

Module 1 Lesson 2 – Conducting Action Research

EXERCISE 1 - Review APD and COAs

Instructions:

- This is an individual exercise.
- Imagine you are conducting action research for an upcoming environmental/surface inspection. You are now at the step in the action research process where you are reviewing the APD and COAs. You acquire the APD and COAs from the well file in your office (see attached APD and COAs).
- Review the attached APD and COAs.
- Take notes of any items of interest that might be relevant to an upcoming environmental/surface inspection. Take notes for the five different inspection activities:
 - Surface Construction
 - Surface Drilling
 - Interim Reclamation
 - Surface Production
 - Surface Abandonment

Example: Review the APD and COAs and imagine you are preparing for a surface construction inspection. Take notes on the appropriate note pad (attached) for that upcoming surface construction inspection activity. Repeat this same process for the other four inspection activities (i.e., SD, IR, SP, and SA). Take notes on the appropriate note pads for the other inspection activities as if you were preparing for those inspection activities. You can use your own note pad. Hint: You would not note special COAs for final reclamation for the ES-SC inspection, but you would for the ES-SA inspection.

- At the next webinar, students will be asked a series of questions related to this exercise.

Attachments:

1. ES-SC Note Pad (1 page)
 - a. Student can use the first (top) section of the Note Pad to type notes to complete the exercise and reference during the exercise review.
 - b. Student can use the second (bottom) section of the Note Pad to type notes during the exercise review/instructor feedback and reference in the future.
2. ES-SD Note Pad (1 page)
3. ES-IR Note Pad (1 page)
4. ES-SP Note Pad (1 page)
5. ES-SA Note Pad (1 page)
6. Entire APD and COAs (99 pages)

Module 1 – Lesson 2: “Conducting Action Research”

Exercise 1 – Review APD and COAs

Exercise Aid: **NOTE PAD** for ES-SC Inspection

Notes for Exercise (Filled in for Exercise)

Exercise Feedback – Optional Notes (Filled in during instructor feedback)

Module 1 – Lesson 2: “Conducting Action Research”

Exercise 1 – Review APD and COAs

Exercise Aid: **NOTE PAD** for ES-SD Inspection

Notes for Exercise (Filled in for Exercise)

Exercise Feedback – Optional Notes (Filled in during instructor feedback)

Module 1 – Lesson 2: “Conducting Action Research”

Exercise 1 – Review APD and COAs

Exercise Aid: **NOTE PAD** for ES-IR Inspection

Notes for Exercise (Filled in for Exercise)

Exercise Feedback – Optional Notes (Filled in during instructor feedback)

Module 1 – Lesson 2: “Conducting Action Research”

Exercise 1 – Review APD and COAs

Exercise Aid: **NOTE PAD** for ES-SP Inspection

Notes for Exercise (Filled in for Exercise)

Exercise Feedback – Optional Notes (Filled in during instructor feedback)

Module 1 – Lesson 2: “Conducting Action Research”

Exercise 1 – Review APD and COAs

Exercise Aid: **NOTE PAD** for ES-SA Inspection

Notes for Exercise (Filled in for Exercise)

Exercise Feedback – Optional Notes (Filled in during instructor feedback)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: DRILL REENTER		5. Lease Serial No.
1b. Type of Well: Oil Well Gas Well Other Single Zone Multiple Zone		6. If Indian, Allottee or Tribe Name
2. Name of Operator		7. If Unit or CA Agreement, Name and No.
3a. Address		8. Lease Name and Well No.
3b. Phone No. (include area code)		9. API Well No.
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		10. Field and Pool, or Exploratory
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area
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	12. County or Parish
17. Spacing Unit dedicated to this well	13. State	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. on file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification |
| 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). | 6. Such other site specific information and/or plans as may be required by the BLM. |

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		
Office		

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.

(Continued on page 2)

*(Instructions on page 2)



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 1: 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 well, 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 directionally 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.

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 well 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 will 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 collects this information to allow 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 Collection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Other description

Oil and/or Gas

Location of Well

1. SHL: SESE / 239 FSL / 205 FEL / TWSP: 14N / RANGE: 11W / SECTION: 31 / LAT: 35.6390492 / LONG: -98.4025265 (TVD: 0 feet, MD: 0 feet)
PPP: SESE / 165 FSL / 379 FEL / TWSP: 14N / RANGE: 11W / SECTION: 31 / LAT: 35.6388475 / LONG: -98.4031128 (TVD: 13254 feet, MD: 13292 feet)
PPP: SENE / 2641 FSL / 379 FEL / TWSP: 14N / RANGE: 11W / SECTION: 31 / LAT: 35.6390492 / LONG: -98.4025265 (TVD: 0 feet, MD: 0 feet)
BHL: NENE / 50 FNL / 380 FEL / TWSP: 14N / RANGE: 11W / SECTION: 30 / LAT: 35.6672269 / LONG: -98.4031131 (TVD: 13421 feet, MD: 23671 feet)

BLM Point of Contact

Name: Carolyn Russell

Title: AFM RESOURCES

Phone: 4055797170

Email: cfrussell@blm.gov

CONFIDENTIAL

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.

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ENGINEERING

General CONDITIONS OF APPROVAL

Operator: Devon Energy Production Company LP

Well Name: MAD DOG 31_30-14N-11W 1HX

Lease No: 14-20-205-16391

SME: Private Surface Owner

Location:

SHL: 239' FSL & 205' FEL, (SESE), Sec. 31, T. 14 N., R. 11 W., I.M., Blaine County, OK

BHL: 50' FNL & 380' FEL, (NENW), Sec. 30, T. 14 N., R. 11 W., I.M., Blaine County, OK

A copy of the CONDITIONS OF APPROVAL must be furnished to your field representative.

1. Verbal notification shall be given to the assigned BLM Natural Resource Specialist at least **72 HOURS PRIOR TO PAD CONSTRUCTION.**
2. The Operator shall provide the BLM Inspection and Enforcement department a verbal notification with the following information **72 hours prior to spud.**
 - BLM lease number
 - Well Name
 - API number
 - Operator Name
 - Drilling contractor's name
 - Rig Number
 - Date and Time which the well will be spud.
3. Verbal notification shall be given to the BLM Inspection and Enforcement department at least **72 hours before well operations begin on the following:**
 - Well Spud (including setting conductor casing)
 - Pressure Testing BOPE, Casing, and Formation Integrity Testing
 - Setting and Cementing all Casing Strings
 - Open Hole Logging Operations
 - Drilling Over Lease Expiration for Lease Extension
4. Approval of this APD does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease that would entitle the applicant to conduct operations thereon. In addition, approval of this APD does not imply that the operator has legal access to the drilling location. When crossing private surface 43 CFR 3814 regulations must be complied with and when crossing public surface off-lease the operator must have approved rights-of-way.
5. **This APD is valid for two years from the date of approval or until the oil and gas lease expires/terminates, whichever occurs first.** If drilling of this permitted well is to result in an extension of the lease term, diligent operations (actual drilling) must be in progress before and continue through the lease expiration date and must continue diligently until well completion, advance lease rentals must have been paid, and a letter stating drilling operations were in progress must be submitted to this office no later than five days past the lease expiration date. If the APD terminates, any surface

disturbance created under the application must be reclaimed according to an approved plan.

6. All applicable local, state and/or federal laws, regulations, and/or statutes must be complied with.

7. A complete copy of the approved APD must be at the drill site during the construction of the roads and drill pad, the drilling of the well, and the completion of the well.

BLM Contact Information:

<i>Natural Resource Specialist: (NRS)</i>	<i>Mr. Ty Swirin</i>	<i>(405) 579-7175 office (405) 230-6569 cell</i>	<i>tswirin@blm.gov</i>
<i>Inspection & Enforcement:</i>	<i>On Call</i>	<i>(405) 245-5048 cell</i>	
<i>Petroleum Engineer:</i>	<i>Mr. Teungku Krueng</i>	<i>(405) 579-7141 office</i>	<i>tkrueng@blm.gov</i>

Oklahoma Field Office (OKFO): **(405) 579-7100**
201 Stephenson Parkway, Suite 1200
Norman, OK 73072
www.blm.gov/nm

DRILLING PLAN CONDITIONS OF APPROVAL

I. ADMINISTRATIVE REQUIREMENTS

1. Contact the BLM Petroleum Engineers listed in the above table if there are any concerns regarding these Drilling Plan Conditions of Approval prior to SPUD Notification during normal business hours.
2. After Spud Notification and matters of urgent concern that occur outside of normal business hours shall be directed to Inspection and Enforcement first. The Field Inspector may direct the call to a BLM Engineer if necessary.
3. Notices to BLM Inspection and Enforcement staff, and discussion with BLM Engineers shall be recorded in your daily progress (drilling) report. The name of the BLM staff, the time when they were notified, and the nature of the discussion shall be documented, including any pertinent outcome of the discussion. Unless instructed otherwise, daily drilling reports shall be submitted at the end of drilling operations in the form of a drilling summary; however, daily reports may be requested at any time and shall be available on demand.
4. Required Testing, Logging, and Coring procedures noted below:
 - Mud Logging/Gamma Ray/MWD.
 - Open hole logs (GR/SP/DIL/LDT/CNL/ML) from TD (horizontal well – vertical portion of hole) to the top of the upper most potential hydrocarbon intervals.

- Open hole logs (GR/SP/DIL) from the top of the upper most hydrocarbon interval to the base of the surface casing and (GR) log from base of surface casing to surface.
- Cased hole CBL on production casing.

When logs are run, digital log data must be submitted to this office. **Paper logs will not be accepted.** Log data should be in LAS format (Log ASCII Standard [Canadian Well Log Society Version 1.2, or greater]).

5. A copy of the daily drilling and completion morning reports along with a copy of all the open and cased hole logs shall be submitted to the BLM office 30 days from completion. The completion data reported to the BLM should include the final bottom hole location, treating pressure, pumped volumes, post frac analysis, flow back oil and water volumes and tracer information if available.

6. **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.

7. **Casing String Cement Compressive Strength:** After cementing but before commencing any tests, the casing string shall stand cemented until the cement has reached a compressive strength of at least 500 psi at the shoe, and cement has been in place at least 8 hours. During this WOC time, no tests shall be initiated until cement has been in place at least 8 hours; also no drill pipe shall be run in the hole. WOC time shall be recorded in the driller's log. 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.

8. If applicable, plans for disposal of water produced beyond the drilling and completions phase of this well shall be submitted via Sundry Notice of Intent, Form 3160-5, and must be approved by the Authorized Officer prior to disposal. Please refer to Onshore Oil and Gas Order #7 A. for appropriate disposal methods and approval requirements. 'Unless prohibited by the Authorized Officer, produced water from newly completed wells may be temporarily disposed of into pits for a period of up to 90 days, if the use of the pit was approved as part of an application for permit to drill.

9. If applicable, requests for measurement of produced oil or gas at any location other than on the lease, or within the boundary of a valid Federal or Indian agreement, shall be submitted via Sundry Notice of Intent, Form 3160-5, and must be approved by the Authorized Officer prior to use of any alternative method.

II. 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.

If the operator plans on using a multi-bowl wellhead assembly in the APD

2. Operator has proposed a **multi-bowl wellhead assembly**. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (2M) psi**.
 - a. Wellhead shall be installed by manufacturer's representatives. Submit documentation with subsequent Sundry Notice.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. **All seal test on the multi-bowel wellhead shall be tested for a minimum period of 15 minutes and chart recorded. This information shall be submitted with the BOP/BOPE test information.**
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - f. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i. must be followed.

3. **Variance approved to use flex line from BOP to choke manifold.** If you choose to use a flexible hose as opposed to a non-flexible connection between the stack and the choke manifold, the hose must be successfully tested along with the stack over each hole section at the same test pressure of the approved RAM size (RAM test pressure). Check condition of flexible line from BOP to choke manifold and replace if exterior is damaged or if line fails test. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. The manufactures' specification and hydrostatic pressure test certification matching the hose in service information must be available on request to our inspection and enforcement personnel.

If the operator is not using a multi-bowl well head assembly, Items 4 and 5 apply.

4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5,000 (5M) psi**.

5. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below **the 9-5/8" intermediate** casing shoe shall be **10,000 (10M) psi**.

5M/10M system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

6. The BLM office shall be notified as stated in General Conditions of Approval above in advance for a representative to witness the BOP tests. All testing shall comply as described in Onshore Oil and Gas Order No. 2 and API 53

- a. 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.
- 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.

III. PRESSURE TESTING ON CASING – AFTER CEMENTING

In accordance with Onshore Oil and Gas Order No. 2, “all casing strings below the conductor shall be pressure tested to 0.22 psi/ft of casing string length, or 1,500 psig, whichever is greater, not to exceed 70% of the minimum internal yield.” Variance granted to use 0.22 psi/ft offset exterior gradient for the 70% of the minimum yield pressure calculations.

IV. FORMATION TESTING REQUIREMENTS – AFTER DRILLING OUT BELOW SHOE

On all exploratory wells and on that portion of any well approved for a 5M psi BOPE system or greater, a pressure integrity test of the formation (FIT), at each casing shoe (before drilling no more than 20 ft below the casing shoe) shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth (TD) of the well, or to the maximum mud weight listed in the APD to the next setting depth, whichever is greater.

V. OTHER VARIANCES TO BLM ORDERS AND REGULATIONS and COA Requirements

- o Due to inconsistency in the APD request,

BLM assumes the following statement is correct:

Testing Procedure: A third party testing company will conduct pressure tests and record prior to drilling out below 13-3/8" and 9-5/8" casing. The BOP, Choke, Choke Manifold, Top Drive Valves and Floor Safety Valves will be tested to 3500 psi prior to drilling below the 13-3/8" surface casing shoe and to 100% of full working pressure (10,000 psi) prior to drilling below the 9-5/8" intermediate casing shoe. The Annular Preventer will be tested to 3500 psi prior to drilling below the 13-3/8" surface casing shoe and to 100% of working pressure (5000 psi) prior to drilling below the 9-5/8" intermediate casing shoe. The rotating head is not used for pressure control and will not be tested for such. In addition, the BOP equipment will be tested every 21 days and after any repairs to the equipment as well as drilling out below any casing string. Pipe rams, blind rams and annular preventer will be activated on each trip and weekly BOP drills will be held with each crew.

Instead of:

Testing Procedure

A third party testing company will conduct pressure tests and record prior to drilling out below 13.375" and 9.625" casing. The BOP, Choke, Choke Manifold, Top Drive Valves and Floor Safety Valves will be tested to 5000 psi prior to drilling below the 13.375" surface casing shoe and to 5000 psi prior to drilling below the 9.625" intermediate casing shoe. The Annular Preventer will be tested to 3500 psi prior to drilling below the 13.375" surface casing shoe and to 3,500 psi prior to drilling below the 9.625" intermediate casing shoe. The rotating head is not used for pressure control and will not be tested for such. In addition, the BOP equipment will be tested every 21 days and after any repairs to the equipment as well as drilling out below any casing string. Pipe rams, blind rams and annular preventer will be activated on each trip and weekly BOP drills will be held with each crew.

o Variance request on submitting logs from nearby wells is denied. Please submit a sundry request once APD is approved.

o **Variance approved with use of a 5M annular on a 10M BOP system per IM-NM2017-008.**

The 5M Annular Preventer on a required 10M BOP stack will be tested to **100 % of rated working pressure** including a 10 minute low pressure test. Pressure shall be maintained at least 10 minutes.

The Operator assumes all responsibility for maintaining well control accredited industry standard Certification of appropriate supervisory drilling rig personnel.

Enforcement actions include but are not limited to immediate replacement of personnel lacking certifications, drilling operations being delayed or installment of a 10M annular.

Initials & (Date)

United States Department of the Interior
BUREAU OF LAND MANAGEMENT
 Oklahoma Field Office
 201 Stephenson Parkway, Suite 1200
 Norman, Oklahoma 73072
www.blm.gov/nm

**ENVIRONMENTAL
General CONDITIONS OF APPROVAL**

Operator: Devon Energy Production Company LP
Well Name: MAD DOG 31_30-14N-11W 1HX
Lease No: 14-20-205-16391
SME: Private Surface Owner

Location:

SHL: 239' FSL & 205' FEL, (SESE), Sec. 31, T. 14 N., R. 11 W., I.M., Blaine County, OK
BHL: 50' FNL & 380' FEL, (NENW), Sec. 30, T. 14 N., R. 11 W., I.M., Blaine County, OK

A copy of the CONDITIONS OF APPROVAL must be furnished to your field representative.

1. **Verbal notification shall be given to the assigned BLM Natural Resource Specialist, at least 72 HOURS PRIOR TO PAD CONSTRUCTION. Refer to page 2 for BLM contact information.**

2. Approval of this APD does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease that would entitle the applicant to conduct operations thereon. In addition, approval of this APD does not imply that the operator has legal access to the drilling location. When crossing private surface 43 CFR 3814 regulations must be complied with and when crossing public surface off-lease the operator must have approved rights-of-way.

3. This APD is valid for two years from the date of approval or until the oil and gas lease expires/terminates, whichever occurs first. If drilling of this permitted well is to result in an extension of the lease term, diligent operations (actual drilling) must be in progress before and continue through the lease expiration date and must continue diligently until well completion, advance lease rentals must have been paid, and a letter stating drilling operations were in progress must be submitted to this office no later than five days past the lease expiration date. If the APD terminates, any surface disturbance created under the application must be reclaimed according to an approved plan.

4. All applicable local, state and/or federal laws, regulations, and/or statutes must be complied with.

5. A complete copy of the approved APD must be at the drill site during the construction of the roads and drill pad, the drilling of the well, and the completion of the well.

*BLM- Oklahoma Field Office- ENVIRONMENTAL Conditions of Approval: Devon-MAD
DOG 31_30-14N-11W 1HX*

Approval Date: 04/03/2018

BLM Contact Information:

Natural Resource Specialist (NRS):	Mr. Ty Swirin	(405) 579-7175 office	tswirin@blm.gov
Archeologist:	Mr. Jamie Palmer	(405) 579-7173 office	jpalm@blm.gov
Wildlife:	Mr. George Thomas	(405) 579- 7176 office (918) 344-7874 cell	gthomas@blm.gov

Oklahoma Field Office (OKFO)
201 Stephenson Parkway, Suite 1200
Norman, OK 73072
www.blm.gov/nm

(405) 579-7100

“SPECIAL CONDITIONS OF APPROVAL”

REVIEW and COMPLY with the following for the LIFE of this well:

1. As stated in 43 CFR 3162.3 2, the issuance of this APD does not grant, convey, authorize, allow or otherwise imply approval or permission to conduct any associated activities off the approved pad area (i.e. well pad, access road, pipeline easement, utility easement). All surface disturbing activities associated with the drilling of this well will be restricted to the approved areas.
2. If the operator and/or surface owners wants or attempts to change or modify any of the terms and conditions of approval, the applicant/operator must contact the BLM OFO Natural Resource at tswirin@blm.gov or telephone at ((405) 579-7175 or 7100) before considering or implementing any changes or stipulations.
3. Operator shall give at least 48 hours’ notice to the Natural Resource Specialist (Ty Swirin) via e-mail at tswirin@blm.gov or telephone at ((405) 579-7175 or 7100) prior to any well pad construction or drilling activities.

Archeology/Cultural:

4. If any new discoveries of archaeological material such as flint or stone tools, pottery, human bone, fire hearths, historic glass, ceramics, metal, or building foundations are exposed anytime during exploration operations; then all work at the location of such artifacts shall stop immediately and the operator and its contractors or subcontractors will immediately contact BLM Multi-Resources Assistant Manager, Carolyn Russell at 405-579-7170; and the State Historical Preservation Office called immediately. No further work at the location of artifacts should begin until the BLM notifies the operator to proceed

a. In the event that lease development practices are found in the future to have an adverse effect on significant cultural resources, Traditional Cultural Properties, or paleontological resources, the operator and the BLM, in consultation with the affected tribe(s), the State Historic Preservation Office will take action to mitigate or negate those effects. Measures include, but are not limited to physical barriers to protect resources, relocation of practices responsible for the adverse effects, or other treatments as appropriate.

b. All surface disturbances must be kept within the proposed ground disturbance as it currently exists in the APD. Expansion of the pad or widening of the road is prohibited unless expressly authorized by the BLM archaeologist. Any “in kind” land disturbing activities associated with this project at the request of the land owner are prohibited unless cultural clearance is provided and a cultural resources report is submitted by a BLM permitted archaeologist. These activities include but are not limited to: destruction of buildings, improvement of roads, removal of trees, bushes or any clear-cutting, or any other activity that would disturb the ground surface outside of the currently BLM approved areas.

c. These conditions apply as essential terms and conditions of this APD. These requirements are made to comply with Section 106 of the National Historic Preservation Act as amended, the Native American Graves Protection and Repatriation Act, and the Code of Federal

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DOG 31_30-14N-11W 1HX*

Regulations 36 CFR Part 800. Having gone through the permitting process successfully, **Devon Energy Production Company LP** is fully aware that any future project that causes ground disturbance prior to a permit being issued by the BLM, will be a violation of NHPA and will be considered Knowing and Willful and may result in a denial of permit and will be forced to remedy any violation regardless of cost.

d. If human remains are discovered the procedures of the Oklahoma Burial Desecration Law (Oklahoma Statute Chapter 47, Section 1168.0 - 1168.6), Texas Health & Safety Code (Section 711.010 Unknown or Abandoned Cemetery), or Kansas Unmarked Burial Sites Statute and Regulations (K. S. A 75-2741) shall apply.

e. This authorization does not permit any surface disturbance on any other Federal or State Surface management agency or private land owners. The operator or their agent is responsible for obtaining permits, permissions, or Rights-of-ways from other surface management agencies prior to any ground disturbance and ensuring that cultural resources surveys are approved by those agencies.

Surface Disturbance:

5. No construction or routine maintenance activities will be performed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 6 inches deep, the soil shall be deemed too wet.

6. If soil is removed, at least the top 6 inches of soil material, or whatever salvageable, will be stripped and stockpiled (separate from the spoils pile) on an unutilized construction zone of the well pad. The stockpiled soil material will be spread on the portions of the well pad, which are to be reclaimed (including the cut and fill slopes and all portions of the well pad outside of the production facility) prior to reseeding. Spreading will not be done when the ground or topsoil is frozen or wet.

7. At a minimum, effectively install silt fencing (screening) and/or weed-free hay/straw bales prior to beginning any clearing/construction activities. Silt fencing will be installed (and maintained) adjacent to the entire area to be leveled and cleared (around all construction sites; pad, access road, and pipeline) so as to minimize the movement of materials from the BLM approved areas of surface disturbance to adjacent lands or drainages. Placement should be along all sides of the pad except for those areas needed for vehicular access. The bales need to be installed, maintained, and replaced in such a manner as to provide effective control of any surface runoff and/or erosion that may occur. A double row of hay bales will be used where necessary. These measures will be effectively maintained until the well is in active/production stage or has been plugged and abandoned, and successful stabilization, reclamation and restoration is achieved. These erosion control measures are only needed for the duration of construction, drilling/completion, production (only if ground has not been stabilized), and reclamation as needed to prevent soil movement.

8. The access road and pad may be surfaced with rock aggregate per operator and surface owner's agreement. Surfacing or additional surfacing will be required in the event there is resource or excessive road damage.

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Production:

9. All production related facilities/equipment will be painted, and all painted surfaces will be maintained to ensure its integrity, according to API, BLM, and surface owner specifications.

10. A fluid impermeable secondary containment dike/berm will be constructed/placed around any tank battery and facilities according to 40 CFR 112.7. No sumps, pumps, drains, lines or other means will be used to remove/discharge water collected within the secondary containment except to remove for on-site storage/off-site disposal via approved storage tanks and/or transport systems. The dike/berm and the entire containment area will be graveled. A step or walkway will be placed over the dike/berm to gain access to the tank battery.

11. Dike & berm the tank battery that will receive fluids from this well. The dike/berm will be impervious and designed according to requirements of 40 CFR 112. The EPA has a booklet (July 1992) available titled "Information on SPCC Plans – 40 CFR 112." Page 20 of this booklet describes, in detail, how tank battery dikes (berms) are to be constructed.

12. If the well is successful, all production equipment, facilities and tanks including well-head and above-ground piping/equipment shall be properly enclosed to exclude livestock if present.

13. If a compressor or pump-jack shall be used at any point over the life of the well, noise mitigation may be required at the discretion of the landowner. If noise mitigation is required, a 48.6 dB[A] Leq noise level will be enforced 100 feet from a dwelling/home in a direct line between the noise source and the dwelling/home.

14. During production operations the location and access road will be policed and kept free from all debris and garbage.

Reclamation:

15. After plugging operations are complete, and prior to reclamation, all contaminated soil, cables, drums, thread protectors, trash/debris, and unnecessary materials/equipment or imported gravel, etc., shall be removed and hauled to an authorized permitted disposal facility.

