DATE IN 8/30/13	SUSPENSE	ENGINEER PG	LOGGED IN 09/06/13	TYPE PMX	APP NO. pPRG1324961744

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]

[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 X PMX ☐ SWD ☐ IPI ☐ EOR ☐ PPR

Apache Corp
Empire Abo Unit 223
30-015-22527

[D] Other: Specify _____

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

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

[B] X Offset Operators, Leaseholders or Surface Owner

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

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

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

[F] ☐ Waivers are Attached

RECEIVED OCD
2013 AUG 30 P 1:13

[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.

Brian Wood		Consultant	8-30-13
Print or Type Name	Signature	Title	Date

brian@permitswest.com
e-mail Address

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: _____Secondary Recovery ___XXX___Pressure Maintenance _____Disposal _____Storage
Application qualifies for administrative approval? _____Yes _____No

II. OPERATOR: APACHE CORPORATION

ADDRESS: 303 VETERANS AIR PARK LANE, SUITE 3000, MIDLAND, TX 79705

CONTACT PARTY: BRIAN WOOD (PERMITS WEST, INC.) PHONE: 505 466-8120

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? ___XXX___Yes _____No
If yes, give the Division order number authorizing the project: R-4549 et al

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:

Empire Abo Unit 223
30-015-22527

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: BRIAN WOOD TITLE: CONSULTANT

SIGNATURE: B-Wood DATE: AUG. 29, 2013

E-MAIL ADDRESS: brian@permitswest.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

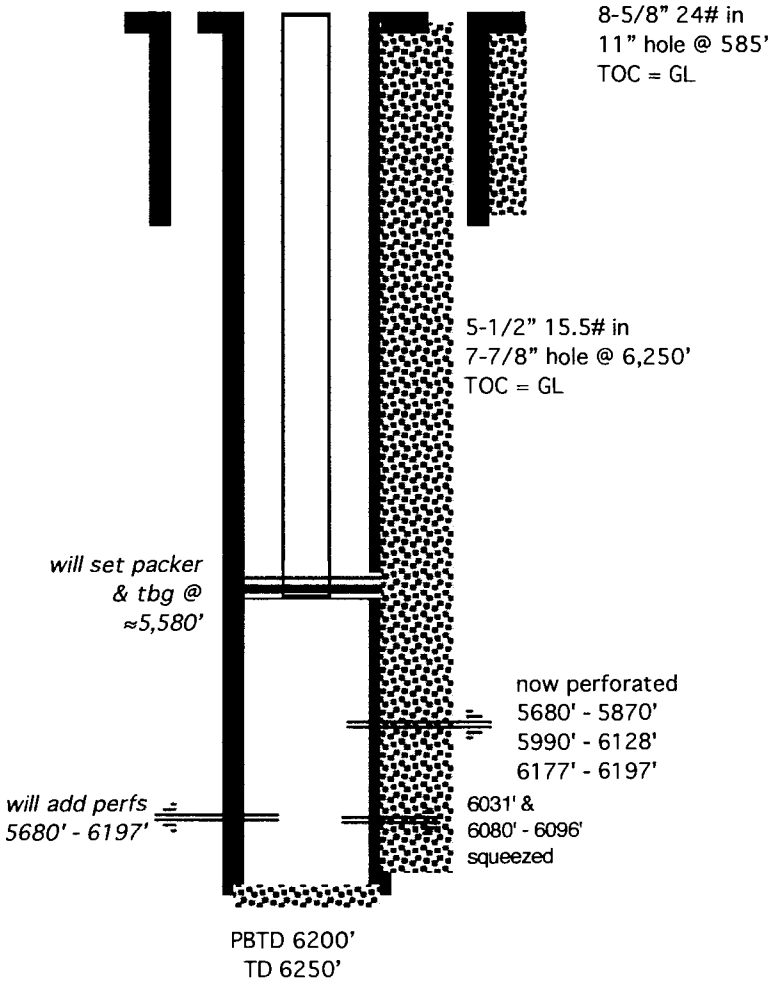
INJECTION WELL DATA SHEET

OPERATOR: APACHE CORPORATION

WELL NAME & NUMBER: EMPIRE ABO UNIT 223

WELL LOCATION:	F	6	18 S	28 E
2630 FNL & 1930 FWL				
FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC



(not to scale)

WELL CONSTRUCTION DATA

Surface Casing

Hole Size: 11" Casing Size: 8-5/8"

Cemented with: 300 sx. *or* _____ ft³

Top of Cement: SURFACE Method Determined: CIRC. 63 SX TO PIT

Intermediate Casing

Hole Size: _____ Casing Size: _____

Cemented with: _____ sx. *or* _____ ft³

Top of Cement: _____ Method Determined: _____

Production Casing

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

Cemented with: 1,240 sx. *or* _____ ft³

Top of Cement: SURFACE Method Determined: CIRC. 5 SX TO PIT

Total Depth: 6,375'

Injection Interval

5,680' feet to 6,197'

(Perforated or Open Hole; indicate which)

Side 2

INJECTION WELL DATA SHEET

Tubing Size: 3-1/2" Lining Material: TUBOSCOPE TK FIBER

Type of Packer: ARROW AS-1X

Packer Setting Depth: ≈5,580

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

Additional Data

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

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

2. Name of the Injection Formation: ABO

3. Name of Field or Pool (if applicable): EMPIRE; ABO (22040)

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. ONLY PERFORATED IN ABO

   PERF (now open): 5680-5870, 5990-6128 & 6177-6197,

   PERF (squeezed): 6031 (200 sx) & 6080-6096 (150 sx)

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

   OVER: GLORIETA YESO (3485'), SAN ANDRES (2045'),

   GRAYBURG (1725'), QUEEN (985'), SEVEN RIVERS (615')

   UNDER: NONE IN THE AREA OF REVIEW

I. Purpose is to convert a 6,250' deep Empire; Abo oil well to a gas injection well. Gas was previously injected (1,068,930 Mcf) in the well in 1994-95. Injection may occur in the entire Abo shale - reef interval from 5,680' to 6,197'. This is the Empire; Abo Pool (NMOCD pool code 22040). It would be at least the 22nd injection well in the unit. Previous injection well rules or orders are R-4549 and PMX-55, PMX-58, PMX-61, PMX-62, PMX-65, PMX-116, and PMX-188.

II. Operator: Apache Corporation (OGRID #873)
Operator phone number: (432) 818-1052
Operator address: 303 Veterans Air Park Lane, Suite 3000
Midland, TX 79705
Contact for Application: Brian Wood (Permits West, Inc.)
Phone: (505) 466-8120

III. A. (1) Lease: New Mexico State Land Office lease E0-4201-0000
Lease Size: 247.72 acres (see Exhibit A for C-102 and maps)
Unit Size: 11,339.15 acres
Unit Number: 300117
Closest Lease Line: 710'
Closest Unit Line: 1,463'
Lease: Lots 3, 5, & 6, SENW, & NESW Sec. 6, T. 18 S., R. 28 E. et al

A. (2) Surface casing (8-5/8", 24#, J-55) was set in 1978 at 585' in an 11" hole. Casing was cemented to the surface with 300 sacks Class C. Circulated 63 sacks to the pit.

Production casing (5-1/2", 15.5#, K-55) was set at 6,250' (TD) in a 7-7/8" hole. Casing was cemented to the surface with 1,140 sacks (490 sacks thick set + 550 sacks light) and then 100 sacks Class C. Circulated 55 sacks to the pit.

A. (3) Tubing will be 3-1/2", J-55, 9.3#, 8 rd EUE with turned down couplings coated with Tuboscope® TK fiber line. Setting depth will be ≥5,580'. (Highest perforation will be at 5,680'.)

A. (4) An Arrow AS-1X nickel plated packer will be set at ≥5,580' (≤100' above the highest perforation of 5,680').

B. (1) Injection zone will be the Abo, which is part of the Empire; Abo Pool (NMOCD pool code number 22040).

B. (2) Injection interval will be 5,680' to 6,197'. The entire well bore is cased.

B. (3) Well was drilled in 1978 as an Empire; Abo oil well. Production in the first five months of 2013 averaged 18 Mcfd. (The well last produced oil in 2006.) The well has cumulatively produced at least 783 barrels of oil, 947,883 Mcf of gas, and 6,087 barrels of water. Five Abo intervals have been perforated. Two of the five Abo intervals have been squeezed. The Abo shale is currently perforated in three intervals (5680' - 5870', 5990' - 6128', & 6177' - 6197'). See Exhibit B for current well bore status.

B. (4) Injection interval (5,680' - 6,197') will be perforated with 4 shots per foot. Shot diameter = 0.42". Existing open perforations are 5680' - 5870', 5990' - 6128', and 6177' - 6197'. Perforation history is:

1978 (May): perforated 6031' & squeezed with 200 sacks
1978 (May): perforated 6080' - 6096'
1979 (February): squeezed 6080' - 6096' with 150 sacks
1979 (February): perforated 6177' - 6197'
1994: perforated 5990' - 6197'
2002: perforated 5680' - 5870'

B. (5) Higher and lower potential oil or gas zones and the number of wells in 1-18s-27e and 6-18s-28e that have produced from that zone are:

Queen (13 wells)
Grayburg (13 wells)
San Andres (3 wells)
Glorieta Yeso (12 wells)
Abo (41 wells)
Wolfcamp (none in Sections 1 or 6, closest is 8,860' northwest)

IV. This is an expansion of an existing injection project. There are 5 other Abo injection wells in the unit. Converting this oil well to an injection well will improve unit economics and positively affect existing production within the Empire Abo Unit.

V. Exhibit C shows 37 existing wells (22 producing oil or gas + 15 plugged & abandoned) within a half-mile radius. Exhibit D shows 618 existing wells (371 producing oil or gas + 216 plugged & abandoned + 30 injectors or disposals + 1 water well) within a two-mile radius.

Exhibit E shows all leases and lessors (only State and BLM) within a half-mile. Exhibit F shows all leases and lessors within a two-mile radius. Most of the land is State, some is BLM, and less is fee. Details on the leases (* = unit lease) within a half-mile are:

T. 17 S., R. 28 E.	Lessor	Lease Number	Lessee
Lot 4 Sec. 31	NMSLO	XO-0647-0322*	Cockburn
SESW Sec. 31	NMSLO	BO-7966-0025*	Occidental Permian
T. 18 S., R. 27 E.	Lessor	Lease Number	Lessee
All Sec. 1	BLM	NMNM-070945X*	Apache
E2SE4 Sec. 1	BLM	NMNM-016788*	ExxonMobil
Lot 1 & SENE Sec. 1	BLM	NMNM-557371*	Apache

T. 18 S., R. 28 E.	Lessor	Lease Number	Lessee
Lot 1, S2NE4, & NESE Sec. 6	NMSLO	XO-0647-0405*	Khody
Lot 2 Sec. 6	NMSLO	B1-1594-0001*	Vilas Trust
Lots 3, 5, & 6 & SENW, NESW	NMSLO	B1-1594-0004*	BP & Burlington
Lot 4 Sec. 6	NMSLO	OG-4307-0002*	Occidental Permian
NWSE & SESE Sec. 6	NMSLO	OG-0103-0001*	Kerr-McGee
Lot 7 Sec. 6	NMSLO	EO-7179-0001	ConocoPhillips
SESW Sec. 6	NMSLO	OG-0103-0002*	Mewbourne
SWSE Sec. 6	NMSLO	XO-0647-0344*	Apache

VI. Thirty-one of the 37 existing wells that are within a half-mile penetrated the Abo. Twenty-nine of the 31 penetrators are Abo wells and 2 are deeper gas wells. Eleven penetrators are plugged and abandoned. Closest Abo well (22F) is an active oil well that is 376' south. A table abstracting construction details and history of all 31 penetrators and diagrams of the eleven plugged penetrators are in Exhibit G.

The 37 existing wells that are within a half-mile (regardless of depth) are:

API	Operator	Township	Range	Section	TVD	Well	Status	Zone(s)	Distance (feet)
3001502623	Apache	18.0S	28E	6	6210	EAU 022F	oil	Abo	376
3001521395	Apache	18.0S	28E	6	6200	EAU 211	oil	Abo	633
3001502620	Apache	18.0S	28E	6	6206	EAU 022D	oil	Abo	661
3001510107	Alamo	18.0S	28E	6	1985	State FX 1	oil	Queen-Grayburg-San Andres	757
3001521746	Apache	18.0S	28E	6	6305	EAU 221	oil	Abo	788
3001502626	Saikin & Oliver	18.0S	28E	6	705	Shuffeburger 1	P & A	Yates-Seven Rivers	1014
3001502611	Cockburn	18.0S	28E	6	2090	Capital State 1	P & A	Queen-Grayburg-San Andres	1096
3001523548	Apache	18.0S	28E	6	6311	EAU 211A	oil	Abo	1138
3001502628	BP	18.0S	28E	6	6310	EAU 023D	P & A	Abo	1148
3001522593	BP	18.0S	28E	6	6260	EAU 234	P & A	Abo	1193

3001522012	Apache	18.0S	28E	6	6303	EAU 222	oil	Abo	1323
3001522490	BP	18.0S	28E	6	6300	EAU 233	P & A	Abo	1324
3001502622	Apache	18.0S	28E	6	6194	EAU 021D	oil	Abo	1332
3001522491	BP	18.0S	28E	6	6350	EAU 231B	P & A	Abo	1355
3001502619	Apache	18.0S	28E	6	6202	EAU 021C	oil	Abo	1417
3001521626	Apache	18.0S	28E	6	6390	EAU 231A	oil	Abo	1536
3001522637	Apache	18.0S	28E	6	6267	EAU 212	oil	Abo	1545
3001502614	Apache	18.0S	28E	6	6242	EAU 023B	oil	Abo	1548
3001502618	Miller	18.0S	28E	6	2396	Capital State 1	P & A	San Andres	1603
3001502610	Apache	18.0S	28E	6	6243	EAU 22C	oil	Abo	1651
3001522528	BP	18.0S	28E	6	6350	EAU 232A	P & A	Abo	1826
3001521737	BP	18.0S	28E	6	6345	EAU 232	P & A	Abo	1844
3001502627	Ruth	18.0S	28E	6	6225	State M-AI 2	oil	Abo	1901
3001523116	Apache	18.0S	28E	6	6242	EAU 213	oil	Abo	1918
3001521553	Apache	18.0S	27E	1	6225	EAU 201	oil	Abo	1961
3001502624	Pan American	18.0S	28E	6	6412	State CD 1	P & A	Abo	1962
3001502621	Apache	18.0S	28E	6	6033	EAU 022E	oil	Abo	1972
3001522913	Apache	18.0S	28E	6	6300	EAU 235	P & A	Abo	1997
3001526943	Mewbourne	18.0S	28E	6	10200	Chalk Bluff 6 State 1	gas	Morrow	2011
3001534028	BP	18.0S	28E	6	10374	SLIDER 6 State 1	P & A	Morrow & Wolfcamp	2045
3001502613	Apache	18.0S	28E	6	6119	EAU 21B	oil	Abo	2059
3001531087	Marbob	18.0S	28E	6	4466	LP State 3	P & A	Queen-Grayburg-San Andres	2276
3001521542	Apache	18.0S	28E	6	6261	EAU 231	P & A	Abo	2281
3001502617	BP	18.0S	28E	6	6346	EAU 024K	P & A	Abo	2401
3001533784	Apache	18.0S	27E	1	4310	AAO Federal 8	oil	Queen-Grayburg-San Andres	2460
3001502625	Apache	18.0S	28E	6	6194	EAU 023C	oil	Abo	2495
3001502616	Apache	18.0S	28E	6	6253	EAU 24C	oil	Abo	2599
3001522656	*Apache*	*18.0S*	*27E*	*1*	*6225*	*EAU 203*	*oil*	*Abo*	*2650*

VII. 1. Average injection rate will be ≈1,500 Mcfd.
Maximum injection rate will be ≈2,000 Mcfd.
2. System will be closed.
3. Average injection pressure will be ≈1,000 psi
Maximum injection pressure will be 1,136 psi (= 0.2 psi/foot x 5,680' (highest perforation)).
4. Injection source will be produced gas only from Apache wells in the Empire Abo Unit. Apache has >200 wells in the unit. Gas analysis is in Exhibit H. No compatibility problems were reported during the 2 years (1995-96) in which 1,068,930 Mcf was injected in this well.
5. Abo is productive within one mile. The #223 well has produced 783 barrels of oil and 948,165 Mcf of gas from the Abo since 1996.

VIII. The Abo (>517' thick in this well) reef extends east-west and is composed of fractured and vugular dolomitized limestone. Closest possible source of drinking water above the proposed injection interval is the Triassic at ≈350'. Surface casing was set at 585' and cement circulated to the surface in this well.

State Engineer records (Exhibit I) show the closest point of diversion is 5,300' (1,616 meters) south. The records do not indicate the type of diversion. No water well was found during a September 9-10, 2012 field inspection. Closest water well is a windmill (not in State Engineer records) that is 1-1/3 mile south in Section 7. No underground source of drinking water is below the proposed injection interval. Formation tops are:

Quaternary = 0'
Yates = 325'
Seven Rivers = 615'
Queen = 985'
Grayburg: 1,725'
San Andres = 2,045'
Glorieta = 3,485'
Drinkard = 5,600'
Abo pay = 5,680'
Total Depth: 6,250'

There will be more than a mile of vertical separation between the bottom of the only possible underground water source (Triassic) and the top of the Abo. Produced water has been injected or disposed into zones above (Queen, Grayburg, San Andres, Glorieta), opposite (Abo), and below (Permo-Penn, Wolfcamp, Cisco, Canyon) the proposed injection interval in 32 wells within Section 6 and the 8 bordering sections.

IX. The well will be stimulated with acid to clean out scale or fill.

X. Dual Spacing Thermal Neutron Decay Time, Cement Bond, Borehole Compensated Sonic Variable Density, Simultaneous Dual Laterolog Micro-SFL, Simultaneous Compensated Neutron Formation Density, and Gamma Ray-Neutron logs were run and are on file with the NMOCD.

