



January 30, 2017

Mr. David Catanach, Director
Oil Conservation Division
1220 South St. Francis Drive
Santa Fe NM 87505

Re: Extension of Administrative Order SWD-1379-A
Barnsdall Federal SWD No. 1
Location: B-27-17S-29E
API 30-015-42468
Eddy County, New Mexico

Dear Director Catanach:

This is a request for an administrative approval to extend the disposal permit, described above, from the two year period specified in the order.

Summary

The Barnsdall Federal SWD No. 1 was initially authorized under Administrative Order SWD-1379, effective January 3, 2013. Subsequently, Apache requested and received an amended order, SWD-1379-A, which authorized the well for a new two year period beginning October 1, 2014. We received notice from Mr. Goetze on an email dated January 20, 2017 that the authority for this well has lapsed.

In the period between the order and the two-year term of the order, Apache has been diligent in attempting to equip and test this well for active service. While Apache has not provided volumes establishing activity, we can demonstrate that there has been continuous, ongoing efforts to utilize this permit. For these reasons and with the information provided herein, we request an administrative extension to the order.

Current status

The well currently is equipped for service and injection transfer lines have been installed. The well is not in use at this time due to inadequate pressure limits established by the order. After several attempts to acidize and establish injection, the well will not take significant disposal volumes at or below the maximum authorized injection pressure, currently limited to 1540 psi. The well is current with all required MIT and Bradenhead tests.

Director David Catanach
Barnsdall Federal SWD #1
Request to Extend

Activity Summary

Apache has performed several operations on this well in attempts to test and establish injection. These activities include:

- March 17-26, 2015: Complete well, run 4.5" tubing on packer
- April 7, 2015: Acidize well
- April 8, 2015: Run injectivity test
- April 10, 2015: Conduct MIT, had bleed off, reschedule MIT for later with OCD
- April 30, 2015: Conduct OCD witnessed MIT successfully
- May 5, 2015: Conduct Initial Step Rate Test (SRT) by Elite
- June 20, 2015: Equip well for and attempt to establish injection
- July 30, 2015: Conduct second SRT by Cardinal
- January 26, 2016: MIT and Bradenhead test witnessed by OCD
- Additionally there have been several meetings with BLM and OCD staff regarding SRT methodology and well completion in the last two years.

Planned activity includes conducting an additional, more detailed SRT to provide evidence for increasing the injection pressure limit. This procedure is being designed by our production engineer now, and we discussed the proposed procedure with Mr. Goetze as recently as January 24, 2017. A sundry notice for the SRT will be filed within the next two weeks to OCD and BLM.

Support for administrative extension

Apache discussed the well's status with Mr. Goetze on January 24, and he suggested requesting an extension to the order. The following information is provided to support this request:

- A review of the parties entitled to notice for an application for a SWD well indicates no change in ownership compared to the ownership information provided in the initial application. All interests noticed in the original application are the same.
- Therefore, additional notice or published notice provides no effective notice not already accomplished in the permitting process.
- No new, unaddressed wells within a one-half mile radius have been drilled which penetrate the permitted disposal interval.
- The well is completed in the manner specified by Order SWD-1379-A.
- The well passed a very recent Bradenhead test, which was witnessed by Mr. Richard Inge on January 19, 2017.
- Approval of this request will conserve resources by enabling the use of this well without additional permitting expense and delay, aiding economics significantly in this area of challenged well production and high operating and lifting costs.
- As you can see by the activity log provided above, Apache has not let the expiration pass without positive action to utilize this well.

Director David Catanach
Barnsdall Federal SWD #1
Request to Extend

Request

Please review the information in this letter. Apache respectfully requests your approval for an administrative extension to Order SWD-1379-A for a period not to exceed nine month from the order's expiration date of October 1, 2016. This extension provides the opportunity for Apache to successfully and economically establish disposal operations in this well while protecting the offset interest owners.

Should you need additional information or wish to discuss this request in more detail please feel free to contact either Dean Gaines at 432-818-1083 or dean.gaines@apachecorp.com or myself at 432-818-1883 or mark.henkhaus@apachecorp.com .

Thank you for your time reviewing this request.

Sincerely,



R. Mark Henkhaus, PE
Regulatory Manager
Permian Region

Attachments

1. Administrative Order SWD-1379 dated January 3, 2013
2. Administrative Order SWD-1379-A dated October 1, 2014
3. Email from Mr. Goetz regarding lapse in authority, dated January 20, 2017
4. Current wellbore diagram
5. AOR leasehold map from application
6. Offset leasehold owner notification list from application
7. AOR well map application
8. Well list from application
9. 3160-4 Well completion report
10. 3160-5 showing completion activity subsequent to drilling
11. MIT test, witnessed by Mr. Inge and performed on April 30, 2015
12. Initial SRT conducted May 5, 2015
13. Subsequent SRT conducted July 30, 2015
14. SRT test analysis by Cardinal Surveys

cc: Richard Inge, OCD, Artesia
Phillip Goetze, OCD, Santa Fe
Cody Layton, BLM, Carlsbad

State of New Mexico
Energy, Minerals and Natural Resources Department

1

Susana Martinez
Governor

John Bemis
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey
Division Director
Oil Conservation Division



Administrative Order SWD-1379
January 3, 2013

**ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION**

Under the provisions of 19.15.26.8B NMAC, Apache Corp. seeks an administrative order to utilize its proposed Barnsdall Federal SWD Well No. 1 (API 30-015-NA) to be located 330 feet from the North line and 1880 feet from the East line, Unit letter B of Section 27, Township 17 South, Range 29 East, NMPM, Eddy County, New Mexico, for produced water disposal purposes.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of 19.15.26.8B NMAC and satisfactory information has been provided that affected parties as defined in said rule have been notified and no objections have been received within the prescribed waiting period. The applicant has presented satisfactory evidence that all requirements prescribed in 19.15.26.8 NMAC have been met and the operator is in compliance with 19.15.5.9 NMAC.

IT IS THEREFORE ORDERED THAT:

The applicant, Apache Corp., is hereby authorized to utilize its proposed Barnsdall Federal SWD Well No. 1 (API 30-015-NA) to be located 330 feet from the North line and 1880 feet from the East line, Unit letter B of Section 27, Township 17 South, Range 29 East, NMPM, Eddy County, New Mexico, for disposal of oil field produced water (UIC Class II only) into formations from the Devonian through the base of the Ellenburger through perforations from approximately 11840 feet to 13000 feet through internally coated tubing and a packer set within 100 feet of the permitted interval.

The operator shall supply the Division with a copy of a mudlog over the permitted disposal interval. If significant hydrocarbon shows occur while drilling, the operator shall receive permission in writing from the Division prior to commencing disposal.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the disposed water enters only the approved disposal interval and is not permitted to escape to other formations or onto the surface.

After installing tubing, the casing-tubing annulus shall be loaded with an inert fluid and

equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

The well shall pass an initial mechanical integrity test ("MIT") prior to initially commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT testing procedures and schedules shall follow the requirements in Division Rule 19.15.26.11A. NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths in this well.

The wellhead injection pressure on the well shall be limited to **no more than 2368 psi**. In addition, the disposal well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.

The Director of the Division may authorize an increase in tubing pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the target formation. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate-Test.

The operator shall notify the supervisor of the Division's district office of the date and time of the installation of disposal equipment and of any MIT test so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's district office. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.24 NMAC.

Without limitation on the duties of the operator as provided in Division Rules 19.15.29 and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's district office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

The injection authority granted under this order is not transferable except upon division approval. The division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

The division may revoke this injection permit after notice and hearing if the operator is in violation of 19.15.5.9 NMAC.

The disposal authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced injection operations into the subject well. One year after the last date of reported disposal into this well, the Division shall consider the well abandoned, and the authority to dispose will terminate *ipso facto*. The Division, upon written request mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the disposal authority granted herein.



JAMI BAILEY
Director

JB/wvjj

cc: Oil Conservation Division – Artesia District Office
Bureau of Land Management – Carlsbad Field Office

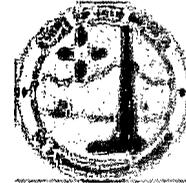
State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

Jami Bailey, Division Director
Oil Conservation Division



Administrative Order SWD-1379-A
October 1, 2014

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION

Pursuant to the provisions of Division Rule 19.15.26.8B. NMAC, Apache Corporation (the "operator") seeks an administrative order to utilize its proposed Barnsdall Federal SWD Well No. 1 located 330 feet from the North line and 1880 feet from the East line, Unit letter B of Section 27, Township 17 South, Range 29 East, NMPM, Eddy County, New Mexico, for produced water disposal purposes.

This Order is an amendment that changes the approved injection interval described in Administrative Order SWD-1379. Order SWD-1379 approved injection into formations from the Devonian to the base of the Ellenburger through perforations from approximately 11840 feet to 13000 feet. This Order supersedes the original Order SWD-1379 issued on January 3, 2013.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of Division Rule 19.15.26.8B. NMAC and satisfactory information has been provided that affected parties as defined in said rule have been notified and no objections have been received within the prescribed waiting period. The applicant has presented satisfactory evidence that all requirements prescribed in Rule 19.15.26.8 NMAC have been met and the operator is in compliance with Rule 19.15.5.9 NMAC.

IT IS THEREFORE ORDERED THAT:

The applicant, Apache Corporation (OGRID 873), is hereby authorized to utilize its Barnsdall Federal SWD Well No. 1 (API 30-015-42468) to be located 330 feet from the North line and 1880 feet from the East line, Unit letter B of Section 27, Township 17 South, Range 29 East, NMPM, Eddy County, for disposal of oil field produced water (UIC Class II only) through perforations in the Wolfcamp and Cisco formations from 7700 feet to 9500 feet. Injection will occur through internally-coated, 4 ½-inch or smaller tubing and a packer set within 100 feet of the top perforation.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the disposed water enters only the approved disposal interval and is not permitted to escape to other formations or onto the surface. This includes the well construction proposed and described in the application except as noted in specific conditions.