16. The entire area will be returned to its original contour or as directed by the surface owner. Stockpiled topsoil will be returned to all disturbed areas or, if needed, clean soil or topsoil would be added. All disturbed areas should be ripped to a depth of 12-24 inches and disked prior to topsoil placement and seeding.

17. Establish vegetation on all areas of the location to be reclaimed. This phase of the reclamation process should be accomplished by using seed or sod. Current policy recommends that these areas be restored with native vegetation in regards to both species and structure (grass, shrubs or trees). In those areas where trees or shrubs are planted, grass should be planted in conjunction to provide stabilization until trees are mature. This recommended reclamation is contingent upon the wishes of the surface owner and/or the surface management agency. Seeding will be repeated if a satisfactory

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stand is not obtained as determined by the Authorized Officer upon evaluation after the second growing season.

18. Use only certified weed-free seed. It is recommended to use the appropriate seed mixture, according to NRCS site guidelines, for the site unless the surface owner or surface managing agency prefers a different seed mix. Under no circumstances should the seed mixture contain any species listed by the State of Oklahoma as noxious or invasive.

19. All areas of the surface disturbance (i.e. well pad, access road, pipeline, etc.) that are not needed or used in the production or operation of the well shall be reclaimed, immediately as described in the approved APD.

20. After the well is no longer in production, complete reclamation of the site will begin as soon as possible, but in no case longer than sixty (60) days from final plugging of the well and completed within thirty (30) days, weather permitting, unless approved otherwise by the BLM and surface owner.

21. The final fill slope prior to re-seeding will not be steeper than a 3:1 Ratio. To obtain this ratio, pits and slopes will be back-sloped into the pad upon completion of drilling. Construction slopes can be much steeper during drilling, but will be re-contoured to the above ratio during reclamation. Production equipment (including any facilities associated with pipeline construction) will be placed on location as not to interfere with reclaiming the cut and fill slopes to their proper ratio. If equipment is found to interfere with the proper reclamation of the slope, the company will be required to move the equipment so proper re-contouring can occur.

22. Operator must provide proof or certification of water permit for use in project well(s). If the source of water used on the project well(s) changes to a different source from what was analyzed in the original surface use plan; then the proposed new water source is to be submitted to BLM on Sundry Form 3160-5.

Wildlife Resource General Conditions of Approval (WRGCOAs)

The Bureau of Land Management (BLM) and the United States Fish and Wildlife Service (Service) have cooperatively developed the following 12 Wildlife Resource General Conditions of Approval (WRGCOA's). These WRGCOA's are conservation measures (CM's) in all of BLM's (in-house) biological evaluations. These required WRGCOA's are Best Management Practices (BMP's) incorporated into all approved permits issued by BLM for mineral extraction projects. The BLM does not normally require certain technologies to accomplish goals; but rather identifies the end goal, allowing the Operator to determine the optimal approach for accomplishing that goal. They are designed to minimize impacts (cumulative and otherwise) to ground water, surface water, wetlands, riparian zones, migratory birds, threatened and/or endangered species and other significant biological resources.

The operator (&/or their assigns) will implement the following:

1. Migratory Bird Protection:

Maximize the protection of migratory birds and their habitat following guidelines outlined in:

- The Migratory Bird Treaty Act (MBTA) of 1918.
- Executive Order 13186, Responsibilities of Federal Agencies to Protect Migratory Birds.
- April 12, 2010 Memorandum of Understanding between the BLM and Service titled "To Promote the Conservation of Migratory Birds".

Specifically, the BLM requires the following conservation measures to be implemented by the Operator or its Agent as specific migratory bird protection measures:

1. Avoid any take of migratory birds and/or minimize the loss, destruction, or degradation of migratory bird habitat while completing the proposed project or action.
2. If the proposed project or action includes a reasonable likelihood that take of migratory birds will occur, then complete actions that could take migratory birds outside of their nesting season. This includes clearing or cutting of vegetation, grubbing, etc.
3. Conduct a pre-construction bird nesting survey. If no migratory birds are found nesting in the proposed project or action area immediately prior to the time when construction and associated activities are to occur, the project activity may proceed as planned. If migratory bird nesting is present in the proposed project or action area, work must cease until fledglings have left the nests.

NTL-96-01-TDO: The BLM requires that the Operator follow all guidelines set forth in the Tulsa District Office Notice to Lessees and Operators (NTL-96-01-TDO) under permits issued by the BLM with the jurisdiction of.

This federal and Indian oil and gas leases operating NTL facilitates BLM oil and gas permitted activity through required procedure designed to minimize bird and bat mortality. Modification requirements regarding all open-vent exhaust stacks, open earthen pits, and open-topped tanks are clearly addressed in the NTL-96-01-TDO, and can be found at the following web address:

www.blm.gov/nm/st/en/prog/energy/oil_and_gas/notice_to_lessees/ntl_96-01.html

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2. American Burying Beetle Protection: Follow all BLM and Service protocol established regarding areas where the American burying beetle (ABB) is known or suspected to exist. The US Fish and Wildlife Service has established a protocol for increasing protection of American burying beetles in areas where they are known to exist and possibly over-winter. The Service is clear regarding ABB protocol, including survey procedures and time/distance regulations. Burying of transmission lines cannot be implemented in known ABB habitat during the over-winter period. The web-site describing ABB protocol is located at: <http://www.fws.gov/southwest/es/oklahoma/beetle1.htm>

3. Pipelines and Wetland Measures: Specific surface water BMP control measures will be implemented prior to any surface disturbance activity where wetland habitat exists. These BMP control measures will effectively prevent the flow of sediment loaded surface water during rain events into the wetland area. Surface water runoff that can impact wetlands detrimentally include but are not limited to that which runs off lease roads and well pad areas. Consideration must also be given to all pipeline installation in wetland areas. Pipeline installation will be implemented in a manner that does not impact wetland habitat. An example of this would be to bore under encountered wetlands rather than trench through them. It is the Operators responsibility to employ measures that protect wetlands from their activities.

4. Raptor Protection: Birds of prey, or raptors, are especially vulnerable to collision and/or electrocution because of their size and hunting behavior. Power poles that have inadequate spacing between the phases (hot wires), or unnecessary grounded metal, can kill raptors. All above ground transmission lines shall be constructed in such a way as to minimize electrocution of birds. This simple measure can be completed through construction of perch guards and the like. Detailed information and additional guidelines can be found in “*Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 1981*”, available from the Raptor Research Foundation, Inc. Temporary pipelines or other conduits needed to supply the drilling location with fresh water are not affected by this requirement and may remain on the surface and do not need to be buried.

5. 40 CFR 112, Surface Water and Groundwater Protection: Properly bermed tank batteries can prevent unnecessary contamination of the surface, surface water pathway, and groundwater. Contamination of any of the pathways can directly impact general wildlife and the environment. The BLM requires the Operator to dike & berm the tank battery that will receive fluids from this well.

The dike/berm will be impervious and designed according to requirements of 40CFR 112. The EPA has a booklet (July 1992) available titled “*Information on*

SPCC Plans – 40 CFR 112". Page 20 of this booklet describes, in detail, how tank battery dikes (berms) are to be constructed.

6. Vegetative Establishment: The BLM requires the establishment of vegetation on all areas of the location to be reclaimed. This phase of the reclamation process should be accomplished by using seed or sod. Current policy recommends that these areas be restored with native vegetation in regards to both species and structure (grass, shrubs or trees). In those areas where trees or shrubs are planted, grass should be planted in conjunction to provide stabilization until trees are mature. This recommended reclamation is contingent upon the wishes of the surface owner and/or the surface management agency.

7. Erosion Control: The BLM requires that erosion control measures prior to beginning any construction activities be effectively employed. These erosion control measures will be installed (and maintained) outside of the entire area to be leveled and cleared (around all construction sites; pad, access road and pipeline) so as to effectively minimize the movement of materials from the BLM permit site to adjacent lands or drainages. These measures will be effectively maintained until the well is producing or has been declared a dry hole and plugged. These erosion control measures are required for the duration of the construction, drilling and completion phases of this project and not for the life of the well.

8. Impervious Liners: Drilling operation fluids can contaminate the environment. The BLM requires that the Operator install an impervious liner under the drilling rig structure. Usually this will be the drilling rig substructure, operating equipment (diesel engines) and storage tanks (diesel fuel, lubricants, antifreeze, etc.); not the entire pad. This liner should extend into sumps and the cellar and into and along the ditches to prevent any fluids associated with the drilling process from coming into contact with earthen material. This liner will be washed off into lined ditches, lined sumps or into the lined cellar and then pumped to the lined sumps prior to being removed from the location. Metal catch pans may be used on isolated engines and/or storage tanks where the impervious liner may not be practical. The catch pans, if used, will need to be kept pumped and/or drained (not allowed to overflow). The contents of the metal catch pans may go to the lined sumps, lined cellar or pumped into tanks/trucks for disposal purposes.

9. Sumps: To further insure and minimize possible contamination of the environment, the BLM requires that all sumps be lined with impervious material (steel or concrete preferable) on all sides, and bottom. These sumps will, at all times, be below the level of the ditches so that the fluids in the ditches can flow into the sump without coming into contact with native soil or other earthen layer. These sumps must be emptied before overflowing. These sumps will also be covered so as to prevent accidental entry by migratory birds.

10. Rat and Mouse Hole: Additional contaminant control is required by making the rat hole and mouse hole impervious. This can be accomplished by installing cylinders (conductors, culverts or tin-horns) with concrete bottoms. The cylinders shall be installed in such a manner so as to prevent fluids from the pad surface from running into the cylinders, or entering between the cylinders and the earthen wall of the rat and/or mouse hole. The top of the cylinder should be above the pad surface. One option is to pour cement around the outside of the cylinders between the cylinders and the earthen hole. The cement could also be shaped/formed at an incline or raised (like a collar) above the ground level. Modifications to this approach shall first be cleared by submitting in writing the alternative method to a BLM staff biologist and engineer for review.

11. Drilling Cellar: The drilling cellar (concrete, metal, etc) must also be lined so as to make it as impervious as possible to prevent liquids discharged from the drill hole, or drained from the pad surface, from percolating into the soil. If needed, a pump will be installed to transfer fluids in the cellar to one of the lined sumps. The cellar will not be allowed to overflow.

12. Removal of Impervious Liners: Improper removal of impervious liners can defeat the purpose of the liner. Exercise caution and care when removing any of the impervious liners (geo-membrane, concrete, steel, etc.). The liquids and solids which have collected on/in the impervious liners will not be allowed to come into contact with the pad surface, parent soil or any other earthen layers during the cleanup of the site. The liners will be properly cleaned prior to removal or removed in such a manner so as not to allow liquids/solids to escape. Preferably the liner will be washed off into lined ditches, lined sumps or into the lined cellar and then pumped to the lined sumps prior to being removed.

NTL 96-01

Notice to Lessees and Operators (NTL) of Federal and Indian Oil and Gas Leases Operating Under Permits Issued by the Bureau of Land Management within the Jurisdiction of the Tulsa District Office (i.e., Kansas, Oklahoma and Texas)
(NTL 96-01 TDO)

Modification of Oil and Gas Facilities to Minimize Bird and Bat Mortality

I. BACKGROUND:

The subject of bird and bat mortalities associated with oil and gas facilities has become a concern not only nationwide but worldwide and has prompted many oil and gas companies to modify existing and new production facilities to minimize accidental deaths of birds, bats, and other wildlife.

Open-vent exhaust stacks are used as perches by many species of birds, especially during migration. Death may result from carbon monoxide poisoning, incineration, or becoming trapped in the units.

Open pits and tanks on production sites periodically contain salt water, oil or oil by-products. These pits and tanks present a hazard to birds because they appear to be fresh water. Birds, particularly waterfowl and shorebirds, are lured into the pits or tanks thinking they are places to feed, drink, or rest. This results in a loss of hundreds of thousands of birds nationwide.

The potential hazard to birds and bats from open-vent exhaust stacks and open pits and tanks warrants mitigative action by the Bureau of Land Management (BLM).

The Migratory Bird Treaty Act of 1918, as amended, authorizes the Secretary of Interior to adopt such measures necessary to protect and preserve migratory raptor and other avian species. Additionally, the BLM is responsible for implementing protective management goals identified in the Nongame Migratory Bird Habitat Conservation Strategy Plan. The Federal Land Policy and Management Act (FLPMA) declares that the policy of the United States is to manage the public lands in a manner that will protect the quality of scientific, ecological, and environmental values.

II. PURPOSE:

To minimize the likelihood of accidental death of birds and bats on oil and gas facilities under the jurisdiction of the BLM.

III. AUTHORITY:

Under the authority of Title 43 Code of Federal Regulations (CFR) Part 3161.2, Part 3162.5-1 and Part 3164.2, lessees/operators on Federal and Indian oil and gas leases can be required to modify production equipment when needed to protect

natural resources and environmental quality.

IV. REQUIREMENTS:

A. All open-vent exhaust stacks on production vessels designed to heat the product using an open flame (as opposed to electrically heated) shall be constructed, modified and/or otherwise equipped and maintained to prevent birds and bats from entering and to discourage perching and nesting. Such production vessels include, but may not be limited to, heater-treaters, separators, dehydrators, and in-line units. This requirement does not apply to compression type equipment.

B. All open earthen pits will be effectively netted or otherwise covered, and maintained, until such time as the pits are filled and/or reclaimed. Minimizing the likelihood of accidental deaths of migratory birds is the goal. This netting or cover shall be installed no later than forty-five (45) days after the setting of the production casing string or completion of plugging as a dry hole. All pits, if not netted or covered, will be adequately equipped during the 45 day interim period with other bird deterrent devices. Such devices to be used during the interim period may include, but not be limited to, streamers, pinwheels and/or noise devices. Variances may be requested. The 45 day interim period for completion of covering or netting pits in no way limits the operator's responsibility should migratory birds be found dead in the pits within the interim period or during the actual drilling phase.

C. All open topped (non-earthen) tanks will be effectively netted or otherwise covered and maintained so as to minimize the likelihood of accidental deaths of migratory birds. This netting or cover shall be installed no later than four (4) days after the setting of the production casing string or completion of plugging as a dry hole. All tanks installed for production purposes will be immediately netted or covered. All tanks shall remain netted or covered until such time as they are removed from the location. The granting of a four (4) day interim period for completion of covering or netting tanks associated with the drilling process in no way limits the operator's responsibility should migratory birds be found dead in the tanks within the interim period or during the actual drilling phase.

V. TIME FRAMES:

1. All open-vent exhaust stacks, open pits, and tanks existing as of the effective date of this NTL will be modified as required under Section IV, Requirements, A., B. and C. within a twelve (12) month period from the same effective date of this NTL.

2. All new oil and gas operations commenced after the time frames presented above (No. V.1.) will immediately incorporate requirement Numbers IV.A., IV.B. and IV.C. (above) as applicable.

VI. COMPLIANCE:

SLIM compliance inspections will include examinations for the use and effectiveness of these measures. Should these measures prove to be ineffective the BLM shall seek alternate measures to minimize the likelihood of accidental deaths of birds and bats. Failure to implement the requirements listed in this NTL will be considered failure to comply with a written order and a "Notice of Incidents of Noncompliance" may be issued.

APPROVED: Date: 8-15-96 Jim Sims
Tulsa District Manager



Application for Permit to Drill

APD Package Report

Date Printed:

APD ID:	Well Status:
APD Received Date:	Well Name:
Operator:	Well Number:

APD Package Report Contents

- Form 3160-3
- Operator Certification Report
- Application Report
- Application Attachments
 - Well Plat: 1 file(s)
- Drilling Plan Report
- Drilling Plan Attachments
 - Blowout Prevention Choke Diagram Attachment: 1 file(s)
 - Blowout Prevention BOP Diagram Attachment: 1 file(s)
 - Casing Design Assumptions and Worksheet(s): 4 file(s)
 - Proposed horizontal/directional/multi-lateral plan submission: 1 file(s)
 - Other Facets: 5 file(s)
- SUPO Report
- SUPO Attachments
 - New Road Map: 1 file(s)
 - New road access plan attachment: 1 file(s)
 - Attach Well map: 1 file(s)
 - Production Facilities map: 1 file(s)
 - Water source and transportation map: 1 file(s)
 - Well Site Layout Diagram: 1 file(s)
 - Other SUPO Attachment: 3 file(s)
- PWD Report
- PWD Attachments
 - None
- Bond Report
- Bond Attachments
 - None

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: Chelsey Green**Signed on:** 10/12/2017**Title:** Regulatory Compliance Professional**Street Address:** 333 West Sheridan Avenue**City:** Oklahoma City**State:** OK**Zip:** 73102**Phone:** (405)228-8595**Email address:** Chelsey.Green@dvn.com**Field Representative****Representative Name:****Street Address:****City:****State:****Zip:****Phone:****Email address:**

APD ID: 10400022718

Submission Date: 11/21/2017

Highlighted data reflects the most recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

[Show Final Text](#)

Well Type: OTHER

Well Work Type: Drill

Section 1 - General

APD ID: 10400022718

Tie to previous NOS? 10400021348

Submission Date: 11/21/2017

BLM Office: OKLAHOMA

User: Chelsey Green

Title: Regulatory Compliance Professional

Federal/Indian APD: IND

Is the first lease penetrated for production Federal or Indian? IND

Lease number: 14-20-205-16391

Lease Acres: 160

Surface access agreement in place? N

Allotted? YES

Reservation: CHEYENNE & ARAPAHO

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: DEVON ENERGY PRODUCTION COMPANY LP

Operator letter of designation:

Operator Info

Operator Organization Name: DEVON ENERGY PRODUCTION COMPANY LP

Operator Address: 333 West Sheridan Avenue

Zip: 73102

Operator PO Box:

Operator City: Oklahoma City

State: OK

Operator Phone: (405)552-6571

Operator Internet Address: aletha.dewbre@dvn.com

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: MAD DOG 31_30-14N-11W

Well Number: 1HX

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: MISSISSIPPIAN

Pool Name:

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

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: SINGLE WELL

Multiple Well Pad Name:

Number:

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OTHER

Describe Well Type: Oil and/or Gas

Well sub-Type: APPRAISAL

Describe sub-type:

Distance to town:

Distance to nearest well: 652 FT

Distance to lease line: 205 FT

Reservoir well spacing assigned acres Measurement: 1280 Acres

Well plat: 2017_8_31_MAD_DOG_31_30_14N_11W_1HX_20170831141930.pdf

Well work start Date: 04/15/2018

Duration: 30 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number:

	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	239	FSL	205	FEL	14N	11W	31	Aliquot SESE	35.6390492	-98.4025265	BLAINE	OKLAHOMA	INDIAN	F	FEE	1655	0	0
KOP Leg #1	50	FSL	379	FEL	14N	11W	31	Aliquot SESE	35.6385322	-98.4031128	BLAINE	OKLAHOMA	INDIAN	F	FEE	-11288	12953	12943
PPP Leg #1	2641	FSL	379	FEL	14N	11W	31	Aliquot SENE	35.6390492	-98.4025265	BLAINE	OKLAHOMA	INDIAN	I	14-20-205-16391	1655	0	0

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

	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
PPP Leg #1	165	FSL	379	FEL	14N	11W	31	Aliquot SESE	35.6388475	-98.4031128	BLAINE	OKLAHOMA	INDIAN	F	FEE	-11599	13292	13254
EXIT Leg #1	165	FNL	380	FEL	14N	11W	30	Aliquot NENE	35.666912	-98.403113	BLAINE	OKLAHOMA	INDIAN	F	FEE	-11766	23557	13421
BHL Leg #1	50	FNL	380	FEL	14N	11W	30	Aliquot NENE	35.6672269	-98.4031131	BLAINE	OKLAHOMA	INDIAN	F	FEE	-11766	23671	13421



OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO.: 1HX
GOOD DRILL SITE: YES
BLAINE COUNTY, STATE: OK
GROUND ELEVATION: 1655.85 GR. AT STAKE
SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W
BOTTOM HOLE: 30-14N-11W.L.M.
DISTANCE TO NEAREST WELL: 7085'
 MUSE 1-31H API#3501123285

ACCESSIBILITY TO LOCATION: FROM SOUTH LINE
TOPOGRAPHY & VEGETATION: LOCATION FELL IN THE CORNER OF A FIELD

DISTANCE & DIRECTION FROM HWY JCT OR TOWN: 5.0MI± W OF GEARY
 FROM THE TOWN OF GEARY HEAD NORTH ON US-281 0.5MI± TO E950RD,
 HEAD WEST 4.8MI± TO INTER. OF E950RD & N2580RD, PAD SITE IS ON THE NW CORNER.

PLEASE NOTE THAT THIS LOCATION WAS STAKED ON THE GROUND UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL LAND SURVEYOR, BUT ACCURACY OF THIS EXHIBIT IS NOT GUARANTEED. PLEASE CONTACT CRAFTON TULL PROMPTLY IF ANY INCONSISTENCY IS DETERMINED, GPS DATA IS OBSERVED FROM RTK-GPS.
 NOTE: X AND Y DATA SHOWN HEREON FOR SECTION CORNERS MAY NOT HAVE BEEN SURVEYED ON THE GROUND, AND FURTHER, DOES NOT REPRESENT A TRUE BOUNDARY SURVEY.

GRAPHIC SCALE IN FEET



SURFACE HOLE DATA

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD27

X: 1880488.9

Y: 232849.3

GPS DATUM: NAD27

LAT: 35.63900073

LONG: -98.40218207

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD83

X: 1848889.4

Y: 232873.6

GPS DATUM: NAD83

LAT: 35.63904922

LONG: -98.40252650

BOTTOM HOLE DATA

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD27

X: 1880357.4

Y: 243106.9

GPS DATUM: NAD27

LAT: 35.66717909

LONG: -98.40276782

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD83

X: 1848757.7

Y: 243131.2

GPS DATUM: NAD83

LAT: 35.66722687

LONG: -98.40311306

FIRST PERFORATION DATA

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD27

X: 1880313.1

Y: 232776.3

GPS DATUM: NAD27

LAT: 35.63879808

LONG: -98.40277237

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD83

X: 1848713.7

Y: 232800.5

GPS DATUM: NAD83

LAT: 35.63884658

LONG: -98.40311681

BOTTOM HOLE INFORMATION

PROVIDED BY OPERATOR LISTED.

BASIS OF ELEVATION:
 TOPO ELEVATION = 1653.19'
 AT E/4, SECTION 31, 14N-11W
 TOPO ELEVATION = 1653.59'
 AT SE COR. SECTION 31, 14N-11W
 TOPO ELEVATION = 1643.45'
 AT S/4, SECTION 31, 14N-11W

CERTIFICATION:
 THIS IS TO CERTIFY THAT THIS WELL LOCATION EXHIBIT WAS COMPILED AND PREPARED UNDER MY SUPERVISION.