XI. According a field inspection and the State Engineer's records, there are no water wells within a one-mile radius.

XII. Apache is not aware of any geologic or engineering data that may indicate that the Abo is in hydrologic connection with any underground sources of water. Closest Quaternary fault is 73 miles southwest (Exhibit J). At least 127 injection and 14 saltwater disposal wells have been drilled into the Abo.

XIII. Notice (this application) has been sent (Exhibit K) to the surface owner (Bogle Ltd. Company), all oil and gas lessees or Abo operating right holders (see below), and all oil and gas lessors (only New Mexico State Land Office and BLM) within a half-mile:

Barney Cockburn
BLM
Bogle Ltd. Company

BP America Production Company
Burlington Resources
ConocoPhillips Company
ExxonMobil Corporation
Kerr-McGee
Khody Land & Minerals Co.
Mewbourne Oil Company
NM State Land Office
Occidental Permian Ltd.
Ruth Oil Co.
Sheldon P. Vilas Trust

A legal ad (see Exhibit L) was published on August 16, 2013.

N MEXICO OIL CONSERVATION COMMISS

WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102
Supersedes C-128
Effective 1-1-65

All distances must be from the outer boundaries of the Section

Operator	Lease	Well No.
Atlantic Richfield Co.	Empire Abo Unit - J	223

Unit Letter	Section	Township	Range	County
F	6	18 South	28 East	Eddy

Actual Footage Location of Well:
2630 feet from the North line and 1930 feet from the West line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
3644.3	Abo Reef	Empire Abo	40 Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

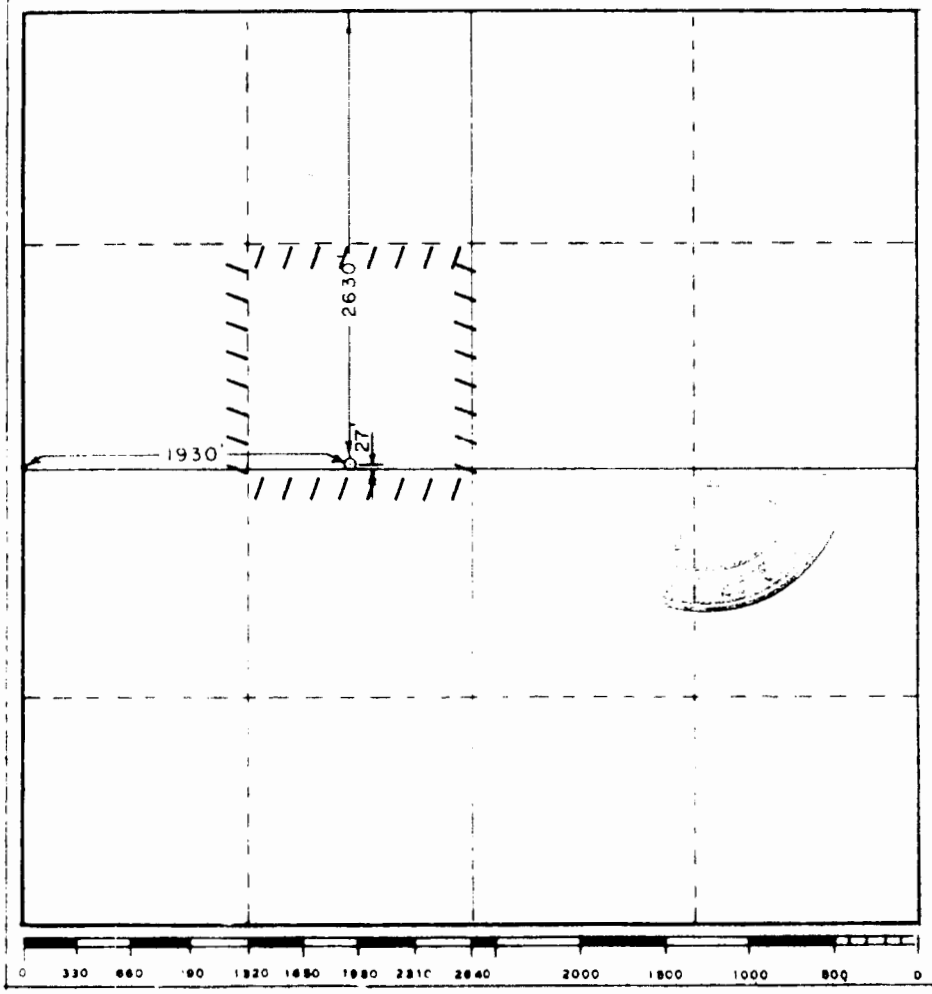
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

[X] Yes [ ] No If answer is "yes," type of consolidation Unitization

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name

Position
Dist. Drlg. Supt.

Company
Atlantic Richfield Company

Date
4/25/78

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

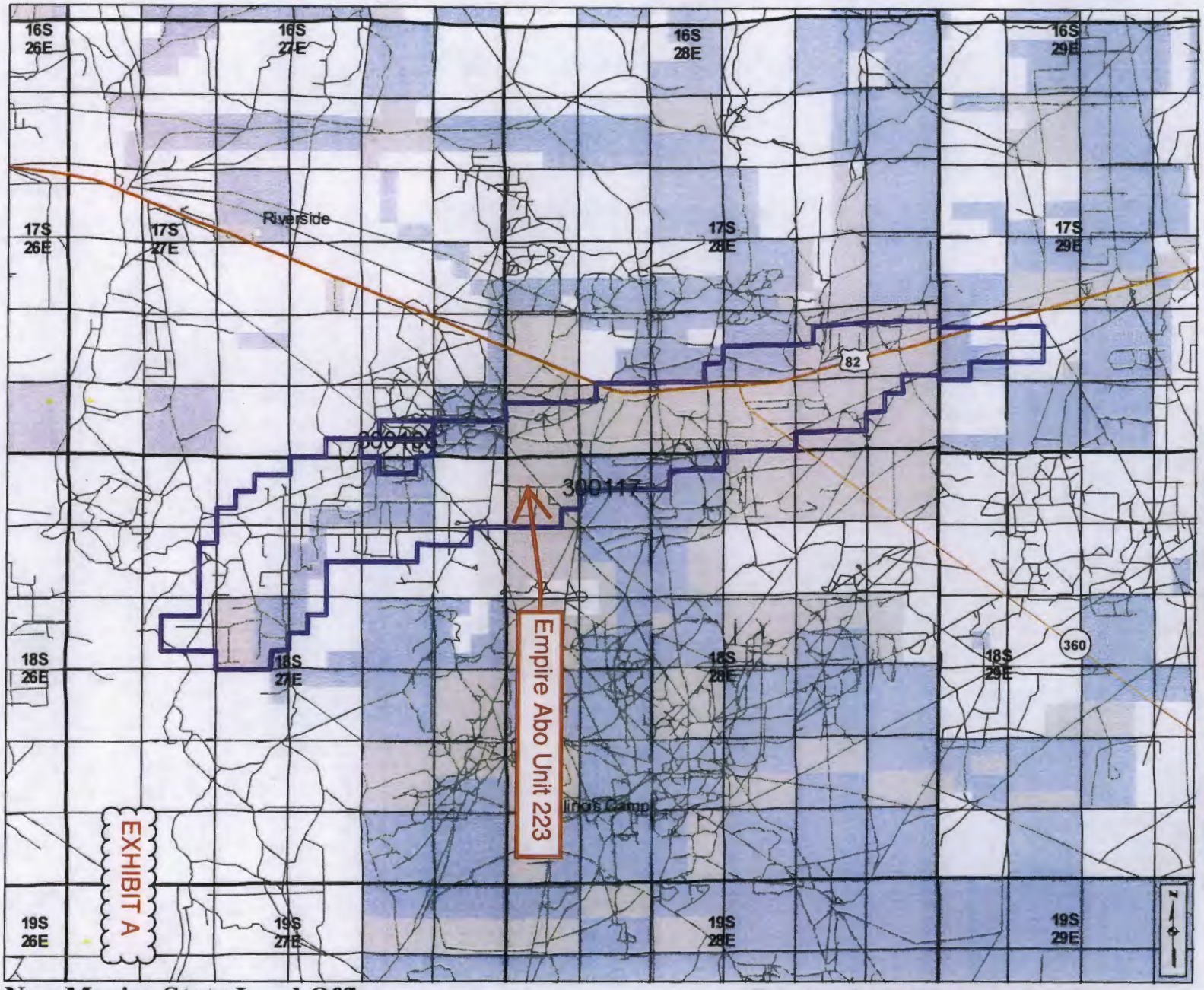
December 19, 1977
Date Surveyed

Registered Professional Engineer and/or Land Surveyor

John W. West

Certificate No. 676

EXHIBIT A



Point Locations
- County Seat
- SLO District Offices
- City, Town or Village
- Volcanic Vents
- Highway Mileposts

NMOCD Oil and Gas Wells
- Oil
- Gas
- Injection
- Water
- Carbon Dioxide
- DA or PA
- Miscellaneous
- Salt Water Disposal

Federal Minerals
- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

State Trust Lands
- Surface Estate
- Subsurface Estate
- Both Estates

NMSLO Leasing
- Option Agreement
- Commercial Lease
- Minerals Lease
- Oil and Gas Lease
- Agricultural Lease
- Not Available for Oil and Gas Leasing
- Restriction Influences Oil and Gas Leasing

Other Boundaries
- Continental Divide
- State Boundary
- County Boundaries
- Oil and Gas Unit Boundary
- Participating Areas in Units
- Geologic Regions
- Potash Enclave (NMOCD R-111-P)

For detailed legend of the Geologic Map of New Mexico, please see http://geoinfo.nmt.edu

New Mexico State Land Office

Oil, Gas, and Minerals

0 0.45 0.9 1.8 2.7 3.6 Miles

Universal Transverse Mercator Projection, Zone 13
1983 North American Datum

Land Office Geographic Information Center
logic@slo.state.nm.us

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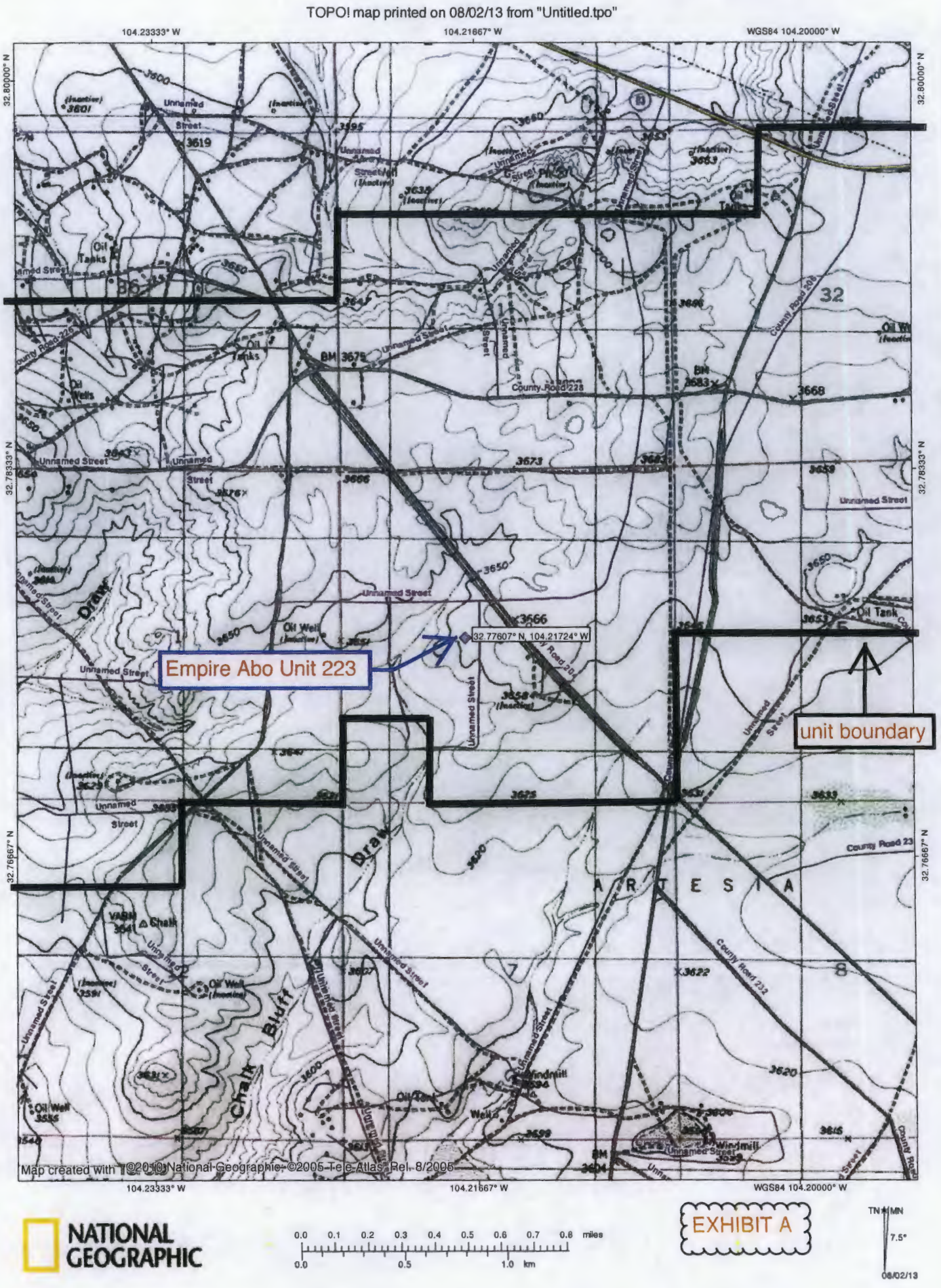
www.nmstatelands.org

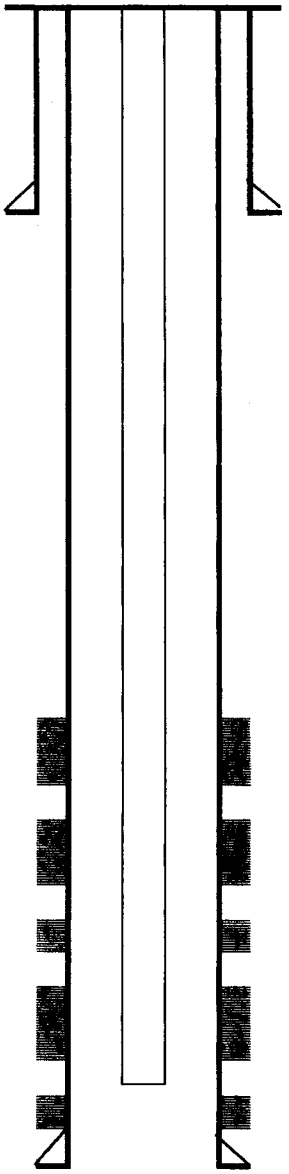

TOPO! map printed on 08/02/13 from "Untitled.tpo"
104.23333° W
104.21667° W
WGS84 104.20000° W
32.80000° N
32.78333° N
32.76667° N
Empire Abo Unit 223
32.77607° N, 104.21724° W
unit boundary
ARTESIA
Chalk Bluff Draw
Map created with TOPO! ©2010 National Geographic ©2005 Tele Atlas Rel. 8/2005
NATIONAL GEOGRAPHIC
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 miles
0.0 0.5 1.0 km
EXHIBIT A
TN MN
7.5°
08/02/13

Apache Corp.

