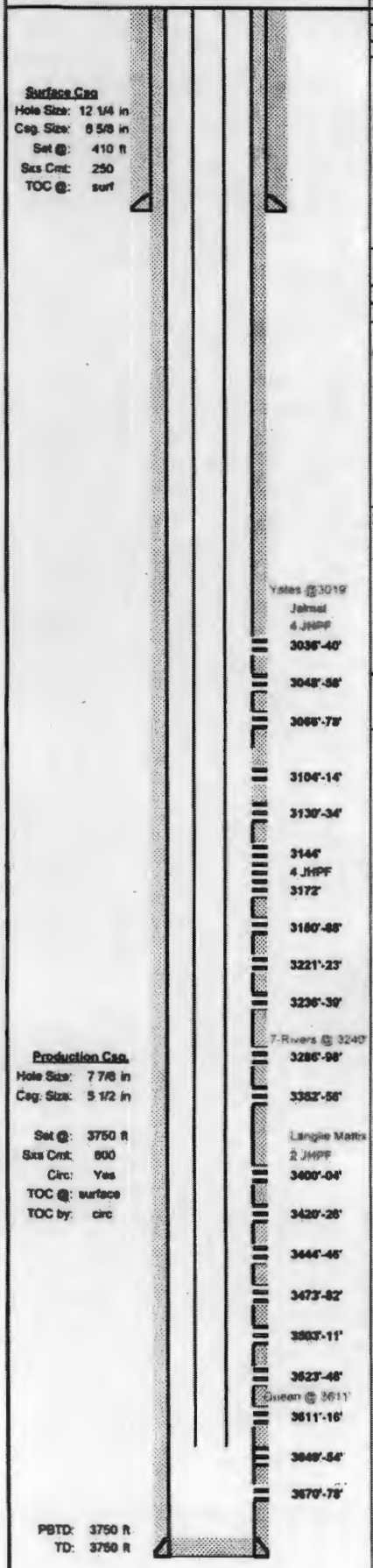
Length (ft)		Detail
13	1	1 1/4" x 16' PR w/ 7/8" pin
0	1	1 1/4" x 1 1/2" x 14' liner
25	1	1" steel rod
8	2	2', 6' - 1" Steel Subs
3475	139	1" KD rods guided
29	1	Rotor
0	1	1 1/4" x 6' Gas Anchor
3550		

WELL HISTORY SUMMARY

24-Nov-93	IC: Perf'd Langlie Mattix f/ 3450'-56', 3480'-92', 3501'-11', 41'-43', 53'-55', 3587'-91', 3625'-27', 3644'-51' and 3655'-63' with 2 spf (110 holes). Frac'd with 29,000 gals XLG 2% KCL carrying 136,000#'s 16/30 brady sand. Pump test 24 hours - 1 BOPd, 114 BWPD, & 24 MCFPD. Perf'd Jalmat f/ 3010'-21', 24'-40', 51'-60', 3091'-3109', 3119'-21', 26'-29', 38'-44', 48'-50', 53'-55', 57'-62', 3178'-80', 12'-18', 28'-31', 82'-87', 3282 - 87' & 3290 - 92' w/ 2 spf (222 holes total). Frac'd w/ 43,000 gals XLG 2% KCl carrying 220,000# 12/20 sand. **Pump tst 24 hrs - 32 bopd, 183 blwpd, & 11 Mcfgpd.** Commingled all perfs: IP=33 bopd, 267 bwpd, & 23 MCFPD.
05-Jan-94	NMOCD Potential test: 32 bopd, 183 bwpd, & 11 Mcfgpd
29-Apr-94	Replaced rod pump.
21-May-94	Replaced rod pump.
03-Mar-94	Replaced rod pump. Tst tbg. Good tst.
16-Aug-94	C/O 30' of fill. Replaced rod pump.
21-Jan-95	Repaired rod part - replaced rod pump, 47 - 3/4" boxes, 40 -7/8" boxes, & 36 - 1" boxes. Tst tbg. Good tst.
23-Sep-96	Repaired rod part - replaced rod pump and 6 - 3/4" rods.
10-Oct-97	Set CIBP @ 3420' & dump'd 35' of cmt on top. TOC-3385'. Repaired rod part - replaced rod pmp & ran new string of rods.
12-Nov-98	Set CIBP @ 2950', 35' of cmt on top. TOC-2915'. Displaced csg w/pkr fluid & tst csg to 550# - Okay. Well T/A'd 11/16/98.
11-Nov-02	Re-enter T/A'd Well. RIH w/ 4 3/4" bit & 6 - 2 1/2" Drill Collars on 2 7/8" tubing Tagged cmt @ 2933'. Test csg to 550# - held. Drilled cmt & CIBP. Tagged CIBP at 3048'. Tagged cmt of second plug at 3382', drilled cmt & CIBP at 3421'. Drilled & pushed to 3,695'. Circ'd, drilled & pushed CIBP to 3695'. Circ'd well clean. 2790 bbls of water to complete job. Used 5 gallons Corrosion inhibitor and ran Production Equipment. **Status change to Producing.**
18-Nov-02	Lay 1150' of 2" poly flowline from CJU #403 to CJU #202 and tie in.
27-Dec-02	POOH w/ rods & pump. Pump was stucked. POOH with 2 7/8" tubing. Bailed out sand to 3685'. RIH with production string.
08-Jan-03	POOH with rods, pump, and 101 - 2 7/8" tubing. Changed out pump. Placed well on production.
23-May-03	R/P body break 114 rods from surface. Change rd design to reduce rod load & slow down unit spm. Pump was good
29-Jul-03	POOH with rods, pump, and tubing. Changed out pump. Hydrotest tubing in hole - busted 3 joints. Tagged bottom at 3692', tally out of hole. RIH with pump, rods, and tubing. Added 13 joints to tubing string.
4-Dec-03	POOH & laid dwn sub pmp. RIH w/ new 114 jts 2 7/8" tbg & tagged @ 2704'. Set TAC w/12,000#. RIH w/pmp & rods. PWOP.
26-May-04	POOH w/ rods & pump. **Tagged fill at 3696'** & tally out of hole. Hydrotest tbg in hole to 7,000#. Set TAC with 16,000# Rih w/ pmp & rods. Laid down 6 jts due to outside corrosion. Changed out 12 - 7/8" & 18 - 3/4" boxes due to wear. PWOP.
16-Dec-04	POOH with rods without stucked pump. POOH with 2 7/8" tubing. Hydrotest tubing in hole - found 1 split 94th joint. Laid down 12 joints due to pits. RIH with production string with Super Max blast joint. PWOP.
08-Jan-05	Unseat pump, pumped 40 bbls water with soap. PWOP.
27-Dec-05	POOH w/ rods, pump and tubing. Had parted 7/8" (box break) - rod # 93. RIH w/ tubing, pump and rods. PWOP.
29-Jun-06	POOH with rods and pump. POOH with 2 7/8" tubing. Hydrotest tubing in hole to 7000# - found hole on joint above SN RIH with and rods. Load and test pump to 500#. PWOP.
14-Mar-07	Stripped rods string out off tubing. Found hole on joint above SN. RIH with tubing, rods and pump. PWOP.
04-Jan-08	POOH with rods pump and tubing. Found hole on joint above SN. Hydrotest tubing in hole to 7000#. RIH with pump and rods.
28-Aug-09	POOH with rods, pump and tubing Hydrotest tubing down hole to 7000# - found split on 112 th. RIH with pump and rods. PWC
22-Mar-10	POOH with parted 22nd - 7/8" (box break). Re-set pump PWOP.
06-Apr-10	POOH with rods and pump. Scanalog tubing: 7 green, and 1 red @ bottom of prod string. Hydrotest tubing in hole to 7000# - good. RIH with pump and rods. PWOP.
02-Jun-10	POOH with rods, plunger and tubing. Hydrotest tubing to 7000# - found split on 104th joint. RIH with plunger and rods. PWOP.
08-Sep-10	Replaced parted polished Rod. PWOP.
21-Sep-10	POOH with rod, pump and tubing. Hydrotest tubing to 7,000 psig - found split in 110th joint. RIH with plunger and rods. PWOP.
02-Feb-11	POOH with plunger and tubing. Hydrotest tubing to 7,000 psig - found hole on 111 joint & bad pit on 110 joint. PWOP.
18-Feb-11	POOH with rods, pump and tubing. RIH with stator on tubing. RIH with rotor and rods. PWOP.
21-Dec-11	POOH with rods, pump and tubing. Ran BHP Survey to 3,689'. Hydrotest tubing - okay. PIH with rotor and rods. PWOP.
18-Jan-13	POOH w/ rods, pump & tbg. Parted 87th rod, body break. Pump rate was low. POOH w/ rotor, RIH w/ rods & replacement rotor. PW