LAST PERFORMANCE DATA

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD27

X: 1880357.1

Y: 242991.9

GPS DATUM: NAD27

LAT: 35.66686315

LONG: -98.40276693

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD83

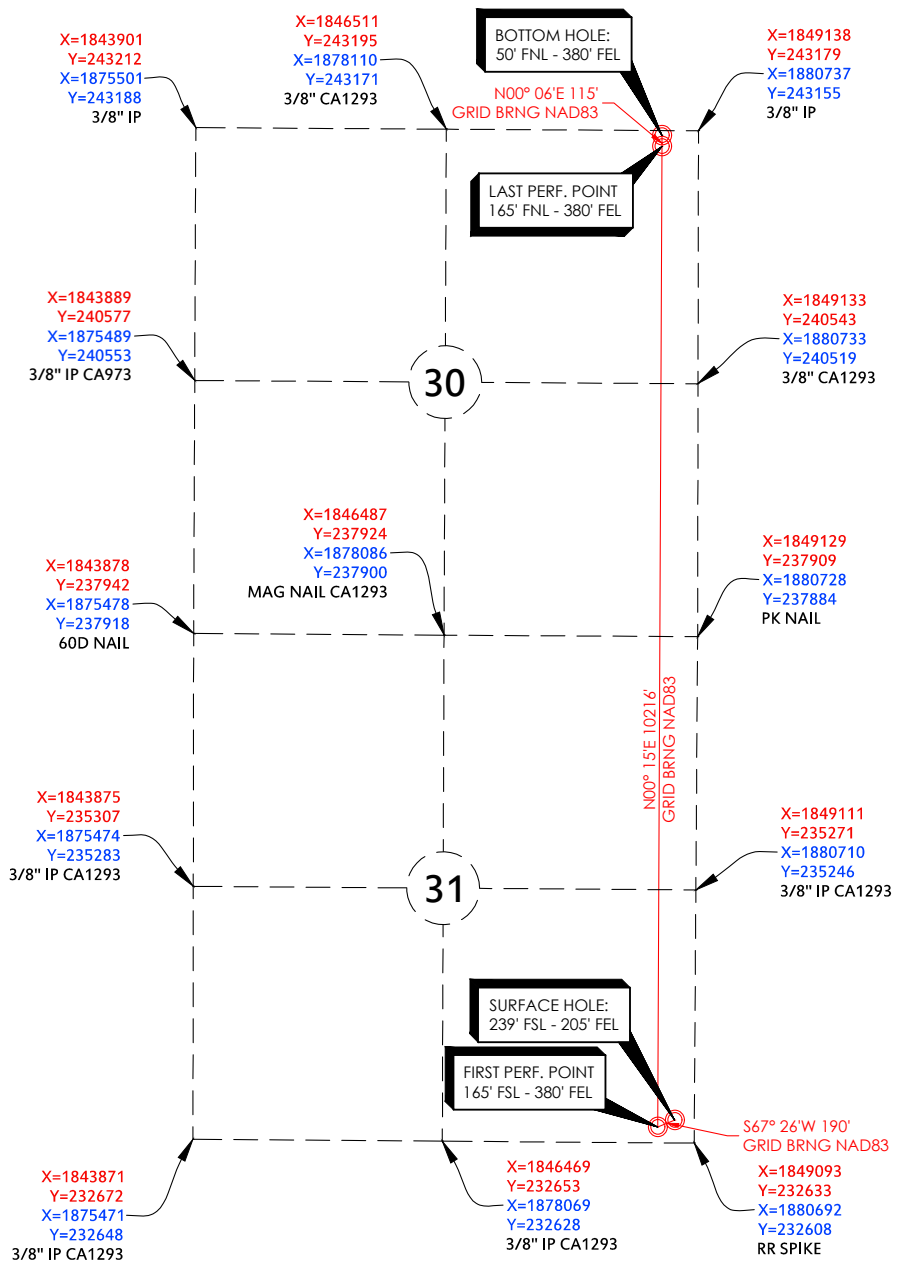
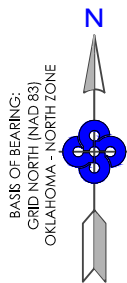
X: 1848757.5

Y: 243016.2

GPS DATUM: NAD83

LAT: 35.66691095

LONG: -98.40311216



DENVER WINCHESTER PLS 1952



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	
	PART OF THE SE/4 OF SECTION 31, 14N, 11W WELL LOCATION EXHIBIT BLAINE COUNTY, OKLAHOMA
SCALE: 1" = 2000'	DRAWING: 16601798-WELL
PLOT DATE: 08-31-2017	DRAWN BY: SQ

300 Pointe Parkway Blvd
Yukon, OK 73099
405.787.6270 t 405.787.6276 f
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Crafton Tull
SURVEYING
CERTIFICATE OF AUTHORIZATION:
CA 973 (PE/LS) EXPIRES 6/30/2018

SHEET NO.: 1 OF 2



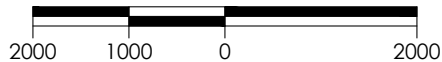
OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO.: 1HX
GOOD DRILL SITE: YES
BLAINE COUNTY, STATE: OK
GROUND ELEVATION: 1655.85 GR. AT STAKE
SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W
BOTTOM HOLE: 30-14N-11W.L.M.
DISTANCE TO NEAREST WELL: 7085'
 MUSE I-31H API#3501123285

ACCESSIBILITY TO LOCATION: FROM SOUTH LINE
TOPOGRAPHY & VEGETATION: LOCATION FELL IN THE CORNER OF A FIELD

DISTANCE & DIRECTION FROM HWY JCT OR TOWN: 5.0MI± W OF GEARY
 FROM THE TOWN OF GEARY HEAD NORTH ON US-281 0.5MI± TO E950RD,
 HEAD WEST 4.8MI± TO INTER. OF E950RD & N2580RD, PAD SITE IS ON THE NW CORNER.

PLEASE NOTE THAT THIS LOCATION WAS STAKED ON THE GROUND UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL LAND SURVEYOR, BUT ACCURACY OF THIS EXHIBIT IS NOT GUARANTEED. PLEASE CONTACT CRAFTON TULL PROMPTLY IF ANY INCONSISTENCY IS DETERMINED, GPS DATA IS OBSERVED FROM RTK-GPS.
 NOTE X AND Y DATA SHOWN HEREON FOR SECTION CORNERS MAY NOT HAVE BEEN SURVEYED ON THE GROUND, AND FURTHER, DOES NOT REPRESENT A TRUE BOUNDARY SURVEY.

GRAPHIC SCALE IN FEET



SURFACE HOLE DATA

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD27

X: 1880488.9

Y: 232849.3

GPS DATUM: NAD27

LAT: 35.63900073

LONG: -98.40218207

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD83

X: 1848889.4

Y: 232873.6

GPS DATUM: NAD83

LAT: 35.63904922

LONG: -98.40252650

BOTTOM HOLE DATA

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD27

X: 1880357.4

Y: 243106.9

GPS DATUM: NAD27

LAT: 35.66717909

LONG: -98.40276782

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD83

X: 1848757.7

Y: 243131.2

GPS DATUM: NAD83

LAT: 35.66722687

LONG: -98.40311306

FIRST PERFORATION DATA

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD27

X: 1880313.1

Y: 232776.3

GPS DATUM: NAD27

LAT: 35.63879808

LONG: -98.40277237

STATE PLANE COORDINATES:

ZONE: OK-NORTH NAD83

X: 1848713.7

Y: 232800.5

GPS DATUM: NAD83

LAT: 35.63884658

LONG: -98.40311681

BOTTOM HOLE INFORMATION

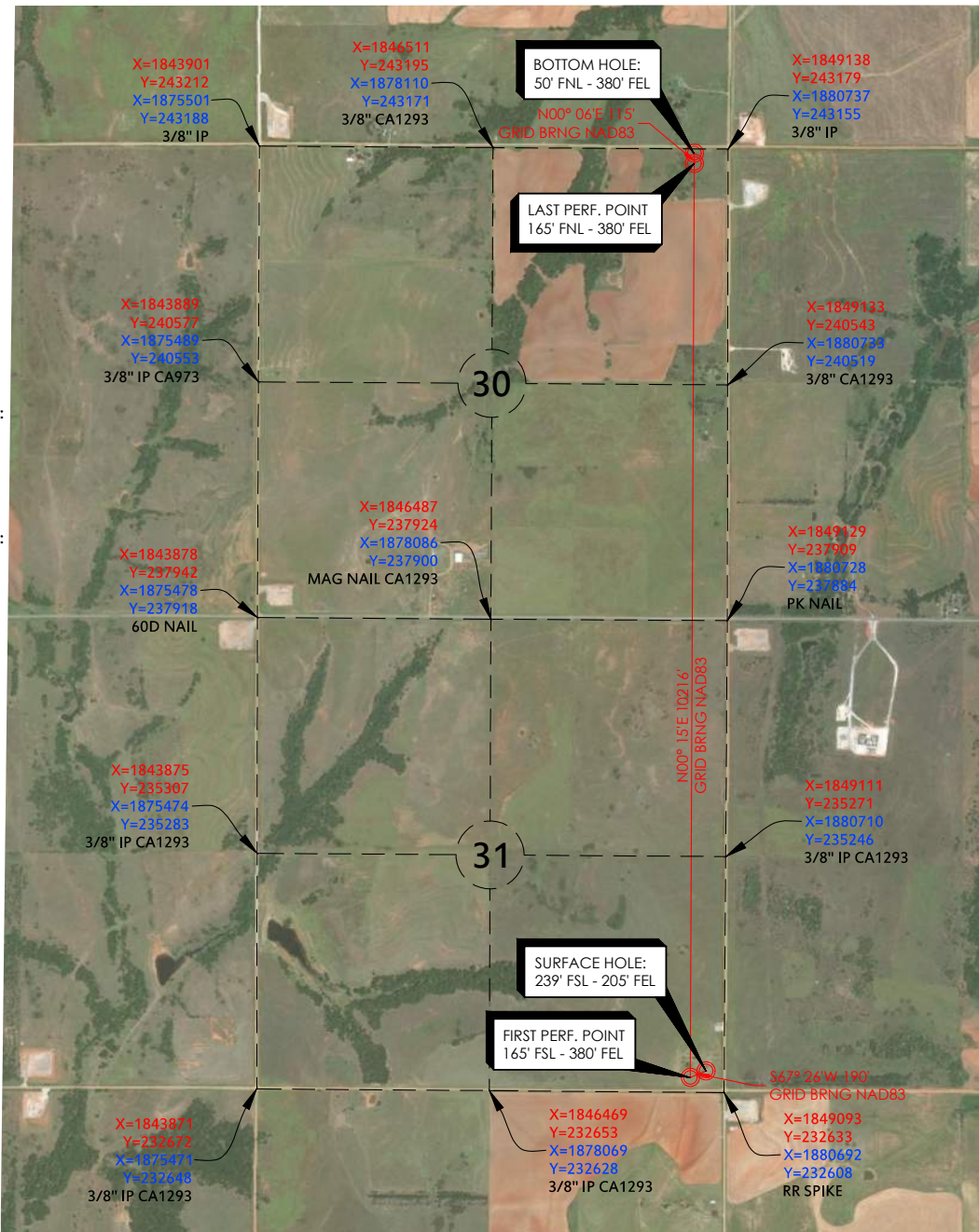
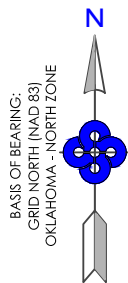
PROVIDED BY OPERATOR LISTED.

BASIS OF ELEVATION:

TOPO ELEVATION = 1653.19'
 AT E/4, SECTION 31, 14N-11W
 TOPO ELEVATION = 1653.59'
 AT SE COR. SECTION 31, 14N-11W
 TOPO ELEVATION = 1643.45'
 AT S/4, SECTION 31, 14N-11W

CERTIFICATION:

THIS IS TO CERTIFY THAT THIS WELL LOCATION EXHIBIT WAS COMPILED AND PREPARED UNDER MY SUPERVISION.



DENVER WINCHESTER

PLS 1952



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:

PART OF THE SE/4 OF SECTION 31, 14N, 11W
 WELL LOCATION EXHIBIT
 BLAINE COUNTY, OKLAHOMA

300 Pointe Parkway Blvd
 Yukon, OK 73099
 405.787.6270 t 405.787.6276 f
 www.craftontull.com



Crafton Tull
 SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

SCALE: 1" = 2000'
 PLOT DATE: 08-31-2017

DRAWING: 16601798-AERIAL
 DRAWN BY: SQ

SHEET NO.: 2 OF 2



DEVON ENERGY
OPERATOR: PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO.: 1HX
GOOD DRILL SITE: YES
BLAINE COUNTY, STATE: OK

ACCESSIBILITY TO LOCATION: FROM SOUTH LINE

TOPOGRAPHIC & VEGETATION: LOCATION FELL IN THE CORNER OF A FIELD

CONTOUR INTERVAL:
10'

GROUND ELEVATION: 1655.85 GR. AT STAKE

SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL

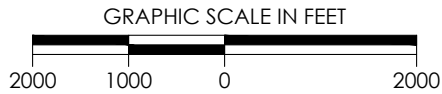
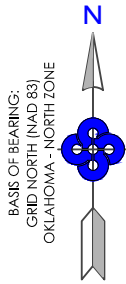
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W

BOTTOM HOLE: FOOTAGE: 50' FNL - 380' FEL

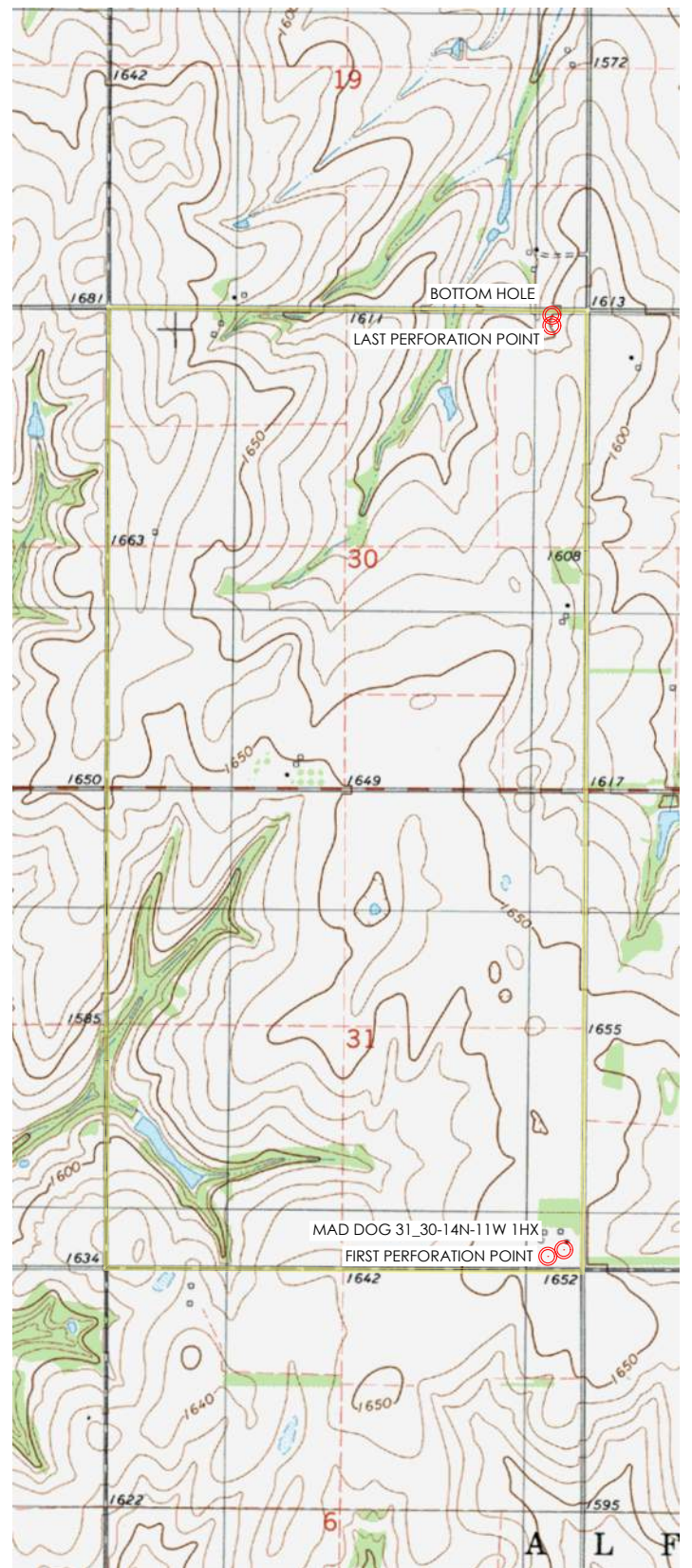
SECTION: 30 **TOWNSHIP:** 14N **RANGE:** 11W

DISTANCE & DIRECTION FROM HWY JCT OR TOWN: 5.0MI± W OF GEARY
 FROM THE TOWN OF GEARY HEAD NORTH ON US-281 0.5MI± TO E950RD,
 HEAD WEST 4.8MI± TO INTER. OF E950RD & N2580RD, PAD SITE IS ON THE NW
 CORNER.

DISTANCE TO NEAREST WELL: 7085'
 MUSE 1-31H API#3501123285



THE PURPOSE OF THIS MAP IS TO VERIFY THE LOCATION AND ELEVATION AS STAKED ON THE GROUND AND TO SHOW THE SURROUNDING TOPOGRAPHIC FEATURES. THE FOOTAGE SHOWN HEREON IS ONLY AS SCALED ONTO A USGS TOPOGRAPHIC MAP. PLEASE NOTE THAT THIS LOCATION WAS CAREFULLY STAKE ON THE GROUND UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL LAND SURVEYOR, BUT THE ACCURACY OF THIS SURVEY IS NOT GUARANTEED. PLEASE PROMPTLY CONTACT CRAFTON TULL IF AN INCONSISTENCY IS DETERMINED.



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	

PART OF THE SE/4
 SECTION 31, 14N, 11W, I.M.
 TOPOGRAPHIC VICINITY MAP
 BLAINE COUNTY, OKLAHOMA



300 Pointe Parkway Blvd
 Yukon, OK 73099
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 www.craftontull.com

Crafton Tull

® SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

SCALE: 1" = 2000'
 PLOT DATE: 08-31-2017

DRAWING:
 DRAWN BY:

16601798-QUAD
 SQ

SHEET NO.: 1 OF 1

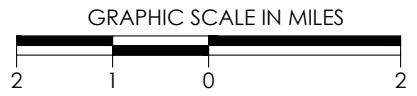
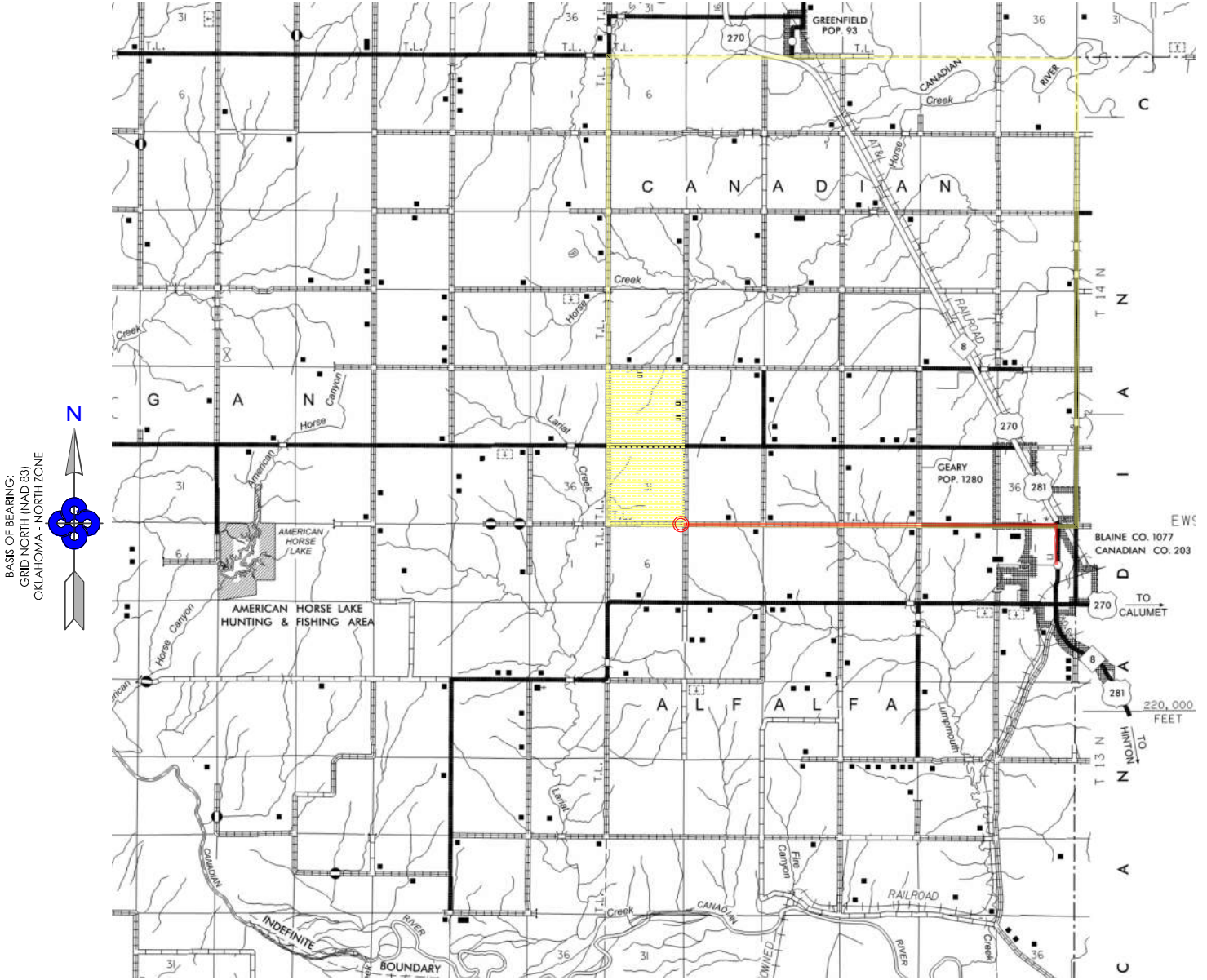


DEVON ENERGY
OPERATOR: PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO. 1HX
GOOD DRILL SITE. YES
BLAINE COUNTY, STATE: OK

GROUND ELEVATION: 1655.85 GR. AT STAKE
SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W
BOTTOM HOLE FOOTAGE: 50' FNL - 380' FEL
SECTION: 30 **TOWNSHIP:** 14N **RANGE:** 11W

DISTANCE TO NEAREST WELL: 7085'
 MUSE 1-31H API#3501123285

DISTANCE & DIRECTION FROM HWY JCT OR TOWN: 5.0MI± W OF GEARY
 FROM THE TOWN OF GEARY HEAD NORTH ON US-281 0.5MI± TO E950RD,
 HEAD WEST 4.8MI± TO INTER. OF E950RD & N2580RD, PAD SITE IS ON THE NW
 CORNER.



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	

PART OF THE SE/4
 SECTION 31, 14N, 11W, I.M.
 COUNTY HIGHWAY VICINITY MAP
 BLAINE COUNTY, OKLAHOMA

300 Pointe Parkway Blvd
 Yukon, OK 73099
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Crafton Tull
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 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

SCALE: 1/2" = 1 MILE
 PLOT DATE: 08-31-2017

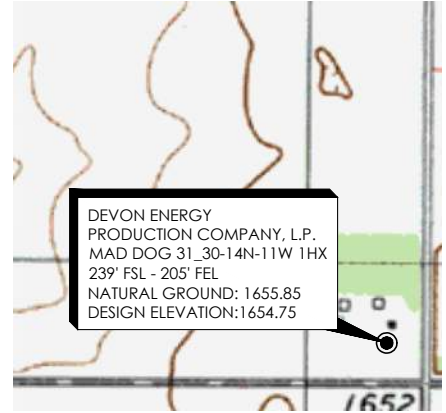
DRAWING:
 DRAWN BY:

16601798-HWY
 SQ

SHEET NO.: 1 OF 1

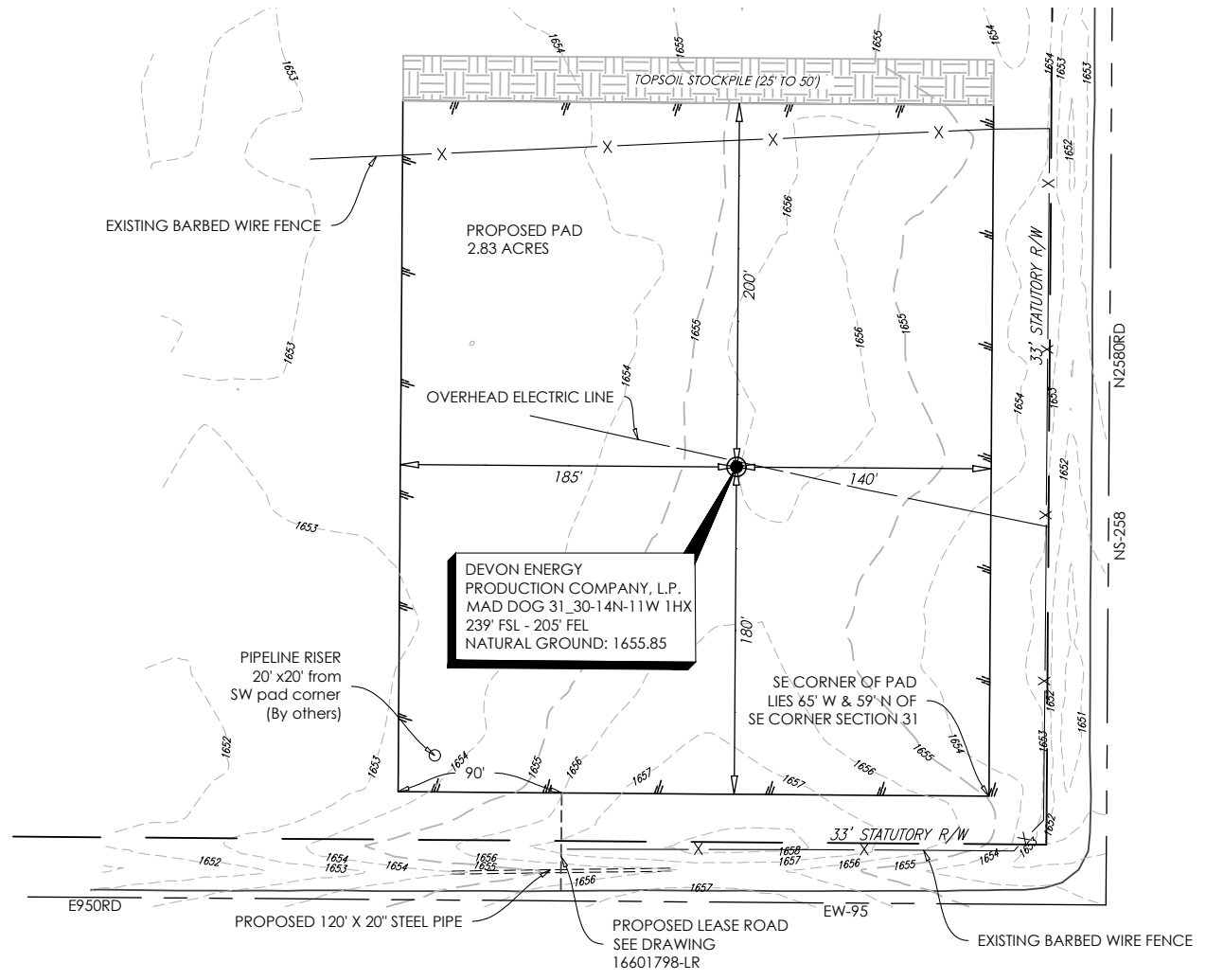
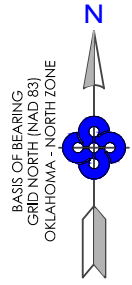


OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO. 1HX
GOOD DRILL SITE. YES
BLAINE COUNTY, STATE: OK
GROUND ELEVATION: 1655.85 GR. AT STAKE
SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W

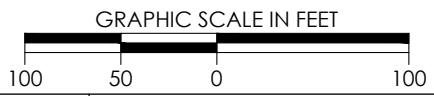


DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 MAD DOG 31_30-14N-11W 1HX
 239' FSL - 205' FEL
 NATURAL GROUND: 1655.85
 DESIGN ELEVATION: 1654.75

REED, WILLIAM J REVOCABLE TRUST
 SE/4, SEC. 31, 14N 11W I.M.