GROUP:	**Permian North**	**DATE:**	**Jun. 20, 2013**
FIELD:	**Artesia (BP)**	**BY:**	**Hillari J. Gould**
LEASE/UNIT:	**Empire Abo Unit**	**WELL:**	**J-223**
COUNTY:	**Eddy**	**STATE:**	**New Mexico**
API:	**30-015-22527**		

Unit Letter F, Section 6, T-18-S, R-28-E
Spud Date: 04/22/78

KB = 10'
GL = 3644'



8 5/8" 24# K-55 Set @ 585'; 11" hole
CMT W/ 300 SX (SURF/CIRC)

TBG @ 6162'

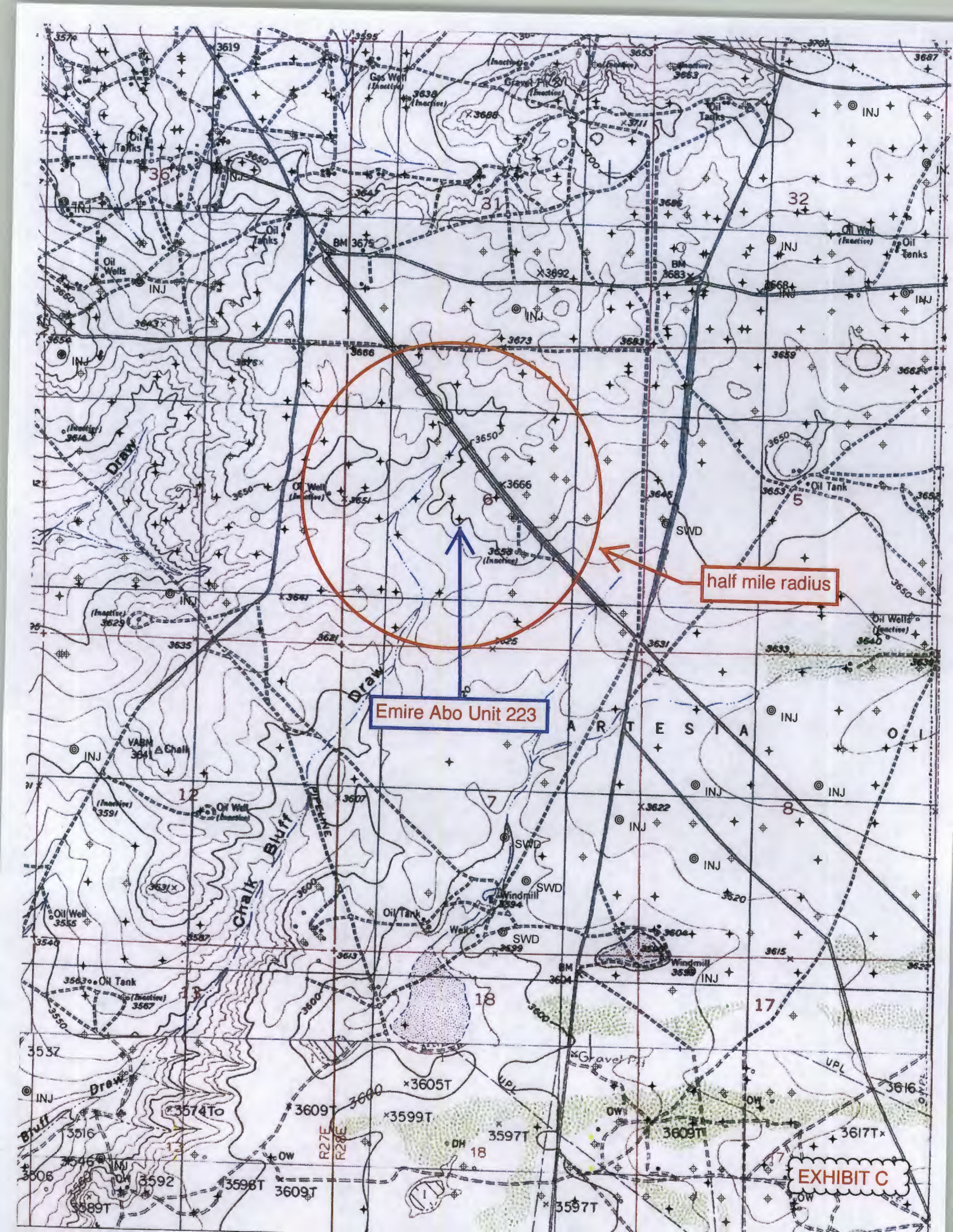
ABO
5/78: Perf & SQZ @ 6031' w/ 150 sx cmt
5/78: Perf @ 6080-6096' w/ 2 JSPF
5/78: Acidized w/ 300 gal 15% NE, 500 gal 10# CaCl, 500 gal LC, 2000 gal 60/40 DAD
2/79: SQZ perfs (6080-6096') w/ 100 sx cmt

ABO
2/79: Perf @ 6177-6197' w/ 2 JSPF
3/94: Perf @ 5990-6128
3/94: Acidized w/ 3000 gals 15% NEFE & **Convert to GIW**
5/02: Perf @ 5680-84', 5693-98', 5735-39', 5757-59', 5763-69, 5785-96, 5870 w/ 2 JSPF
5/02: Acidized w/ 1600 gals 15% HCL & 110 BS

5 1/2" 15.5# K-55 Set @ 6250'; 7-7/8" hole
CMT W/ 1040 SX (SURF/CIRC)

TD: 6250'
PBTD: 6200'

EXHIBIT B


half mile radius
Emire Abo Unit 223
EXHIBIT C
ARTESIA
Chalk Bluff Draw
Draw
Bluff Draw
R27E
R28E
SWD
INJ
Oil Tanks
Oil Wells
Oil Well
Oil Tank
Windmill
Gas Well
Gravel Pit
VABM
Chalk
UPL
OW
DH

2 mile radius

Empire Abo Unit 223

EMPIRE OIL FIELD

ARTESIA OIL FIELD

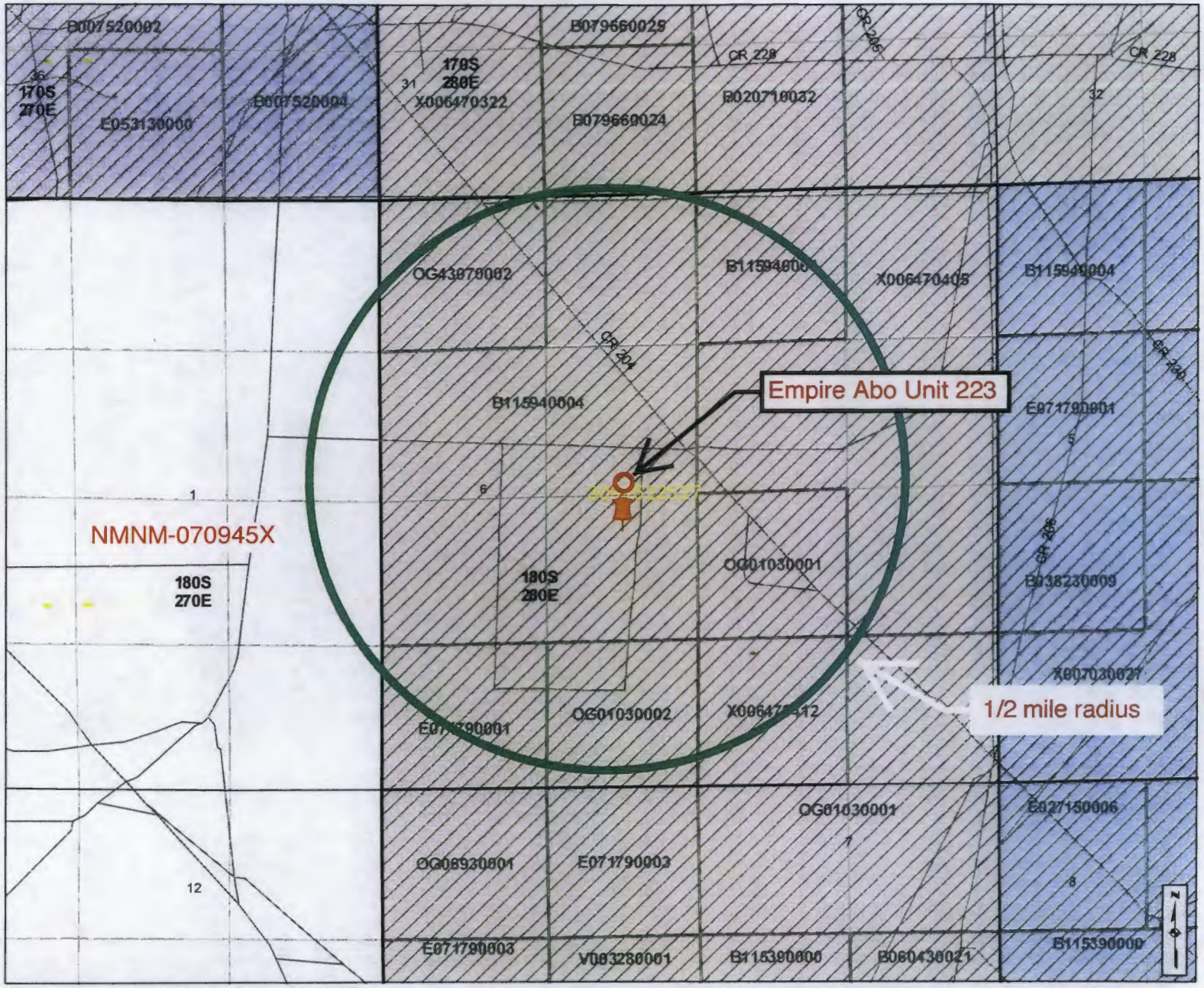
EXHIBIT D

SCALE 1:29629

0 1 MILES

0 1000 2000 YARDS

0 1 2 KILOMETI



Cartographic Features

- County Boundaries
- County Seats
- City, Town or Village
- SLO District Offices
- SLO District Boundary
- Hwy Mileposts
- Interstate
- US Hwy
- NM Hwy
- Local Road
- Continental Divide

Federal Minerals Ownership

- All Minerals
- Coal Only
- Oil and Gas Only
- Oil, Gas and Coal Only
- Other Minerals

State Trust Lands

- Surface Estate
- Subsurface Estate
- Surface and Subsuface Estate

State Leases

- Oil and Gas Leases
- Agricultural Leases
- Commercial Leases
- Minerals Leases
- Not Available for Oil and Gas Leasing
- Oil and Gas Leasing Influenced by Restriction

Oil and Gas Related Features

- Oil and Gas Unit Boundary
- Participating Areas in Units
- Geologic Regions
- Volcanic Vents
- NMOCD Order R-111-P Potash Enclave Outline

NMOCD Oil and Gas Wells

- CO^2
- Gas
- Injection
- Miscellaneous
- Oil
- Salt Water Disposal
- Water
- DA or PA

New Mexico State Land Office

Oil, Gas and Minerals

0 0.05 0.1 0.2 0.3 0.4 Miles

Universal Transverse Mercator Projection, Zone 13
1983 North American Datum

EXHIBIT E

Land Office Geographic Information Center
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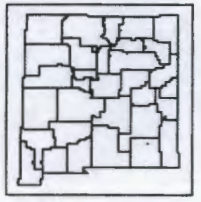
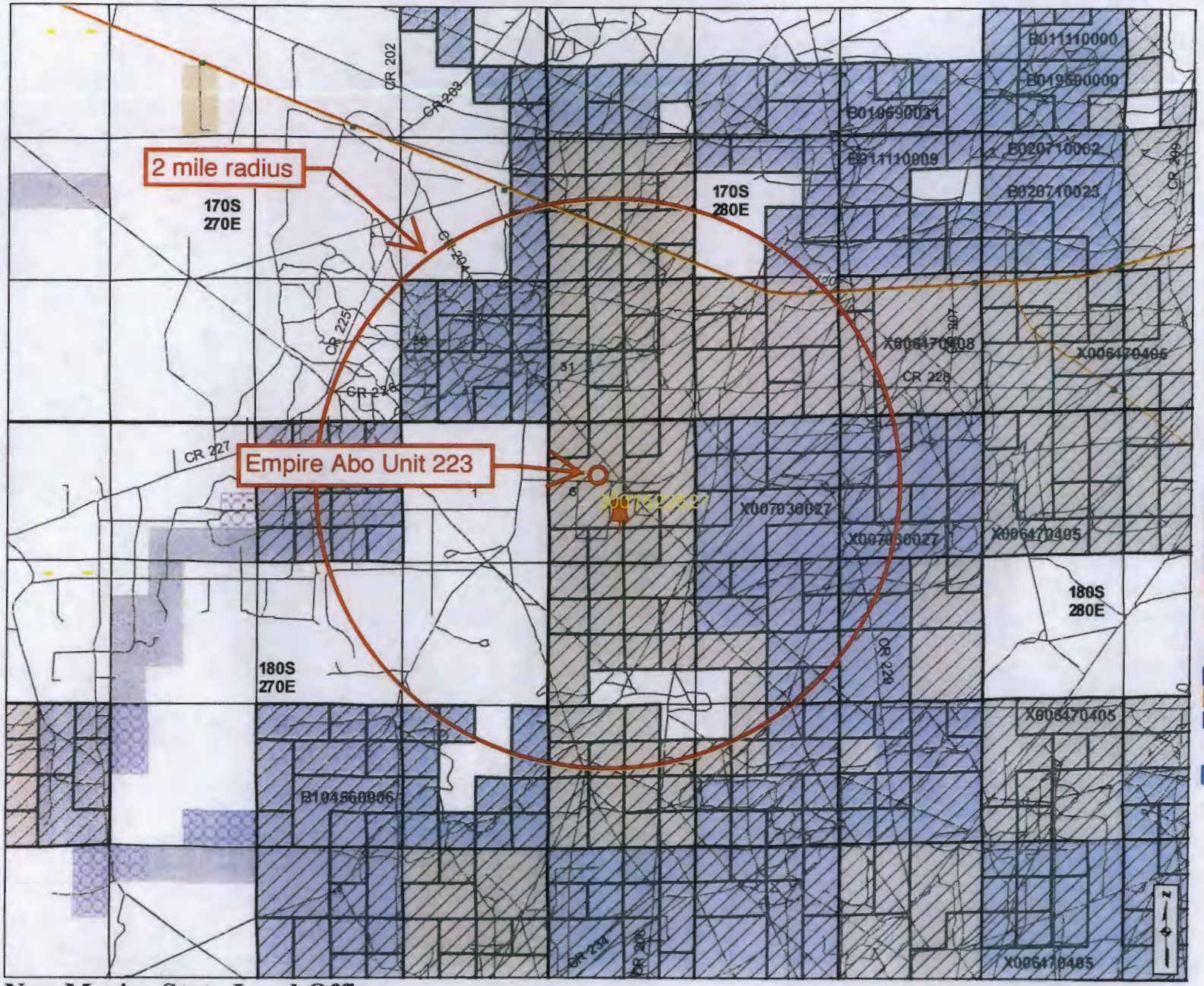


www.nmstatelands.org



Cartographic Features

- County Boundaries
- County Seats
- City, Town or Village
- SLO District Offices
- SLO District Boundary
- Hwy Mileposts
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- Oil and Gas Leases
- Agricultural Leases
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- Minerals Leases
- Not Available for Oil and Gas Leasing
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Oil and Gas Related Features

- Oil and Gas Unit Boundary
- Participating Areas in Units
- Geologic Regions
- Volcanic Vents
- NMOCD Order R-111-P Potash Enclave Outline

NMOCD Oil and Gas Wells

- CO^2
- Gas
- Injection
- Miscellaneous
- Oil
- Salt Water Disposal
- Water
- DA or PA

New Mexico State Land Office

Oil, Gas and Minerals

0 0.2 0.4 0.8 1.2 1.6 Miles

Universal Transverse Mercator Projection, Zone 13
1983 North American Datum

EXHIBIT F

Land Office Geographic Information Center
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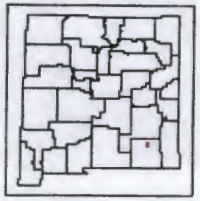


www.nmstatelands.org

Sorted by distance from Empire Abo Unit 223

WELL	SPUD	TD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW DETERMINED
EAU 022F	1/28/60	6210	Empire-Abo	Oil	11	8.625	1283	550 sx	GL	circulated
30-015-02623					7.875	5.5	6210	850 sx	425	temperature survey
K-6-18s-28e										
EAU 211	12/12/74	6200	Empire-Abo	Oil	12.25	8.625	990	700 sx	GL	circulated
30-015-21395					7.625	5.5	6200	1515 sx	GL	circulated 150 sx
E-6-18s-28e										
EAU 022D	11/3/59	6206	Empire-Abo	Oil	11	8.625	1498	850 sx	GL	circulated
30-015-02620					7.875	5.5	6202	850 sx	250	no report
F-6-18s-28e										
EAU 221	3/29/76	6305	Empire-Abo	Oil	11	8.625	553	400 sx	GL	circulated 50 sx
30-015-21746					7.875	5.5	6300	1650 sx	GL	circulated 165 sx
F-6-18s-28e										
EAU 211A	2/11/81	6311	Empire-Abo	Oil	12.25	9.625	980	425 sx	GL	circulated 51 sx
30-015-23548					8.75	7	6250	1325 sx	GL	circulated 260 sx
L-6-18s-28e										
EAU 023D	4/3/60	6310	Empire-Abo	P & A	12.25	8.625	1031	900 sx	GL	cemented
30-015-02628					7.875	5.5	6195	150 sx	5180	CBL
J-6-18s-28e										
EAU 234	8/4/78	6260	Empire-Abo	P & A	11	8.625	556	425 sx	GL	cemented 3 yds Redi Mix
30-015-22593					7.875	5.5	6260	860 sx	GL	circulated 140 sx
G-6-18s-28e										
EAU 222	2/17/77	6303	Empire-Abo	Oil	11	8.625	555	275 sx	GL	cemented 6 yds Redi Mix
30-015-22012					7.875	5.5	6293	1600 sx	GL	circulated 60 sx
F-6-18s-28e										
EAU 233	5/10/78	6300	Empire-Abo	P & A	11	8.625	590	125 sx	GL	circulated 95 sx
30-015-22490					7.875	5.5	6300	1525 sx	GL	circulated 2 sx
G-6-18s-28e										
EAU 021D	12/27/59	6194	Empire-Abo	Oil	12.25	8.625	1003	550 sx	GL	circulated
30-015-02622					7.875	5.5	6194	850 sx	125	no report
L-6-18s-28e										

Sorted by distance from Empire Abo Unit 223

WELL	SPUD	TD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW DETERMINED
EAU 231B	7/18/78	6350	Empire-Abo	P & A	11	8.625	550	350 sx	GL	circulated 65 sx
30-015-22491					7.875	5.5	6350	1525 sx	GL	circulated 124 sx
J-6-18s-28e										
EAU 021C	10/8/59	6202	Empire-Abo	Oil	11	8.625	1493	700 sx	GL	circulated
30-015-02619					7.875	5.5	6241	650 sx	GL	piping braden head
E-6-18s-28e										
EAU 231A	9/24/75	6390	Empire-Abo	Oil	11	8.625	1001	600 sx	GL	cemented 6 yds Redi Mix
30-015-21626					7.875	5.5	6390	1200 sx	GL	circulated 125 sx
G-6-18s-28e										
EAU 212	12/4/78	6267	Empire-Abo	Oil	11	8.625	553	600 sx	GL	circulated 5 yds Redi Mix
30-015-22637					7.875	5.5	6250	1650 sx	GL	circulated 65 sx
E-6-18s-28e										
EAU 023B	12/28/59	6242	Empire-Abo	Oil	11	8.625	544	250 sx	GL	circulated
30-015-02614					7.875	5.5	6241	850 sx	4950	CBL
G-6-18s-28e										
EAU 022C	7/20/60	6243	Empire-Abo	Oil	11	8.625	763	250 sx	GL	circulated
30-015-02610					7.875	5.5	6243	1100 sx	1380	CBL
N-6-18s-28e										
EAU 232A	6/27/78	6350	Empire-Abo	P & A	11	8.625	558	400 sx	GL	cemented 120 sx
30-015-22528					7.875	5.5	6350	1730 sx	GL	circulated 132 sx
J-6-18s-28e										
EAU 232	3/5/76	6345	Empire-Abo	P & A	11	8.625	560	200 sx	GL	cemented 8 yds Redi Mix
30-015-21737					7.875	5.5	6345	2005 sx	GL	circulated 75 sx
G-6-18s-28e										
STATE M-AI 002	10/4/60	6225	Empire-Abo	Oil	12.25	9.625	1004	450 sx	GL	circulated
30-015-02627					7.875	5.5	6225	550 sx	1600	temperature survey
M-6-18s-28e										
EAU 213	3/10/80	6242	Empire-Abo	Oil	12.25	9.625	1000	500 sx	GL	cemented 2 yds Redi Mix
30-015-23116					8.75	7	6115	1350 sx	GL	circulated 315 sx
E-6-18s-28e										