PREPARED BY:	Larry S. Adams	Domingo Carrizales	UPDATED:	06-Jan-12

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 & 1540 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'	

GEOLOGICAL DATA

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)

CORES, DST'S, or MUD LOGS:

Core 1: 3276 - 3335' (recovered 60')
Core 2: 3335 -67' (recovered 32')
Core 3: 3367 - 3401' (recovered 34')
Core 4: 3401 - 14' (recovered 13')
Core 5: 3415 - 75' (recovered 60')
Core 6: 3475 - 3535' (recovered 60')
Core 7: 3535 - 75' (recovered 36')

HYROCARBON 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'-46', 3473'-82', 3503'-11', 3523'-48', 3611'-16', 3649'-54', & 3670'-78' 2 JHPF (72', 144 hole**
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', 80'-88', & 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

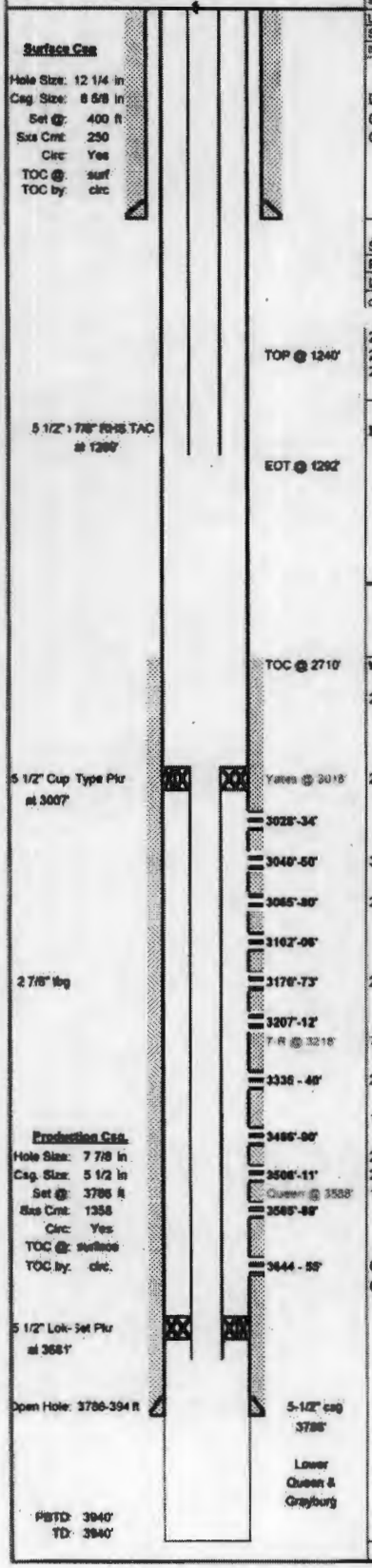
WELL HISTORY SUMMARY

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=1 680 - 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'-46', 3473'-82', 3503'-11', 3523'-48', 3611'-16', 3649'-54', & 3670'-78' w/ 2 JHPF (72 ft 144 holes). Frac'd Langlie Mattix / 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', 3048'-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, 84 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/ 33352'-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 @ 2964'. Treat Jal & LM w/ 10,500 gals 15% HCl NEFE & 150 tons CO2. Divert w/ 12,500# RS. AIR= 10 bpm. Pavg= 3350#. ISIP= 800 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 @ 3688'.** 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 @ 3000' = 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	410 WSW
STATUS	Water Supply Well			API#	30-025-32857
LOCATION:	1425 FNL & 1450 FWL, Sec 24, T - 24S, R - 36E; Lea County, New Mexico				
SPUD DATE:	05/08/95	TD	3786	KB 3,336'	DF
INT. COMP. DATE:	05/22/95	PBTD	3735	GL 3,324'	

GEOLOGICAL DATA

ELECTRIC LOGS:

DLT-MSFL-SLD (5-18-95 Halliburton)
CSL from 2700 - 3776' (5-18-95 Halliburton)
GR-CCL (5-21-95 Halliburton)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3018' 7-Rivers @ 3218' Queen @ 3588'

CASING PROFILE

SURF.	8 5/8" - 24#, WC-50, ST&C set@ 423'. Cmt'd w/250 sxs - circ cmt to surface.
PROD.	5 1/2" - 15.5#, WC-50, LT&C set@ 3786' Cmt'd w/1358 sxs - circ cmt to surface.
LINER.	None

CSG. PERFS: OPEN HOLE

22-May-95 **Perf'd L.M. Queen** f/ 3486 - 90', 3506 - 11', 3585 - 88', 3644 - 55' w/4 spf (92 holes total)
22-May-95 **Perf'd Jal Yates** f/ 3065 - 3080 w/ 4 spf (64 holes total)
25-Jul-96 **Perf'd Jalmat** f/3026'-34', 3040'-50', 3102'-06', 3170'-73', 3207'-12', 3216'-26' & 3335'-40', 4 spf (200 holes total).

CURRENT PERFORATION DATA

TUBING DETAIL 5/19/2006

1232	38	2 7/8" J-55, 6.5#, 8rd Tbg	
1	1	2 7/8" x 3 1/2" Crossover	
8	1	3 1/2" Lift Sub	
18	1	3 1/2" Stator	
2	1	3 1/2" x 1/2" Tag Bar	
33	1	2 7/8" J-55, 6.5#, 8rd Tbg	
3	1	2 7/8" x 5 1/2" TAC RHR w/45 K shear pin	
1292			

Top of Pump (Stator) is at 1240'.