- NOTES:**
- THIS PROPOSED PLAT DOES NOT REPRESENT A TRUE BOUNDARY SURVEY
 - THE FOOTAGES AND TIES SHOWN HEREON ARE FROM LINES OF OCCUPATION AND MAY NOT BE FROM ACTUAL PROPERTY CORNERS.
 - OWNERSHIP SHOWN HEREON IS PROVIDED BY AND/OR VERIFIED WITH CLIENT.
 - INFORMATION SHOWN HEREON IS FOR CONSTRUCTION PURPOSES ONLY



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	

EXISTING CONTOURS
 PART OF THE SE/4 OF
 SECTION 31, 14N, 11W
 BLAINE COUNTY, OKLAHOMA

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Crafton Tull
 SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

G:\16601798_MADDOG\ENERGY\DWG_CLIPS\WELL_FLAT\BIA-DEVON-PAD-PROFILE.DWG 8/31/2017 6:47:37 AM DW2795



OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.

LEASE NAME: MAD DOG 31_30-14N-11W

GROUND ELEVATION: 1655.85 GR. AT STAKE

WELL NO. 1HX

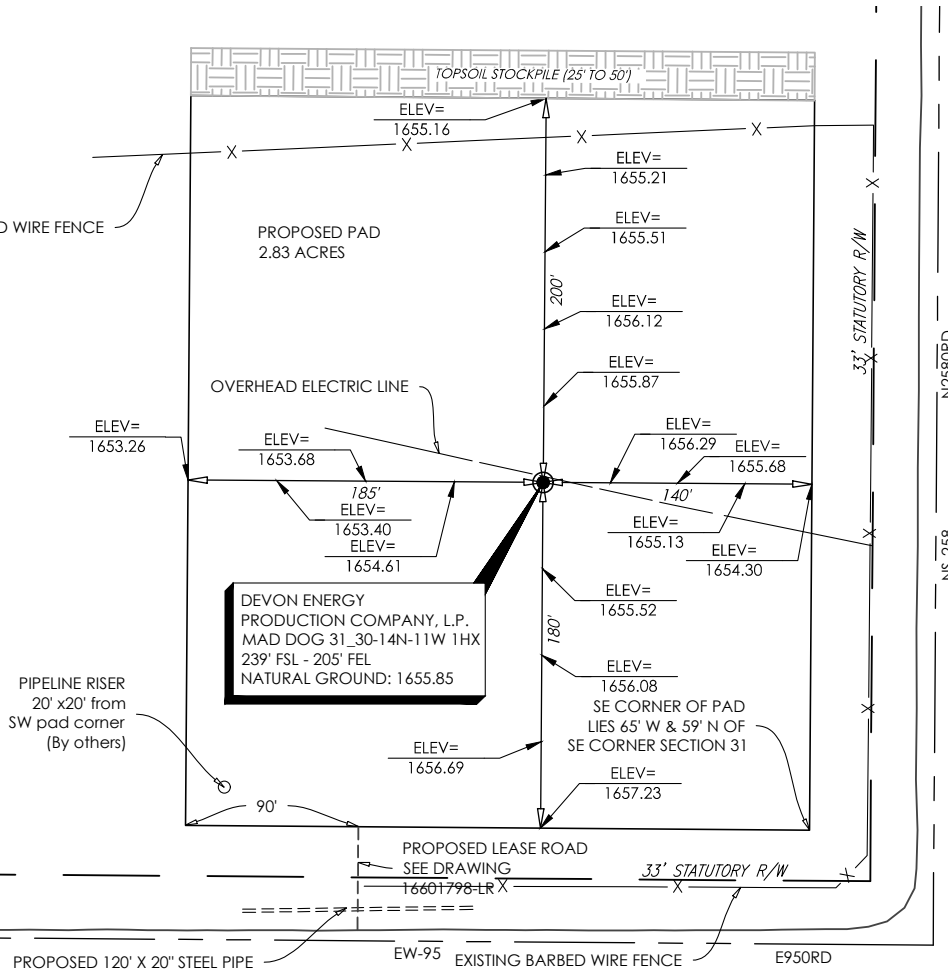
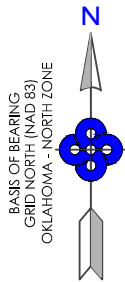
SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL

GOOD DRILL SITE. YES

SECTION: 31 TOWNSHIP: 14N RANGE: 11W

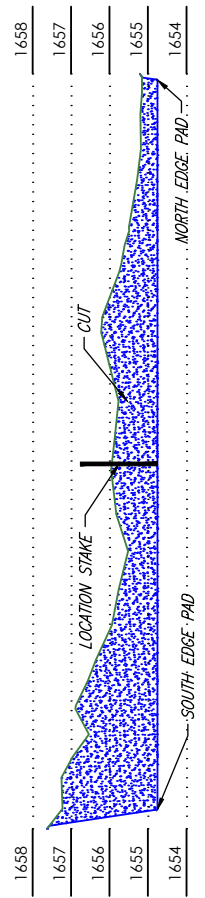
BLAINE COUNTY, STATE: OK

REED, WILLIAM J REVOCABLE TRUST
SE/4, SEC. 31, 14N 11W I.M.



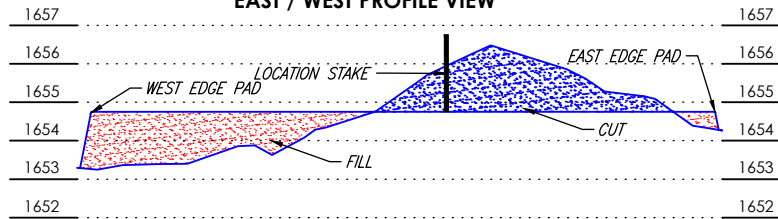
NORTH / SOUTH PROFILE VIEW

SCALE: 1"=100' HZ
SCALE: 1"=15' VT



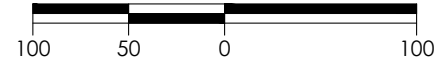
SCALE: 1"=100' HZ
SCALE: 1"=4' VT

EAST / WEST PROFILE VIEW



- NOTES:
- THIS PROPOSED PLAT DOES NOT REPRESENT A TRUE BOUNDARY SURVEY
 - THE FOOTAGES AND TIES SHOWN HEREON ARE FROM LINES OF OCCUPATION AND MAY NOT BE FROM ACTUAL PROPERTY CORNERS.
 - OWNERSHIP SHOWN HEREON IS PROVIDED BY AND/OR VERIFIED WITH CLIENT.
 - INFORMATION SHOWN HEREON IS FOR CONSTRUCTION PURPOSES ONLY

GRAPHIC SCALE IN FEET



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:

PROPOSED PAD CROSS-SECTION
PART OF THE SE/4 OF
SECTION 31, 14N, 11W
BLAINE COUNTY, OKLAHOMA



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SURVEYING
CERTIFICATE OF AUTHORIZATION:
CA 973 (PE/LS) EXPIRES 6/30/2018

SCALE: 1" = 100'

DRAWING:

16601798-PD-XS

PLOT DATE: 08-31-2017

DRAWN BY:

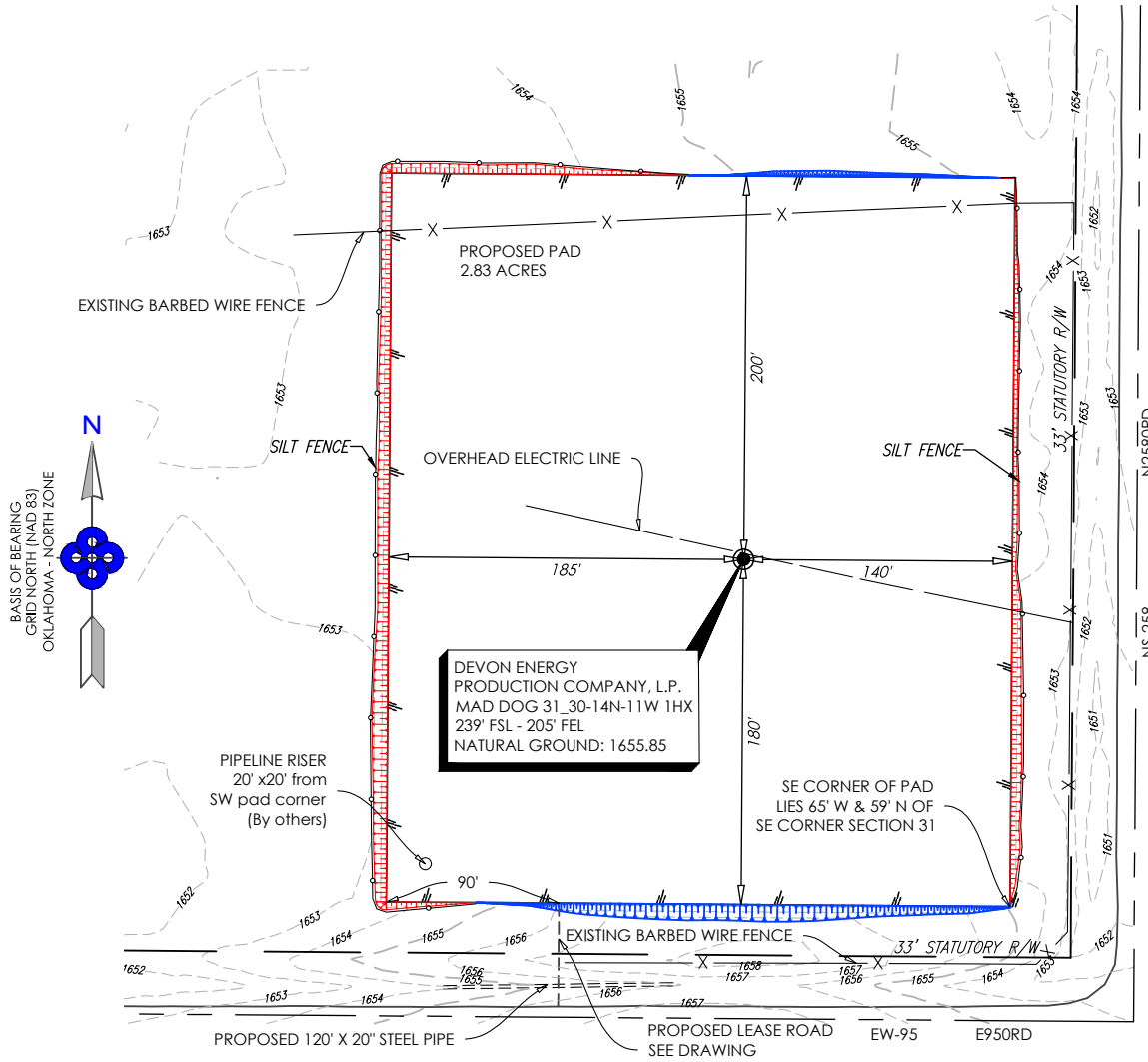
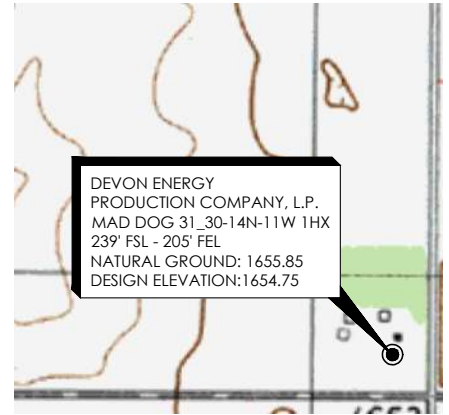
DW

SHEET NO.: 1 OF 1



OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO. 1HX
GOOD DRILL SITE. YES
BLAINE COUNTY, STATE: OK
GROUND ELEVATION: 1655.85 GR. AT STAKE
SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W

REED, WILLIAM J REVOCABLE TRUST
 SE/4, SEC. 31, 14N 11W I.M.

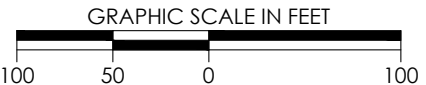


DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 DESIGN INFORMATION

FINISHED PAD ELEV: 1654.75
 CUT RATIO: 3:1
 FILL RATIO: 4:1
 CUT VOLUME: 2,267 C.Y.
 FILL VOLUME: 2,267 C.Y.
 SHORT TERM PAD DISTURBANCE:
 2.97 AC± OR 129,544 SQ FT±
 LONG TERM PAD DISTURBANCE:
 2.68 AC± OR 116,877 SQ FT±
 SHORT TERM LEASE ROAD DISTURBANCE:
 0.11 AC± OR 4,575 SQ FT±
 LONG TERM LEASE ROAD DISTURBANCE:
 0.11 AC± OR 4,575 SQ FT±
 SHORT TERM TOTAL DISTURBANCE:
 3.08 AC± OR 134,119 SQ FT±
 LONG TERM TOTAL DISTURBANCE:
 2.79 AC± OR 121,452 SQ FT±



- NOTES:**
- THIS PROPOSED PLAT DOES NOT REPRESENT A TRUE BOUNDARY SURVEY
 - THE FOOTAGES AND TIES SHOWN HEREON ARE FROM LINES OF OCCUPATION AND MAY NOT BE FROM ACTUAL PROPERTY CORNERS.
 - OWNERSHIP SHOWN HEREON IS PROVIDED BY AND/OR VERIFIED WITH CLIENT.
 - INFORMATION SHOWN HEREON IS FOR CONSTRUCTION PURPOSES ONLY



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	

FINAL CONTOURS
 PART OF THE SE/4 OF
 SECTION 31, 14N, 11W
 BLAINE COUNTY, OKLAHOMA

300 Pointe Parkway Blvd
 Yukon, OK 73099
 405.787.6270 † 405.787.6276 f
 www.craftontull.com

Crafton Tull
 SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

SCALE: 1" = 100'
 PLOT DATE: 08-31-2017

DRAWING: 16601798-PD-PR
 DRAWN BY: DW

SHEET NO.: 1 OF 1

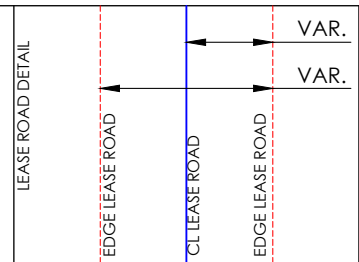
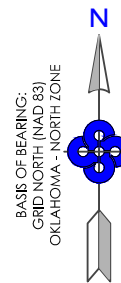


DEVON ENERGY
OPERATOR: PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO.: 1HX
 BLAINE COUNTY, STATE: OK

LEASE RD FOOTAGE: 53.86 L.F. OR 3.26 RODS
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W

"MAD DOG 31_30-14N-11W 1HX"

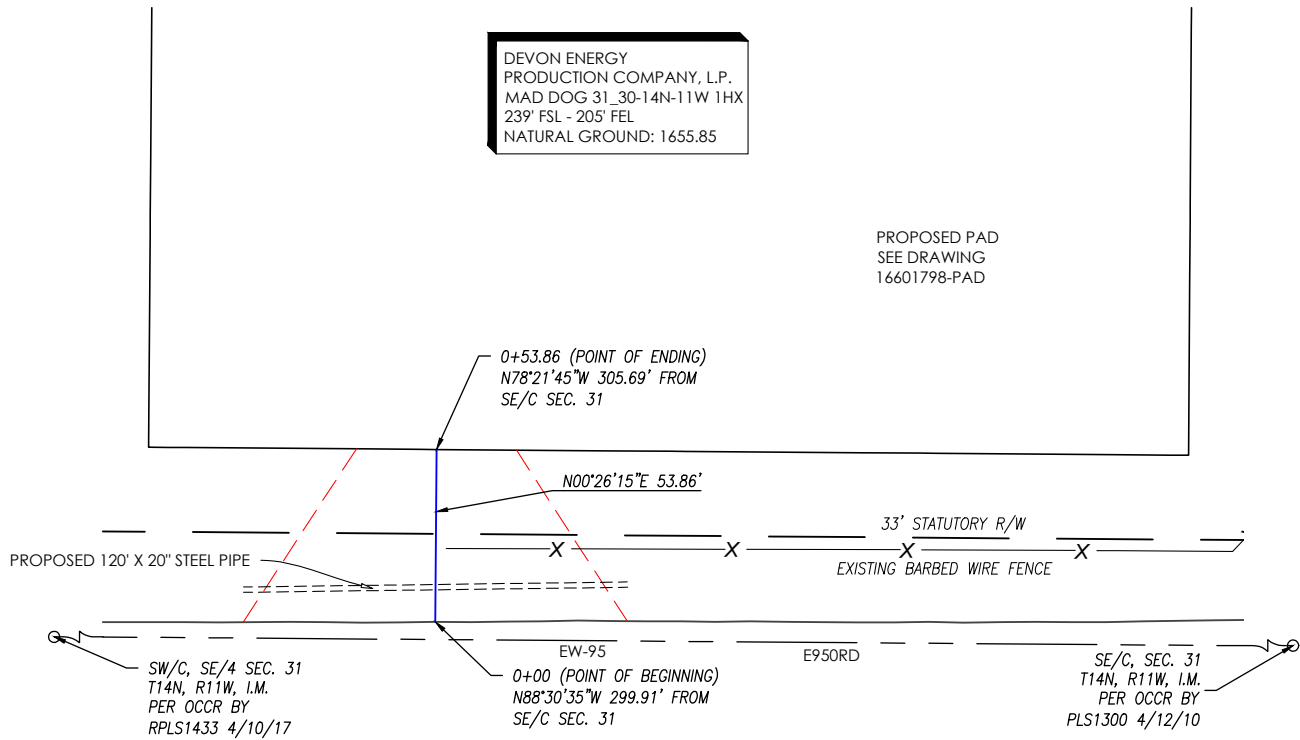
- NOTES:
 • THE LAST SITE VISIT WAS PERFORMED ON 8/23/17.
 • OWNERSHIP SHOWN HEREON IS PROVIDED BY AND/OR VERIFIED WITH CLIENT.



REED, WILLIAM J REVOCABLE TRUST
 SE/4, SEC. 31, 14N 11W I.M.
 TOTAL LENGTH = 53.86 L.F. OR 3.26 RODS

DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 MAD DOG 31_30-14N-11W 1HX
 239' FSL - 205' FEL
 NATURAL GROUND: 1655.85

PROPOSED PAD
 SEE DRAWING
 16601798-PAD



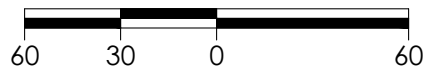
Centerline Description of a Proposed Lease Road situate within a portion of the Southeast Quarter (SE/4) of Section Thirty-One (31), Township Fourteen North (T14N), Range Eleven West (R11W) of the Indian Meridian (I.M.) in Blaine County, Oklahoma, being more particularly described as follows:

BEGINNING at a point, said point being N 88° 30' 35" W 299.91 feet from the Southeast corner of said SE/4; thence N 00° 26' 15" E a distance of 53.86 feet to and ENDING at a point 90 feet East of the Southwest corner of a proposed pad, said point being N 78° 21' 45" W 305.69 feet from the Southeast corner of said SE/4.
 The Basis of Bearing for this description is Grid North, NAD 83(2011), Oklahoma North Zone.
 This description was prepared on August 25, 2017 BY Denver Winchester, LPLS 1952.

Being 120 feet wide tapering to 50 feet wide at 0+53.86
 Total Length = 53.86 L.F. OR 3.26 RODS

CERTIFICATION:
 I, DENVER WINCHESTER, OKLAHOMA LICENSED PROFESSIONAL LAND SURVEYOR NO. 1952,
 DO HEREBY CERTIFY THAT THIS PLAT OF SURVEY MEETS THE OKLAHOMA MINIMUM STANDARDS
 FOR THE PRACTICE OF LAND SURVEYING AS ADOPTED BY THE OKLAHOMA STATE BOARD OF
 REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS

GRAPHIC SCALE IN FEET



DENVER WINCHESTER PLS 1952

MAD DOG 31_30-14N-11W 1HX



REVISION DATE:	

LEASE ROAD EXHIBIT
 PART OF THE SE/4 OF
 SECTION 31, 14N, 11W
 BLAINE COUNTY, OKLAHOMA

300 Pointe Parkway Blvd
 Yukon, OK 73099
 405.787.6270 t 405.787.6276 f
 www.craftontull.com

Crafton Tull
 SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

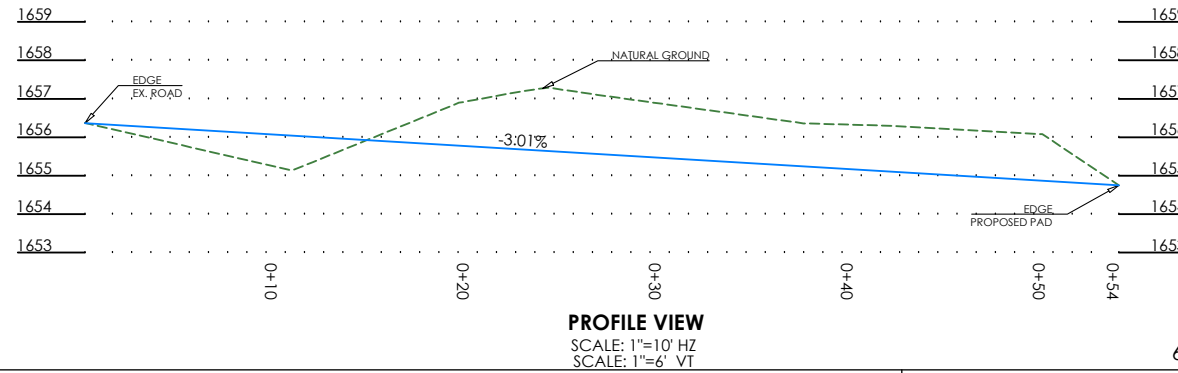
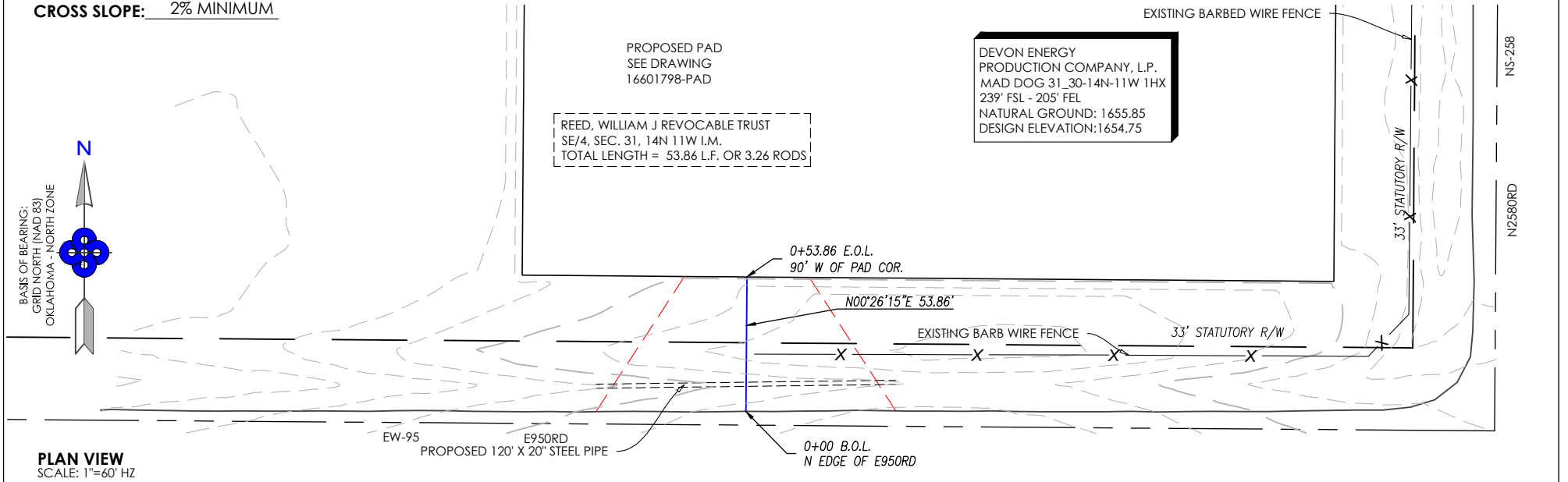
SCALE: 1" = 60'
 PLOT DATE: 08-31-2017
 DRAWING: 16601798-LR
 DRAWN BY: SQ

SHEET NO.: 1 OF 1

OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO.: 1HX
BLAINE COUNTY, STATE: OK
LEASE ROAD FOOTAGE: 53.86 L.F. OR 3.26 RODS
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W
CROSS SLOPE: 2% MINIMUM

- NOTES:**
- THIS PROPOSED EXHIBIT DOES NOT REPRESENT A TRUE BOUNDARY SURVEY
 - THE FOOTAGES AND TIES SHOWN HEREON ARE FROM LINES OF OCCUPATION AND MAY NOT BE FROM ACTUAL PROPERTY CORNERS.
 - OWNERSHIP SHOWN HEREON IS PROVIDED BY AND/OR VERIFIED WITH CLIENT.
 - THIS PLAN AND PROFILE EXHIBIT IS FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT REPRESENT ANY DESIGN WORK
 - ANY UTILITY INFORMATION SHOWN HEREON IS AN APPROXIMATION AND SHOULD BE VERIFIED BY THE CONTRACTOR.