EXHIBIT G

Sorted by distance from Empire Abo Unit 223

WELL	SPUD	TD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW DETERMINED
EAU 201	6/28/75	6225	Empire-Abo	Oil	11	8.625	1012	525 sx	GL	cemented 50 yds Redi Mix
30-015-21553					7.875	5.5	6225	1150 sx	GL	circulated 120 sx
H-1-18s-27e										
STATE CD 001	4/14/61	6412	Empire-Abo	P & A	11	8.625	877	500 sx	GL	circulated 48 sx
30-015-02624					7.875	4.5	6408	140 sx	5350	no report
O-6-18s-28e										
EAU 022E	11/29/59	6033	Empire-Abo	Oil	11	8.625	996	600 sx	GL	circulated
30-015-02621					7.875	5.5	6008	850 sx	1062	no report
C-6-18s-28e										
EAU 235	5/31/79	6300	Empire-Abo	P & A	11	8.625	750	800 sx	GL	top job
30-015-22913					7.875	5.5	6352	1950 sx	GL	circulated 270 sx
G-6-18s-28e										
CHALK BLUFF 6 STATE 001	2/17/92	10200	North Illinois Camp Morrow	Gas	17.5	13.375	400	650 sx	GL	circulated 20 sx
30-015-26943					12.25	9.625	2600	1100 sx	GL	circulated 65 sx
M-6-18s-28e					7.875	7	9445	1895 sx	no report	circulated 1st stage
SLIDER 6 STATE 001	6/19/05	10374	North Illinois Camp Morrow	P & A	17.5	13.375	470	600 sx	GL	circulated
30-015-34028					11	8.625	3132	900 sx	GL	circulated
G-6-18s-28e					7.875	5.5	10433	1200 sx	2630	CBL
EAU 021B	12/8/59	6119	Empire-Abo	Oil	11	8.625	971	350 sx	GL	circulated
30-015-02613					7.875	5.5	6119	550 sx	1548	drilling report
D-6-18s-28e										
EAU 231	9/1/75	6261	Empire-Abo	P & A	11	8.625	1002	550 sx	GL	cemented 4 yds Redi Mix
30-015-21542					7.875	5.5	6261	1175 sx	GL	circulated 115 sx
B-6-18s-28e										
EAU 024K	8/11/60	6346	Empire-Abo	P & A	11	8.625	721	350 sx	GL	circulated
30-015-02617					7.875	5.5	6359	150 sx Incor 4% gel + 170 units HYS 400	4730	drilling report
I-6-18s-28e										

EXHIBIT G

Sorted by distance from Empire Abo Unit 223

WELL	SPUD	TD	POOL	WELL TYPE	HOLE O.D.	CASING O.D.	SET @	CEMENT	TOC	HOW DETERMINED
EAU 023C	10/12/59	6194	Empire-Abo	Oil	10.25	8.625	507	450 sx	GL	circulated
30-015-02625					7.875	5.5	6194	1550 sx	GL	circulated
B-6-18s-28e										
EAU 410	no spud yet	proposed 6400	Empire-Abo	Oil	12.25	8.625	500	360	plan GL	no report
30-015-39008					7.875	5.5	6400	1080	plan GL	no report
D-6-18s-28e										
EAU 024C	3/7/60	6253	Empire-Abo	Oil	11	8.625	731	250 sx	GL	circulated
30-015-02616					7.875	5.5	6253	900 sx	1185	CBL
H-6-18s-28e										
EAU 203	9/13/78	6225	Empire-Abo	Oil	11	8.625	1004	700 sx	no report	did not circulate
30-015-22656					7.875	5.5	6222	1325 sx	GL	circulated 165 sx & CBL
H-1-18s-27e										

33 wells in ½ mile
10 - P&A [2 Morrows]
23
Active

None on repair
Ordering Paragraphs (C) and (8) list

Empire Abo Unit 23 D
(fka, Empire Abo Unit K 23)
2260 FSL & 2269 FEL
6-18s-28e
30-015-02628
P & A: 12-10-08

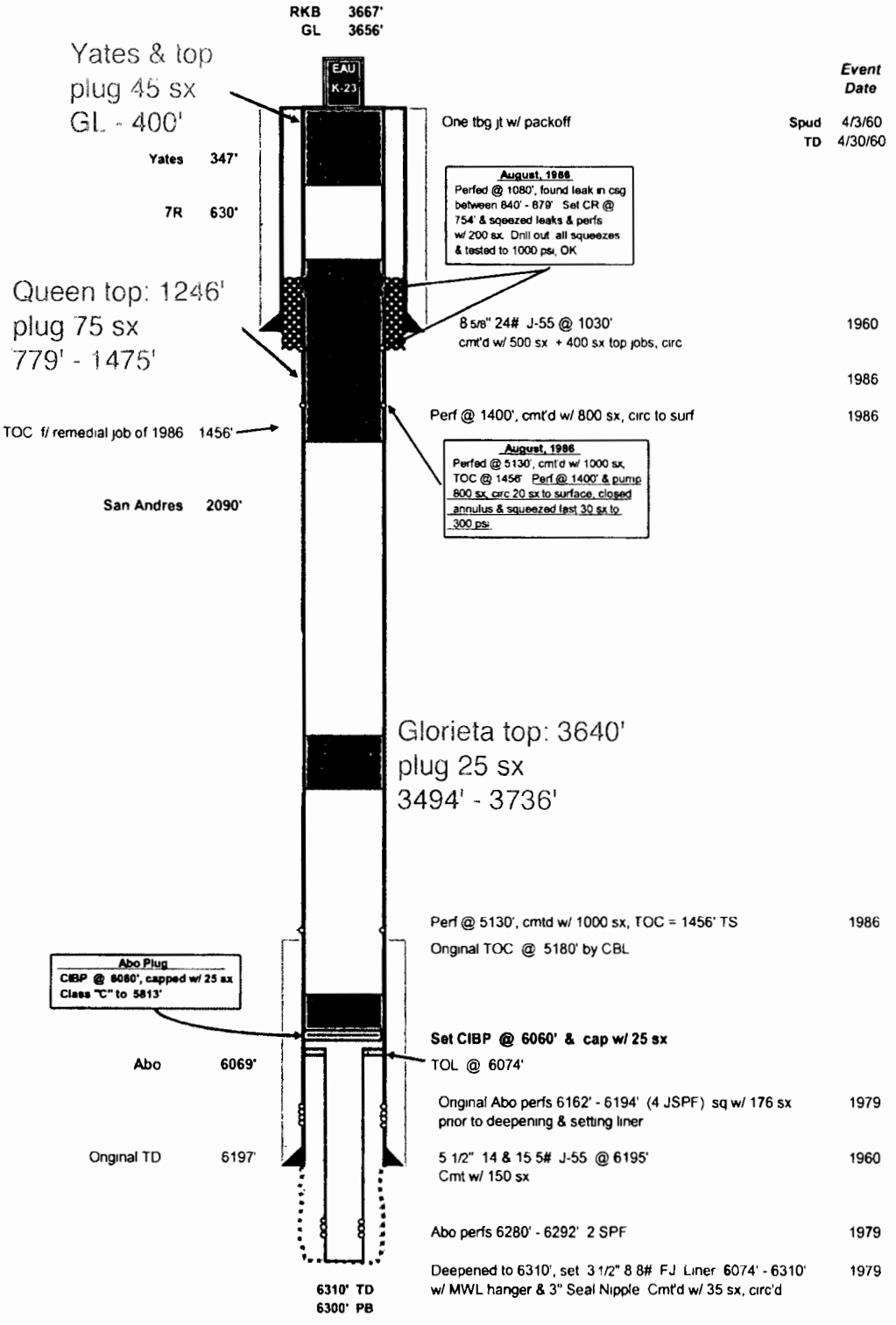
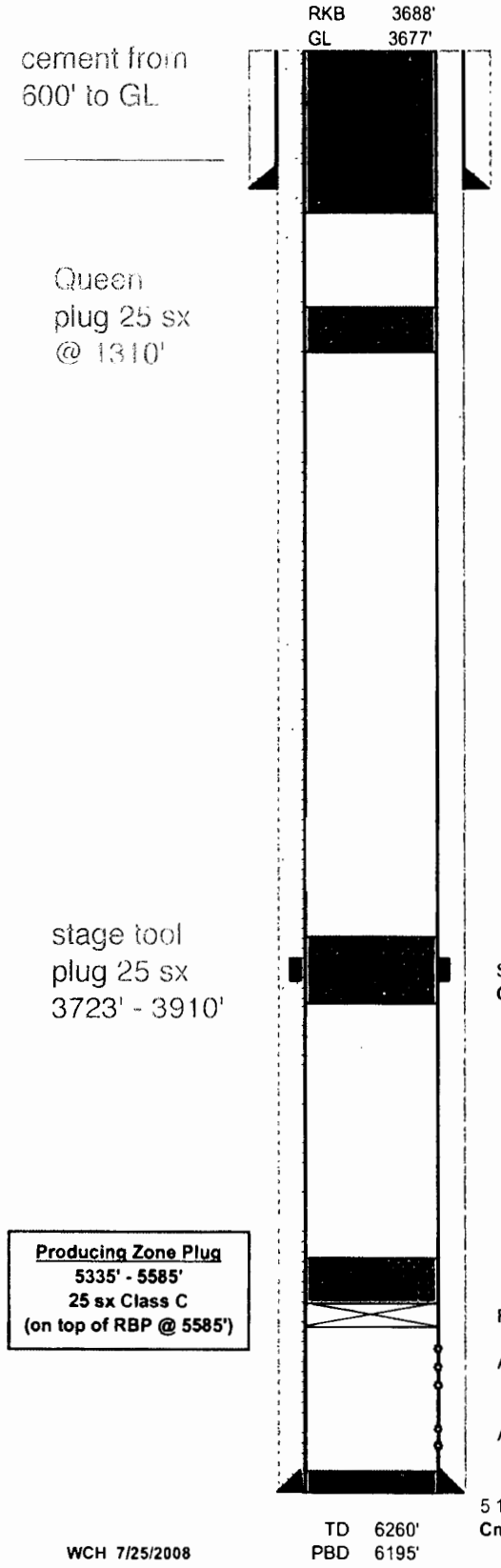


EXHIBIT G

Empire Abo Unit 234
(fka, Empire Abo Unit J 234)
1900 FNL & 2441 FEL
6-18s-28e
30-015-22593
P & A: 11-21-08



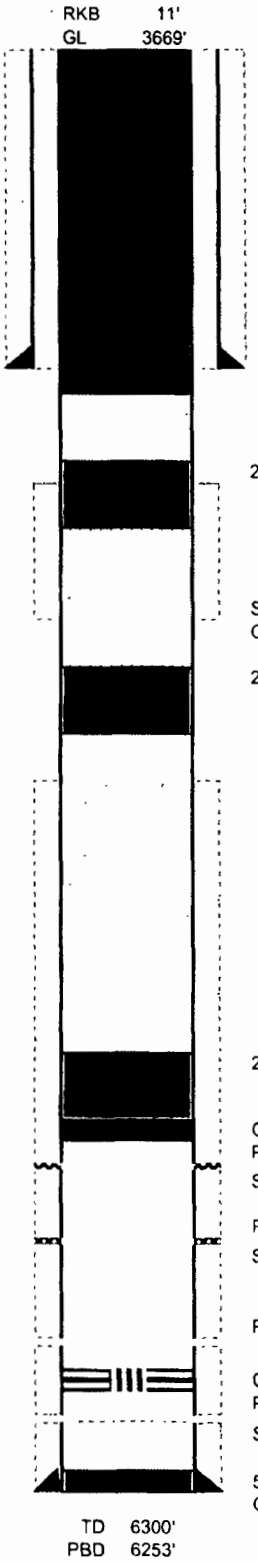
	Event Date
Spud	8/4/78
Completed	8/29/78
8 5/8" 24# @ 556' **Cmt w/ 425 sx, TOC @ 60' - TS** **Topped out w/ 3 yds Redi-mix**	8/5/78
Stage tool @ 4008' **Cmt 2nd stage w/ 450 sx, circ to surface**	8/22/78
RBP @ 5585'	
Abo perfs 5725-6073'	11/12/01
Abo perfs 6124-6144'	8/26/78
5 1/2" 15.5# K55 @ 6260' **Cmt 1st stage w/ 410 sx, TOC @ DVT - circ**	8/22/78

WCH 7/25/2008

EXHIBIT G

Empire Abo Unit 233
(fka, Empire Abo Unit J 233)
2550 FNL & 2050 FEL
6-18s-28e
30-015-222490
P & A 4-1-09

	Event Date
Spud	5/10/78
Completed	6/7/78



plug 85 sx
GL - 690'

10 sx cement @ surface — **NEW**

Run 3/4" tbg to 601' & cmt 5 1/2" x 8 5/8" annulus to surface w/ 100 sx — 5/29/78

50 sx cement @ 690' — **NEW**

8 5/8", 24#, K-55 @ 590'
Cement w/ 415 sx to surface — 5/11/78

Queen @ 1250'
plug 25 sx

25 sx cement @ 1250' — **NEW**

Stage tool @ 2997'
Cement w/ 600 sx to 1060' by TS — 5/29/78

Glorieta
plug 25 sx
3325' - 3614'

25 sx cement @ 3600' — **NEW**

TOC 4263' by CBL — 6/2/1978

set CIBP @ 6060'
plug 25 sx
5813' - 6060'

25 sx cement @ 6060' — **NEW**

CIBP @ 6060' — **NEW**
Perfs 6080-6096' 2 SPF — 6/2/78
Squeeze w/ 325 sx — 1/5/80

Perfs 6088-6104 2 SPF 32 holes — 10/14/97
Squeezed w/ 75 sx — 10/20/97

Perfs 6124-6142 2 SPF 36 holes — 10/22/97

Cement retainer @ 6150' — 10/13/97
Perfs 6166-6186' 2 SPF — 1/8/80
Squeeze w/ 100 sx — 10/14/97

5 1/2", 15.5#, K-55 @ 6300'
Cement w/ 825 sx to 4263' — 5/29/1978

DLT 1/14/09

EXHIBIT G

Empire Abo Unit 231 B
(fka, Empire Abo Unit K 231)
1700 FSL & 2350 FEL
6-18s-28e
P & A: 8-26-09