ROD DETAIL 3/21/2004

5	1	1 1/4" x 16' w/7/8" pin
1225	49	1" Steel Rods w/ 87 Rod Guides
10	1	Rotor
1240		

WELL HISTORY SUMMARY

22-May-95 IC. **Perf'd Queen** f/ 3486 - 90', 3506 - 11', 3585 - 88', 3644 - 55' w/4 spf (92 holes total). Frac'd w/34,600 gals. XL borate gel carrying 142,000#'s 20/40 brady sand. Pump tst for 23 hours: 15 bo, 39 BW & 33 MCF. **Perf'd Yates** 3065 - 3080' w/ 4 spf (64 holes total). Frac'd w/43,000 gals XLG 2% KCL carrying 216,000#'s 12/20 sand. Commingled all perfs - **IP=31 bopd, 238 bwpd, & 47 Mcfgpd (pumping).**

25-Jul-96 Set CIBP@ 3450' on WL & dump 10' cmt on top. PBTD=3440'. **Perf'd Yates** f/ 3026'-80', 3102'-73', 3207'-26', 3335'-40'. Acdz'd perfs 3102'-3340' w/2000 gals 15% NEFE HCl & 200 7/8" RCN BSs. AIR - 9 BPM at 1170#. ISIP - vacuum. Acdz'd perfs 3028 - 3050' w/1300 gals 15% NEFE HCL & 110 7/8" RCN ball sealers. AIR= 9 BPM @ 980 psig. @ 980 psig. ISIP=430, P5min=vacuum. **After WO: 15 bopd, 166 bwpd, & 12 Mcfgpd**

31-Aug-98 **Set CIBP @ 3000'.** Circ well w/pkr fluid & tst csg to 500 psi. Good tst. Dmp 35' cmt on CIBP. TOC @ 2965'. **Well TA'd 8-31-98.**

26-Mar-01 Displaced wellbore with gelled brine. Spot 30 sxs cmt from 2965 - 2750'. WOC. Tagged TOC @ 2710'. Spot 25 sxs cmt from 1400 - 1200'. WOC. Tagged TOC @ 1130'. Circulate 55 sxs from 475' to surface inside 5 1/2" casing. Cut off wellhead and cap 5 1/2" casing. Installed Dry hole marker & cleaned location. NMOCD notified - well **P&A'd 3-28-2001.**

20-Dec-03 **Re-entered P&A'd Well.** Drilled out cmt plugs, CIBPs, & float shoe w/ 4 3/4" bit. **Deepened f/ 3,786' to 3,940' TD.** Swabbed test OH. Swabbed f/ 500 feet, fluid level didn't changed, recovered 166 bbls water. Ran sub pump on 2 3/8" tbg. Pump (set at 70 HZ) rate 3100 BFPD, fluid level dropped f/ 500' to 820'.

7-Jan-04 POOH with sub pump. Found water in both protectors and motors. Ran repaired pump in hole. **Test: 3100 BWPD (1/8/04).**

21-Jan-04 POOH w/sub pump & took in for inspection. RIH w/5 1/2" Lock Set Pkr w/ a 20/64" choke to 3722'. Set PKR and released from pkr. RIH with sub pump to 3600', bottom of moter at 3702'. Placed on production.

12-Feb-04 POOH w/ sub pump & took in for inspection. POOH w/ Lock Set PKR & changed out choke to 16/64". Set packer at 3722', RIH w/ sub pump to 3600', bottom of motor at 3702'. Placed well on pump at 2100 BFPD.

2-Mar-04 POOH w/sub pmp & took in for insp. RIH w/sub pmp to 3535', btm of motor @ 3548'. PWOP @ 2100 BFPD.

21-Mar-04 POOH w/ sub pump. Redress sub pump & RIH. Good pump action. Clay/oil emusion was plugging the pump.

13-May-04 POOH w/ 2 3/8" tbg & sub pump. POOH w/PKR & choke. RIH w/5 1/2" Lok-set Packer, 21 jts 2 7/8" IPC and 5 1/2" Cup Type Packer. Set with 2 3/8" on/off tool. **Bottom packer was set @ 3681', top packer set at 3007'**, RIH with 5 1/2" RHR Tubing Anchor Catcher, 1 joint 2 7/8" tubing, Stator, 39 joints 2 7/8" tubing. RIH with Rotor, 49 - 1" rods with rods guides. PWOP. **IP: 2 BOPD & 2200 BWPD (6/20/04).**

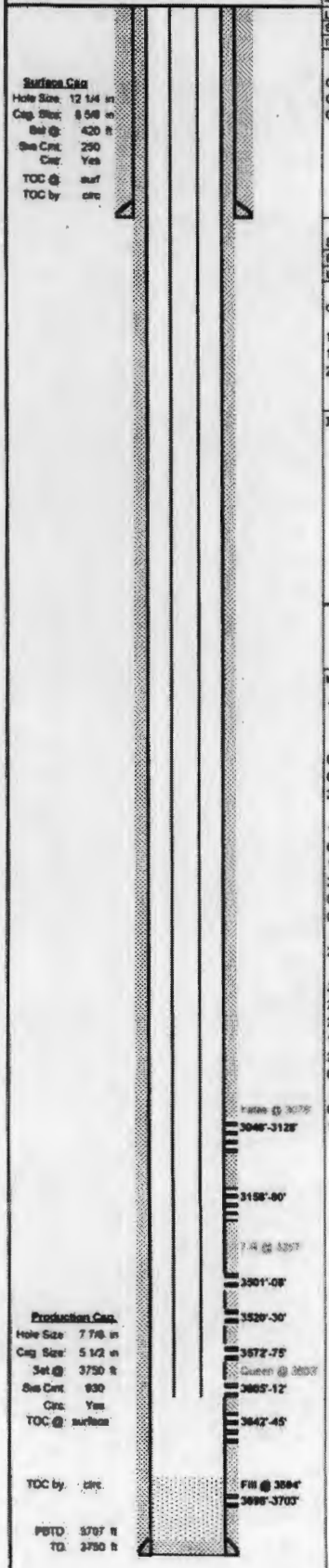
09-Jul-07 Latched on to parted rod. PWOP.

08-May-08 POOH with Sub Pump. RIH with Sub Pump. Monitor well for 2 hrs @ 42 Hz. Rate = 1380 bwpd @ 425 psi.