0+00.00 | EL. 1656.37' | BEGIN TAPER 120' WIDE
 0+10.85 | EL. 1655.15' | CONSTRUCT STEEL PIPE
 0+53.86 | EL. 1654.75' | END TAPER TO 50' E.O.L.



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	

PROPOSED LEASE ROAD PLAN AND PROFILE
 PART OF THE SE/4 OF
 SECTION 31, 14N, 11W
 BLAINE COUNTY, OKLAHOMA



300 Pointe Parkway Blvd
 Yukon, OK 73099
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SCALE: 1" = 60'
 PLOT DATE: 08-31-2017

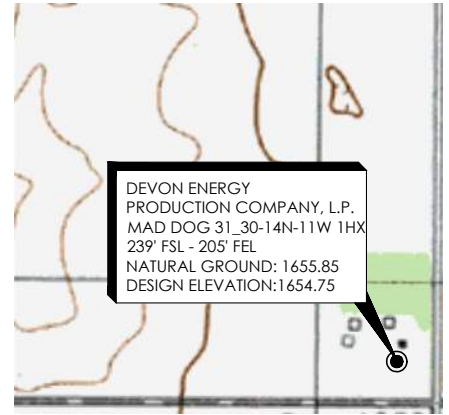
DRAWING:
 DRAWN BY:

16601798-LR-P&P
 SQ

SHEET NO.: 1 OF 1

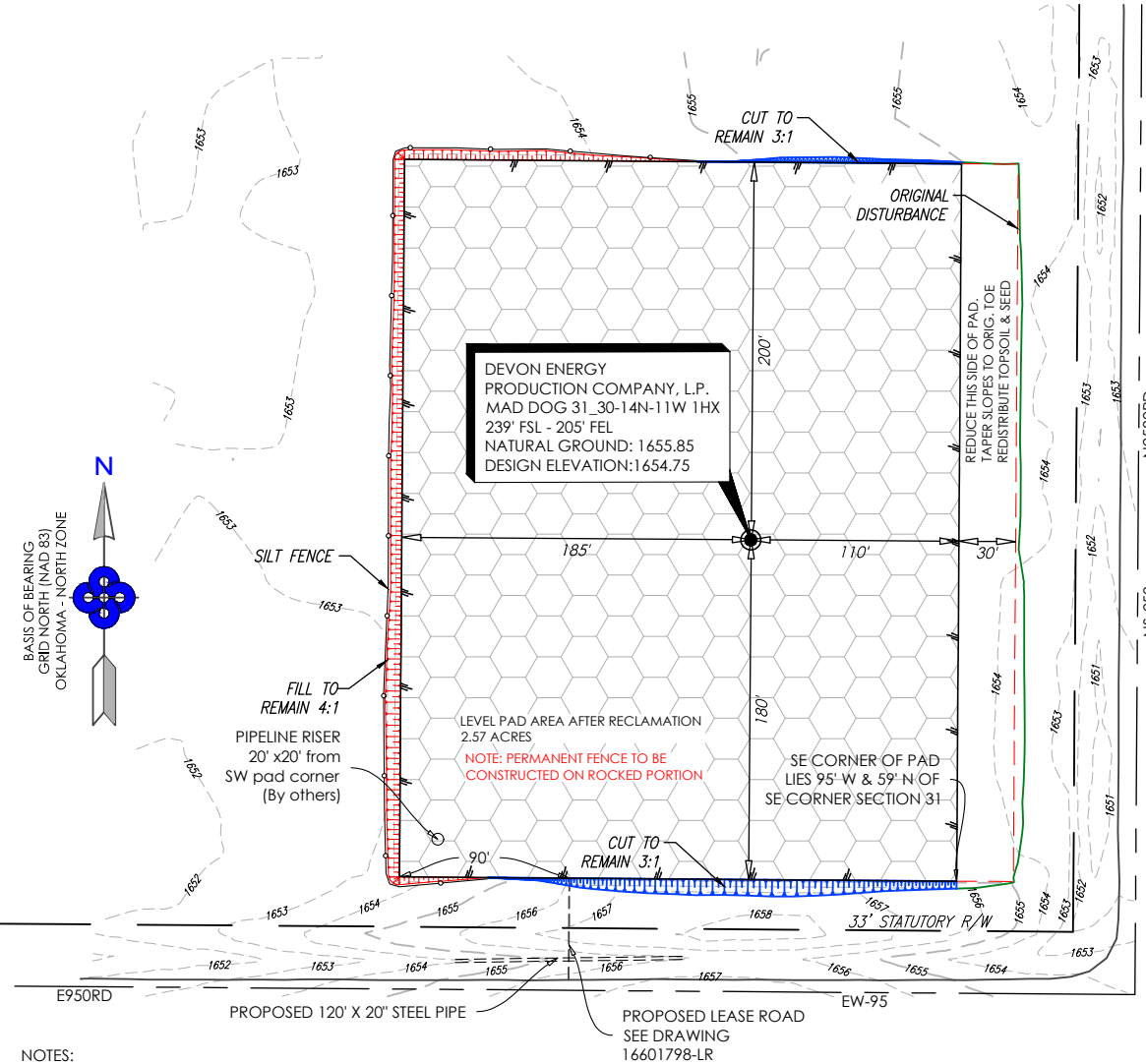


OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
LEASE NAME: MAD DOG 31_30-14N-11W
WELL NO. 1HX
GOOD DRILL SITE. YES
BLAINE COUNTY, STATE: OK
GROUND ELEVATION: 1655.85 GR. AT STAKE
SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL
SECTION: 31 **TOWNSHIP:** 14N **RANGE:** 11W



DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 MAD DOG 31_30-14N-11W 1HX
 239' FSL - 205' FEL
 NATURAL GROUND: 1655.85
 DESIGN ELEVATION: 1654.75

REED, WILLIAM J REVOCABLE TRUST
 SE/4, SEC. 31, 14N 11W I.M.

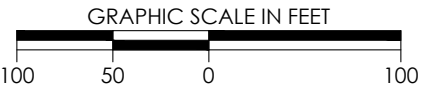


DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 MAD DOG 31_30-14N-11W 1HX
 239' FSL - 205' FEL
 NATURAL GROUND: 1655.85
 DESIGN ELEVATION: 1654.75

DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 DESIGN INFORMATION
 FINISHED PAD ELEV: 1654.75
 CUT RATIO: 3:1
 FILL RATIO: 4:1
 CUT VOLUME: 2,267 C.Y.
 FILL VOLUME: 2,267 C.Y.
 SHORT TERM PAD DISTURBANCE:
 2.97 AC± OR 129,544 SQ FT±
 LONG TERM PAD DISTURBANCE:
 2.68 AC± OR 116,877 SQ FT±
 SHORT TERM LEASE ROAD DISTURBANCE:
 0.11 AC± OR 4,575 SQ FT±
 LONG TERM LEASE ROAD DISTURBANCE:
 0.11 AC± OR 4,575 SQ FT±
 SHORT TERM TOTAL DISTURBANCE:
 3.08 AC± OR 134,119 SQ FT±
 LONG TERM TOTAL DISTURBANCE:
 2.79 AC± OR 121,452 SQ FT±



- NOTES:**
- THIS PROPOSED PLAT DOES NOT REPRESENT A TRUE BOUNDARY SURVEY
 - THE FOOTAGES AND TIES SHOWN HEREON ARE FROM LINES OF OCCUPATION AND MAY NOT BE FROM ACTUAL PROPERTY CORNERS.
 - OWNERSHIP SHOWN HEREON IS PROVIDED BY AND/OR VERIFIED WITH CLIENT.
 - INFORMATION SHOWN HEREON IS FOR CONSTRUCTION PURPOSES ONLY



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	

RECLAMATION EXHIBIT
 PART OF THE SE/4 OF
 SECTION 31, 14N, 11W
 BLAINE COUNTY, OKLAHOMA

300 Pointe Parkway Blvd
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 405.787.6270 † 405.787.6276 f
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Crafton Tull
 SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

SCALE: 1" = 100'
 PLOT DATE: 08-31-2017

DRAWING: 16601798-PD-PRRC
 DRAWN BY: SQ

SHEET NO.: 1 OF 1

APD ID: 10400022718

Submission Date: 11/21/2017

Highlighted data reflects the most recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

[Show Final Text](#)

Well Type: OTHER

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	PERMIAN	1656	0	0		USEABLE WATER	No
2	BROWN DOLOMITE	-2329	3985	3992		NONE	No
3	BASE HEEBNER SHALE	-5684	7340	7350		NONE	No
4	TONKAWA	-6464	8120	8130		NATURAL GAS,OIL	No
5	COTTAGE GROVE	-6959	8615	8625		NATURAL GAS,OIL	No
6	HOGSHOOTER	-7404	9060	9070		NATURAL GAS,OIL	No
7	CHECKERBOARD	-7729	9385	9395		NATURAL GAS,OIL	No
8	OSWEGO	-8589	10245	10255		NATURAL GAS,OIL	No
9	CHEROKEE	-8624	10280	10290		NATURAL GAS,OIL	No
10	MORROW	-9579	11235	11245		NATURAL GAS,OIL	No
11	CHESTER	-10264	11920	11930		NATURAL GAS,OIL	No
12	MISSISSIPPIAN	-11354	13010	13020		NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 13921

Equipment: Ten thousand (10M) psi working pressure Blind Rams and a five thousand (5M) psi Annular Preventer will be installed on all casing. Two (2) chokes, (1) hydraulic and (1) manual, will be used. Floor Safety Valves that are full open and sized to fit Drill Pipe and Collars will be available on the rig floor in the open position when the Top Drive is not in use.

Requesting Variance? YES

Variance request: Operator requests a 0.22 psi/ft offset gradient be used as the production hole will not be evacuated during drilling operations. A variance to the requirement of a rigid steel line connecting to the choke manifold is requested.

Testing Procedure: A third party testing company will conduct pressure tests and record prior to drilling out below 13-3/8" and 9-5/8" casing. The BOP, Choke, Choke Manifold, Top Drive Valves and Floor Safety Valves will be tested to 3500 psi

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

prior to drilling below the 13-3/8" surface casing shoe and to 100% of full working pressure (10,000 psi) prior to drilling below the 9-5/8" intermediate casing shoe. The Annular Preventer will be tested to 3500 psi prior to drilling below the 13-3/8" surface casing shoe and to 100% of working pressure (5000 psi) prior to drilling below the 9-5/8" intermediate casing shoe. The rotating head is not used for pressure control and will not be tested for such. In addition, the BOP equipment will be tested every 21 days and after any repairs to the equipment as well as drilling out below any casing string. Pipe rams, blind rams and annular preventer will be activated on each trip and weekly BOP drills will be held with each crew.

Choke Diagram Attachment:

Choke_and_BOPE_stack_20171120085526.pdf

BOP Diagram Attachment:

Choke_and_BOPE_stack_20171120085534.pdf

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	17.5	13.375	NEW	API	N	0	1500	0	1500			1500	J-55	54.5	OTHER - BTC	2.749	3.684	BUOY	4.695	BUOY	4.695
2	INTERMEDIATE	12.25	9.625	NEW	API	N	8115	11031	8115	11031			2916	OTHER	40	OTHER - BTC	1.4	1.648	BUOY	2.339	BUOY	2.646
3	PRODUCTION	8.75	5.5	NEW	API	N	0	13703	0	13421			13703	OTHER	23	OTHER - VAMTOP-HT	0.709	1.187	BUOY	2.028	BUOY	2.356
4	PRODUCTION	8.75	5.5	NEW	API	N	13703	23671	13421	13421			9968	OTHER	23	OTHER - DWC/C IS+	0.709	1.187	BUOY	2.028	BUOY	2.356

Casing Attachments

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Surface_Casing_Assumptions_20170118_20171120092249.docx

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Intermediate_Casing_Assumptions_20170118_20171120092303.docx

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Production_Casing_Assumptions_20170118_20171120092325.docx

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Casing Attachments

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Production_Casing_Assumptions_20170118_20171120092339.docx

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	1200	433	2.79	11.5	148		A	8.80 lbm/sk Enhancer 923, CMT, 4 % Bentonite, 0.1250 lbm/sk Poly-E-Flake, 2 % Calcium Chloride, Pellet and 11.03 Gal/sk fresh water
SURFACE	Tail		1200	1500	232	1.3	14.8	37		A	37.60 lbm/sk Enhancer 923, CMT, 2 % Calcium Chloride, Pellet 0.1250 lbm/sk Poly-E-Flake and 5.91 Gal/sk fresh water
INTERMEDIATE	Lead		8115	1053 1	227	4.16	10.5	135		A	31.02 lbm/sk Enhancer 923, CMT, 28.22 lbm/sk Pozmix A, 0.20 % WellLife 1094 - 15 lb bag, 8 % Bentonite, 8 % Cal-Seal 60, 0.25 % WG-17, 25.96 Gal/sk fresh water
INTERMEDIATE	Tail		1053 1	1103 1	151	1.3	13.5	27.9		A	0.25 % HR-800, 0.05 % WG-17, 0.40 % Halad(R)-9, 5.76 Gal/sk fresh water

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		9041	1370 3	1248	1.18	16	210		Halliburton NeoCEM	Halliburton NeoCEM proprietary blend + 0.2% BWOC Welllife 1094, 0.125 lbs/sk POL-E-FLAKE

PRODUCTION	Lead		1370 3	2367 1	2667	1.18	16	448		Halliburton NeoCEM	Halliburton NeoCEM proprietary blend + 0.2% BWOC Welllife 1094, 0.125 lbs/sk POL-E-FLAKE
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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: Mud weight increases at shoe depths are for pressure control. Mud weight increases in the curve and lateral sections of the hole are for hole stability, not pressure control. Mud weight assumptions for casing load designs exceed anticipated maximum mud weight for balanced drilling in all hole sections. Ten thousand (10M) psi working pressure Blind Rams and Pipe Rams and a five thousand (5M) psi Annular Preventer will be installed on all casing. The proposed well will not require a flare pit. Expected mud weights will be 0.1 to 1.0 ppg greater than the formation pressure. Sufficient quantities of mud material and additives will be maintained on site to maintain mud properties, control lost circulation and assure well control (including a minimum of 1000 sacks of barite). The mud volume on location will exceed 500 bbls with the rig's active system.

Describe the mud monitoring system utilized: Visual monitoring, Totco and PVT will be utilized to detect volume changes indicating loss or gain of circulating fluid volume.

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
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Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

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
0	1500	SPUD MUD	8.33	9.5							
0	1103 1	WATER-BASED MUD	8.33	9.5							
1342 1	1342 1	OIL-BASED MUD	13.3	15							
0	1342 1	OIL-BASED MUD	13.3	15							

Section 6 - Test, Logging, Coring

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

No planned testing

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

MWD,MUDLOG

Coring operation description for the well:

No coring operations or wireline logging operations are planned. Logging operations will consist solely of gamma ray MWD logging from KOP, and mudlog/lithology logs.

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 10468

Anticipated Surface Pressure: 10468

Anticipated Bottom Hole Temperature(F): 225

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

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? NO

Hydrogen sulfide drilling operations plan:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Devon_Mad_Dog_31_30_14N_11W_1HX__Permit_Plan_2__20171121131954.xlsx

Other proposed operations facets description:

Other proposed operations facets attachment:

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5.50_23lb_P110EC_VAM_TOP_HT_20171121130832.pdf

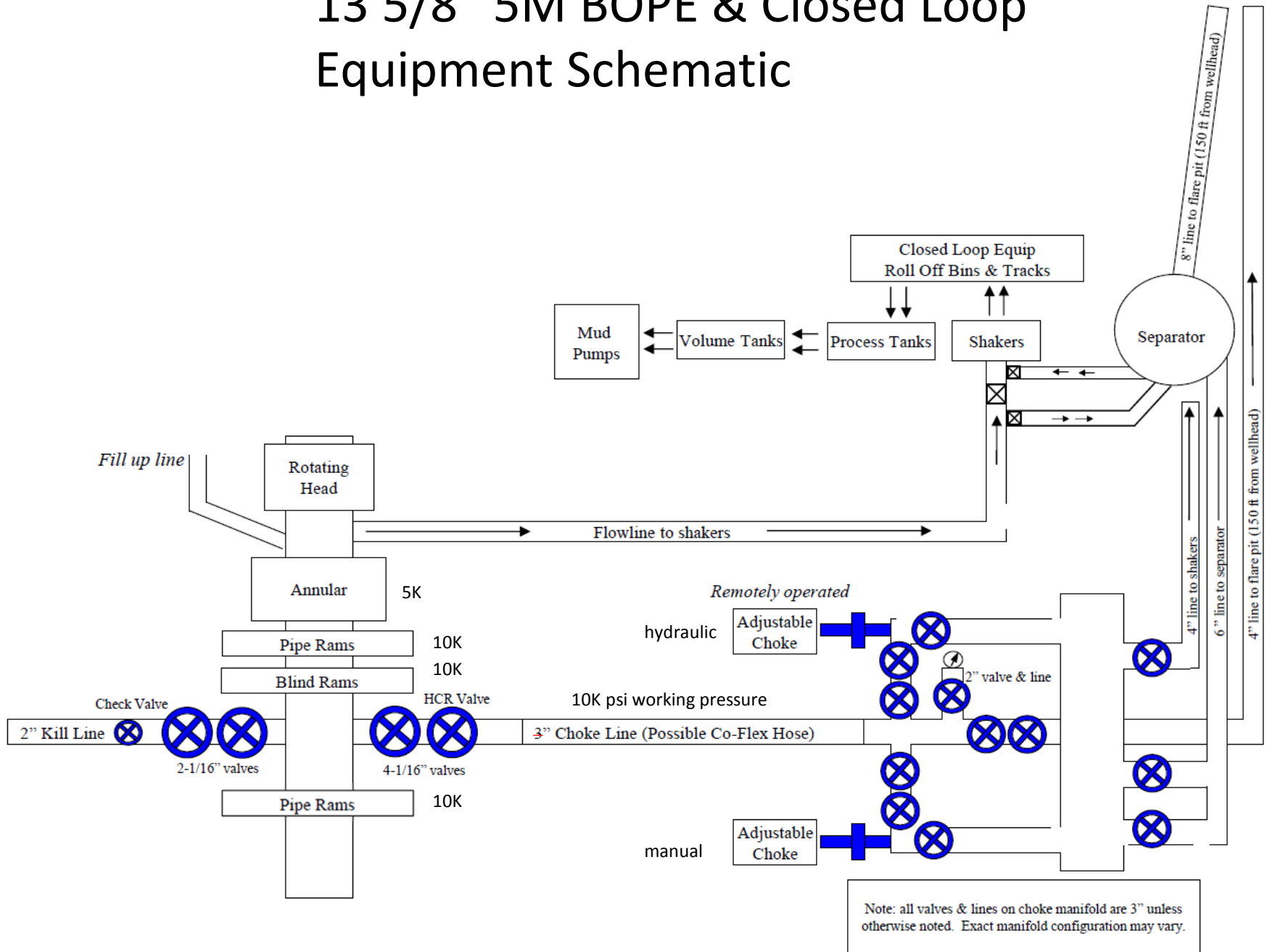
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13.375_54.50__J55_ERW_BTC_20171121130833.PDF

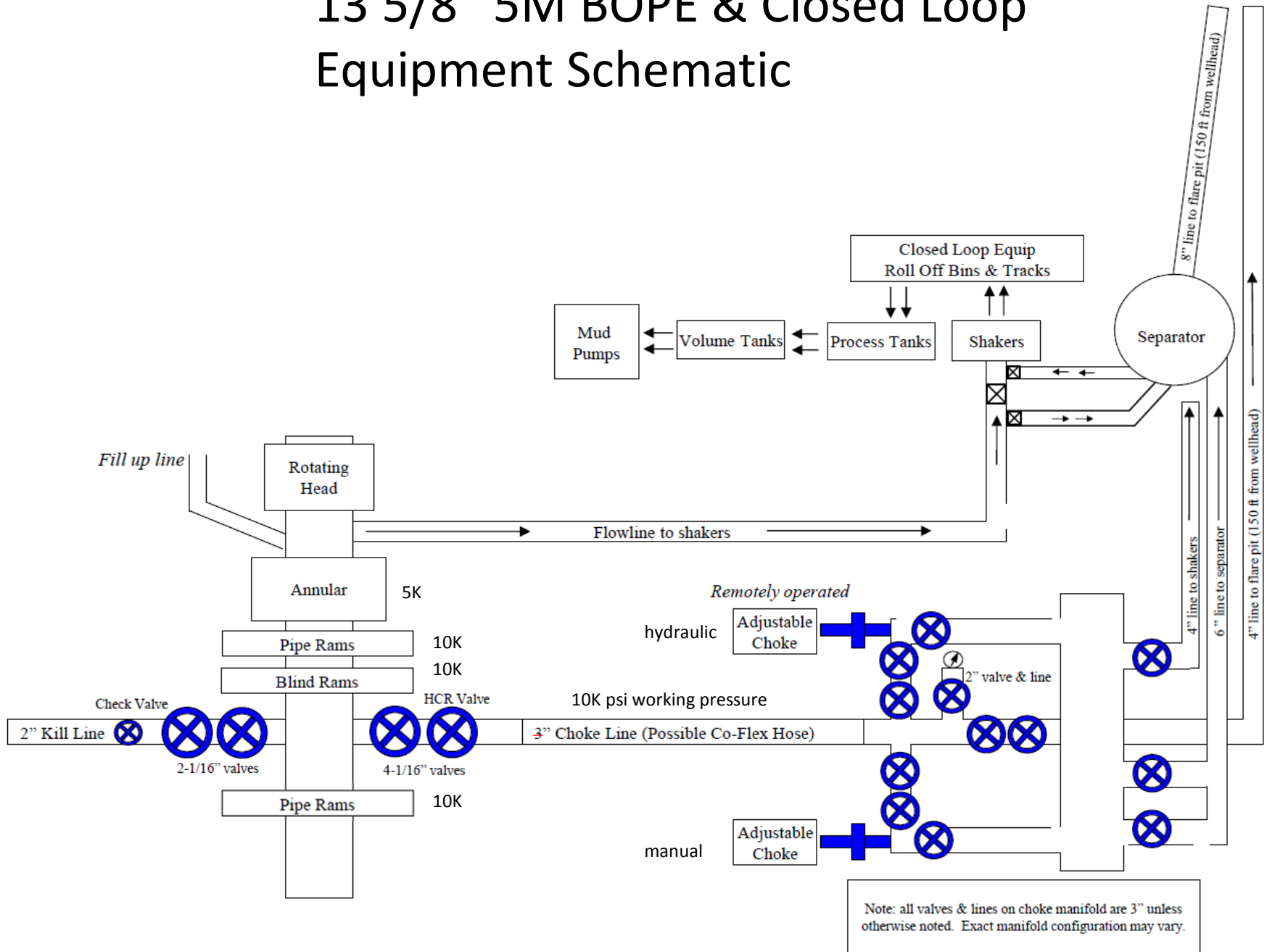
Mad_Dog_11_09_17_AFMSS_APD_20171121131621.pdf

Other Variance attachment:

13 5/8" 5M BOPE & Closed Loop Equipment Schematic



13 5/8" 5M BOPE & Closed Loop Equipment Schematic



Casing Assumptions and Load Cases

Surface

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe. Operator used 0.22 psi/ft gradient to calculate burst and collapse safety factors in order to assume a worst case scenario.

Surface Casing Burst Design		
Load Case	External Pressure	Internal Pressure
Pressure Test	Water (8.33ppg)	Max mud weight of next hole-section plus Test psi
Drill Ahead	Water (8.33ppg)	Max mud weight of next hole section
Displace to Gas	Water (8.33ppg)	Dry gas from next casing point

Surface Casing Collapse Design		
Load Case	External Pressure	Internal Pressure
Full Evacuation	Water gradient in cement, mud above TOC	None
Cementing	Wet cement weight	Water (8.33ppg)

Surface Casing Tension Design	
Load Case	Assumptions
Overpull	100kips
Runing in hole	3 ft/s
Service Loads	N/A

Casing Assumptions and Load Cases

Intermediate

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe. Operator used 0.22 psi/ft gradient to calculate burst and collapse safety factors in order to assume a worst case scenario.

Intermediate Casing Burst Design		
Load Case	External Pressure	Internal Pressure
Pressure Test	Water (8.33ppg)	Max mud weight of next hole-section plus Test psi
Drill Ahead	Water (8.33ppg)	Max mud weight of next hole section
Fracture @ Shoe	Water (8.33ppg)	Dry gas

Intermediate Casing Collapse Design		
Load Case	External Pressure	Internal Pressure
Full Evacuation	Water gradient in cement, mud above TOC	None
Cementing	Wet cement weight	Water (8.33ppg)

Intermediate Casing Tension Design	
Load Case	Assumptions
Overpull	100kips
Runing in hole	2 ft/s
Service Loads	N/A

Casing Assumptions and Load Cases

Production

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe. Operator used 0.22 psi/ft gradient to calculate burst and collapse safety factors in order to assume a worst case scenario.

Production Casing Burst Design		
Load Case	External Pressure	Internal Pressure
Pressure Test	Water (8.33ppg)	Fluid in hole (water or produced water) + test psi
Tubing Leak	Water (8.33ppg)	Packer @ KOP, leak below surface 8.6 ppg packer fluid
Stimulation	Water (8.33ppg)	Max frac pressure with heaviest frac fluid

Production Casing Collapse Design		
Load Case	External Pressure	Internal Pressure
Full Evacuation	Water gradient in cement, mud above TOC.	None
Cementing	Wet cement weight	Water (8.33ppg)

Production Casing Tension Design	
Load Case	Assumptions
Overpull	100kips
Runing in hole	2 ft/s
Service Loads	N/A

Casing Assumptions and Load Cases

Production

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe. Operator used 0.22 psi/ft gradient to calculate burst and collapse safety factors in order to assume a worst case scenario.

Production Casing Burst Design		
Load Case	External Pressure	Internal Pressure
Pressure Test	Water (8.33ppg)	Fluid in hole (water or produced water) + test psi
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Stimulation	Water (8.33ppg)	Max frac pressure with heaviest frac fluid

Production Casing Collapse Design		
Load Case	External Pressure	Internal Pressure
Full Evacuation	Water gradient in cement, mud above TOC.	None
Cementing	Wet cement weight	Water (8.33ppg)

Production Casing Tension Design	
Load Case	Assumptions
Overpull	100kips
Runing in hole	2 ft/s
Service Loads	N/A

Customer: Devon EnerCreation Dæ 1/1/1990
 Project: Blaine Cour Oklahoma (NAD83) OK North
 Field: Blaine Cour Oklahoma North Ref: Grid
 Structure: Mad Dog 3`Job Numbe
 EPSG Proj North Amer Oklahoma Latitude: 35.639049 Longitude: -98.40253
 Wellhead: Mad Dog 3`Ground Lev 1655.85 Kelly Bushir 1680.85
 Profile: Permit PlanPrint Date: 11/8/2017 Vertical Sec 359.26 BHL TVD: 13421

MD (ft)	Incl. Deg.	Azim. Deg.	Sub-Sea (ft)	TVD (ft)	Local N Co (ft)	Local E Co (ft)	Global N Co (ft)	Global E Co (ft)
0	0	0	-1680.85	0	0	0	232873.6	1848889.4
100	0	0	-1580.85	100	0	0	232873.6	1848889.4
200	0	0	-1480.85	200	0	0	232873.6	1848889.4
300	0	0	-1380.85	300	0	0	232873.6	1848889.4
400	0	0	-1280.85	400	0	0	232873.6	1848889.4
500	0	0	-1180.85	500	0	0	232873.6	1848889.4
600	0	0	-1080.85	600	0	0	232873.6	1848889.4
700	0	0	-980.85	700	0	0	232873.6	1848889.4
800	0	0	-880.85	800	0	0	232873.6	1848889.4
900	0	0	-780.85	900	0	0	232873.6	1848889.4
1000	0	0	-680.85	1000	0	0	232873.6	1848889.4
1100	0	0	-580.85	1100	0	0	232873.6	1848889.4
1200	0	0	-480.85	1200	0	0	232873.6	1848889.4
1300	0	0	-380.85	1300	0	0	232873.6	1848889.4
1400	0	0	-280.85	1400	0	0	232873.6	1848889.4
1500	0	0	-180.85	1500	0	0	232873.6	1848889.4
1600	0	0	-80.85	1600	0	0	232873.6	1848889.4
1700	1.5	223.024	19.139	1699.989	-0.957	-0.893	232872.64	1848889
1800	3	223.024	119.059	1799.909	-3.827	-3.572	232869.77	1848886
1900	4.5	223.024	218.842	1899.692	-8.608	-8.034	232865	1848881
1919.91	4.799	223.024	238.686	1919.536	-9.788	-9.135	232863.81	1848880
2000	4.799	223.024	318.495	1999.345	-14.686	-13.706	232858.91	1848876
2100	4.799	223.024	418.145	2098.995	-20.802	-19.414	232852.8	1848870
2200	4.799	223.024	517.794	2198.644	-26.918	-25.122	232846.68	1848864
2300	4.799	223.024	617.444	2298.294	-33.033	-30.83	232840.57	1848859
2400	4.799	223.024	717.093	2397.943	-39.149	-36.537	232834.45	1848853
2500	4.799	223.024	816.743	2497.593	-45.265	-42.245	232828.34	1848847
2600	4.799	223.024	916.392	2597.242	-51.381	-47.953	232822.22	1848841
2700	4.799	223.024	1016.042	2696.892	-57.496	-53.66	232816.1	1848836
2800	4.799	223.024	1115.691	2796.541	-63.612	-59.368	232810	1848830
2900	4.799	223.024	1215.341	2896.191	-69.728	-65.076	232803.87	1848824
2963	4.799	223.024	1278.12	2958.97	-73.581	-68.672	232800	1848821
3000	4.799	223.024	1314.99	2995.84	-75.844	-70.784	232797.76	1848819
3100	4.799	223.024	1414.64	3095.49	-81.959	-76.491	232791.64	1848813
3200	4.799	223.024	1514.289	3195.139	-88.075	-82.199	232785.53	1848807
3300	4.799	223.024	1613.939	3294.789	-94.191	-87.907	232779.41	1848801
3400	4.799	223.024	1713.588	3394.438	-100.306	-93.614	232773.29	1848796
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3600	4.799	223.024	1912.887	3593.737	-112.538	-105.03	232761.06	1848784
3700	4.799	223.024	2012.537	3693.387	-118.654	-110.738	232754.95	1848779
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4100	4.799	223.024	2411.135	4091.985	-143.117	-133.568	232730.48	1848756

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4400	4.799	223.024	2710.083	4390.933	-161.464	-150.691	232712.14	1848739
4500	4.799	223.024	2809.733	4490.583	-167.58	-156.399	232706.02	1848733
4600	4.799	223.024	2909.382	4590.232	-173.695	-162.107	232699.91	1848727
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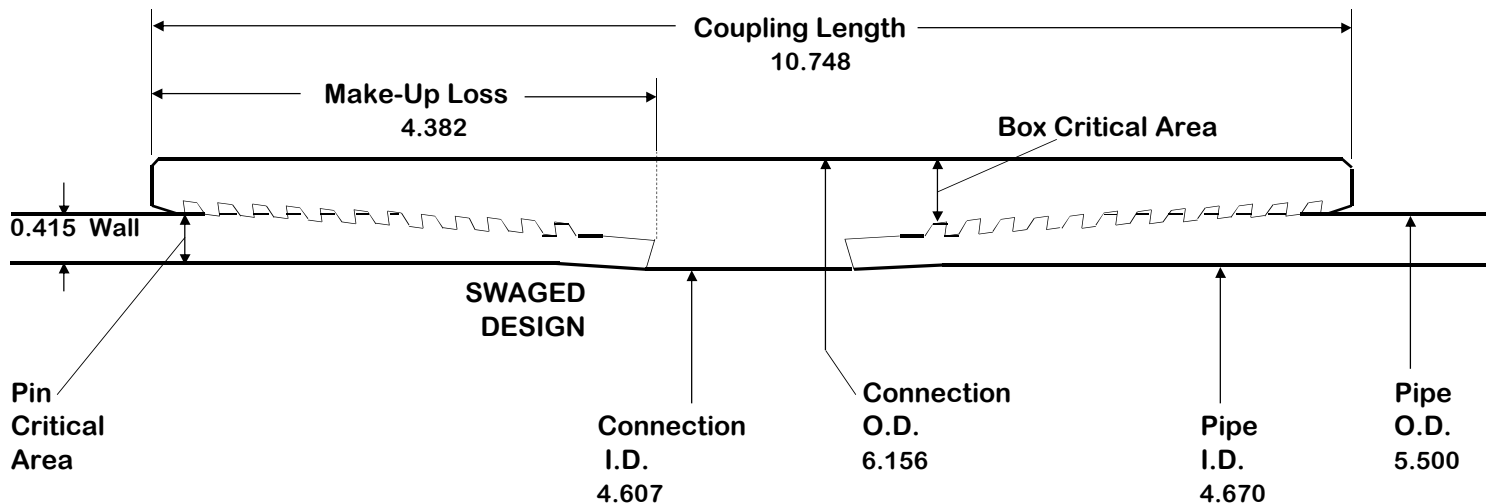
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22800	90	0.238	11740.155	13421.005	9385.989	-135.313	242259.59	1848754
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35.666912	-98.40311	0	10143.84	0	0 Cross North 165' FNL 380' FEL S
35.66703	-98.40311	0	10186.84	0	0
35.667225	-98.40311	0	10257.83	0	0 PBHL @ 23 50' FNL 380' FEL S
35.667227	-98.40311	0	10258.45	0	0

VAM TOP HT



O.D.	WEIGHT	WALL	GRADE	DRIFT
5.500	23.00	0.415	P110EC	4.545

PIPE BODY PROPERTIES

Material Grade	P110EC
Min. Yield Strength	125 ksi
Min. Tensile Strength	135 ksi
Outside Diameter	5.500 in
Inside Diameter	4.670 in
NOMINAL AREA	6.630 sq.in.

YIELD STRENGTH	829 kips
ULTIMATE STRENGTH	895 kips
MIN INTERNAL YIELD	16,510 psi
*HIGH COLLAPSE	16,220 psi

*Ratings based on VMS specifications

Questions? Contact Tech Services (281) 821-5510

Ref. Drawing: SI-PD 100526 Rev.B

Date: 1-Jun-12

Time: 2:45 PM

CONNECTION PROPERTIES

CONNECTION OD	6.156 in
CONNECTION ID	4.607 in
MAKE UP LOSS	4.382 in
COUPLING LENGTH	10.748 in
BOX CRITICAL AREA	6.757 sq.in.
%PB Section Area	101.9%
PIN CRITICAL AREA	6.630 sq.in.
%PB Section Area	100.0%

YIELD STRENGTH	829 kips
PARTING LOAD	895 kips
MIN INTERNAL YIELD	16,510 psi
*HIGH COLLAPSE	16,220 psi
WK COMPRESSION	663 kips
MAX PURE BENDING	30 deg/100

TORQUE DATA ft-lb

min	opt	max
12,450	13,750	15,050

Max. Liner Torque: 20,000ft-lbs

Generated by:

Venkata Muthyala

OCTG Casing Data Sheet



VALLOUREC & MANNESMANN TUBES

O.D.	T&C LB/FT	PE LB/FT	GRADE
9.625	40.00	38.97	P110 EC

Grade - Material Properties

Minimum Yield Strength:	125.0	ksi
Maximum Yield Strength:	140	ksi
Minimum Tensile Strength:	135	ksi

Pipe Body Data (PE)

Geometry

Nominal ID:	8.835	inch
Wall:	0.395	inch
Nominal Area:	11.454	inch ²
API Drift:	8.679	inch
Alternate Drift:	8.750	inch

Performance

Pipe Body Yield Strength:	1,432	kips
Collapse Resistance:	4,230	psi
Internal Yield Pressure (<i>API Historical</i>):	8,980	psi

Lamé - Internal Yield Pressure

Lamé open:	8,950	psi
Lamé capped:	9,970	psi
Lamé ductile rupture:	9,700	psi

API Connection Data

STC Internal Pressure:	8,980	psi
STC Joint Strength:	861	kips
LC Internal Pressure:	8,980	psi
LC Joint Strength:	988	kips
BC Internal Pressure:	8,980	psi
BC Joint Strength:	1,266	kips

LC Torque (ft-lbs)

minimum: 7,410	optimum: 9,880	maximum: 12,350
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This data sheet is for informational purposes only. While every effort has been made to ensure the accuracy of all data and that the information contained herein is correct, this material is presented as a reference guide only. V & M Tubes assumes no responsibility for the results obtained through the use of this material.

API grades with enhanced performance are supplied with API couplings produced from standard API grades.

TECHNICAL DATA SHEET

13 3/8 " • 54.50 # • J55

API Connection

Pipe Dimensions

Size:	13 3/8	inches
Nom Wt-ft:	54.50	lbs/ft
Grade:	J55	--
Thread Type:	Buttress	--
TPI:	8 TPI	Threads/inch
PE Weight	52.79	lbs/ft
Wall Thickness	0.380	inches
Nominal ID	12.615	inches
Drift Diameter	12.459	inches
Nominal Pipe Body Area	15.513	sq-inches

Pipe Parameters

Minimum Yield	55,000	psi
Minimum Ultimate	75,000	psi

Pipe Body Performance

Yield Strength	853,242	lbs
Tensile Strength	1,163,512	lbs
Minimum Internal Yield Pressure	2,730	psi
Collapse Pressure	1,130	psi

Connection Parameters

Coupling OD (Nom)	14.375	inches
Coupling Critical ID	13.202	inches
Coupling Length	10.625	inches
Coupling Critical Area	25.412	sq-inches
Pin Critical Area	15.513	sq-inches
Coupling Critical Area	163.8%	%PBYS
Pin Critical Area	100.0%	%PBYS
Yield Strength in Tension	853,242	lbs
Fracture Strength	909,470	lbs
Make-Up Loss	0.500	inches
Percent of Pipe Body Fracture	78.2%	
Min. Internal Yield Pressure	2,730	psi
Internal Leak Resistance	2,980	psi
Collapse Pressure	1,130	psi
Tension Efficiency	100.0%	
Compression Efficiency	50.0%	

Note:
The information in this Technical Data Sheet is for general information only. It should not be used or relied upon for any specific application without being independently verified by competent professional examination for accuracy, suitability and applicability. Anyone utilizing the information contained herein does so at their own risk.

phone: 281-949-1023
toll free: 888-258-2000





**Mad Dog 31_31-14N-11W 1HX
SECTION 31_30, T14N, R11W
BLAINE COUNTY, OKLAHOMA**

**Anadarko Basin
Drilling Plan**

Prepared By: **Stephen Lake**

DRILLING ENGINEER- ANADARKO BASIN

direct 405-552-5317 | *mobile* 405-318-0577

email steve.lake@dvn.com

Devon Energy CORPORATION

333 West Sheridan Avenue

Oklahoma City, OK 73102-5015

U.S.A.

Drilling Program

Estimated Tops of Important Markers

Formation	Depth (TVD)	Depth (MD)
	Surface	Surface
PERMIAN	0	0
BROWN DOLOMITE	3985	3985
BASE HEEBNER SHALE	7340	7340
TONKAWA	8120	8120
COTTAGE GROVE	8615	8615
HOGSHOOTER	9060	9060
CHECKERBOARD	9385	9385
OSWEGO	10245	10245
CHEROKEE	10280	10280
MORROW	11235	11235
CHESTER	11920	11920
MISSISSIPPIAN	13010	13020
Lateral TD	13421	23671

Target Formation and Total Depth:

The total depth of the proposed well is 23671' MD/13421' TVD located in the MISSISSIPPIAN target interval.

Estimated Depths of Anticipated Fresh Water, Oil, Gas, or other Important Minerals

Substance	Depth (TVD)
Fresh Water	0' to 130'
Base of Treatable Water	130'
Hydrocarbons	8615' TVD to TD

Plan for Protection

Oklahoma Corporation Commission requires surface casing to be set between 50' and 250' below base of treatable water, operator obtained approval to set the surface casing at a depth of 1500' with 13.375" casing.

Planned productive interval will be cased and cemented with 5.5" casing, cement will cover all pay zones.

Pressure Control Equipment

Equipment

Ten thousand (10M) psi working pressure Blind Rams and Pipe Rams and a five thousand (5M) psi Annular Preventer will be installed on all casing. Three (3) chokes, (2) hydraulic and (1) manual, will be used. Floor Safety Valves that are full open and sized to fit Drill Pipe and Collars will be available on the rig floor in the open position when the Top Drive is not in use.

Variance Request

A variance to the requirement of a rigid steel line connecting to the choke manifold is requested.

Testing Procedure

A third party testing company will conduct pressure tests and record prior to drilling out below 13.375" and 9.625" casing. The BOP, Choke, Choke Manifold, Top Drive Valves and Floor Safety Valves will be tested to 5000 psi prior to drilling below the 13.375" surface casing shoe and to 5000 psi prior to drilling below the 9.625" intermediate casing shoe. The Annular Preventer will be tested to 3500 psi prior to drilling below the 13.375" surface casing shoe and to 3,500 psi prior to drilling below the 9.625" intermediate casing shoe. The rotating head is not used for pressure control and will not be tested for such. In addition, the BOP equipment will be tested every 21 days and after any repairs to the equipment as well as drilling out below any casing string. Pipe rams, blind rams and annular preventer will be activated on each trip and weekly BOP drills will be held with each crew.

Proposed Casing Program

Depth	Hole (in)	Casing Size	Casing ID	Grade	Weight	Thread	Condition
0' - 1,500' MD	17.5	13.375	12.615	J55	54.5	BTC	New
8,115' - 11,031' MD	12.25	9.625	8.835	P-110EC	40	BTC	New
0' - 13,703' MD	8.75	5.5	4.778	P-110EC	23	VAMTOP-HT	New
13,703' - 23,671' MD	8.75	5.5	4.778	P-110EC	23	DWC/C IS+	New

Casing Size	Grade	Weight	Thread	Collapse (psi)	Burst (psi)	Tension (Kips)
13.375 in	J55	54.5	BTC	1130	2730	853242
9.625 in	P-110EC	40	BTC	4230	8980	1432000
5.5 in	P-110EC	23	VAMTOP-HT	16220	16510	829000
5.5 in	P-110EC	23	DWC/C IS+	16220	16510	829000

Burst Design:

Casing Size	Grade	Weight	Thread	Burst (psi)	Burst SF
13.375 in	J55	54.5	BTC	2730	3.684
9.625 in	P-110EC	40	BTC	8980	1.648
5.5 in	P-110EC	23	VAMTOP-HT	16510	1.187
5.5 in	P-110EC	23	DWC/C IS+	16510	1.187

Collapse Design:

Casing Size	Grade	Weight	Thread	Collapse (psi)	Collapse SF
13.375 in	J55	54.5	BTC	1130	2.749
9.625 in	P-110EC	40	BTC	4230	1.400
5.5 in	P-110EC	23	VAMTOP-HT	16220	1.516
5.5 in	P-110EC	23	DWC/C IS+	16220	1.516

Tension Design:

Casing Size	Grade	Weight	Thread	Tension (Kips)	Tension SF
13.375 in	J55	54.5	BTC	853242	4.695
9.625 in	P-110EC	40	BTC	1432000	2.646
5.5 in	P-110EC	23	VAMTOP-HT	829000	2.356
5.5 in	P-110EC	23	DWC/C IS+	829000	2.356

Assumptions:

Maximum Bottom Hole Temperature (BHT) = 225°F

Maximum Bottom Hole Pressure (BHP) = 10468 psi (15 ppg MW)

All casing design assumptions were ran in Stress Check to determine safety factor which meet or exceed both Devon Energy and BLM minimum requirements. All casing strings will be filled while running in hole in order to not exceed collapse rating of the pipe.

Well will be in an overbalanced state while drilling with sufficient mud weight to provide hole stability. Similar wells drilled with like pressure gradients in the target formation have shown desirable well bore stability with given mud weights. Operator used 0.22 psi/ft gradient to calculate burst and collapse safety factors in order to assume a worst case scenario.

Load cases evaluated include:

Burst: The casing is subjected to the maximum internal burst pressure when the casing is pressure tested prior to the frac job to 12,000 psi with 8.3 ppg fresh water inside the casing. The TOC behind the production casing will be 9041 ft. The minimum SF is 1.0.

Collapse: The casing is subjected to the maximum external (collapse) pressure during full evacuation of the casing with maximum mud weight (15 ppg) behind the casing from surface to TOC (9041') and cement slurry density (16 ppg) from TOC to casing shoe TVD. The minimum SF is 1.1.

Tension: The maximum tensile load subjected to the casing results from the cooling effect of injecting fluid down the casing during the frac job. The minimum SF is 1.4.

All casing strings below the conductor shall be pressure tested to 0.22 psi/ft. of casing string length or 1500 psi, whichever is greater, but not to exceed 70% minimum internal yield.

Proposed Cement Program

Surface Casing: Cement will be circulated to surface, estimated volume (gauge hole + 45%).

Lead: 433 sks standard cement @11.5ppg, 2.79 ft³/sks

Estimated additives used:

8.80 lbm/sk Enhancer 923, CMT, 4 % Bentonite, 0.1250 lbm/sk Poly-E-Flake, 2 % Calcium Chloride, Pellet and 11.03 Gal/sk fresh water

Tail: 232 sks standard cement @14.8ppg, 1.3 ft³/sks

Estimated additives used:

37.60 lbm/sk Enhancer 923, CMT, 2 % Calcium Chloride, Pellet 0.1250 lbm/sk Poly-E-Flake and 5.91 Gal/sk fresh water

Intermediate Casing:

Cement top will be 8,115' TVD/MD. Estimated volume (gauge hole + 25%).

Lead: 227 sks standard cement @10.5ppg, 4.16 ft³/sks

Estimated additives used:

31.02 lbm/sk Enhancer 923, CMT, 28.22 lbm/sk Pozmix A, 0.20 % WellLife 1094 - 15 lb bag, 8 % Bentonite, 8 % Cal-Seal 60, 0.25 % WG-17, 25.96 Gal/sk fresh water

Tail: 151 sks standard cement @13.5ppg, 1.3 ft³/sks

Estimated additives used:

0.20 % WellLife 1094 - 15 lb bag, 0.25 % HR-800, 0.05 % WG-17, 0.40 % Halad(R)-9, 5.76 Gal/sk fresh water

Production Casing:

Cement top for the production cement will be brought up to ~9,041' TVD/MD, 2,000' above intermediate casing which covers all hydrocarbon bearing formations with cement. Estimated volume (gauge hole + 25%).

Tail: 3915 sks standard cement @16ppg, 1.18 ft³/sks

Estimated additives used:

Halliburton NeoCEM proprietary blend + 0.2% BWOC Welllife 1094, 0.125 lbs/sk POL-E-FLAKE

The Novi formation will be identified by mud loggers based on cuttings samples.

All waiting on cement times shall be adequate to achieve a minimum of 500 psi compressive strength at the casing shoe prior to drilling out.

Other freshwater zones and zones with valuable deposits of minerals will be protected by casing and cement in the wellbore.

Proposed Mud Program

Depth	Type	Wt. (ppg)	VIS	pH	Water Loss	PV	YP
0 ft to 1500 ft	FW	8.3-9.5	32-40	8.0-8.5	NC	0-25	0-20
1500 ft to 11031 ft	FW/GEL	8.3-9.5	45-50	8.5-10.5	NC	5-15	0-4
11031 ft to 23671 ft	OBM	13.3-15	60-65	9.0-9.5	8-10	8-16	15-18

NC = no control

In instances when circulation is lost, LCM will be used in order to attempt to regain full returns.