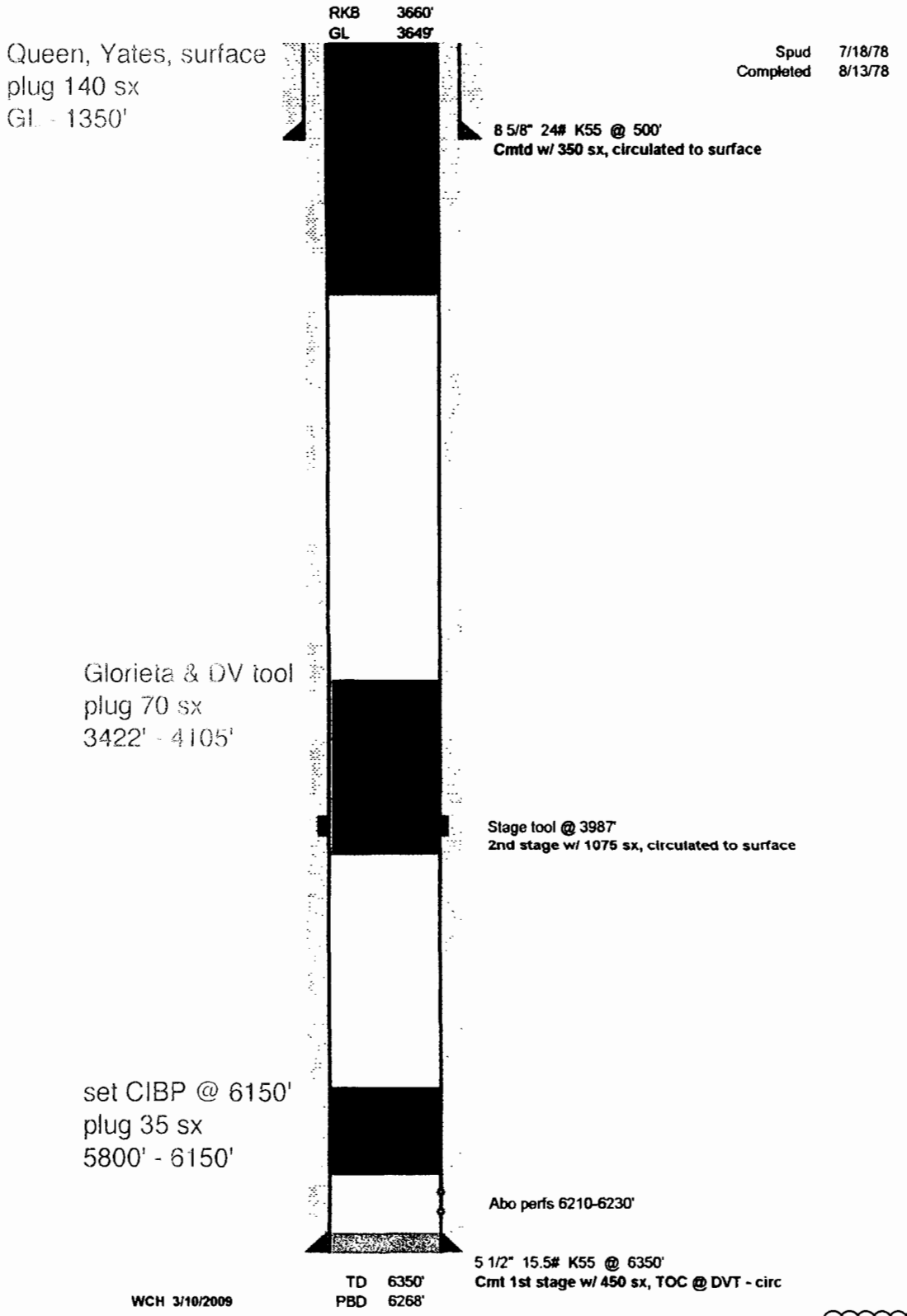


EXHIBIT G

Empire Abo Unit K-232
Empire Abo Field

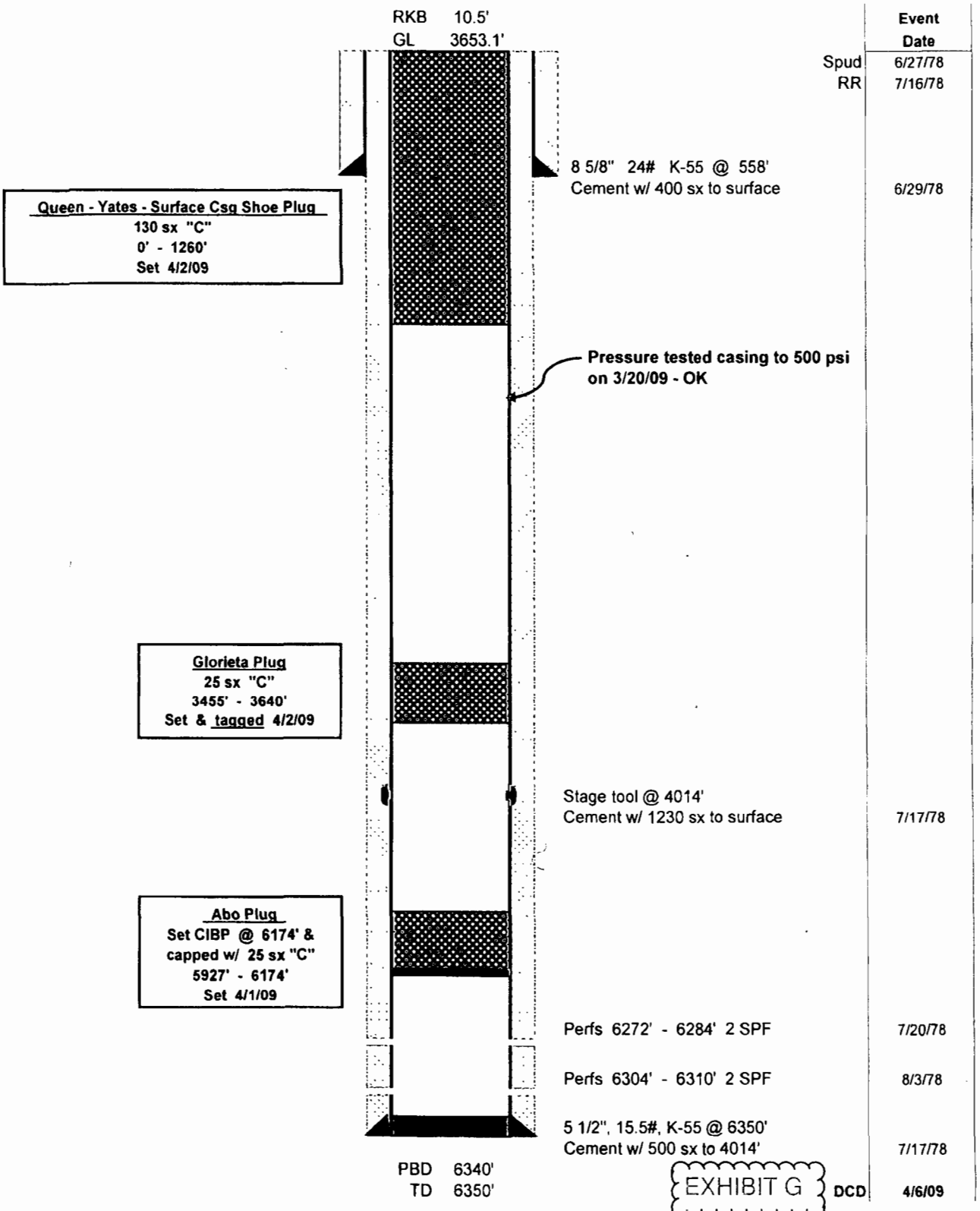
API No. 30-015-22528

2300' FSL & 1570' FEL
Sec 6- T18S - R28E
Eddy County, New Mexico

aka, Empire Abo Unit 232A

FINAL P&A Status

April 6, 2009



Empire Abo Unit "J" #232
Empire Abo Field

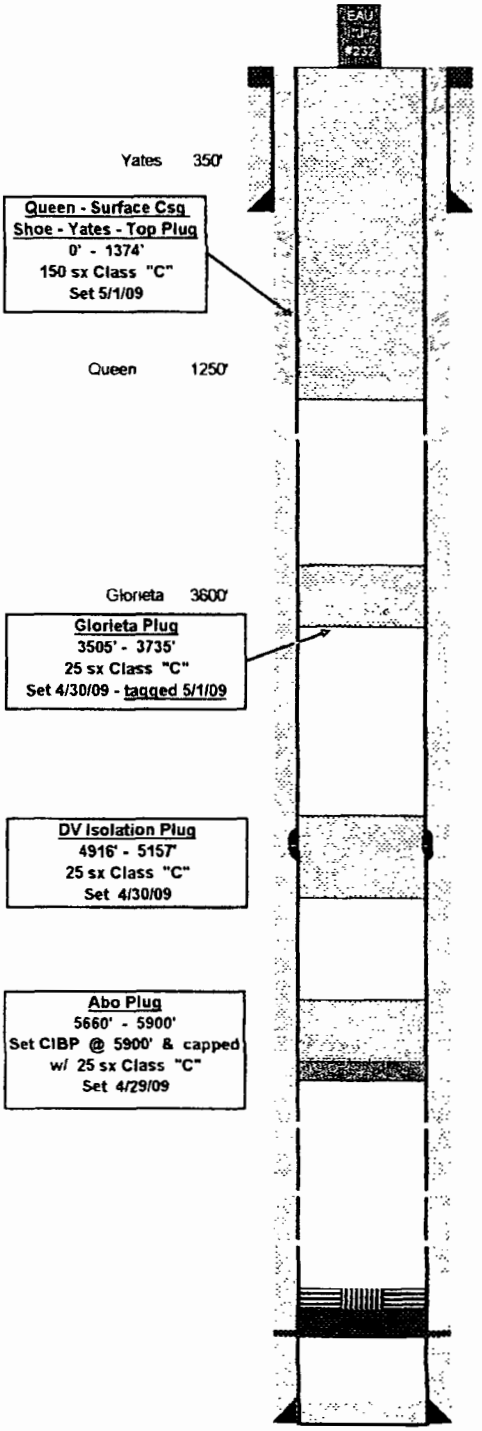
API No. 30-015-21737

2253' FNL & 1576' FEL
Section 6 - T18S - R28E
Eddy County, New Mexico

aka, Empire Abo Unit 232

Final P&A Status
May 1, 2009

RKB 10'
GL 3666'



	Event Date
Spud by DCD	3/5/76
Completed	4/13/76
P&A	5/1/09
Well Life	12,110 days

Yates 350'

Queen - Surface Csg Shoe - Yates - Top Plug
0' - 1374'
150 sx Class "C"
Set 5/1/09

8 5/8" 24# K-55 @ 560' — 3/6/76
Cmt w/ 200 sx & topped off to surface w/ 8 yds redi-mix

Queen 1250'

Perfs 1754' - 1755' 4 shots
Cmt to surface w/ 550 sx - circ'd 75 sx — 4/5/1976
TOC 1800' by TS — 3/28/1976

Glorieta 3600'

Glorieta Plug
3505' - 3735'
25 sx Class "C"
Set 4/30/09 - tagged 5/1/09

DV Isolation Plug
4916' - 5157'
25 sx Class "C"
Set 4/30/09

DV tool @ 5007' — 3/28/76
Cmtd 2nd stage w/ 1125 sx
Did not circ cmt

Abo Plug
5660' - 5900'
Set CIBP @ 5900' & capped w/ 25 sx Class "C"
Set 4/29/09

Perfs 5984-6160' — 3/15/2002

Perfs 6184-97' 2 SPF — 4/16/1976

Perfs 6268-6283' 2 SPF 32 holes — 4/12/1976

Cement retainer @ 6300' — 4/10/76
Perfs 6319-24' 2 SPF 12 shots — 4/7/76
Squeeze w/ 150 sx — 4/10/76

5 1/2" K-55, ST&C @ 6345' — 3/27/76
0' - 6167' 14# 6167' - 6345' 15.5#
Cmtd 1st stage w/ 330 sx
Did not circ to DV tool, had show of gilsonite

6336' PBD
DCD 5/2/09 6345' TD

EXHIBIT G

Pan American's
State CD 1
API 30-015-02624
968 FSL & 2270 FEL 6-18s-28e
Spud 5-17-58 and Plug 6-12-61

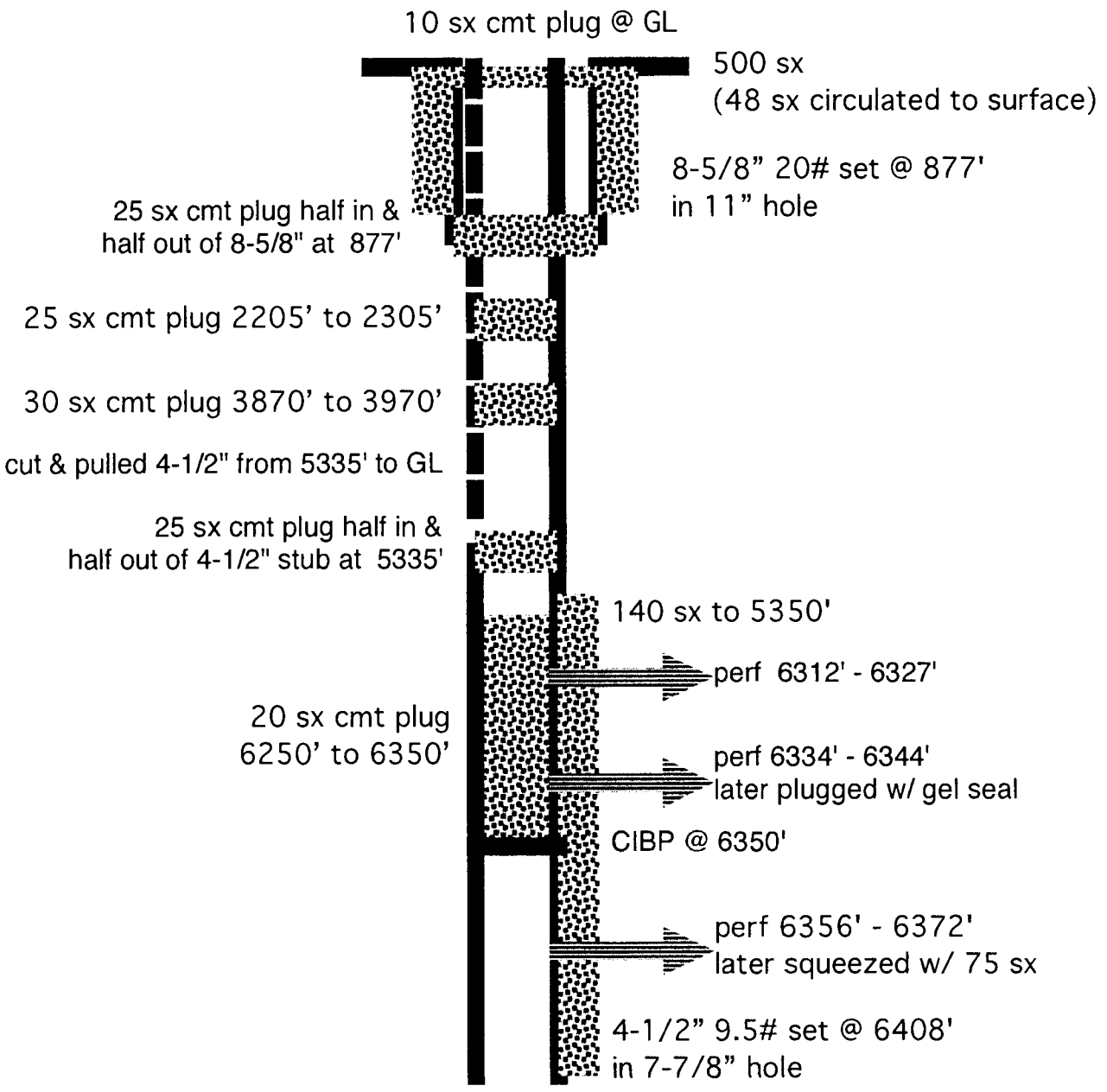


EXHIBIT G

(not to scale)

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS

Empire Abo Unit "J" #235
Empire Abo Field

API No. 30-015-22913

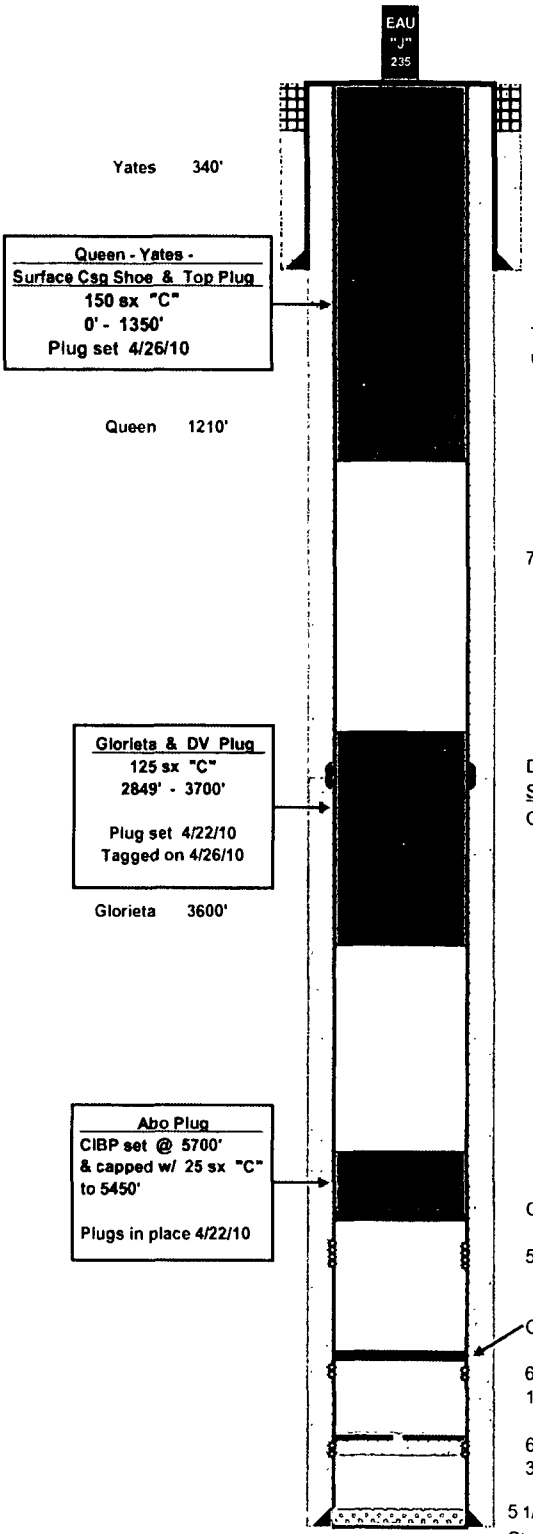
State Lease Nos. 647-320, 647-363, 647-368

1750' FNL & 1600' FEL
Section 6 - T18S - R28E
Eddy County, New Mexico

aka, Empire Abo Unit 235

Final P&A Status
4 / 26 / 10

GL 3672.9'
RKB 13'



Yates 340'

Queen 1210'

Glorieta 3600'

DCD 4/28/10

6316' PBD
6352' TD

Queen - Yates - Surface Csg Shoe & Top Plug
150 sx "C"
0' - 1350'
Plug set 4/26/10

Glorieta & DV Plug
125 sx "C"
2849' - 3700'
Plug set 4/22/10
Tagged on 4/26/10

Abo Plug
CIBP set @ 5700'
& capped w/ 25 sx "C" to 5450'
Plugs in place 4/22/10

11" drilled hole

8 5/8" 24# K55 STC @ 750'
Cmt'd w/ 650 sx Thik-Set & 100 sx "C" w/ 2% $CaCl_2$ & 150 sx "C" w/ 2% $CaCl_2$.
TOC by TS = 230', cmt'd to surface w/ 6 1/2 yds redi-mix.

7 7/8" drilled hole

DV Tool @ 3023'
Stage 2: 1100 sx Thik-Set w/ 2% $CaCl_2$
Circ'd 200 sx to surface

CIBP @ 5700'

5755' - 6161' overall 2 SPF 105' / 210 holes

CIBP @ 6176' set on tbg, no cmt cap

6190' - 6207' w/ 2 SPF. OPT: 146 BO, 0 BW & 102 MCF w/ 70 psi FTP On 3/4" choke.

6264' - 6284' w/ 2 SPF, last swab rate 3 BO + 3 BWPH, "swabbed dry". Sq w/

5 1/2" 15.5# K-55 STC @ 6300'
Stage 1: Cmt'd w/ 650 sx HLW w/ 6 pps salt, 1/4# flocele & 2% CaCl2 followed by 200 sx Thik-Set w/ 2% $CaCl_2$. Circ'd 70 sx from above DV tool.