The operator shall limit (either by plugging back or by setting casing shallower) the 7-inch production casing exposed below the bottom depth of the permitted disposal interval to a length no greater than 200 feet (9700 feet or less).

The operator shall run a cement bond log (or equivalent) to determine the top of cement and the quality of cement placement for the 7-inch production casing.

The operator shall supply the Division with a copy of a mudlog over the permitted disposal interval and an estimated insitu water salinity based on open-hole logs. If significant hydrocarbon shows occur while drilling, the operator shall notify the Division's District II and the operator shall be required to receive written permission prior to commencing disposal. The operator shall supply both the Division's District II office and Santa Fe Bureau office with a copy of the log.

The operator shall run an initial injection survey (tracer/temperature or equivalent) of the entire injection interval within two (2) years after commencing disposal into this well. The operator shall supply both the Division's District II office and Santa Fe Bureau office with a copy of the survey log.

After installing tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

The well shall pass an initial mechanical integrity test ("MIT") prior to initially commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT procedures and schedules shall follow the requirements in Division Rule 19.15.26.11A. NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths in this well.

The wellhead injection pressure on the well shall be limited to **no more than 1540 psi**. In addition, the disposal well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.

The Director of the Division may authorize an increase in tubing pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the target formation. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate Test.

The operator shall notify the supervisor of the Division's District II office of the date and time of the installation of disposal equipment and of any MIT so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's district office. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 and

19.15.7.24 NMAC.

Without limitation on the duties of the operator as provided in Division Rules 19.15.29 and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's District II office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

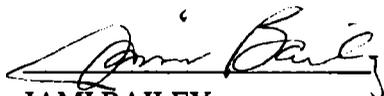
The injection authority granted under this order is not transferable except upon division approval. The Division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

The Division may revoke this injection permit after notice and hearing if the operator is in violation of Rule 19.15.5.9 NMAC.

The disposal authority granted herein shall terminate two (2) years after the effective date of this order if the operator has not commenced injection operations into the subject well. One year after the last date of reported disposal into this well, the Division shall consider the well abandoned, and the authority to dispose will terminate *ipso facto*. The Division, upon written request mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the disposal authority granted herein.



JAMI BAILEY
Director

JB/prg

cc: Oil Conservation Division – Artesia District Office
Bureau of Land Management – Carlsbad Field Office

From: Goetze, Phillip, EMNRD
To: Inge, Richard, EMNRD; Bayliss, Randolph, EMNRD; Sharp, Karen, EMNRD
Cc: Jones, William V, EMNRD; McMillan, Michael, EMNRD; Henkhaus, Mark; Lowe, Leonard, EMNRD
Subject: Apache's Shut-in SWD Wells
Date: Friday, January 20, 2017 11:55:13 AM

RE: Barnsdall Federal SWD No. 1 (API 30-015-42468; SWD-1379-A) and AAO Federal SWD No. 1 (API 30-015-42549; SWD-1503)

Ms. Sharp and Gents:

As far as the status of a SWD well, the District has the discretion to apply the category that best fits the current well operations, and the "S" status has been applied to injection wells, but these are typically EOR wells in active EOR projects. I did not request, nor am I aware that any of my cohorts request, that these wells be placed in a "S" status. And would agree that placing a SWD well in a shut-in status not the best procedure since the well is still "active" based on the UIC permit and NMAC.

I have reviewed all my e-mail with regards to these two SWDs and provide the following conclusions:

1. Barnsdall Federal SWD No. 1 (SWD-1379-A): The Barnsdall was a subject of discussion in March 2016, as Apache provided the information requirements put as conditions in the most current order. On March 24, 2016, requesting the salinity calculations based on logs for both wells, and approval to proceed with injection. In my March 24th email, I stated "*Apache can initiate injection at its discretion*" but this did not change any of the conditions of the order including the two-year period to commence. I later received an additional e-mail in November from Dean Gaines of Apache requesting some guidance on SRT procedures. I did not respond and have not received any subsequent requests or notices. At this time, there has been no written request for the extension of the date to commence injection; thus, the deadline of October 1, 2016, has passed and Richard's assessment that this well has lost its injection authority is correct.
2. AAO Federal SWD No. 1 (SWD-1503): This well had drilling issues resulting in a side-tracked completion. Division records show that the AAO initiated injection on May 2016. This well satisfied the two-year period (with injection commencing by October 8, 2016).

Richard, please provide notice to Apache that the injection authority for SWD-1379-A has lapsed. I will include Apache in this e-mail conversation. Resolution to this lapse is a resubmittal of a C-108 application (which needs to show only the changes from the previous submittal), with the most significant item for the resubmittal being notification (newspaper and "affected persons").

I also note that results of injection operations (hand labeled as "Step rate" tests) were conducted on both wells. However, these injection operations are more similar to well stimulation efforts and are not reflective of a SRT conducted purely for demonstrating formation characteristics. Since no application for an Injection Pressure Increase for either well was submitted to Santa Fe for consideration, the Bureau did not provide any review and response. Please contact me with any questions regarding the content of this response. Thanks Richard and take care. PRG

Phillip Goetze, PG
Engineering Bureau, Oil Conservation Division
New Mexico Energy, Minerals and Natural Resources Department
1220 South St. Francis Drive, Santa Fe, NM 87505
Direct: 505.476.3466
E-mail: phillip.goetze@state.nm.us



From: Inge, Richard, EMNRD
Sent: Thursday, January 19, 2017 3:59 PM
To: Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>
Cc: Bayliss, Randolph, EMNRD <Randolph.Bayliss@state.nm.us>; Sharp, Karen, EMNRD <Karen.Sharp@state.nm.us>
Subject: FW: Shut-in SWD wells

I went to perform a bradenhead test on this well this morning. It is still "Shut-in". I show no injection reported for this well and SWD1379-A expired 10/1/2016.

I am not sure how the well got classified as shut-in, or if other arrangements were made between the operator and Santa Fe. But I believe the permit has expired and a notice should be sent to Apache to that effect or something posted someplace explaining any special circumstances if they exist that keeps this permit valid.

Thanks!

Richard Inge, Compliance Officer
Oil Conservation Division – Artesia
811 S. First Street
Artesia, NM 88210
575-748-1283x107 office
575-626-0831 cell

From: Inge, Richard, EMNRD
Sent: Wednesday, May 11, 2016 11:14 AM
To: Sharp, Karen, EMNRD <Karen.Sharp@state.nm.us>
Subject: RE: Shut-in SWD wells

Thanks!

From: Sharp, Karen, EMNRD
Sent: Wednesday, May 11, 2016 11:13 AM

To: Inge, Richard, EMNRD
Subject: RE: Shut-in SWD wells

I just spoke W/Mark Henkaus (don't know how to spell that) and he said they have been to BLM on these two wells and also to Santa Fe working out some "issues", I guess. Everything is now in order and the wells will be injecting quickly. Will submit sundries to that effect when it happens.
ks

From: Inge, Richard, EMNRD
Sent: Tuesday, May 10, 2016 8:42 AM
To: Sharp, Karen, EMNRD
Subject: Shut-in SWD wells

Karen,

I am trying to figure out how 2 SWD wells got an RBDMS status of "S" (shut-in)?

30-015-42468	Barnsdall Federal SWD 001	Apache Corp
30-015-42549	AAO Federal SWD 001	Apache Corp

SWD wells cannot be shut-in. I also could not find paperwork in the well file to justify this status.

There are also 2 injection wells but I saw where they were included in an ACO.

No hurry on this, but I just want to understand how this happened and how to fix this. SWD wells cannot be shut-in because after 1 year of inactivity, their injection permit expires and they cannot use the well as an SWD unless they re-permit the well.

Injection wells cannot be shut-in if all of the injection wells in a field will not report injection for over 1 year. Otherwise, they lose their permit.

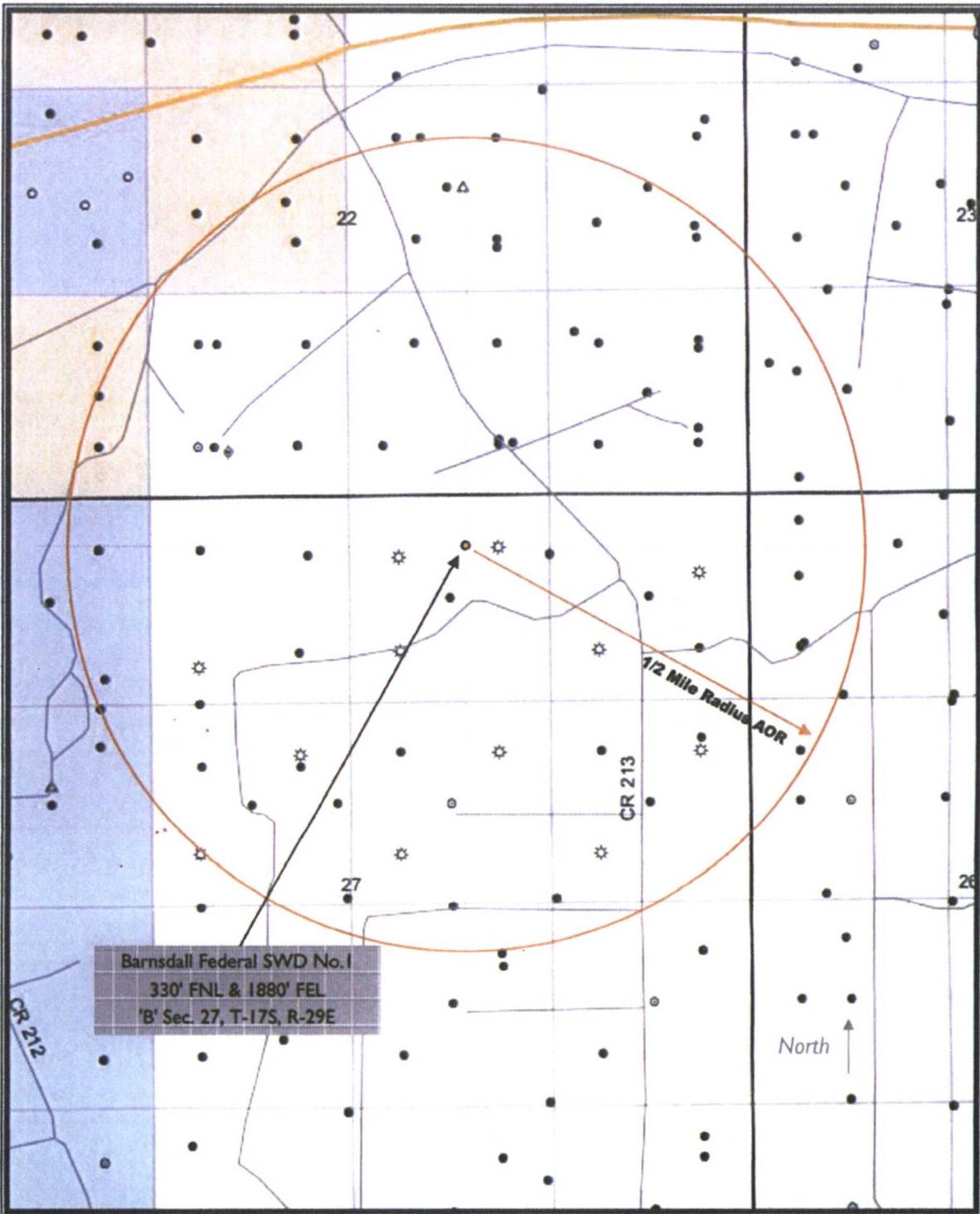
Thanks!

Richard Inge, Compliance Officer
EMNRD-OCD Artesia
575-748-1283 x107
575-626-0831 cell
richard.inge@state.nm.us

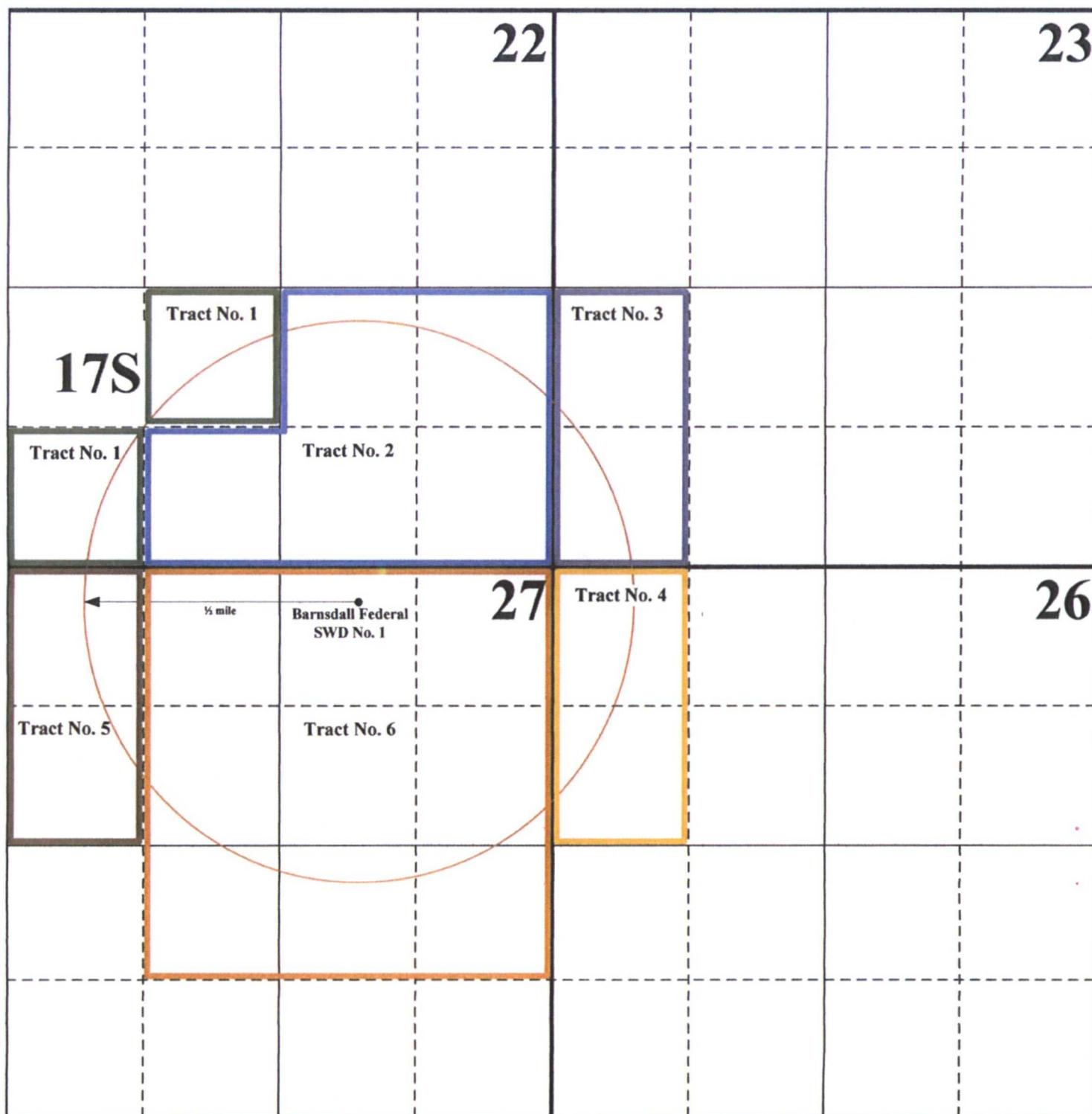
COMPLETION SCHEMATIC		LEASE NAME Barnsdall Federal SWD		WELL NO. 1			
		TYPE COMPLETION: <input checked="" type="checkbox"/> SINGLE <input type="checkbox"/> DUAL <input type="checkbox"/> OTHER					
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>13 3/8" 48# H-40 250 sx</p> <p>9 5/8" 40# J55 1335 sx</p> <p>7" 29# HCL 80 8,370' 1300 sx</p> </div> <div style="width: 45%;"> <p>165'</p> <p>4,500'</p> <p>Flow @ 9,490'</p> <p>6 1/8" Hole</p> <p>TD 9,556'</p> </div> </div>		LOCATION:					
		TD 9,556'		PBD		KB	
		COD		DOD		GL	
		CURRENT COMPLETION ZONE:					
		CSG. PERFS:		O. H. INTERVAL: To			
		CURRENT TEST (SHOW DATE)					
		GOR LIMIT			SPACING		
		SURF		SIZE: 13 3/8"	48#	DEPTH 165'	CMT: 250 sxs Circ
		INTER		SIZE: 9 5/8"	40#	DEPTH 4500'	CMT: 1335 sxs Circ 1"
		PROD		SIZE: 7"	29#	DEPTH 8370'	CMT: 1300 sxs Circ
Note: Flow @ 9,490'							
SUMMARY OF PREVIOUS WORKOVERS							
None							
PREPARED BY: Mark Thomas			UPDATED: 8-Jun-10				

C-108 - Item V
Area of Review Map

Barnsdall Federal SWD No.1



29 East



Apache Corporation
Form C-108: Barnsdall Federal SWD No. 1
Offset Leasehold Owner Tract Identification

Apache Corporation
Form C-108: Barnsdall Federal SWD No. 1
Section 27, T-17 South, R-29 East, NMPM
Eddy County, New Mexico

Offset Leasehold Owner Notification List (See Attached Map)

Tract No. 1

Leasehold Owner: (All depths below 5,000')

Cimarex Energy Company ✓
600 N. Marienfeld Street
Suite 600
Midland, Texas 79701

Tract No. 2

Leasehold Owner: (All depths below 10,964')

COG Operating, LLC ✓
Concho Oil & Gas Company
600 W. Illinois Ave.
One Concho Center
Midland, Texas 79701

Tract No. 3

Leasehold Owner (All depths below the top of the Devonian Formation):

ConocoPhillips Company ✓
P.O. Box 7500
Bartlesville, Oklahoma 74005

Tract No. 4

Leasehold Owner (All depths below the top of the Devonian Formation):

ConocoPhillips Company ✓

Tract No. 5

Leasehold Owner (All depths below 11,163')

Chase Oil Corporation ✓
P.O. Box 1767
Artesia, New Mexico 88211-1767

Robert C. Chase ✓
P.O. Box 960
Artesia, New Mexico 88211-0960

Apache Corporation
Form C-108: Barnsdall Federal SWD No. 1
Section 27, T-17 South, R-29 East, NMPM
Eddy County, New Mexico

Offset Leasehold Owner Notification List (Page 2)

Tract No. 5 (Cont.)

Bill W. Chase ✓
P.O. Box 515
Artesia, New Mexico 88211-0515

Buckhorn Enterprises Corporation ✓
2101 West Runyan Ave.
Artesia, New Mexico 88210

Ventana Minerals, LLC ✓
P.O. Box 359
Artesia, New Mexico 88211-0359

Diakan Minerals, LLC ✓
P.O. Box 693
Artesia, New Mexico 88211-0693

Tract No. 6

Leasehold Owner (All depths below the base of the Abo Formation)

ZPZ Delaware I, LLC
(Wholly owned subsidiary of ✓
Apache Corporation)

Surface Owner

Bureau of Land Management ✓
620 E. Greene Street
Carlsbad, New Mexico 88220-6292

Additional Notice

Oil Conservation Division
811 S. First Street
Artesia, New Mexico 88210

APACHE CORPORATION

BARNSDALL FEDERAL SWD #1

1 Mile Radius

Sec 27 T17S R29E

330' FNL & 1880' FEL

POSTED WELL DATA

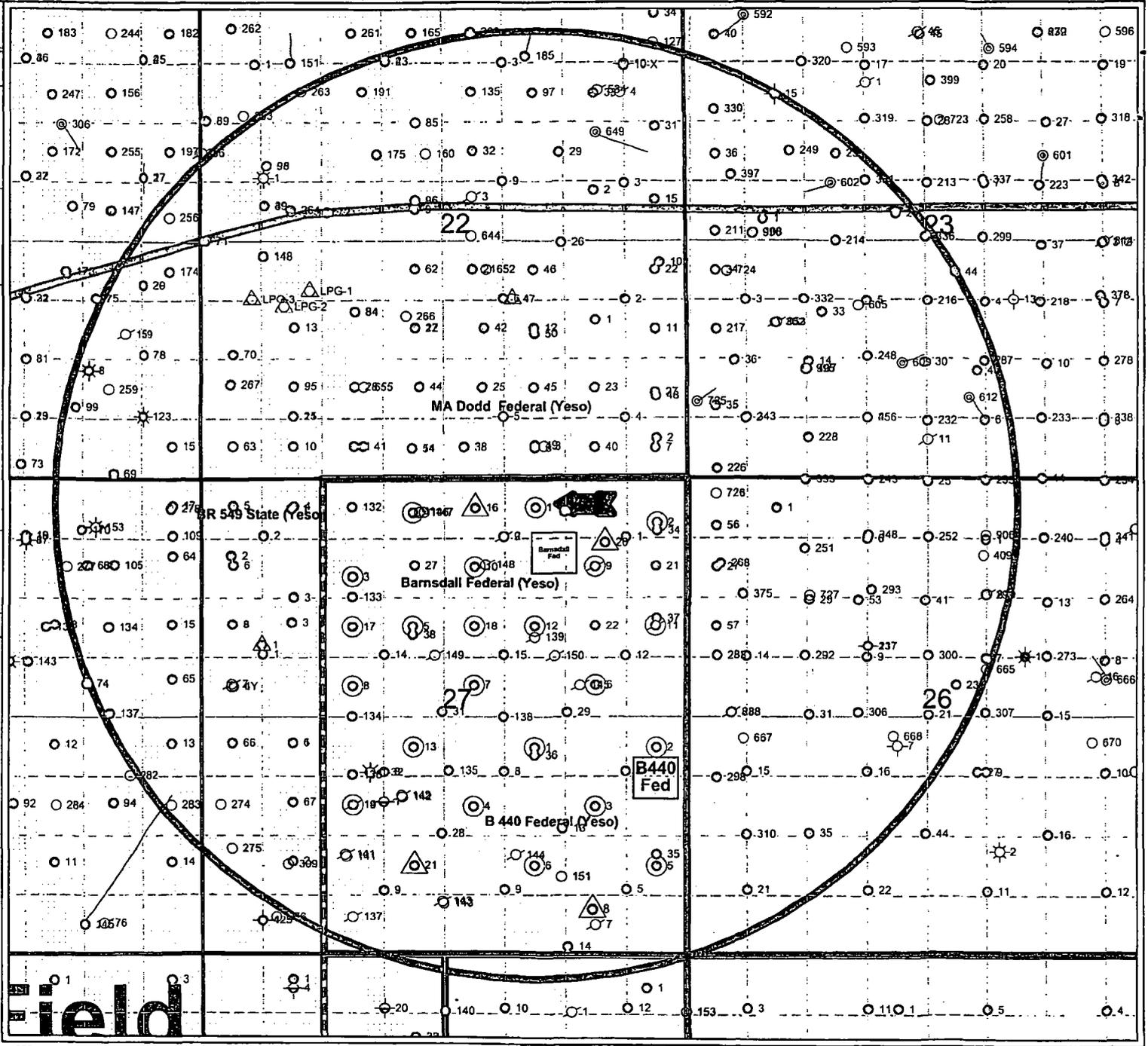
○ Well Number

- WELL SYMBOLS**
- Abandoned Well
 - ☼ Dry Hole, With Show of Gas
 - ☼ Dry Hole, With Show of Oil
 - Dry Hole
 - ☼ Gas Well
 - Location
 - △ Proposed Drilling Location
 - ☼ Oil & Gas Well
 - Oil Well
 - ⊙ Active Producer
 - △ Service Well
 - Suspended Oil Well



March 5, 2013

Exhibit #2



APACHE CORPORATION
FORM C-108: BARNSDALL FEDERAL SWD NO. 1
AREA OF REVIEW WELL LIST

API NUMBER	OPERATOR	LEASE NAME	WELL NO.	WELL TYPE	STATUS	FTG. N/S	N/S	FTG. E/W	E/W	UNIT	SEC.	T.SHP.	RNG.	TOTAL DEPTH
30-015-03153	COG Operating, LLC	RJ Unit	106	P	Active	990'	N	330'	E	A	27	17S	29E	3,310'
30-015-03164	COG Operating, LLC	RJ Unit	104	P	Active	660'	N	660'	E	A	27	17S	29E	2,800'
30-015-29147	Apache Corp.	Barnsdall Federal	2	P	Active	500'	N	330'	E	A	27	17S	29E	4,640'
30-015-30391	Apache Corp.	Barnsdall Federal	9	P	Active	990'	N	990'	E	A	27	17S	29E	4,694'
30-015-03140	COG Operating, LLC	RJ Unit	102	P	Active	660'	N	1980'	E	B	27	17S	29E	3,300'
30-015-25882	COG Operating, LLC	RJ Unit	103	P	Active	385'	N	1325'	E	B	27	17S	29E	3,500'
30-015-29146	Apache Corp.	Barnsdall Federal	1	P	Active	330'	N	1650'	E	B	27	17S	29E	5,766'
30-015-29973	Apache Corp.	Barnsdall Federal	10	P	Active	990'	N	2310'	E	B	27	17S	29E	4,566'
30-015-03155	COG Operating, LLC	RJ Unit	101	P	Active	990'	N	2310'	W	C	27	17S	29E	3,258'
30-015-29148	Apache Corp.	Barnsdall Federal	3	P	Active	1090'	N	1650'	W	C	27	17S	29E	4,600'
30-015-30142	Apache Corp.	Barnsdall Federal	4	P	Active	380'	N	2310'	E	C	27	17S	29E	4,690'
30-015-34624	COG Operating, LLC	RJ Unit	132	P	Active	330'	N	1650'	W	C	27	17S	29E	3,615'
30-015-37680	Apache Corp.	Barnsdall Federal	16	P	NYD	380'	N	2370'	W	C	27	17S	29E	6,150'
30-015-03160	Mack Energy Corp.	Robinson State	4	P	PA	330'	N	990'	W	D	27	17S	29E	3225'
30-015-40255	COG Operating, LLC	BR-549 State	6	P	NYD	1165'	N	1015'	W	D	27	17S	29E	5,550'
30-015-03158	Alamo Permian Res.	Robinson State	3	P	Active	1345'	N	990'	W	E	27	17S	29E	3,263'
30-015-03143	COG Operating, LLC	RJ Unit	109	P	Active	2615'	N	2615'	W	F	27	17S	29E	2,877'
30-015-03177	COG Operating, LLC	RJ Unit	107	P	Active	1980'	N	1980'	W	F	27	17S	29E	2,840'
30-015-29339	Apache Corp.	Barnsdall Federal	5	P	Active	1650'	N	2310'	W	F	27	17S	29E	4,695'
30-015-31127	COG Operating, LLC	RJ Unit	108	P	Active	1740'	N	2310'	W	F	27	17S	29E	3,223'
30-015-34625	COG Operating, LLC	RJ Unit	133	P	Active	1330'	N	1650'	W	F	27	17S	29E	3,610'
30-015-34988	COG Operating, LLC	RJ Unit	149	P	NYD	1980'	N	2553'	W	F	27	17S	29E	3,600'
30-015-37681	Apache Corp.	Barnsdall Federal	17	P	Active	1730'	N	1650'	W	F	27	17S	29E	6,016'
30-015-03152	COG Operating, LLC	RJ Unit	110	I	Active	1980'	N	1980'	E	G	27	17S	29E	2,870'
30-015-29341	Apache Corp.	Barnsdall Federal	7	P	Active	2310'	N	2310'	E	G	27	17S	29E	6,600'
30-015-29974	Apache Corp.	Barnsdall Federal	12	P	Active	1650'	N	1650'	E	G	27	17S	29E	4,700'
30-015-35159	COG Operating, LLC	RJ Unit	150C	P	ND	1980'	N	1425'	E	G	27	17S	29E	N/A
30-015-37643	Apache Corp.	Barnsdall Federal	18	P	Active	1650'	N	2310'	E	G	27	17S	29E	6,046'
30-015-03151	COG Operating, LLC	RJ Unit	112	P	Active	1980'	N	660'	E	H	27	17S	29E	3,500'
30-015-03154	COG Operating, LLC	RJ Unit	111	P	Active	1650'	N	990'	E	H	27	17S	29E	3,310'
30-015-03157	COG Operating, LLC	RJ Unit	114	P	Active	2615'	N	1295'	E	H	27	17S	29E	2,920'
30-015-29340	Apache Corp.	Barnsdall Federal	6	P	Active	2310'	N	990'	E	H	27	17S	29E	4,700'
30-015-30392	Apache Corp.	Barnsdall Federal	11	P	Active	1650'	N	330'	E	H	27	17S	29E	4,705'
30-015-31210	COG Operating, LLC	RJ Unit	113	P	Active	1570'	N	330'	E	H	27	17S	29E	3,620'
30-015-34976	COG Operating, LLC	RJ Unit	138	P	Active	2630'	S	1980'	E	J	27	17S	29E	3,610'
30-015-03130	COG Operating, LLC	Burch Keely Ut.	127	P	Active	330'	N	990'	W	D	26	17S	29E	3,325'
30-015-03138	Marbob Energy Corp.	Burch Keely Ut.	125	P	PA	990'	N	330'	W	D	26	17S	29E	3,225'
30-015-24417	COG Operating, LLC	Burch Keely Ut.	126	P	Active	530'	N	330'	W	D	26	17S	29E	3,507'
30-015-29478	COG Operating, LLC	Burch Keely Ut.	268	P	Active	955'	N	365'	W	D	26	17S	29E	4,745'

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA 9
FORM APPROVED
OMB No. 1004-0137
Expires: July 31, 2010

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

5. Lease Serial No.
NMLC028775B

1a. Type of Well Oil Well Gas Well Dry Other: OTII
b. Type of Completion New Well Work Over Deepen Plug Back Diff. Resvr.
Other _____

6. If Indian, Allottee or Tribe Name

7. Unit or CA Agreement Name and No.

2. Name of Operator
APACHE CORP
Contact: REESA FISHER
E-Mail: Reesa.Fisher@apachecorp.com

8. Lease Name and Well No.
BARNSDALL FEDERAL SWD 1

3. Address 303 VETERANS AIRPARK LANE SUITE 1000
MIDLAND, TX 79705
3a. Phone No. (include area code)
Ph: 432-818-1062

9. API Well No.
30-015-42468

4. Location of Well (Report location clearly and in accordance with Federal requirements)*
Sec 27 T17S R29E Mer
At surface 330FNL 1880FEL
At top prod interval reported below
At total depth

10. Field and Pool, or Exploratory
SWD/WOLF-CISCO

11. Sec., T., R., M., or Block and Survey
or Area Sec 27 T17S R29E Mer

12. County or Parish
EDDY
13. State
NM

14. Date Spudded
11/18/2014
15. Date T.D. Reached
12/10/2014
16. Date Completed
 D & A Ready to Prod.
05/05/2015

17. Elevations (DF, KB, RT, GL)*
3560 GL

18. Total Depth: MD 9556
TVD
19. Plug Back T.D.: MD 9556
TVD

20. Depth Bridge Plug Set: MD
TVD

21. Type Electric & Other Mechanical Logs Run (Submit copy of each)
CNL/GR/BCS/CALIPER/SBGR/CCL/CNCR/CCL

22. Was well cored? No Yes (Submit analysis)
Was DST run? No Yes (Submit analysis)
Directional Survey? No Yes (Submit analysis)

23. Casing and Liner Record (Report all strings set in well)

Hole Size	Size/Grade	Wt. (#/ft.)	Top (MD)	Bottom (MD)	Stage Cementer Depth	No. of Sk. & Type of Cement	Slurry Vol. (BBL)	Cement Top*	Amount Pulled
17.500	13.375 H-40	48.0	0	165		250		0	
12.250	9.625 HCK-55	40.0	0	4500		1403		0	
8.750	7.000 L-80	29.0	0	8370		130		0	
6.125			8370	9556					

24. Tubing Record

Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)	Size	Depth Set (MD)	Packer Depth (MD)
4.500	8327	8319						

25. Producing Intervals

Formation	Top	Bottom	Perforated Interval	Size	No. Holes	Perf. Status
A) WOLFCAMP	7700	8689	8370 TO 9556			OH-SWD/SI
B) CISCO	8689	9556				
C)						
D)						

26. Perforation Record

Depth Interval	Amount and Type of Material
8370 7700 TO 9556	126 BBL ACID

27. Acid, Fracture, Treatment, Cement Squeeze, Etc.

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity
			→					

28a. Production - Interval B

Date First Produced	Test Date	Hours Tested	Test Production	Oil BBL	Gas MCF	Water BBL	Oil Gravity Corr. API	Gas Gravity
			→					

RECEIVED
ACCEPTED FOR RECORD
JAN 14 2016
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

(See Instructions and spaces for additional data on reverse side)

ELECTRONIC SUBMISSION #328586 VERIFIED BY THE BLM WELL INFORMATION SYSTEM

** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED **

RPD
1/20/2016

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

NM OIL CONSERVATION
ARTESIA DISTRICT

NOV 16 2015

OCD-ARTESIA 10

FORM APPROVED
OMB NO. 1004-0135
Expires: July 31, 2010

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side.

1. Type of Well <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input checked="" type="checkbox"/> Other: UNKNOWN OTH		5. Lease Serial No. NMLC028775B
2. Name of Operator APACHE CORPORATION Contact: REESA FISHER E-Mail: Reesa.Fisher@apachecorp.com		6. If Indian, Allottee or Tribe Name
3a. Address 303 VETERANS AIRPARK LANE SUITE 3000 MIDLAND, TX 79705	3b. Phone No. (include area code) Ph: 432-818-1062	7. If Unit or CA/Agreement, Name and/or No.
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 27 T17S R29E NWNE 330FNL 1880FEL		8. Well Name and No. BARNSDALL FEDERAL SWD 1
		9. API Well No. 30-015-42468
		10. Field and Pool, or Exploratory SWD;WOLF-CISCO/SWD;ELLEN
		11. County or Parish, and State EDDY COUNTY COUNTY, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input checked="" type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Fracture Treat	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input checked="" type="checkbox"/> Water Disposal	

13. Describe Proposed or Completed Operation (clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomplete horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Apache completed this SWD well, as follows:
 3/17/2015 RIH w/bit & tbg.
 3/18/2015 RIH w/bit, load csg & tbg w/mud in anticipation of water flow and possible high concentration of H2S
 3/19/2015 RIH to 8483' (@ 100' below csg shoe), POH w/tbg while displacing with mud. No flow, pressure or H2S issues encountered.
 3/20/2015 Set pkr @ 8319'.
 3/23/2015 Circ mud out of hole.
 3/24/2015 Circ clean, POH & LD WS:
 3/25/2015 Log - TOC @ 72'.
 3/26/2015 RIH w/4-1/2" 8RD EUE Duoline tbg, latch pkr @ 8319', set w/20,000# compression. ETD @ 8327'.

11/20/15
Accepted for record
NMOCD

SUBJECT TO LIKE APPROVAL BY STATE

14. I hereby certify that the foregoing is true and correct.
 Electronic Submission #309093 verified by the BLM Well Information System
 For APACHE CORPORATION, sent to the Carlsbad
 Committed to AFMSS for processing by LINDA DENNISTON on 08/25/2015 ()

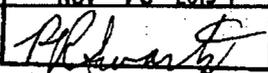
Name (Printed/Typed) REESA FISHER	Title SR STAFF REGULATORY ANALYST
-----------------------------------	-----------------------------------

Signature (Electronic Submission)	Date 07/15/2015
-----------------------------------	-----------------

ACCEPTED FOR RECORD

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____	Title _____	Date NOV 10 2015
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		Office _____

NOV 10 2015


BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Additional data for EC transaction #309093 that would not fit on the form

32. Additional remarks, continued

3/27/2015 Circ pkr fluid, test. Pump out plug. Get off pkr, test csg @ 500#/30 min.
3/30/2015 Flow back.
4/07/2015 Acidize w/126 BBL acid.
4/08/2015 MIRU Elite & run injectivity test. SD RDMO Elite.
4/10/2015 MIRU to run MIT. Bleed off, try to re-test - did not pass. Reschedule MIT test w/OCD @ later date.
4/11/2015 WO foam in acid to settle in pkr.
4/30/2015 MIT passed, witnessed by Richard Inge w/OCD. SI well.
5/05/2015 Ran Step-Rate Test. SI well. WO IPI request approval.

NOTE: WELL IS ON RECORD IN SWD ELLENBURGER (96103); HOWEVER, WELL PHYSICALLY ENDED UP IN SWD WOLFCAMP-CISCO (96136) AND SHOULD BE REPORTED IN SAID POOL FOR PRODUCTION REPORTING. THE ORDER (SWD-1379-A) REFLECTS THIS DESIGNATION. OCD DOES NOT HAVE RESOURCES AT THIS TIME TO WARRANT TIME SPENT TRYING TO CHANGE THEIR SYSTEM.

State of New Mexico
Energy, Minerals and Natural Resources Department

Susana Martinez
Governor

David Martin
Cabinet Secretary

Brett F. Woods, Ph.D.
Deputy Cabinet Secretary

David Catanach, Division Director
Oil Conservation Division



NM OIL CONSERVATION
ARTESIA DISTRICT

Date

4/30/15

JUL 22 2015

API # 30-015-42468

RECEIVED

Dear Operator:

I have this date performed a Mechanical Integrity Test on the BALNSDALE Fm SWDTH.

If this test was successful the original chart has been retained by the NMOCD and will be scanned into the well's file in 7 to 10 days, pending receipt of the Form C-103 indicating the reason for this test. The well files are located at www.emnrd.state.nm.us/ocd/OCOnline.htm

If this test was unsuccessful the original chart has been returned to the operator pending repair and retest of the well, which must be accomplished within 90 days. If this is a test of a repaired well, previously in non-compliance, all dates and requirements of the original non-compliance are still in effect. No expectation of extension should be construed as a result of this test.

If this test was for Temporary Abandonment include in your detailed description, on Form C-103, the location of the CIBP and any other tubular goods in the well, as well as your request for TA status. Include how long you are requesting the TA status for.

If this is a successful test of a repaired well you must submit a form C-103 to NMOCD within 30 days. This C-103 must include a detailed description of the repair to the well. Only after receipt of the C-103 will the non-compliance be closed.

If this is a successful Initial Test of an injection well you must submit a form C-103 to NMOCD within 30 days. This C-103 must include a detailed description of the work done on this well including the position of the packer, tubing information, the date of first injection, the tubing pressure and injection volume. Contact Karen Sharp at 575-748-1283 x109 to verify all required paperwork has been received before you can begin injection.

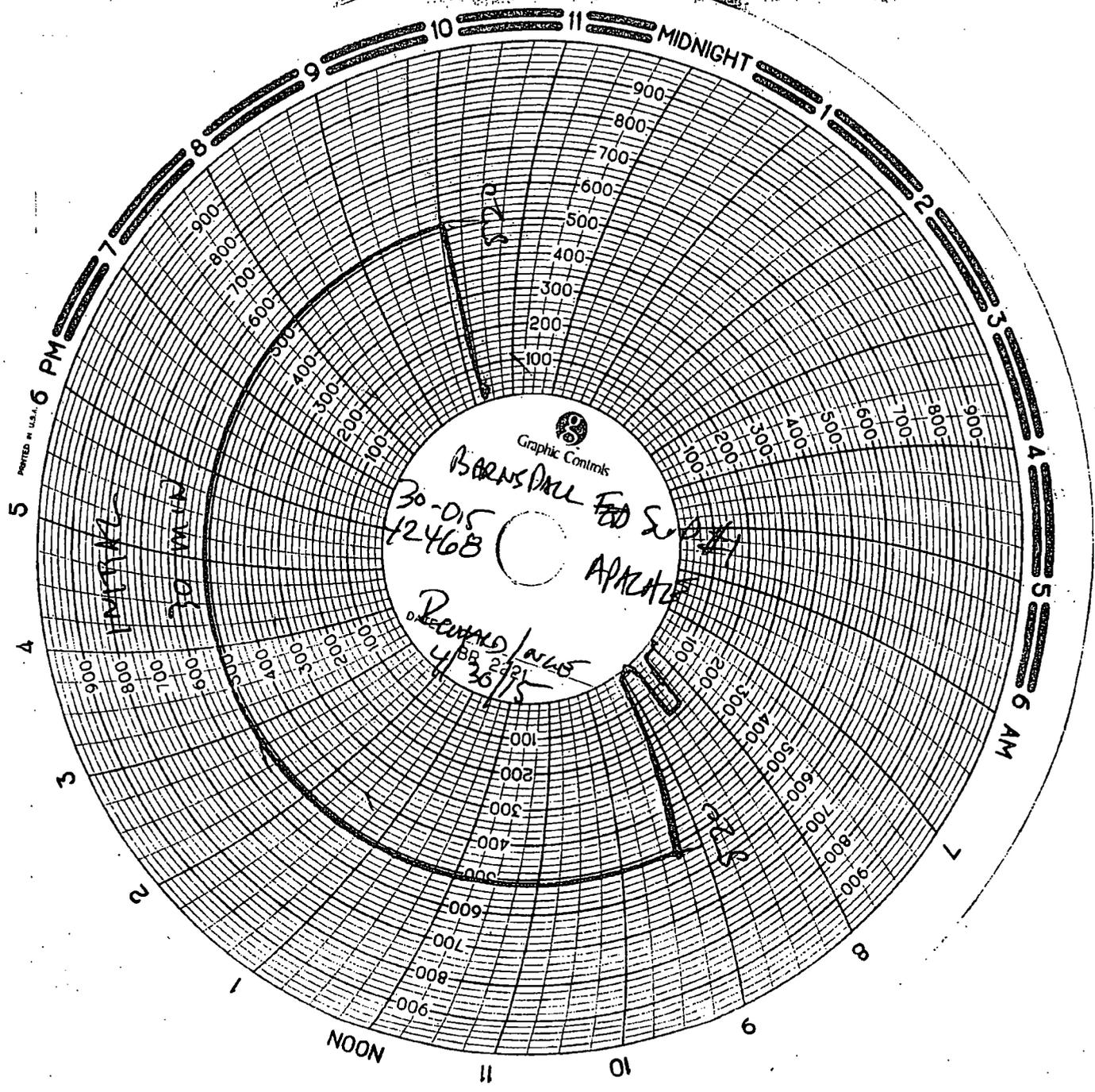
If I can be of additional service contact me at (575) 748-1283 ext 107.

Thank You,

Richard Inge

Richard Inge
Compliance Officer
District II - Artesia

PRINTED IN U.S.A. 6 PM



REPAIRS

REPAIRS

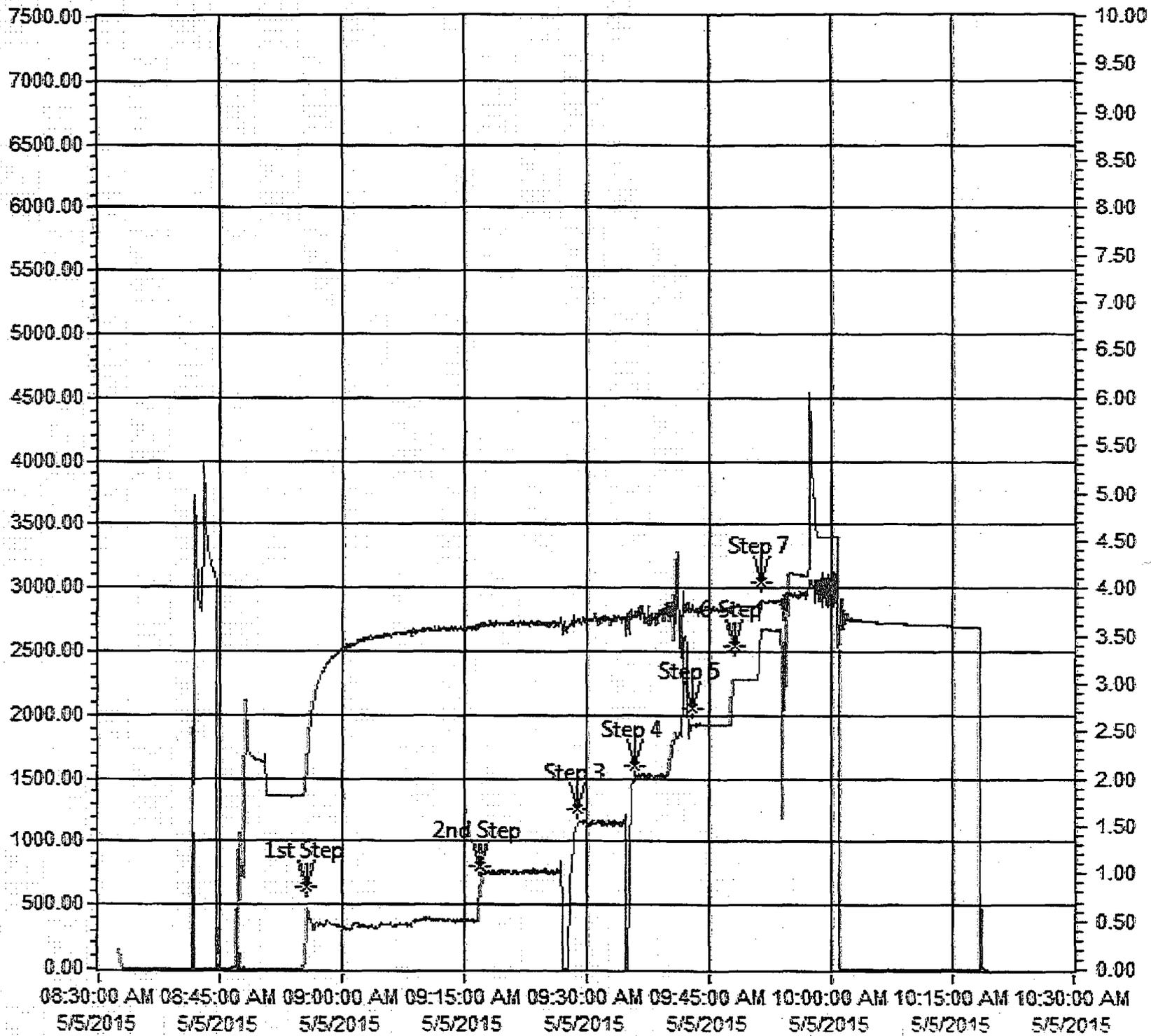
May 5, 2015

Elite

Well Services LLC

Job Event Log

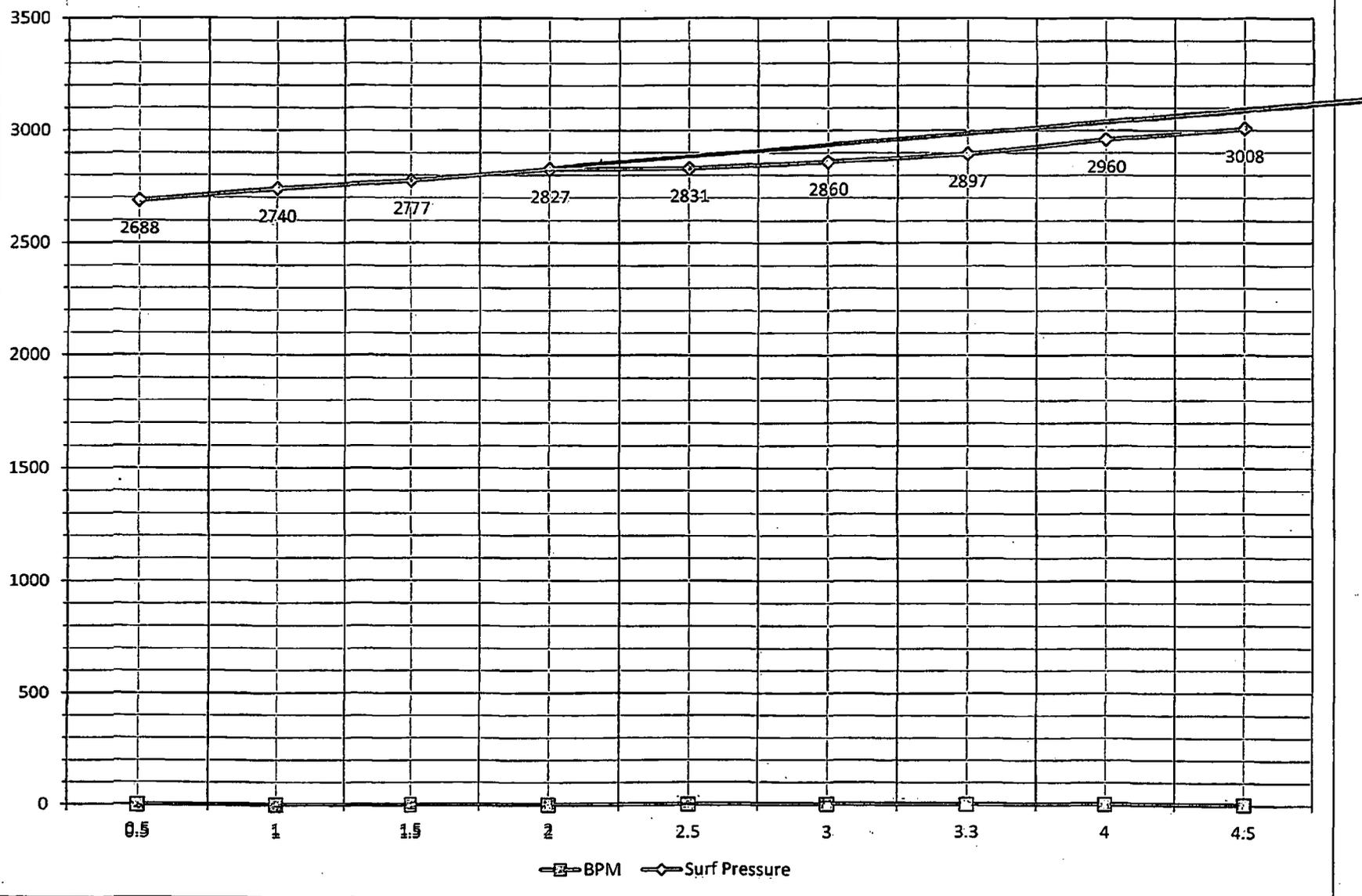
Time	Stage	Rate	Pressure	Comment	Stage total	Total
7:00				Arrive		
7:05				Safty Meeting		
7:10				Spot trucks		
7:15				Rig up Meeting		
8:32				Job Meeting		
8:41				Test Lines		
8:55		.5	2688	Step 1	10	
9:17		1	2740	Step 2	10	
9:28		1.5	2777	Step 3	10	
9:35		2	2827	Step 4	10	
9:40		2.5	2831	Step 5	20	
9:48		3	2860	Step 6	10	
9:51		3.3	2897	Step 7	10	
9:55		4	2960	Step 8	21	
9:58		4.5	3008	Step 9	10	111
10:02			2823	ISIP		
10:07			2722	5 Min		
10:12			2705	10 Min		
10:17			2696	15 Min		



STP 
 Rate 
 Annulus 

Barnsdall SWD #1 Step Rate Test Number 1
 May 5, 2015

Barnsdall #1 - Step-Rate Injectivity - Surface Pressure



Barnsdall SWD #1 Step Rate Test Number 2
July 15, 2015

13

Step Rate Test



Cardinal Surveys Company

30-Jul-15

Apache Corporation

Well: Barndall SWD No. 1

Field;

County: Lea County, NM

SC70499

File No. 22271

Intercept @ 4104.1 BPD, 7308.6 BH PSIA & Surface Intercept @ 2,910 PSIA

Downhole PSI Tool Ser. No. CSC2604

Surface PSI Gauge Ser. No. CSC 2701

Tool @ 8,900'

	Start	End	Rate
1	10:16 AM	10:45 AM	0 8,900'
2	10:45 AM	11:00 AM	720
3	11:00 AM	11:15 AM	1440
4	11:15 AM	11:30 AM	2160
5	11:30 AM	11:45 AM	4320
6	11:45 AM	12:00 PM	5760
7	12:15 PM	12:30 PM	7200
8	12:30 PM	12:45 PM	8640
9	12:45 PM	1:00 PM	10080
10	1:00 PM	1:15 PM	11520
11	1:15 PM	1:30 PM	12960 DATA SHOWS THIS RATE NEVER REACHED
12	1:30 PM	1:45 PM	0 15 MIN FALL OFF
13			
14			
15			
16			
17			
18			

Barnsdall SWD #1 Step Rate Test Number 2

July 15, 2015

Step Rate Test
30-Jul-15

Apache Corporation

Well: Barndall SWD No. 1

Field:

Location: Lea County, NM



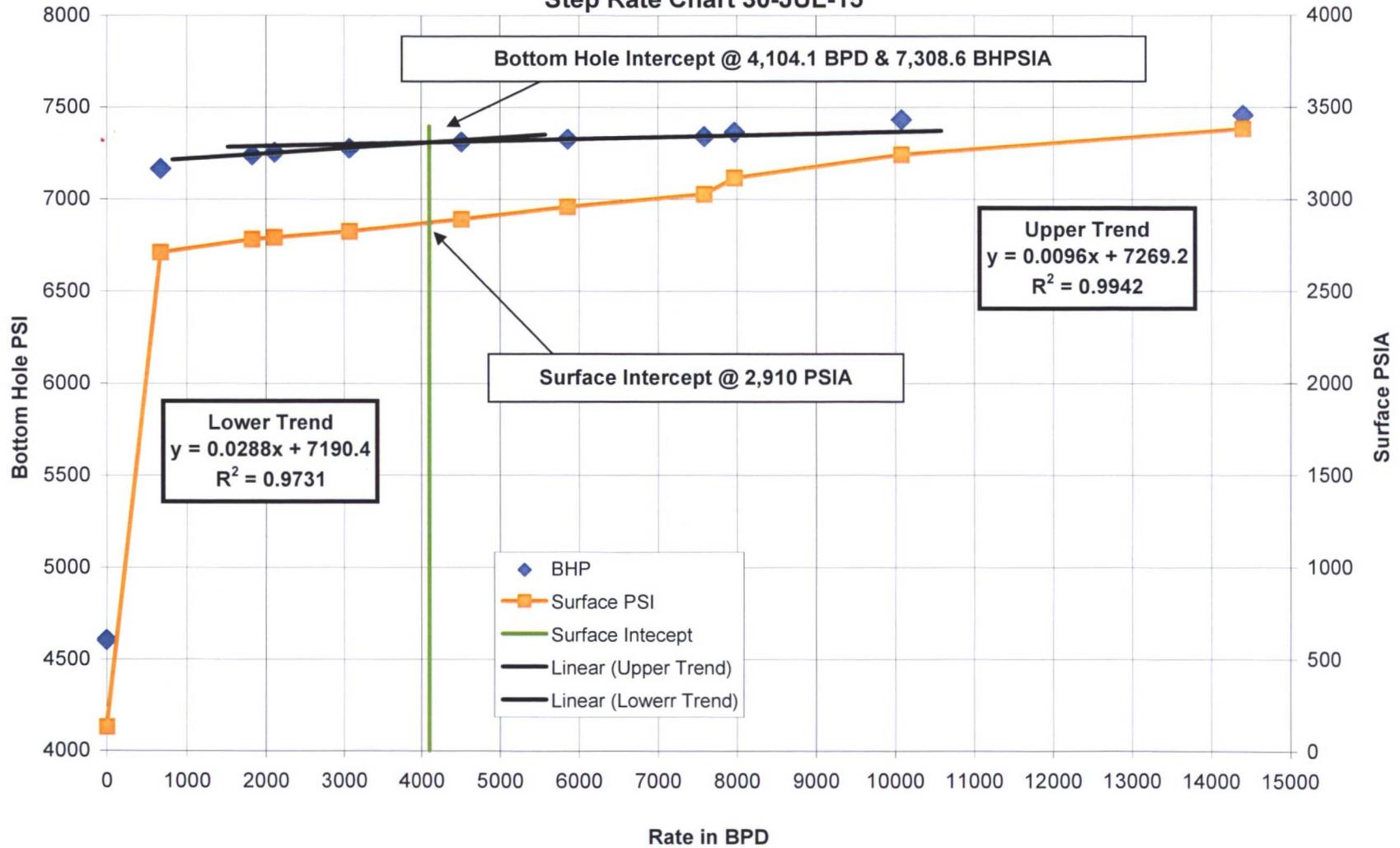
	S Time	E Time	D Time Min	Last Rate BPD	Step BPD	BHP PSIA	Surf PSIA	Cum BBL	Delta BBL	Avg. BPD	Lower Trend	Upper Trend
1	10:16 AM	10:45 AM	29	0	0	4606.7	131	0	0	0		
2	10:45 AM	11:00 AM	15	720	720	7165.9	2712	7	7	672		
3	11:00 AM	11:15 AM	15	1440	720	7240.3	2783	26	19	1824	7240.3	
4	11:15 AM	11:30 AM	15	2160	720	7254.7	2793	48	22	2112	7254.7	
5	11:30 AM	11:45 AM	15	4320	2160	7278.1	2826	80	32	3072	7278.1	
6	11:45 AM	12:00 PM	15	5760	1440	7312	2892	127	47	4512		7312
7	12:15 PM	12:30 PM	15	7200	1440	7327	2960	188	61	5856		7327
8	12:30 PM	12:45 PM	15	8640	1440	7341.8	3028	267	79	7584		7341.8
9	12:45 PM	1:00 PM	15	10080	1440	7365.9	3117	350	83	7968		
10	1:00 PM	1:15 PM	15	11520	1440	7434.9	3243	455	105	10080		
11	1:15 PM	1:30 PM	15	12960	1440	7459.5	3384	605	150	14400		
12	1:30 PM	1:45 PM	15	0	0	7396.1	3523	714	109	10464	PUMP MAXED OUT	
13							2980	714	0	0		
14												
15												
16												

upper trend	0.0096	7269.2
lower trend	0.0288	7190.4
intersect	4104.16667	BPD
BHP PSI	7308.6	PSIA

Barnsdall SWD #1 Step Rate Test Number 2
July 15, 2015

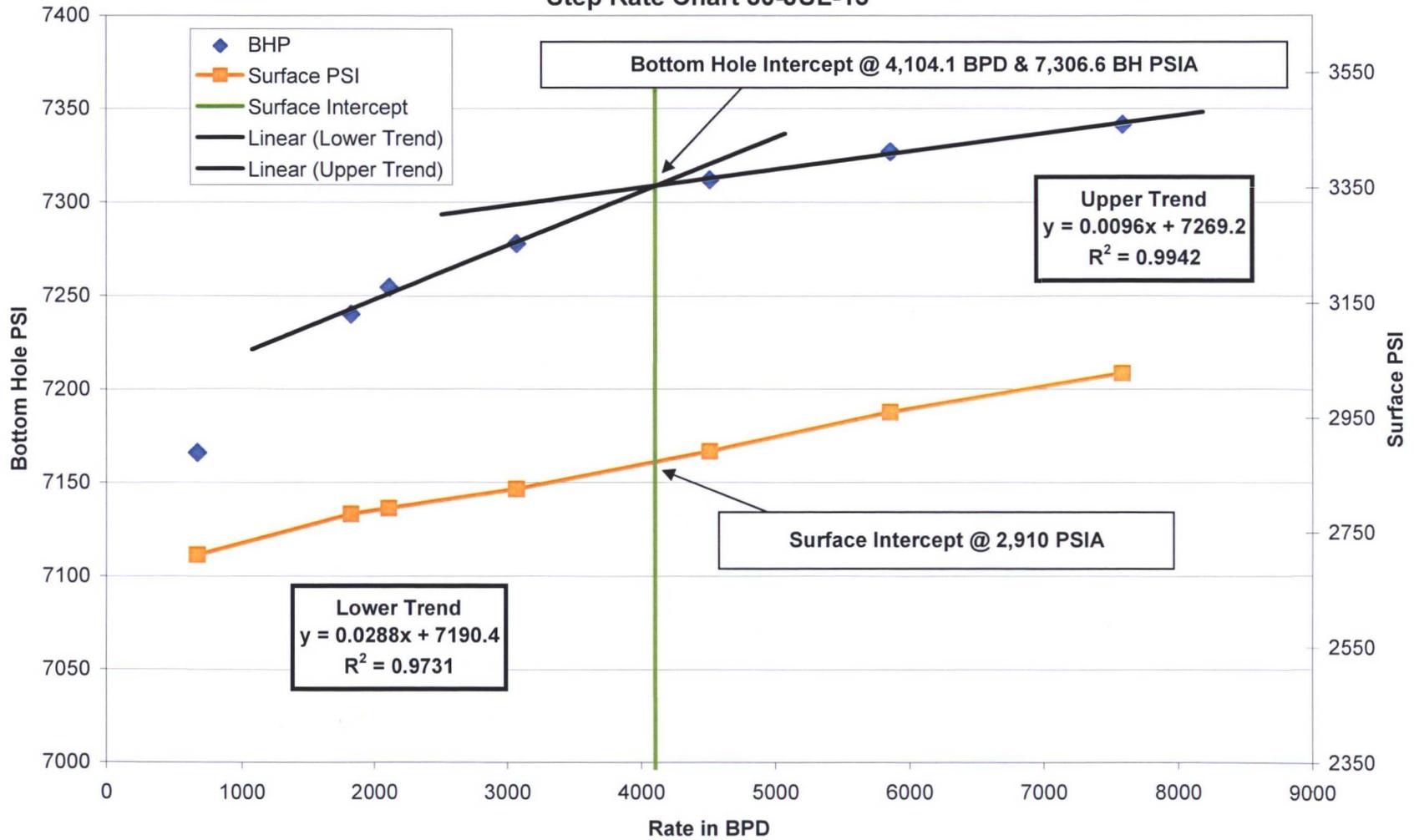


Apache Corporation
Barnsdall SWD No. 1
Step Rate Chart 30-JUL-15



Barnsdall SWD #1 Step Rate Test Number 2
July 15, 2015

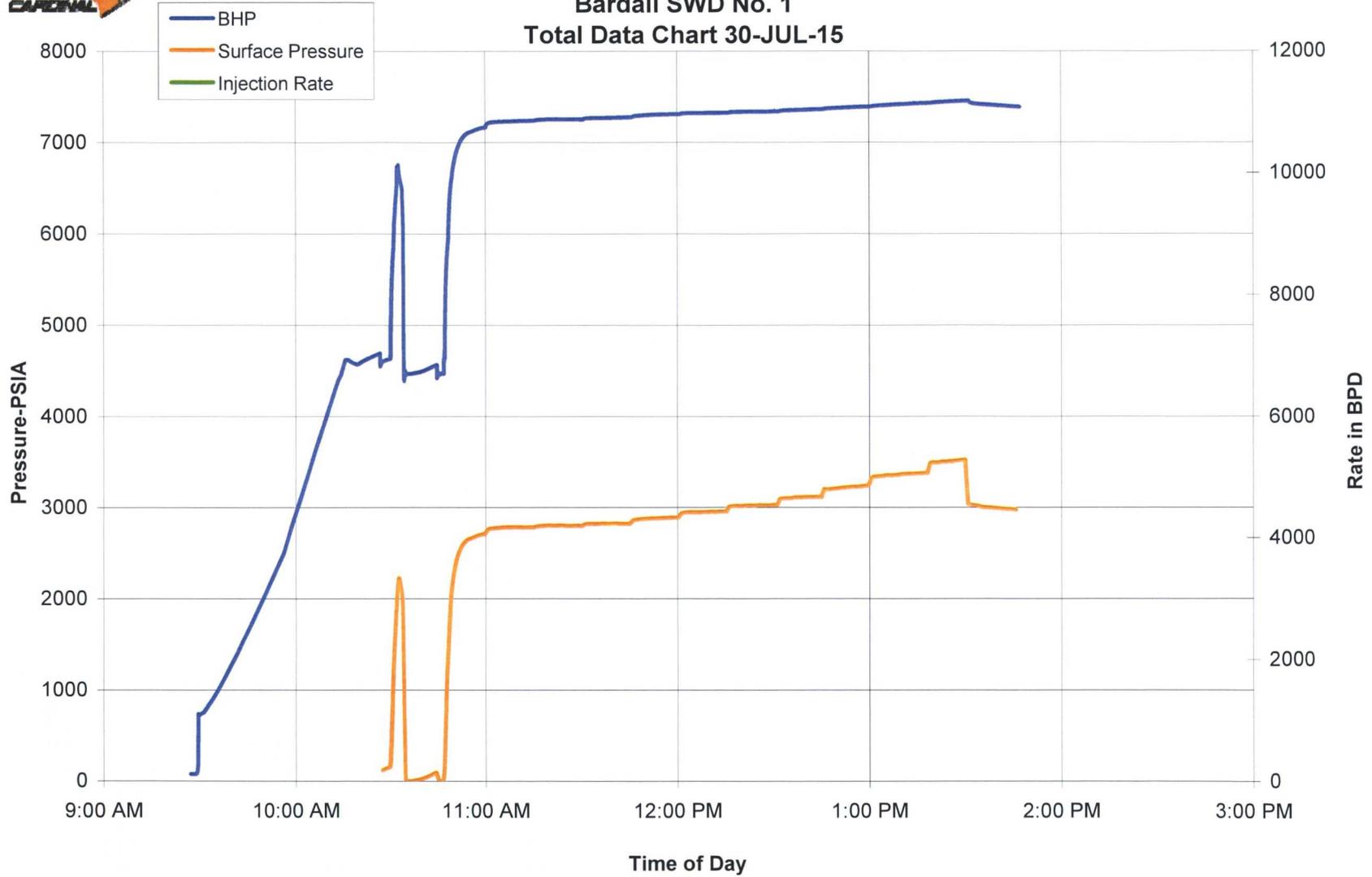
Apache Corporation
Barnsdall SWD No. 1
Step Rate Chart 30-JUL-15



Barnsdall SWD #1 Step Rate Test Number 2
July 15, 2015



Apache Corporation
Bardall SWD No. 1
Total Data Chart 30-JUL-15





March 8, 2016

Re: Barnsdall Federal SWD No. 1
Fracture Step Rate Test Review

To Whom it May Concern:

Apache Corporation asked us to review the SRT data on the above listed well that we completed on 7-30-2015.

We looked over the raw data along with the field notes and did not see anything that would indicate the original data is incorrect. We were also able to view some previous data from Apache that confirms the surface parting pressure data that we obtained and what another service provider obtained to be very similar. Differences between the two plots being that Cardinal's data is calculated on downhole measurements and the other provider used only surface data. Using only surface data in a high rate injection well can be difficult at best and the other service provider or an engineer for Apache did an excellent job in picking the surface parting pressure.

There might be a question in regards to the spike in the BHP and the SPSI at the start of the test. Our field notes make no mention of this, so we would just have to speculate that there was a possible leak noticed at the surface so the test was stopped to make quick repairs and this would not have degraded the test.

We have complete confidence in the data.

Regards,

Darrell Norris

Cardinal Surveys Company
432-580-8061
423-557-2069
dnorris@cardinalsurveys.com

Goetze, Phillip, EMNRD

From: Henkhaus, Mark <Mark.Henkhaus@apachecorp.com>
Sent: Tuesday, January 31, 2017 6:56 AM
To: Catanach, David, EMNRD
Cc: Goetze, Phillip, EMNRD; Inge, Richard, EMNRD; clayton@blm.gov; Stretcher, Laci; Gaines, Dean; Clements, Aaron
Subject: Barnsdall Federal SWD #1 Administrative Extension Request
Attachments: Barndall SWD #1 Catanach Extension Request.pdf

Director Catanach,

Attached please find a request for an administrative extension to the OCD's order SWD-1379-A for the Barnsdall Federal SWD #1, API 30-015-42468, Eddy County New Mexico.

I am copying Mr. Inge in Artesia, Mr. Layton with the BLM, and Mr. Goetze as well.

Your consideration of this request is appreciated. If anyone desires a hard copy, please let me know and I'll be glad to drop a copy in the mail.

Thank you, please let me know if you have any questions,

Mark

MARK HENKHAUS

MANAGER

Permian Regulatory

direct 432-818-1883 | *mobile* 432-894-1857 | *office* 2120A

mark.henkhaus@apachecorp.com

APACHE CORPORATION

303 Veterans Airpark Ln

Midland, Texas 79705

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