Mud System Requirements

Mud weight increases at shoe depths are for pressure control. Mud weight increases in the curve and lateral sections of the hole are for hole stability, not pressure control. Mud weight assumptions for casing load designs exceed anticipated maximum mud weight for balanced drilling in all hole sections.

The Mud System will run as a self-contained mud system utilizing electronic PVT sensors for monitoring pit levels with the drilling fluids, mud, and cuttings being transported to an OCC approved site for disposal or soil farmed with the appropriate approval. The location is constructed with the use of cemented soil that is an impervious surface under the drilling rig structures, substructures, operating equipment, storage tanks, sumps, cellars and ditches associated with this location. Above ground steel storage tanks are used instead of a reserve pit for storage and disposal of water, drill mud, and cuttings during operations. All drill cuttings and liquid mud will be hauled to an approved Oklahoma Corporation Commission site for disposal or soil farming upon receiving appropriate approval.

Evaluation Program

Directional Surveys: Surveys will be taken at intervals no greater than 200 ft when the dogleg severity is less than 5°/100 ft and no greater than 100 ft when the dogleg severity is greater than or equal to 5°/100 ft.

Samples: 30' samples KOP to TD. Dry cut to Devon geologist

Cores: None anticipated

DST's: None anticipated

Logs: Caliper log, Gamma Ray Log, Measurement while drilling, Mud Log/Geologic Lithology Log

Expected BHP

Anticipated bottom-hole pressure ranges from 9282 psi to 10468 psi (13.3-15.0 ppge)

Abnormal Pressures or Hazards

No abnormal pressures and/or temperatures are anticipated. No hydrogen sulfide is expected. Offset wells have shown that losses are expected in known loss zones in the Cottage Grove and Checkerboard formations. Immediate offset wells show no Red Fork channeling. Wellbore is West of the Morrow truncation line suggesting that the Morrow sands are likely present as a pressurized gas producing formation.

Supplementary Information

The proposed well will not require a flare pit. Expected mud weights in the MISSISSIPPIAN Shale Horizontal will be 0.5 to 1.0 ppg greater than formation pressure (i.e. overbalanced drilling.)

Overview of Drilling Procedure

Drill 17.5" hole to 1500' TVD; run 13.375" casing to 1500' and cement to surface; mount BOPE stack, set isolation plug and test BOPE and casing independently to regulatory requirements.

Drill 12.25" hole to 11031' TVD; run 9.625" casing, cement per cement program and test.

Drill 8.75" hole to 23671' MD, run 5.5" production casing, cement per program and test.

Overview of Completions

Test casing to 12,000 psi.

Frac through 5.5" casing with a maximum 12,000 STP, using a maximum fluid density of 11 ppg and TOC behind the 5.5" as per the cement program.

APD ID: 10400022718

Submission Date: 11/21/2017

Highlighted data reflects the most recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

[Show Final Text](#)

Well Type: OTHER

Well Work Type: Drill

Section 1 - Existing Roads

Will existing roads be used? NO

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

MAD_DOG_31_30_14N_11W_1HX_lease_road_20171012142157.pdf

New road type: RESOURCE

Length: 53.86 Feet

Width (ft.): 120

Max slope (%): 2

Max grade (%): 3

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 50

New road access erosion control: Silt Fence, and re-direct water from the north east around the north side of location heading west.

New road access plan or profile prepared? YES

New road access plan attachment:

MAD_DOG_31_30_14N_11W_1HX_road_profile_20171012142059.pdf

Access road engineering design? NO

Access road engineering design attachment:

Access surfacing type: GRAVEL

Access topsoil source: ONSITE

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Access surfacing type description:

Access onsite topsoil source depth: 12

Offsite topsoil source description:

Onsite topsoil removal process: 12" of topsoil is pushed to the side of location and stock piled.

Access other construction information:

Access miscellaneous information:

Number of access turnouts:

Access turnout map:

Drainage Control

New road drainage crossing: CULVERT

Drainage Control comments: 1 each 120' x 20" steel pipe

Road Drainage Control Structures (DCS) description: 1 each 120' x 20" steel pipe

Road Drainage Control Structures (DCS) attachment:

Access Additional Attachments

Additional Attachment(s):

Section 3 - Location of Existing Wells

Existing Wells Map? YES

Attach Well map:

MAD_DOG_31_30_14N_11W_1HX__1_mi_radius_20171012142438.pdf

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:

Production Facilities map:

Mad_Dog_31_30_14N_11W_1HX_Facility_Layout_Rev1_20171012142526.pdf

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Water source use type: INTERMEDIATE/PRODUCTION CASING,
SURFACE CASING

Water source type: RECYCLED

Describe type:

Source latitude:

Source longitude:

Source datum:

Water source permit type: WATER WELL

Source land ownership: PRIVATE

Water source transport method: PIPELINE

Source transportation land ownership: PRIVATE

Water source volume (barrels): 23275.102

Source volume (acre-feet): 3

Source volume (gal): 977554.3

Water source and transportation map:

Mad_Dog_Water_Map_20171018125450.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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Section 6 - Construction Materials

Construction Materials description: CKD Ashgrove Cement 1801 N Santa Fe Ave Chanute, KS 66720 Cap Rock Hoskins Trucking 256282 E CR 72 Hitchcock, OK 73744

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: drilled cuttings and liquid mud

Amount of waste: 2000 barrels

Waste disposal frequency : One Time Only

Safe containment description: above ground closed system containment

Safe containmant attachment:

Waste disposal type: OTHER

Disposal location ownership: PRIVATE

Disposal type description: soil farming

Disposal location description: All cuttings and liquid mud are captured in above ground closed system containment then hauled to an approved Oklahoma Corporation Commission site for disposal or soil farming upon receiving appropriate approval.

Waste type: FLOWBACK

Waste content description: Completion water from frac, and produced formation water.

Amount of waste: 85000 barrels

Waste disposal frequency : Daily

Safe containment description: onsite tank battery

Safe containmant attachment:

Waste disposal type: OFF-LEASE INJECTION

Disposal location ownership: PRIVATE

Disposal type description:

Disposal location description: Williamson 1-2 SWD, Bomoff 1 SWD, Canna 1-13 SWD, Safari 1 SWD

Waste type: COMPLETIONS/STIMULATION

Waste content description: Recirculated fresh water, with small amount of formation frac water.

Amount of waste: 5000 barrels

Waste disposal frequency : One Time Only

Safe containment description: 500 bbl frac tanks with a lined containment area.

Safe containmant attachment:

Waste disposal type: OFF-LEASE INJECTION

Disposal location ownership: PRIVATE

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Disposal type description:

Disposal location description: Williamson 1-2 SWD, Bomoff 1 SWD, Canna 1-13 SWD, Safari 1 SWD

Waste type: PRODUCED WATER

Waste content description: Produced formation water, small amounts of frac water.

Amount of waste: 105000 barrels

Waste disposal frequency : Daily

Safe containment description: onsite tank battery

Safe containmant attachment:

Waste disposal type: OFF-LEASE INJECTION **Disposal location ownership:** PRIVATE

Disposal type description:

Disposal location description: Williamson 1-2 SWD, Bomoff 1 SWD, Canna 1-13 SWD, Safari 1 SWD

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 cuttings stored in an above ground storage tank, closed loop system.

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

MAD_DOG_31_30_14N_11W_1HX_final_contours_20171012143812.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name:

Multiple Well Pad Number:

Recontouring attachment:

Drainage/Erosion control construction: All areas disturbed shall be reclaimed as early and as nearly as practicable to their original condition or their final land use and shall be maintained to control dust and minimize erosion to the extent practicable.

Drainage/Erosion control reclamation: Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns. The disturbed area then shall be reseeded in the first favorable growing season.

Wellpad long term disturbance (acres): 2.68

Wellpad short term disturbance (acres): 2.97

Access road long term disturbance (acres): 0.11

Access road short term disturbance (acres): 0.11

Pipeline long term disturbance (acres): 0

Pipeline short term disturbance (acres): 0

Other long term disturbance (acres): 0

Other short term disturbance (acres): 0

Total long term disturbance: 2.79

Total short term disturbance: 3.08

Reconstruction method: Operator will use Best Management Practices "BMP" to mechanically recontour to obtain the desired outcome.

Topsoil redistribution: Topsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.

Soil treatment: Topsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns.

Existing Vegetation at the well pad: Grasses and mesquite.

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road: Grasses and mesquite.

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline: Grasses and mesquite.

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances: Grasses and mesquite.

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? NO

Seed harvest description:

Seed harvest description attachment:

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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

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: Maintain weeds on an as need basis.

Weed treatment plan attachment:

Monitoring plan description: Monitor as needed.

Monitoring plan attachment:

Success standards: Reclamation will be determined successful when the desirable vegetation across the disturbed area reaches 70% of the background cover. (This is standard for every well)

Pit closure description: No pits, closed loop system

Pit closure attachment:

Section 11 - Surface Ownership

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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: MAD DOG 31_30-14N-11W

Well Number: 1HX

Fee Owner: William J. Reed Revocable Trust

Fee Owner Address: PO Box 1

Phone: (405)488-7001

Email:

Surface use plan certification:

Surface use plan certification document:

Surface access agreement or bond:

Surface Access Agreement Need description:

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: Onsite conducted on 09/26/2017, MAD DOG 31_30-14N-11W 1HX, NOS #: 10400021348

Other SUPO Attachment

Soil_Cementing_Attachment_20171121134739.pdf

2017_8_31_MAD_DOG_31_30_14N_11W_1HX_lease_plat_20171121135939.pdf

WMP_20171121140416.docx

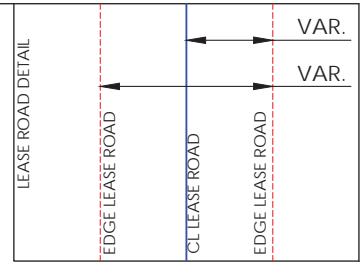


DEVON ENERGY
 OPERATOR: PRODUCTION COMPANY, L.P.
 LEASE NAME: MAD DOG 31_30-14N-11W
 WELL NO. 1HX
 BLAINE COUNTY, STATE: OK

LEASE RD FOOTAGE: 53.86 L.F. OR 3.26 RODS
 SECTION: 31 TOWNSHIP: 14N RANGE: 11W

"MAD DOG 31_30-14N-11W 1HX"

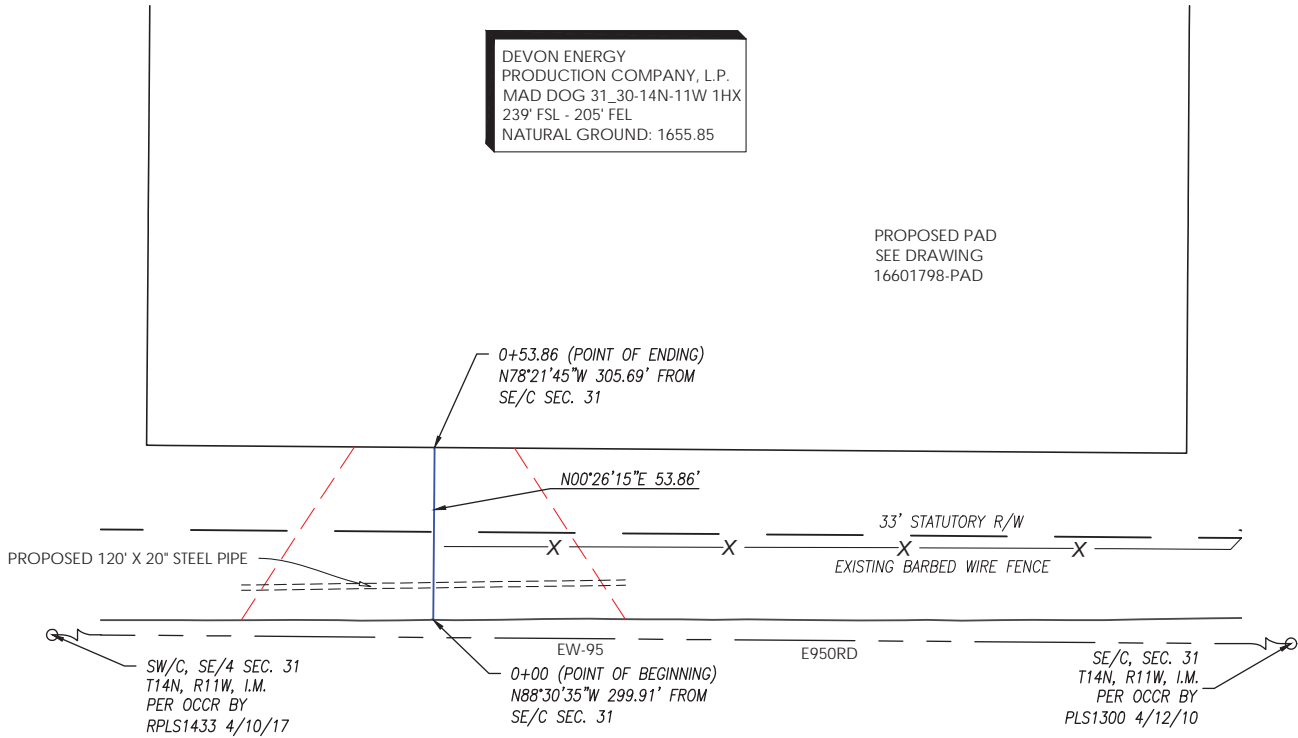
NOTES:
 • THE LAST SITE VISIT WAS PERFORMED ON 8/23/17.
 • OWNERSHIP SHOWN HEREON IS PROVIDED BY AND/OR VERIFIED WITH CLIENT.



REED, WILLIAM J REVOCABLE TRUST
 SE/4, SEC. 31, 14N 11W I.M.
 TOTAL LENGTH = 53.86 L.F. OR 3.26 RODS

DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 MAD DOG 31_30-14N-11W 1HX
 239' FSL - 205' FEL
 NATURAL GROUND: 1655.85

PROPOSED PAD
 SEE DRAWING
 16601798-PAD



Centerline Description of a Proposed Lease Road situate within a portion of the Southeast Quarter (SE/4) of Section Thirty-One (31), Township Fourteen North (T14N), Range Eleven West (R11W) of the Indian Meridian (I.M.) in Blaine County, Oklahoma, being more particularly described as follows:

BEGINNING at a point, said point being N 88° 30' 35" W 299.91 feet from the Southeast corner of said SE/4; thence N 00° 26' 15" E a distance of 53.86 feet to and ENDING at a point 90 feet East of the Southwest corner of a proposed pad, said point being N 78° 21' 45" W 305.69 feet from the Southeast corner of said SE/4.

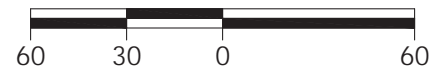
The Basis of Bearing for this description is Grid North, NAD 83(2011), Oklahoma North Zone. This description was prepared on August 25, 2017 BY Denver Winchester, LPLS 1952.

Being 120 feet wide tapering to 50 feet wide at 0+53.86
 Total Length = 53.86 L.F. OR 3.26 RODS

CERTIFICATION:
 I, DENVER WINCHESTER, OKLAHOMA LICENSED PROFESSIONAL LAND SURVEYOR NO. 1952, DO HEREBY CERTIFY THAT THIS PLAT OF SURVEY MEETS THE OKLAHOMA MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING AS ADOPTED BY THE OKLAHOMA STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS
 Date: 2017.08.31 06:49:40-05'00'

DENVER WINCHESTER PLS 1952

GRAPHIC SCALE IN FEET



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:

LEASE ROAD EXHIBIT
 PART OF THE SE/4 OF
 SECTION 31, 14N, 11W
 BLAINE COUNTY, OKLAHOMA

SCALE: 1" = 60'

PLOT DATE: 08-31-2017

DRAWING: 16601798-LR

DRAWN BY: SQ

300 Pointe Parkway Blvd
 Yukon, OK 73099
 405.787.6270 t 405.787.6276 f
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 SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

SHEET NO.: 1 OF 1

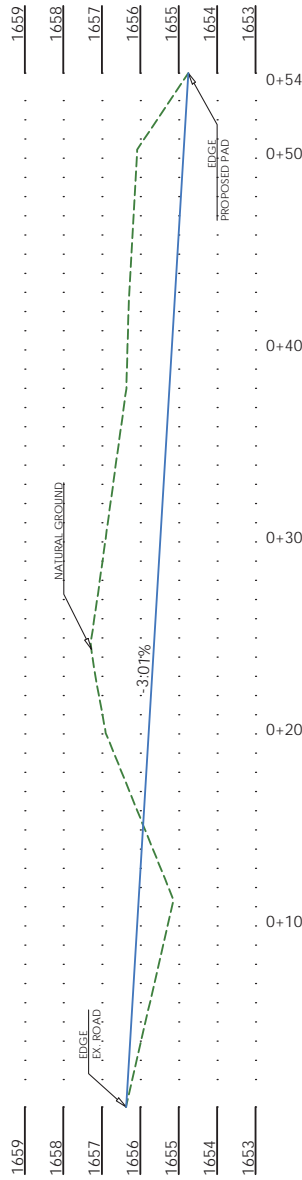
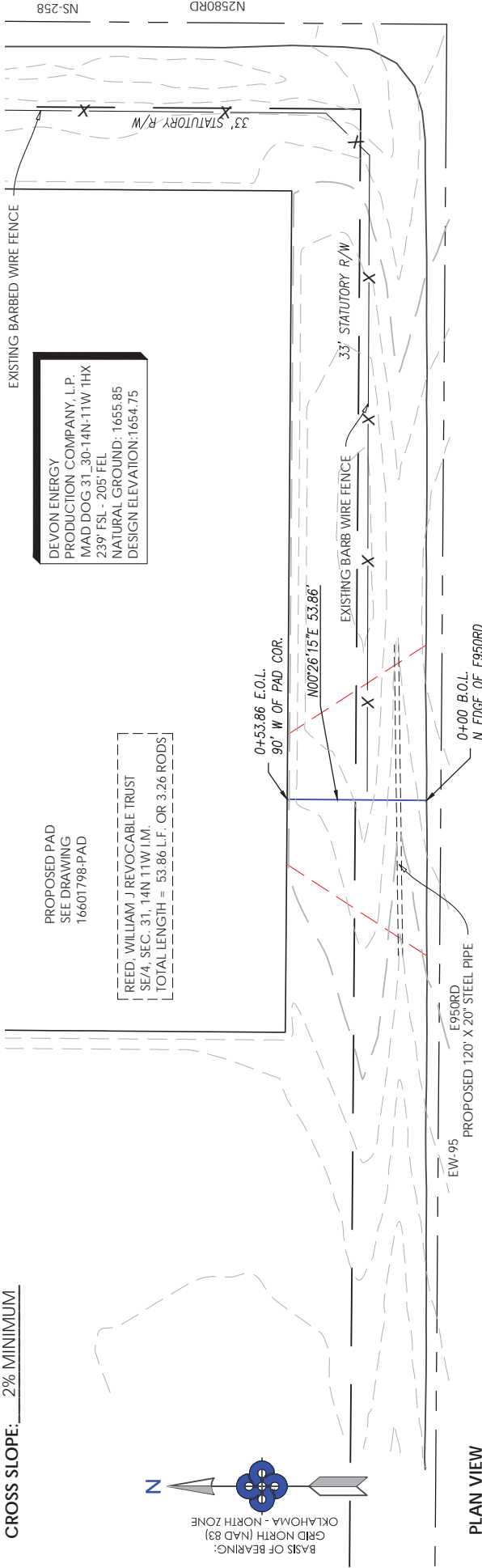
OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
 LEASE NAME: MAD DOG 31_30-14N-11W
 WELL NO. 1HX
 BLAINE COUNTY, STATE: OK
 LEASE ROAD FOOTAGE: 53.86 L.F. OR 3.26 RODS
 SECTION: 31 TOWNSHIP: 14N RANGE: 11W
 CROSS SLOPE: 2% MINIMUM

- NOTES:
- THIS PROPOSED EXHIBIT DOES NOT REPRESENT A TRUE BOUNDARY SURVEY
 - THE FOOTAGES AND TIES SHOWN HEREON ARE FROM LINES OF OCCUPATION AND MAY NOT BE FROM ACTUAL PROPERTY CORNERS.
 - OWNERSHIP SHOWN HEREON IS PROVIDED BY AND/OR VERIFIED WITH CLIENT.
 - THIS PLAN AND PROFILE EXHIBIT IS FOR INFORMATIONAL PURPOSES ONLY AND DOES NOT REPRESENT ANY DESIGN WORK
 - ANY UTILITY INFORMATION SHOWN HEREON IS AN APPROXIMATION AND SHOULD BE VERIFIED BY THE CONTRACTOR.

PROPOSED PAD
 SEE DRAWING
 16601798-PAD

REED, WILLIAM J. REVOCABLE TRUST
 SE/4, SEC. 31, 14N 11W 11M.
 TOTAL LENGTH = 53.86 LF. OR 3.26 RODS

DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 MAD DOG 31_30-14N-11W 1HX
 239' FSL - 205' FEL
 NATURAL GROUND: 1655.85
 DESIGN ELEVATION: 1654.75



MAD DOG 31_30-14N-11W 1HX

PROPOSED LEASE ROAD PLAN AND PROFILE
 PART OF THE SE/4 OF
 SECTION 31, 14N, 11W
 BLAINE COUNTY, OKLAHOMA



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 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

REVISION DATE:

SCALE: 1" = 60'
 PLOT DATE: 08-31-2017
 DRAWING:
 DRAWN BY:

16601798-LR-P&P
 SQ

1 Mile Buffer



HOLMAN 1-24H
35011232970100

HOLMAN 1-19H
35011233100000

MAX 1-18H
35011234700000

PETTICREW 1-20H
35011233000000

NEELY 1-21H
35011233570000

24

19

20

21

JONES 1-21
35011220440000

YOUNG 23-19 /14-11/ 1
35011202720000

HOLMAN 1-24H_P
35011232970000

HELM 1-25H
35011233430000

MAD DOG 31_30-14N-11W 1HX
35011AABWW0000

GARY 1-28H
3501123476000

25

30

29

28

FLORA GOURLEY 1-30
35011208960000

PETTICREW 1
35011204620000

BRETZLAFF 29-1
35011228720000

DEEN 1
35011207970000

MUSE 1-30
35011231110000

GARRETT 1-36H
35011233280000

BETTY JO 1-29H
35011233740000

36

31

32

33

BOMHOFF 1-36
35011215590000

BOMHOFF 1 SWD
35011219620001

BOMHOFF 1
35011219620000

LONDON GRAYSE 1-6H_ST1
35011233590100

MUSE 1-31H
35011232850000

BOMHOFF TRUST 1-32H
35011233130000

STRATMAN 1
35011303480000

BASE 1-33H
35011233010000

1

6

5

4

LONDON GRAYSE 1-6H_OH
35011233590000

GRAMLI
3501120

BURNS 1-1
35011216060000

STEGALL 1
35011214440000

OTTER 1-12H
35011232710000

MAIB 1-5H
35011232840000

SEYLER 1-9H
35011232820000

COBLE 1-7H
35011232600000

LEFT HAND WOMAN 1-8H
35011232690000



DEVON ENERGY PRODUCTION CO

MAD DOG 31_30-14N-11W 1HX

BLAINE COUNTY, OK

October 3, 2017 9:54 AM

10/17/2017

35°38'20.5"N 98°24'09.7"W - Google Maps

Google Maps

35°38'20.5"N 98°24'09.7"W

MAD DOG 31-30-14N-11W 1HX

POUD NW 1/4 of SW 1/4 31-14N-11W



Imagery ©2017 Google, Map data ©2017 Google, United States 500 ft

WTR. LINE

LOCATION

Measure distance

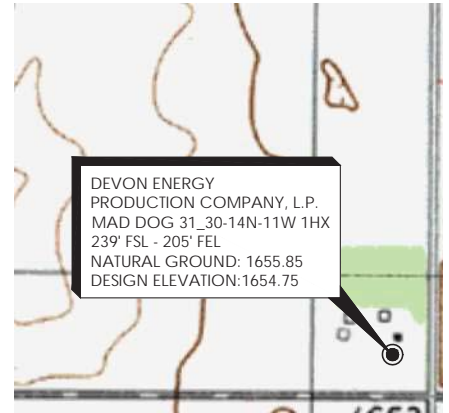
Total distance: 1.45 mi (2.33 km)

SE 1/4 31-14N-11W

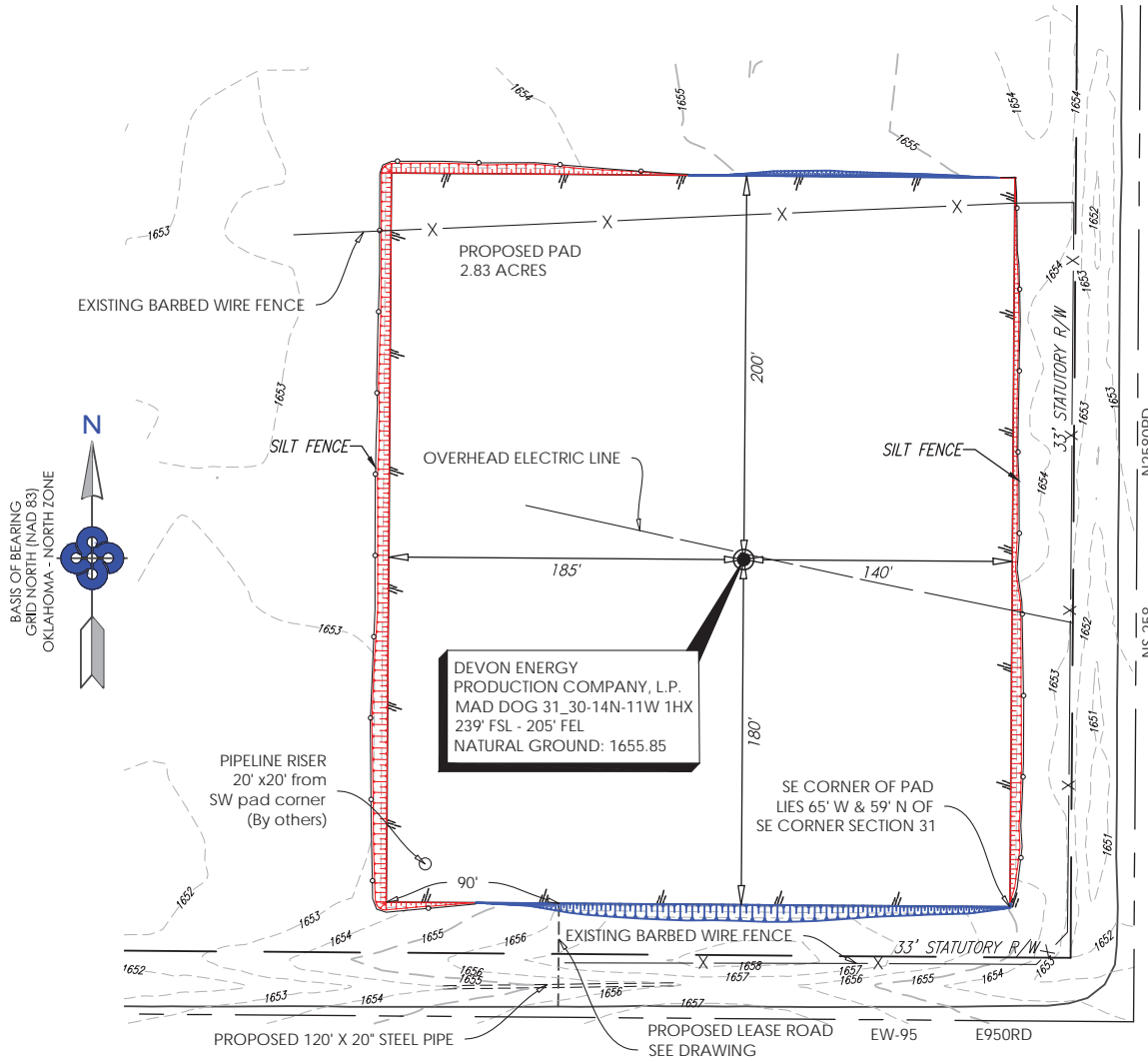


OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
 LEASE NAME: MAD DOG 31_30-14N-11W
 WELL NO. 1HX
 GOOD DRILL SITE. YES
 BLAINE COUNTY, STATE: OK
 GROUND ELEVATION: 1655.85 GR. AT STAKE
 SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL
 SECTION: 31 TOWNSHIP: 14N RANGE: 11W

REED, WILLIAM J REVOCABLE TRUST
 SE/4, SEC. 31, 14N 11W I.M.



DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 MAD DOG 31_30-14N-11W 1HX
 239' FSL - 205' FEL
 NATURAL GROUND: 1655.85
 DESIGN ELEVATION: 1654.75



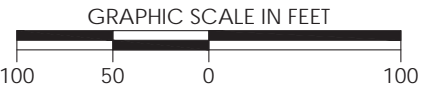
DEVON ENERGY
 PRODUCTION COMPANY, L.P.
 DESIGN INFORMATION

FINISHED PAD ELEV: 1654.75
 CUT RATIO: 3:1
 FILL RATIO: 4:1
 CUT VOLUME: 2,267 C.Y.
 FILL VOLUME: 2,267 C.Y.
 SHORT TERM PAD DISTURBANCE:
 2.97 AC± OR 129,544 SQ FT±
 LONG TERM PAD DISTURBANCE:
 0.11 AC± OR 4,575 SQ FT±
 SHORT TERM LEASE ROAD DISTURBANCE:
 0.11 AC± OR 4,575 SQ FT±
 LONG TERM LEASE ROAD DISTURBANCE:
 0.11 AC± OR 4,575 SQ FT±
 SHORT TERM TOTAL DISTURBANCE:
 3.08 AC± OR 134,119 SQ FT±
 LONG TERM TOTAL DISTURBANCE:
 2.79 AC± OR 121,452 SQ FT±

Date: 2017.08.31 06:49:50-05'00'



- NOTES:
- THIS PROPOSED PLAT DOES NOT REPRESENT A TRUE BOUNDARY SURVEY
 - THE FOOTAGES AND TIES SHOWN HEREON ARE FROM LINES OF OCCUPATION AND MAY NOT BE FROM ACTUAL PROPERTY CORNERS.
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 - INFORMATION SHOWN HEREON IS FOR CONSTRUCTION PURPOSES ONLY



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	

FINAL CONTOURS
 PART OF THE SE/4 OF
 SECTION 31, 14N, 11W
 BLAINE COUNTY, OKLAHOMA

300 Pointe Parkway Blvd
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Crafton Tull
 SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

G:\16601798_MADDOG\ENERGY\DWG_CLIPS\WELL_FLAT\BIA-DEVON-PAD-PROFILE.DWG 8/31/2017 6:47:40 AM DW2795

Devon energy emplaces an impervious liner through subgrade stabilization by incorporating chemical additives into the subgrade to increase the strength of the subgrade soils and to provide structural value for the pavement structure. This consists of first compacting one or more layers of a mixture of soil, chemical additives and water to achieve a stable subgrade. Chemical additives used to stabilize or modify are defined as cementitious additives, namely Portland cement, fly ash, lime additives and cement kiln dust. The chemical composition of the additives are tested against standards ASTM C150/C150M-16 for chemical and physical properties.



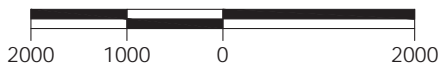
OPERATOR: DEVON ENERGY PRODUCTION COMPANY, L.P.
 LEASE NAME: MAD DOG 31_30-14N-11W
 WELL NO. 1HX
 GOOD DRILL SITE: YES
 BLAINE COUNTY, STATE: OK
 GROUND ELEVATION: 1655.85 GR. AT STAKE
 SURFACE HOLE FOOTAGE: 239' FSL - 205' FEL
 SECTION: 31 TOWNSHIP: 14N RANGE: 11W
 BOTTOM HOLE: 30-14N-11W.I.M.
 DISTANCE TO NEAREST WELL: 7085'
 MUSE 1-31H API#3501123285

ACCESSIBILITY TO LOCATION: FROM SOUTH LINE
 TOPOGRAPHY & VEGETATION: LOCATION FELL IN THE CORNER OF A FIELD

DISTANCE & DIRECTION FROM HWY JCT OR TOWN: 5.0MI± W OF GEARY
 FROM THE TOWN OF GEARY HEAD NORTH ON US-281 0.5MI± TO E950RD,
 HEAD WEST 4.8MI± TO INTER. OF E950RD & N2580RD, PAD SITE IS ON THE NW CORNER.

PLEASE NOTE THAT THIS LOCATION WAS STAKED ON THE GROUND UNDER THE SUPERVISION OF A LICENSED PROFESSIONAL LAND SURVEYOR, BUT ACCURACY OF THIS EXHIBIT IS NOT GUARANTEED. PLEASE CONTACT CRAFTON TULL PROMPTLY IF ANY INCONSISTENCY IS DETERMINED, GPS DATA IS OBSERVED FROM RTK-GPS.
 NOTE: X AND Y DATA SHOWN HEREON FOR SECTION CORNERS MAY NOT HAVE BEEN SURVEYED ON THE GROUND, AND FURTHER, DOES NOT REPRESENT A TRUE BOUNDARY SURVEY.

GRAPHIC SCALE IN FEET



SURFACE HOLE DATA

STATE PLANE COORDINATES:
 ZONE: OK-NORTH NAD27
 X: 1880488.9
 Y: 232849.3
 GPS DATUM: NAD27
 LAT: 35.63900073
 LONG: -98.40218207
 STATE PLANE COORDINATES:
 ZONE: OK-NORTH NAD83
 X: 1848889.4
 Y: 232873.6
 GPS DATUM: NAD83
 LAT: 35.63904922
 LONG: -98.40252650

BOTTOM HOLE DATA

STATE PLANE COORDINATES:
 ZONE: OK-NORTH NAD27
 X: 1880357.4
 Y: 243106.9
 GPS DATUM: NAD27
 LAT: 35.66717909
 LONG: -98.40276782

STATE PLANE COORDINATES:
 ZONE: OK-NORTH NAD83
 X: 1848757.7
 Y: 243131.2
 GPS DATUM: NAD83
 LAT: 35.66722687
 LONG: -98.40311306

FIRST PERFORATION DATA

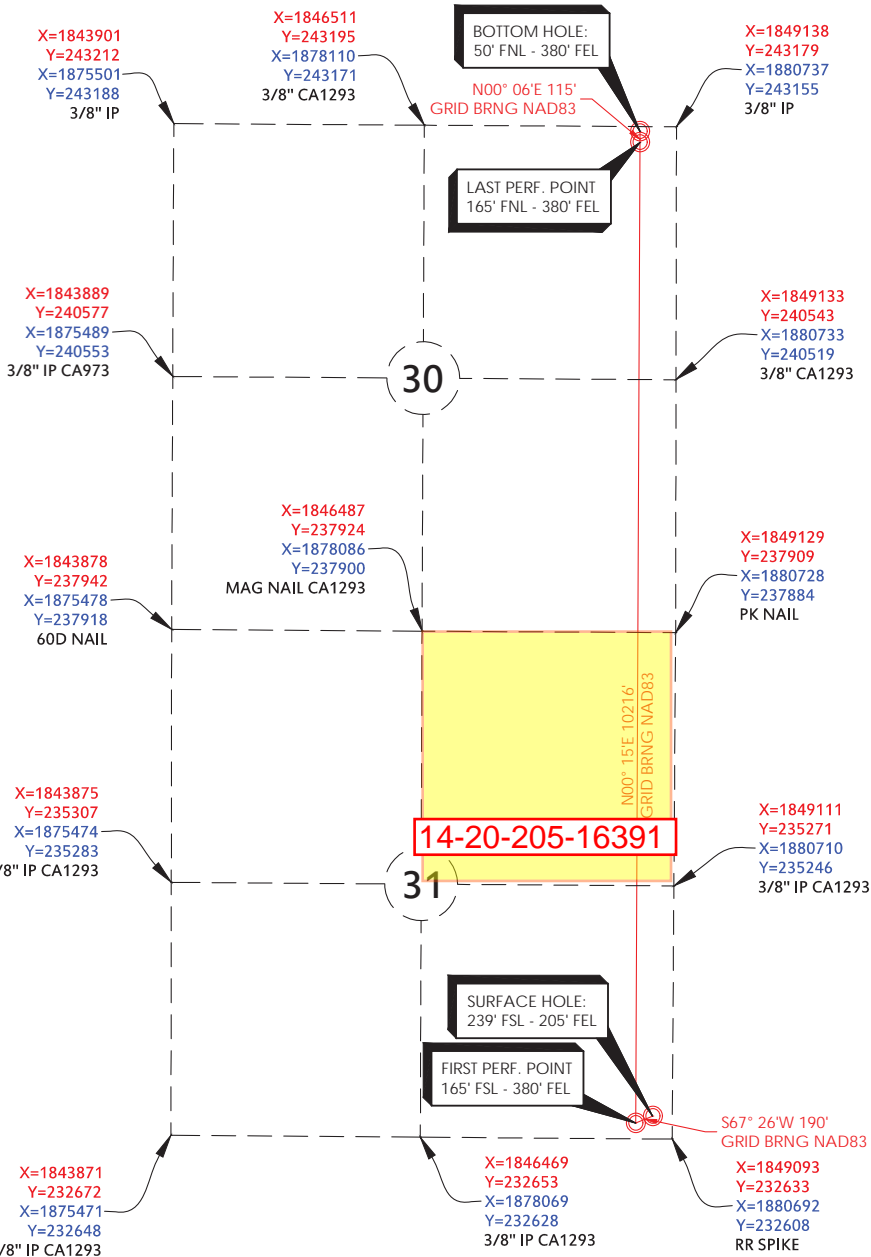
STATE PLANE COORDINATES:
 ZONE: OK-NORTH NAD27
 X: 1880313.1
 Y: 232776.3
 GPS DATUM: NAD27
 LAT: 35.63879808
 LONG: -98.40277237
 STATE PLANE COORDINATES:
 ZONE: OK-NORTH NAD83
 X: 1848713.7
 Y: 232800.5
 GPS DATUM: NAD83
 LAT: 35.63884658
 LONG: -98.40311681

BOTTOM HOLE INFORMATION PROVIDED BY OPERATOR LISTED.

BASIS OF ELEVATION:
 TOPO ELEVATION = 1653.19'
 AT E/4, SECTION 31, 14N-11W
 TOPO ELEVATION = 1653.59'
 AT SE COR. SECTION 31, 14N-11W
 TOPO ELEVATION = 1643.45'
 AT S/4, SECTION 31, 14N-11W

CERTIFICATION:
 THIS IS TO CERTIFY THAT THIS WELL LOCATION EXHIBIT WAS COMPILED AND PREPARED UNDER MY SUPERVISION.
 Date: 2017.08.31 06:50:11-05'00'

Denver Winchester
 DENVER WINCHESTER PLS 1952



MAD DOG 31_30-14N-11W 1HX

REVISION DATE:	

PART OF THE SE/4 OF SECTION 31, 14N, 11W
 WELL LOCATION EXHIBIT
 BLAINE COUNTY, OKLAHOMA

SCALE: 1" = 2000'
 PLOT DATE: 08-31-2017

DRAWING: 16601798-WELL
 DRAWN BY: SQ

300 Pointe Parkway Blvd
 Yukon, OK 73099
 405.787.6270 t 405.787.6276 f
 www.craftontull.com

Crafton Tull
 SURVEYING
 CERTIFICATE OF AUTHORIZATION:
 CA 973 (PE/LS) EXPIRES 6/30/2018

WASTE MINIMIZATION PLAN

Operator Name:
Devon Energy Production Company, L.P.

Operator Address:
333 West Sheridan Ave.
Oklahoma City, OK 73102

Lease Serial No. 14-20-205-16391

If Indian, Allottee or Tribe Name:
Cheyenne & Arapaho

If Unit or CA Agreement Name and No.:

Well Name and Well No.:
Mad Dog 31_30-14N-11W 1HX

APD ID No.:
10400022718

1. **ANTICIPATED COMPLETION DATE AND DATE OF FIRST PRODUCTION OF PROPOSED WELL**

Completion dates and dates of first production can be highly uncertain and variable during the well planning and development process, especially during the time period between the point of time an APD is submitted to the commencement of completions operations. Factors that may influence completion date and date of first production, but which are uncertain at this time, include drilling schedules, completions schedules, surface use restrictions, weather and environmental conditions, and economic considerations. Accordingly, the information provided here is only a rough estimation.

The estimated completion date of the proposed well is within 90 days after the date stated in Field 22 (approximate date work will start) of the APD associated with this plan.

The estimated date of first production of the proposed well is within 60 days after the date of commencement of completions operations.

2. **EXPECTED OIL AND GAS PRODUCTION RATES OF THE PROPOSED WELL**

OPERATOR CONSIDERS THE FOLLOWING INFORMATION CONFIDENTIAL BUSINESS INFORMATION. OPERATOR RESPECTFULLY REQUESTS THAT BLM APPLY ALL AVAILABLE SAFEGUARDS TO PROTECT DISCLOSURE OF SUCH INFORMATION, INCLUDING REFRAINING FROM POSTING OR OTHERWISE MAKING THIS INFORMATION PUBLICLY AVAILABLE.

The expected oil production rate of the proposed well is 650 – 1270 bopd.¹

The expected gas production rate of the proposed well is 3300 – 7700 mcf.²

3. **EXPECTED DURATION OF THE PROPOSED WELL**

OPERATOR CONSIDERS THE FOLLOWING INFORMATION CONFIDENTIAL BUSINESS INFORMATION. OPERATOR RESPECTFULLY REQUESTS THAT BLM APPLY ALL AVAILABLE SAFEGUARDS TO PROTECT DISCLOSURE OF SUCH INFORMATION, INCLUDING REFRAINING FROM POSTING OR OTHERWISE MAKING THIS INFORMATION PUBLICLY AVAILABLE.

The expected duration of the proposed well is 30 – 50 years.³

1 OPERATOR RESPECTFULLY OBJECTS TO PROVIDING ITS CONFIDENTIAL, PROPRIETARY INTERNAL DATA AND PROJECTIONS FOR THIS WELL BECAUSE SUCH PUBLIC DISCLOSURE WOULD PROVIDE A COMPETITIVE ADVANTAGE TO OUR PEERS, COMPROMISE OPERATOR'S DETERMINATION OF ENTERPRISE VALUE, AND AS A CONSEQUENCE, BE A GRAVE DISSERVICE TO OUR SHAREHOLDERS.

2 Please refer to previous footnote.

3 Please refer to previous footnote.

4. **EXPECTED PRODUCTION DECLINE CURVE OF OIL AND GAS FROM THE PROPOSED WELL**

OPERATOR CONSIDERS THE FOLLOWING INFORMATION CONFIDENTIAL BUSINESS INFORMATION. OPERATOR RESPECTFULLY REQUESTS THAT BLM APPLY ALL AVAILABLE SAFEGUARDS TO PROTECT DISCLOSURE OF SUCH INFORMATION, INCLUDING REFRAINING FROM POSTING OR OTHERWISE MAKING THIS INFORMATION PUBLICLY AVAILABLE.

The requested estimate is objectionable⁴ and irrelevant to pipeline capacity at time of initial connection. Nonetheless, please see attached for a generic estimation of the information requested.

5. **EXPECTED BTU VALUE FOR GAS PRODUCTION FROM THE PROPOSED WELL**

OPERATOR CONSIDERS THE FOLLOWING INFORMATION CONFIDENTIAL BUSINESS INFORMATION. OPERATOR RESPECTFULLY REQUESTS THAT BLM APPLY ALL AVAILABLE SAFEGUARDS TO PROTECT DISCLOSURE OF SUCH INFORMATION, INCLUDING REFRAINING FROM POSTING OR OTHERWISE MAKING THIS INFORMATION PUBLICLY AVAILABLE.

The expected BTU value for gas production from the proposed well is 1100-1300 BTUs.⁵

6. **INFORMATION PROVIDED TO MISTREAM PROCESSING COMPANIES**

Operator certifies that it has provided (or will as soon as practicable) one or more midstream processing companies with Operator's production plans, including the anticipated completion dates and gas production rates of the well(s) proposed herein.

7. **IDENTIFICATION OF GAS PIPELINE AND INFORMATION ON THE PIPELINE**

Operator has identified a gas pipeline to which the operator plans to connect, with sufficient capacity to accommodate the anticipated production of the proposed well.

- A. Pipeline identity: Enlink Midstream
- B. Maximum Current Daily Capacity of the Pipeline: N/A
- C. Current Throughput of the Pipeline: N/A

4 Please refer to previous footnote.

5 Please refer to previous footnote.

- D. Anticipated Daily Capacity of the Pipeline at the Anticipated Date of First Gas Sales from the Proposed Well: N/A
- E. Anticipated Throughput of the Pipeline at the Anticipated Date of First Gas Sales from the Proposed Well: N/A
- F. Description of Plans Known to Operator for Expansion of Pipeline Capacity for the Area that Includes the Proposed Well: N/A

8. **INFORMATION REQUESTED WHEN OPERATOR CANNOT IDENTIFY A GAS PIPELINE WITH SUFFICIENT CAPACITY**

- A. Volumes Currently Being Flared or Vented:

Operator has identified a gas pipeline to which the operator plans to connect, with sufficient capacity to accommodate the anticipated production of the proposed well. Therefore, this information is not necessary.

- B. Gas Pipeline System Map:

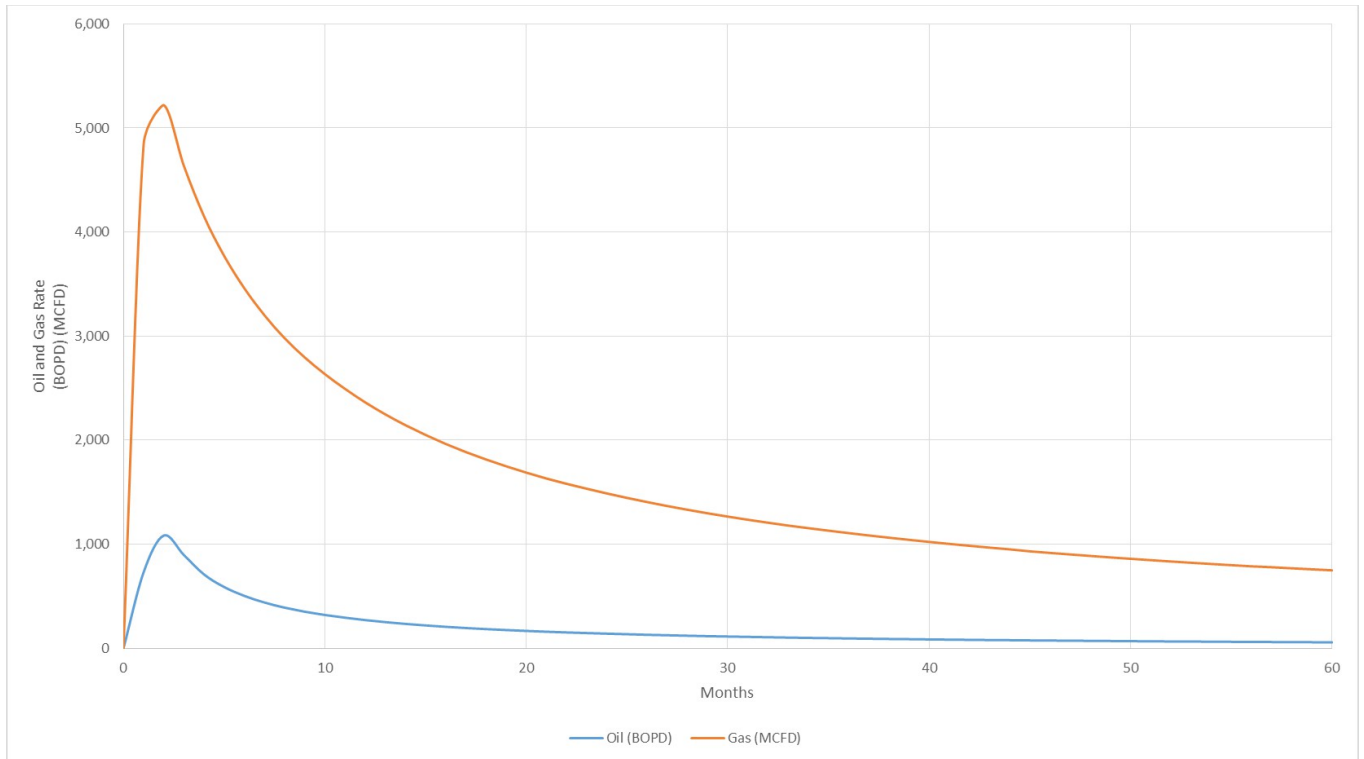
Operator has identified a gas pipeline to which the operator plans to connect, with sufficient capacity to accommodate the anticipated production of the proposed well. Therefore, this information is not necessary.

- C. Evaluation of Opportunities for On-Site Capture Approaches:

Operator has identified a gas pipeline to which the operator plans to connect, with sufficient capacity to accommodate the anticipated production of the proposed well. Therefore, this information is not necessary.

PRODUCTION DECLINE CURVE ATTACHMENT

OPERATOR CONSIDERS THE FOLLOWING INFORMATION CONFIDENTIAL BUSINESS INFORMATION. OPERATOR RESPECTFULLY REQUESTS THAT BLM APPLY ALL AVAILABLE SAFEGUARDS TO PROTECT DISCLOSURE OF SUCH INFORMATION, INCLUDING REFRAINING FROM POSTING OR OTHERWISE MAKING THIS INFORMATION PUBLICLY AVAILABLE.



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:

Describe 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:

Describe 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:



Bond Information

Federal/Indian APD: IND

BLM Bond number:

BIA Bond number: 30S100753026-22

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: