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DISTRICT II-ARTESIA O.C.D.

Form 3160-3
(June 2015)

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM060341

6. If Indian, Allotee or Tribe Name

1a. Type of work: ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other

1c. Type of Completion: ☐ Hydraulic Fracturing ☑ Single Zone ☐ Multiple Zone

7. If Unit or CA Agreement, Name and No.

8. Lease Name and Well No.
OSAGE BOYD 15 FEDERAL COM
17H
317253

2. Name of Operator
PERCUSSION PETROLEUM OPERATING LLC

9. API Well No.
30-015-46075

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
919 Milam Street, Suite 2475 Houston TX 77002	(713)589-2337	N. SEVEN RIVERS; GLORIETA -YESO

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface NENW / 786 FNL / 1777 FWL / LAT 32.65163 / LONG -104.475406

At proposed prod. zone NENW / 20 FNL / 2010 FWL / LAT 32.668011 / LONG -104.474681

11. Sec., T. R. M. or Blk. and Survey or Area
SEC 22 / T19S / R25E / NMP

14. Distance in miles and direction from nearest town or post office*	12. County or Parish	13. State
14 miles	EDDY	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
457 feet	40	160

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
20 feet	2765 feet / 8201 feet	FED: NMB001424

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3473 feet	01/02/2019	30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Brian Wood / Ph: (505)466-8120	10/26/2018

Title
President

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	05/30/2019

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

Application approval 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.
Conditions of approval, if any, are attached.

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.

APPROVED WITH CONDITIONS

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 05/30/2019

RWP 6-12-19

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the wen, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionany drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.
AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160
PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service wen or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.
ROUTINE USE: Information from the record and/or the record win be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.
EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The BLM conects this information to anow evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Conection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

(Continued on page 3)

Additional Operator Remarks

Location of Well

1. SHL: NENW / 786 FNL / 1777 FWL / TWSP: 19S / RANGE: 25E / SECTION: 22 / LAT: 32.65163 / LONG: -104.475406 (TVD: 0 feet, MD: 0 feet)
   PPP: NENW / 1325 FNL / 2010 FWL / TWSP: 19S / RANGE: 25E / SECTION: 15 / LAT: 32.664545 / LONG: -104.474657 (TVD: 2765 feet, MD: 6931 feet)
   BHL: NENW / 20 FNL / 2010 FWL / TWSP: 19S / RANGE: 25E / SECTION: 15 / LAT: 32.668011 / LONG: -104.474681 (TVD: 2765 feet, MD: 8201 feet)

BLM Point of Contact

Name: Tanja Baca

Title: Admin Support Assistant

Phone: 5752345940

Email: tabaca@blm.gov

Approval Date: 05/30/2019

Review and Appeal Rights

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

PECOS DISTRICT DRILLING
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Percussion Petroleum Operating, LLC**
LEASE NO.:	**NMNM-060341**
WELL NAME & NO.:	**Osage Boyd 15 Federal Com 17H**
SURFACE HOLE FOOTAGE:	**0786' FNL & 1777' FWL**
BOTTOM HOLE FOOTAGE	**0020' FNL & 2010' FWL Sec. 15, T. 19 S., R 25 E.**
LOCATION:	**Section 22, T. 19 S., R 25 E., NMPM**
COUNTY:	**County, New Mexico**

Communitization Agreement

- The operator will submit a Communitization Agreement to the Carlsbad Field Office, 620 E Greene St. Carlsbad, New Mexico 88220, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☐ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a "Major" violation.**

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.

4. **The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.**

B. **CASING**

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Water Basin:
After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until

cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Medium Cave/Karst
Possibility of water flow sin the San Andres.
Possibility of lost circulation in the San Andres and Artesia Group.

Contingency Surface Casing Plan:

1. The **13-3/8** inch surface casing shall be set at approximately **400** feet and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

    b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Casing Plan without Contingency:

2. The **9-5/8** inch surface casing shall be set at approximately **1279** feet and cemented to the surface **(If contingency casing is used the 9-5/8" casing will become the intermediate casing).**

a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.

b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial cementing will be done prior to drilling out that string.

If cement does not circulate to surface on the intermediate casing, the cement on the production casing must come to surface.

Centralizers required on horizontal leg, must be type for horizontal service and a minimum of one every other joint.

3. The minimum required fill of cement behind the **7 X 5-1/2** inch production casing is:

☐ Cement to surface. If cement does not circulate, contact the appropriate BLM office.

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API 53.

2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be psi.

3. The appropriate BLM office shall be notified a minimum of hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    a. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**.

    b. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

    c. The results of the test shall be reported to the appropriate BLM office.

    d. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

    e. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

E. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

JAM 052819

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Operator Certification Data Report

05/30/2019

Operator Certification

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

NAME: Brian Wood **Signed on:** 10/26/2018

Title: President

Street Address: 37 Verano Loop

City: Santa Fe **State:** NM **Zip:** 87508

Phone: (505)466-8120

Email address: afmss@permitswest.com

Field Representative

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Application Data Report

05/30/2019

APD ID: 10400035652 **Submission Date:** 10/26/2018

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400035652 **Tie to previous NOS?** **Submission Date:** 10/26/2018

BLM Office: CARLSBAD **User:** Brian Wood **Title:** President

Federal/Indian APD: FED **Is the first lease penetrated for production Federal or Indian?** FED

Lease number: NMNM060341 **Lease Acres:** 40

Surface access agreement in place? **Allotted?** **Reservation:**

Agreement in place? NO **Federal or Indian agreement:**

Agreement number:

Agreement name:

Keep application confidential? NO

Permitting Agent? YES **APD Operator:** PERCUSSION PETROLEUM OPERATING LLC

Operator letter of designation:

Operator Info

Operator Organization Name: PERCUSSION PETROLEUM OPERATING LLC

Operator Address: 919 Milam Street, Suite 2475

Zip: 77002

Operator PO Box:

Operator City: Houston **State:** TX

Operator Phone: (713)589-2337

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? NO **Master Development Plan name:**

Well in Master SUPO? NO **Master SUPO name:**

Well in Master Drilling Plan? NO **Master Drilling Plan name:**

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** N. SEVEN RIVERS; **Pool Name:** GLORIETA -YESO

Is the proposed well in an area containing other mineral resources? USEABLE WATER,NATURAL GAS,OIL

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Describe other minerals:

Is the proposed well in a Helium production area? N **Use Existing Well Pad?** NO **New surface disturbance?**

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** OSAGE BOYD 15 FEDERAL COM **Number:** 15H

Well Class: HORIZONTAL **Number of Legs:** 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 14 Miles **Distance to nearest well:** 20 FT **Distance to lease line:** 457 FT

Reservoir well spacing assigned acres Measurement: 160 Acres

Well plat: Osage_17H_Plat_GasCap_Plan_20181026154048.pdf

Well work start Date: 01/02/2019 **Duration:** 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 7977

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	786	FNL	1777	FWL	19S	25E	22	Aliquot NENW	32.65163	-104.475406	EDDY	NEW MEXICO	NEW MEXICO	F	FEE	3473	0	0
KOP Leg #1	455	FNL	1958	FWL	19S	25E	22	Aliquot NENW	32.6525363	-104.4748179	EDDY	NEW MEXICO	NEW MEXICO	F	FEE	1165	2348	2308
PPP Leg #1	1325	FNL	2010	FWL	19S	25E	15	Aliquot NENW	32.664545	-104.474657	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 060341	708	6931	2765

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
EXIT Leg #1	20	FNL	2010	FWL	19S	25E	15	Aliquot NENW	32.668011	-104.474681	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 060341	708	8201	2765
BHL Leg #1	20	FNL	2010	FWL	19S	25E	15	Aliquot NENW	32.668011	-104.474681	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 060341	708	8201	2765

APD ID: 10400035652 **Submission Date:** 10/26/2018

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	QUATERNARY	3470	0	0	OTHER : Caliche	USEABLE WATER	No
2	GRAYBURG	2867	603	603	DOLOMITE	NATURAL GAS,OIL	No
3	SAN ANDRES	2682	788	790	DOLOMITE	NATURAL GAS,OIL	No
4	GLORIETA	1122	2348	2390	DOLOMITE	NATURAL GAS,OIL	No
5	YESO	967	2503	2561	DOLOMITE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M **Rating Depth:** 5000

Equipment: A 3000-psi 5000' rated BOP stack consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD.

Requesting Variance? NO

Variance request:

Testing Procedure: Pressure tests will be conducted before drilling out from under all casing strings. Third party test crews will conduct all tests. All tests will be recorded for 10-minutes on low pressure (500 psi) and 10-minutes on high pressure (3000-psi). After BOP testing is complete, test casing (without test plug) to 2000-psi for 30 minutes. All tests will be charted on a plot. BOPs will be function tested every day.

Choke Diagram Attachment:

Osage_17H_Choke_20181026155040.pdf

BOP Diagram Attachment:

Osage_17H_BOP_20181026155048.pdf

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	12.25	9.625	NEW	API	N	0	1279	0	1266	3473		1279	J-55	36	LTC	1.125	1.125	DRY	1.8	DRY	1.8
2	PRODUCTION	8.75	7.0	NEW	API	Y	0	2525	0	2472	3473		2525	L-80	32	BUTT	1.125	1.125	DRY	1.8	DRY	1.8
3	PRODUCTION	8.75	5.5	NEW	API	Y	2525	8005	2472	2765			5480	L-80	17	BUTT	1.125	1.125	DRY	1.8	DRY	1.8

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Osage_17H_Casing_Design_Assumptions_20181026155127.pdf

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Casing Attachments

Casing ID: 2 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Osage_17H_Casing_Design_Assumptions_20181026155156.pdf

Casing Design Assumptions and Worksheet(s):

Osage_17H_Casing_Design_Assumptions_20181026155207.pdf

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Osage_17H_Casing_Design_Assumptions_20181026155233.pdf

Casing Design Assumptions and Worksheet(s):

Osage_17H_Casing_Design_Assumptions_20181026155250.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	1279	637	1.32	14.8	840	100	Class C	2% CaCl + ¼ pound per sack celloflake
PRODUCTION	Lead		0	2525	495	1.97	12.6	975	50	65/65/6 Class C	6% gel + 5% salt + ¼ pound per sack celloflake + 0.2% C41-P
PRODUCTION	Tail		0	2525	1369	1.32	14.8	1795	50	Class C	2% CaCl + ¼ pound per sack celloflake
PRODUCTION	Lead		2350	8005	495	1.97	12.6	975	50	65/65/6 Class C	6% gel + 5% salt + ¼ pound per sack

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
											celloflake + 0.2% C41-P
PRODUCTION	Tail		2350	8005	1360	1.32	14.8	1795	50	Class C	2% CaCl + ¼ pound per sack celloflake

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: All necessary mud products (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well.

Describe the mud monitoring system utilized: An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used.

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
2349	8201	OTHER : Cut brine	8.6	9.2							
0	1279	OTHER : Fresh water/gel	8.4	9.2							
1279	2349	OTHER : Fresh water/cut brine	8.3	9.2							

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Section 6 - Test, Logging, Coring

List of production tests including testing procedures, equipment and safety measures:

A mud logger will be used from GL to TD. Samples will be collected every 10' in the lateral pay zone.

No electric logs are planned at this time.

List of open and cased hole logs run in the well:

MUDLOG

Coring operation description for the well:

No core or drill stem test is planned.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 1189 **Anticipated Surface Pressure:** 580.7

Anticipated Bottom Hole Temperature(F): 111

Anticipated abnormal pressures, temperatures, or potential geologic hazards? NO

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Osage_17H_H2S_Plan_20181026155644.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Osage_17H_Horizontal_Drill_Plan_20181026155706.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Osage_17H_Drill_Plan_20181026160410.pdf

Osage_17H_Contingency_Plan_20181026160418.pdf

Other Variance attachment:

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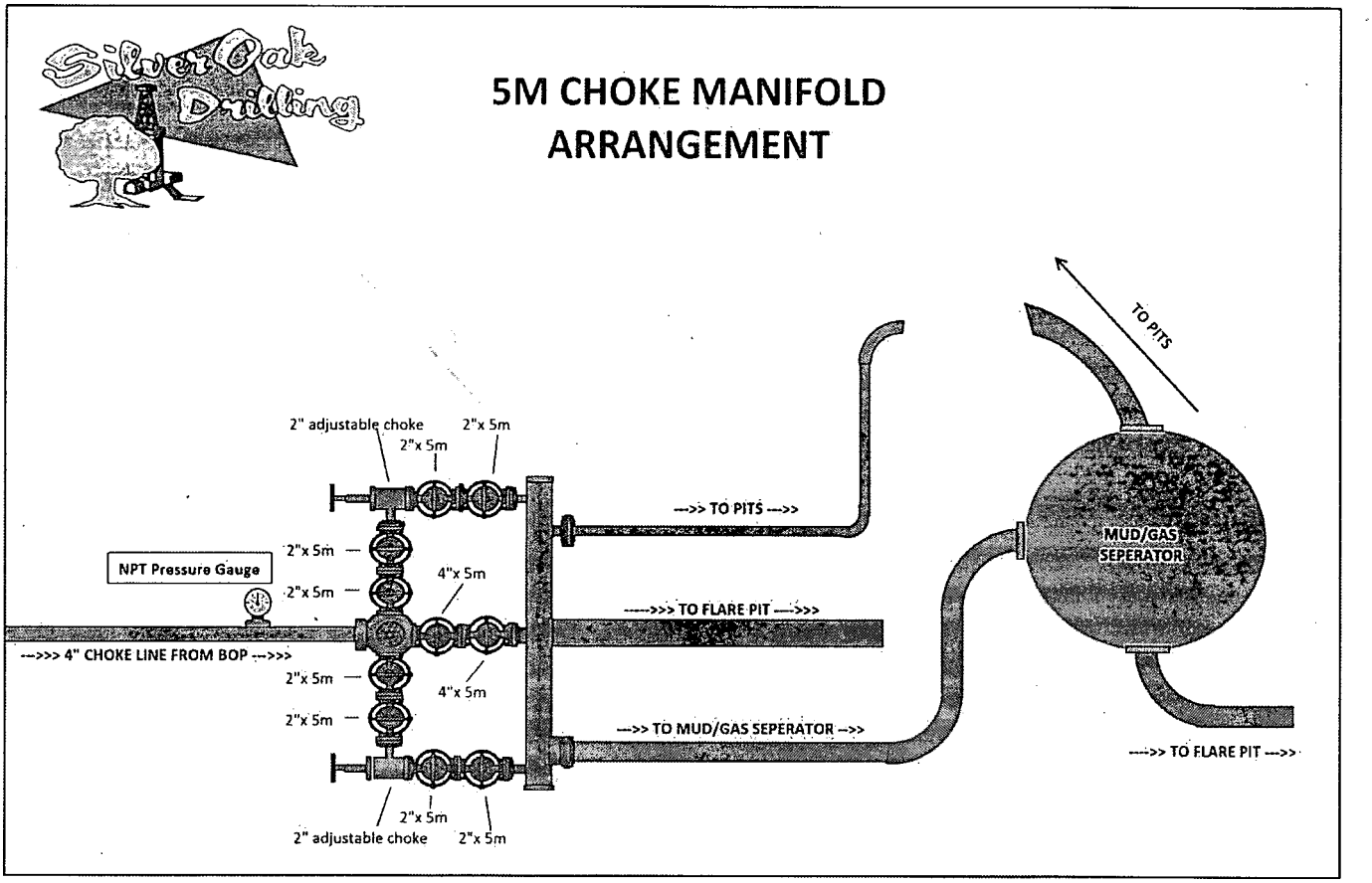
Houston, TX 77002



Pressure Testing

a. All testing to be done with 3rd party testing crews
b. All tests should be done for each BOP/Valve/Choke Manifold:
    1. Recorded for 10 minutes on low pressure (500 psi)
    2. Recorded for 10 minutes on high pressure (3000 psi)
    3. All BOP testing will be completed with a test plug in place in wellhead
c. After BOP testing is complete, test casing (without test plug) to 2000 psi for 30 minutes
d. Company representative to email all copies of all plots to Drilling Engineer as well as save in the well file.
e. **BOP's shall be function tested every day.**

Gas Buster Operation

a. Flow should be directed to pits unless choke is needed to control gas
b. Adjustable choke to adjusted only by Percussion Rep on location
c. Flare should remain burning (pilot lit) anytime fluid is going through gas buster
d. Choke needs to be monitored to not overrun gas buster

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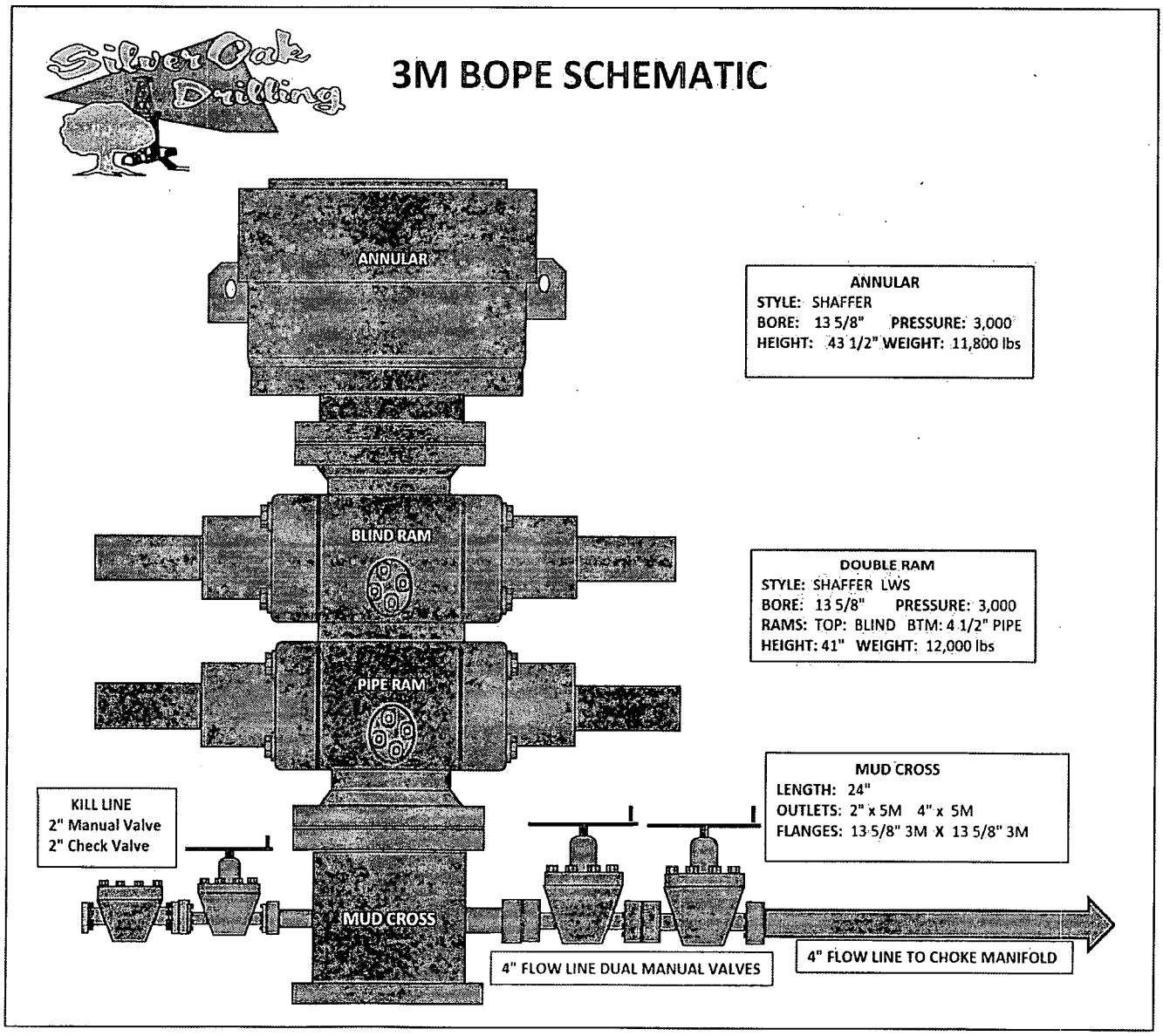
Houston, TX 77002

Nipple-Up

a. Raise stack and center over the wellhead
b. Install DSA and ring gaskets
c. Lower stack onto DSA
d. Torque DSA flange bolts in a star pattern to the specified torque
e. Verify BOP is centered to the rotary table
f. Install rotating head
g. Install hydraulic lines to BOP
h. Verify manifold line-up
i. Test BOP & manifold



PERCUSSION PETROLEUM LLC

Casing Design Criteria and Load Case Assumptions

Percussion Petroleum Operating, LLC.
919 Milam Street, Suite 2475
Houston, TX 77002

Lakewood Federal Com horizontal Wells

1. Collapse: DF_C=1.125
   a. Full Internal Evacuation: Collapse force equal to the mud gradient in which the casing will be run (0.65 psi/ft). The effects of axial load on collapse will be considered.
   b. Cementing: Collapse force equal to the gradient of planned cement slurries to planned depths and minimum mud gradient in which the casing will be run above that (0.65 psi/ft) and an internal force equal to mud gradient of displacement fluid (0.43 psi/ft)

2. Burst: DF_B=1.125
   a. Pressure Test: psi casing test with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.
   b. Injection Down Casing: psi surface injection pressure plus an internal pressure gradient of 0.65 psi/ft with an external force equal to the mud gradient in which the casing will be run (0.65 psi/ft), which is a more conservative backup force than pore pressure.

3. Tensile: DF_T=1.8
   a. Overpull: A downward force of 100,000 lbs is applied at the shoe along with the weight of the casing string utilizing the effects of buoyancy (10.5 ppg).

4. Surface Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
9-5/8"	36	J-55	STC	8.921	8.765	2,020	3,520	394	0.0773
Safety Factors									
	API Rec. SF	**ACTUAL SF**	Case		External Fluids		Internal Fluids		
Collapse	1.125	**3.30**	Lost Circulation		Mud		*None*		
Burst	1.125	**1.46**	Plug Bump		Green Cement + 2ksi surf pressure		Displacement Fluid/Mud		
Tension	1.8	**2.80**	100 klbs Overpull		Mud		Mud		

Buoyed Casing Weight: ***40,798 lbs (assuming 8.4 ppg fluid and 1,300' casing-worst case scenario)***

PERCUSSION PETROLEUM LLC

Production Casing Program									
Casing Size (in)	**Weight (ppf)**	**Grade**	**Connection**	**ID**	**ID (drift)**	**Collapse (psi)**	**Burst (psi)**	**Tension (1,000 lbs)**	**Capacity (bbl/ft)**
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5-1/2"	17	L-80	BTC	4.892	4.767	6,280	7,740	348	0.0232

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Tension	1.8	**2.29**	100 klbs Overpull	Mud	Mud

Buoyed Casing Weight: ***86,522 lbs (assuming 8.4 ppg fluid and 3,500' TVD-worst case scenario)***

PERCUSSION PETROLEUM LLC

Casing Design Criteria and Load Case Assumptions

Percussion Petroleum Operating, LLC.
919 Milam Street, Suite 2475
Houston, TX 77002

Lakewood Federal Com horizontal Wells

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PERCUSSION PETROLEUM LLC

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PERCUSSION PETROLEUM LLC

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PERCUSSION PETROLEUM LLC

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PERCUSSION PETROLEUM LLC

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PERCUSSION PETROLEUM LLC

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PERCUSSION PETROLEUM LLC

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PERCUSSION PETROLEUM LLC

Hydrogen Sulfide Drilling Operations Plan

Percussion Petroleum Operating, LLC.
919 Milam Street, Suite 2475
Houston, TX 77002

1. H_2S Safety Instructions to the following:
   - Characteristics of H_2S.
   - Physical effects and hazards.
   - Principal and operation of H_2S detectors, warning system and briefing areas.
   - Evacuation procedures, routes and First Aid.
   - Proper use of safety equipment and life support systems.
   - Essential personnel meeting medical evaluation criteria will receive additional training on the proper use of 30 min pressure demand air packs.

2. H_2S Detection & Alarm Systems:
   - H_2S sensor/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud returns pits by the shale shaker. Additional H_2S monitors may be placed as deemed necessary.
   - An audio alarm system will be installed on the derrick, the floor, and in the doghouse.

3. Windsocks and Wind Streamers:
   - Windsocks at mud pit area should be high enough to be visible.
   - Windsock on the rig floor/top of doghouse should be high enough to be visible.

4. Condition Flags & Signs:
   - Warning sign on access road to location
   - Flags to be displayed on sign at entrance to location
     i. Green Flag – Normal Safe Operation Condition
     ii. Yellow Flag – Potential Pressure and Danger
     iii. Red Flag – Danger (H_2S present in dangerous concentrations) Only H_2S trained personnel admitted on location

5. Well Control Equipment:
   - See attached APD

6. Communications:
    - While working under masks, chalkboards will be used for communications
    - Hand signals will be used where chalk board is inappropriate
    - Two-way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at drilling foreman's trailer or living quarters.