PREPARED BY:	Larry S. Adams	D. Carrizales	UPDATED	09-Jun-08

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit					WELL NO.	419
STATUS	Active	Oil				API#	30-025-32551
LOCATION	330 FSL & 500 FEL, Sec 13, T - 24S, R - 36E, Lea County, New Mexico						
SPUD DATE	08/31/94	TD	3750	KB	3,327'	DF	3,326'
INT. COMP. DATE	10/06/94	PBTD	3707	GL	3,315'		

GEOLOGICAL DATA

ELECTRIC LOGS:
GR-DSN-SDL-CSNG (9-7-94 Halliburton)
GR-DLL-MSFL-LSS (9-7-94 Halliburton)
GR-CCL (7-23-96 Rotary Wireline)

CORES, DST'S, or MUD LOGS:

HYDROCARBON BEARING ZONE DEPTH TOPS:

Yates @ 3078' 7-Rivers @ 3257' Queen @ 3603'

CASING PROFILE

SURF.	8 5/8" - 24#, CF-50, ST&C set@ 420'. Cmt'd w/250 sxs - circ cmt to surface.
PROD.	5 1/2" - 15.5#, WC-50, LT&C set@ 3750' Cmt'd w/930 sxs - circ cmt to surface.
LINER	None

CURRENT PERFORATION DATA

CSG. PERFS:

OPEN HOLE:

13-Sep-94 Perf'd Lanlie Mattix f/ 3501'-08', 20'-30', 72'-75', 3605'-12', 42'-45', & 3698'-3703', w/ 2 spf (70 holes total)
13-Sep-94 Perf'd Jalmat f/ 3158 - 80' w/ 4 spf (88 holes total)
22-Jul-96 Perf'd Jalmat f/ 3046 - 3128' w/ 4 spf (172 holes total)

TUBING DETAIL 1/6/12

Length (ft)		Detail
0 KB		
2981	95	2 7/8" 6.5#, J-55, 8rd EUE tbg.
3	1	5 1/2" x 2 7/8" TAC w/ 20,000#
935	18	2 7/8" 6.5#, J-55, 8rd EUE tbg.
4	1	2 7/8" Lift Sub
24	1	2 7/8" Tubing Pump
4	1	2 7/8" Lift Sub
20	1	2 7/8" Desander
62	2	2 7/8" Mud Anchor
3633		btm

ROD DETAIL 1/6/12

Length (ft)		Detail
20	1	1 1/4" x 26' polish rod w/ 7/8" pin
0	1	1 1/4" x 1 1/2" x 16' liner
8	2	2', 6' - 1" pony rods
1075	43	1" steel rods
1225	49	7/8" steel rods
650	26	3/4" steel rods
575	23	1 1/2" K-Bar
4	1	2 1/4 " x 4' rod plunger
0	1	2 1/2" Sanding Valve & 1 1/4" x 12' GA
3557'		btm

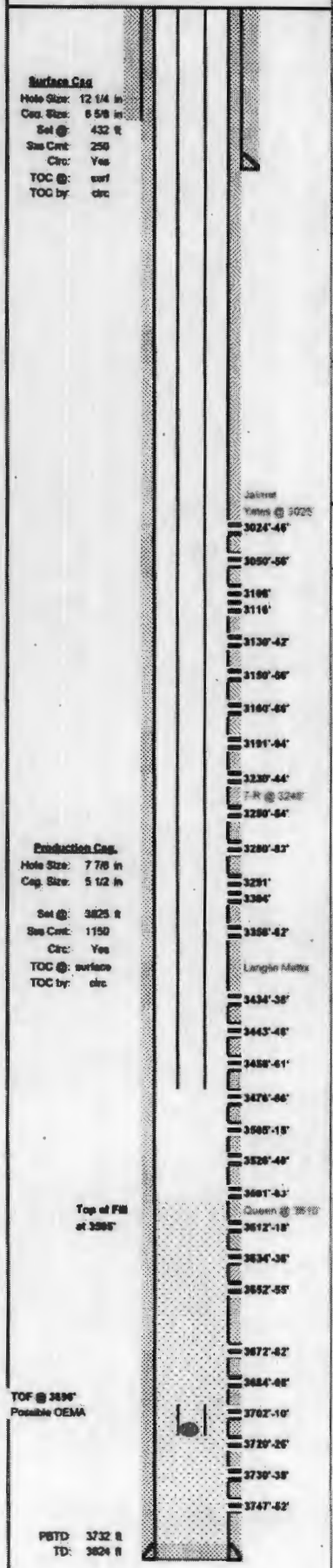
WELL HISTORY SUMMARY

13-Sep-94 IC: Perf'd L. M. f/3501'-08', 20'-30', 72'-75', 3605'-12', 42'-45', & 3698 - 3703' w/ 2 spf (70 holes total). Frac'd w/ 26,000 gals XLG 2% KCL carrying 108,000#'s 12/20 sand. Perf'd Yates f/ 3158 - 80' w/4 spf (88 holes total). Frac'd w/43,000 gals XLG carrying 220,000#'s 12/20 sand.
All perfs: IP=71 bopd, 139 bwpd, & 83 Mcfdgpd (pumping)
09-Jan-95 C/O frac sand from 3650 - 3700' using bailer. Returned to production.
04-Nov-95 Change out rod pump and 12 bad rod boxes.
22-Jul-96 Set CIBP @ 3460' & dump 10' cmt on top. PBTD=3440'. Perf'd Yates f/ 3046'-3128', 3158'-3180', w/ 4 spf (172 holes total). Acidized perfs w/3,000 gals 15% NEFE HCL dropping 240 7/8" RCN ball sealers. AIR=10 bpm @ 1695 psi. ISIP= vacuum. After WO: 88 bopd, 232 bwpd, & 14 Mcfdgpd.
11-Jan-97 Change out rod pump.
05-May-97 Tagged fill @ 3357' (83'). Did not Clean out.
18-Jun-98 Changed out 79 jts 2 7/8" tbg, 33- 3/4" rod boxes, 43-7/8" rod boxes, 40-1" rod boxes, & rod pump.
24-Mar-99 Changed out 10 - 3/4" rods. Tagged fill @ 3312' (127').
04-Oct-99 Changed out MA. Opened Langlie Mattix and downhole commingled with Jalmat zone.
02-Dec-03 POOH w/ rods, pump, & tubing. RIH w/ 4 3/4" bit, 6 - 3 1/2" drill collars on 2 7/8" work string. Tagged fill at 3267', cleaned out to 3436' - recovered frac sand; drilled to 3438' - recoved hard plastic & ball sealers. Drilled cement and CIBP. Cleaned out to 3707'. RIH with 2 7/8" tubing, pump, and rods. Placed well on production.
24-Jan-04 POOH with one rod.Pump 75 bbls 2% KCl water w/surfactant 122. Hung well, pumped and load well w/10 bbls produced water. PWOP. Well was trashed up.
22-Mar-04 POOH w/Rods parted 126th 3/4"r od body break fished and repaired & returned pump. Put well back on Prod.
29-Jun-05 POOH w/ rods & pump. Tagged at 3693, 14' of fill. Did not cleaned out. Laid down 5 joints due to pitting. PWOP.
28-Dec-09 POOH with rod (parted @ ON/Off Tool). Pooh with tubing and plunger. RIH with tubing, plunger and rods. PWOP.
19-Feb-10 POOH with parted 111th - 3/4" (body break) rods & pump. Ran Pessure Gradient every 500', tagged at 3667'. Hydrotest tubing to 7000#. RIH with pump and rods. PW
28-Nov-11 POOH with parted 90th 7/8" (body break) rods pump & tubing.. Ran Pessure Gradient every 500', tagged at 3694'. Hydrotest tubing
05-Jan-12 POOH with parted 83 K-Bar, fished all K-Bars & pump. Laid down with 12 K-Bars due to pitting. POOH with tubing. Ran pressure survey, tagged at 3,681' RIH with pump and rods.PWOP.
01-Jun-12 POOH with parted 111th - 3/4" (body break) rods & pump. RIH with pump and rods. PWOP.
19-Feb-13 POOH w/ rods, body break shoulder, 3/4" rod. POOH w/ rods. RIH w/ plunger & rods, replaced 10- 3/4", 20- 7/8" & 35- 1" couplings. PWOP.

PREPARED BY: Larry S. Adams Domingo Carrizales | UPDATED: 14-Jun-12

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 @ 3248' 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
OPEN HOLE

01-Aug-96 **Perf'd Jal** f/3050'-56', 68'-90', 3106'-3111', 50'-56', 91'-94', 3230'-34', 3294'-3304', & 3358'-62' w/ 4 spf (232 holes)
05-Oct-05 **Perf'd K. M.** f/ 3747'-52', 3730'-38', 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/3260'-83', 32'-54', 25'-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.
16-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.

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
3479		

WELL HISTORY SUMMARY

01-Aug-96 Ran GR-CCL from 3730 -2730'. **Perf'd** f/ 3050'-56', 3068'-90', 3106'-11', 50'-56', 91'-94', 3230'-34', 3294'-3304', 3358'-62', w/ 4 spf (232 holes). Frac w/ 51,000 gals 30# borate carrying 256,000#'s 12/20 brady sand. **Pump tst 24 hrs - 35 bopd, 263 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 3690'.** 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: 20 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 3688'. **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 3784'. 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.
28-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 @ 3635'. 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 WO Test: 17 BOPD, 31 MCF & 428 BWPD.**
08-Jan-10 POOH w/ rods & plunger. **Tagged fill @ 3667'.** 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 3,695'.** 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. Carrizales	UPDATED	23-May-12

Field: **Cooper Jal Unit**

CJU #511

	Location:
Footage:	980 FNL & 2280 FWL
Section:	Sec. 24, T-24S, R-36E
Block:	
Survey:	
County:	Lea, New Mexico
Lat:	
Long:	
	Elevations:
GL:	3,322'
KB:	3,333.5'
KB Calc:	11.5'
ck w/log?	N/A

Date	History
24-Sep-13	Ran CBL & CNL
8-Oct-08	Selectively perforate 3279' - 3719' (582 holes) & acid frac w/ 7200 gal 15% HCl + 93 tons CO2 + 7200# RS
29-Oct-08	Set RBP at 3264', selectively perforate 3022' - 3241' (358 holes) & acid frac w/ w/ 9000 gal 15% HCl + 114 tons CO2 + 15000# RS. Unset RBP.
1-Jan-09	Tag PBTD w/ WL and take pressure readings every 500'.
22-Mar-10	Set RBP at 3262' & frac perfs 3022' - 3241' w/ 93,174 MMscf N2, 194,000# sand & 200 BS. Recover RBP, CO 3713' - 3722' & RWTP.
24-Sep-10	Body part - 109th rod (3/4"). Replaced 5 K-Bars & several rod boxes.
2-Nov-10	Body part - 108th rod (3/4").
23-Feb-11	Body part - 93rd rod (3/4").
13-Apr-11	Body part - 112th rod (3/4").
21-May-11	Parted polish rod.
30-May-12	Body part due to pitting - 108th rod (3/4").
9-Jul-12	CO 3635' - 3648' & torqued up.
22-Jul-13	Body part at 1475' (7/8"). R&R pump & replace 1-3/4" rod + 15-7/8" box.
13-Sep-13	Rod Part.

Tubing Detail (top to bottom)			
Joints	Description	Footage	Depth
98	2-7/8" 6.5#, J-55 Super Max	3,100	3,100
1	2-7/8" x 5-1/2" TAC	4	3,104
13	2-7/8" 6.5#, J-55 Super Max	410	3,514
1	2-7/8" Super Max Blast Joint	31	3,545
1	1 - 2-7/8" SN	1	3,546
1	2-1/2" Cavins Desander	20	3,566
1	2-7/8" Perf Sub	4	3,570
1	2-7/8" Mud Anchor	60	3,630

Rod Detail (top to bottom)			
Rods	Description	Footage	Depth
1	26' x 1-1/4" polish rod w/ 7/8" pin	22.00	22.00
1	1-1/4" x 1-1/2" x 14' liner	0.00	22.00
2	2' & 6' pony rods	10.00	32.00
39	7/8" KD rods	975.00	1,007.00
71	3/4" KD rods	1,775.00	2,782.00
30	1-1/2" K-Bars	750.00	3,532.00
1	On/Off tool	1.00	3,533.00
1	2-1/2" x 2" x 20' RWBC pump	20.00	3,553.00
	1-1/4" x 1' Gas Seperator	0.00	3,553.00

Pumping Unit:
Updated: 12/18/13 MCB

Wellbore Diagram

Reservoir:	Cooper Jal
Well ID info:	CJU #511
API No:	30-025-39104
Spud Date:	9/10/2008

Hole Size:	12-1/4"
Surface Csg:	8-5/8" - 24#, LS42 ST&C
Set @	1165'
Cement - Lead:	270 sx "C" + 2% CaCl2 + 3# Gilsonite + 0.25% R-38
Tail:	250 sx "C" + 2% CaCl2 + 3# Gilsonite + 0.25% R-38
Circ:	Yes (124 Sacks)
TOC:	Surface

TOC: 1520' (CBL 9/24/2008)

Yates @ 3022'

3022'-3054'
3082'-3086'
3096'-3116'
3126'-3142'
3146'-3160'
3184'-3200'
3202'-3234'
3236'-3241'

7-R @ 3279'

3279'-3293'
3308'-3310'
3324'-3326'

3346'-3353'
3366'-3376'
3390'-3392'
3398'-3402'
3424'-3426'
3434'-3442'
3448'-3450'
3456'-3465'
3468'-3478'
3480'-3482'
3490'-3507'
3516'-3530'
3532'-3534'

Queen @ 3541'

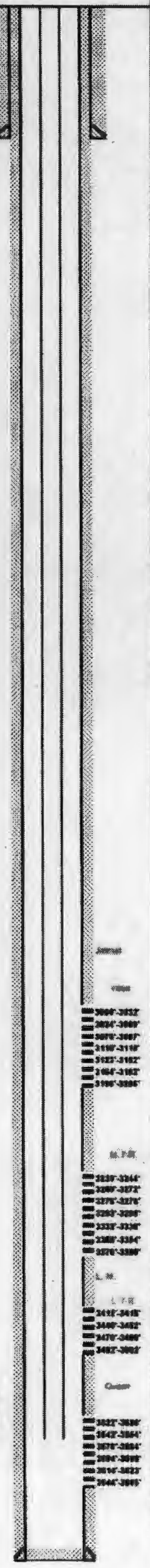
3541'-3544'
3552'-3556'
3563'-3567'
3572'-3585'
3592'-3601'
3609'-3617'
3626'-3626'
3631'-3636'
3640'-3642'
3649'-3652'
3655'-3657'
3659'-3661'
3666'-3670'
3674'-3689'
3696'-3698'
3700'-3702'
3709'-3714'
3717'-3719'

Hole Size:	7-7/8"
Prod. Csg:	5-1/2" - 15.5# J-55, LT&C
Set @	3765'
Cement - Lead:	120 sx 50/50 Poz C w/ 10% Gel + 5% Salt
Tail:	300 sx 50/50 Poz C w/ 2% Gel + 5% Salt
Circ:	No

PBTD 3723'
TD 3773'

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



Surface Csg.