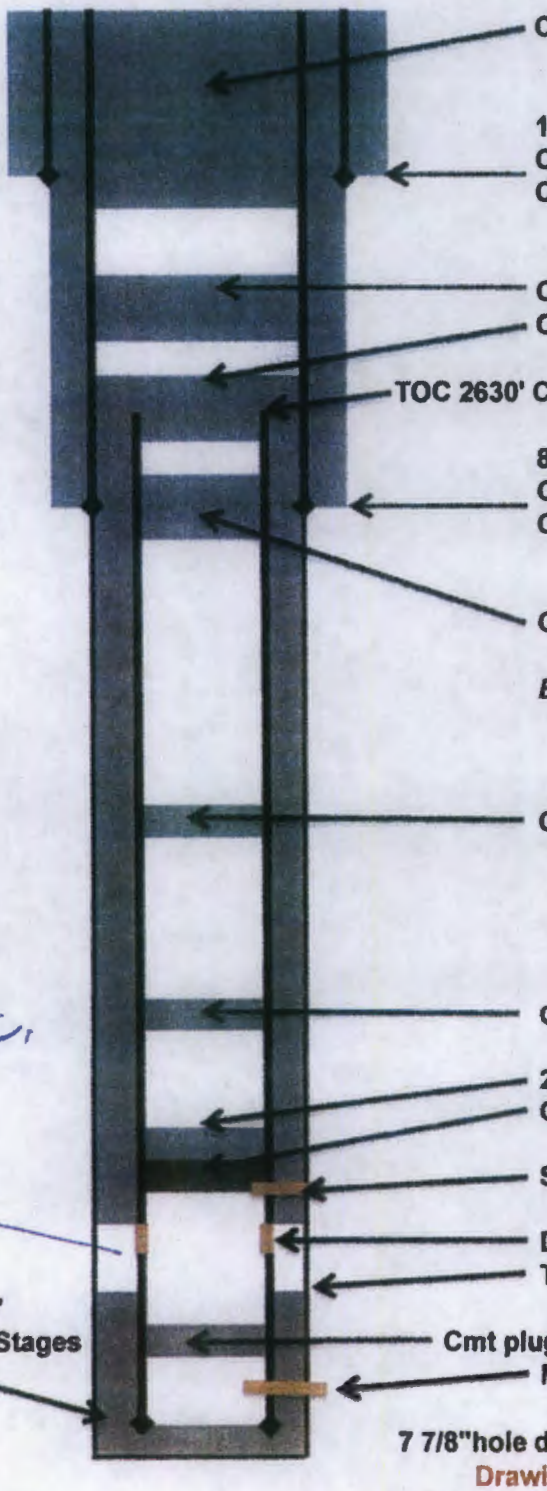
	Event Date
Spud	5/31/79
TD	6/20/79
RR	6/21/79
P&A	4/26/10
Life of Well	11,288 days
	6/1/79
	6/21/79
	10/15/01
	4/1/09
	7/6/79
	6/24/79
	6/20/79

EXHIBIT G

BP America Production Company

Slider 6 State # 1
API # 30-015-34028
Unit Letter"G", Sec 6, T18S, R28E
Eddy County, NM
SL 2285 x1366 FEL BHL 1686 FNL x 1533 FEL

P & A: 12-23-08



Cmt plug Surface-521'

13 3/8"CSA 468' in 17 1/2"hole
Cmt w/ 600sx Cmt
Cmt circulated to surface

Cmt plug 1596-1475'

Cmt plug 2600-2437'

TOC 2630' CBL/Cut & Pull 5 1/2" 2542'

8 5/8" CSA 3121' in 11"hole
Cmt w/900sx cmt
Cmt circulated to surface

Cmt plug 3640-2828'

Exhibit"C"

Abo 5354
Wolfcamp 6946
Cisco 8147

Cmt plug 5361-5101'

Cmt plug 6909-6185'

Open Lower W.C.

25 Sx cmt plug 7081-7364'

CIBP 7364'

Squeeze Holes 7389-7396 w/660sx

DV Tool 7516'

TOC 7950' by CBL

5 1/2"CSA 10433'
Cmt w/ 1200sx/2 Stages

Cmt plug 10050-9899'

Morrow Perfs 10130-10168'

EXHIBIT G

7 7/8"hole drilled to TD 10433'

BEP

Drawing not to Scale

www.pwllc.net

drawing from SWD-318

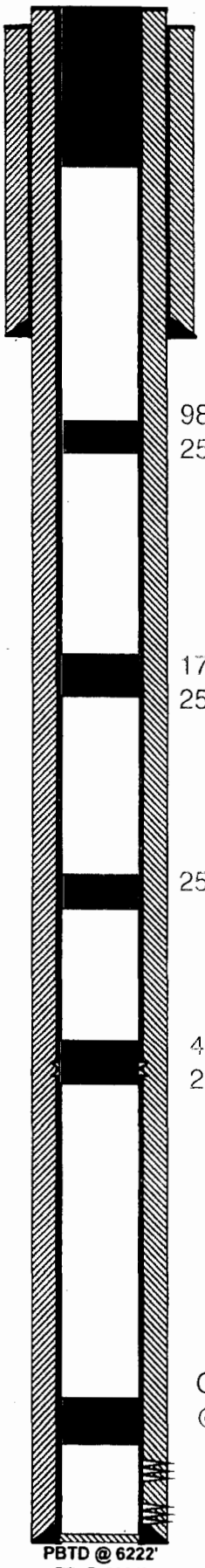
Apache

WELL BORE INFO.

aka, Empire Abo Unit 231

LEASE NAME	**Empire Abo Unit "I"**
WELL #	**231**
API #	**30-015-21542**
COUNTY	**Eddy**

1260 FNL & 1580 FEL
6-18s-28e
P & A: 6-12-13



0

GL - 300'
30 sx

626

11" Hole
8 5/8" 24# @ 1002'
w/550 sx (TOC @ 15', topped off w/ 4 yds Redimix)

1252

980' - 1260'
25 sx

1878

2504

1745' - 2050'
25 sx

3131

25 sx @ 3310'

3757

DV tool @ 4242'

4037' - 4292'
25 sx

4383

5009

5635

CIBP & 25 sx
@ 5800'

Abo perfs @ 5850'-5996'

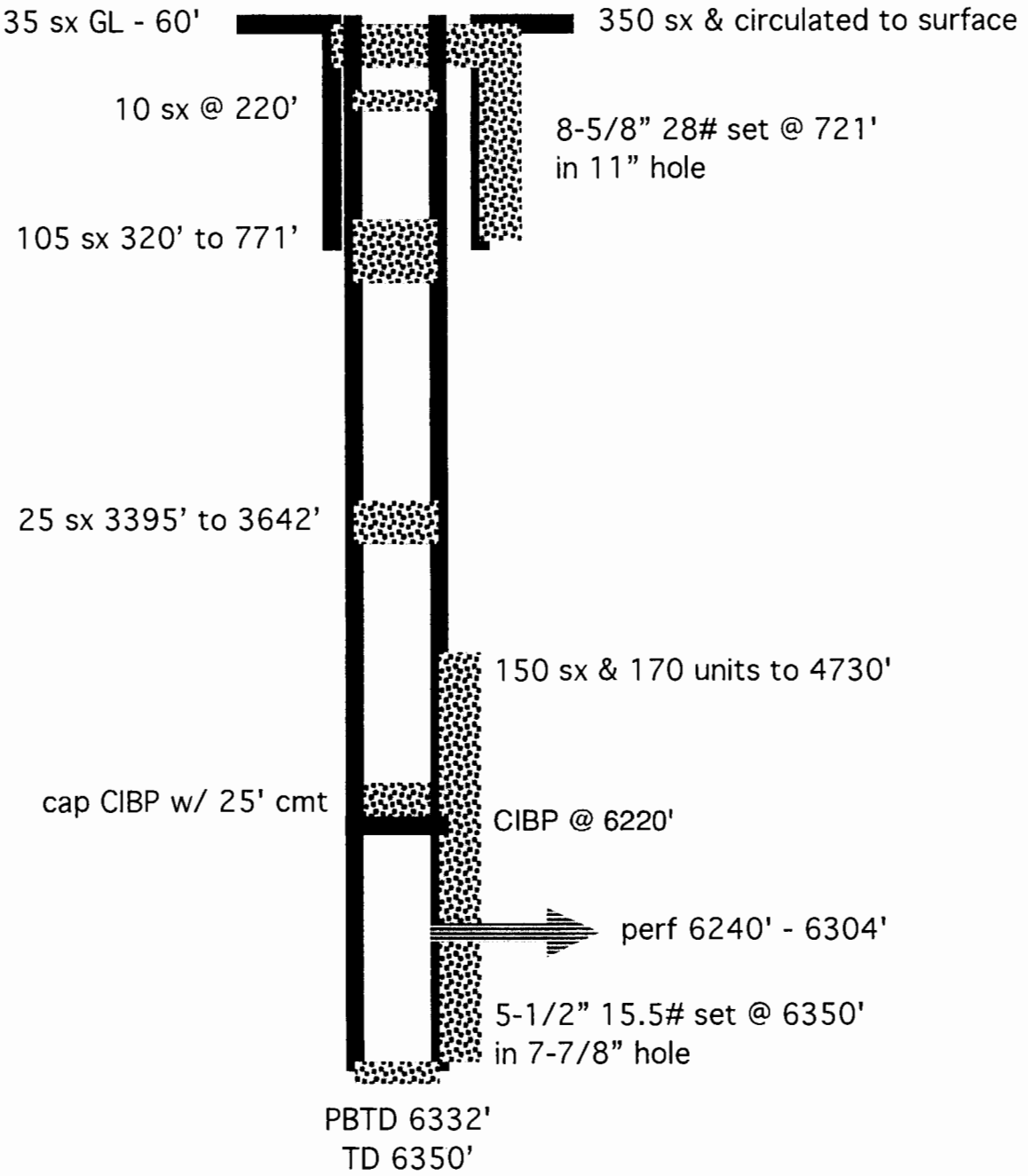
Abo perfs @ 6190'-6200'

7 7/8" Hole
5 1/2" 15.5# @ 6261'
w/ 1175 sx CIRC

6261

PBTD @ 6222'
TD @ 6261'

BP's
Empire Abo Unit 24K
API 30-015-02617
2310 FSL & 990 FEL 6-18s-28e
Spud 8-11-60 and Plug 12-12-02



(not to scale)

EXHIBIT G

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS

November 27, 2012

MR. WILLIAM V. JONES, P.E.
New Mexico Oil Conservation Division
1220 South St. Frances Dr.
Santa Fe, NM 87505

Dear Mr. William V. Jones,

We would like approval to convert previously approved gas and water injection wells back to gas and water injection wells. The current reservoir pressure is approximately 80 psi. The specific gravity is 0.89. We plan to recharge the reservoir in an attempt to increase production. Based on the current producing well count, oil and gas production and lease operating expense, the Empire Abo Unit is marginally economic. We propose our surface pressure limit to be 1,200 psi. This pressure limit duplicates what Arco did during the 1970's, 1980's and 1990's.

Sincerely,

MARK THOMAS
Sr. Production Engineer Advisor

EXHIBIT H

4808 N. Michigan, Roswell, NM. 88202-8323 575-622-9874

Precision Gas Measurement, Inc.

Natural Gas Report

Sample Information

	Sample Information
Company Name	APACHE CORP.
Lease Name	EMPIRE ABO D-40 BATT.
Location ID	
Sample Date	12/8/2011
Operator	JWD
Method Name	BTUH2S.met
Injection Date	2011-12-08 15:54:48

Component Results

Component Name	Norm%	Gross HV (Dry) (BTU / Ideal cu.ft.)	Gross HV (Sat.) (BTU / Ideal cu.ft.)	Relative Gas Density (Dry)	GPM (Dry) (Gal. / 1000 cu.ft.)
NITROGEN	1.0347	0.0	0.0	0.01001	0.114
METHANE	63.9803	644.2	632.9	0.35439	10.837
CARBON DIOXIDE	2.7073	0.0	0.0	0.04114	0.462
ETHANE	15.0924	266.3	261.6	0.15669	4.033
PROPANE	6.8299	171.3	168.3	0.10399	1.880
I-BUTANE	0.9208	29.8	29.3	0.01848	0.301
N-BUTANE	2.1152	68.8	67.6	0.04245	0.666
I-PENTANE	0.5423	21.6	21.3	0.01351	0.198
N-PENTANE	0.5352	21.4	21.0	0.01333	0.194
C6+	0.8577	43.9	43.1	0.02760	0.372
H2S	5.3842	34.2	33.6	0.06336	0.727
Water	0.0000	0.0	0.0	0.00000	0.000
Total:	100.0000	1301.4	1278.7	0.84493	19.783

Results Summary

Result	Dry	Sat.
Total Normalzed Mole%	100.0000	100.0000
Pressure Base (psia)	14.650	
Flowing Temperature (Deg. F)	74.5	
Flowing Pressure (psia)	41.7	
Water Mole%	-	1.7502
Gross Heating Value (BTU / Ideal cu.ft.)	1301.4	1278.7
Gross Heating Value (BTU / Real cu.ft.)	1307.7	1285.4
Relative Density (G), Real	0.8486	0.8451
Compressibility (Z) Factor	0.9952	0.9948
Total GPM	19.783	19.545
Wobbe Index	1419.5	1398.2

EXHIBIT H

Wildcat Measurement Service
P.O.Box 1836
416 East Main Street
Artesia, NM 88211-1836

9/21/2012 2:36 PM
Phone: 575-746-3481
888-421-9453
Fax: 575-748-9852
dnorman@wildcatms.com

GAS ANALYSIS REPORT

Analysis For: FRONTIER FIELD SERVICES, L.L.C.
Field Name: EMPIRE ABO
Well Name: E.A.U. D-40A
Station Number: 631010
Purpose: SPOT
Sample Deg. F: 88.0
Volume/Day:
Formation:
Line PSIG: 32.1
Line PSIA: 45.3

Run No: 2120921-02
Date Run: 09/21/2012
Date Sampled: 09/21/2012
Producer: APACHE CORPORATION
County: EDDY
State: NM
Sampled By: EMC
Atmos Deg. F:

EFF 9-1-2012
Entered 10-3-2012
BACKDATED

GAS COMPONENTS		MOL%	GPM
Oxygen	O2:	0.0000	
Carbon Dioxide	C02:	2.2013	
Nitrogen	N2:	1.0846	
Hydrogen Sulfide	H2S:	12.0000	
Methane	C1:	58.2157	
Ethane	C2:	13.9332	3.7051
Propane	C3:	6.6223	1.8141
Iso-Butane	IC4:	1.0052	0.3271
Nor-Butane	NC4:	2.4604	0.7713
Iso-Pentane	IC5:	0.6767	0.2461
Nor-Pentanes	NC5:	0.6844	0.2467
Hexanes Plus	C6+:	1.1162	0.4826
Totals		100.0000	7.5929

Pressure Base: 14.650
Real BTU Dry: 1305.291
Real BTU Wet: 1282.377

Calc. Ideal Gravity: 0.8924
Calc. Real Gravity: 0.8969
Field Gravity:
Standard Pressure: 14.696
Ideal BTU Dry: 1302.345
Ideal BTU Wet: 1279.684
Z Factor: 0.9946
Average Mol Weight: 25.8478
Average CuFt/Gal: 54.9641
26 lb. Product: 1.5002
Ethane+ GPM: 7.5929
Propane+ GPM: 3.8878
Butane+ GPM: 2.0737
Pentane+ GPM: 0.9753

Remarks:
H2S IN GAS STREAM ON LOCATION: 12.0000% = 120,000 PPM

Analysis By: Don Norman

EXHIBIT H

408

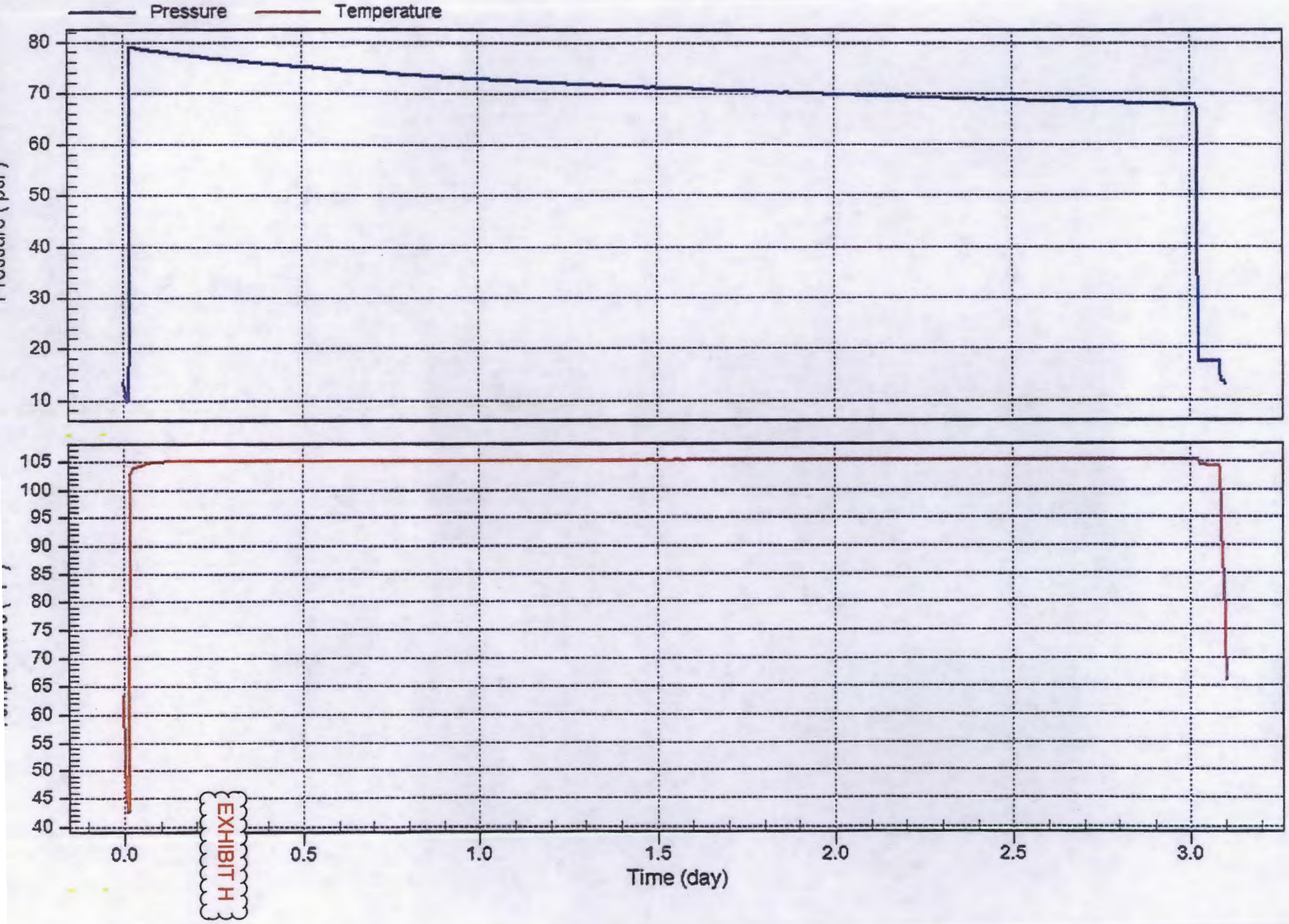
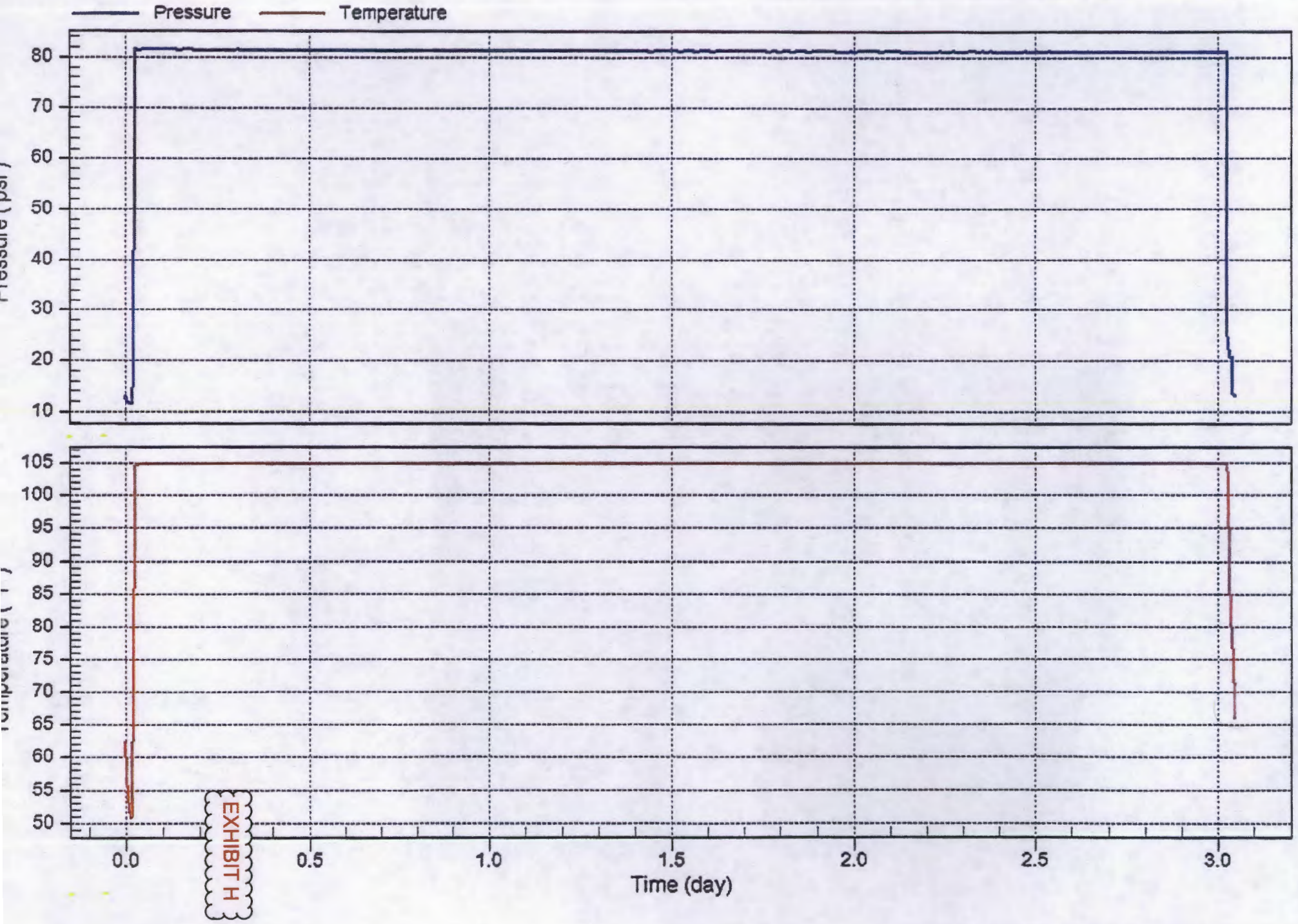


EXHIBIT H

#19


Pressure
Temperature
80
70
60
50
40
30
20
10
105
100
95
90
85
80
75
70
65
60
55
50
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Time (day)
EXHIBIT H

New Mexico Office of the State Engineer

Active & Inactive Points of Diversion

(with Ownership Information)

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

(acre ft per annum)

WR File Nbr	Sub basin	Use	Diversion	Owner	County	POD Number	Code Grant	Source	q q q 6416 4	Sec	Tws	Rng	X	Y	Distance
RA 08235		STK	1.43	BOGLE FARMS	ED	RA 08235				07	18S	28E	573537	3625134*	1616
RA 08236		STK	1	BOGLE FARMS	ED	RA 08236			3	08	18S	28E	574557	3624563*	2505
RA 08237		STK	1.47	BOGLE FARMS	ED	RA 08237			3 3	08	18S	28E	574557	3624563*	2505

Shallow Alluvial WR 1991 transferred

Record Count: 3

UTMNAD83 Radius Search (in meters):

Easting (X): 573307 Northing (Y): 3626734 Radius: 3220

Sorted by: Distance

EXHIBIT 1

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

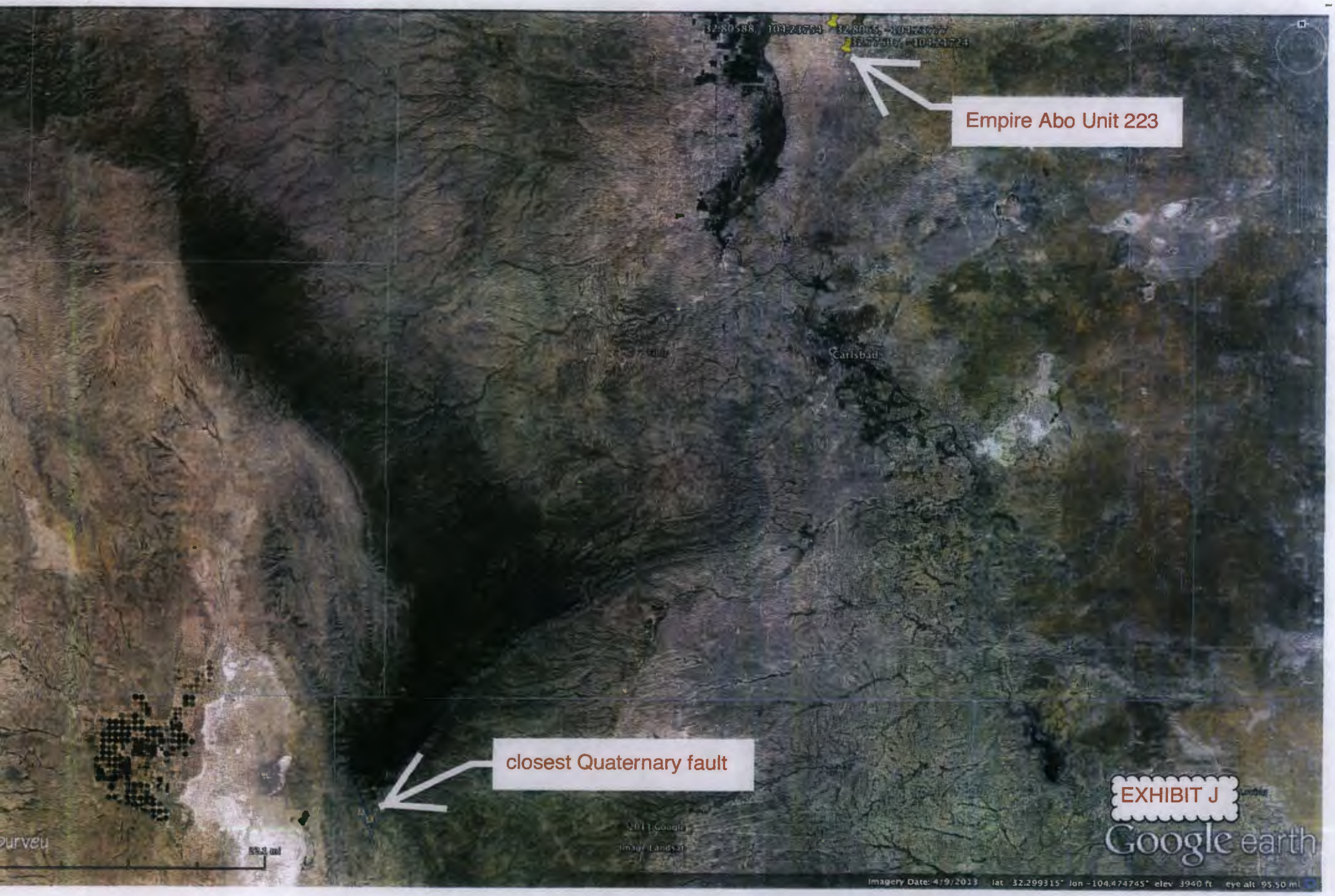
New Mexico Office of the State Engineer
Water Column/Average Depth to Water

No records found.

UTMNAD83 Radius Search (in meters):

Easting (X): 573307 Northing (Y): 3626734 Radius: 4000 = 13,120'

EXHIBIT I


Empire Abo Unit 223
closest Quaternary fault
EXHIBIT J
Google earth
Carlsbad
Imagery Date: 4/9/2013 lat 32.299315° lon -104.474745° elev 3940 ft eye alt 95.50 mi

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

August 29, 2013

Bogle Ltd. Company
P. O. Box 460
Dexter, NM 88231

Apache Corporation is applying (application attached) to convert its Empire Abo Unit 223 oil well to a gas injection well. As required by NM Oil Conservation Division Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: Empire Abo Unit 223 (state lease) TD = 6,250'
Proposed Injection Zone: Abo (from 5,680' to 6,197')
Location: 2630' FNL & 1930' FWL Sec. 6, T. 18 S., R. 28 E., Eddy County, NM
Approximate Location: ≈11 air miles southeast of Artesia, NM
Applicant Name: Apache Corporation (432) 818-1926
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a water injection well will be filed with the NM Oil Conservation Division (NMOCD). If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

Brian Wood

7010 2780 0002 6818 8952

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EXHIBIT K

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

August 29, 2013

Barney Cockburn
P. O. Box 105
Artesia, NM 88210

Dear Mr. Cokburn:

Apache Corporation is applying (application attached) to convert its Empire Abo Unit 223 oil well to a gas injection well. As required by NM Oil Conservation Division Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

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Please call me if you have any questions.

Sincerely,

Brian Wood

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Street, Apt. No.; or PO Box No.
City, State, ZIP+4
PS Form 3800, August 2006 See Reverse for Instructions

7010 2780 0002 6818 8969

EXHIBIT K

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

August 29, 2013

BLM
620 E. Greene St.
Carlsbad, NM 88220

Apache Corporation is applying (application attached) to convert its Empire Abo Unit 223 oil well to a gas injection well. As required by NM Oil Conservation Division Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: Empire Abo Unit 223 (state lease) TD = 6,250'
Proposed Injection Zone: Abo (from 5,680' to 6,197')
Location: 2630' FNL & 1930' FWL Sec. 6, T. 18 S., R. 28 E., Eddy County, NM
Approximate Location: ≈11 air miles southeast of Artesia, NM
Applicant Name: Apache Corporation (432) 818-1926
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a water injection well will be filed with the NM Oil Conservation Division (NMOCD). If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

Brian Wood

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7010 2780 0002 6818 8976

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

August 29, 2013

Bogle Ltd. Company
c/o COG & Concho
600 West Illinois Ave.
Midland, TX 79701

Apache Corporation is applying (application attached) to convert its Empire Abo Unit 223 oil well to a gas injection well. As required by NM Oil Conservation Division Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

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Location: 2630' FNL & 1930' FWL Sec. 6, T. 18 S., R. 28 E., Eddy County, NM
Approximate Location: ≈11 air miles southeast of Artesia, NM
Applicant Name: Apache Corporation (432) 818-1926
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a water injection well will be filed with the NM Oil Conservation Division (NMOCD). If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

Brian Wood

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AUG 29 2013
87552

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City, State, ZIP+4

EXHIBIT K

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

August 29, 2013

BP America Production Co.
501 Westlake Park Blvd.
Houston, TX 77079

Apache Corporation is applying (application attached) to convert its Empire Abo Unit 223 oil well to a gas injection well. As required by NM Oil Conservation Division Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

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Location: 2630' FNL & 1930' FWL Sec. 6, T. 18 S., R. 28 E., Eddy County, NM
Approximate Location: ≈11 air miles southeast of Artesia, NM
Applicant Name: Apache Corporation (432) 818-1926
Applicant's Address: 303 Veterans Airpark Lane, #3000, Midland, TX 79705

Submittal Information: Application for a water injection well will be filed with the NM Oil Conservation Division (NMOCD). If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. The NMOCD address is 1220 South St. Francis Dr. Santa Fe, NM 87505. Their phone number is (505) 476-3440.

Please call me if you have any questions.

Sincerely,

Brian Wood

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PS Form 3800, August 2006 See Reverse for Instructions

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

August 29, 2013

Burlington Resources
3401 E. 30th Street
Farmington, NM 87402

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EXHIBIT K

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 (505) 466-8120

August 29, 2013

ConocoPhillips Company
P. O. Box 7500
Bartlesville, OK 74005-7500

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Please call me if you have any questions.

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Brian Wood

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City, State, ZIP+4

7010 2780 0002 6818 9027

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
[illegible] Loop, Santa Fe, New Mexico [illegible] (505) 466-8120

August 29, 2013

ExxonMobil Corporation
P. O. Box 4358
Houston, TX 77210-4358

Apache Corporation is applying (application attached) to convert its Empire Abo Unit 223 oil well to a gas injection well. As required by NM Oil Conservation Division Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

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Brian Wood

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Street, Apt. No., or PO Box No.
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PS Form 3800, August 2006

EXHIBIT K

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
[illegible] Loop, Santa Fe, New Mexico [illegible] (505) 466-8120

August 29, 2013

Kerr-McGee O/G Onshore, LP
P. O. Box 1330
Houston, TX 77251

Apache Corporation is applying (application attached) to convert its Empire Abo Unit 223 oil well to a gas injection well. As required by NM Oil Conservation Division Rules, I am notifying you of the following proposal. This letter is a notice only. No action is needed unless you have questions or objections.

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Please call me if you have any questions.

Sincerely,

Brian Wood

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Street, Apt. No., or PO Box No.
City, State, ZIP+4

See Reverse for Instructions

7010 2780 0002 6818 9041

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
[illegible]

August 29, 2013

Khody Land & Minerals
210 Park Ave., Suite 900
Oklahoma City, OK 73102

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EXHIBIT K

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
[illegible]

August 29, 2013

Mewbourne Oil Company
P. O. Box 7698
Tyler, TX 75711

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Sincerely,

Brian Wood

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Street, Apt. No.; or PO Box No.
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PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS

August 29, 2013

Nick Jaramillo
New Mexico State Land Office
P. O. Box 1148
Santa Fe, NM 87504-1148

Dear Nick,

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Brian Wood

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EXHIBIT K

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS

August 29, 2013

Occidental Permian Ltd.
P. O. Box 4294
Houston, TX 77210

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Please call me if you have any questions.

Sincerely,

Brian Wood

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City, State, ZIP+4

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87505 (505) 466-8120

August 29, 2013

Ruth Oil Co., LLC
P. O. Box 1212
Eunice, NM 88231

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Brian Wood

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Sent To: Ruth Oil Co., LLC
Street, Apt. No.; or PO Box No.
City, State, ZIP+4

EXHIBIT K

PERMITS WEST, INC.
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87505 (505) 466-8120

August 29, 2013

Sheldon P. Vilas Trust
c/o Gary A. Lee, Trustee
P. O. Box 1872
Kingsland, TX 78639

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Sincerely,

Brian Wood

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Sent To: Sheldon P. Vilas Trust
Street, Apt. No.; or PO Box No. C/O Gary A. Lee
City, State, ZIP+4

7010 2780 0002 6818 9102

Affidavit of Publication

NO. 22697

STATE OF NEW MEXICO

County of Eddy:

Danny Scott

being duly sworn, says that he is the **Publisher**

of the Artesia Daily Press, a daily newspaper of general circulation, published in English at Artesia, said county and state, and that the hereto attached

Legal Notice

was published in a regular and entire issue of the said Artesia Daily Press, a daily newspaper duly qualified for that purpose within the meaning of Chapter 167 of the 1937 Session Laws of the state of New Mexico for

1 Consecutive weeks/days on the same day as follows:

First Publication August 16, 2013

Second Publication

Third Publication

Fourth Publication

Fifth Publication

Subscribed and sworn to before me this

16th day of August 2013

OFFICIAL SEAL
Latisha Romine
NOTARY PUBLIC-STATE OF NEW MEXICO

My commission expires: 5/12/2015

Latisha Romine

Latisha Romine
Notary Public, Eddy County, New Mexico

Copy of Publication:

LEGAL NOTICE

Apache Corporation is applying for a gas injection well. The Empire Abo Unit 223 will inject into the Abo from 5,680' to 6,197'. It is located 11 miles southeast of Artesia at 2630 FNL & 1930 FWL Sec. 6, T. 18 S., R. 28 E., Eddy County. Maximum disposal rate will be 2,000 Mcfd. Maximum injection pressure will be 1,136 psi. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505 within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.

Published in the Artesia Daily Press, Artesia, N.M., Aug. 16, 2013. Legal No 22697.

EXHIBIT L

Suspended for COG review - reinstated Nov. 2, 2013

C-108 Review Checklist: Received 9/10/13 Add. Request: _____ Reply Date: _____ Suspended: 9/17/13 [Ver 10]

PERMIT TYPE: WFX / PMX / SWD Number: 270 Permit Date: 11/14/13 Legacy Permits/Orders: R-4549 + amend R-9984

Well No. 223 Well Name(s): Empire-Abo Unit

API : 30-0 15-22527 Spud Date: 4/22/1978 New or Old: Old (UIC Class II Primacy 03/07/1982)

Footages 2630 FNL / 1930 FWL Lot — Unit F Sec 6 Tsp 18S Rge 28E County Eddy

General Location: SE of Artesia / Abo reef Pool: Empire Abo Pool No.: 22040

Operator: Apache Corp OGRID: 873 Contact: Brian Wood / Permits West

COMPLIANCE RULE 5.9: Inactive Wells: 4 Total Wells: 2804 Fincl Assur: Yes Compl. Order? No **IS 5.9 OK?** Yes

Well File Reviewed ✓ Current Status: Oil producer / Abo unit; previously gas injector (R-9984) 1993-1996

Well Diagrams: NEW: Proposed ✓ RE-ENTER: Before Conv. ✓ After Conv. ✓ Are Elogs in Imaging?: _____

Planned Rehab Work to Well: Squeezed old perfs at 6031 & 6080-6096; new perfs 5680-6197

Well Construction Details:	Sizes (in) Borehole / Pipe	Setting Depths (ft)	Stage Tool	Cement Sx or Cf	Cement Top and Determination Method
Planned __or Existing __ **Conductor**	—	—		—	—
Planned __or Existing ✓ **Surface**	11 / 8 5/8	0 to 585		300	Circ. to pit (Surf.)
Planned __or Existing ✓ **Interm/Prod**	7 7/8 / 5 1/2	0 to 6250	No	1,240	Circ to pit (Surf.)
Planned __or Existing __ **Prod/Interm**	—	—	—	—	—
Planned __or Existing __ **Liner/Prod**	—	—	—	—	—
(N) Planned ✓ or Existing ✓ **OH** (PERF)	5 1/2	N: 5680-6197 Old: 6031/6080-96	Inj Length 517		

Injection Stratigraphic Units:	Depths (ft)	Injection or Confining Units	Tops?
Adjacent Unit: Litho. Struc. Por.	—	—	—
Confining Unit: Litho. (Struc.) Por.	—	Drinkard	—
Proposed Inj Interval TOP:	5680	Abo R-9984	5250
Proposed Inj Interval BOTTOM:	6197	Reef int'l	6369
Confining Unit: Litho. Struc. Por.	—	Wolfcamp	—
Adjacent Unit: Litho. Struc. Por.	—	—	—

Completion/Operation Details:

Drilled TD 6250 PBTD 6200

NEW TD NA NEW PBTD NA

NEW Open Hole ○ or NEW Perfs ✓

Tubing Size 3 1/2 in. Inter Coated? Yes

Proposed Packer Depth 5580 ft

Min. Packer Depth 5580 (100-ft limit)

Proposed Max. Surface Press. * 1600 psi

Admin. Inj. Press. * 1116 (0.2 psi per ft)

AOR: Hydrologic and Geologic Information

POTASH: R-111-P NA Noticed? NA **BLM Sec Ord** NA **WIPP** NA Noticed? NA **SALADO:** T: NA B: NA **CLIFF HOUSE** NA

FRESH WATER: Formation Alluvial Roswell Art. Basin Max Depth 200 Wells? 0 FW Analysis? No **HYDROLOGIC AFFIRM By Qualified Person** ✓

Disposal Fluid: Formation Source(s) Produced gas from unit Analysis? No On Lease ✓ Operator Only ○ or Commercial ○

Disposal Interval: Injection Rate (Avg/Max BWPD): 12 MMCFPD (max & ave) Protectable Waters: No **CAPITAN REEF:** thru ○ adj ○ NA ✓

H/C Potential: Producing Interval? Yes Formerly Producing? Yes Method: E Log /Mudlog/DST/Depleted/Other Empire Abo Unit PM Project

AOR Wells: 1/2-M Radius Map? Yes Well List? Yes Total No. Wells Penetrating Interval: 33 Horizontals? 0

Penetrating Wells: No. Active Wells 23 Num Repairs? 0 on which well(s)? [majority are Abo prod. and injectors - review wells in R-9984] Diagrams? Yes

Penetrating Wells: No. P&A Wells 10 Num Repairs? 0 on which well(s)? _____ Diagrams? Yes

NOTICE: Newspaper Date 08/16/13 Mineral Owner SLO Surface Owner Bogle Ltd Co N. Date 08/29/13

RULE 26.7(A): Identified Tracts? Yes Affected Persons: BP America / Burlington / ConocoPhillips / Ker. McGee / Exxon Mobile / Kohdy Land Mewbourne / Ruth Oil / Sheldon Vilas Trust N. Date 08/29/13

Permit Conditions: **Issues:** None

Add Permit Cond: * R-9984 approved this well for a max pressure ≤ 2000 psi

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

Case No. 10813
Order No. R-9984

APPLICATION OF ARCO OIL AND GAS COMPANY FOR APPROVAL OF THE CONVERSION OF SIXTEEN WELLS IN THE EMPIRE ABO UNIT TO INJECTION, EDDY COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on September 9, 1993, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 5th day of October, 1993, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) By Order No. R-4549 issued in Case No. 4953 on June 15, 1973, the Division authorized Arco Oil and Gas Company to institute a pressure maintenance project in its Empire Abo Unit Area located in portions of Townships 17 and 18 South, Ranges 27, 28 and 29 East, NMPM, Eddy County, New Mexico, by the injection of gas into the Abo formation through eight initial injection wells located within the unit.

(3) The applicant, Arco Oil and Gas Company, seeks approval to convert sixteen wells, all as shown on Exhibit "A" attached hereto, to injection in the Empire Abo Unit Pressure Maintenance Project, by the injection of gas into the Abo formation through the gross interval from approximately 5,250 feet to 6,369 feet.

(4) Approval of the proposed expansion will allow the applicant to inject gas into portions of the Empire Abo Unit Area not previously subject to gas injection, thereby improving sweep efficiency.

(5) Approval of the proposed expansion will also allow the applicant to recover additional oil from the Empire Abo Unit Area which may not otherwise be recovered, thereby preventing waste, and will not violate correlative rights.

(6) No offset operator and/or interest owner appeared at the hearing in opposition to the application.

(7) The applicant should take all steps necessary to ensure that the injected gas enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(8) The injection of gas into each of the wells shown on Exhibit "A" should be accomplished through 2 3/8-inch internally plastic-lined tubing installed in a packer set within 100 feet of the uppermost injection perforation; the casing-tubing annulus should be filled with an inert fluid and a gauge or approved leak-detection device should be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(9) According to applicant's evidence and testimony, there are five wells within the "area of review", described as follows, which may not be cemented adequately so as to confine the injected fluid to the proposed injection zone:

OPERATOR, WELL NAME	WELL LOCATION
Arco-Empire Abo Ut. No. M-10	Unit O, Section 10-18S-27E
Arco-Empire Abo Ut. No. M-12	Unit A, Section 10-18S-27E
Arco-Empire Abo Ut. No. M-15	Unit B, Section 11-18S-27E
Arco-Empire Abo Ut. No. N-12	Unit A, Section 10-18S-27E
Rhonda Operating-Federal "EA" No. 1	Unit D, Section 12-18S-27E

(10) Prior to commencing injection operations into any injection well located within one-half mile of the above-described wells, the applicant should be required to cement above, across and below the proposed injection interval in a manner acceptable to the supervisor of the Division's Artesia District Office, or in the alternative, demonstrate by means of cement bond logs, temperature surveys or other appropriate data that the wells are adequately cemented so as to confine the injected gas to the injection formation.

(11) According to further evidence, there are five wells within the "area of review", described as follows, which may not be plugged and abandoned in a manner so as to confine the injected fluid to the proposed injection zone:

OPERATOR, WELL NAME	WELL LOCATION
Pan American-State "BL" No. 1	Unit B, Section 4-18S-28E
Exxon-Chalk Bluff Draw Ut. No. 18	Unit M, Section 16-18S-27E
Exxon-Chalk Bluff Draw Ut. No. 12	Unit A, Section 17-18S-27E
Exxon-Chalk Bluff Draw Ut. No. 20	Unit N, Section 17-18S-27E
James P. Dunigan-State No. 1	Unit D, Section 3-18S-28E

(12) Prior to commencing injection operations into any injection well located within one-half mile of the above-described wells, the applicant should be required to re-plug the wells in a manner acceptable to the supervisor of the Division's Artesia District Office, or in the alternative, demonstrate by other means that the wells are adequately plugged and abandoned so as to confine the injected gas to the injection formation.

(13) Prior to commencing injection operations into the wells shown on Exhibit "A", the casing in each well should be pressure tested throughout the interval from the surface down to the proposed packer setting depth, to assure the integrity of such casing.

(14) The injection wells or pressurization system should be initially equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 2,000 psi.

(15) The Division Director should have the authority to administratively authorize a pressure limitation in excess of the pressure limitation described in Finding No. (14) above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(16) The operator should give advance notification to the supervisor of the Artesia District Office of the Division of the date and time of the conductance of remedial cement operations, re-plugging operations, the installation of injection equipment and of the mechanical integrity pressure tests in order that the same may be witnessed.

(17) The expansion of the Empire Abo Unit Pressure Maintenance Project should be approved and the project should be governed by the provisions of Division Order No. R-4549, as amended, and Rule Nos. 701 through 708 of the Oil Conservation Division Rules and Regulations.

(18) The injection authority granted herein for the proposed injection wells should terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Arco Oil and Gas Company, is hereby authorized to expand its Empire Abo Unit Pressure Maintenance Project by injecting gas into the Abo formation, Empire-Abo Pool, Eddy County, New Mexico, through the gross interval from approximately 5,250 feet to 6,369 feet in the sixteen wells shown on Exhibit "A" attached hereto.

(2) The applicant shall take all steps necessary to ensure that the injected gas enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(3) Injection into the wells shown on Exhibit "A" shall be accomplished through 2 3/8-inch plastic-lined tubing installed in a packer set approximately within 100 feet of the uppermost injection perforation; the casing-tubing annulus in each well shall be filled with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(4) The injection wells or pressurization system shall be equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 2,000 psi.

(5) The Division Director shall have the authority to administratively authorize a pressure limitation in excess of the above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(6) Prior to commencing injection operations into the wells shown on Exhibit "A", the casing in each well shall be pressure-tested throughout the interval from the surface down to the proposed packer setting depth, to assure the integrity of such casing.

(7) Prior to commencing injection operations into any injection well located within one-half mile of the following described wells, the applicant shall cement the wells above, across and below the proposed injection interval in a manner acceptable to the supervisor of the Division's Artesia District Office, or in the alternative, demonstrate by means of cement bond logs, temperature surveys or other appropriate data that the wells are adequately cemented so as to confine the injected gas to the injection formation:

OPERATOR, WELL NAME	WELL LOCATION
Arco-Empire Abo Ut. No. M-10	Unit O, Section 10-18S-27E
Arco-Empire Abo Ut. No. M-12	Unit A, Section 10-18S-27E
Arco-Empire Abo Ut. No. M-15	Unit B, Section 11-18S-27E
Arco-Empire Abo Ut. No. N-12	Unit A, Section 10-18S-27E
Rhonda Operating-Federal "EA" No. 1	Unit D, Section 12-18S-27E

(8) Prior to commencing injection operations into any injection well located within one-half mile of the following described wells, the applicant shall re-plug the wells in a manner acceptable to the supervisor of the Division's Artesia District Office, or in the alternative, demonstrate by other means that the wells are adequately plugged and abandoned so as to confine the injected gas to the injection formation:

OPERATOR, WELL NAME	WELL LOCATION
Pan American-State "BL" No. 1	Unit B, Section 4-18S-28E
Exxon-Chalk Bluff Draw Ut. No. 18	Unit M, Section 16-18S-27E
Exxon-Chalk Bluff Draw Ut. No. 12	Unit A, Section 17-18S-27E
Exxon-Chalk Bluff Draw Ut. No. 20	Unit N, Section 17-18S-27E
James P. Dunigan-State No. 1	Unit D, Section 3-18S-28E

(9) The operator shall give advance notification to the supervisor of the Artesia District Office of the Division of the date and time of the conductance of remedial cement operations, re-plugging operations, the installation of injection equipment and of the mechanical integrity pressure tests in order that the same may be witnessed.

(10) The applicant shall immediately notify the supervisor of the Artesia District Office of the Division of the failure of the tubing, casing or packer in any of the injection wells shown on Exhibit "A", the leakage of water, gas or oil from or around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area, and shall take such steps as may be timely and necessary to correct such failure or leakage.

(11) The applicant shall conduct injection operations in accordance with the provisions of Division Order No. R-4549, as amended, and Division Rule Nos. 701 through 708. The applicant shall submit monthly progress reports in accordance with Division Rule Nos. 706 and 1115.

(12) The injection authority granted herein shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

(13) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LeMAY
Director

S E A L

EXHIBIT "A"
CASE NO. 10813
ORDER NO. R-9984
EMPIRE ABO UNIT
APPROVED INJECTION WELLS

Well Number	Location	Unit	S-T-R	Injection Perforations	Packer Depth	Tubing Size
Unit G No. 321	1520' FSL - 250' FEL	I	33-17S-28E	5800' - 6350'	5750'	2 3/8"
Unit F No. 343	2300' FNL - 1675' FWL	F	34-17S-28E	5650' - 6188'	5600'	2 3/8"
Unit H No. 261	150' FSL - 1400' FWL	N	32-17S-28E	5650' - 6220'	5600'	2 3/8"
Unit H No. 302	1250' FSL - 1925' FWL	N	33-17S-28E	5750' - 6280'	5700'	2 3/8"
Unit I No. 23	470' FNL - 2170' FEL	B	6-18S-28E	5700' - 6190'	5650'	2 3/8"
Unit I No. 283	175' FNL - 300' FEL	A	5-18S-28E	5900' - 6260'	5850'	2 3/8"
Unit J No. 202	2490' FNL - 1299' FEL	H	1-18S-27E	5600' - 6268'	5550'	2 3/8"
Unit J No. 223	2630' FNL - 1930' FWL	F	6-18S-28E	5550' - 6245'	5500'	2 3/8"
Unit K No. 182	1533' FSL - 2370' FWL	K	1-18S-27E	5850' - 6369'	5800'	2 3/8"
Unit L No. 111	20' FSL - 2485' FEL	O	3-18S-27E	5320' - 6020'	5270'	2 3/8"
Unit L No. 131	100' FSL - 100' FWL	M	2-18S-27E	5590' - 6185'	5540'	2 3/8"
Unit L No. 141	1050' FSL - 1360' FWL	N	2-18S-27E	5580' - 6125'	5530'	2 3/8"
Unit L No. 153	90' FSL - 1456' FEL	O	2-18S-27E	5950' - 6300'	6300'	2 3/8"
Unit M No. 901	1300' FNL - 1220' FWL	D	10-18S-27E	5350' - 6100'	5300'	2 3/8"
Unit P No. 5	330' FSL - 990' FWL	M	9-18S-27E	5250' - 5760'	5200'	2 3/8"
Unit R No. 5	1980' FNL - 660' FWL	E	16-18S-27E	5300' - 5694'	5250'	2 3/8"

Goetze, Phillip, EMNRD

From: Brian Wood <brian@permitswest.com>
Sent: Saturday, November 02, 2013 12:01 PM
To: Goetze, Phillip, EMNRD
Subject: Fwd: Apache's Empire Abo Unit 223 30-015-22527

Please proceed with approval.
We have not heard further from COG since Sept. 16.
We have called (Oct. 14 & 17) and e-mailed (Oct. 25).
No reply to any of these communications.
Thanks

Begin forwarded message:

From: Brian Wood <brian@permitswest.com>
Subject: Re: Apache's Empire Abo Unit 223 30-015-22527
Date: October 11, 2013 1:21:03 PM MDT
To: "Goetze, Phillip, EMNRD" <Phillip.Goetze@state.nm.us>

We are checking with COG.

Any time frame for Empire Abo Unit 45 (30-015-03188)?
This was delivered Aug. 20.
On Oct 11, 2013, at 1:02 PM, Goetze, Phillip, EMNRD wrote:

Brian:

> I need to have input on whether your client is interested in protesting or not. Please provide a final decision as I am working on this permit next Tuesday. PRG
>
> Phillip R. Goetze, P.G.
> Engineering Bureau, Oil Conservation Division
> 1220 South St. Francis Dr., Santa Fe, NM 87505
> O: 505.476.3466 F: 505.476.3462
>
> -----Original Message-----
> From: Brian Wood [mailto:brian@permitswest.com]
> Sent: Tuesday, September 17, 2013 1:35 PM
> To: Goetze, Phillip, EMNRD
> Subject: Apache's Empire Abo Unit 223 30-015-22527

COG has asked for additional time to review this application.

Please hold the application for another 20 days.

Thanks