7. Drilling Stem Testing:
    - No Drill Stem Tests or hole coring is planned at this time.

8. Drilling contractor supervisor will be required to be familiar with the effects H_2S has on tubular goods and other mechanical equipment.

9. If H2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H2S scavenger chemicals if necessary.

10. Emergency Contacts:

Emergency Contact Information - H2S Contingency Plan				
Precussion Petroleum Operating, LLC	**713-518-1331**			
Key Parties at Percussion Petroleum		**Office**	**Mobile**	**Email**
Lelan J Anders	Vice President of Operations	713-429-1291	281-908-1752	Lelan@PercussionPetroleum.com
Lupe Carrillo	Chief Operating Officer	713-589-9509	832-776-1869	Lupe@PercussionPetroleum.com
John H. Campbell III	Chief Executive Officer	713-589-4683	936-718-6488	John@PercussionPetroleum.com

Artesia, New Mexico:	
Ambulance	911
State Police	575-746-2703
City Police	575-746-2703
Sheriff's Office	575-746-9888
Fire Department	575-746-2701
Local Emergency Planning Committee	575-746-2122
New Mexico Oil Conservation Division	575-748-1283

Carlsbad, New Mexico:	
Ambulance	911
State Police	575-885-3137
City Police	575-885-2111
Sheriff's Office	575-887-7551
Fire Department	575-887-3798
Local Emergency Planning Committee	575-887-6544
New Mexico Oil Conservation Division	575-887-6544

PERCUSSION PETROLEUM LLC

Santa Fe, New Mexico:	
New Mexico Emergency Response Commission	505-476-9600
New Mexico Emergency Response Commission (24 hr)	505-827-9126
New Mexico State Emergency Operations Center	505-476-9635

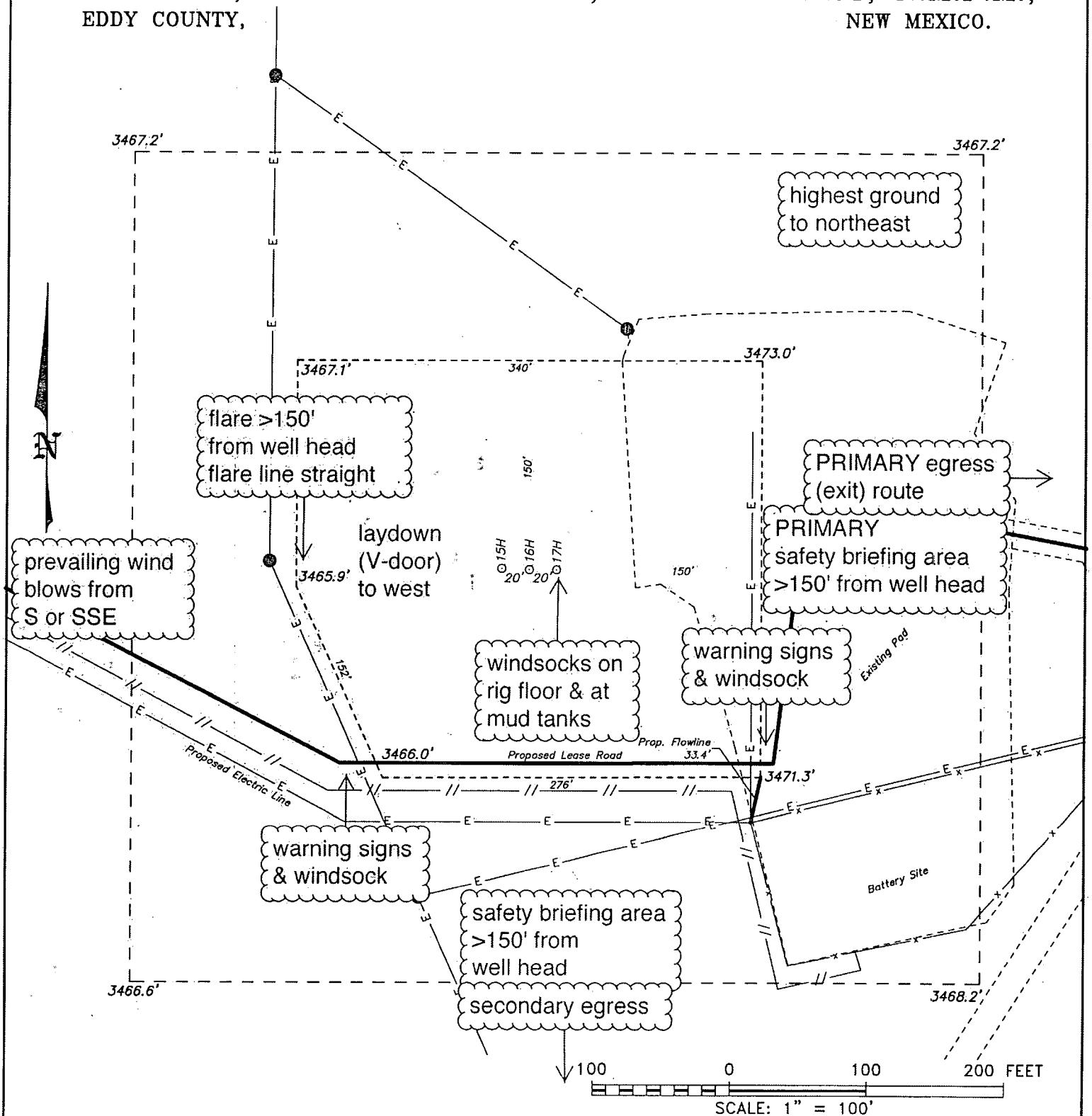
Federal Contacts:	
Carlsbad BLM Office	575-234-5972
National Emergency Response Center (Washington, DC)	800-424-8802

Medical:	
Flight for Life - Lubbock, TX	806-743-9911
AeroCare - Lubbock, TX	806-747-8923
Med Flight Air Ambulance - Albuquerque, NM	505-842-4433
SB Air Med Service - Albuquerque, NM	505-842-4949

Well Control/Other:	
Wild Well Control	281-784-4700
Boots & Coots IWC	800-256-9688
B.J. Services	575-746-3569
Halliburton	575-746-2757

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.



PERCUSSION PETROLEUM OPERATING, LLC

REF: OSAGE BOYD 15 FEDERAL COM 17H / WELL PAD TOPO

THE OSAGE BOYD 15 FEDERAL COM 17H LOCATED 786' FROM THE NORTH LINE AND 1777' FROM THE WEST LINE OF SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

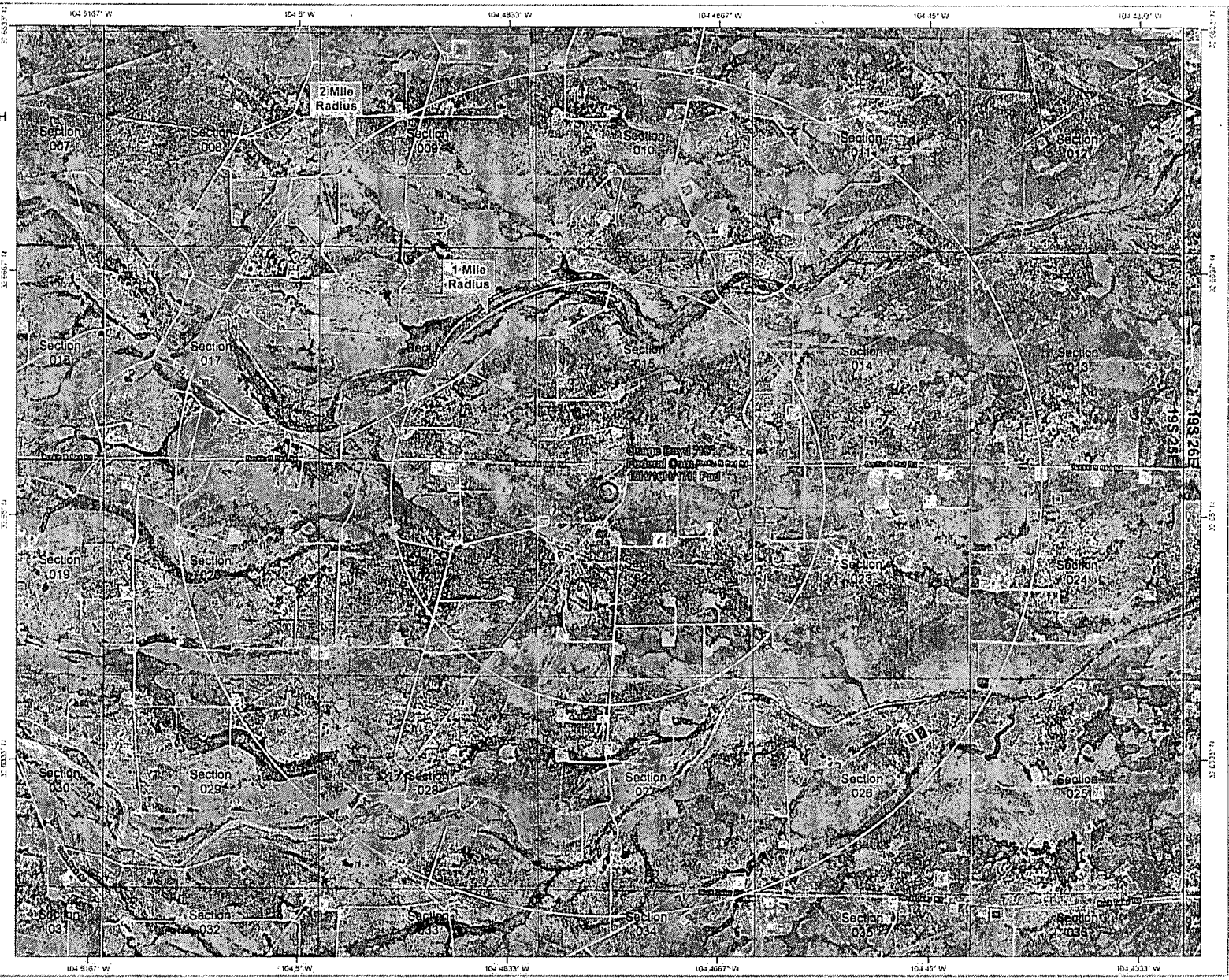
basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number: 33766	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

Percussion Petroleum Operating, LLC

Osage Boyd "15" Federal Com 15H/16H/17H
H_2S Contingency Plan:
Radius Map

Section 22, Township 19S, Range 25E
Eddy County, New Mexico



Surface Hole Location

1:27,000

0 0.25 0.5 1

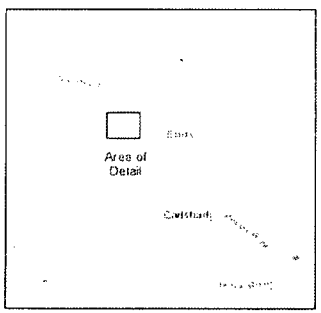
Miles

N

NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST, INC.

Prepared by Permits West, Inc., September 13, 2018
for Percussion Petroleum Operating, LLC



PERCUSSION PETROLEUM

Company: Percussion Petroleum, LLC
Project: Eddy County, NM
Site: Osage Boyd 15 FED COM
Well: #17H
Wellbore: OH
Rig:
Design: Plan #1 / 9:31, July 20 2018

PROJECT DETAILS: Eddy County, NM

Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level

WELLBENDERS DIRECTIONAL SERVICES LLC

WELL DETAILS: #17H

RKB = 17' @ 3490.00usft
3473.00

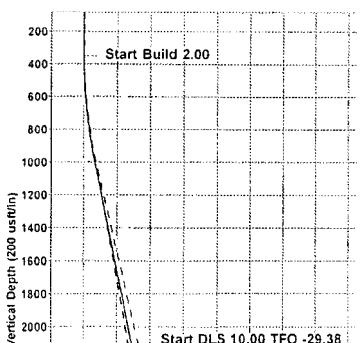
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	600823.30	497610.60	32.651630	-104.475407	17

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

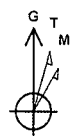
Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
OB 15: 17H SHL (786 FNL & 1777' FWL)	0.00	0.00	0.00	600823.30	497610.60	Point
OB 15: 17H FTP/LP	2765.00	892.30	232.00	601715.60	497842.60	Point
OB 15: 17H LTP	2765.00	5879.10	231.30	606702.40	497841.90	Point
OB 15: 17H PBHL (20 FNL & 2010' FWL)	2765.00	5959.20	231.30	606782.50	497841.90	Point

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00
3	1000.77	13.02	28.74	995.18	64.53	35.38	2.00	64.53
4	2348.19	13.02	28.74	2307.99	330.62	181.28	0.00	330.59
5	3134.31	90.00	359.99	2765.00	892.30	232.00	10.00	892.26
6	8201.21	90.00	359.99	2765.00	5959.20	231.30	0.00	5959.16

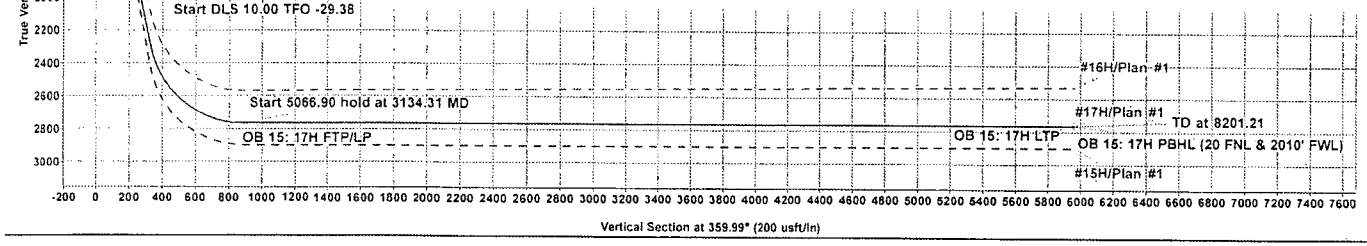


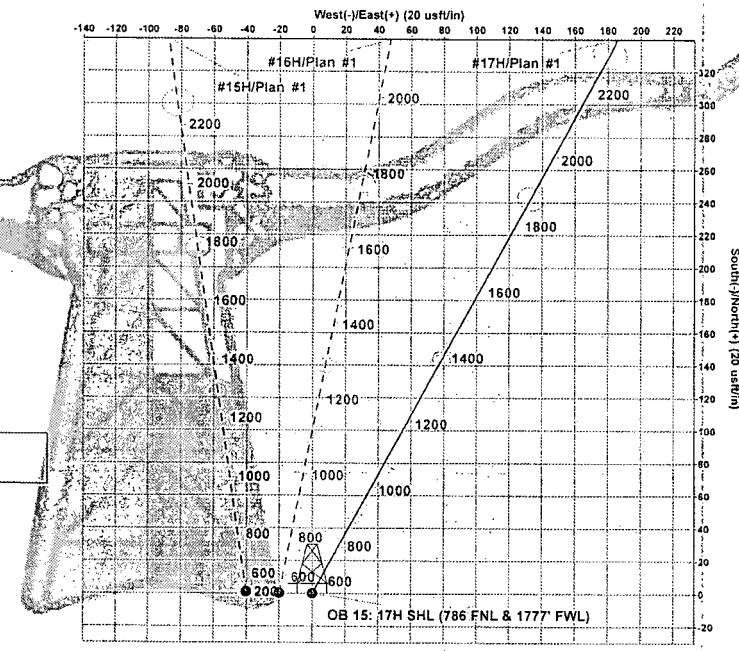
TOTAL CORRECTION
To convert a Magnetic Direction to a Grid Direction, Add 7.36°

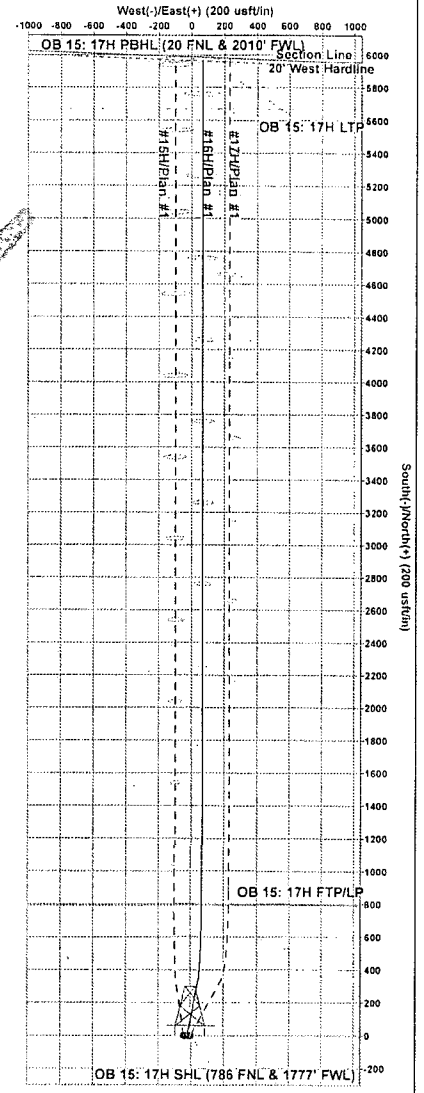


Azimuths to Grid North
True North: 0.08°
Magnetic North: 7.36°

Magnetic Field
Strength: 47981.3snT
Dip Angle: 60.29°
Date: 07/19/2018
Model: IGRF2015







Disclaimer:
All Plan Details, boundary lines and offset well location/ survey data is provided by customer and subject to customer approval.

Plan: Plan #1 (#17H/OH)

Created By: Matthew May Date: 9:31, July 20 2018

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Well:	#17H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	WBDS_SQL_2

Project Eddy County, NM

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site Osage Boyd 15 FED COM

Site Position:		**Northing:**	600,962.30 usft	**Latitude:**	32.652008
From:	Map	**Easting:**	496,514.50 usft	**Longitude:**	-104.478969
Position Uncertainty:	0.00 usft	**Slot Radius:**	13.200 in	**Grid Convergence:**	-0.08 °

Well #17H - Slot 17

Well Position	**+N/-S**	0.00 usft	**Northing:**	600,823.30 usft	**Latitude:**	32.651630
	+E/-W	0.00 usft	**Easting:**	497,610.60 usft	**Longitude:**	-104.475407
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	3,473.00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	07/19/18	7.29	60.29	47,981.31748352

Design Plan #1

Audit Notes:

Version:	**Phase:**	PLAN	**Tie On Depth:**	0.00

Vertical Section:

Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
0.00	0.00	0.00	359.99

Survey Tool Program **Date** 07/20/18

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,201.21	Plan #1 (OH)	MWD+IGRF	OWSG MWD + IGRF or WMM

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Well:	#17H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	WBDS_SQL_2

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
350.00	0.00	0.00	350.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	1.00	28.74	400.00	0.38	0.21	0.38	2.00	2.00	0.00	28.74
500.00	3.00	28.74	499.93	3.44	1.89	3.44	2.00	2.00	0.00	0.00
600.00	5.00	28.74	599.68	9.56	5.24	9.56	2.00	2.00	0.00	0.00
700.00	7.00	28.74	699.13	18.72	10.27	18.72	2.00	2.00	0.00	0.00
800.00	9.00	28.74	798.15	30.93	16.96	30.92	2.00	2.00	0.00	0.00
900.00	11.00	28.74	896.63	46.15	25.31	46.15	2.00	2.00	0.00	0.00
1,000.77	13.02	28.74	995.18	64.53	35.38	64.53	2.00	2.00	0.00	0.00
1,100.00	13.02	28.74	1,091.87	84.13	46.13	84.12	0.00	0.00	0.00	0.00
1,200.00	13.02	28.74	1,189.30	103.88	56.96	103.87	0.00	0.00	0.00	0.00
1,300.00	13.02	28.74	1,286.73	123.62	67.78	123.61	0.00	0.00	0.00	0.00
1,400.00	13.02	28.74	1,384.16	143.37	78.61	143.36	0.00	0.00	0.00	0.00
1,500.00	13.02	28.74	1,481.59	163.12	89.44	163.10	0.00	0.00	0.00	0.00
1,600.00	13.02	28.74	1,579.02	182.87	100.27	182.85	0.00	0.00	0.00	0.00
1,700.00	13.02	28.74	1,676.45	202.61	111.09	202.60	0.00	0.00	0.00	0.00
1,800.00	13.02	28.74	1,773.89	222.36	121.92	222.34	0.00	0.00	0.00	0.00
1,900.00	13.02	28.74	1,871.32	242.11	132.75	242.09	0.00	0.00	0.00	0.00
2,000.00	13.02	28.74	1,968.75	261.86	143.58	261.83	0.00	0.00	0.00	0.00
2,100.00	13.02	28.74	2,066.18	281.61	154.40	281.58	0.00	0.00	0.00	0.00
2,200.00	13.02	28.74	2,163.61	301.35	165.23	301.32	0.00	0.00	0.00	0.00
2,300.00	13.02	28.74	2,261.04	321.10	176.06	321.07	0.00	0.00	0.00	0.00
2,348.19	13.02	28.74	2,307.99	330.62	181.28	330.59	0.00	0.00	0.00	0.00
2,350.00	13.17	28.35	2,309.76	330.98	181.47	330.95	10.00	8.73	-21.53	-29.38

Company:	Percussion Petroleum, LLC	Local Co-ordinate Reference:	Well #17H - Slot 17
Project:	Eddy County, NM	TVD Reference:	RKB = 17' @ 3490.00usft
Site:	Osage Boyd 15 FED COM	MD Reference:	RKB = 17' @ 3490.00usft
Well:	#17H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	WBDS_SQL_2

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
2,400.00	17.71	20.36	2,357.94	343.13	186.83	343.10	10.00	9.07	-15.97	-29.00
2,450.00	22.44	15.61	2,404.89	359.46	192.04	359.43	10.00	9.46	-9.51	-21.30
2,500.00	27.26	12.45	2,450.25	379.85	197.08	379.81	10.00	9.64	-6.31	-16.82
2,550.00	32.14	10.18	2,493.67	404.13	201.91	404.10	10.00	9.75	-4.53	-13.96
2,600.00	37.04	8.46	2,534.83	432.13	206.48	432.10	10.00	9.81	-3.44	-11.99
2,650.00	41.96	7.09	2,573.39	463.64	210.76	463.60	10.00	9.85	-2.74	-10.57
2,700.00	46.90	5.96	2,609.09	498.40	214.72	498.37	10.00	9.87	-2.26	-9.51
2,750.00	51.85	5.00	2,641.64	536.17	218.34	536.13	10.00	9.89	-1.92	-8.70
2,800.00	56.80	4.16	2,670.79	576.64	221.57	576.60	10.00	9.91	-1.68	-8.08
2,850.00	61.76	3.41	2,696.32	619.52	224.40	619.48	10.00	9.92	-1.50	-7.59
2,900.00	66.72	2.73	2,718.04	664.47	226.81	664.43	10.00	9.92	-1.36	-7.20
2,950.00	71.69	2.10	2,735.79	711.16	228.78	711.12	10.00	9.93	-1.27	-6.91
3,000.00	76.65	1.50	2,749.43	759.22	230.29	759.18	10.00	9.93	-1.19	-6.68
3,050.00	81.62	0.93	2,758.85	808.30	231.33	808.26	10.00	9.94	-1.15	-6.52
3,100.00	86.59	0.37	2,763.98	858.01	231.89	857.97	10.00	9.94	-1.12	-6.41
3,134.31	90.00	359.99	2,765.00	892.30	232.00	892.26	10.00	9.94	-1.11	-6.35
3,200.00	90.00	359.99	2,765.00	957.99	231.99	957.95	0.00	0.00	0.00	0.00
3,300.00	90.00	359.99	2,765.00	1,057.99	231.98	1,057.95	0.00	0.00	0.00	0.00
3,400.00	90.00	359.99	2,765.00	1,157.99	231.96	1,157.95	0.00	0.00	0.00	0.00
3,500.00	90.00	359.99	2,765.00	1,257.99	231.95	1,257.95	0.00	0.00	0.00	0.00
3,600.00	90.00	359.99	2,765.00	1,357.99	231.94	1,357.95	0.00	0.00	0.00	0.00
3,700.00	90.00	359.99	2,765.00	1,457.99	231.92	1,457.95	0.00	0.00	0.00	0.00
3,800.00	90.00	359.99	2,765.00	1,557.99	231.91	1,557.95	0.00	0.00	0.00	0.00
3,900.00	90.00	359.99	2,765.00	1,657.99	231.89	1,657.95	0.00	0.00	0.00	0.00
4,000.00	90.00	359.99	2,765.00	1,757.99	231.88	1,757.95	0.00	0.00	0.00	0.00
4,100.00	90.00	359.99	2,765.00	1,857.99	231.87	1,857.95	0.00	0.00	0.00	0.00
4,200.00	90.00	359.99	2,765.00	1,957.99	231.85	1,957.95	0.00	0.00	0.00	0.00

Company:	Percussion Petroleum, LLC	Local Co-ordinate Reference:	Well #17H - Slot 17
Project:	Eddy County, NM	TVD Reference:	RKB = 17' @ 3490.00usft
Site:	Osage Boyd 15 FED COM	MD Reference:	RKB = 17' @ 3490.00usft
Well:	#17H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	WBDS_SQL_2

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
4,300.00	90.00	359.99	2,765.00	2,057.99	231.84	2,057.95	0.00	0.00	0.00	0.00
4,400.00	90.00	359.99	2,765.00	2,157.99	231.83	2,157.95	0.00	0.00	0.00	0.00
4,500.00	90.00	359.99	2,765.00	2,257.99	231.81	2,257.95	0.00	0.00	0.00	0.00
4,600.00	90.00	359.99	2,765.00	2,357.99	231.80	2,357.95	0.00	0.00	0.00	0.00
4,700.00	90.00	359.99	2,765.00	2,457.99	231.78	2,457.95	0.00	0.00	0.00	0.00
4,800.00	90.00	359.99	2,765.00	2,557.99	231.77	2,557.95	0.00	0.00	0.00	0.00
4,900.00	90.00	359.99	2,765.00	2,657.99	231.76	2,657.95	0.00	0.00	0.00	0.00
5,000.00	90.00	359.99	2,765.00	2,757.99	231.74	2,757.95	0.00	0.00	0.00	0.00
5,100.00	90.00	359.99	2,765.00	2,857.99	231.73	2,857.95	0.00	0.00	0.00	0.00
5,200.00	90.00	359.99	2,765.00	2,957.99	231.71	2,957.95	0.00	0.00	0.00	0.00
5,300.00	90.00	359.99	2,765.00	3,057.99	231.70	3,057.95	0.00	0.00	0.00	0.00
5,400.00	90.00	359.99	2,765.00	3,157.99	231.69	3,157.95	0.00	0.00	0.00	0.00
5,500.00	90.00	359.99	2,765.00	3,257.99	231.67	3,257.95	0.00	0.00	0.00	0.00
5,600.00	90.00	359.99	2,765.00	3,357.99	231.66	3,357.95	0.00	0.00	0.00	0.00
5,700.00	90.00	359.99	2,765.00	3,457.99	231.65	3,457.95	0.00	0.00	0.00	0.00
5,800.00	90.00	359.99	2,765.00	3,557.99	231.63	3,557.95	0.00	0.00	0.00	0.00
5,900.00	90.00	359.99	2,765.00	3,657.99	231.62	3,657.95	0.00	0.00	0.00	0.00
6,000.00	90.00	359.99	2,765.00	3,757.99	231.60	3,757.95	0.00	0.00	0.00	0.00
6,100.00	90.00	359.99	2,765.00	3,857.99	231.59	3,857.95	0.00	0.00	0.00	0.00
6,200.00	90.00	359.99	2,765.00	3,957.99	231.58	3,957.95	0.00	0.00	0.00	0.00
6,300.00	90.00	359.99	2,765.00	4,057.99	231.56	4,057.95	0.00	0.00	0.00	0.00
6,400.00	90.00	359.99	2,765.00	4,157.99	231.55	4,157.95	0.00	0.00	0.00	0.00
6,500.00	90.00	359.99	2,765.00	4,257.99	231.54	4,257.95	0.00	0.00	0.00	0.00
6,600.00	90.00	359.99	2,765.00	4,357.99	231.52	4,357.95	0.00	0.00	0.00	0.00
6,700.00	90.00	359.99	2,765.00	4,457.99	231.51	4,457.95	0.00	0.00	0.00	0.00
6,800.00	90.00	359.99	2,765.00	4,557.99	231.49	4,557.95	0.00	0.00	0.00	0.00
6,900.00	90.00	359.99	2,765.00	4,657.99	231.48	4,657.95	0.00	0.00	0.00	0.00

Company:	Percussion Petroleum, LLC	Local Co-ordinate Reference:	Well #17H - Slot 17
Project:	Eddy County, NM	TVD Reference:	RKB = 17' @ 3490.00usft
Site:	Osage Boyd 15 FED COM	MD Reference:	RKB = 17' @ 3490.00usft
Well:	#17H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	WBDS_SQL_2

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100ft)	Build (°/100ft)	Turn (°/100ft)	TFace (°)
7,000.00	90.00	359.99	2,765.00	4,757.99	231.47	4,757.95	0.00	0.00	0.00	0.00
7,100.00	90.00	359.99	2,765.00	4,857.99	231.45	4,857.95	0.00	0.00	0.00	0.00
7,200.00	90.00	359.99	2,765.00	4,957.99	231.44	4,957.95	0.00	0.00	0.00	0.00
7,300.00	90.00	359.99	2,765.00	5,057.99	231.42	5,057.95	0.00	0.00	0.00	0.00
7,400.00	90.00	359.99	2,765.00	5,157.99	231.41	5,157.95	0.00	0.00	0.00	0.00
7,500.00	90.00	359.99	2,765.00	5,257.99	231.40	5,257.95	0.00	0.00	0.00	0.00
7,600.00	90.00	359.99	2,765.00	5,357.99	231.38	5,357.95	0.00	0.00	0.00	0.00
7,700.00	90.00	359.99	2,765.00	5,457.99	231.37	5,457.95	0.00	0.00	0.00	0.00
7,800.00	90.00	359.99	2,765.00	5,557.99	231.36	5,557.95	0.00	0.00	0.00	0.00
7,900.00	90.00	359.99	2,765.00	5,657.99	231.34	5,657.95	0.00	0.00	0.00	0.00
8,000.00	90.00	359.99	2,765.00	5,757.99	231.33	5,757.95	0.00	0.00	0.00	0.00
8,100.00	90.00	359.99	2,765.00	5,857.99	231.31	5,857.95	0.00	0.00	0.00	0.00
8,201.21	90.00	359.99	2,765.00	5,959.20	231.30	5,959.16	0.00	0.00	0.00	0.00

Checked By: _____ Approved By: _____ Date: _____

PERCUSSION PETROLEUM LLC

Percussion Petroleum, LLC

Eddy County, NM
Osage Boyd 15 FED COM
#17H

OH
Plan #1

Anticollision Report

20 July, 2018

WELLBENDERS
DIRECTIONAL SERVICES

PERCUSSION PETROLEUM LLC

Anticollision Report

WELLBENDERS DIRECTIONAL SERVICES

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Reference Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	WBDS_SQL_2
Reference Design:	Plan #1	**Offset TVD Reference:**	Reference Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	ISCWSA
Depth Range:	0.00 to 8,201.21usft	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,000.00 usft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 Sigma	**Casing Method:**	Not applied

Survey Tool Program **Date** 07/20/18

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	8,201.21	Plan #1 (OH)	MWD+IGRF	OWSG MWD + IGRF or WMM

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (usft)	Offset Measured Depth (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Separation Factor	Warning
Osage Boyd 15 FED COM						
#15H - OH - Plan #1	350.00	347.00	40.31	38.23	19.388	CC
#15H - OH - Plan #1	400.00	396.89	40.57	38.14	16.652	ES
#15H - OH - Plan #1	8,201.21	8,319.45	356.54	142.68	1.667	SF
#16H - OH - Plan #1	350.00	349.00	20.00	17.91	9.587	CC
#16H - OH - Plan #1	400.00	399.06	20.13	17.69	8.236	ES
#16H - OH - Plan #1	8,201.21	7,999.73	287.15	138.38	1.930	SF

Offset Design Osage Boyd 15 FED COM - #15H - OH - Plan #1 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD+IGRF — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	3.00	0.00	0.00	0.00	-88.72	0.90	-40.30	40.31				
100.00	100.00	103.00	100.00	0.15	0.16	-88.72	0.90	-40.30	40.31	40.00	0.31	130.755	
200.00	200.00	203.00	200.00	0.51	0.52	-88.72	0.90	-40.30	40.31	39.28	1.03	39.318	
300.00	300.00	303.00	300.00	0.87	0.88	-88.72	0.90	-40.30	40.31	38.57	1.74	23.138	
350.00	350.00	347.00	350.00	1.04	1.03	-88.72	0.90	-40.30	40.31	38.23	2.08	19.388	CC
400.00	400.00	396.89	399.89	1.22	1.21	-117.46	1.28	-40.35	40.57	38.14	2.44	16.652	ES
500.00	499.93	496.63	499.57	1.58	1.57	-117.11	4.62	-40.82	42.73	39.57	3.15	13.552	
600.00	599.68	596.27	598.97	1.95	1.94	-116.37	11.38	-41.77	47.05	43.17	3.88	12.126	
700.00	699.13	695.73	697.89	2.32	2.31	-115.41	21.54	-43.19	53.54	48.91	4.63	11.565	
800.00	798.15	794.95	796.17	2.72	2.70	-114.40	35.05	-45.08	62.21	56.79	5.42	11.488	
900.00	896.63	905.98	893.79	3.15	3.18	-113.54	51.76	-47.42	73.00	66.70	6.30	11.589	
1,000.77	995.18	1,006.00	992.15	3.61	3.62	-114.45	69.45	-49.90	85.48	78.29	7.18	11.896	
1,100.00	1,091.87	1,107.67	1,088.90	4.10	4.08	-116.20	86.85	-52.33	98.54	90.44	8.10	12.167	
1,200.00	1,189.30	1,208.58	1,186.40	4.60	4.54	-117.56	104.38	-54.79	111.78	102.75	9.03	12.382	
1,300.00	1,286.73	1,309.49	1,283.89	5.11	5.01	-118.63	121.92	-57.24	125.07	115.10	9.97	12.550	
1,400.00	1,384.16	1,389.60	1,381.38	5.63	5.38	-119.49	139.45	-59.70	138.39	127.58	10.81	12.797	
1,500.00	1,481.59	1,488.69	1,478.88	6.15	5.85	-120.20	156.98	-62.15	151.74	139.98	11.76	12.907	
1,600.00	1,579.02	1,587.77	1,576.37	6.68	6.32	-120.79	174.52	-64.61	165.11	152.40	12.70	12.998	
1,700.00	1,676.45	1,686.86	1,673.87	7.21	6.78	-121.30	192.05	-67.06	178.49	164.83	13.65	13.074	
1,800.00	1,773.89	1,785.95	1,771.36	7.74	7.25	-121.74	209.59	-69.52	191.88	177.28	14.60	13.139	
1,900.00	1,871.32	1,885.04	1,868.86	8.27	7.72	-122.11	227.12	-71.97	205.28	189.72	15.56	13.194	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Reference Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	WBDS_SQL_2
Reference Design:	Plan #1	**Offset TVD Reference:**	Reference Datum

Offset Design Osage Boyd 15 FED COM - #15H - OH - Plan #1 — Offset Site Error: 0.00 usft

Survey Program: 0-MWD+IGRF — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
2,000.00	1,968.75	1,984.13	1,966.35	8.81	8.20	-122.45	244.66	-74.43	218.69	202.18	16.51	13.242	
2,100.00	2,066.18	2,083.22	2,063.85	9.34	8.67	-122.74	262.19	-76.88	232.11	214.64	17.47	13.285	
2,200.00	2,163.61	2,182.31	2,161.34	9.88	9.14	-123.00	279.72	-79.34	245.53	227.10	18.43	13.322	
2,300.00	2,261.04	2,281.40	2,258.84	10.42	9.62	-123.24	297.26	-81.79	258.96	239.57	19.39	13.355	
2,348.19	2,307.99	2,329.15	2,305.82	10.68	9.85	-123.34	305.71	-82.97	265.43	245.58	19.85	13.370	
2,350.00	2,309.76	2,330.94	2,307.58	10.69	9.85	-122.94	306.03	-83.02	265.67	245.80	19.87	13.370	
2,400.00	2,357.94	2,380.37	2,356.22	10.98	10.09	-115.14	314.77	-84.24	272.55	252.20	20.36	13.388	
2,450.00	2,404.90	2,429.33	2,404.39	11.32	10.33	-111.39	323.44	-85.46	279.83	258.97	20.85	13.418	
2,500.00	2,450.25	2,479.61	2,453.74	11.69	10.58	-109.92	332.90	-86.70	287.66	266.28	21.38	13.453	
2,550.00	2,493.67	2,532.83	2,505.02	12.11	10.88	-109.42	347.05	-87.99	295.68	273.68	22.00	13.440	
2,600.00	2,534.83	2,587.41	2,556.00	12.57	11.24	-109.36	366.43	-89.27	303.70	280.99	22.71	13.375	
2,650.00	2,573.39	2,643.42	2,606.15	13.06	11.67	-109.54	391.27	-90.54	311.60	288.09	23.50	13.259	
2,700.00	2,609.09	2,700.87	2,654.84	13.60	12.16	-109.87	421.72	-91.77	319.23	294.85	24.39	13.091	
2,750.00	2,641.64	2,759.80	2,701.34	14.18	12.73	-110.26	457.85	-92.94	326.49	301.12	25.37	12.870	
2,800.00	2,670.79	2,820.19	2,744.89	14.80	13.38	-110.66	499.63	-94.04	333.22	306.78	26.44	12.601	
2,850.00	2,696.32	2,881.98	2,784.65	15.45	14.11	-111.06	546.87	-95.05	339.31	311.69	27.62	12.284	
2,900.00	2,718.04	2,945.07	2,819.77	16.14	14.91	-111.42	599.25	-95.94	344.63	315.73	28.91	11.923	
2,950.00	2,735.79	3,009.33	2,849.39	16.86	15.79	-111.73	656.22	-96.69	349.08	318.78	30.30	11.522	
3,000.00	2,749.43	3,074.56	2,872.75	17.61	16.75	-111.98	717.09	-97.29	352.55	320.74	31.81	11.082	
3,050.00	2,758.85	3,140.54	2,889.20	18.37	17.76	-112.15	780.95	-97.71	354.97	321.55	33.43	10.619	
3,100.00	2,763.98	3,207.00	2,898.24	19.16	18.81	-112.24	846.76	-97.95	356.30	321.15	35.15	10.138	
3,134.31	2,765.00	3,252.73	2,900.00	19.70	19.55	-112.25	892.44	-98.00	356.55	320.17	36.37	9.802	
3,138.99	2,765.00	3,258.98	2,899.96	19.78	19.65	-112.24	898.69	-98.00	356.53	319.99	36.55	9.756	
3,200.00	2,765.00	3,318.24	2,900.00	20.76	20.63	-112.25	957.95	-98.01	356.55	318.16	38.39	9.287	
3,300.00	2,765.00	3,418.24	2,900.00	22.41	22.30	-112.25	1,057.95	-98.02	356.55	315.01	41.53	8.584	
3,400.00	2,765.00	3,518.24	2,900.00	24.10	24.01	-112.25	1,157.95	-98.04	356.55	311.80	44.75	7.968	
3,500.00	2,765.00	3,618.24	2,900.00	25.82	25.75	-112.25	1,257.95	-98.05	356.55	308.53	48.01	7.426	
3,600.00	2,765.00	3,718.24	2,900.00	27.57	27.52	-112.25	1,357.95	-98.06	356.55	305.22	51.32	6.947	
3,700.00	2,765.00	3,818.24	2,900.00	29.34	29.30	-112.25	1,457.95	-98.08	356.55	301.88	54.67	6.522	
3,800.00	2,765.00	3,918.24	2,900.00	31.12	31.10	-112.25	1,557.95	-98.09	356.55	298.50	58.05	6.142	
3,900.00	2,765.00	4,018.24	2,900.00	32.92	32.91	-112.25	1,657.95	-98.11	356.55	295.10	61.45	5.802	
4,000.00	2,765.00	4,118.24	2,900.00	34.74	34.73	-112.25	1,757.95	-98.12	356.55	291.68	64.87	5.496	
4,100.00	2,765.00	4,218.24	2,900.00	36.56	36.57	-112.25	1,857.95	-98.13	356.55	288.24	68.31	5.219	
4,200.00	2,765.00	4,318.24	2,900.00	38.39	38.41	-112.25	1,957.95	-98.15	356.55	284.78	71.77	4.968	
4,300.00	2,765.00	4,418.24	2,900.00	40.23	40.25	-112.25	2,057.95	-98.16	356.55	281.31	75.23	4.739	
4,400.00	2,765.00	4,518.24	2,900.00	42.08	42.11	-112.25	2,157.95	-98.17	356.55	277.83	78.72	4.530	
4,500.00	2,765.00	4,618.24	2,900.00	43.93	43.97	-112.25	2,257.95	-98.19	356.55	274.34	82.21	4.337	
4,600.00	2,765.00	4,718.24	2,900.00	45.79	45.83	-112.25	2,357.95	-98.20	356.55	270.84	85.70	4.160	
4,700.00	2,765.00	4,818.24	2,900.00	47.65	47.70	-112.25	2,457.95	-98.22	356.55	267.33	89.21	3.997	
4,800.00	2,765.00	4,918.24	2,900.00	49.52	49.57	-112.25	2,557.95	-98.23	356.55	263.82	92.72	3.845	
4,900.00	2,765.00	5,018.24	2,900.00	51.39	51.44	-112.25	2,657.95	-98.24	356.55	260.30	96.24	3.705	
5,000.00	2,765.00	5,118.24	2,900.00	53.26	53.32	-112.25	2,757.95	-98.26	356.55	256.78	99.77	3.574	
5,100.00	2,765.00	5,218.24	2,900.00	55.14	55.20	-112.25	2,857.95	-98.27	356.55	253.25	103.30	3.452	
5,200.00	2,765.00	5,318.24	2,900.00	57.02	57.09	-112.25	2,957.95	-98.28	356.55	249.71	106.83	3.337	
5,300.00	2,765.00	5,418.24	2,900.00	58.90	58.97	-112.25	3,057.95	-98.30	356.55	246.17	110.37	3.230	
5,400.00	2,765.00	5,518.24	2,900.00	60.78	60.86	-112.25	3,157.95	-98.31	356.55	242.63	113.91	3.130	
5,500.00	2,765.00	5,618.24	2,900.00	62.67	62.75	-112.25	3,257.95	-98.33	356.55	239.09	117.46	3.035	
5,600.00	2,765.00	5,718.24	2,900.00	64.55	64.64	-112.25	3,357.95	-98.34	356.55	235.54	121.01	2.946	
5,700.00	2,765.00	5,818.24	2,900.00	66.44	66.53	-112.25	3,457.95	-98.35	356.55	231.99	124.56	2.862	
5,800.00	2,765.00	5,918.24	2,900.00	68.33	68.42	-112.25	3,557.95	-98.37	356.55	228.43	128.11	2.783	
5,900.00	2,765.00	6,018.24	2,900.00	70.23	70.31	-112.25	3,657.95	-98.38	356.55	224.88	131.67	2.708	
6,000.00	2,765.00	6,118.24	2,900.00	72.12	72.21	-112.25	3,757.95	-98.39	356.55	221.32	135.23	2.637	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Reference Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	WBDS_SQL_2
Reference Design:	Plan #1	**Offset TVD Reference:**	Reference Datum

Offset Design Osage Boyd 15 FED COM - #15H - OH - Plan #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IGRF — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
6,100.00	2,765.00	6,218.24	2,900.00	74.01	74.10	-112.25	3,857.95	-98.41	356.55	217.76	138.79	2.569	
6,200.00	2,765.00	6,318.24	2,900.00	75.91	76.00	-112.25	3,957.95	-98.42	356.55	214.20	142.35	2.505	
6,300.00	2,765.00	6,418.24	2,900.00	77.80	77.90	-112.25	4,057.95	-98.44	356.54	210.63	145.91	2.444	
6,400.00	2,765.00	6,518.24	2,900.00	79.70	79.80	-112.25	4,157.95	-98.45	356.54	207.07	149.48	2.385	
6,500.00	2,765.00	6,618.24	2,900.00	81.60	81.70	-112.25	4,257.95	-98.46	356.54	203.50	153.04	2.330	
6,600.00	2,765.00	6,718.24	2,900.00	83.50	83.60	-112.25	4,357.95	-98.48	356.54	199.94	156.61	2.277	
6,700.00	2,765.00	6,818.24	2,900.00	85.40	85.50	-112.25	4,457.95	-98.49	356.54	196.37	160.18	2.226	
6,800.00	2,765.00	6,918.24	2,900.00	87.30	87.40	-112.25	4,557.95	-98.51	356.54	192.80	163.75	2.177	
6,900.00	2,765.00	7,018.24	2,900.00	89.20	89.30	-112.25	4,657.95	-98.52	356.54	189.22	167.32	2.131	
7,000.00	2,765.00	7,118.24	2,900.00	91.10	91.21	-112.25	4,757.95	-98.53	356.54	185.65	170.89	2.086	
7,100.00	2,765.00	7,218.24	2,900.00	93.00	93.11	-112.25	4,857.95	-98.55	356.54	182.08	174.47	2.044	
7,200.00	2,765.00	7,318.24	2,900.00	94.90	95.01	-112.25	4,957.95	-98.56	356.54	178.50	178.04	2.003	
7,300.00	2,765.00	7,418.24	2,900.00	96.81	96.92	-112.25	5,057.95	-98.57	356.54	174.93	181.62	1.963	
7,400.00	2,765.00	7,518.24	2,900.00	98.71	98.82	-112.25	5,157.95	-98.59	356.54	171.35	185.19	1.925	
7,500.00	2,765.00	7,618.24	2,900.00	100.61	100.73	-112.25	5,257.95	-98.60	356.54	167.78	188.77	1.889	
7,600.00	2,765.00	7,718.24	2,900.00	102.52	102.63	-112.25	5,357.95	-98.62	356.54	164.20	192.35	1.854	
7,700.00	2,765.00	7,818.24	2,900.00	104.42	104.54	-112.25	5,457.95	-98.63	356.54	160.62	195.92	1.820	
7,800.00	2,765.00	7,918.24	2,900.00	106.33	106.45	-112.25	5,557.95	-98.64	356.54	157.04	199.50	1.787	
7,900.00	2,765.00	8,018.24	2,900.00	108.23	108.35	-112.25	5,657.95	-98.66	356.54	153.46	203.08	1.756	
8,000.00	2,765.00	8,118.24	2,900.00	110.14	110.26	-112.25	5,757.95	-98.67	356.54	149.88	206.66	1.725	
8,100.00	2,765.00	8,218.24	2,900.00	112.05	112.17	-112.25	5,857.95	-98.68	356.54	146.30	210.24	1.696	
8,201.21	2,765.00	8,319.45	2,900.00	113.98	114.10	-112.25	5,959.15	-98.70	356.54	142.68	213.87	1.667 SF	

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Reference Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	WBDS_SQL_2
Reference Design:	Plan #1	**Offset TVD Reference:**	Reference Datum

Offset Design Osage Boyd 15 FED COM - #16H - OH - Plan #1 — **Offset Site Error:** 0.00 usft

Survey Program: 0-MWD+IGRF — **Offset Well Error:** 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
0.00	0.00	1.00	0.00	0.00	0.00	-89.43	0.20	-20.00	20.00				
100.00	100.00	101.00	100.00	0.15	0.15	-89.43	0.20	-20.00	20.00	19.70	0.30	66.423	
200.00	200.00	201.00	200.00	0.51	0.51	-89.43	0.20	-20.00	20.00	18.98	1.02	19.646	
300.00	300.00	301.00	300.00	0.87	0.87	-89.43	0.20	-20.00	20.00	18.27	1.74	11.528	
350.00	350.00	349.00	350.00	1.04	1.04	-89.43	0.20	-20.00	20.00	17.91	2.09	9.587	CC
400.00	400.00	399.06	400.06	1.22	1.22	-118.08	0.61	-19.92	20.13	17.69	2.44	8.236	ES
500.00	499.93	499.18	500.12	1.58	1.58	-117.19	4.01	-19.24	21.14	17.98	3.16	6.688	
600.00	599.68	599.28	599.97	1.95	1.95	-115.56	10.83	-17.89	23.17	19.28	3.89	5.957	
700.00	699.13	699.34	699.47	2.32	2.32	-113.54	21.07	-15.86	26.23	21.59	4.64	5.651	
800.00	798.15	799.34	798.50	2.72	2.72	-111.46	34.69	-13.15	30.34	24.91	5.43	5.583	
900.00	896.63	899.26	896.90	3.15	3.15	-109.51	51.69	-9.77	35.51	29.23	6.28	5.654	
1,000.77	995.18	999.86	995.30	3.61	3.61	-107.78	72.19	-5.70	41.79	34.59	7.20	5.802	
1,100.00	1,091.87	1,101.14	1,091.66	4.10	4.11	-106.01	94.44	-1.28	48.52	40.34	8.18	5.932	
1,200.00	1,189.30	1,201.38	1,188.76	4.60	4.61	-104.63	116.90	3.18	55.33	46.15	9.18	6.027	
1,300.00	1,286.73	1,301.62	1,285.86	5.11	5.13	-103.56	139.35	7.64	62.17	51.97	10.20	6.095	
1,400.00	1,384.16	1,401.86	1,382.95	5.63	5.65	-102.69	161.81	12.10	69.03	57.79	11.23	6.145	
1,500.00	1,481.59	1,502.10	1,480.05	6.15	6.18	-101.99	184.26	16.56	75.90	63.62	12.28	6.182	
1,600.00	1,579.02	1,602.35	1,577.15	6.68	6.71	-101.40	206.72	21.03	82.77	69.45	13.33	6.211	
1,700.00	1,676.45	1,697.41	1,674.24	7.21	7.21	-100.90	229.17	25.49	89.66	75.30	14.36	6.245	
1,800.00	1,773.89	1,802.83	1,771.34	7.74	7.78	-100.47	251.63	29.95	96.55	81.11	15.45	6.251	
1,900.00	1,871.32	1,903.07	1,868.44	8.27	8.32	-100.10	274.09	34.41	103.45	86.94	16.51	6.265	
2,000.00	1,968.75	2,003.31	1,965.54	8.81	8.86	-99.78	296.54	38.87	110.35	92.77	17.58	6.277	
2,100.00	2,066.18	2,103.55	2,062.63	9.34	9.40	-99.49	319.00	43.33	117.25	98.60	18.65	6.287	
2,200.00	2,163.61	2,193.90	2,157.26	9.88	9.90	-98.86	341.79	47.68	124.48	104.81	19.67	6.329	
2,300.00	2,261.04	2,284.56	2,241.88	10.42	10.52	-93.80	373.84	51.58	136.55	115.88	20.67	6.607	
2,348.19	2,307.99	2,326.12	2,278.75	10.68	10.86	-90.06	392.92	53.28	145.33	124.29	21.04	6.907	
2,350.00	2,309.76	2,327.64	2,280.07	10.69	10.88	-89.50	393.67	53.34	145.70	124.65	21.05	6.921	
2,400.00	2,357.94	2,369.42	2,315.59	10.98	11.25	-77.17	415.59	54.98	156.29	134.94	21.35	7.320	
2,450.00	2,404.90	2,410.47	2,348.84	11.32	11.64	-68.79	439.59	56.52	167.12	145.51	21.61	7.734	
2,500.00	2,450.25	2,450.88	2,379.82	11.69	12.06	-62.61	465.49	57.96	177.91	156.07	21.84	8.146	
2,550.00	2,493.67	2,490.72	2,408.50	12.11	12.51	-57.85	493.10	59.29	188.44	166.39	22.05	8.545	
2,600.00	2,534.83	2,530.05	2,434.86	12.57	12.98	-54.07	522.25	60.52	198.54	176.28	22.25	8.922	
2,650.00	2,573.39	2,568.94	2,458.91	13.06	13.47	-51.02	552.79	61.65	208.06	185.62	22.45	9.270	
2,700.00	2,609.09	2,607.44	2,480.62	13.60	13.97	-48.53	584.55	62.67	216.91	194.27	22.64	9.581	
2,750.00	2,641.64	2,645.60	2,499.99	14.18	14.50	-46.49	617.42	63.58	224.98	202.13	22.84	9.849	
2,800.00	2,670.79	2,683.48	2,517.01	14.80	15.04	-44.83	651.23	64.38	232.20	209.14	23.07	10.067	
2,850.00	2,696.32	2,721.10	2,531.68	15.45	15.60	-43.48	685.87	65.08	238.52	215.21	23.31	10.233	
2,900.00	2,718.04	2,758.53	2,543.98	16.14	16.17	-42.40	721.20	65.67	243.89	220.31	23.58	10.342	
2,950.00	2,735.79	2,795.78	2,553.91	16.86	16.76	-41.56	757.10	66.16	248.27	224.38	23.89	10.391	
3,000.00	2,749.43	2,832.91	2,561.47	17.61	17.35	-40.93	793.44	66.53	251.63	227.38	24.25	10.376	
3,050.00	2,758.85	2,869.95	2,566.65	18.37	17.96	-40.51	830.11	66.80	253.94	229.28	24.66	10.299	
3,100.00	2,763.98	2,906.93	2,569.45	19.16	18.56	-40.29	866.97	66.96	255.19	230.07	25.12	10.159	
3,134.31	2,765.00	2,932.36	2,570.00	19.70	18.99	-40.24	892.40	67.00	255.44	229.96	25.48	10.025	
3,136.09	2,765.00	2,934.03	2,570.00	19.73	19.01	-40.24	894.07	67.00	255.44	229.93	25.52	10.011	
3,200.00	2,765.00	3,003.63	2,569.58	20.76	20.18	-40.17	956.40	67.00	255.76	228.78	26.98	9.480	
3,300.00	2,765.00	3,103.64	2,568.77	22.41	21.90	-40.06	1,056.40	66.99	256.38	227.08	29.30	8.750	
3,400.00	2,765.00	3,196.36	2,567.97	24.10	23.52	-39.94	1,156.39	66.97	256.99	225.41	31.58	8.138	
3,500.00	2,765.00	3,303.64	2,567.17	25.82	25.42	-39.83	1,256.38	66.96	257.61	223.53	34.08	7.559	
3,600.00	2,765.00	3,403.65	2,566.36	27.57	27.21	-39.71	1,356.38	66.94	258.23	221.71	36.52	7.071	
3,700.00	2,765.00	3,503.65	2,565.56	29.34	29.01	-39.60	1,456.37	66.93	258.84	219.86	38.98	6.640	
3,800.00	2,765.00	3,596.35	2,564.76	31.12	30.70	-39.49	1,556.36	66.92	259.46	218.10	41.36	6.273	
3,900.00	2,765.00	3,703.66	2,563.96	32.92	32.67	-39.37	1,656.36	66.90	260.08	216.14	43.95	5.918	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Reference Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	WBDS_SQL_2
Reference Design:	Plan #1	**Offset TVD Reference:**	Reference Datum

Offset Design Osage Boyd 15 FED COM - #16H - OH - Plan #1 — Offset Site Error: 0.00 usft

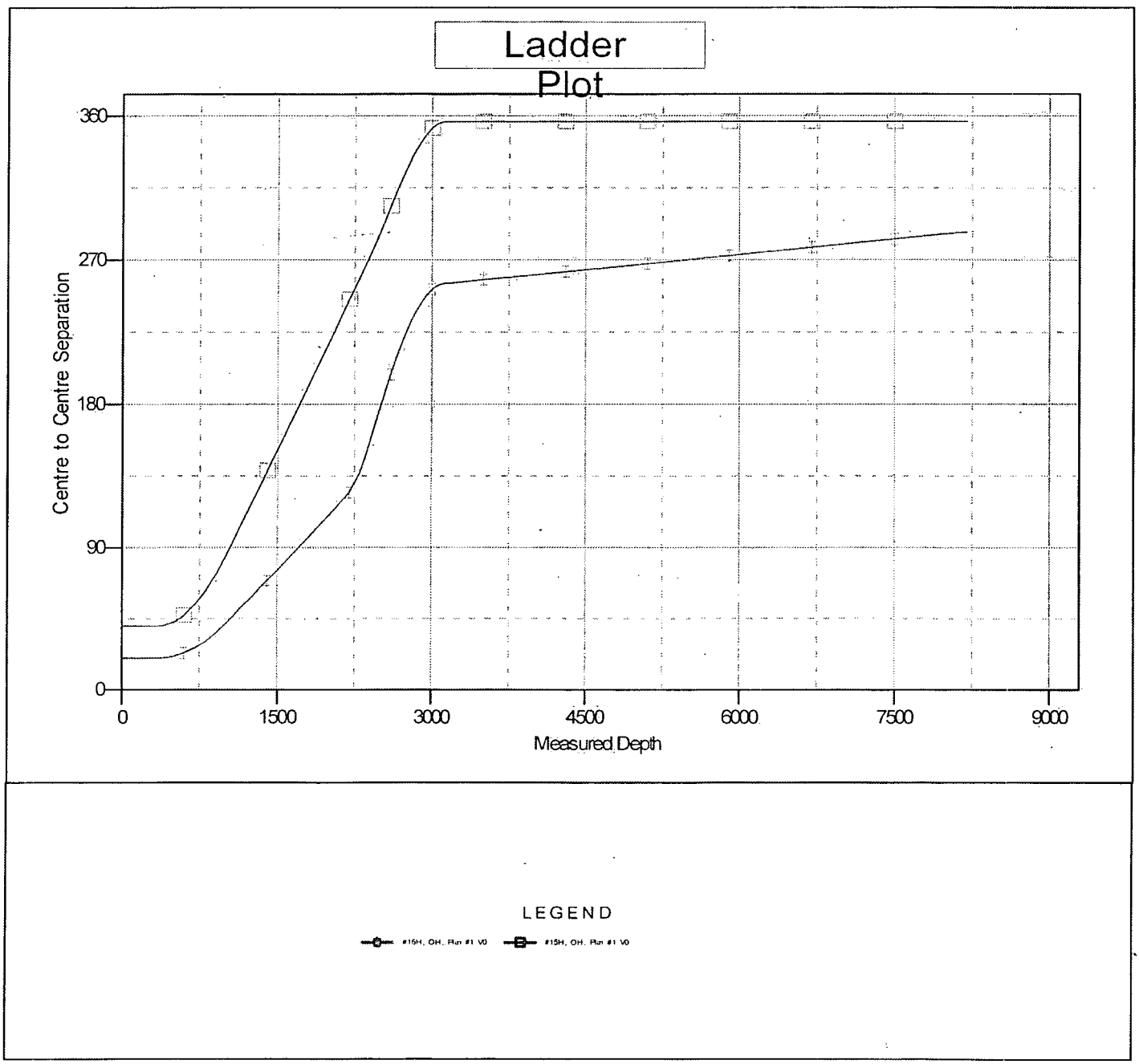
Survey Program: 0-MWD+IGRF — Offset Well Error: 0.00 usft

Reference Measured Depth (usft)	Reference Vertical Depth (usft)	Offset Measured Depth (usft)	Offset Vertical Depth (usft)	Semi Major Axis Reference (usft)	Semi Major Axis Offset (usft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (usft)	Offset Wellbore Centre +E/-W (usft)	Distance Between Centres (usft)	Distance Between Ellipses (usft)	Minimum Separation (usft)	Separation Factor	Warning
4,000.00	2,765.00	3,803.66	2,563.15	34.74	34.51	-39.26	1,756.35	66.89	260.71	214.26	46.45	5.613	
4,100.00	2,765.00	3,903.66	2,562.35	36.56	36.35	-39.15	1,856.34	66.87	261.33	212.38	48.95	5.339	
4,200.00	2,765.00	4,003.67	2,561.55	38.39	38.21	-39.04	1,956.34	66.86	261.95	210.49	51.46	5.091	
4,300.00	2,765.00	4,103.67	2,560.74	40.23	40.07	-38.93	2,056.33	66.85	262.58	208.61	53.97	4.865	
4,400.00	2,765.00	4,203.67	2,559.94	42.08	41.93	-38.82	2,156.32	66.83	263.20	206.72	56.48	4.660	
4,500.00	2,765.00	4,303.68	2,559.14	43.93	43.80	-38.71	2,256.32	66.82	263.83	204.84	58.99	4.472	
4,600.00	2,765.00	4,403.68	2,558.34	45.79	45.68	-38.60	2,356.31	66.80	264.46	202.96	61.50	4.300	
4,700.00	2,765.00	4,503.68	2,557.53	47.65	47.55	-38.49	2,456.30	66.79	265.08	201.08	64.01	4.141	
4,800.00	2,765.00	4,603.69	2,556.73	49.52	49.43	-38.39	2,556.30	66.77	265.71	199.20	66.51	3.995	
4,900.00	2,765.00	4,703.69	2,555.93	51.39	51.32	-38.28	2,656.29	66.76	266.34	197.33	69.02	3.859	
5,000.00	2,765.00	4,803.69	2,555.12	53.26	53.20	-38.17	2,756.29	66.75	266.97	195.46	71.51	3.733	
5,100.00	2,765.00	4,903.70	2,554.32	55.14	55.09	-38.07	2,856.28	66.73	267.61	193.60	74.01	3.616	
5,200.00	2,765.00	5,003.70	2,553.52	57.02	56.98	-37.96	2,956.27	66.72	268.24	191.74	76.50	3.506	
5,300.00	2,765.00	5,103.70	2,552.72	58.90	58.87	-37.86	3,056.27	66.70	268.87	189.89	78.98	3.404	
5,400.00	2,765.00	5,203.71	2,551.91	60.78	60.76	-37.75	3,156.26	66.69	269.51	188.04	81.47	3.308	
5,500.00	2,765.00	5,303.71	2,551.11	62.67	62.66	-37.65	3,256.25	66.67	270.14	186.20	83.94	3.218	
5,600.00	2,765.00	5,403.71	2,550.31	64.55	64.55	-37.54	3,356.25	66.66	270.78	184.37	86.41	3.134	
5,700.00	2,765.00	5,503.72	2,549.50	66.44	66.45	-37.44	3,456.24	66.65	271.42	182.54	88.88	3.054	
5,800.00	2,765.00	5,603.72	2,548.70	68.33	68.34	-37.34	3,556.23	66.63	272.05	180.72	91.34	2.979	
5,900.00	2,765.00	5,703.72	2,547.90	70.23	70.24	-37.24	3,656.23	66.62	272.69	178.90	93.79	2.908	
6,000.00	2,765.00	5,803.72	2,547.10	72.12	72.14	-37.13	3,756.22	66.60	273.33	177.10	96.24	2.840	
6,100.00	2,765.00	5,903.73	2,546.29	74.01	74.04	-37.03	3,856.21	66.59	273.97	175.29	98.68	2.776	
6,200.00	2,765.00	6,003.73	2,545.49	75.91	75.94	-36.93	3,956.21	66.57	274.62	173.50	101.12	2.716	
6,300.00	2,765.00	6,103.73	2,544.69	77.80	77.84	-36.83	4,056.20	66.56	275.26	171.71	103.55	2.658	
6,400.00	2,765.00	6,203.74	2,543.88	79.70	79.75	-36.73	4,156.20	66.55	275.90	169.93	105.97	2.604	
6,500.00	2,765.00	6,303.74	2,543.08	81.60	81.65	-36.63	4,256.19	66.53	276.55	168.16	108.39	2.551	
6,600.00	2,765.00	6,403.74	2,542.28	83.50	83.55	-36.53	4,356.18	66.52	277.19	166.39	110.80	2.502	
6,700.00	2,765.00	6,503.75	2,541.47	85.40	85.46	-36.43	4,456.18	66.50	277.84	164.63	113.21	2.454	
6,800.00	2,765.00	6,603.75	2,540.67	87.30	87.36	-36.34	4,556.17	66.49	278.48	162.88	115.61	2.409	
6,900.00	2,765.00	6,703.75	2,539.87	89.20	89.27	-36.24	4,656.16	66.47	279.13	161.13	118.00	2.365	
7,000.00	2,765.00	6,803.76	2,539.07	91.10	91.17	-36.14	4,756.16	66.46	279.78	159.39	120.39	2.324	
7,100.00	2,765.00	6,903.76	2,538.26	93.00	93.08	-36.04	4,856.15	66.45	280.43	157.66	122.77	2.284	
7,200.00	2,765.00	7,003.76	2,537.46	94.90	94.98	-35.95	4,956.14	66.43	281.08	155.93	125.15	2.246	
7,300.00	2,765.00	7,103.77	2,536.66	96.81	96.89	-35.85	5,056.14	66.42	281.73	154.21	127.52	2.209	
7,400.00	2,765.00	7,203.77	2,535.85	98.71	98.80	-35.76	5,156.13	66.40	282.38	152.50	129.88	2.174	
7,500.00	2,765.00	7,303.77	2,535.05	100.61	100.71	-35.66	5,256.12	66.39	283.03	150.79	132.24	2.140	
7,600.00	2,765.00	7,403.78	2,534.25	102.52	102.61	-35.57	5,356.12	66.38	283.68	149.09	134.59	2.108	
7,700.00	2,765.00	7,503.78	2,533.45	104.42	104.52	-35.47	5,456.11	66.36	284.34	147.40	136.94	2.076	
7,800.00	2,765.00	7,603.78	2,532.64	106.33	106.43	-35.38	5,556.11	66.35	284.99	145.72	139.28	2.046	
7,900.00	2,765.00	7,703.79	2,531.84	108.23	108.34	-35.29	5,656.10	66.33	285.65	144.04	141.61	2.017	
8,000.00	2,765.00	7,803.79	2,531.04	110.14	110.25	-35.19	5,756.09	66.32	286.30	142.37	143.94	1.989	
8,100.00	2,765.00	7,896.21	2,530.23	112.05	112.01	-35.10	5,856.09	66.30	286.96	140.80	146.16	1.963	
8,201.21	2,765.00	7,999.73	2,529.99	113.98	113.99	-35.07	5,959.60	66.30	287.15	138.38	148.77	1.930 SF	

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Reference Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	WBDS_SQL_2
Reference Design:	Plan #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to RKB = 17' @ 3490.00usft
Offset Depths are relative to Offset Datum
Central Meridian is -104.333334

Coordinates are relative to: #17H - Slot 17
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: -0.08°

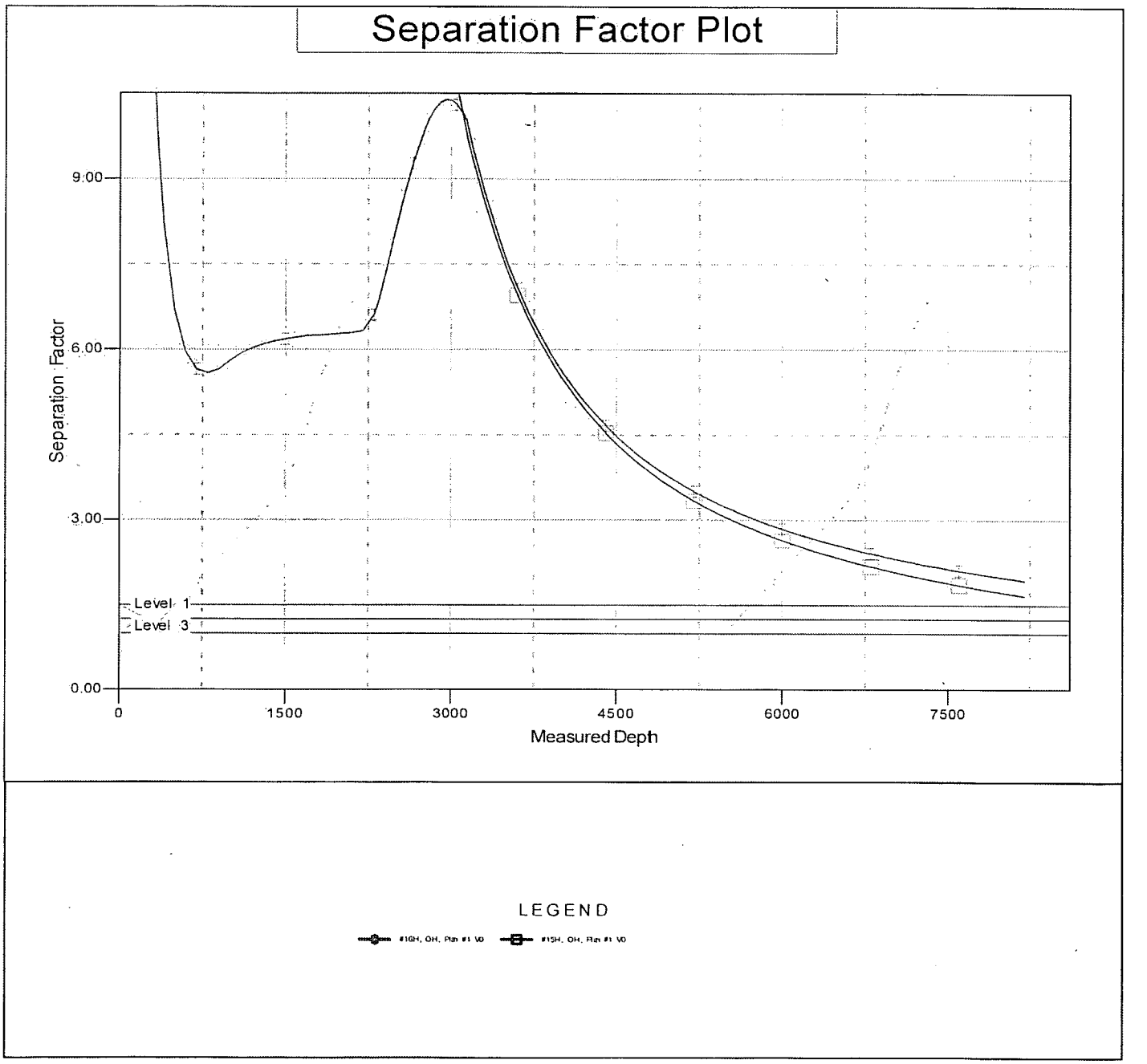


CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Percussion Petroleum, LLC	**Local Co-ordinate Reference:**	Well #17H - Slot 17
Project:	Eddy County, NM	**TVD Reference:**	RKB = 17' @ 3490.00usft
Reference Site:	Osage Boyd 15 FED COM	**MD Reference:**	RKB = 17' @ 3490.00usft
Site Error:	0.00 usft	**North Reference:**	Grid
Reference Well:	#17H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.00 usft	**Output errors are at**	2.00 sigma
Reference Wellbore	OH	**Database:**	WBDS_SQL_2
Reference Design:	Plan #1	**Offset TVD Reference:**	Reference Datum

Reference Depths are relative to RKB = 17' @ 3490.00usft
Offset Depths are relative to Offset Datum
Central Meridian is -104.333334

Coordinates are relative to: #17H - Slot 17
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: -0.08°



Percussion Petroleum Operating, LLC
Osage Boyd 15 Federal Com 17H
SHL: 786' FNL & 1777' FWL 22-19S-25E
BHL: 20' FNL & 2010' FWL 15-19S-25E
Eddy County, NM

Drilling Program

1. ESTIMATED TOPS

Formation/Lithology	TVD	MD	Contents
Quaternary caliche	000'	000'	water
Grayburg dolomite	603'	603'	hydrocarbons
San Andres dolomite	788'	790'	hydrocarbons
(KOP	2308'	2349'	hydrocarbons)
Glorieta silty dolomite	2348'	2390'	hydrocarbons
Yeso dolomite & goal	2503'	2561'	hydrocarbons
TD	2765'	8201'	hydrocarbons

2. NOTABLE ZONES

Yeso is the goal. Closest water well (RA 02909) is 2840' southwest. Water bearing strata were found at 120' in this 188' deep well.

3. PRESSURE CONTROL

A 3000-psi 5000' rated BOP stack consisting of annular preventer and double (blind and pipe) ram will be used below surface casing to TD. See attached BOP and choke manifold diagrams.

Pressure tests will be conducted before drilling out from under all casing strings. Third party test crews will conduct all tests. All tests will be recorded for 10-minutes on low pressure (500 psi) and 10-minutes on high pressure (3000-psi). After BOP testing is complete, test casing (without test plug) to 2000-psi for 30 minutes. All tests will be charted on a plot. BOPs will be function tested every day.

4. CASING & CEMENT

All casing will be API and new. A contingency plan is attached.

Hole O. D.	Set MD	Set TVD	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
12.25"	0' - 1279'	0' - 1266'	Surface 9.625"	36	J-55	LTC	1.125	1.125	1.8
8.75"	0' - 2525'	0' - 2472'	Prod. 1 7"	32	L-80	BTC	1.125	1.125	1.8
8.75"	2525' - 8201'	2472' - 2765'	Prod. 2 5.5"	17	L-80	BTC	1.125	1.125	1.8

Casing Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Lead	637	1.32	840	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		100% Excess			Stop collar 10' above shoe with centralizer. One on 1st collar and every 4th collar to GL.	
Production	Lead	495	1.97	975	12.6	65/65/6 Class C + 6% gel + 5% salt + ¼ pound per sack celloflake + 0.2% C41-P
	Tail	1360	1.32	1795	14.8	Class C + 2% CaCl + ¼ pound per sack celloflake
TOC = GL		50% Excess			Stop collar 10' above shoe with centralizer. One on 1st collar and every 10 collars to 1200' with 1 centralizer in 9.625" casing.	

5. MUD PROGRAM

An electronic/mechanical mud monitor with a minimum pit volume totalizer, stroke counter, and flow sensor will be used. All necessary mud products (LCM) will be on site to handle any abnormal hole condition that may be encountered while drilling this well. A closed loop system will be used.

Type	Interval (MD)	lb/gal	Viscosity	Fluid Loss	Plastic Viscosity	Yield Point
fresh water/gel	0' - 1279'	8.4 - 9.2	36-42	NC	3-5	5-7
fresh water/cut brine	1279' - 2349'	8.3 - 9.2	28-30	NC	1	1
cut brine	2349' - 8201'	8.6 - 9.2	29-32	NC	4-5	6-10

6. CORES, TESTS, & LOGS

No core or drill stem test is planned.

A mud logger will be used from GL to TD. Samples will be collected every 10' in the lateral pay zone.

No electric logs are planned at this time.

7. DOWN HOLE CONDITIONS

No abnormal pressure or temperature is expected. Maximum expected bottom hole pressure is ≈1189 psi. Expected bottom hole temperature is ≈111° F.

A Hydrogen Sulfide Drilling Operation Plan is attached.

8. OTHER INFORMATION

Anticipated spud date is upon approval. It is expected it will take ≈1 month to drill and complete the well.

St. Devote LLC has operating rights in NMNM-060341. St. Devote LLC is a subsidiary of Percussion.

PERCUSSION PETROLEUM LLC

919 Milam Street, Suite 2475
Houston, TX 77002

Contingency Planning – Osage Federal Area Wells

Prepared by Lelan J. Anders, Percussion Petroleum Operating, LLC.

INTRODUCTION:

This document is designed to address the issues that could arise at any time drilling horizontal Yeso wells. Percussion Petroleum Operating (PPO) is going to follow regularly used practices and procedures in order to drill the wells to TD and still keep them economical to operate.

SCENARIO:

If a complete loss of circulation occurs while drilling above 400 ft MD.

CORRECTIVE ACTIONS:

1. Pump an LCM sweep and attempt to regain circulation – if unsuccessful go to step 2

2. Continue drilling at attempt to seal off lost circulation zone with drill cuttings
    1. Monitor torque and drag on drill string to determine if pipe is sticking
    2. Have contingency plan to 'drill dry' – have plenty of water on hand and well control in place
    3. Continue to 'dry drill' until torque and drag dictate a different plan

3. If 'dry drilling' is unsuccessful – Run contingency surface casing string
    1. Ream out 12-1/4" open hole to 17-1/2" open hole
    2. Run contingency 13-3/8" 48# H-40, STC casing to no more than 400' MD
    3. Cement 13-3/8" casing using Class C cement
        i. Pump at minimum 200% excess cement
            1. 400 sks 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk to be used on initial cement job.
        ii. Top off cement from surface using 1" if necessary
            1. Top off will be 200 sks of 65/35/6 Class C Cement, 12.8 ppg, 1.87 yield, 10.15 gal/sk
            2. Second top off will be performed with same cement if needed.
        iii. Insure that cement has cured for a minimum of 12 hours prior to drilling out
    4. Install 13-3/8" 3M wellhead and drill to surface casing depth with 12-1/4" OD bit
    5. Run and cement surface casing as planned

APD ID: 10400035652 **Submission Date:** 10/26/2018

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Well Type: OIL WELL **Well Work Type:** Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Osage_17H_Road_Map_20181026155916.pdf

Existing Road Purpose: ACCESS **Row(s) Exist?** NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? NO

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

Osage_17H_Well_Map_20181026160036.pdf

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? SUBMIT

Production Facilities description: A 33.4' long 4" O D. HDPE flow line will be laid on the surface south to a proposed central tank battery (CTB). CTB will sit on the south side of Percussion's existing three well Ross Ranch Goodman pad. Maximum operating pressure will be 125 psi. An existing 3-phase power line already crosses the east side of the well pad. A 1549.8' long 4" O D. HDPE crude oil line will be laid on the surface from the CTB southwest to an existing crude oil line at Percussion's Ross Ranch 22 #2 pad. Maximum operating pressure will be 125 psi.

Production Facilities map:

Osage_17H_Production_Facilities_20181026160057.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Water source use type: DUST CONTROL, INTERMEDIATE/PRODUCTION CASING, STIMULATION, SURFACE CASING

Water source type: GW WELL

Describe type:

Source longitude:

Source latitude:

Source datum:

Water source permit type: PRIVATE CONTRACT

Source land ownership: PRIVATE

Water source transport method: PIPELINE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 10000

Source volume (acre-feet): 1.288931

Source volume (gal): 420000

Water source and transportation map:

Osage_17H_Water_Source_Map_20181026160118.pdf

Water source comments:

New water well? NO

New Water Well Info

Well latitude: **Well Longitude:** **Well datum:**

Well target aquifer:

Est. depth to top of aquifer(ft): **Est thickness of aquifer:**

Aquifer comments:

Aquifer documentation:

Well depth (ft): **Well casing type:**

Well casing outside diameter (in.): **Well casing inside diameter (in.):**

New water well casing? **Used casing source:**

Drilling method: **Drill material:**

Grout material: **Grout depth:**

Casing length (ft.): **Casing top depth (ft.):**

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: NM One Call (811) will be notified before construction starts. Top 6" of soil and brush will be stockpiled north of the pad. V-door will face west. Closed loop drilling system will be used. Caliche will be hauled from existing caliche pit on private land. Arkland caliche pit is in NWNE 23-19s-25e.
Construction Materials source location attachment:

Osage_17H_Construction_Methods_20181026160134.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Drill cuttings, mud, salts, and other chemicals

Amount of waste: 1000 barrels

Waste disposal frequency : Daily

Safe containment description: Steel tanks

Safe containmant attachment:

Waste disposal type: HAUL TO COMMERCIAL FACILITY **Disposal location ownership:** PRIVATE
Disposal type description:

Disposal location description: R360's state approved (NM-01-0006) disposal site at Halfway, NM

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

Reserve pit length (ft.) **Reserve pit width (ft.)**

Reserve pit depth (ft.) **Reserve pit volume (cu. yd.)**

Is at least 50% of the reserve pit in cut?

Reserve pit liner

Reserve pit liner specifications and installation description

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? YES

Description of cuttings location Steel tanks on pad

Cuttings area length (ft.) **Cuttings area width (ft.)**

Cuttings area depth (ft.) **Cuttings area volume (cu. yd.)**

Is at least 50% of the cuttings area in cut?

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Osage_17H_Well_Site_Layout_20181026160149.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** OSAGE BOYD 15 FEDERAL COM

Multiple Well Pad Number: 15H

Recontouring attachment:

Osage_17H_Interim_Reclamation_Diagram_20181026160503.pdf

Osage_17H_Recontour_Plat_20181026160514.pdf

Drainage/Erosion control construction: Crowned and ditched

Drainage/Erosion control reclamation: Harrowed on the contour

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Well pad proposed disturbance (acres): 2.34	**Well pad interim reclamation (acres):** 0.19	**Well pad long term disturbance (acres):** 2.15
Road proposed disturbance (acres): 0	**Road interim reclamation (acres):** 0	**Road long term disturbance (acres):** 0
Powerline proposed disturbance (acres): 0	**Powerline interim reclamation (acres):** 0	**Powerline long term disturbance (acres):** 0
Pipeline proposed disturbance (acres): 6.69	**Pipeline interim reclamation (acres):** 6.69	**Pipeline long term disturbance (acres):** 0
Other proposed disturbance (acres): 0.55	**Other interim reclamation (acres):** 0	**Other long term disturbance (acres):** 0.55
Total proposed disturbance: 9.58	**Total interim reclamation:** 6.88	**Total long term disturbance:** 2.7

Disturbance Comments:

Reconstruction method: Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the well pad 0.41 acre by removing caliche and reclaiming 60' on the west side of the pad. This will leave 2.15 acres for the anchors, pump jacks, and tractor-trailer turn around. Disturbed areas will be contoured to match pre-construction grades.

Topsoil redistribution: Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with surface owner's requirements. Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the last well is plugged, then the rest of the pad will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled.

Soil treatment: None

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation?

Seed harvest description:

Seed harvest description attachment:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name:

Last Name:

Phone:

Email:

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: To BLM standards

Weed treatment plan attachment:

Monitoring plan description: To BLM standards

Monitoring plan attachment:

Success standards: To BLM satisfaction

Pit closure description: No pit

Pit closure attachment:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Section 11 - Surface Ownership

Disturbance type: PIPELINE

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Jerome Hugh Jones

Fee Owner Address: c/o Ross Ranch, P.O. Box 216 Lakewood NM 88254

Phone: (575)365-4797

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: See attached

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Jerome Hugh Jones

Fee Owner Address: c/o Ross Ranch, P.O. Box 216 Lakewood NM 88254

Phone: (575)365-4797

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: See attached

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Disturbance type: OTHER

Describe: Central Tank Battery

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Jerome Hugh Jones

Phone: (575)365-4797

Fee Owner Address: c/o Ross Ranch, P.O. Box 216 Lakewood NM 88254

Email:

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: See attached

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Disturbance type: OTHER

Describe: Oil Line

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Operator Name: PERCUSSION PETROLEUM OPERATING LLC

Well Name: OSAGE BOYD 15 FEDERAL COM **Well Number:** 17H

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland: **USFS Ranger District:**

Fee Owner: Ross&Barbara Whitney Trust **Fee Owner Address:** 25601 E 130th St., Greenwood MO 64034

Phone: (816)525-1233 **Email:**

Surface use plan certification: NO

Surface use plan certification document:

Surface access agreement or bond: Agreement

Surface Access Agreement Need description: See attached

Surface Access Bond BLM or Forest Service:

BLM Surface Access Bond number:

USFS Surface access bond number:

Section 12 - Other Information

Right of Way needed? NO **Use APD as ROW?**

ROW Type(s):

ROW Applications

SUPO Additional Information:

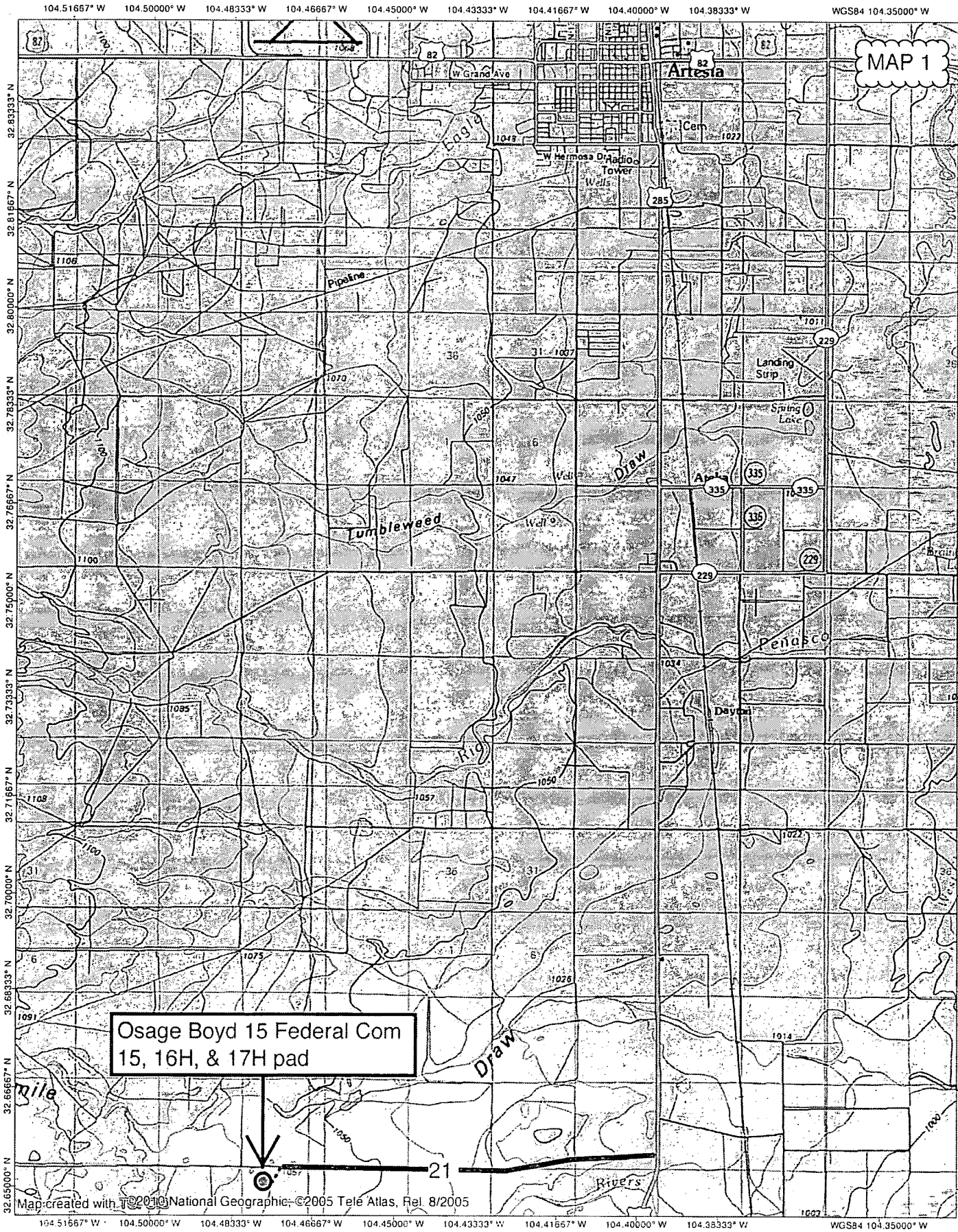
Use a previously conducted onsite? YES

Previous Onsite information: On-site inspection was held with Matt Wirth (BLM) on July 12, 2018. Lone Mountain inspected the well pad and submitted archaeology report NMCRIS-141118 on August 7, 2018. APAC inspected the oil line and submitted report NMCRIS-141712 on October 25, 2018.

Other SUPO Attachment

Osage_17H_SUPO_20181026160540.pdf

TOPO! map printed on 09/09/18 from "Untitled.tpo"



104.51667° W 104.50000° W 104.48333° W 104.46667° W 104.45000° W 104.43333° W 104.41667° W 104.40000° W 104.38333° W WGS84 104.35000° W

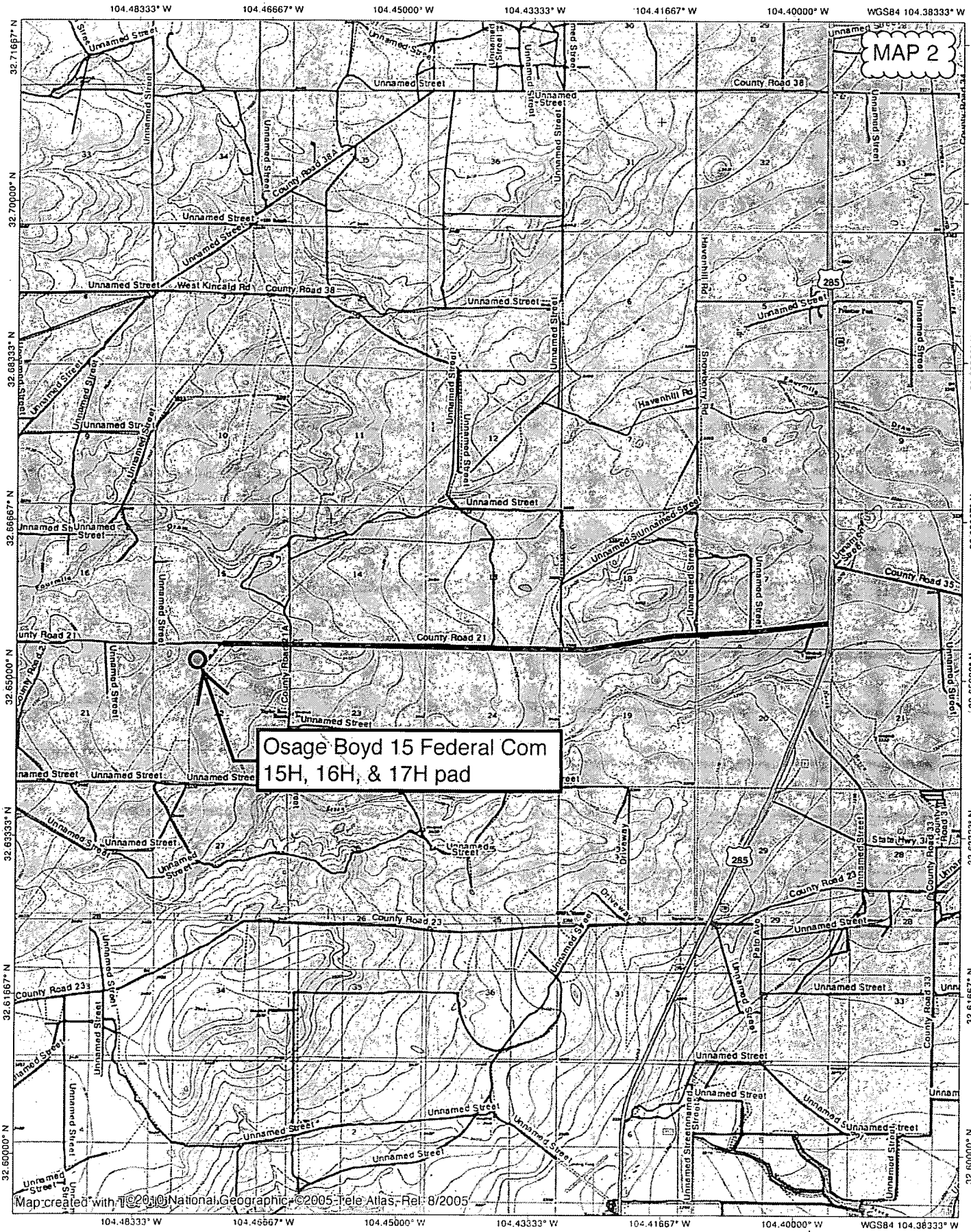
32.83333° N 32.81667° N 32.80000° N 32.78333° N 32.76667° N 32.75000° N 32.73333° N 32.71667° N 32.70000° N 32.68333° N 32.66667° N 32.65000° N

NATIONAL GEOGRAPHIC

0.0 0.5 1.0 1.5 2.0 2.5 3.0 miles
0 1 2 3 4 5 km

TN ↑ MN
7°
09/09/18

TOPO! map printed on 09/09/18 from "Untitled.tpo"

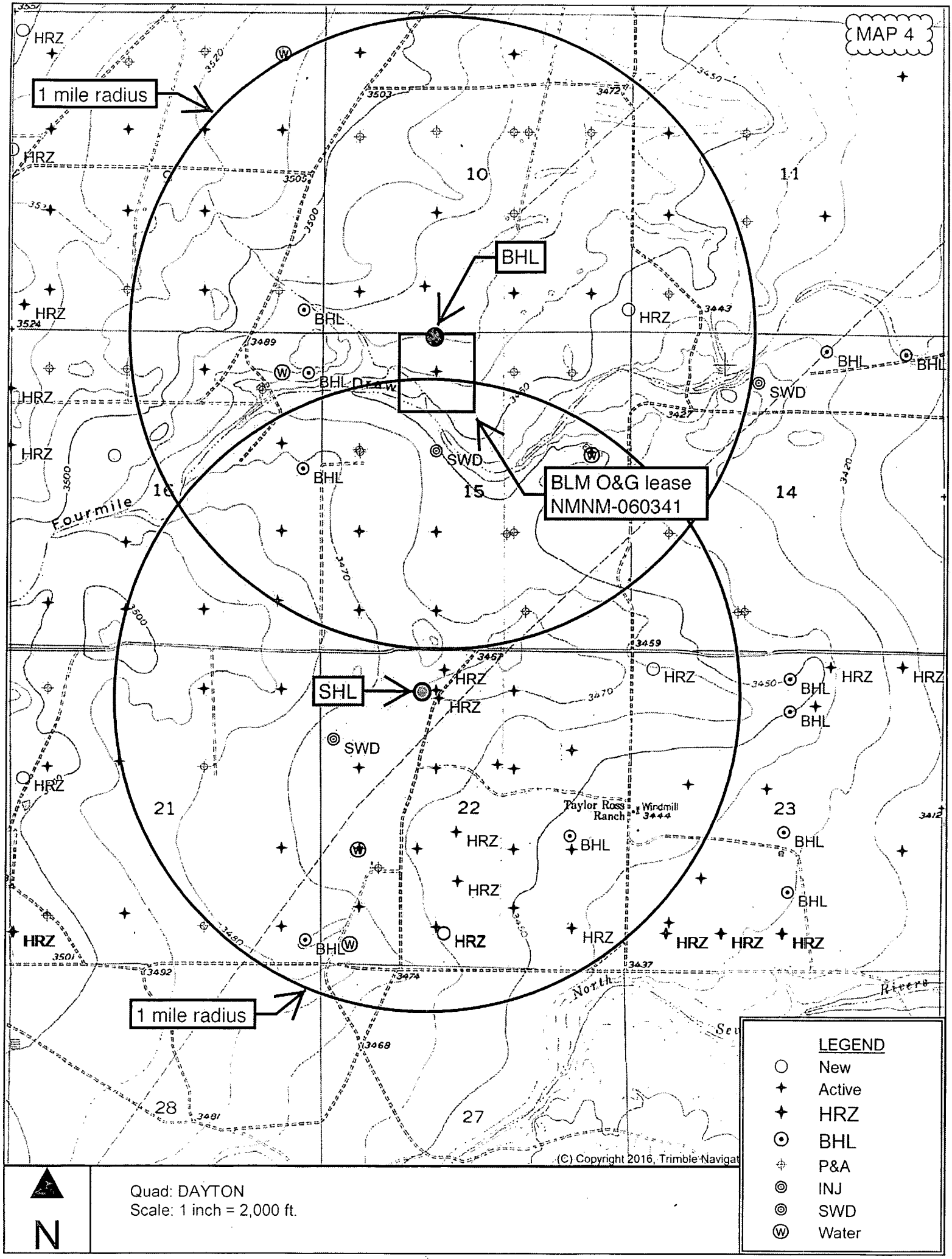


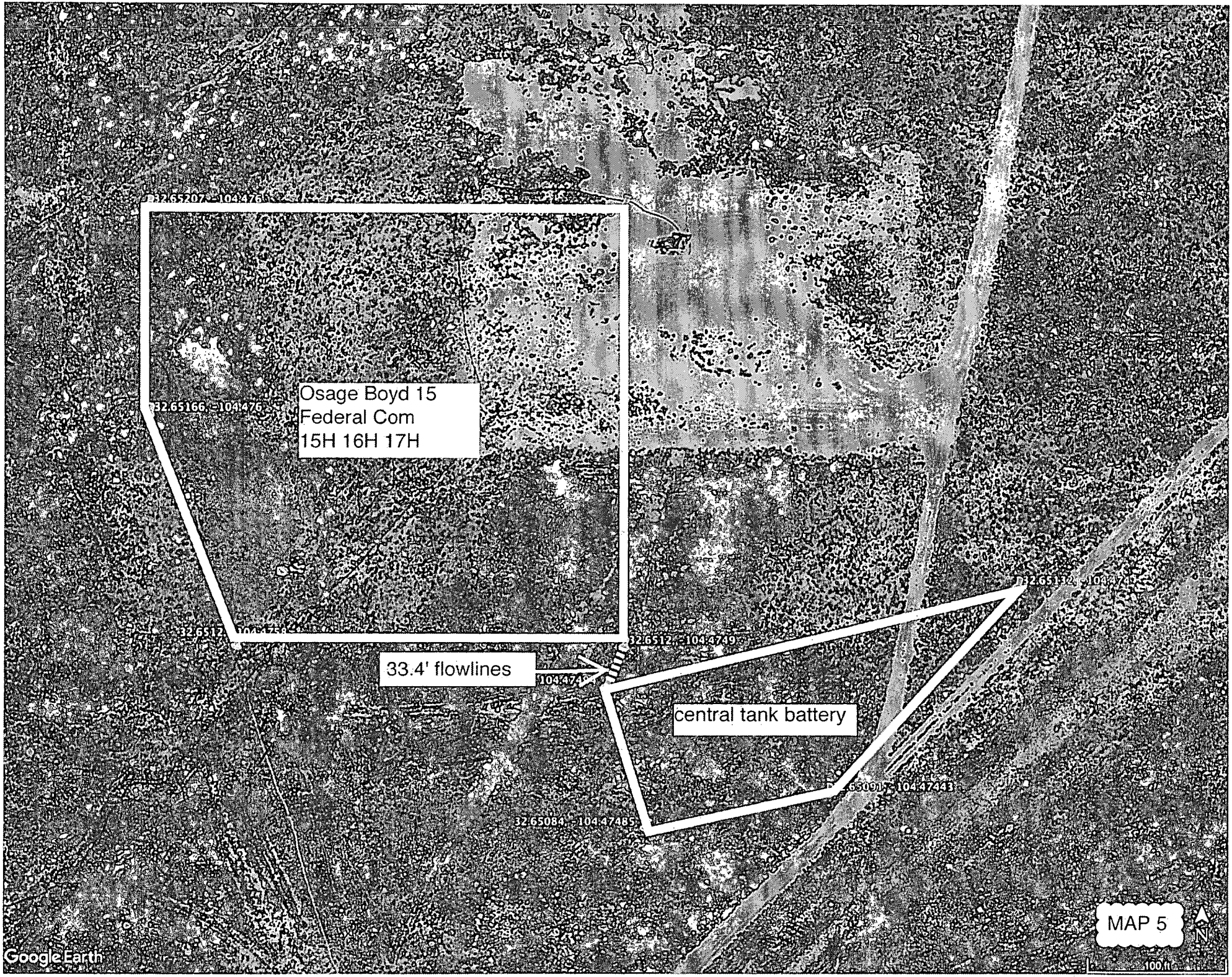
NATIONAL GEOGRAPHIC

0.0 0.5 1.0 1.5 2.0 miles
0.0 0.5 1.0 1.5 2.0 2.5 3.0 km

TN 7° MN
09/09/18


21
21
32.65207, -104.476
Osage Boyd 15
Federal Com
15H, 16H &
17H pad
32.6512, -104.4758
32.6512, -104.4749
MAP 3
N
Google Earth
300 ft