Hole Size:	12 1/4 in
Csg. Size:	8 5/8 in
Set @:	1170 ft
Sxs Cmt:	500
Circ:	Yes
TOC @:	surf
TOC by:	circ

Production Csg.

Hole Size:	7 7/8 in
Csg. Size:	5 1/2 in
Set @:	3700 ft
Sxs Cmt:	625
Circ:	no
TOC @:	400'
TOC by:	circ

PBTD: 3668' ft
TD: 3748' ft

LEASE NAME	Cooper Jal Unit			WELL NO	512
STATUS	Active	Oil		API#	30-025-39103
LOCATION	1600 FNL & 300 FEL, Sec 24, Unit J, T - 24-S, R - 36-E, Lea County, New Mexico				
SPUD DATE:	09/23/08	TD 3748'	KB 3311'	DF	3310'
INT. COMP. DATE:		PBTD 3668'	GL 3299'	KB	12'

GEOLOGICAL DATA

ELECTRIC LOGS

CNL Gamma Ray / CCL Log- from 3668' - 1150' (10-7-08 Gray Wireline)

Radial Cement Bond, Gamma Ray / CCL Log from 3668' - 250' (10-7-08 Gray Wireline)

CORES, DST'S, & MUD LOGS

HYDROCARBON BEARING ZONE DEPTH TOPS

Tansill @ 2808' Yates @ 2978' Upper 7 Rivers @ 3228' Lower 7 Rivers @ 3380' Queen @ 3560'

CASING PROFILE

SURF.	8 5/8" - 24#, LS42, LT&C set @ 1150'. Cmt'd w/500 sxs Class C w/ 2% CaCl - circ'd w/ 94 sx cmt to surface.	
PROD.	5 1/2" - 15.5#, Grade J55, LT&C set @ 3700', Cmt'd w/ 625 sxs Class H w/ 5% Salt + 300 sxs Class H w/ 5% Salt -	
LINER	None	did not circ cmt to surf

CURRENT PERFORATION DATA

CSG. PERFS OPEN HOLE:

08-Oct-08 Perf'd (L. M.) (Q) f/ 3644'-55', 14'-23', 3594'-98', 76'-84', 42'-54', & 22'-28'; L. M. (7-R) f/ 3482'-3502', 70'-80', 40'-52', 12'-18', 3376'-80', 50'-64', 3332'-36', 3293'-3298', 76'-78', 60'-72', & 3236'-3244'; Jal (Y) f/ 3196'-3208', 3164'-3183', 3123'-3162', 3110'-3116', 3076'-3107', 3034'-3069' & 3000'-3032', 293 ft, 414 (0.45") holes.
Note: Q & 7-Rivers @ 2 spf. Yates @ 1 spf, 120 degrees.

TUBING DETAIL 10/7/08

Length (ft)		Detail
0		KB
2929	93	2 7/8" 6.5#, J-55, Super Max tbg
4	1	2 7/8" x 5 1/2" TAC
596	19	2 7/8" 6.5#, J-55, Super Max tbg
1	1	2 7/8" SN
4	1	2 7/8" Perf Sub
15	1	2 7/8" OPMA
3551		

ROD DETAIL 6/14/12

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
1325	53	7/8" New KD Rods rods
1575	63	3/4" New KD Rods rods
575	23	1 1/4" weight Bars
2	1	1" Guid Sub
1	1	2 1/2" X 2" X 20' RWBC pump
20	1	1 1/4" x 1 1/2" X 20' GA De-Sander
3520		

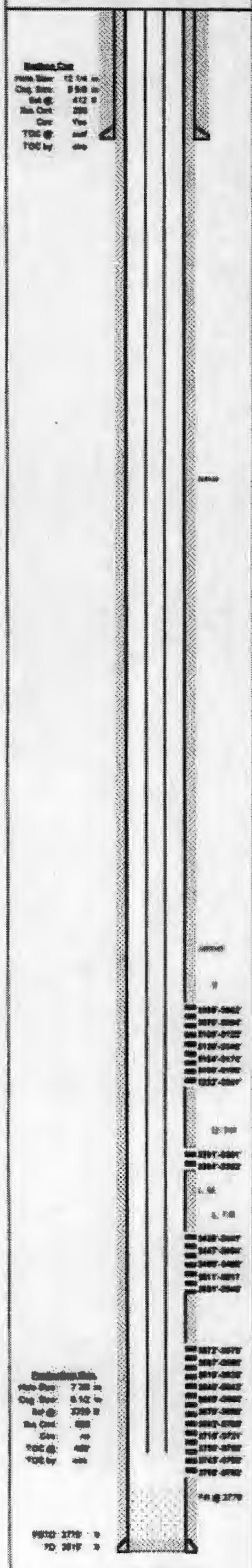
WELL HISTORY SUMMARY

15-Oct-08	**Ran Compensated Neutron Log (9/24/08)** from 3724' (PBTD) to 1150'. **Perf'd (L. M.)** (Q) f/ 3644'-55', 14'-23', 3594'-98', 76'-84', 42'-54', & 22'-28'; (L. M.) (7-R) f/ 3482'-3502', 70'-80', 43'-52', 12'-18', 3376'-3380', 50'-64', 3332'-36', 3293'-3298', 76'-78', 60'-72', & 3236'-3244'; **Jalmat** (Y) f/ 3196'-3208', 3164'-3183', 23'-62', 3110'-3110', 3076'-3097', 34'-69 & 3000'-3032, 293 ft, 414 (0.45") holes. Note: Q & 7-Rivers @ 2 spf, Y. @ 1 spf, 120 degrees. Foam Acid Frac'd L. M. w/ 13,000 gals 15% NEFE acid + 170 Tons CO2. Diverted w/ 12,500# rock salt. AIR= 12 bpm. Pavg= 2700#. ISIP= 5608. Well Flowed for 6 hours, kill wells. RIH with production string. PWOP
18-Dec-08	POOH w/prod string. RIH w/RBP & PKR. **Set RBP @ 3228' &** Pkr @ 3225'. Test to 1000#. POOH w/PKR. PWOP
10-Jan-09	POOH with production string. Stimulated down 5 1/2" casing with 154,077# sand and 1.27 MMSCF nitrogen. Dropped 65 - 7/8" frac balls. Pavg= 2200 psig. ISIP= 1904 psig. Next day SITP= 450 psig. Opened well, bled down to 25 psig in 5 hrs. No fluid recovery. Next day: Slight blow, pumped 300 bbls 2% KCL. RIH w/ 4 3/4" bit, tagged @ 3145'. Pumped 400 bbls 2% KCl - no returns. Rigged up AIR Unit - cleaned f/ 3222' to top of RBP. RIH w/ prod string. PWOP
01-Sep-09	POOH w/rods (parted @ Pull Rod), pump & tbg. Tagged @ 3208'. Tagged sand @ 3208', circ'd clean w/Foam Air. Recovered frac sand & ball sealers. POOH with RBP. RIH with Notched Collar. **tagged @ 3668' (PBTD).** Hydrotest tubing in hole to 7000#. PWOP.
06-Oct-09	POOH w/ rods & pump. Tagged bottom 3,652'. POOH w/ tubing. Hydrotest tubing to 7000#. RIH w/ pump & rods. PWOP.
16-Feb-10	POOH w/ rods, pump and tubing. **Ran Pressure Gradient Tool** taking reading every 500'. Tagged at 3,643'. Hydrotest tubing to 7000# - found split on 101th and burst 7 joints. RIH with pump & rods. Replaced 63 - 3/4" and 34 - 7/8" boxes due to pitting. PWOP.
08-Mar-11	POOH w/ rods and pump. GIH w/ repaired pump and rods, seat pump, check space hang well on, well pumping ok
07-Jun-12	POOH with parted 108th - 3/4" rod (body break). POOH with rods and pump. PWOP
14-Jun-12	POOH with parted 98th - 3/4" rod (body break). Laid bottom 20 rods due to being flat. POOH with rods and pump. PWOP

PREPARED BY: Jim Kidd [illegible] Domingo Carrizales UPDATED: 26-Jun-12

WELLBORE SCHEMATIC AND HISTORY

CURRENT COMPLETION SCHEMATIC



LEASE NAME	Cooper Jal Unit			WELL NO.	814
STATUS	Active	Oil		API#	30-025-38102
LOCATION	[illegible]				
SPUD DATE	[illegible] TD	3815'	KB	[illegible]	DF [illegible]
INT. COMP. DATE	PBTD	3779'	GL	[illegible]	KB [illegible]

ELECTRIC LOGS

CNL - from 3782' - 1150' (10-20-08 Gray Wireline)

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

Tansill @ [illegible] Yates @ [illegible] Upper 7 Rivers @ [illegible] Lower 7 Rivers @ [illegible] Queen @ [illegible]

CASING PROFILE

SURF.	8 5/8" - 24#, Grade [illegible], LT&C set@ 412'. Cmt'd w/250 sxs Class C w/ 2% CaCl - circ'd [illegible] sx cmt to surface
PROD.	5 1/2" - 15.5#, Grade [illegible], LT&C set@ 3729'. Cmt'd w/ 250 sxs Class H w/ 5% Salt + 320 sxs Class H w/ 5% Salt -
LINER	None. did not circ cmt to surface

CSG. PERFS: OPEN HOLE

08-Oct-08 Perf'd (L. M.) [illegible] 3758-62', 43-53', 30-38', 18-21', 3692-3705', 3679-88', 59-63', 40-43', 19-26', 3087-90 & 2872-75'
Perf'd (L. M.) 7-Rivers, [illegible] 3531'-43', 11'-17', 3480'-88', 47'-54', 36'-41', 3354'-62', & 3291'-3300'
Perf'd Jalmat (Y) [illegible] 3222'-3241', 3186'-3195', 54'-74', 30'-46', 08'-22', 3070-3084 & 3030'-3062', 282, 380 (0.45") holes
Note: Q & 7-R @ 2 spf, Y @ 1 spf, 120 degrees

08-Dec-09 Ran GR/CCL log. Perf'd 7-Rivers [illegible] 3354'-3362', & 3291'-3301', 2 spf Perf'd Yates [illegible] 3222'-3241', 3186'-3195', 54'-74', 30'-46', 08'-22', 3070-3084', & 3030'-3062', 282, 380 (0.45") holes. Note: Q & 7-R @ 2 spf, Yates @ 1 spf, 120 degrees

TUBING DETAIL [illegible] ROD DETAIL [illegible]

Length (ft)		Detail	Length (ft)		Detail
0		KB	[illegible]	1	[illegible] x 1 1/4" polish rod w/ 7/8" Pin Spray Metal
2800	[illegible]	2 7/8" 6.5#, J-55, Super Max tbg	[illegible]	1	1 1/4" x 1 1/2" x 14' Liner
4	1	2 7/8" x 5 1/2" TAC	7	1	2' - 7/8" pony rods
736	23	2 7/8" 6.5#, J-55, Super Max tbg	1175	47	7/8" New KD Rods rods
31	1	2 7/8" x 3 1/2" x 31' Blast Jt	[illegible]	[illegible]	7/8" New KD Rods rods
1	1	2 7/8" x 1.10' SN	[illegible]	[illegible]	7/8" New KD Rods rods
4	1	2 7/8" Perf Sub	1	1	on/off Tool
63	1	2 7/8" BPMA	[illegible]	1	2 1/2" x 1 1/2" X 20' pump w/ HVR
3739			[illegible]	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.) [illegible] 3758-62', 43-53', 30-38', 18-21', 3692-3705', 3679-88', 59-63', 40-43', 19-26', 87-90, & 2872-75'
Perf'd (L.M.) (7-Rivers) [illegible] 3531'-3543', 11'-17', 3480'-3488', 47'-54', 36'-41', 3354'-3362', & 3291'-3301' Perf'd Jalmat (Yates) [illegible] 3222-3241', 3186-3195', 54'-74', 30'-46', 08'-22', 3070-3084', & 3030'-3062', 282, 380 (0.45") holes. Note Q & 7-R @ 2 spf, Y @ 1 spf, 120 degrees. Foam Acid Frac'd [illegible] with 10,500 gals 15% NEFE acid plus 120 Tons CO2. Diverted with 12,400# rocks salt. AIR= 13 bpm. Psige [illegible] ISIP= [illegible] Well Flowed - 5% to 12% oil cut. RIH with tubing, pump and rods. PWOP.

8-Dec-09 POOH with rods, pump and tubing. RIH with WL plug and PKR. Set RBP @ 3417' and PKR @ [illegible]. Test to 1000# - leaked off [illegible] in 5 mins. Reset RBP @ 3414' - test to 1000# (Okay). Ran GR/CCL log. Perf'd 7-Rivers [illegible] 3354'-3362', & 3291'-3301', 2 spf. Perf'd Yates [illegible] 3222-3241', 3186'-3195' 3154'-3174', 3130'-3146', 3108'-3122', 3070-3084', & 3030'-3062' 1 spf, 120 degree. Frac'd Yates & 7-Rivers down casing w/ 175,000# sand, total Nitrogen= 1.5 MMSCF. AIR= [illegible] bpm. Nitro Rate= 53 [illegible] Psige= 2885 psig. ISIP= 1500 psig. Flowed back - recovered 63 bbls. (3% oil cut) fluid in 7 hrs. Next day, SITP= [illegible] 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 8 hrs. Next day SITP= [illegible] 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, [illegible] BWPD and 7 MCFPD. Test After: 76 BOPD, 179 BWPD and 76 MCFPD.

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

PREPARED BY:	Jim Kidd	Dominion Companies	UPDATED:	29-Mar-10

Geological Description

Yates, Seven Rivers and Queen Formations, Artesia Group

Cooper Jal Unit #404

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) (NAD83 UTM in meters) (in feet)

(acre ft per annum) (quarters are smallest to largest)

WR File Nbr	Sub basin	Use	Diversion	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):

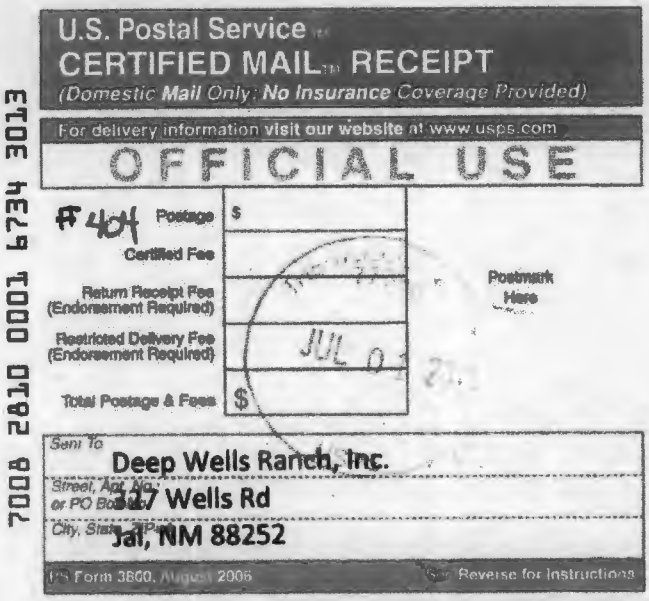
Easting (X): 668517 **Northing (Y):** 3564680 **Radius:** 2000

Sorted by: Distance

*UTM location was derived from PLSS - see Help

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE
#404
Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $
Postmark Here
JUL 01 2011
7008 2810 0001 6734 2849
Sent To: James A. Pruett
Street, Apt. No.; or PO Box No.: 13120 Turtle Creek Dr.
City, State, ZIP+4: Oklahoma City, OK 73170
PS Form 3800, August 2006 See Reverse for Instructions

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE
#404
Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $
Postmark Here
THE WOODLANDS 77380
JUL 01 2011
7008 2810 0001 6734 2924
Sent To: Lea Partners
Street, Apt. No.; or PO Box No.: P.O. Box 4967
City, State, ZIP+4: Houston, Texas 77210
PS Form 3800, August 2006 See Reverse for Instructions



U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE
#404
Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $
Postmark Here
JUL 01 2011
7008 2810 0001 6734 3013
Sent To: Deep Wells Ranch, Inc.
Street, Apt. No.; or PO Box No.: 327 Wells Rd
City, State, ZIP+4: Jal, NM 88252
PS Form 3800, August 2006 See Reverse for Instructions

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE
#404
Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $
Postmark Here
JUL 01 2011
7008 2810 0001 6734 2825
Sent To: RRR Land and Cattle Co.
Street, Apt. No.; or PO Box No.: 2205 Bedford Dr.
City, State, ZIP+4: Midland, TX 79701
PS Form 3800, August 2006 See Reverse for Instructions

U.S. Postal Service™
CERTIFIED MAIL™ RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)
For delivery information visit our website at www.usps.com
OFFICIAL USE
#404
Postage $
Certified Fee
Return Receipt Fee (Endorsement Required)
Restricted Delivery Fee (Endorsement Required)
Total Postage & Fees $
Postmark Here
JUL 01 2011
7008 2810 0001 6734 3068
Sent To: Anna Thomas
Street, Apt. No.; or PO Box No.: 308 Roosevelt Rd.
City, State, ZIP+4: Clarksburg, WV 26301
PS Form 3800, August 2006 See Reverse for Instructions

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 Stephens (281) 465-6367

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 Matlix 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 404. The proposed water injection well is located 510' FNL, 2310' FEL, 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 from 3013' to 3750' 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.
#28829

67110800 00131967
LEGACY RESERVES OPERATING LP
PO BOX 10848
MIDLAND, TX 79702

5.9 Compliance Issues

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

PERMIT TYPE: (WFX) / PMX / SWD Number: 933 Permit Date: 08/28/14 Legacy Permits/Orders: R-4019/R-4020 R-9983

Well No. 404 Well Name(s): Cooper Jal Unit

API : 30-0 25-32218 Spud Date: 10/16/1993 New or Old: New (UIC Class II Primacy 03/07/1982)

Footages 510 FNL/2310 FEL Lot — or Unit B Sec 24 Tsp 24S Rge 36E County Lea

General Location: 6 miles N of Jal Pool: Two Jalmat; Tansill-Yates-SR-Q Langlie Mattix; SR-Q-GB Pool No.: 33820 37240

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

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

WELL FILE REVIEWED ✓ Current Status: Producer - both zones

WELL DIAGRAMS: NEW: Proposed ○ or RE-ENTER: Before Conv. ✓ After Conv. ✓ Logs in Imaging: DLL/Nav Den/Sonic

Planned Rehab Work to Well: No additional work on injection interval / existing perfs

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	12¼/8⅝	0 to 1180		600	Circulated to surf.
Planned __ or Existing ✓ Interm/Prod	7⅞/5½	0 to 3750		925	Circulated to surf.
Planned __ or Existing __ Interm/Prod	—	—	—	—	—
Planned __ or Existing __ Prod/Liner	—	—	—	—	—
Planned __ or Existing __ Liner	—	—	—	—	—
Planned __ or Existing ✓ OH / (PERF)	5½	3013 to 3655	Inj Length 642		

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:	3013	Yates/SR	3005/3223
Proposed Inj Interval BOTTOM:	3750 (advertise)	Queen	3600
Confining Unit: Litho. Struc. Por.	—	Capitan	—
Adjacent Unit: Litho. Struc. Por.		—	—

Completion/Operation Details:

Drilled TD 3692 PBTD 3750

NEW TD — NEW PBTD —

NEW Open Hole ○ or NEW Perfs ○

Tubing Size 8⅝ in. Inter Coated? Yes

Proposed Packer Depth 2960 ft

Min. Packer Depth 2913 (100-ft limit)

Proposed Max. Surface Press. 1200 psi

Admin. Inj. Press: 603 (0.2 psi per ft)

AOR: Hydrologic and Geologic Information

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

FRESH WATER: Aquifer Alluvial/Capitan Max Depth 180/+390 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) Yates/SR/Q and/or Lower GR Analysis? On file On Lease ✓ Operator Only ○ or Commercial ○

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

HC Potential: Producing Interval? Yes Formerly Producing? — Method: Logs/DST/P&A/Other Water Flood Project - active Production 2-Mile Radius Pool Map ✓

AOR Wells: 1/2-M Radius Map? Yes Well List? Yes Total No. Wells Penetrating Interval: 29 Horizontals? 0

Penetrating Wells: No. Active Wells 29 Num Repairs? 0 on which well(s)? - All Cooper Jal unit wells Diagrams? Yes

Penetrating Wells: No. P&A Wells 0 Num Repairs? — on which well(s)? — Diagrams? NA

NOTICE: Newspaper Date 03/06/2014 Mineral Owner Fee Surface Owner Fee N. Date 07/01/14

RULE 26.7(A): Identified Tracts? Yes Affected Persons: Same as Well No. 217 N. Date 07/01/14

Permit Conditions: Issues: - none

Add Permit Cond: None

Goetze, Phillip, EMNRD

From: Mindy Cassard <mcassard@legacylp.com>
Sent: Tuesday, July 01, 2014 3:04 PM
To: Goetze, Phillip, EMNRD
Cc: Martin Staelens
Subject: Injection Permit - Cooper Jal Unit #404 API #30025322180000
Attachments: Supplement documents to complete - 404 convert to inj.pdf; Certified Receipts - convert to inj 404.pdf

Mr. Goetze,

Attached is the additional requested information for the Injection Permit for well #404 Cooper Jal Unit API #30025322180000.

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