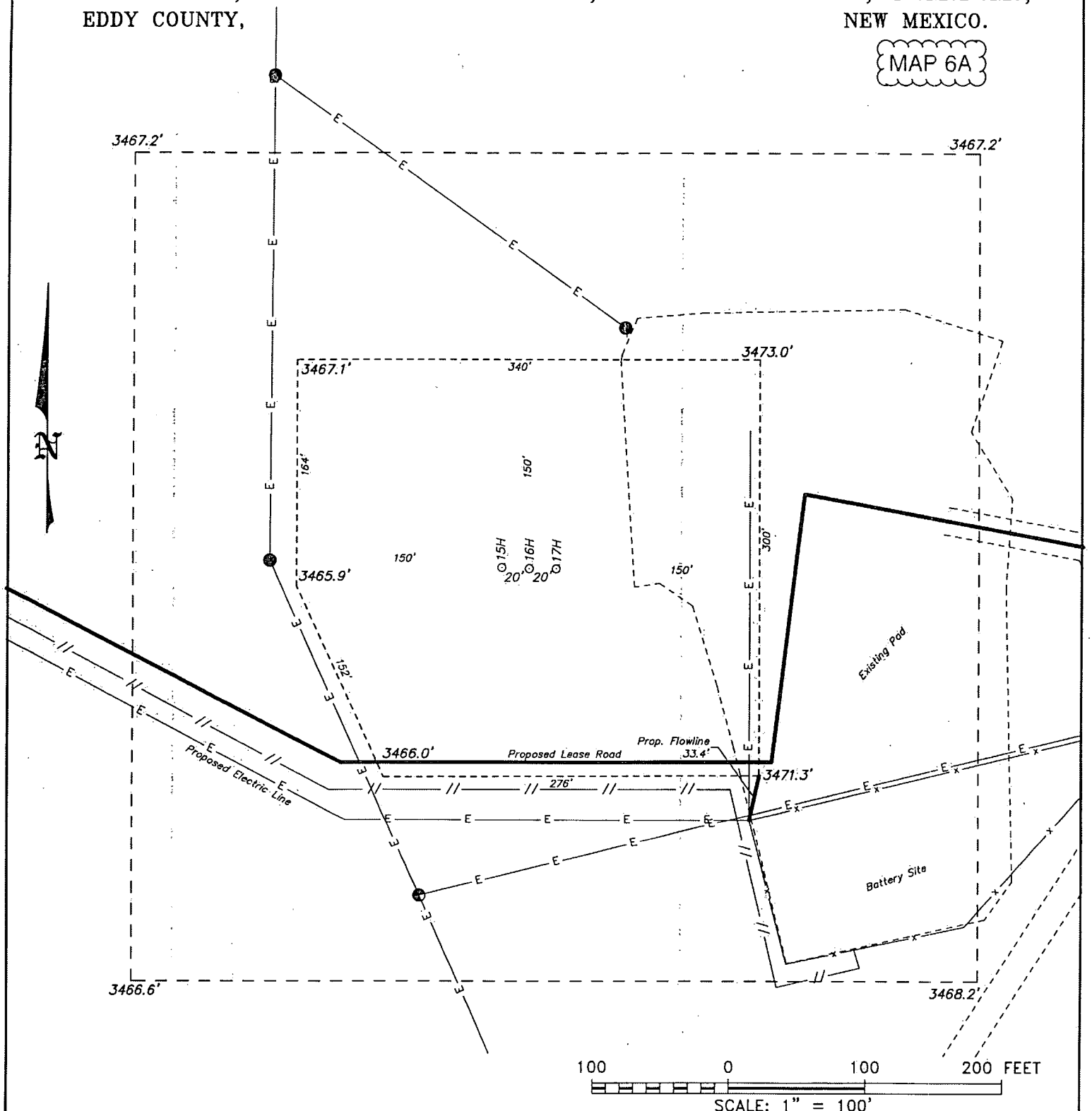

MAP 4
1 mile radius
BHL
SHL
BLM O&G lease
NMNM-060341
1 mile radius
HRZ
BHL
SWD
10
11
14
15
16
21
22
23
27
28
Fourmile
Taylor Ross Ranch
Windmill
3444
North
Rivers
(C) Copyright 2016, Trimble Navigat
LEGEND
New
Active
HRZ
BHL
P&A
INJ
SWD
Water
N
Quad: DAYTON
Scale: 1 inch = 2,000 ft.


Osage Boyd 15
Federal Com
15H 16H 17H
33.4' flowlines
central tank battery
MAP 5
N
Google Earth

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 6A



PERCUSSION PETROLEUM OPERATING, LLC

REF: OSAGE BOYD 15 FEDERAL COM 17H / WELL PAD TOPO

THE OSAGE BOYD 15 FEDERAL COM 17H LOCATED 786' FROM THE NORTH LINE AND 1777' FROM THE WEST LINE OF SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

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(575) 392-2206 - Fax
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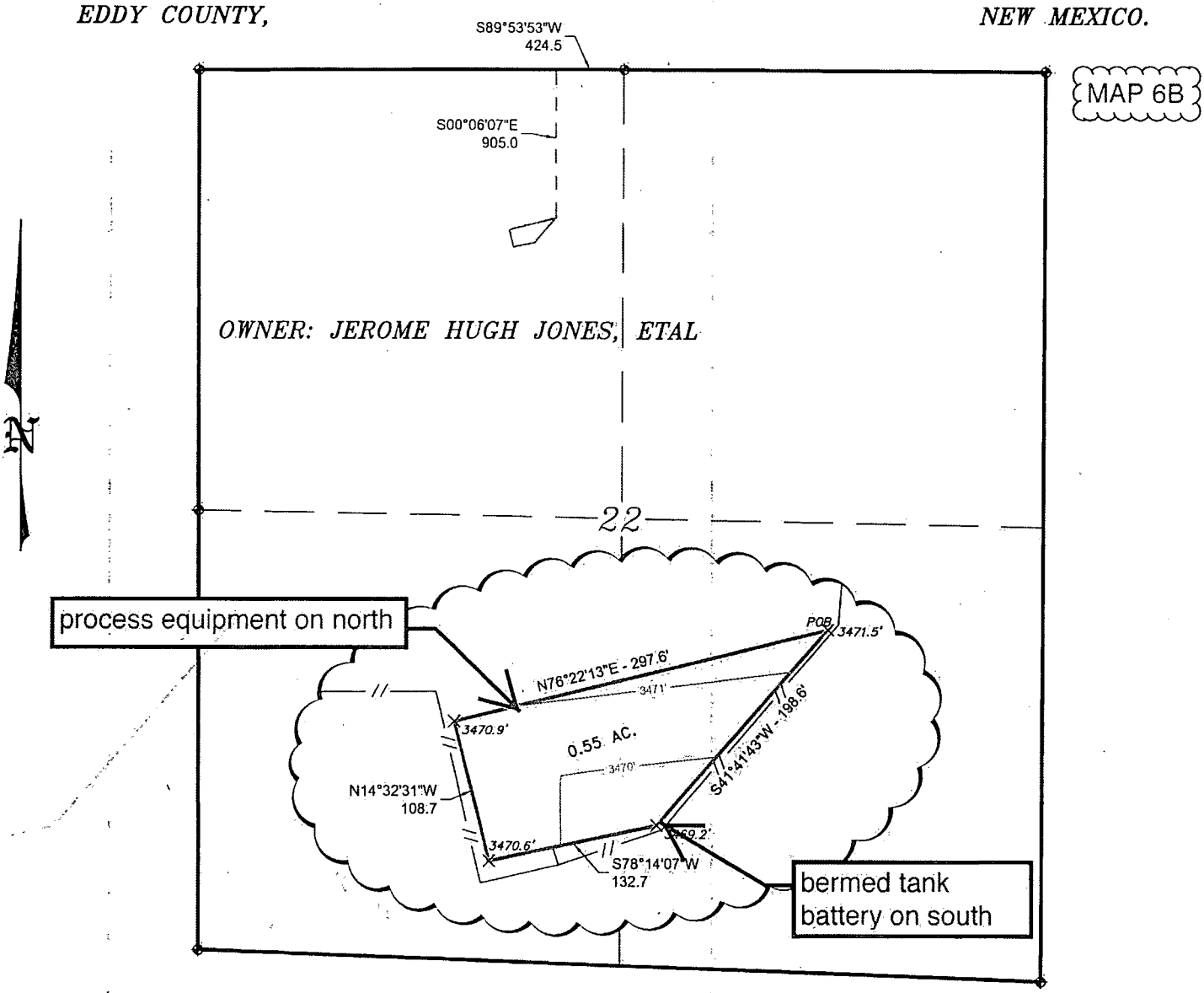
W.O. Number: 33766	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST. N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 6B



LEGAL DESCRIPTION

A TRACT OF LAND LOCATED IN SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS.

BEGINNING AT A POINT WHICH LIES S.89°53'53"W., 424.5 FEET AND S.00°06'07"E., 905.0 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION 22; THENCE S.41°41'43"W., 198.6 FEET; THENCE S.78°14'07"W., 132.7 FEET; THENCE N.14°32'31"W., 108.7 FEET; THENCE N.76°22'13"E., 297.6 FEET TO THE POINT OF BEGINNING. SAID TRACT OF LAND CONTAINING 0.55 ACRES, MORE OR LESS.

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES — N.M. P.S. No. 7977 — TEXAS No. 5074

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

1000 0 1000 2000 FEET

PERCUSSION PETROLEUM OPERATING, LLC

REF: PROPOSED OSAGE BOYD TANK BATTERY

A TRACT OF LAND LOCATED IN

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST,

N.M.P.M., EDDY COUNTY, NEW MEXICO.

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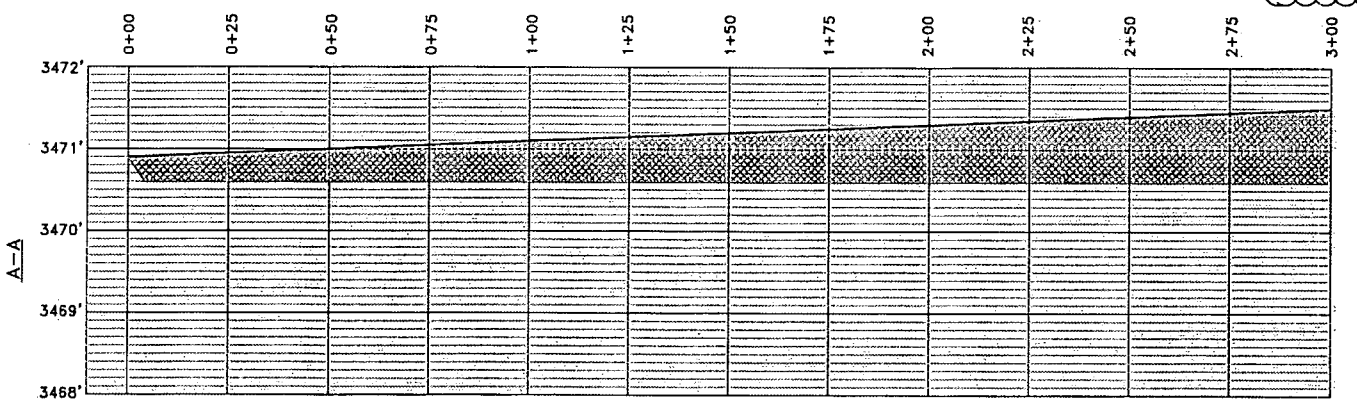
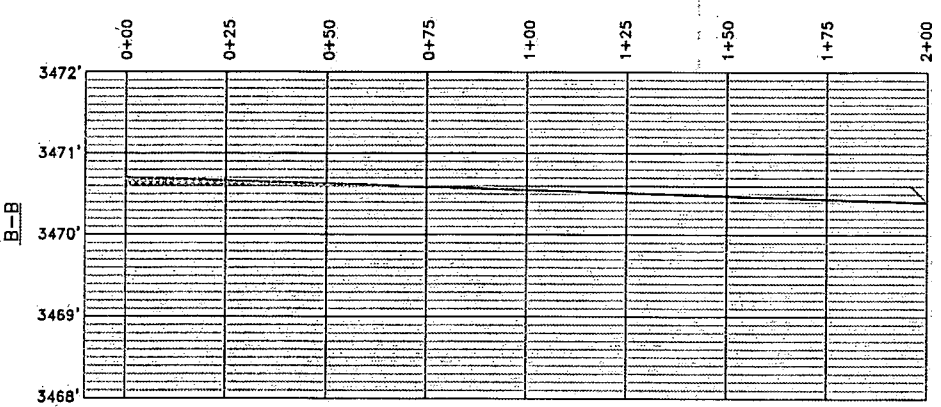
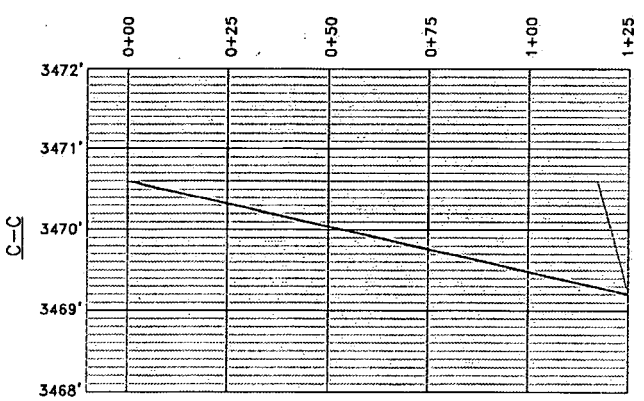
W.O. Number: 33760	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

MAP 6C







PERCUSSION PETROLEUM OPERATING, LLC

REF: OSAGE BOYD 15 FEDERAL COM 9H,10H&11H / PAD CROSS SECTION

THE OSAGE BOYD 15 FEDERAL COM 9H,10H&11H LOCATED IN SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

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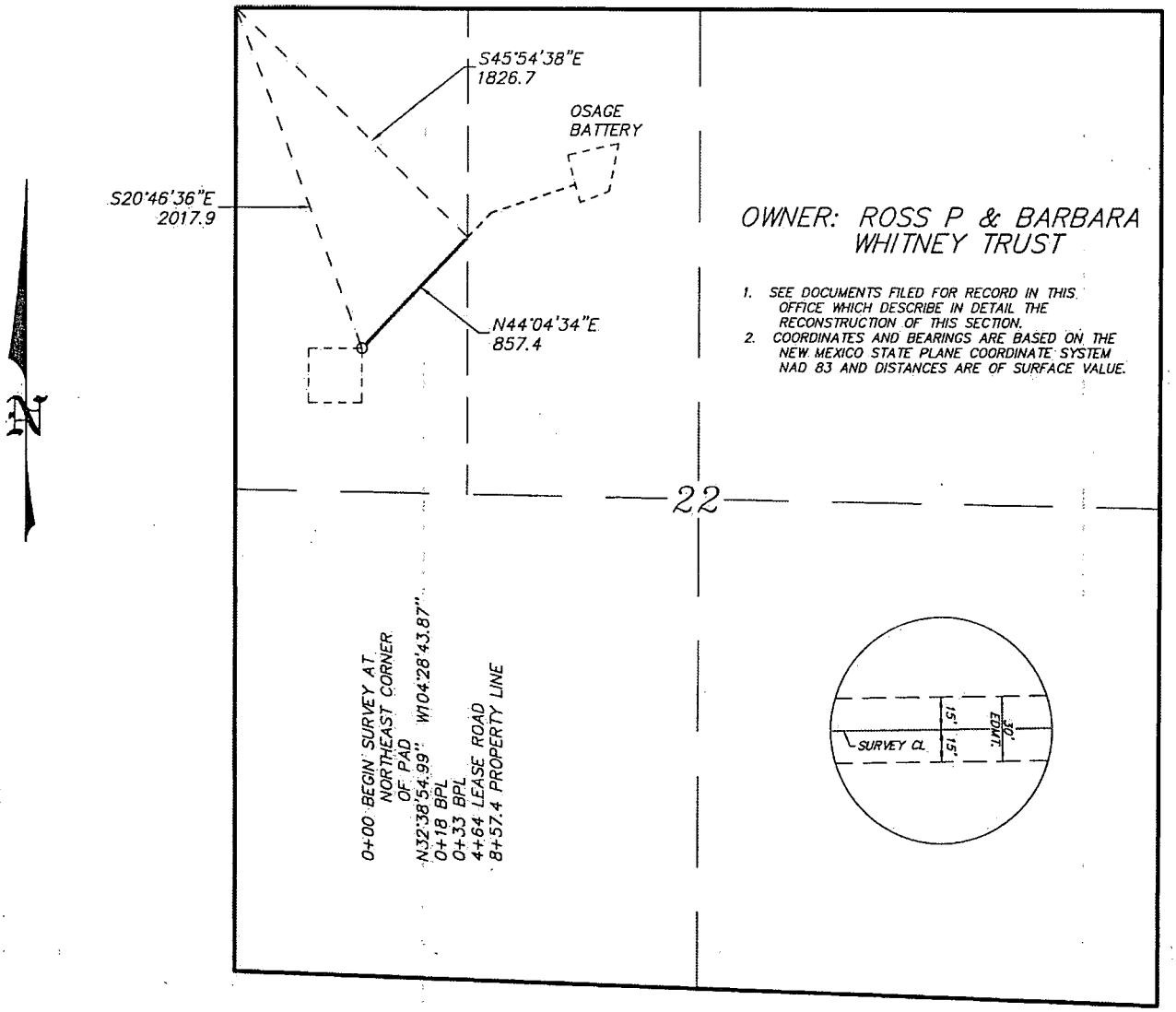
W.O. Number: 33758	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST. N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 6D



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT WHICH LIES S20°46'36"E., 2017.9 FEET FROM THE NORTHWEST CORNER OF SAID SECTION 22; THENCE N44°04'34"E., 857.4 FEET TO A POINT ON THE EAST PROPERTY LINE WHICH LIES S45°54'38"E., 1826.7 FEET FROM THE NORTHWEST CORNER OF SAID SECTION 22. SAID STRIP OF LAND BEING 857.4 FEET OR 51.96 RODS IN LENGTH.

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES
NEW MEXICO
7977
REGISTERED PROFESSIONAL LAND SURVEYOR

GARY L. JONES, N.M. P.S. No. 7977
TEXAS No. 5074

1000 0 1000 2000 FEET

PERCUSSION PETROLEUM OPERATING, LLC

REF: PROPOSED CRUDE OIL LINE TO OSAGE BATTERY

A PIPELINE CROSSING FEE LAND IN
SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

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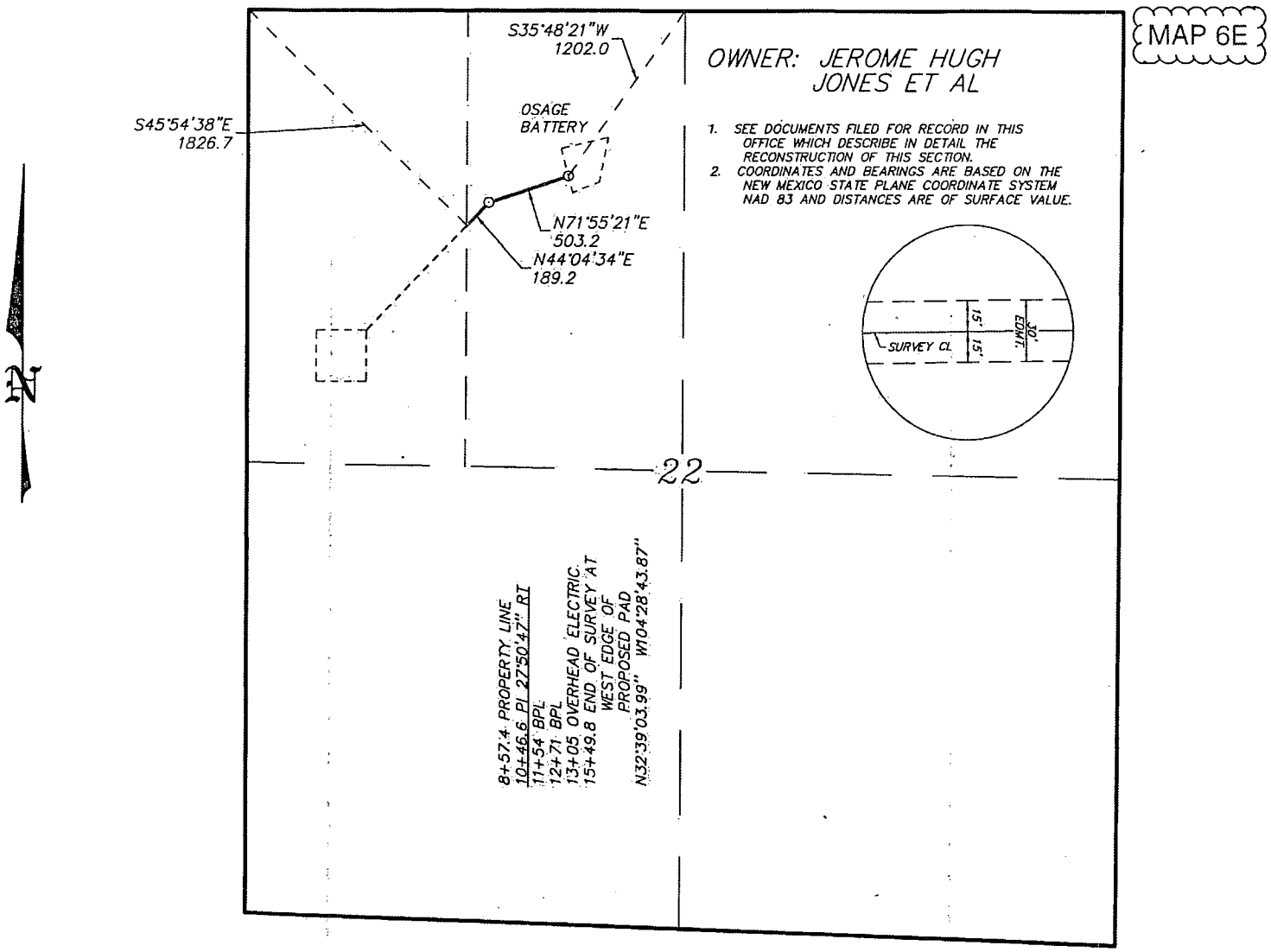
(575) 392-2206 – Fax
basinsurveys.com

W.O. Number: 33905	Drawn By: J GOAD	Date: 7-24-2018	Survey Date: 7-12-2018	Sheet 1 of 2 Sheets

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST. N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 6E



LEGAL DESCRIPTION

A STRIP OF LAND 30.0 FEET WIDE, LOCATED IN SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO AND BEING 15.0 FEET LEFT AND 15.0 FEET RIGHT OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY.

BEGINNING AT A POINT ON A POINT ON THE WEST PROPERTY LINE WHICH LIES S45°54'38"E., 1826.7 FEET FROM THE NORTHWEST CORNER OF SAID SECTION 22; THENCE N44°04'34"E., 189.2 FEET; THENCE N71°55'21"E., 503.2 FEET TO THE END OF THIS LINE WHICH LIES S35°48'21"W., 1202.0 FEET FROM THE NORTH QUARTER CORNER OF SAID SECTION 22. SAID STRIP OF LAND BEING 692.4 FEET OR 41.96 RODS IN LENGTH.

1000 0 1000 2000 FEET

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES
NEW MEXICO
7977
REGISTERED PROFESSIONAL LAND SURVEYOR

GARY L. JONES, NM P.S. No. 7977
TX P.S. No. 5074

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Hobbs, New Mexico 88241
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(575) 392-2206 - Fax
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PERCUSSION PETROLEUM OPERATING, LLC

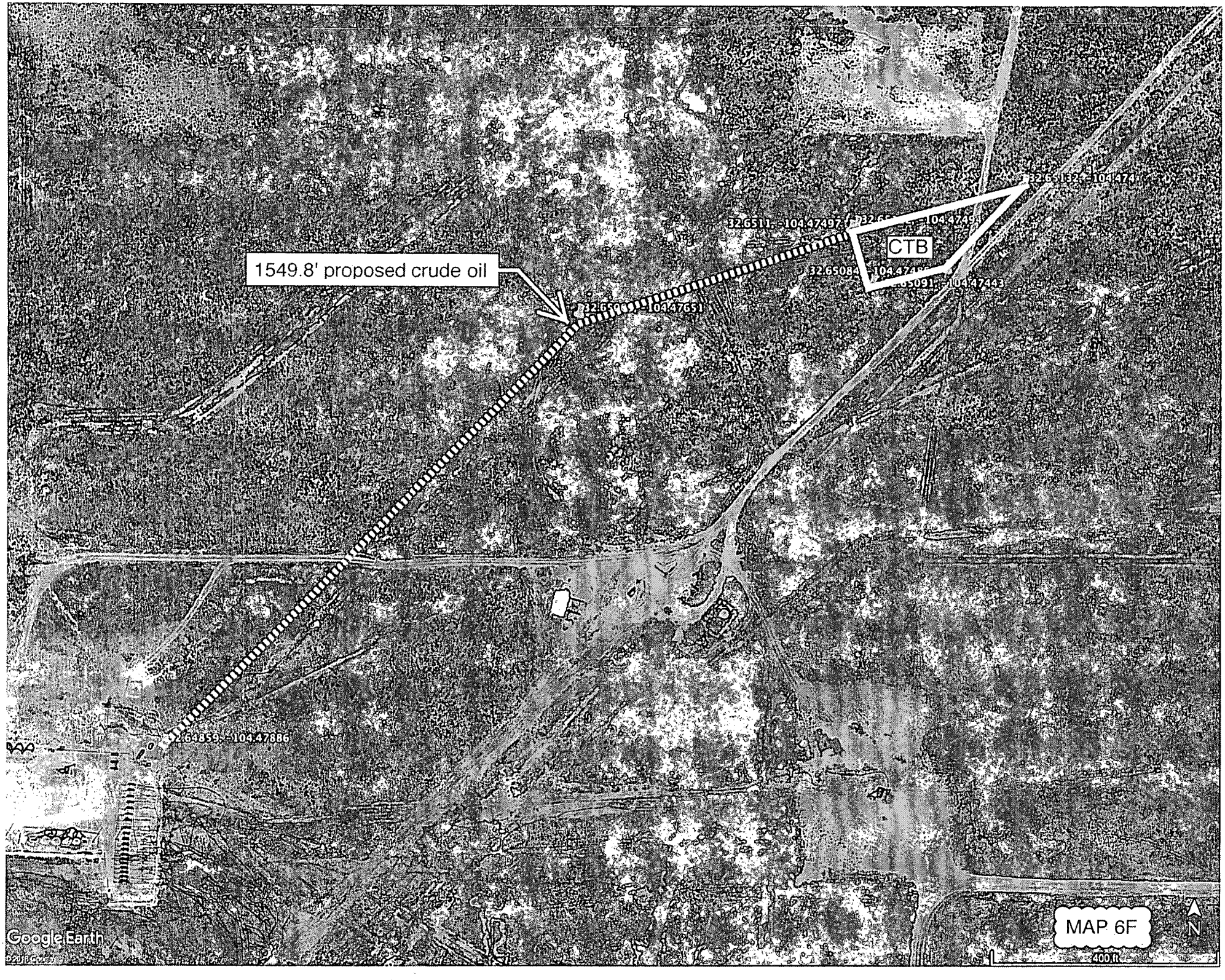
REF: PROPOSED CRUDE OIL LINE TO OSAGE BATTERY

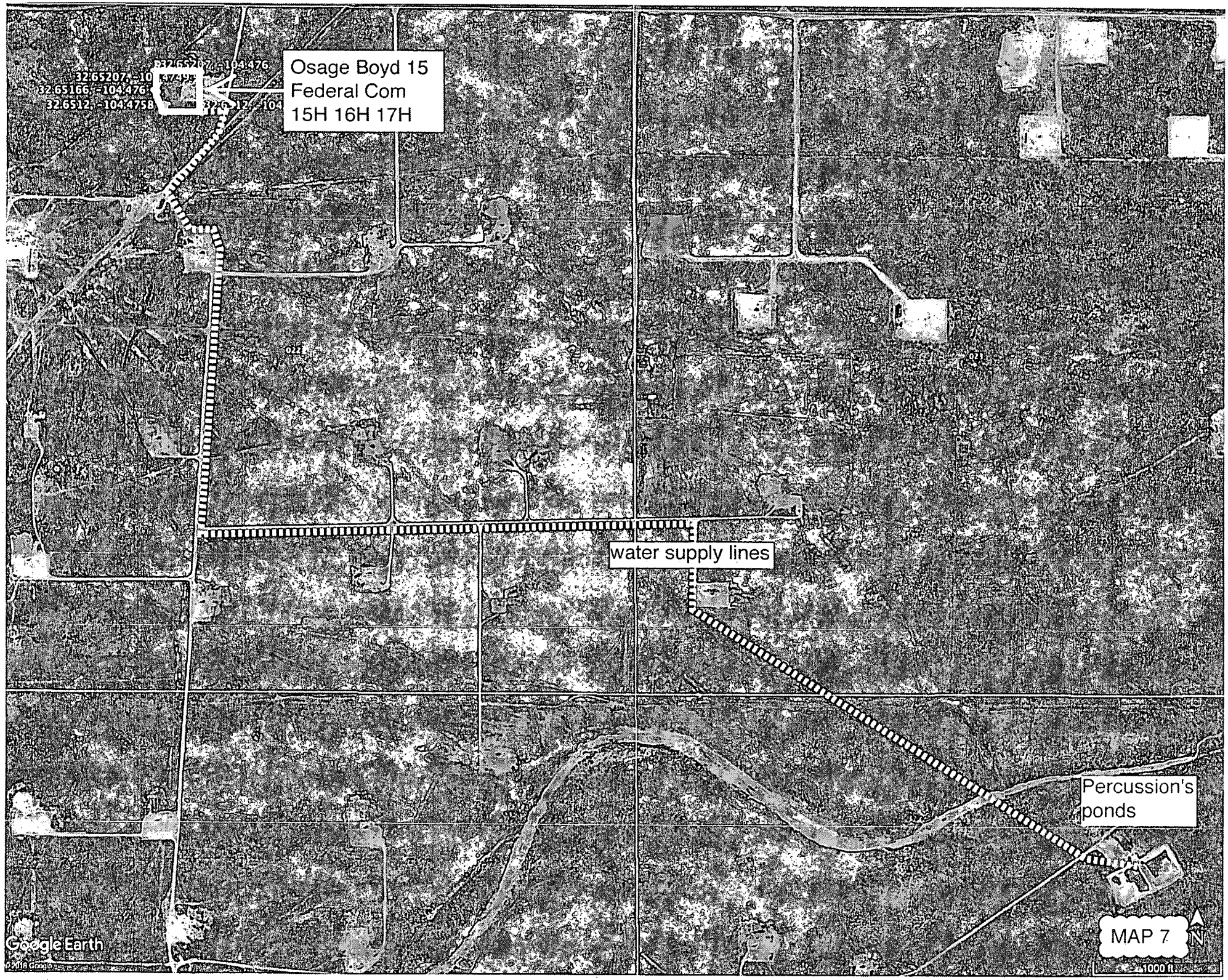
A PIPELINE CROSSING FEE LAND IN

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST,

N.M.P.M., EDDY COUNTY, NEW MEXICO.

W.O. Number: 33905	Drawn By: J GOAD	Date: 7-24-2018	Survey Date: 7-12-2018	Sheet 2 of 2 Sheets

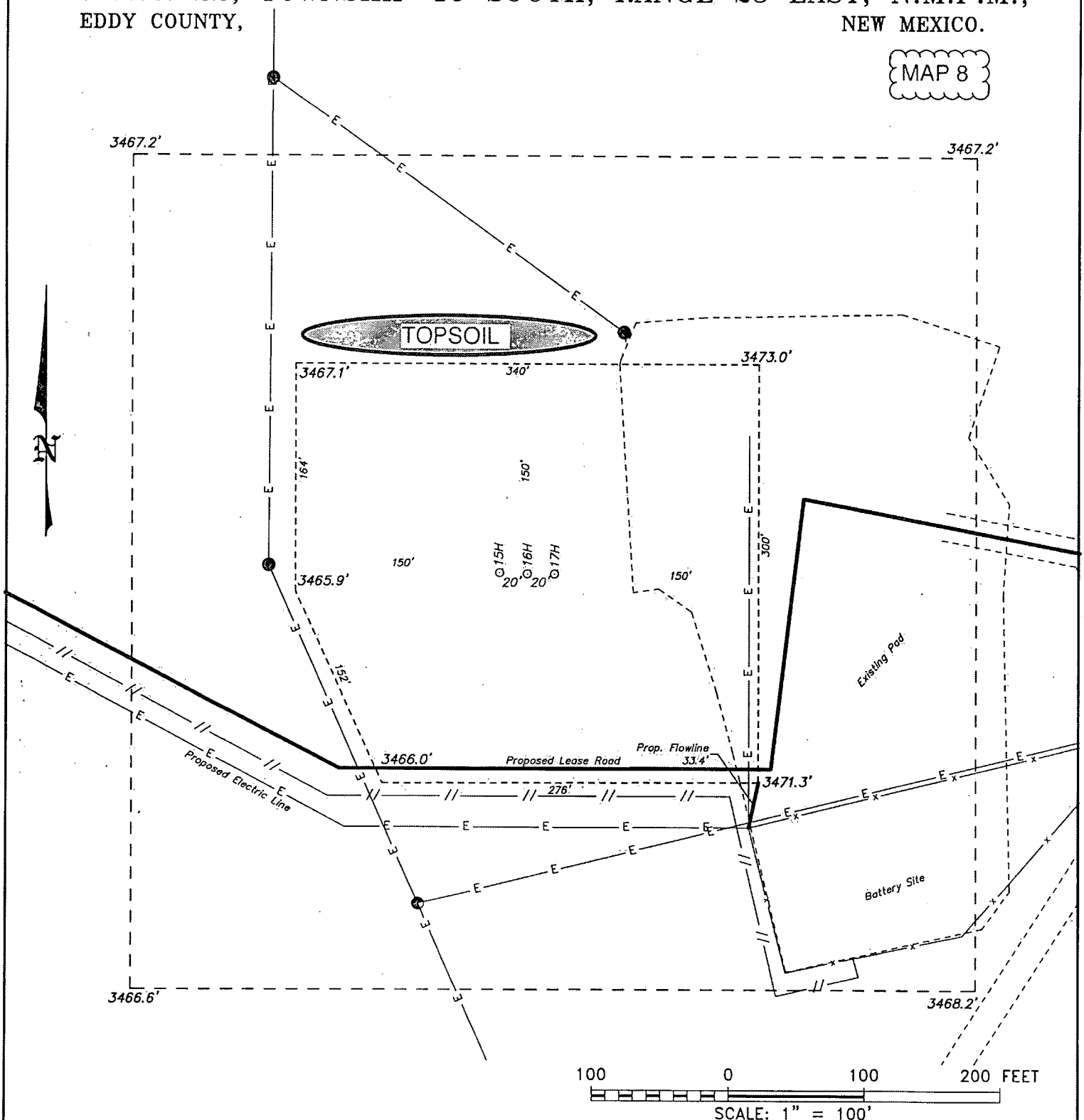

1549.8' proposed crude oil
CTB
32.6511, -104.47497
32.6508, -104.47443
32.65091, -104.47443
32.64859, -104.47886
MAP 6F
N
400 ft
Google Earth


Osage Boyd 15
Federal Com
15H 16H 17H
32.65207, -104.476
32.65166, -104.476
32.6512, -104.4758
water supply lines
Percussion's
ponds
MAP 7
N
Google Earth

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 8



100 0 100 200 FEET

SCALE: 1" = 100'

PERCUSSION PETROLEUM OPERATING, LLC

REF: OSAGE BOYD 15 FEDERAL COM 17H / WELL PAD TOPO

THE OSAGE BOYD 15 FEDERAL COM 17H LOCATED 786' FROM THE NORTH LINE AND 1777' FROM THE WEST LINE OF SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

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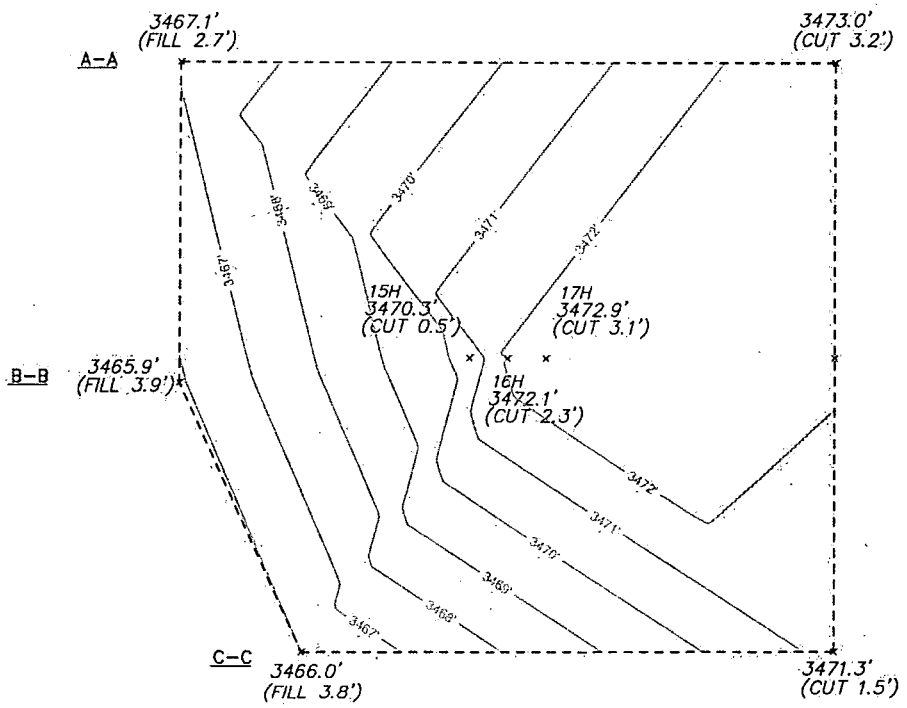
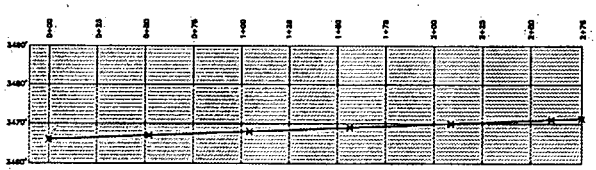
W.O. Number: 33766	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 9





100 0 100 200 FEET

SCALE: 1" = 100'

PERCUSSION PETROLEUM OPERATING, LLC

REF: OSAGE BOYD 15 FEDERAL COM 15H,16H&17H/WELL PAD TOPO

THE OSAGE BOYD 15 FEDERAL COM 15H,16H&17H LOCATED IN SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

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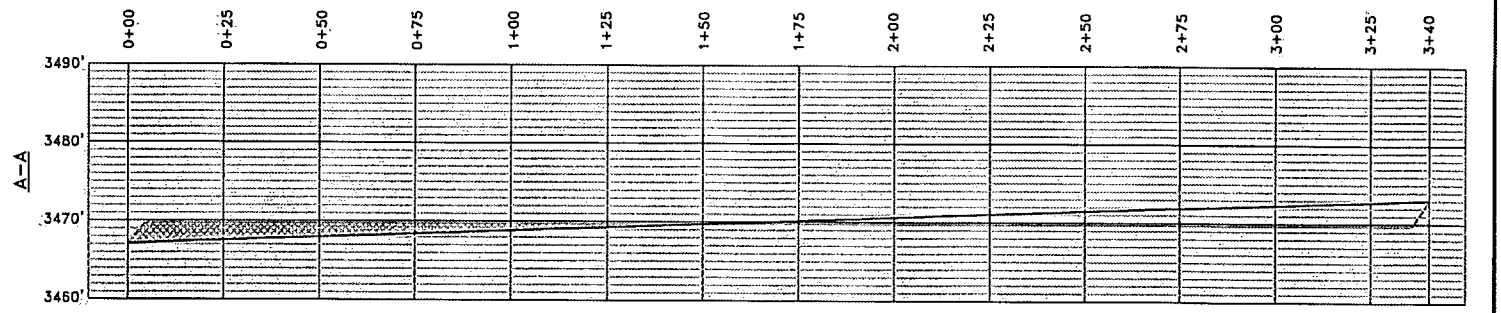
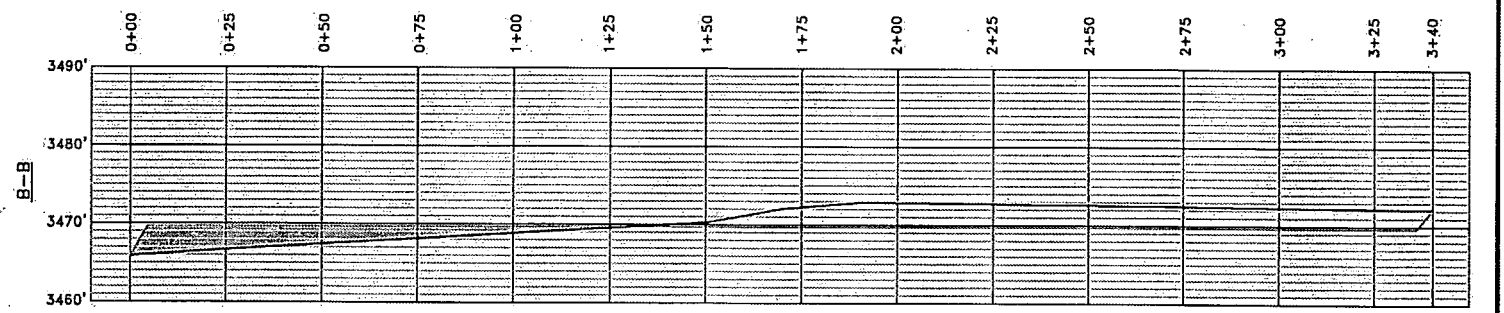
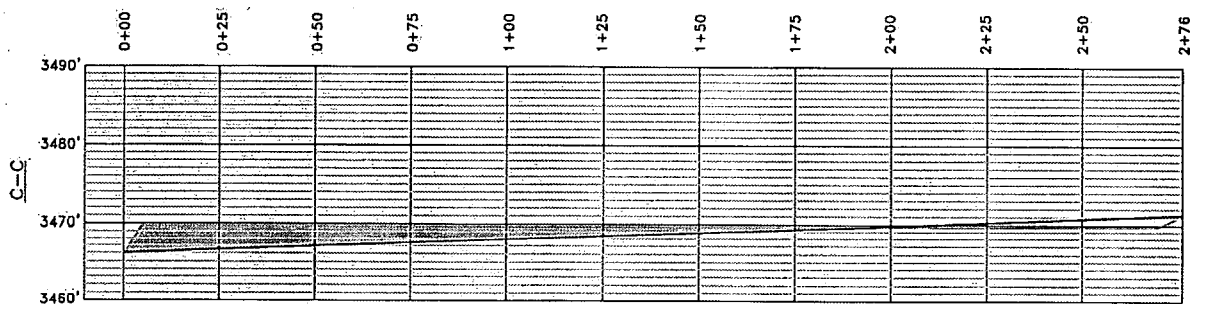
W.O. Number: 33764	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

MAP 10







PERCUSSION PETROLEUM OPERATING, LLC

REF: OSAGE BOYD 15 FEDERAL COM 15H,16H&17H/WELL CROSS SECTION

THE OSAGE BOYD 15 FEDERAL COM 15H,16H&17H LOCATED IN SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

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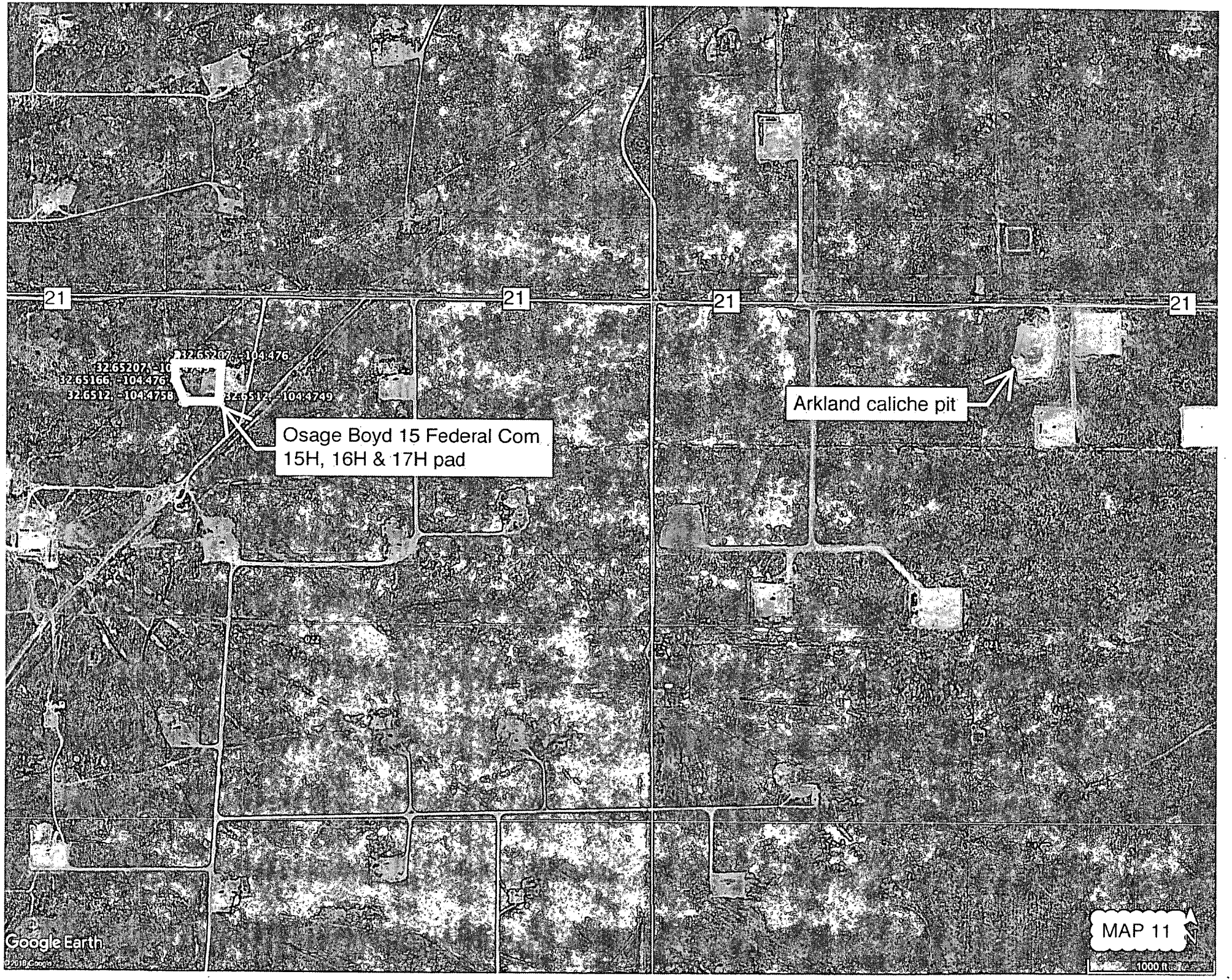
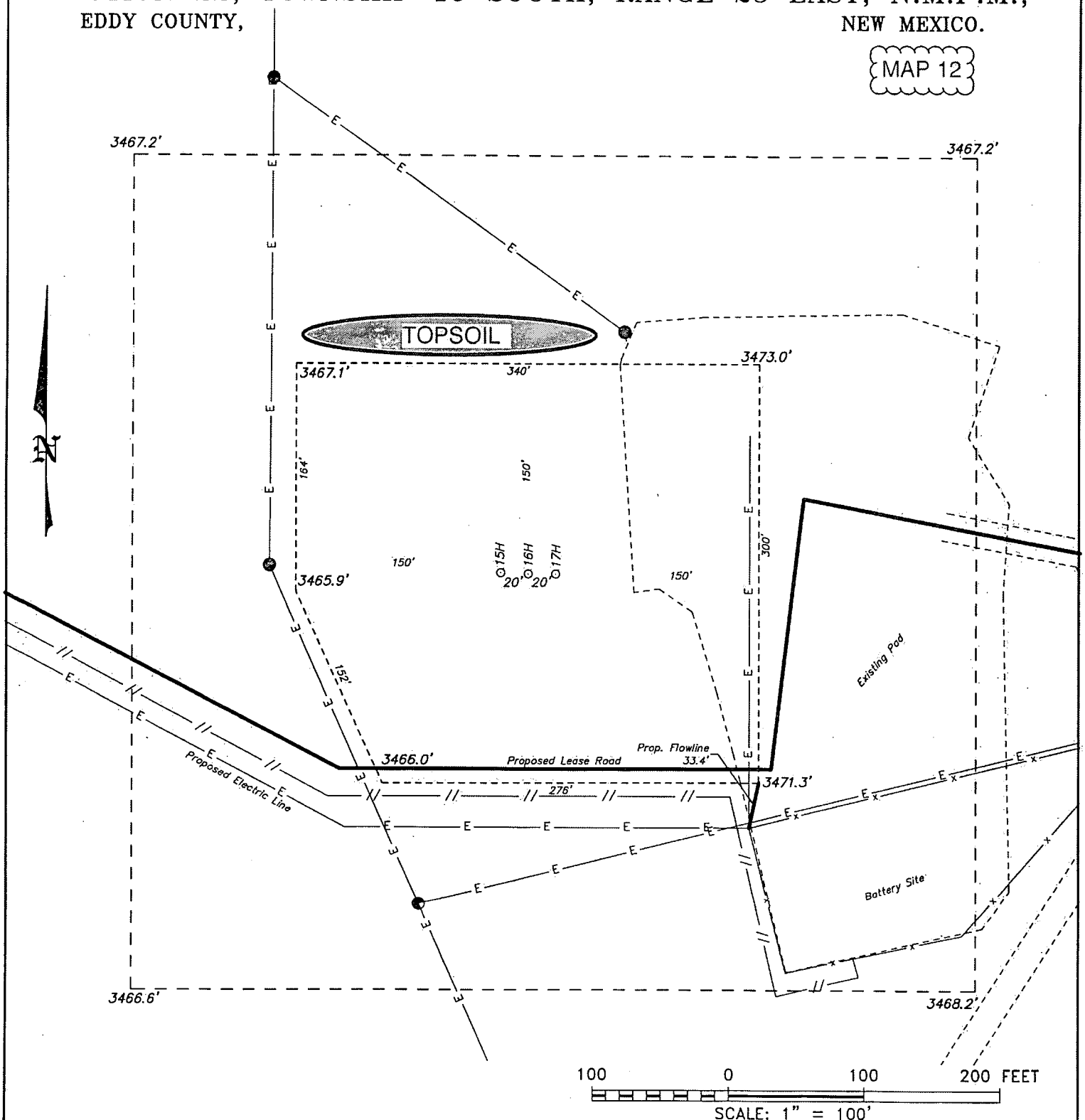
W.O. Number: 33758	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets


21
21
21
21
32.65207, -104.476
32.65166, -104.476
32.6512, -104.4749
Osage Boyd 15 Federal Com
15H, 16H & 17H pad
Arkland caliche pit
Google Earth
MAP 11
1000 ft

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 12



100 0 100 200 FEET

SCALE: 1" = 100'

PERCUSSION PETROLEUM OPERATING, LLC

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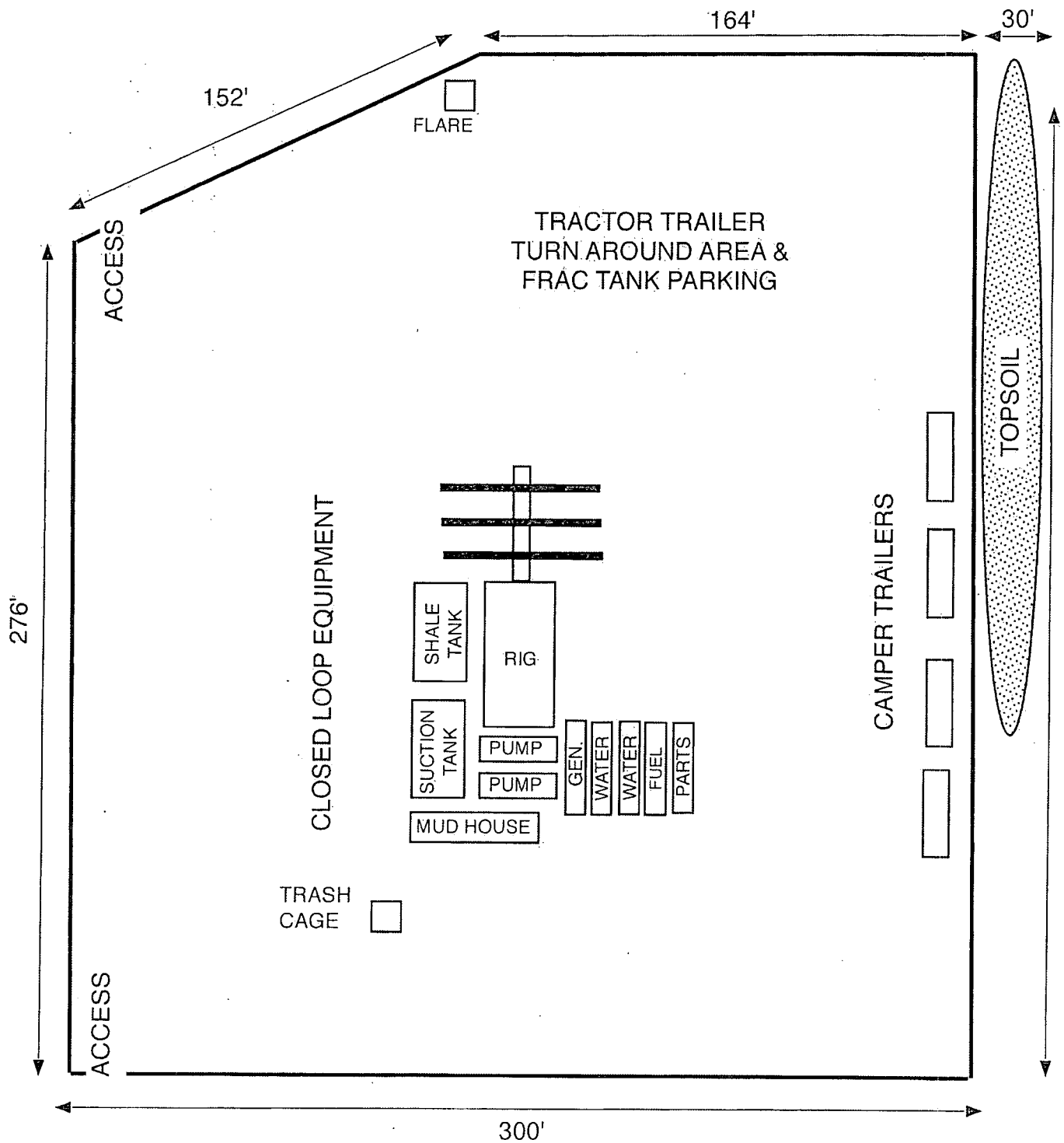
W.O. Number: 33766	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

Percussion's
Osage Boyd 15 Federal Com 17H
rig diagram

Prevailing Wind out of South or SSE → NORTH

1" = 50'

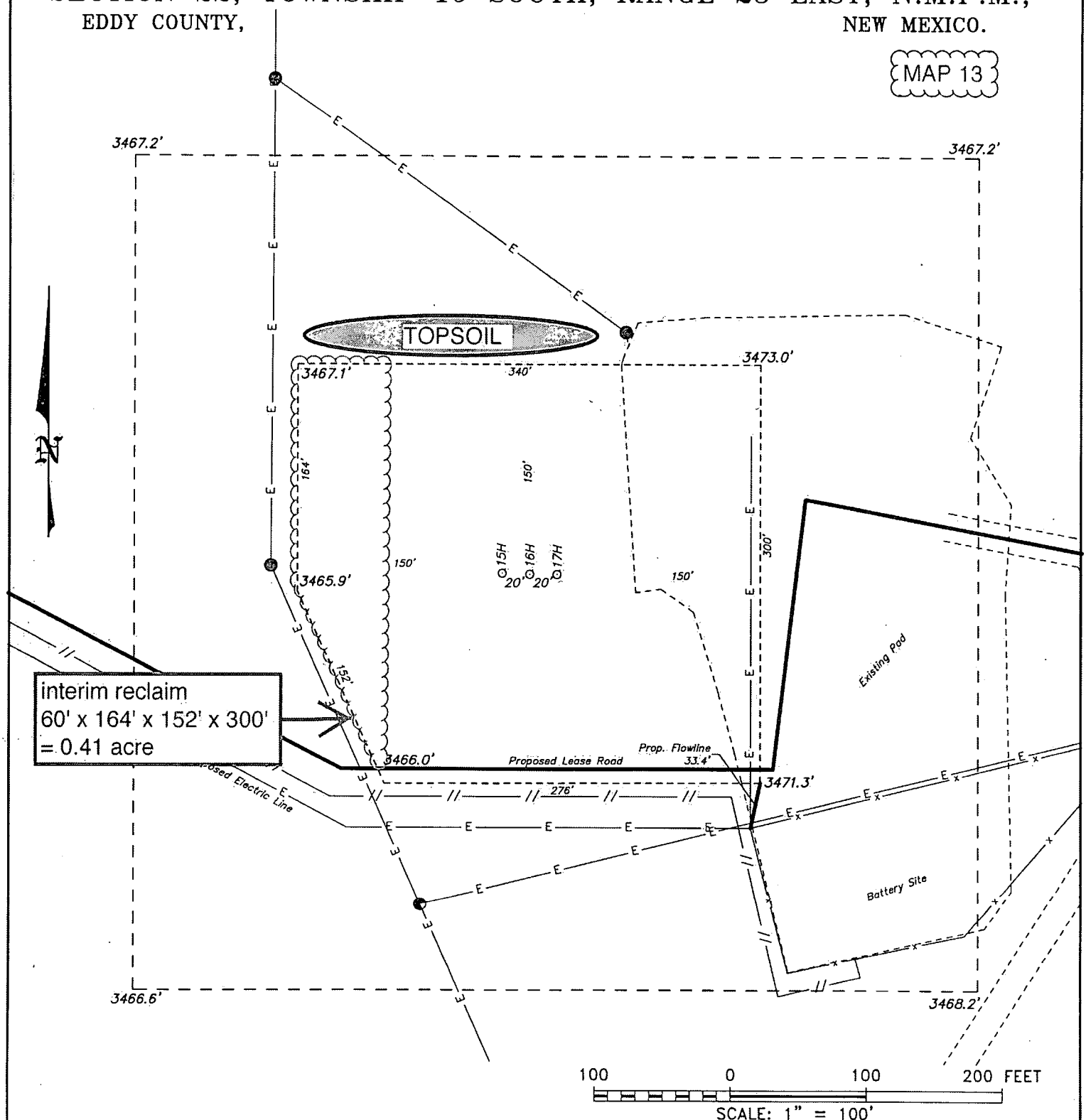


PERMITS WEST INC.
PROVIDING PERMITS for LAND USERS

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 13



100 0 100 200 FEET

SCALE: 1" = 100'

PERCUSSION PETROLEUM OPERATING, LLC

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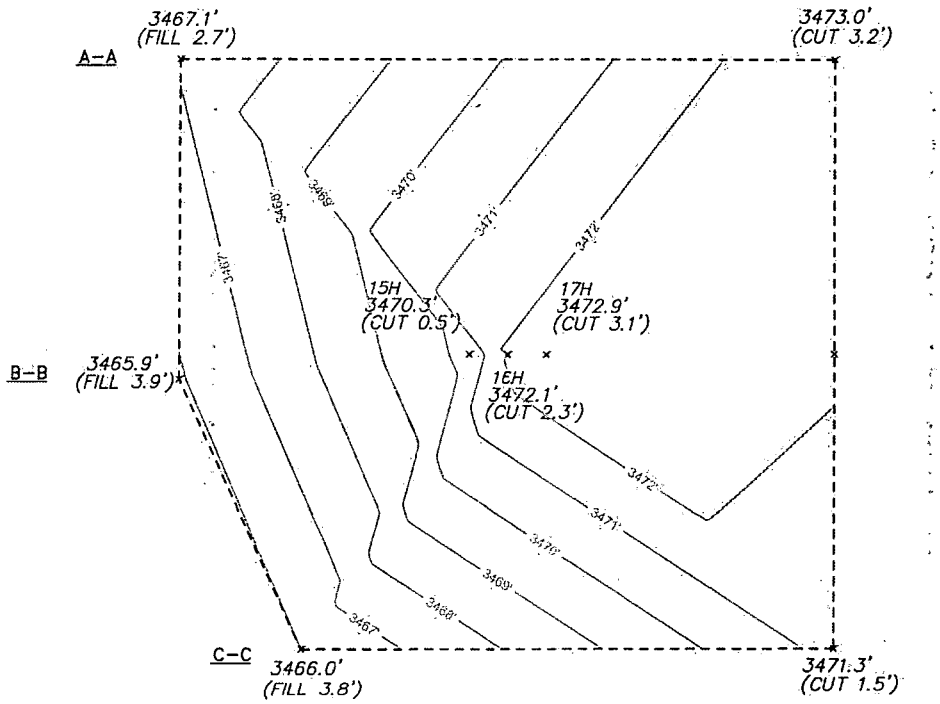
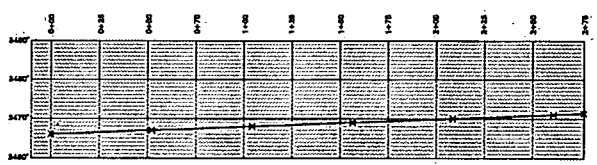
W.O. Number: 33766	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,

EDDY COUNTY, NEW MEXICO.

MAP 14





100 0 100 200 FEET

SCALE: 1" = 100'

PERCUSSION PETROLEUM OPERATING, LLC

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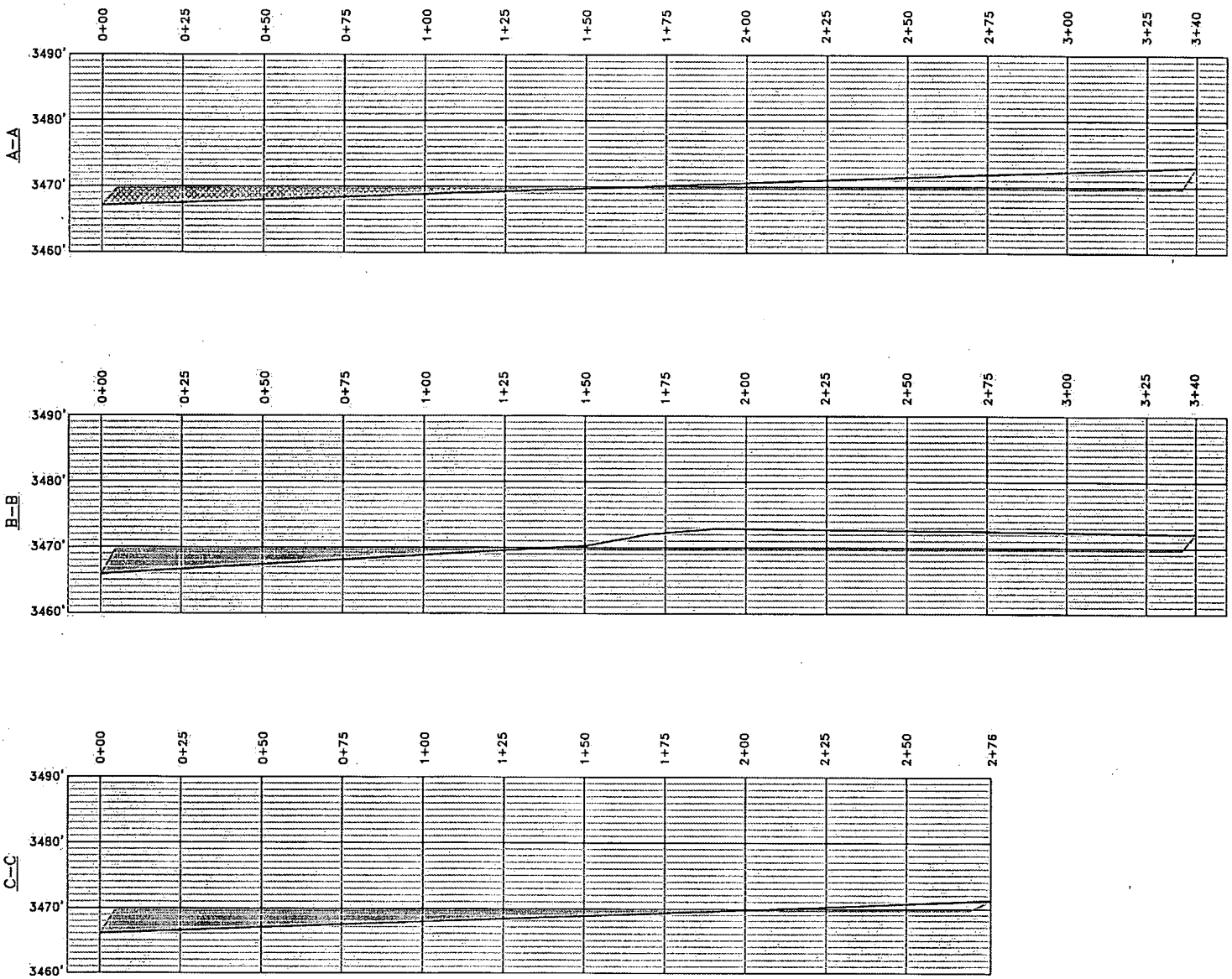
W.O. Number: 33764	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

SECTION 22, TOWNSHIP 19 SOUTH, RANGE 25 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

MAP 15



PERCUSSION PETROLEUM OPERATING, LLC

REF: OSAGE BOYD 15 FEDERAL COM 15H,16H&17H/WELL CROSS SECTION

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W.O. Number: 33758	Drawn By: K. GOAD	Date: 05-17-2018	Survey Date: 05-12-2018	Sheet 1 of 1 Sheets

Disposal, Surface Use Plan

1. ROAD DIRECTIONS & DESCRIPTIONS (See MAPS 1 - 3)

From the junction of US 82 & US 285 in Artesia...
Go South 13.2 miles on US 285 to the equivalent of Mile Post 56.5
Then turn right and go West 4.6 miles on paved County Road 21 (Rocking R)
Then turn left and go SW 0.1 mile on a caliche road to Percussion's existing Ross Ranch Goodman pad
West side of the existing pad is east side of the proposed pad.
No new road is needed.

Non-county roads will be maintained as needed to Gold Book standards. This includes pulling ditches and preserving the crown. This will be done at least once a year, and more often as needed.

2. ROAD TO BE BUILT OR UPGRADED (See MAP 3)

No new road is needed. Upgrade will consist of filling potholes with caliche as needed.

3. EXISTING WELLS (See MAP 4)

Existing oil, gas, water, disposal, and P & A wells are within a mile. No injection well is within a mile radius.

4. PROPOSED PRODUCTION FACILITIES (See MAPS 5 - 6F)

A 33.4' long ≈4" O D. HDPE flow line will be laid on the surface south to a proposed 0.55 acre central tank battery (CTB). CTB will sit on the south side of

Percussion's existing three well Ross Ranch Goodman pad. Maximum operating pressure will be <125 psi.

An existing 3-phase power line already crosses the east side of the well pad.

A 1549.8' long ≈4" O D. HDPE crude oil line will be laid on the surface from the CTB southwest to an existing crude oil line at Percussion's Ross Ranch 22 #2 pad. Maximum operating pressure will be <125 psi.

5. WATER SUPPLY (See MAP 7)

Water will be piped via temporary ≈12,200' long surface 10" Kevlar lay flat pipelines (2) from Percussion's existing lined fresh water pond on its own land in NE4 26-19s-25e. Pipeline route will not be bladed or excavated. Route is all private. Route follows existing roads, pads, and pipelines.

6. CONSTRUCTION MATERIALS & METHODS (See MAPS 8 - 11)

NM One Call (811) will be notified before construction starts. Top ≈6" of soil and brush will be stockpiled north of the pad. V-door will face west. Closed loop drilling system will be used. Caliche will be hauled from existing caliche pit on private land. Arkland caliche pit is in NWNE 23-19s-25e.

7. WASTE DISPOSAL

All trash will be placed in a portable trash cage. It will be hauled to the Eddy County landfill. There will be no trash burning. Contents (drill cuttings, mud, salts, and other chemicals) of the mud tanks will be hauled to R360's state approved (NM-01-0006) disposal site at Halfway. Human waste will be disposed of in chemical toilets and hauled to the Artesia wastewater treatment plant.

8. ANCILLARY FACILITIES

There will be no airstrip or camp. Camper trailers will be on location for the company man, tool pusher, and mud logger.

9. WELL SITE LAYOUT (See MAP 12)

Also see Rig Layout diagram for depictions of the well pad, trash cage, access onto the location, parking, living facilities, and rig orientation.

10. RECLAMATION (See MAPS 13 - 15)

Interim reclamation will be completed within 6 months of completing the well. Interim reclamation will consist of shrinking the well pad 0.41 acre by removing caliche and reclaiming 60' on the west side of the pad. This will leave 2.15 acres for the anchors, pump jacks, and tractor-trailer turn around. Disturbed areas will be contoured to match pre-construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with surface owner's requirements.

Enough stockpiled topsoil will be retained to cover the remainder of the pad when the well is plugged. Once the last well is plugged, then the rest of the pad will be similarly reclaimed within 6 months of plugging. Noxious weeds will be controlled.

Land use will be:

30' x 33.4' flowline = 0.02 acre
30' x 1549.8' crude oil line = 1.07 acres
297.6' x 198.6' x 132.7' x 108.7' CTB = 0.55 acre
20' x 12,200' water line from pond = 5.60 acres
+ 152' x 276' x 300' x 340' x 164' well pad = 2.34 acres
9.58 acres short term
- 0.02 acre flowline
- 1.07 acres oil line
- 5.60 acres water line from pond
- 0.19 acre interim reclamation on well pad
2.70 acres (0.55 ac. CTB + 2.15 ac. pad) long term

11. SURFACE OWNER

Well pad, CTB, flow line, and 692.4' of oil line construction will be on private land (NWNW & E2NW4 22-19s-25e) owned by Jerome Hugh Jones et al and leased to Ross Ranch, P. O. Box 216, Lakewood NM 88254. Ranch phone number is (575) 365-4797. Jones phone number is (703) 352-0067. Percussion has an agreement with the Ranch and Jones.

Remaining 857.4' of oil line construction will be on private land (SWNW 22-19s-25e) owned by Ross & Barbara Whitney Trust, 25601 E. 130th St., Greenwood MO 64034. Phone number is (816) 525-1233. Percussion has an agreement with the Trust.

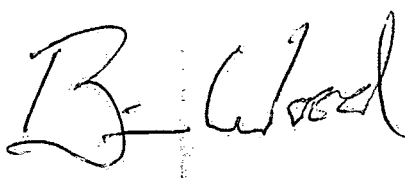
12. OTHER INFORMATION

On-site inspection was held with Matt Wirth (BLM) on July 12, 2018.

Lone Mountain inspected the well pad and submitted archaeology report NMCRIS-141118 on August 7, 2018. APAC inspected the oil line and submitted report NMCRIS-141712 on October 25, 2018.

CERTIFICATION

I hereby certify that I, or someone under my direct supervision, have inspected the drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of state and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U. S. C. 1001 for the filing of false statements. Executed this 26th day of October, 2018.



Brian Wood, Consultant
Permits West, Inc.
37 Verano Loop, Santa Fe, NM 87508
(505) 466-8120 FAX: (505) 466-9682 Cellular: (505) 699-2276

Field representative will be:

Lelan Anders, Operations Manager
Percussion Petroleum Operating, LLC
919 Milam, Suite 2475
Houston TX 77002
Office: (713) 429-1291
Mobile: (281) 908-1752

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

PWD Data Report
05/30/2019

Section 1 - General

Would you like to address long-term produced water disposal? NO

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

Do you propose to put the produced water to beneficial use?

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

Does the produced water have an annual average Total Dissolved Solids (TDS) concentration equal to or less than that of the existing water to be protected?

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

Unlined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Bond Info Data Report

05/30/2019

Bond Information

Federal/Indian APD: FED

BLM Bond number: NMB001424

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: