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Form 3160-3
(June 2015)

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

JAN 22 2019

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT DISTRICT II-ARTESIA O.C.D.

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM016348

6. If Indian, Allotee or Tribe Name:

1a. Type of work: ☑ DRILL ☐ REENTER

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

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

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

8. Lease Name and Well No.: LUSITANO 27-34 FED COM 736H 319562

2. Name of Operator: DEVON ENERGY PRODUCTION COMPANY LP 6137

9. API Well No.: 30-015-45659

3a. Address: 333 West Sheridan Avenue Oklahoma City OK 73102

3b. Phone No. *(include area code)*: (800)583-3866

10. Field and Pool, or Exploratory: PURPLE SAGE / WOLFCAMP 98220

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

At surface: NENE / 235 FNL / 1210 FEL / LAT 32.1079108 / LONG -103.7612552

At proposed prod. zone: SWSE / 330 FSL / 1350 FEL / LAT 32.079443 / LONG -103.7660268

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 27 / T25S / R31E / NMP

14. Distance in miles and direction from nearest town or post office*

12. County or Parish: EDDY

13. State: NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any): 540 feet

16. No of acres in lease: 840

17. Spacing Unit dedicated to this well: 320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 235 feet

19. Proposed Depth: 11788 feet / 21753 feet

20. BLM/BIA Bond No. in file: FED: CO1104

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3338 feet

22. Approximate date work will start*: 09/01/2019

23. Estimated duration: 45 days

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
(Electronic Submission)	Linda Good / Ph: (405)552-6558	09/24/2018

Title: Regulatory Compliance Professional

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575)234-5959	01/17/2019

Title	Office
Assistant Field Manager Lands & Minerals	CARLSBAD

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

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

RWS 1-25-19.

APPROVED WITH CONDITIONS

NSP Required

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 01/17/2019

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

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

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

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

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Additional Operator Remarks

Location of Well

1. SHL: NENE / 235 FNL / 1210 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.1079108 / LONG: -103.7612552 (TVD: 0 feet, MD: 0 feet)
   PPP: NWNE / 100 FNL / 1350 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.108282 / LONG: -103.761686 (TVD: 11450 feet, MD: 11462 feet)
   PPP: SWSE / 1320 FSL / 1350 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.0975087 / LONG: -103.7605756 (TVD: 11788 feet, MD: 15516 feet)
   PPP: NWSE / 2640 FSL / 1350 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.1011372 / LONG: -103.7605643 (TVD: 11788 feet, MD: 14196 feet)
   BHL: SWSE / 330 FSL / 1350 FEL / TWSP: 25S / RANGE: 31E / SECTION: 34 / LAT: 32.079443 / LONG: -103.7660268 (TVD: 11788 feet, MD: 21753 feet)

BLM Point of Contact

Name: Tenille Ortiz
Title: Legal Instruments Examiner
Phone: 5752342224
Email: tortiz@blm.gov

Review and Appeal Rights

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

PECOS DISTRICT
DRILLING OPERATIONS
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM016348
WELL NAME & NO.:	Lusitano 27-34 FED COM 736H
SURFACE HOLE FOOTAGE:	235'/N & 1210'/E
BOTTOM HOLE FOOTAGE	330'/S & 1350'/E
LOCATION:	SECTION 27, T25S, R31E, NMPM
COUNTY:	Eddy

Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	◉ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	
Other	☐4 String Area	☐Capitan Reef	☐WIPP

A. Hydrogen Sulfide

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

B. CASING

1. The **10-3/4"** surface casing shall be set at approximately **940'** (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
   a. **If cement does not circulate to surface,** the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of **6 hours** after pumping cement, ideally between 8-10 hours after completing the cement job.
   b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
   c. If cement falls back, remedial cementing will be done prior to drilling out that string.
   d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **7 5/8"** intermediate casing is:

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

❖ In **Medium/High Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

❖ In **Medium/High Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

In case of lost circulation, operator has proposed to pump down 10 3/4" X 7 5/8" annulus. Operator must run a CBL from TD of the 7 5/8" casing to surface. Submit results to the BLM.

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

- Cement should tie-back at least **200** feet into previous string. Operator shall provide method of verification. **0% excess calculated – additional cement may be required.**

Alternate Casing Design:

4. The **13 3/8"** surface casing shall be set at approximately **940'** (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.

   a. **If cement does not circulate to surface,** the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of **6 hours** after pumping cement, ideally between 8-10 hours after completing the cement job.

   b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.

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

   d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

Intermediate casing must be kept fluid filled to meet BLM minimum collapse requirement.

1. The minimum required fill of cement behind the **8 5/8"** intermediate casing is

Option 1 (Single Stage):

- Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

❖ In **Medium/High Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

Option 2:

Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

❖ In **Medium/High Cave/Karst Areas** if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

In case of lost circulation, operator has proposed to pump down 13 3/8" X 8 5/8" annulus. Operator must run a CBL from TD of the 8 5/8" casing to surface. Submit results to the BLM.

5. The minimum required fill of cement behind the **5-1/2"** production casing is:

   - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification. **Additonial cement will be required. Proposed excess cement calculates to -12%, which does not reach 200 ft into previous casing string.**

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2.

Option 1:

i. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.

ii. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **10,000 (10M)** psi. **Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi).**

Option 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 (10M)** psi. **Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi).**

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
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. 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.
e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

JJP 1112019

GENERAL REQUIREMENTS

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

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

   ☒ Chaves and Roosevelt Counties
   Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
   During office hours call (575) 627-0272.
   After office hours call (575)

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

   ☒ Lea County
   Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.

- Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
- BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

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

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

A. CASING

1. 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.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. 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.

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

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each 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 of the well. This test shall be performed before drilling more than 20 feet of new hole.

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

8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. 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 RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher 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.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
   a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.

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. 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.
e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

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

   b. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

   c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.

   d. 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.

   e. 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.

   f. 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. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

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

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

PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM016348
WELL NAME & NO.:	LUSITANO 27-34 FED COM 736H
SURFACE HOLE FOOTAGE:	235'/N & 1210'/E
BOTTOM HOLE FOOTAGE	330'/S & 1350'/E
LOCATION:	SECTION 27, T25S, R31E, NMPM
COUNTY:	EDDY

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 feet from the source of the noise.

Below ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at below ground level on a plate containing the pertinent information for the plugged well. For more installation details, contact the Carlsbad Field Office at 575-234-5972.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

Temporary Fence Crossing Requirement
Where entry is granted across a fence line, the fence must be braced and tied off on both sides of the passageway with H-braces prior to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Cattle Guard Requirement
Where entry is granted across a fence line for an access road, the fence must be braced and tied off on both sides of the passageway with H-braces prior to cutting. Once the work is completed, the fence will be restored to its prior condition with an appropriately sized cattle guard sufficient to carry out the project. Any new or existing cattle guards on the access route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations. Once the road is abandoned, the fence would be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Livestock Watering Requirement
The operator must contact the allotment holder prior to construction to identify the location of the water pipelines. The operator must take measures to protect the pipelines from compression or other damages. If the water pipelines are damaged or compromised in any way near the proposed project as a result of oil and gas activity, the operator is responsible for repairing the water pipelines immediately. The operator must notify the BLM office (575-234-5972) and the

private surface landowner or the grazing allotment holder if any damage occurs to structures that provide water to livestock.

During construction, the proponent shall minimize disturbance to existing fences, water lines, troughs, windmills, and other improvements on public lands. The proponent is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the grazing permittee/allottee prior to disturbing any range improvement projects. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

As stated above, the applicant through the CCA program contributes funds that are used for habitat restoration projects identified by USFWS and BLM. Although the CCA program may not fully mitigate for impacts to habitat at the project site, it complies with the BLM mitigation rule.

In May 2008, the Pecos District Special Status Species Resource Management Plan Amendment (RMPA) was approved and is being implemented. In addition to the standard practices that minimize impacts, as listed above, the following COA will apply:

- Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken, to minimize noise associated impacts which could disrupt breeding and nesting activities.
- Upon abandonment, a low profile abandoned well marker will be installed to prevent raptor perching.

Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006. The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all power line structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. The holder without liability or expense shall make such modifications and/or additions to the United States.

The presence of short-eared owls is a surprising and scientifically interesting incident. The preparation and construction of CDU 34-34 pad and CTB #1 and CDU 27-27 pad and CTB #1 should be delayed until after September to allow confirmation and documentation of the nesting status.

Construction Mitigation

In order to mitigate the impacts from construction activities on cave and karst resources, the following Conditions of Approval will apply to this APD:

- In the event that any underground voids are encountered during construction activities, construction activities will be halted and the BLM will be notified immediately.
- No Blasting to prevent geologic structure instabilities.
- Pad Berming to minimize effects of any spilled contaminates.

Drilling Mitigation

Federal regulations and standard Conditions of Approval applied to all APDs require that adequate measures are taken to prevent contamination to the environment. Due to the extreme sensitivity of the cave and karst resources in this project area, the following additional Conditions of Approval will be added to this APD.

To prevent cave and karst resource contamination the following will be required.

- Closed Mud System Using Steel Tanks with All Fluids and Cuttings Hauled Off.
- Rotary drilling with fresh water where cave or karst features are expected to prevent contamination of freshwater aquifers.
- Directional Drilling allowed after at least 100 feet below the cave occurrence zone to prevent additional impacts resulting from directional drilling.
- Lost Circulation zones logged and reported in the drilling report so BLM can assess the situation and work with the operator on corrective actions.
- Additional drilling, casing, and cementing procedures to protect cave zones and fresh water aquifers. See Drilling COAs.

Production Mitigation

In order to mitigate the impacts from production activities and due to the nature of karst terrain, the following Conditions of Approval will apply to this APD:

- Tank battery liners and berms to minimize the impact resulting from leaks.
- Leak detection system to provide an early alert to operators when a leak has occurred.
- Automatic shut off, check values, or similar systems will be installed for pipelines and tanks to minimize the effects of line failures used in production or drilling.

Residual and Cumulative Mitigation

- Annual pressure monitoring will be performed by the operator. If the test results indicate a casing failure has occurred, remedial action will be undertaken to correct the problem to the BLM's approval.

Plugging and Abandonment Mitigation

Abandonment Cementing: Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

- The entire well pads and CTB pads will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad and CTB pad. Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pads shall be allowed to enter the well pad. The berm shall be maintained through the life of the well and CTB and after interim reclamation has been completed.
- Any water erosion that may occur due to the construction of the well pads and CTB pads during the life of the wells and CTB's will be corrected within two weeks and proper measures will be taken to prevent future erosion.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing
The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching
Ditching shall be required on both sides of the road.

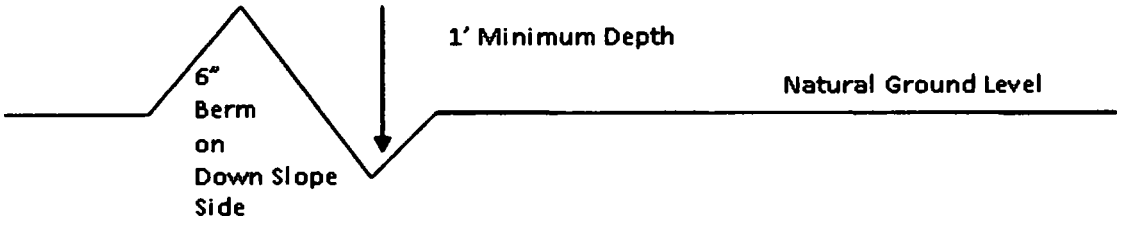
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Construction Steps

1. Salvage topsoil
2. Construct road
3. Redistribute topsoil
4. Revegetate slopes

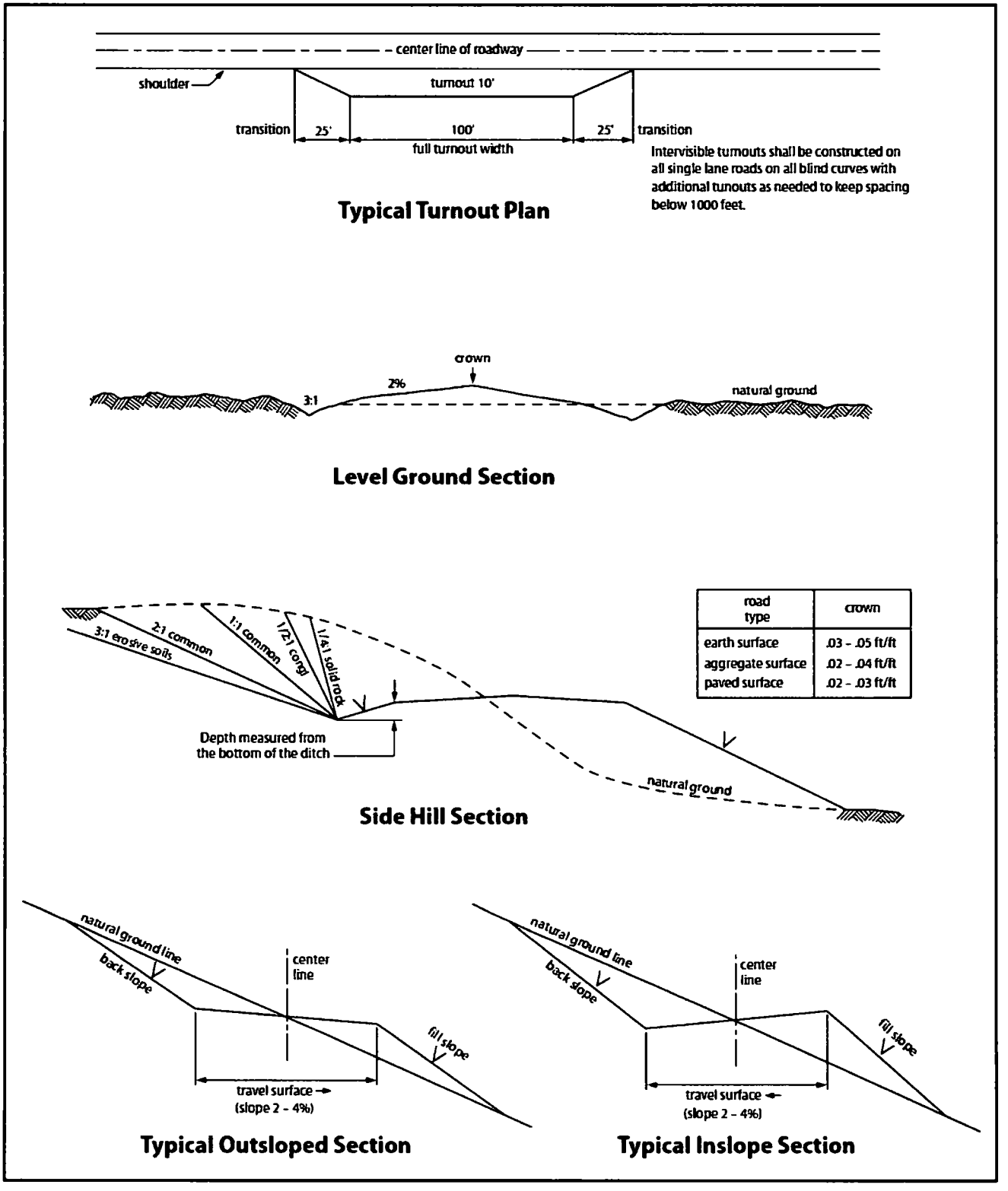


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)
Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening
The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures
The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C.6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting

Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of **36** inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be **30** feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed **20** feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)

- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed **30** feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)

- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

( ) seed mixture 1	( ) seed mixture 3
( ) seed mixture 2	( ) seed mixture 4
(X) seed mixture 2/LPC	( ) Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

18. Escape Ramps - The operator will construct and maintain pipeline/utility trenches that are not otherwise fenced, screened, or netted to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.
b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

19. Special Stipulations:

Lesser Prairie-Chicken

Oil and gas activities will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

A copy of the grant and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.

2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.

3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.

5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

Raptor deterrence will consist of but not limited to the following: triangle perch discouragers shall be placed on each side of the cross arms and a nonconductive perching

deterrence shall be placed on all vertical poles that extend past the cross arms.

6. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

7. The BLM serial number assigned to this authorization shall be posted in a permanent, conspicuous manner where the power line crosses roads and at all serviced facilities. Numbers will be at least two inches high and will be affixed to the pole nearest the road crossing and at the facilities served.

8. Upon cancellation, relinquishment, or expiration of this grant, the holder shall comply with those abandonment procedures as prescribed by the Authorized Officer.

9. All surface structures (poles, lines, transformers, etc.) shall be removed within 180 days of abandonment, relinquishment, or termination of use of the serviced facility or facilities or within 180 days of abandonment, relinquishment, cancellation, or expiration of this grant, whichever comes first. This will not apply where the power line extends service to an active, adjoining facility or facilities.

10. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

11. Special Stipulations:

- For reclamation remove poles, lines, transformer, etc. and dispose of properly.
- Fill in any holes from the poles removed.

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be

allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

This authorization is subject to your Certificate of Participation and/or Certificate of Inclusion under the New Mexico Candidate Conservation Agreement. Because it involves surface disturbing activities covered under your Certificate, your Habitat Conservation Fund Account with the Center of Excellence for Hazardous Materials Management (CEHMM) will be debited according to Exhibit B Part 2 of the Certificate of Participation.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory

revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Below Ground-level Abandoned Well Marker to avoid raptor perching: Upon the plugging and subsequent abandonment of the well, the well marker will be installed at below ground level on a plate containing the pertinent information for the plugged well. A GPS point will be given to the BLM.

Seed Mixture for LPC Sand/Shinnery Sites

Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). Holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. Seeding shall be repeated until a satisfactory stand is established as determined by the Authorized Officer. Evaluation of growth may not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

*Pounds of pure live seed:

Pounds of seed **x** percent purity **x** percent germination = pounds pure live seed

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: Linda Good **Signed on:** 09/24/2018

Title: Regulatory Compliance Professional

Street Address: 333 West Sheridan Avenue

City: Oklahoma City **State:** OK **Zip:** 73102

Phone: (405)552-6558

Email address: Linda.Good@dvn.com

Field Representative

Representative Name: Ray Vaz

Street Address: 6488 Seven Rivers Hwy

City: Artesia **State:** NM **Zip:** 88210

Phone: (575)748-1871

Email address: ray.vaz@dvn.com

AFMSS

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

Application Data Report

01/18/2019

APD ID: 10400034289 **Submission Date:** 09/24/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - General

APD ID: 10400034289 **Tie to previous NOS?** **Submission Date:** 09/24/2018

BLM Office: CARLSBAD **User:** Linda Good **Title:** Regulatory Compliance Professional

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

Lease number: NMNM016348 **Lease Acres:** 840

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

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: (800)583-3866

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? EXISTING **Mater Development Plan name:** Cotton Draw 1 MDP

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

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

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** PURPLE SAGE **Pool Name:** WOLFCAMP

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H

Describe other minerals:

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

Type of Well Pad: MULTIPLE WELL **Multiple Well Pad Name:** LUSITANO 27 WELLPAD **Number:** 5

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

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: **Distance to nearest well:** 235 FT **Distance to lease line:** 540 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Lusitano_27_34_Fed_Com_736H_C_102_signed_20180924060048.pdf

Lusitano_27_34_Fed_Com_736H_Additional_points_20180924060108.pdf

Well work start Date: 09/01/2019 **Duration:** 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

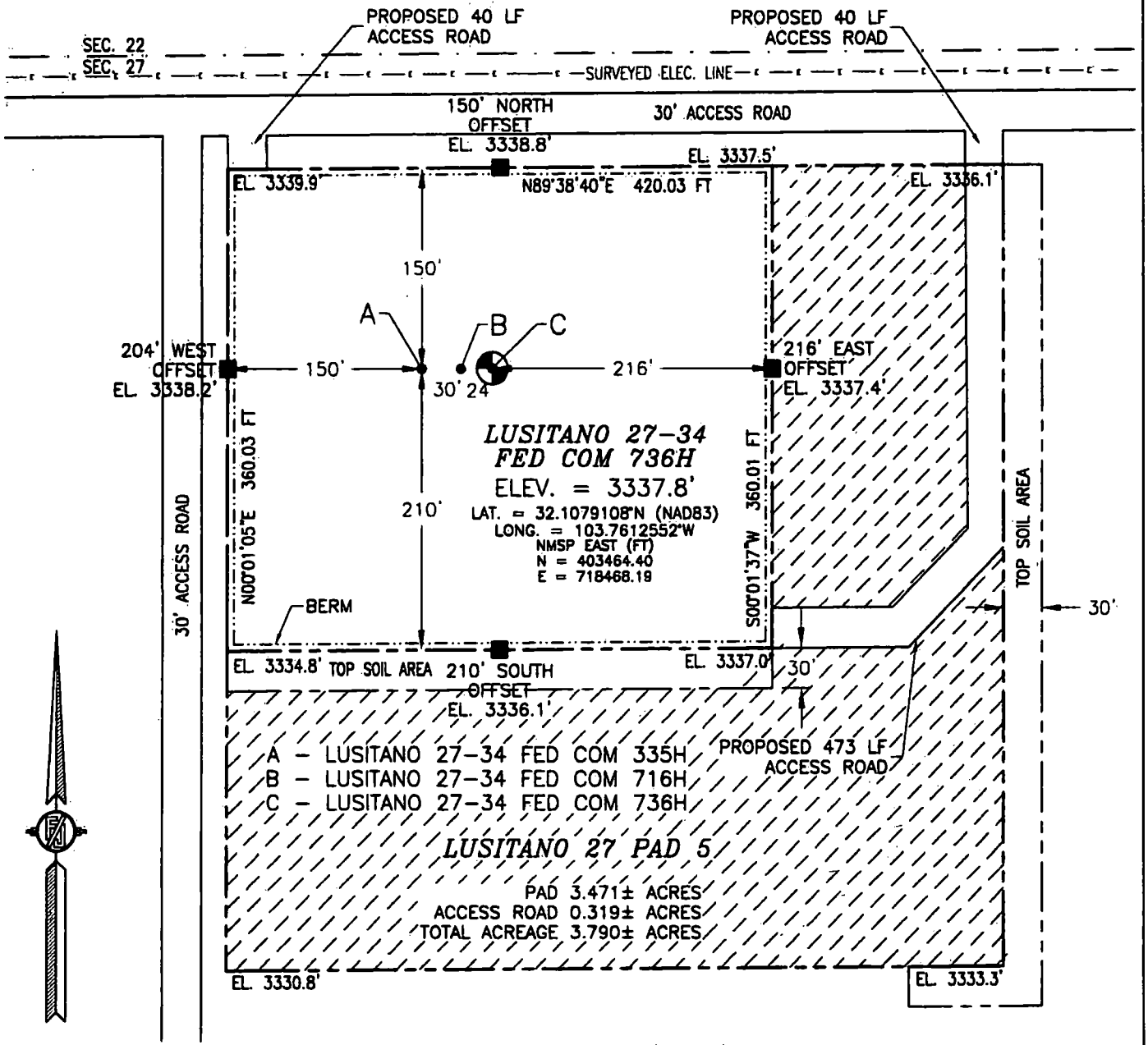
Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 6439

	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	235	FNL	1210	FEL	25S	31E	27	Aliquot NENE	32.1079108	-103.7612552	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 016348	3338	0	0
KOP Leg #1	50	FNL	1350	FEL	25S	31E	27	Aliquot NWNE	32.108421	-103.761685	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 016348	-7877	11219	11215
PPP Leg #1	2640	FSL	1350	FEL	25S	31E	27	Aliquot NWSE	32.1011372	-103.7605643	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 125635	-8450	14196	11788

SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SITE MAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE GRID (NAD83). BASIS OF BEARING AND DISTANCES USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. VERTICAL DATUM: NAVD88.



012 60 120 240

SCALE 1" = 120'

DIRECTIONS TO LOCATION

FROM STATE HIGHWAY 128 AND CR 1 (ORLA HIGHWAY) GO SOUTH ON CR 1 6.5 MILES TO MONSANTO ROAD, TURN RIGHT GO WEST 2.1 MILES, TURN RIGHT GO NORTH 0.8 OF A MILE, TURN LEFT GO WEST 2.1 MILES, BEND LEFT GO SOUTHWEST 1.3 MILES, TURN LEFT GO SOUTH 1.0 MILE TO BEGIN ROAD SURVEY, GO WEST 857', THEN SOUTH-WEST 513' TO THE SOUTHEAST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 736H

LOCATED 235 FT. FROM THE NORTH LINE AND 1210 FT. FROM THE EAST LINE OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO

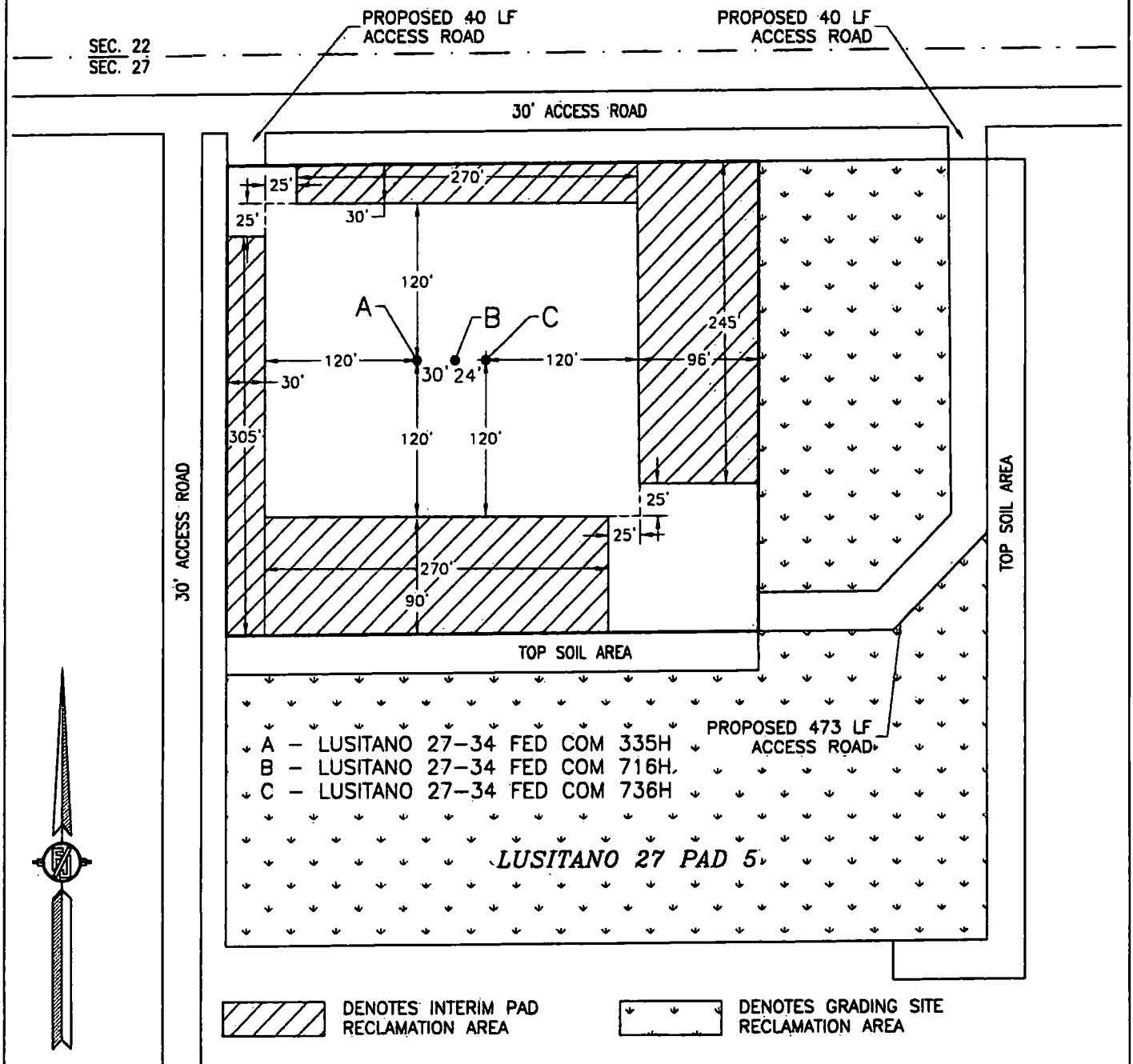
LAND STATUS: BLM

SEPTEMBER 13, 2018

SURVEY NO. 6440A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
INTERIM SITE BUILD PLAN



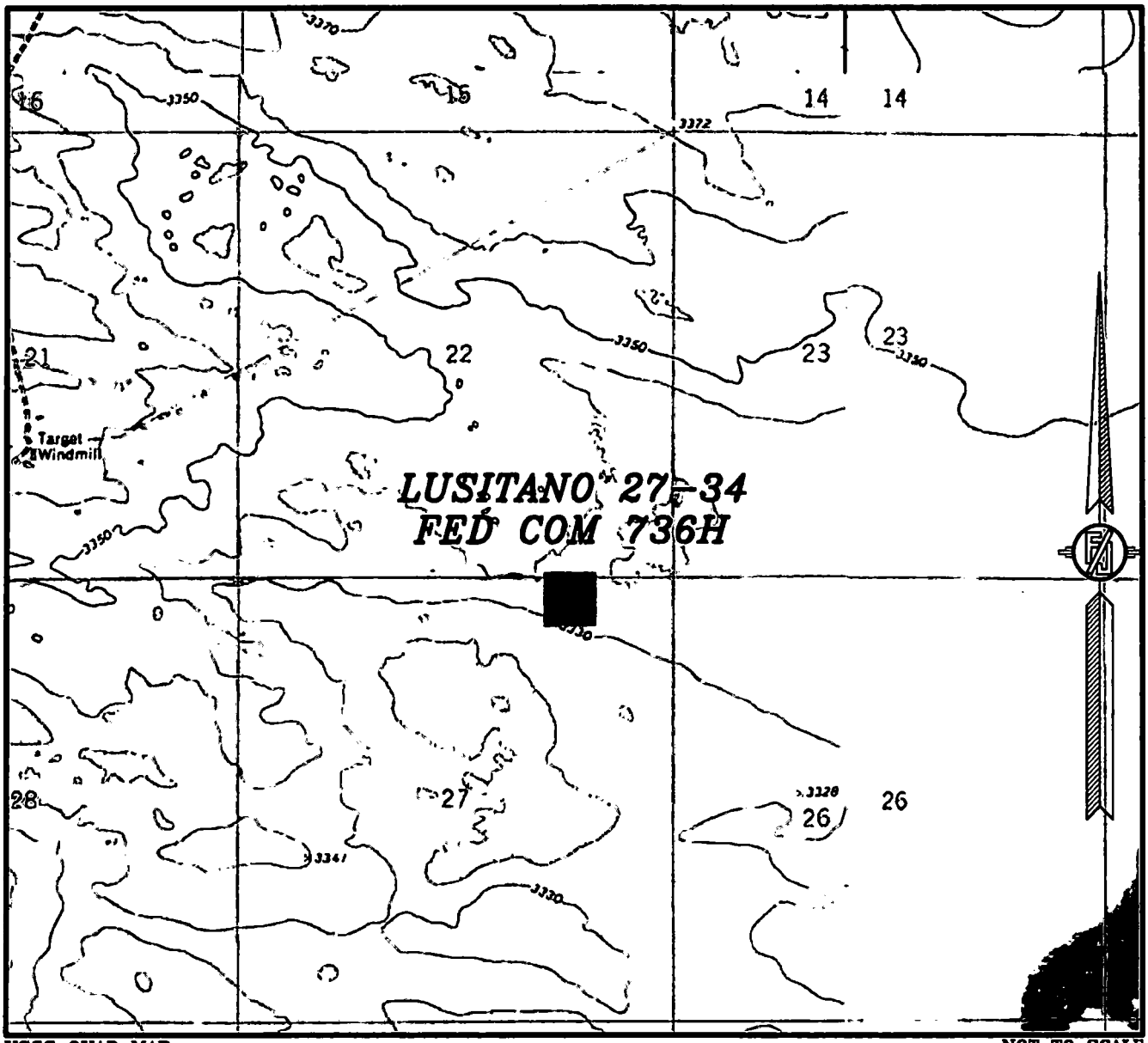
1.497± ACRES INTERIM PAD RECLAMATION AREA
4.473± ACRES GRADING SITE RECLAMATION AREA
2.294± ACRES NON–RECLAIMED AREA
8.264± ACRES LUSITANO 27 PAD 5

DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27–34 FED COM 736H
LOCATED 235 FT. FROM THE NORTH LINE AND 1210 FT. FROM THE EAST LINE OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

SEPTEMBER 13, 2018
SURVEY NO. 6440A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LOCATION VERIFICATION MAP



USGS QUAD MAP:
PHANTOM BANKS

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 736H

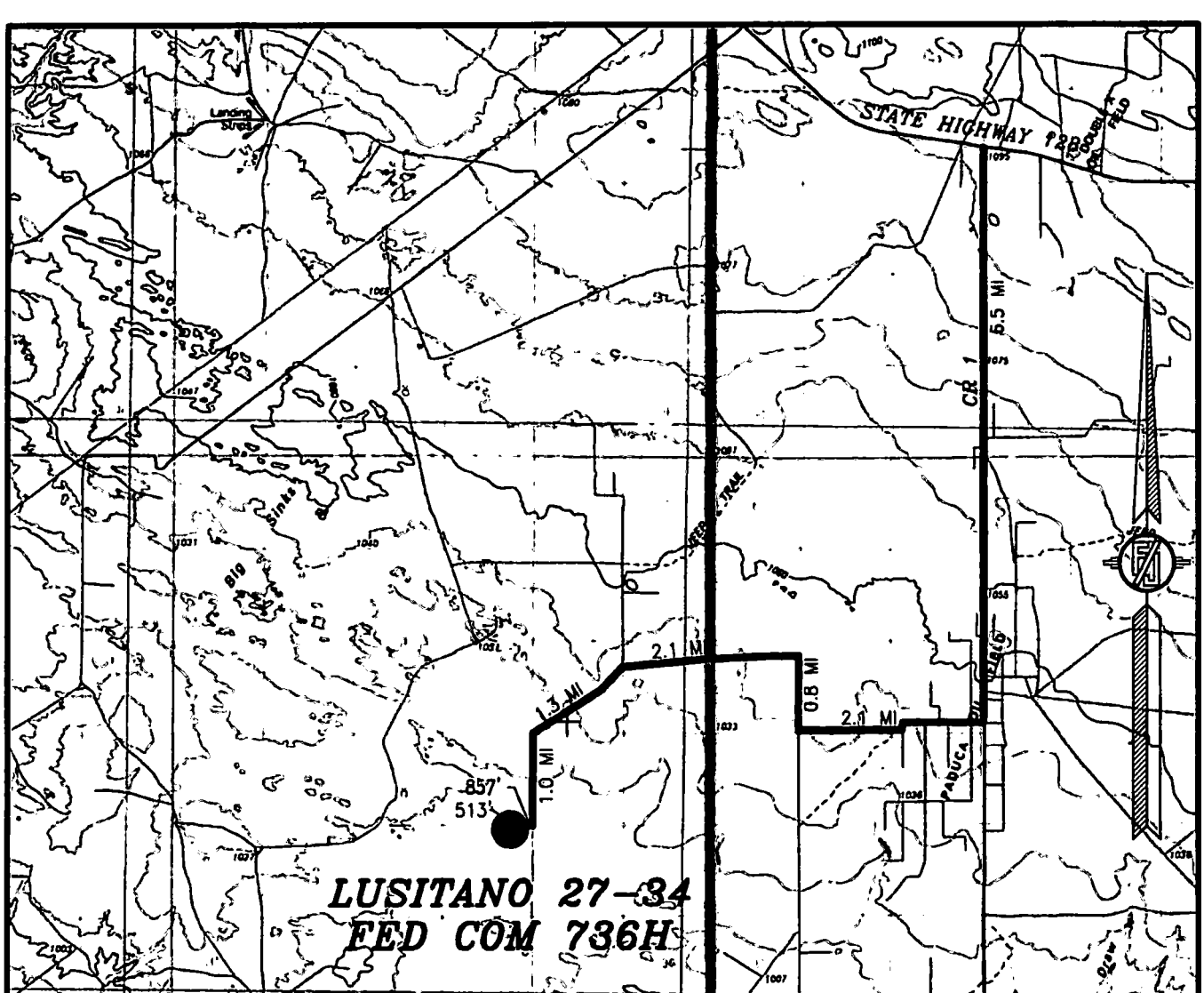
LOCATED 235 FT. FROM THE NORTH LINE
AND 1210 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

SEPTEMBER 13, 2018

SURVEY NO. 6440A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
VICINITY MAP



DISTANCES IN MILES

NOT TO SCALE

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 736H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1210 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

SEPTEMBER 13, 2018

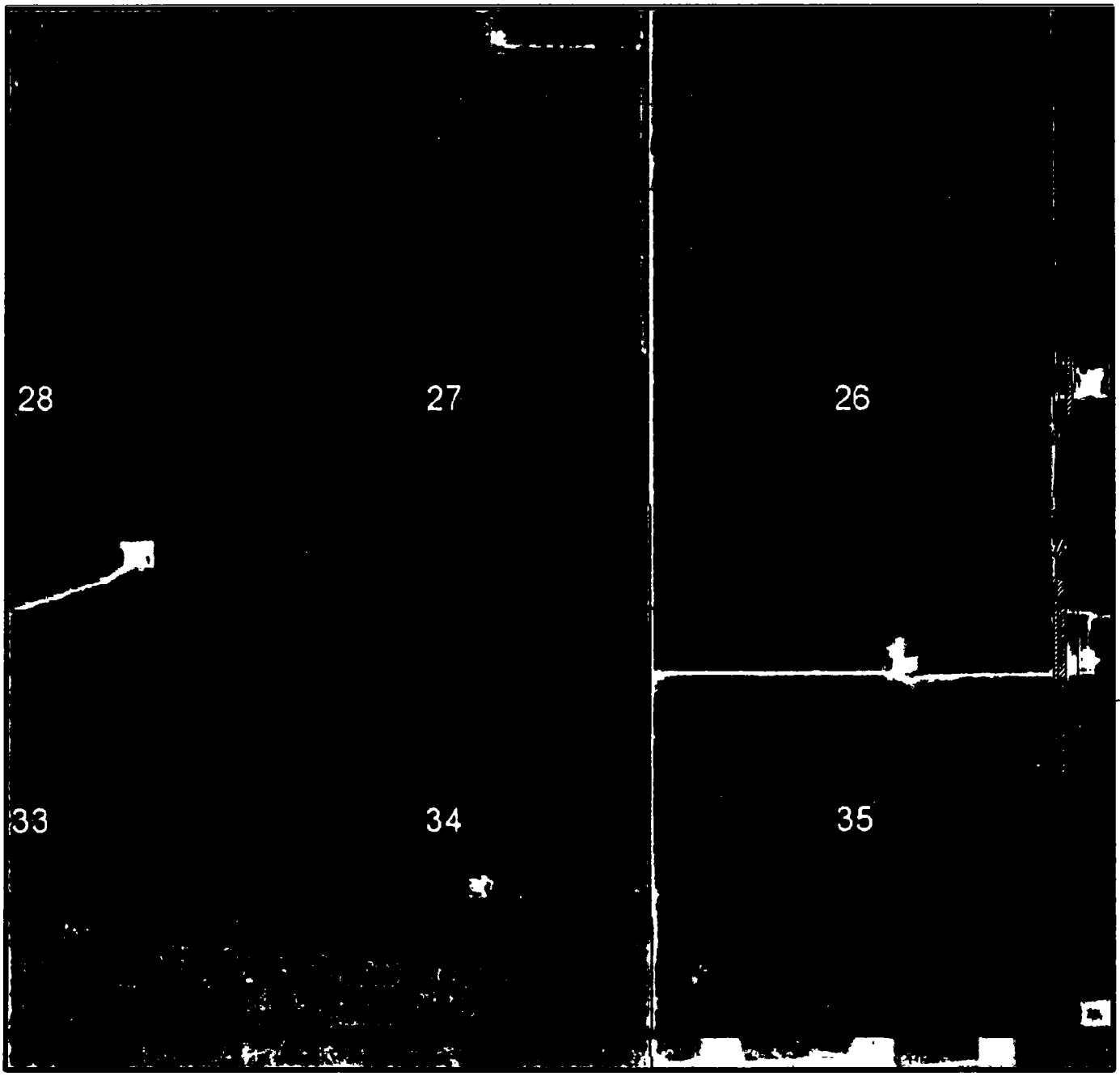
DIRECTIONS TO LOCATION
FROM STATE HIGHWAY 128 AND CR 1 (ORLA HIGHWAY) GO SOUTH ON CR 1 6.5 MILES TO MONSANTO ROAD, TURN RIGHT GO WEST 2.1 MILES, TURN RIGHT GO NORTH 0.8 OF A MILE, TURN LEFT GO WEST 2.1 MILES, BEND LEFT GO SOUTHWEST 1.3 MILES, TURN LEFT GO SOUTH 1.0 MILE TO BEGIN ROAD SURVEY, GO WEST 857', THEN SOUTH-WEST 513' TO THE SOUTHEAST PAD CORNER FOR THIS LOCATION.

SURVEY NO. 6440A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AERIAL PHOTO



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 736H

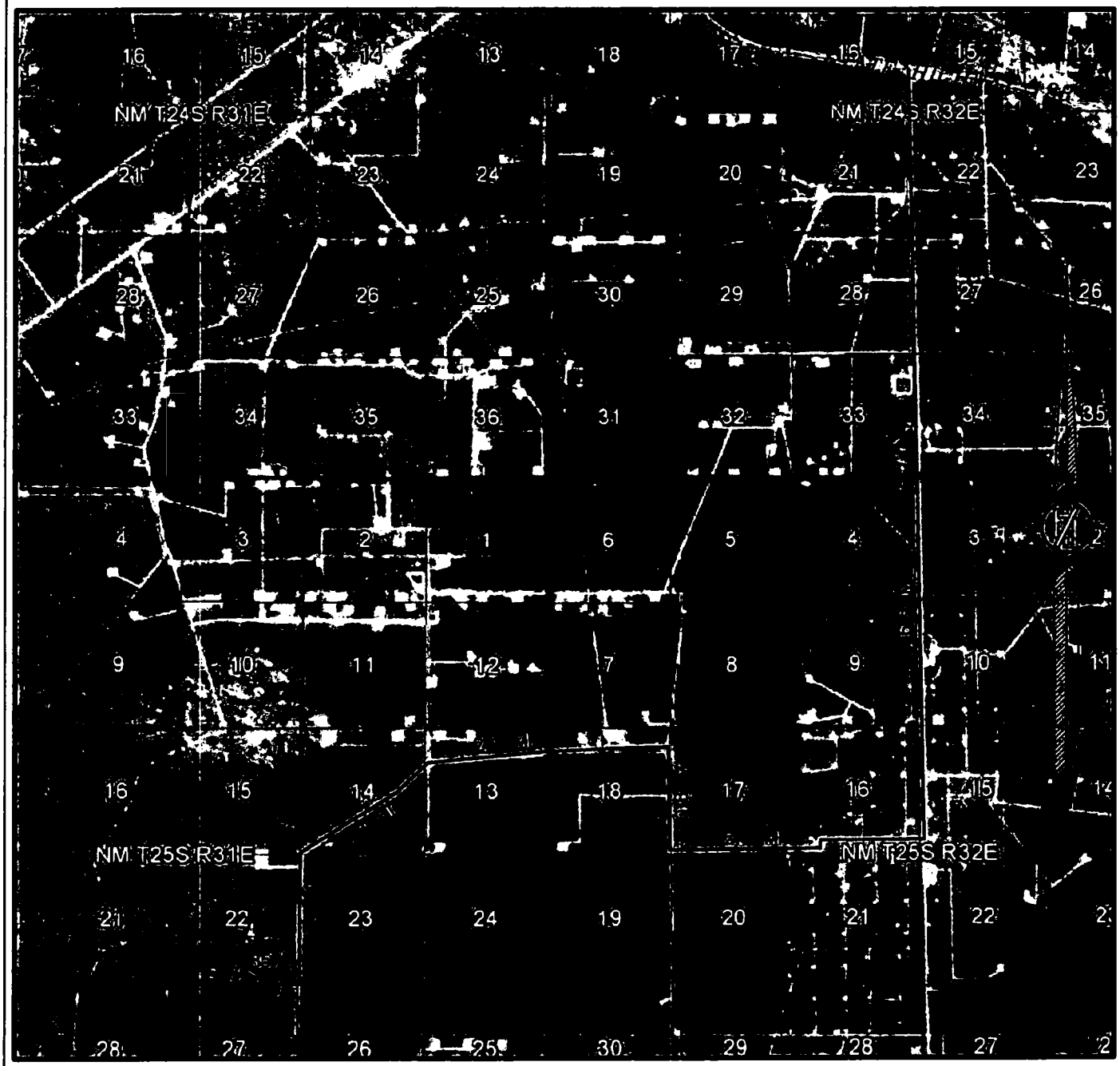
LOCATED 235 FT. FROM THE NORTH LINE
AND 1210 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

SEPTEMBER 13, 2018

SURVEY NO. 6440A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
ACCESS AERIAL ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 736H

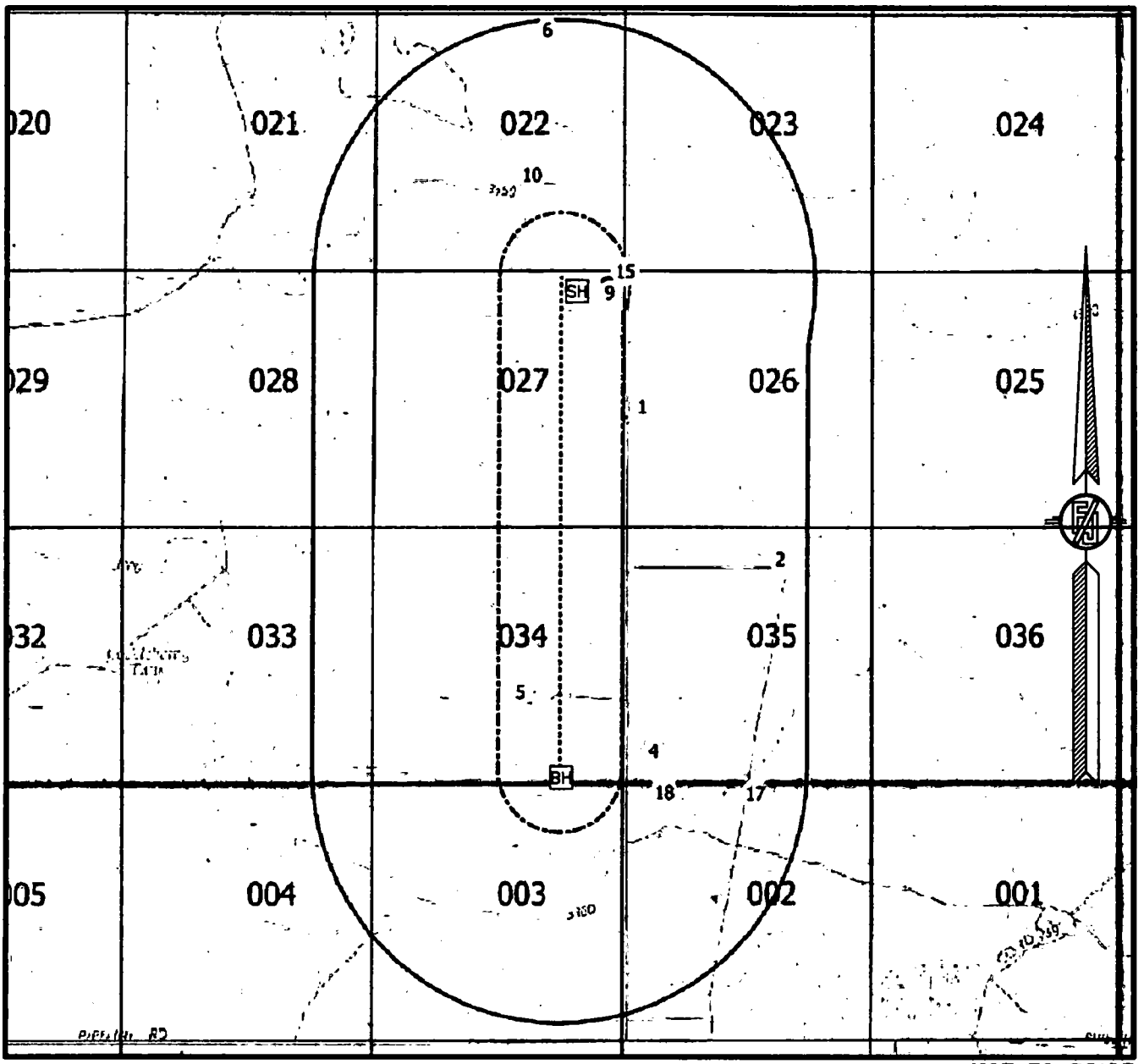
LOCATED 235 FT. FROM THE NORTH LINE
AND 1210 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

SEPTEMBER 13, 2018

SURVEY NO. 6440A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

1-MILE MAP



NOT TO SCALE

WELL DATA FROM NMOCD GIS – 9/12/18

SH SURFACE LOCATION

BH BOTTOM OF HOLE

XX WELLS WITHIN 1 MILE

WELL PATH

1/4 MILE BOUNDARY

1-MILE BOUNDARY

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 736H

LOCATED 235 FT. FROM THE NORTH LINE AND 1210 FT. FROM THE EAST LINE OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO

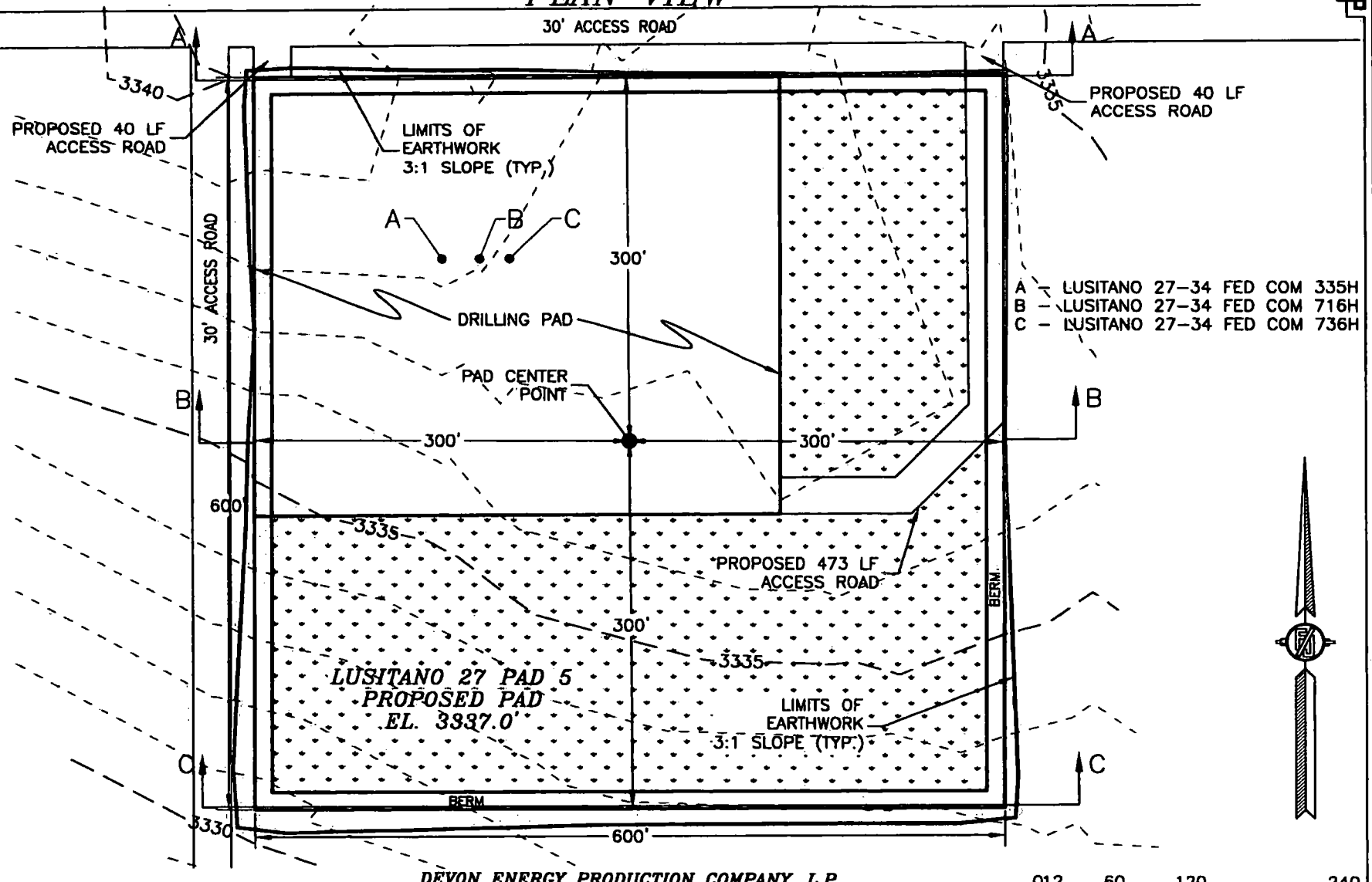
LAND STATUS: BLM

SEPTEMBER 13, 2018

SURVEY NO. 6440A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

PLAN VIEW



012 60 120 240

SCALE 1" = 120'

DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR LUSITANO 27–34 FED COM 736H
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

CUT	FILL	NET
3497 CU. YD	18034 CU. YD	14537 CU. YD (FILL)

EARTHWORK QUANTITIES ARE ESTIMATED

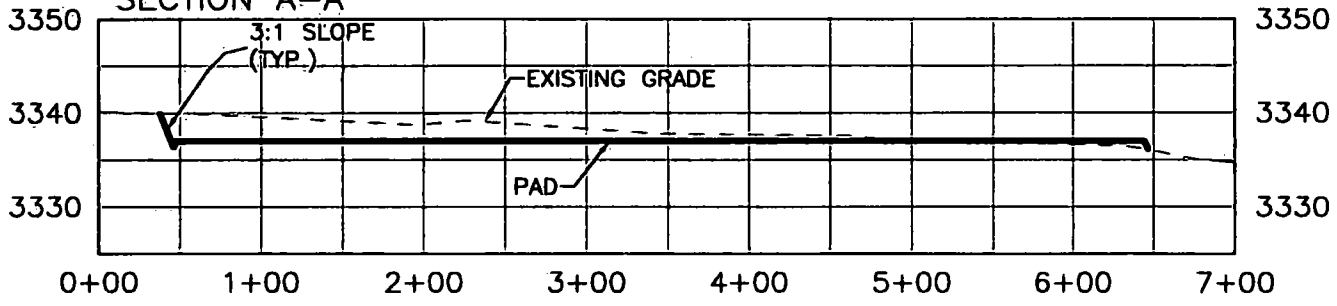
SEPTEMBER 13, 2018

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

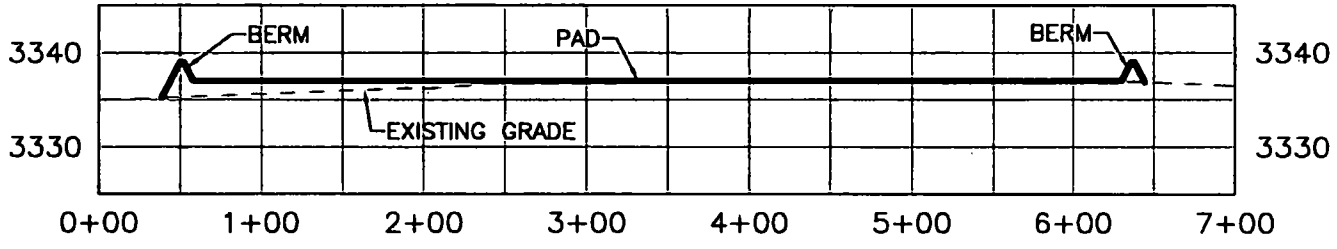
SHEET 1-2
SURVEY NO. 6440A

CROSS SECTIONS

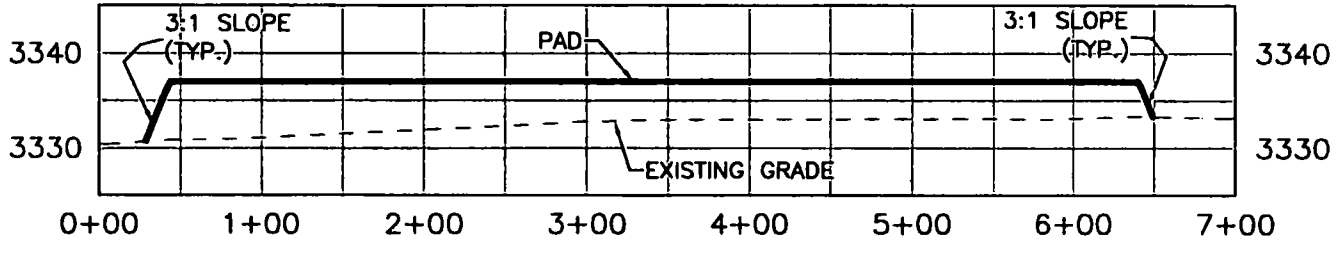
SECTION A–A



SECTION B–B



SECTION C–C



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR LUSITANO 27–34 FED COM 736H
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

SEPTEMBER 13, 2018

012 60 120 240
SCALE 1" = 120' – 1" = 20' VER

CUT	FILL	NET
3497 CU. YD	18034 CU. YD	14537 CU. YD (FILL)

EARTHWORK QUANTITIES ARE ESTIMATED

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

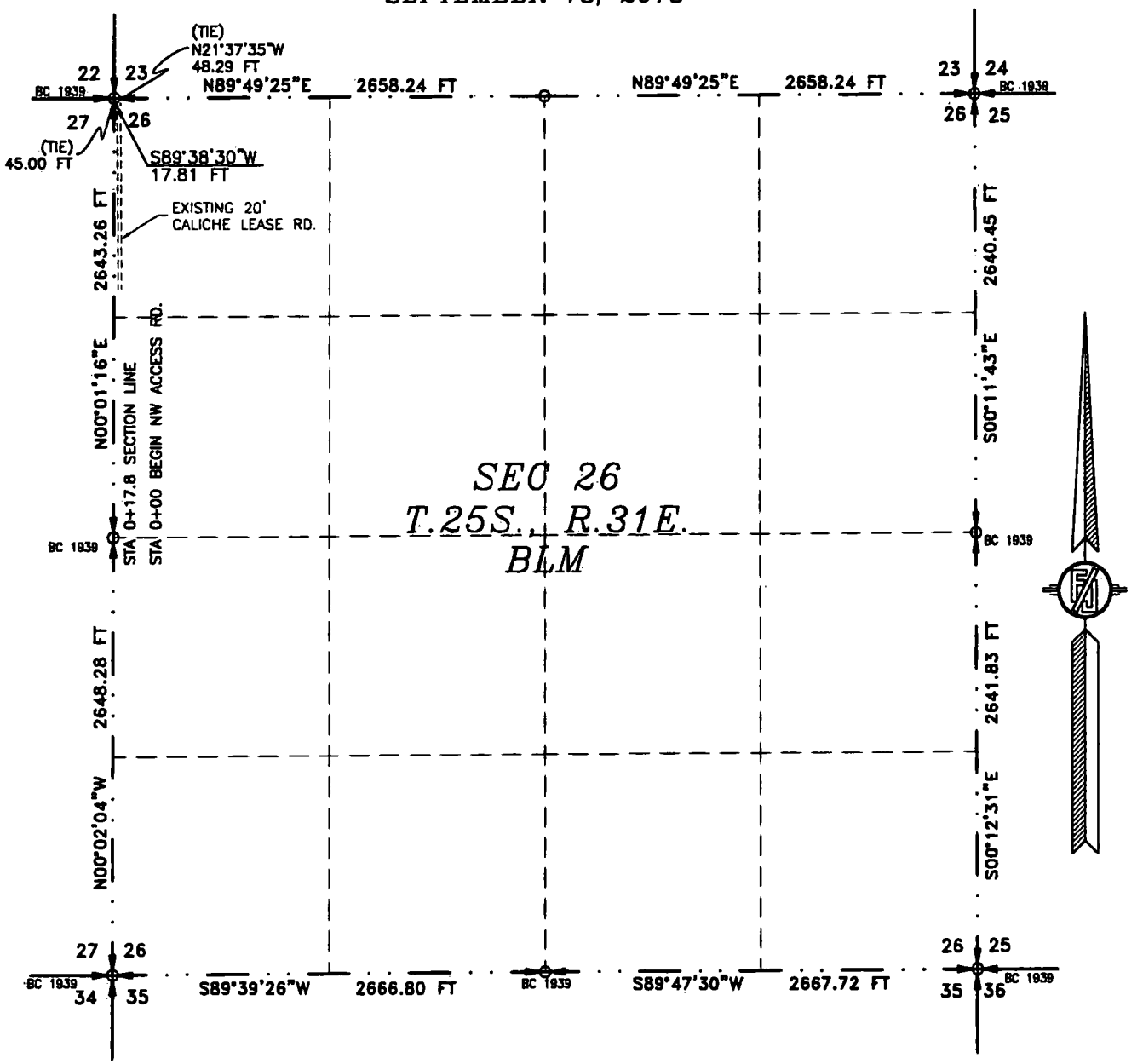
SHEET 2–2
SURVEY NO. 6440A

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 13, 2018



SEE NEXT SHEET (2-4) FOR DESCRIPTION

1000 0 1000

Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 6 DAY OF SEPTEMBER 2018

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO PLS: 12797

301 SOUTH CANAL
(575) 234-3341

SHEET: 1-4

SURVEY NO. 6440A

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 13, 2018

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

NORTHWEST ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NW/4 NW/4 OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N21°37'35"W, A DISTANCE OF 48.29 FEET;

THENCE S89°38'30"W A DISTANCE OF 17.81 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 45.00 FEET;

SAID STRIP OF LAND BEING 17.81 FEET OR 1.08 RODS IN LENGTH, CONTAINING 0.012 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NW/4 17.81 L.F. 1.08 RODS 0.012 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 13 DAY OF SEPTEMBER 2018

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO, PLS, 12797

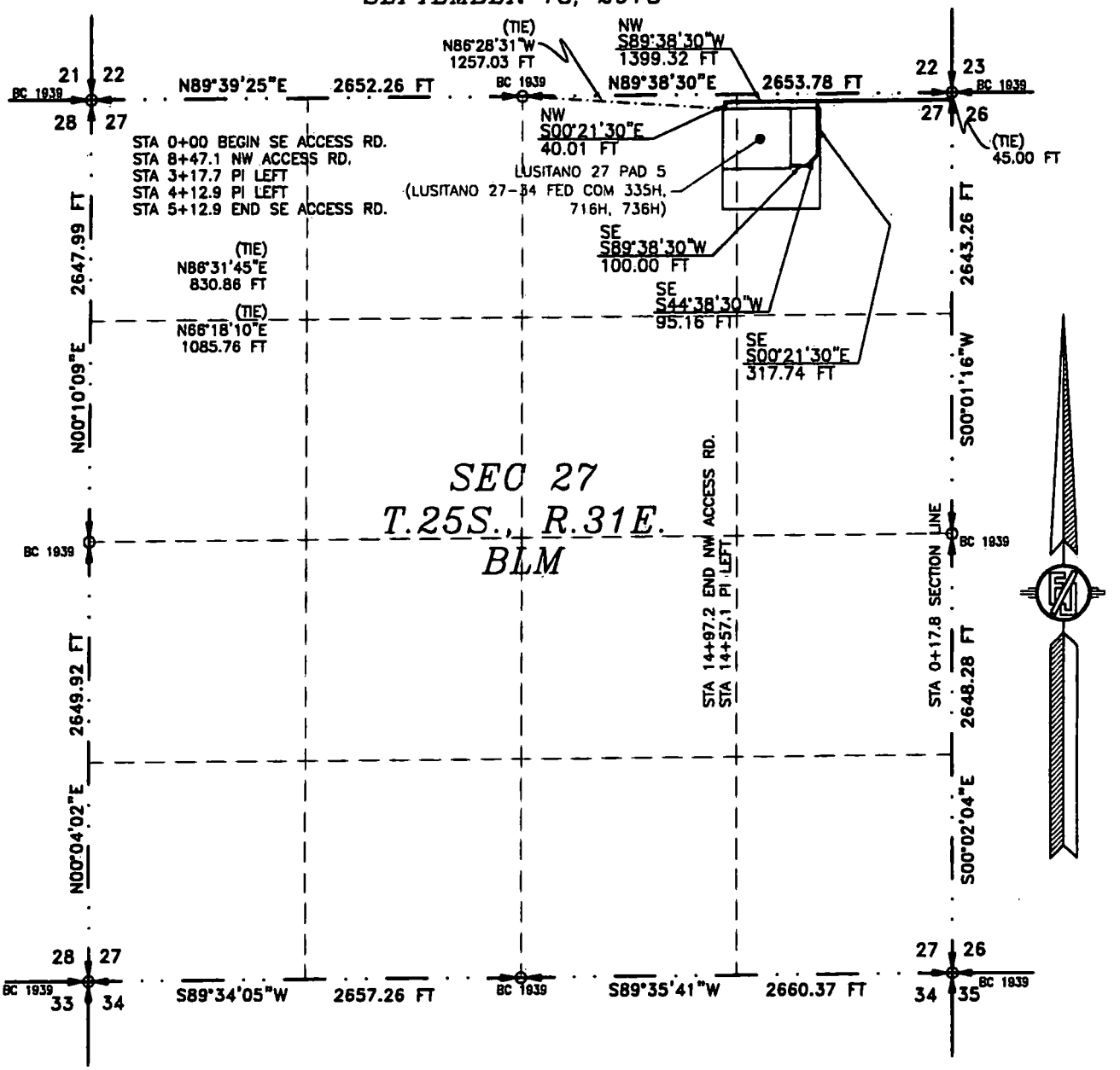
301 SOUTH CANAL
(575) 234-3341

SURVEY NO. 6440A

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 13, 2018



SEE NEXT SHEET (4-4) FOR DESCRIPTION

1000 0 1000

Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 13 DAY OF SEPTEMBER 2018

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO, PLS 12797

SURVEY NO. 6440A

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

Drilling Plan Data Report

01/18/2019

APD ID: 10400034289 **Submission Date:** 09/24/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H

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

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3338	0	0	ALLUVIUM	NONE	No
2	RUSTLER	2480	858	858	SALT	NONE	No
3	BASE OF SALT	-922	4260	4260	SALT	NONE	No
4	DELAWARE	-957	4295	4295	SANDSTONE	NATURAL GAS,OIL	No
5	BONE SPRING	-4892	8230	8230	LIMESTONE,SANDSTONE	NATURAL GAS,OIL	No
6	WOLFCAMP	-8322	11660	11660	SANDSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M **Rating Depth:** 11788

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below intermeidate casing, a BOP/BOPE system with the above minimum rating will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.

Requesting Variance? YES

Variance request: A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.

Testing Procedure: A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Choke Diagram Attachment:

Lusitano_27_34_Fed_Com_736H_WLFMP_10M_BOPE_Double_Ram_and_CLS_Schematic_Remote_Kill_Line_20181213044910.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_736H_WLFMP_10M_BOPE_Double_Ram_and_CLS_Schematic_Remote_Kill_Line_20181213044922.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H

Pressure Rating (PSI): 5M **Rating Depth:** 11788

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below surface casing, a BOP/BOPE system with the above minimum rating will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.A variance is requested for the use of a flexible choke line from the BOP stack to the choke manifold. See attached for specs for hydrostatic test chart.

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Choke Diagram Attachment:

Lusitano_27_34_Fed_Com_736H_5M_BOPE_CK_20180924060307.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_736H_5M_BOPE_CK_20180924060317.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	14.75	10.75	NEW	API	N	0	903	0	903	-6993	-7781	903	J-55	40.5	STC	1.125	1.25	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	9.875	7.625	NEW	API	N	11219	12119	11215	11788	-6993	-11343	900	P-110	29.7	OTHER - FLUSHMAX	1.125	1.25	BUOY	1.6	BUOY	1.6
3	PRODUCTION	6.75	5.5	NEW	API	N	0	21753	0	11788	-6993	-17388	21753	P-110	20	OTHER - VAM-SG	1.125	1.25	BUOY	1.6	BUOY	1.6

Casing Attachments

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_736H_Surf_Csg_Ass_20180924060514.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_736H_Int_Csg_Ass_20180924061528.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_736H_Prod_Csg_Ass_20180924061614.pdf

Section 4 - Cement

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	903	599	1.33	13.2	797	50	C	Class C + adds
INTERMEDIATE	Lead		903	8119	1197	1.85	9	2214	30	TUNED	TUNED LIGHT
INTERMEDIATE	Tail		8119	12119	747	1.33	13.2	993	30	H	Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
PRODUCTION	Lead		11619	21753	641	1.33	13.2	936	10	H	0.125 lbs/sack Poly-E-Flake

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: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

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
903	12119	OTHER : SATURATED BRINE	9	10							

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	903	WATER-BASED MUD	8.5	9							
12119	21753	OIL-BASED MUD	10	10.5							

Section 6 - Test, Logging, Coring

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

Will run GR/CNL fromTD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.

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

DS,GR,MUDLOG

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6436 **Anticipated Surface Pressure:** 3842.64

Anticipated Bottom Hole Temperature(F): 177

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Lusitano_27_34_Fed_Com_736H_H2S_Plans_20180919120840.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Lusitano_27_34_Fed_Com_736H_Dir_Plan_20180924062144.pdf
Lusitano_27_34_Fed_Com_736H_Plot_20180924062156.pdf
Lusitano_27_34_Fed_Com_736H_AC_Rpt_20180924062210.pdf

Other proposed operations facets description:

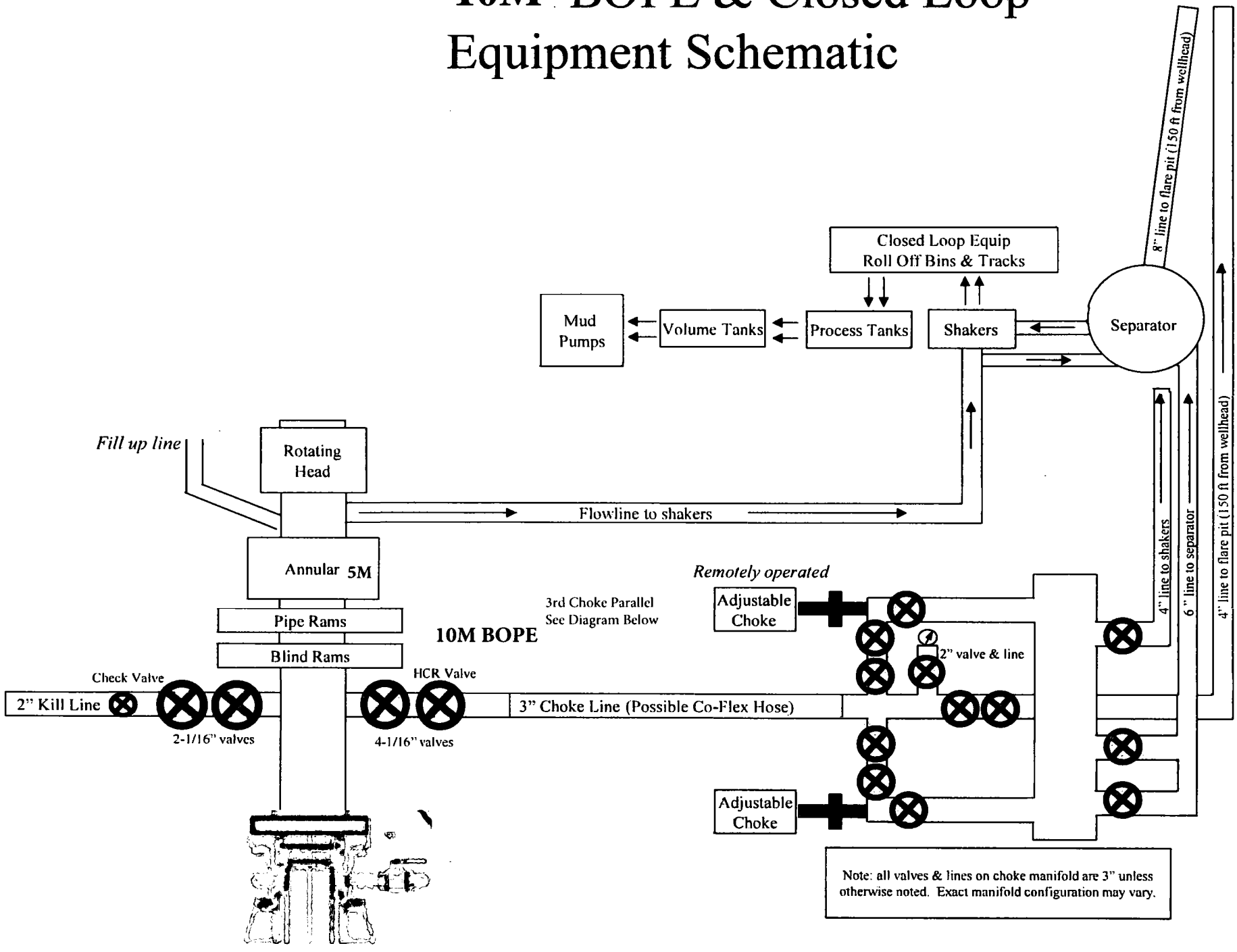
Other proposed operations facets attachment:

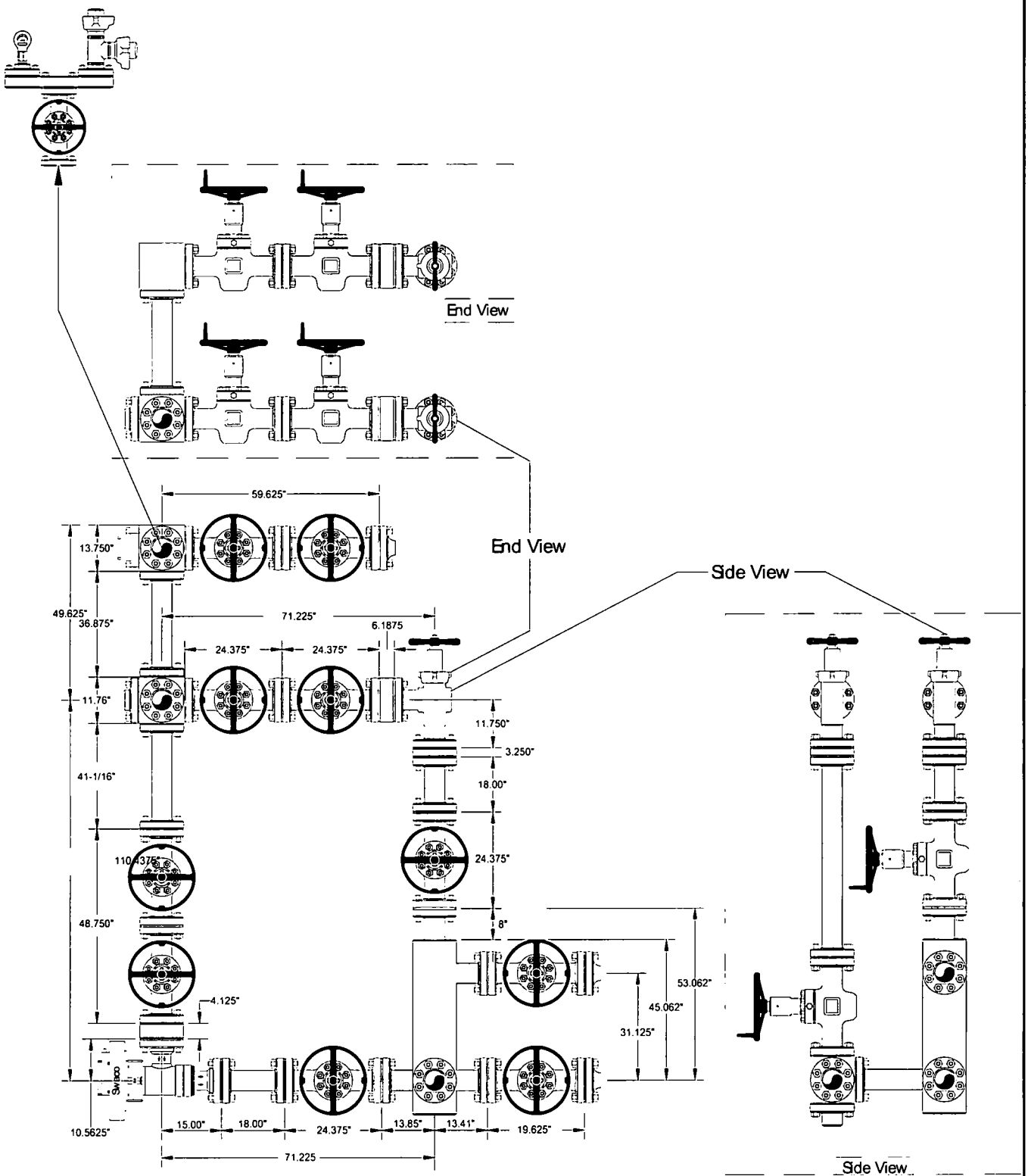
Lusitano_27_34_Fed_Com_736H_Clsd_Loop_20180920092514.pdf
Lusitano_27_34_Fed_Com_736H_5.5_x_20_P110_EC_VAMSG_20180920092525.pdf
Lusitano_27_34_Fed_Com_736H_7.625_29.70_P110_Flushmax_20180920092534.pdf
Lusitano_27_34_Fed_Com_736H_Gas_Capture_Plan_20180920092633.pdf
Lusitano_27_34_Fed_Com_736H_Annular_Preventer_Summary_20181213045830.pdf
Lusitano_27_34_Fed_Com_736H_8.625_32__P110EC_VAM_FJL_NA_7.875_SD_20181213045918.PDF
Lusitano_27_34_Fed_Com_736H_Multibowl_Verb_5M_20181213045919.pdf
Lusitano_27_34_Fed_Com_736H_WLFMP_MB_Verb_5M_Alt_Design_20181213045921.pdf
Lusitano_27_34_Fed_Com_736H_WLFMP_Wellhead_Schematic_10.75x7.625x5.5_20181213045922.pdf
Lusitano_27_34_Fed_Com_736H_WLFMP_Wellhead_Schematic_Contingency_13.375x8.625x5.5_20181213045923.pdf
Lusitano_27_34_Fed_Com_736H_8.625_32__P110EC_BTC_20181218063212.pdf
Lusitano_27_34_Fed_Com_736H_Drilling_Plan_Rev2_20181219102549.pdf

Other Variance attachment:

Lusitano_27_34_Fed_Com_736H_Co_flex_20180920092833.pdf

10M BOPE & Closed Loop Equipment Schematic



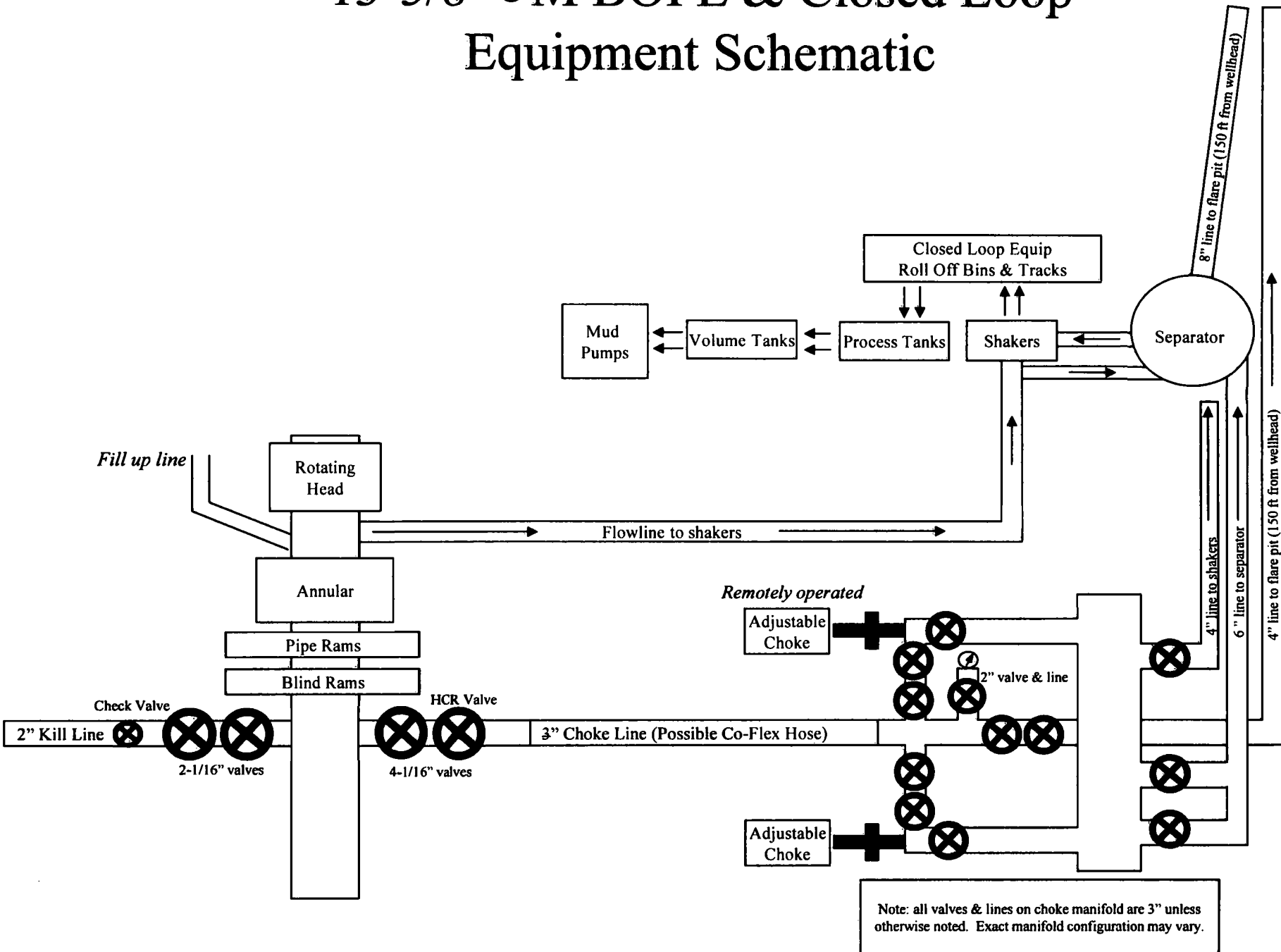


Helmerich & Payne
Rig 282

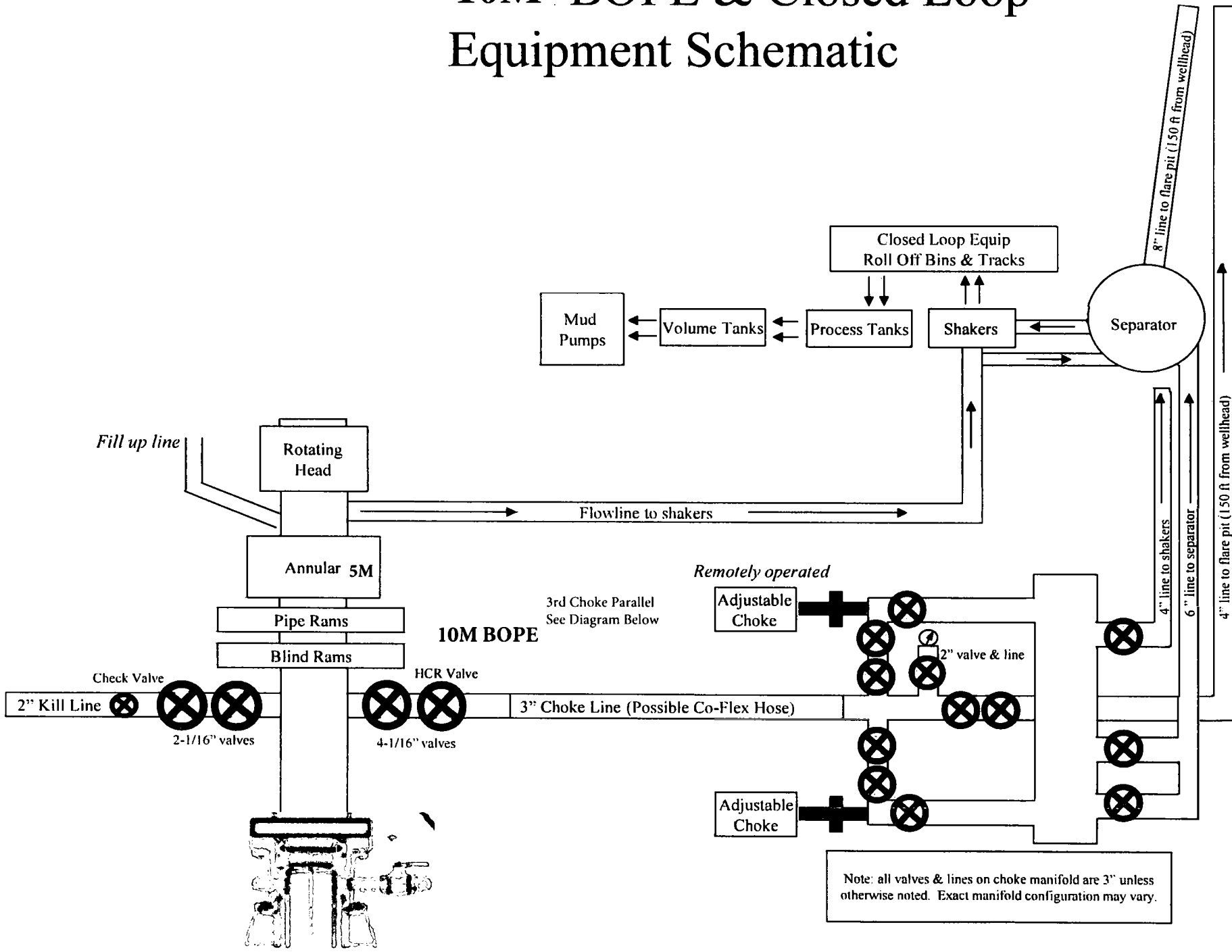
CAMERON

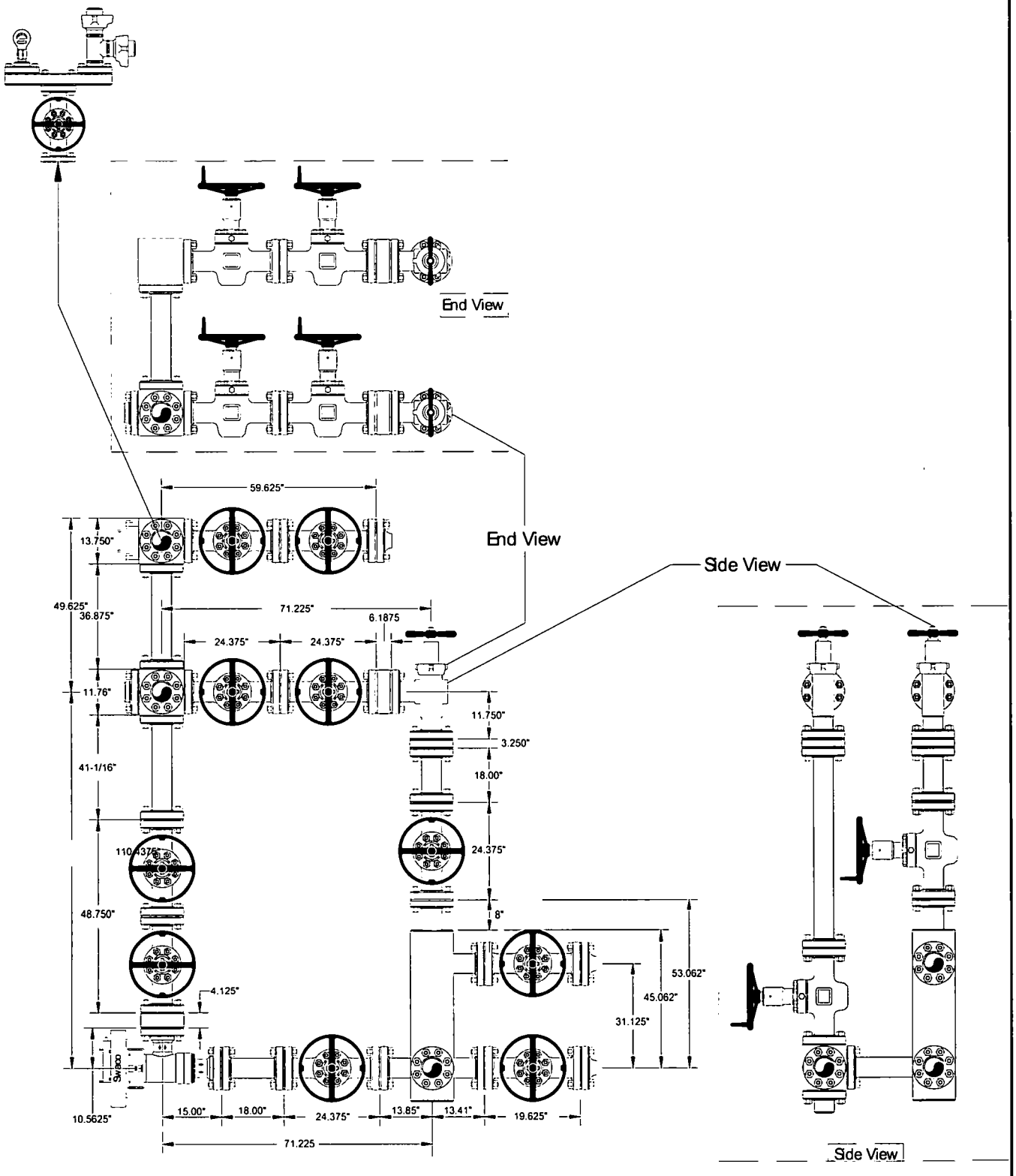
Name. Jeanette	Date 7-19-06	Working Pressure.	# J-5132-E

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



10M BOPE & Closed Loop Equipment Schematic



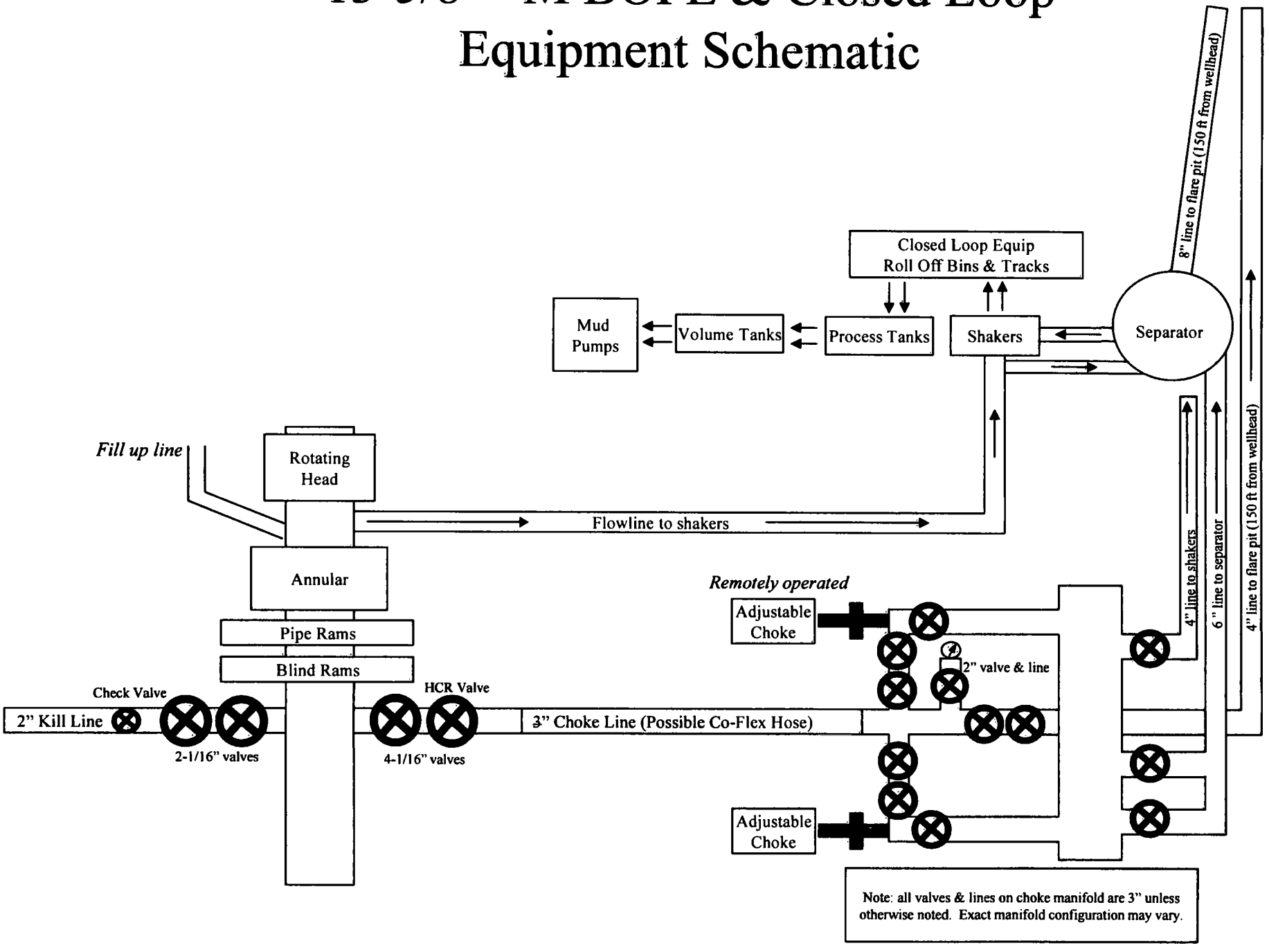


Helmerich & Payne
Rig 282

CAMERON

Name	Jeanette	Date	7-19-06	Working Pressure	#	J-5132-E

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



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.

Surface Casing Burst Design		
Load Case	**External Pressure**	**Internal Pressure**
Pressure Test	Formation Pore Pressure	Max mud weight of next hole-section plus Test psi
Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section
Displace to Gas	Formation Pore Pressure	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.

Intermediate Casing Burst Design		
Load Case	**External Pressure**	**Internal Pressure**
Pressure Test	Formation Pore Pressure	Max mud weight of next hole-section plus Test psi
Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section
Fracture @ Shoe	Formation Pore Pressure	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.

Production Casing Burst Design		
Load Case	**External Pressure**	**Internal Pressure**
Pressure Test	Formation Pore Pressure	Fluid in hole (water or produced water) + test psi
Tubing Leak	Formation Pore Pressure	Packer @ KOP, leak below surface 8.6 ppg packer fluid
Stimulation	Formation Pore Pressure	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

devon

Devon Energy Center
333 West Sheridan Avenue
Oklahoma City, Oklahoma 73102-5015

Hydrogen Sulfide (H_2S) Contingency Plan

For

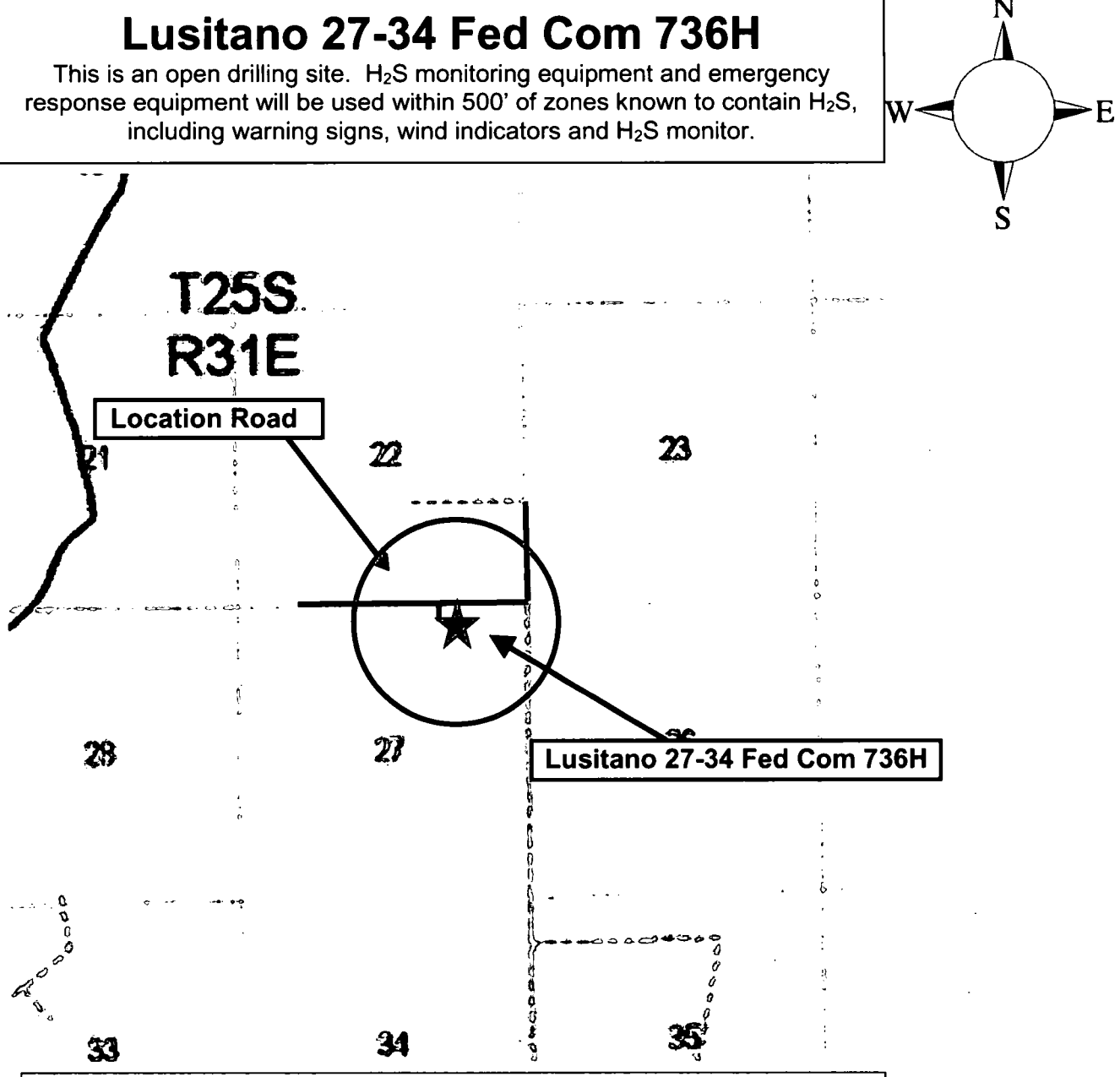
Lusitano 27-34 Fed Com 736H

Sec-27 T-25S R-31E
235' FNL & 1204' FEL
LAT. = 32.1079107' N (NAD83)
LONG = 103.7612359' W

Eddy County NM

Lusitano 27-34 Fed Com 736H

This is an open drilling site. H_2S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H_2S, including warning signs, wind indicators and H_2S monitor.



Assumed 100 ppm ROE = 3000' (Radius of Exposure)
100 ppm H2S concentration shall trigger activation of this plan.

Escape

Crews shall escape upwind of escaping gas in the event of an emergency release of gas. Escape can be facilitated from the location entrance road. Crews should then block the entrance to the location from the lease road so as not to allow anyone traversing into a hazardous area. The blockade should be at a safe distance outside of the ROE. There are no homes or buildings in or near the ROE.

Assumed 100 ppm ROE = 3000'

100 ppm H_2S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H_2S, the first responder(s) must

- **Isolate the area and prevent entry by other persons into the 100 ppm ROE.**
- **Evacuate any public places encompassed by the 100 ppm ROE.**
- **Be equipped with H_2S monitors and air packs in order to control the release.**
- **Use the "buddy system" to ensure no injuries occur during the response**
- **Take precautions to avoid personal injury during this operation.**
- **Contact operator and/or local officials to aid in operation. See list of phone numbers attached.**
- **Have received training in the**
  - **Detection of H_2S, and**
  - **Measures for protection against the gas,**
  - **Equipment used for protection and emergency response.**

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO_2). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Characteristics of H_2S and SO_2

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H_2S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO_2	2.21 Air = 1	2 ppm	N/A	1000 ppm

Contacting Authorities

Devon Energy Corp. personnel must liaison with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available. The following call list of essential and potential responders has been prepared for use during a release. Devon Energy Corp. Company response must be in coordination with the State of New Mexico's 'Hazardous Materials Emergency Response Plan' (HMER)

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (H_2S) TRAINING

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H_2S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H_2S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H_2S metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H_2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H_2S zone (within 3 days or 500 feet) and weekly H_2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H_2S Drilling Operations Plan and the Public Protection Plan.

II. HYDROGEN SULFIDE TRAINING

Note: All H_2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H_2S.

1. **Well Control Equipment**

   A. Flare line

   B. Choke manifold – Remotely Operated

   C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit

   D. Auxiliary equipment may include if applicable: annular preventer and rotating head.

   E. Mud/Gas Separator

2. **Protective equipment for essential personnel:**

   30-minute SCBA units located at briefing areas, as indicated on well site diagram, with escape units available in the top doghouse. As it may be difficult to communicate audibly while wearing these units, hand signals shall be utilized.

3. **H_2S detection and monitoring equipment:**

   Portable H_2S monitors positioned on location for best coverage and response. These units have warning lights which activate when H_2S levels reach 10 ppm and audible sirens which activate at 15 ppm. Sensor locations:

   - **Bell nipple**
   - **Rig floor**
   - **Cellar**
   - **Possum Belly/Shale shaker**
   - **Choke manifold**

   Visual warning systems:

   A. Wind direction indicators as shown on well site diagram

   B. Caution/ Danger signs shall be posted on roads providing direct access to locations. Signs will be painted a high visibility yellow with black lettering of sufficient size to be reasonable distance from the immediate location. Bilingual signs will be used when appropriate.

4. **Mud program:**

   The mud program has been designed to minimize the volume of H_2S circulated to surface. Proper mud weight, safe drilling practices and the use of H_2S scavengers will minimize hazards when penetrating H_2S bearing zones.

5. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H_2S trim.

   B. All elastomers used for packing and seals shall be H_2S trim.

6. **Communication:**

   A. Company personnel have/use cellular telephones in the field.

   B. Land line (telephone) communications at Office

7. **Well testing:**

   A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safety and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H_2S environment will use the closed chamber method of testing.

   B. There will be no drill stem testing.

Devon Energy Corp. Company Call List		
Drilling Supervisor – Basin – Mark Kramer		405-823-4796
EHS Professional – Laura Wright		405-439-8129
Agency Call List		
Lea County (575)	**Hobbs**	
	Lea County Communication Authority	393-3981
	State Police	392-5588
	City Police	397-9265
	Sheriff's Office	393-2515
	Ambulance	**911**
	Fire Department	397-9308
	LEPC (Local Emergency Planning Committee)	393-2870
	NMOCD	393-6161
	US Bureau of Land Management	393-3612
Eddy County (575)	**Carlsbad**	
	State Police	885-3137
	City Police	885-2111
	Sheriff's Office	887-7551
	Ambulance	**911**
	Fire Department	885-3125
	LEPC (Local Emergency Planning Committee)	887-3798
	US Bureau of Land Management	887-6544
	NM Emergency Response Commission (Santa Fe)	(505) 476-9600
	24 HR	(505) 827-9126
	National Emergency Response Center	(800) 424-8802
	National Pollution Control Center: Direct	(703) 872-6000
	For Oil Spills	(800) 280-7118
	Emergency Services	
	Wild Well Control	(281) 784-4700
	Cudd Pressure Control (915) 699-0139	(915) 563-3356
	Halliburton	(575) 746-2757
	B. J. Services	(575) 746-3569
Give GPS position:	Native Air – Emergency Helicopter – Hobbs	(575) 392-6429
	Flight For Life - Lubbock, TX	(806) 743-9911
	Aerocare - Lubbock, TX	(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM	(800) 222-1222
	Poison Control (24/7)	(575) 272-3115
	Oil & Gas Pipeline 24 Hour Service	(800) 364-4366
	NOAA – Website - www.nhc.noaa.gov	

Prepared in conjunction with
Dave Small SHARP communications and consulting

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)
Sec 27-T25S-R31E
Lusitano 27_34 Fed Com 736H

Wellbore #1

Plan: Permit Plan 2

Standard Planning Report - Geographic

19 September, 2018

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3362.80ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3362.80ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Project	Eddy County (NAD 83 NM Eastern)		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Sec 27-T25S-R31E				
Site Position:		**Northing:**	403,674.44 usft	**Latitude:**	32.108547
From:	Map	**Easting:**	714,373.23 usft	**Longitude:**	-103.774477
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.30 °

Well	Lusitano 27_34 Fed Com 736H					
Well Position	**+N/-S**	0.00 ft	**Northing:**	403,464.40 usft	**Latitude:**	32.107911
	+E/-W	0.00 ft	**Easting:**	718,474.16 usft	**Longitude:**	-103.761236
Position Uncertainty		0.50 ft	**Wellhead Elevation:**		**Ground Level:**	3,337.80 ft

Wellbore	Wellbore #1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	8/20/2018	6.91	59.91	47,729.10083454

Design	Permit Plan 2				
Audit Notes:					
Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	0.00
Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**	
	0.00	0.00	0.00	180.68	

Plan Survey Tool Program **Date** 9/19/2018

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,753.86	Permit Plan 2 (Wellbore #1)	MWD+HDGM OWSG MWD + HDGM	

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,158.18	1.98	322.88	4,158.15	2.18	-1.65	1.25	1.25	0.00	322.88	
10,737.15	1.98	322.88	10,733.21	183.19	-138.63	0.00	0.00	0.00	0.00	
10,868.98	0.00	0.00	10,865.00	185.00	-140.00	1.50	-1.50	0.00	180.00	
11,219.02	0.00	0.00	11,215.04	185.00	-140.00	0.00	0.00	0.00	0.00	
12,119.02	90.00	179.89	11,788.00	-387.96	-138.86	10.00	10.00	0.00	179.89	PBHL2 - Lusitano 736
21,753.86	90.00	179.89	11,788.00	-10,022.78	-119.66	0.00	0.00	0.00	0.00	PBHL2 - Lusitano 736

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Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
100.00	0.00	0.00	100.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
200.00	0.00	0.00	200.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
300.00	0.00	0.00	300.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
400.00	0.00	0.00	400.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
500.00	0.00	0.00	500.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
600.00	0.00	0.00	600.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
700.00	0.00	0.00	700.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
800.00	0.00	0.00	800.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
900.00	0.00	0.00	900.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,000.00	0.00	0.00	1,000.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,100.00	0.00	0.00	1,100.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,200.00	0.00	0.00	1,200.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,300.00	0.00	0.00	1,300.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,400.00	0.00	0.00	1,400.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,500.00	0.00	0.00	1,500.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,600.00	0.00	0.00	1,600.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,700.00	0.00	0.00	1,700.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,800.00	0.00	0.00	1,800.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
1,900.00	0.00	0.00	1,900.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,000.00	0.00	0.00	2,000.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,100.00	0.00	0.00	2,100.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,200.00	0.00	0.00	2,200.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,300.00	0.00	0.00	2,300.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,400.00	0.00	0.00	2,400.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,500.00	0.00	0.00	2,500.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,600.00	0.00	0.00	2,600.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,700.00	0.00	0.00	2,700.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,800.00	0.00	0.00	2,800.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
2,900.00	0.00	0.00	2,900.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,000.00	0.00	0.00	3,000.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,100.00	0.00	0.00	3,100.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,200.00	0.00	0.00	3,200.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,300.00	0.00	0.00	3,300.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,400.00	0.00	0.00	3,400.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,500.00	0.00	0.00	3,500.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,600.00	0.00	0.00	3,600.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,700.00	0.00	0.00	3,700.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,800.00	0.00	0.00	3,800.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
3,900.00	0.00	0.00	3,900.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
4,000.00	0.00	0.00	4,000.00	0.00	0.00	403,464.40	718,474.16	32.107911	-103.761236
4,100.00	1.25	322.88	4,099.99	0.87	-0.66	403,465.27	718,473.50	32.107913	-103.761238
4,158.18	1.98	322.88	4,158.15	2.18	-1.65	403,466.58	718,472.51	32.107917	-103.761241
4,200.00	1.98	322.88	4,199.94	3.33	-2.52	403,467.73	718,471.64	32.107920	-103.761244
4,300.00	1.98	322.88	4,299.88	6.08	-4.60	403,470.48	718,469.56	32.107928	-103.761251
4,400.00	1.98	322.88	4,399.82	8.83	-6.68	403,473.23	718,467.47	32.107935	-103.761258
4,500.00	1.98	322.88	4,499.77	11.58	-8.76	403,475.98	718,465.39	32.107943	-103.761264
4,600.00	1.98	322.88	4,599.71	14.33	-10.85	403,478.73	718,463.31	32.107950	-103.761271
4,700.00	1.98	322.88	4,699.65	17.08	-12.93	403,481.48	718,461.23	32.107958	-103.761278
4,800.00	1.98	322.88	4,799.59	19.83	-15.01	403,484.23	718,459.15	32.107966	-103.761284
4,900.00	1.98	322.88	4,899.53	22.59	-17.09	403,486.99	718,457.06	32.107973	-103.761291
5,000.00	1.98	322.88	4,999.47	25.34	-19.17	403,489.74	718,454.98	32.107981	-103.761298
5,100.00	1.98	322.88	5,099.41	28.09	-21.26	403,492.49	718,452.90	32.107988	-103.761304
5,200.00	1.98	322.88	5,199.35	30.84	-23.34	403,495.24	718,450.82	32.107996	-103.761311
5,300.00	1.98	322.88	5,299.29	33.59	-25.42	403,497.99	718,448.74	32.108004	-103.761318

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Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,400.00	1.98	322.88	5,399.23	36.34	-27.50	403,500.74	718,446.65	32.108011	-103.761324
5,500.00	1.98	322.88	5,499.17	39.09	-29.58	403,503.49	718,444.57	32.108019	-103.761331
5,600.00	1.98	322.88	5,599.11	41.85	-31.67	403,506.24	718,442.49	32.108026	-103.761338
5,700.00	1.98	322.88	5,699.05	44.60	-33.75	403,509.00	718,440.41	32.108034	-103.761344
5,800.00	1.98	322.88	5,798.99	47.35	-35.83	403,511.75	718,438.32	32.108041	-103.761351
5,900.00	1.98	322.88	5,898.93	50.10	-37.91	403,514.50	718,436.24	32.108049	-103.761358
6,000.00	1.98	322.88	5,998.87	52.85	-40.00	403,517.25	718,434.16	32.108057	-103.761364
6,100.00	1.98	322.88	6,098.81	55.60	-42.08	403,520.00	718,432.08	32.108064	-103.761371
6,200.00	1.98	322.88	6,198.75	58.35	-44.16	403,522.75	718,430.00	32.108072	-103.761378
6,300.00	1.98	322.88	6,298.69	61.11	-46.24	403,525.50	718,427.91	32.108079	-103.761384
6,400.00	1.98	322.88	6,398.63	63.86	-48.32	403,528.26	718,425.83	32.108087	-103.761391
6,500.00	1.98	322.88	6,498.57	66.61	-50.41	403,531.01	718,423.75	32.108095	-103.761398
6,600.00	1.98	322.88	6,598.51	69.36	-52.49	403,533.76	718,421.67	32.108102	-103.761404
6,700.00	1.98	322.88	6,698.46	72.11	-54.57	403,536.51	718,419.59	32.108110	-103.761411
6,800.00	1.98	322.88	6,798.40	74.86	-56.65	403,539.26	718,417.50	32.108117	-103.761418
6,900.00	1.98	322.88	6,898.34	77.61	-58.73	403,542.01	718,415.42	32.108125	-103.761424
7,000.00	1.98	322.88	6,998.28	80.36	-60.82	403,544.76	718,413.34	32.108133	-103.761431
7,100.00	1.98	322.88	7,098.22	83.12	-62.90	403,547.51	718,411.26	32.108140	-103.761438
7,200.00	1.98	322.88	7,198.16	85.87	-64.98	403,550.27	718,409.18	32.108148	-103.761445
7,300.00	1.98	322.88	7,298.10	88.62	-67.06	403,553.02	718,407.09	32.108155	-103.761451
7,400.00	1.98	322.88	7,398.04	91.37	-69.14	403,555.77	718,405.01	32.108163	-103.761458
7,500.00	1.98	322.88	7,497.98	94.12	-71.23	403,558.52	718,402.93	32.108171	-103.761465
7,600.00	1.98	322.88	7,597.92	96.87	-73.31	403,561.27	718,400.85	32.108178	-103.761471
7,700.00	1.98	322.88	7,697.86	99.62	-75.39	403,564.02	718,398.77	32.108186	-103.761478
7,800.00	1.98	322.88	7,797.80	102.38	-77.47	403,566.77	718,396.68	32.108193	-103.761485
7,900.00	1.98	322.88	7,897.74	105.13	-79.56	403,569.53	718,394.60	32.108201	-103.761491
8,000.00	1.98	322.88	7,997.68	107.88	-81.64	403,572.28	718,392.52	32.108209	-103.761498
8,100.00	1.98	322.88	8,097.62	110.63	-83.72	403,575.03	718,390.44	32.108216	-103.761505
8,200.00	1.98	322.88	8,197.56	113.38	-85.80	403,577.78	718,388.35	32.108224	-103.761511
8,300.00	1.98	322.88	8,297.50	116.13	-87.88	403,580.53	718,386.27	32.108231	-103.761518
8,400.00	1.98	322.88	8,397.44	118.88	-89.97	403,583.28	718,384.19	32.108239	-103.761525
8,500.00	1.98	322.88	8,497.38	121.63	-92.05	403,586.03	718,382.11	32.108247	-103.761531
8,600.00	1.98	322.88	8,597.32	124.39	-94.13	403,588.78	718,380.03	32.108254	-103.761538
8,700.00	1.98	322.88	8,697.26	127.14	-96.21	403,591.54	718,377.94	32.108262	-103.761545
8,800.00	1.98	322.88	8,797.20	129.89	-98.29	403,594.29	718,375.86	32.108269	-103.761551
8,900.00	1.98	322.88	8,897.15	132.64	-100.38	403,597.04	718,373.78	32.108277	-103.761558
9,000.00	1.98	322.88	8,997.09	135.39	-102.46	403,599.79	718,371.70	32.108284	-103.761565
9,100.00	1.98	322.88	9,097.03	138.14	-104.54	403,602.54	718,369.62	32.108292	-103.761571
9,200.00	1.98	322.88	9,196.97	140.89	-106.62	403,605.29	718,367.53	32.108300	-103.761578
9,300.00	1.98	322.88	9,296.91	143.65	-108.70	403,608.04	718,365.45	32.108307	-103.761585
9,400.00	1.98	322.88	9,396.85	146.40	-110.79	403,610.80	718,363.37	32.108315	-103.761591
9,500.00	1.98	322.88	9,496.79	149.15	-112.87	403,613.55	718,361.29	32.108322	-103.761598
9,600.00	1.98	322.88	9,596.73	151.90	-114.95	403,616.30	718,359.21	32.108330	-103.761605
9,700.00	1.98	322.88	9,696.67	154.65	-117.03	403,619.05	718,357.12	32.108338	-103.761611
9,800.00	1.98	322.88	9,796.61	157.40	-119.12	403,621.80	718,355.04	32.108345	-103.761618
9,900.00	1.98	322.88	9,896.55	160.15	-121.20	403,624.55	718,352.96	32.108353	-103.761625
10,000.00	1.98	322.88	9,996.49	162.90	-123.28	403,627.30	718,350.88	32.108360	-103.761631
10,100.00	1.98	322.88	10,096.43	165.66	-125.36	403,630.05	718,348.79	32.108368	-103.761638
10,200.00	1.98	322.88	10,196.37	168.41	-127.44	403,632.81	718,346.71	32.108376	-103.761645
10,300.00	1.98	322.88	10,296.31	171.16	-129.53	403,635.56	718,344.63	32.108383	-103.761652
10,400.00	1.98	322.88	10,396.25	173.91	-131.61	403,638.31	718,342.55	32.108391	-103.761658
10,500.00	1.98	322.88	10,496.19	176.66	-133.69	403,641.06	718,340.47	32.108398	-103.761665
10,600.00	1.98	322.88	10,596.13	179.41	-135.77	403,643.81	718,338.38	32.108406	-103.761672
10,700.00	1.98	322.88	10,696.07	182.16	-137.85	403,646.56	718,336.30	32.108414	-103.761678
10,737.15	1.98	322.88	10,733.21	183.19	-138.63	403,647.59	718,335.53	32.108416	-103.761681

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Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

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Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,800.00	1.03	322.88	10,796.03	184.50	-139.62	403,648.90	718,334.53	32.108420	-103.761684
10,868.98	0.00	0.00	10,865.00	185.00	-140.00	403,649.40	718,334.16	32.108421	-103.761685
10,900.00	0.00	0.00	10,896.03	185.00	-140.00	403,649.40	718,334.16	32.108421	-103.761685
11,000.00	0.00	0.00	10,996.03	185.00	-140.00	403,649.40	718,334.16	32.108421	-103.761685
11,100.00	0.00	0.00	11,096.03	185.00	-140.00	403,649.40	718,334.16	32.108421	-103.761685
11,200.00	0.00	0.00	11,196.03	185.00	-140.00	403,649.40	718,334.16	32.108421	-103.761685
11,219.01	0.00	0.00	11,215.04	185.00	-140.00	403,649.40	718,334.16	32.108421	-103.761685
KOP @ 11219' MD, 50' FNL, 1350' FEL									
11,300.00	8.10	179.89	11,295.76	179.29	-139.99	403,643.68	718,334.17	32.108406	-103.761685
11,400.00	18.10	179.89	11,393.03	156.65	-139.94	403,621.05	718,334.21	32.108343	-103.761685
11,462.11	24.31	179.89	11,450.91	134.20	-139.90	403,598.60	718,334.26	32.108282	-103.761686
FTP @ 11462' MD, 100' FNL, 1350' FEL									
11,500.00	28.10	179.89	11,484.90	117.47	-139.87	403,581.87	718,334.29	32.108236	-103.761686
11,600.00	38.10	179.89	11,568.56	62.93	-139.76	403,527.33	718,334.40	32.108086	-103.761686
11,700.00	48.10	179.89	11,641.49	-5.31	-139.62	403,459.09	718,334.54	32.107898	-103.761687
11,800.00	58.10	179.89	11,701.46	-85.17	-139.46	403,379.23	718,334.69	32.107679	-103.761688
11,900.00	68.10	179.89	11,746.65	-174.24	-139.28	403,290.16	718,334.87	32.107434	-103.761689
12,000.00	78.10	179.89	11,775.68	-269.80	-139.09	403,194.60	718,335.06	32.107171	-103.761690
12,100.00	88.10	179.89	11,787.68	-368.94	-138.90	403,095.46	718,335.26	32.106899	-103.761691
12,119.02	90.00	179.89	11,788.00	-387.96	-138.86	403,076.44	718,335.30	32.106846	-103.761691
12,200.00	90.00	179.89	11,788.00	-468.94	-138.70	402,995.46	718,335.46	32.106624	-103.761692
12,300.00	90.00	179.89	11,788.00	-568.94	-138.50	402,895.46	718,335.66	32.106349	-103.761693
12,400.00	90.00	179.89	11,788.00	-668.94	-138.30	402,795.46	718,335.86	32.106074	-103.761694
12,500.00	90.00	179.89	11,788.00	-768.94	-138.10	402,695.46	718,336.06	32.105799	-103.761695
12,600.00	90.00	179.89	11,788.00	-868.94	-137.90	402,595.46	718,336.26	32.105524	-103.761696
12,700.00	90.00	179.89	11,788.00	-968.94	-137.70	402,495.46	718,336.46	32.105249	-103.761697
12,800.00	90.00	179.89	11,788.00	-1,068.94	-137.50	402,395.46	718,336.65	32.104974	-103.761698
12,900.00	90.00	179.89	11,788.00	-1,168.94	-137.30	402,295.46	718,336.85	32.104700	-103.761700
13,000.00	90.00	179.89	11,788.00	-1,268.94	-137.10	402,195.46	718,337.05	32.104425	-103.761701
13,100.00	90.00	179.89	11,788.00	-1,368.94	-136.90	402,095.46	718,337.25	32.104150	-103.761702
13,200.00	90.00	179.89	11,788.00	-1,468.94	-136.70	401,995.46	718,337.45	32.103875	-103.761703
13,300.00	90.00	179.89	11,788.00	-1,568.94	-136.51	401,895.46	718,337.65	32.103600	-103.761704
13,400.00	90.00	179.89	11,788.00	-1,668.94	-136.31	401,795.46	718,337.85	32.103325	-103.761705
13,500.00	90.00	179.89	11,788.00	-1,768.94	-136.11	401,695.46	718,338.05	32.103050	-103.761706
13,600.00	90.00	179.89	11,788.00	-1,868.94	-135.91	401,595.46	718,338.25	32.102775	-103.761707
13,700.00	90.00	179.89	11,788.00	-1,968.94	-135.71	401,495.46	718,338.45	32.102501	-103.761708
13,800.00	90.00	179.89	11,788.00	-2,068.94	-135.51	401,395.47	718,338.65	32.102226	-103.761709
13,900.00	90.00	179.89	11,788.00	-2,168.94	-135.31	401,295.47	718,338.85	32.101951	-103.761710
14,000.00	90.00	179.89	11,788.00	-2,268.94	-135.11	401,195.47	718,339.05	32.101676	-103.761711
14,100.00	90.00	179.89	11,788.00	-2,368.94	-134.91	401,095.47	718,339.25	32.101401	-103.761712
14,200.00	90.00	179.89	11,788.00	-2,468.94	-134.71	400,995.47	718,339.44	32.101126	-103.761713
14,300.00	90.00	179.89	11,788.00	-2,568.94	-134.51	400,895.47	718,339.64	32.100851	-103.761715
14,400.00	90.00	179.89	11,788.00	-2,668.94	-134.31	400,795.47	718,339.84	32.100576	-103.761716
14,500.00	90.00	179.89	11,788.00	-2,768.94	-134.11	400,695.47	718,340.04	32.100301	-103.761717
14,600.00	90.00	179.89	11,788.00	-2,868.94	-133.91	400,595.47	718,340.24	32.100027	-103.761718
14,700.00	90.00	179.89	11,788.00	-2,968.94	-133.72	400,495.47	718,340.44	32.099752	-103.761719
14,800.00	90.00	179.89	11,788.00	-3,068.94	-133.52	400,395.47	718,340.64	32.099477	-103.761720
14,900.00	90.00	179.89	11,788.00	-3,168.94	-133.32	400,295.47	718,340.84	32.099202	-103.761721
15,000.00	90.00	179.89	11,788.00	-3,268.94	-133.12	400,195.47	718,341.04	32.098927	-103.761722
15,100.00	90.00	179.89	11,788.00	-3,368.94	-132.92	400,095.47	718,341.24	32.098652	-103.761723
15,200.00	90.00	179.89	11,788.00	-3,468.94	-132.72	399,995.47	718,341.44	32.098377	-103.761724
15,300.00	90.00	179.89	11,788.00	-3,568.93	-132.52	399,895.47	718,341.64	32.098102	-103.761725
15,400.00	90.00	179.89	11,788.00	-3,668.93	-132.32	399,795.47	718,341.84	32.097828	-103.761726
15,500.00	90.00	179.89	11,788.00	-3,768.93	-132.12	399,695.47	718,342.03	32.097553	-103.761727

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3362.80ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3362.80ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,600.00	90.00	179.89	11,788.00	-3,868.93	-131.92	399,595.47	718,342.23	32.097278	-103.761728
15,700.00	90.00	179.89	11,788.00	-3,968.93	-131.72	399,495.47	718,342.43	32.097003	-103.761729
15,800.00	90.00	179.89	11,788.00	-4,068.93	-131.52	399,395.47	718,342.63	32.096728	-103.761731
15,900.00	90.00	179.89	11,788.00	-4,168.93	-131.32	399,295.47	718,342.83	32.096453	-103.761732
16,000.00	90.00	179.89	11,788.00	-4,268.93	-131.13	399,195.47	718,343.03	32.096178	-103.761733
16,100.00	90.00	179.89	11,788.00	-4,368.93	-130.93	399,095.47	718,343.23	32.095903	-103.761734
16,200.00	90.00	179.89	11,788.00	-4,468.93	-130.73	398,995.47	718,343.43	32.095628	-103.761735
16,300.00	90.00	179.89	11,788.00	-4,568.93	-130.53	398,895.48	718,343.63	32.095354	-103.761736
16,400.00	90.00	179.89	11,788.00	-4,668.93	-130.33	398,795.48	718,343.83	32.095079	-103.761737
16,500.00	90.00	179.89	11,788.00	-4,768.93	-130.13	398,695.48	718,344.03	32.094804	-103.761738
16,600.00	90.00	179.89	11,788.00	-4,868.93	-129.93	398,595.48	718,344.23	32.094529	-103.761739
16,700.00	90.00	179.89	11,788.00	-4,968.93	-129.73	398,495.48	718,344.43	32.094254	-103.761740
16,800.00	90.00	179.89	11,788.00	-5,068.93	-129.53	398,395.48	718,344.63	32.093979	-103.761741
16,900.00	90.00	179.89	11,788.00	-5,168.93	-129.33	398,295.48	718,344.82	32.093704	-103.761742
17,000.00	90.00	179.89	11,788.00	-5,268.93	-129.13	398,195.48	718,345.02	32.093429	-103.761743
17,100.00	90.00	179.89	11,788.00	-5,368.93	-128.93	398,095.48	718,345.22	32.093154	-103.761744
17,200.00	90.00	179.89	11,788.00	-5,468.93	-128.73	397,995.48	718,345.42	32.092880	-103.761746
17,300.00	90.00	179.89	11,788.00	-5,568.93	-128.53	397,895.48	718,345.62	32.092605	-103.761747
17,400.00	90.00	179.89	11,788.00	-5,668.93	-128.34	397,795.48	718,345.82	32.092330	-103.761748
17,500.00	90.00	179.89	11,788.00	-5,768.93	-128.14	397,695.48	718,346.02	32.092055	-103.761749
17,600.00	90.00	179.89	11,788.00	-5,868.93	-127.94	397,595.48	718,346.22	32.091780	-103.761750
17,700.00	90.00	179.89	11,788.00	-5,968.93	-127.74	397,495.48	718,346.42	32.091505	-103.761751
17,800.00	90.00	179.89	11,788.00	-6,068.93	-127.54	397,395.48	718,346.62	32.091230	-103.761752
17,900.00	90.00	179.89	11,788.00	-6,168.93	-127.34	397,295.48	718,346.82	32.090955	-103.761753
18,000.00	90.00	179.89	11,788.00	-6,268.93	-127.14	397,195.48	718,347.02	32.090681	-103.761754
18,100.00	90.00	179.89	11,788.00	-6,368.93	-126.94	397,095.48	718,347.22	32.090406	-103.761755
18,200.00	90.00	179.89	11,788.00	-6,468.93	-126.74	396,995.48	718,347.41	32.090131	-103.761756
18,300.00	90.00	179.89	11,788.00	-6,568.93	-126.54	396,895.48	718,347.61	32.089856	-103.761757
18,400.00	90.00	179.89	11,788.00	-6,668.93	-126.34	396,795.48	718,347.81	32.089581	-103.761758
18,500.00	90.00	179.89	11,788.00	-6,768.93	-126.14	396,695.48	718,348.01	32.089306	-103.761759
18,600.00	90.00	179.89	11,788.00	-6,868.93	-125.94	396,595.48	718,348.21	32.089031	-103.761760
18,700.00	90.00	179.89	11,788.00	-6,968.93	-125.75	396,495.48	718,348.41	32.088756	-103.761762
18,800.00	90.00	179.89	11,788.00	-7,068.93	-125.55	396,395.49	718,348.61	32.088481	-103.761763
18,900.00	90.00	179.89	11,788.00	-7,168.93	-125.35	396,295.49	718,348.81	32.088207	-103.761764
19,000.00	90.00	179.89	11,788.00	-7,268.93	-125.15	396,195.49	718,349.01	32.087932	-103.761765
19,100.00	90.00	179.89	11,788.00	-7,368.93	-124.95	396,095.49	718,349.21	32.087657	-103.761766
19,200.00	90.00	179.89	11,788.00	-7,468.93	-124.75	395,995.49	718,349.41	32.087382	-103.761767
19,300.00	90.00	179.89	11,788.00	-7,568.93	-124.55	395,895.49	718,349.61	32.087107	-103.761768
19,400.00	90.00	179.89	11,788.00	-7,668.93	-124.35	395,795.49	718,349.81	32.086832	-103.761769
19,500.00	90.00	179.89	11,788.00	-7,768.93	-124.15	395,695.49	718,350.01	32.086557	-103.761770
19,600.00	90.00	179.89	11,788.00	-7,868.93	-123.95	395,595.49	718,350.20	32.086282	-103.761771
19,700.00	90.00	179.89	11,788.00	-7,968.93	-123.75	395,495.49	718,350.40	32.086007	-103.761772
19,800.00	90.00	179.89	11,788.00	-8,068.93	-123.55	395,395.49	718,350.60	32.085733	-103.761773
19,900.00	90.00	179.89	11,788.00	-8,168.93	-123.35	395,295.49	718,350.80	32.085458	-103.761774
20,000.00	90.00	179.89	11,788.00	-8,268.93	-123.15	395,195.49	718,351.00	32.085183	-103.761775
20,100.00	90.00	179.89	11,788.00	-8,368.93	-122.96	395,095.49	718,351.20	32.084908	-103.761776
20,200.00	90.00	179.89	11,788.00	-8,468.93	-122.76	394,995.49	718,351.40	32.084633	-103.761778
20,300.00	90.00	179.89	11,788.00	-8,568.93	-122.56	394,895.49	718,351.60	32.084358	-103.761779
20,400.00	90.00	179.89	11,788.00	-8,668.92	-122.36	394,795.49	718,351.80	32.084083	-103.761780
20,500.00	90.00	179.89	11,788.00	-8,768.92	-122.16	394,695.49	718,352.00	32.083808	-103.761781
20,600.00	90.00	179.89	11,788.00	-8,868.92	-121.96	394,595.49	718,352.20	32.083534	-103.761782
20,700.00	90.00	179.89	11,788.00	-8,968.92	-121.76	394,495.49	718,352.40	32.083259	-103.761783
20,800.00	90.00	179.89	11,788.00	-9,068.92	-121.56	394,395.49	718,352.60	32.082984	-103.761784
20,900.00	90.00	179.89	11,788.00	-9,168.92	-121.36	394,295.49	718,352.79	32.082709	-103.761785
21,000.00	90.00	179.89	11,788.00	-9,268.92	-121.16	394,195.49	718,352.99	32.082434	-103.761786

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3362.80ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3362.80ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
21,100.00	90.00	179.89	11,788.00	-9,368.92	-120.96	394,095.49	718,353.19	32.082159	-103.761787
21,200.00	90.00	179.89	11,788.00	-9,468.92	-120.76	393,995.49	718,353.39	32.081884	-103.761788
21,300.00	90.00	179.89	11,788.00	-9,568.92	-120.56	393,895.50	718,353.59	32.081609	-103.761789
21,400.00	90.00	179.89	11,788.00	-9,668.92	-120.37	393,795.50	718,353.79	32.081334	-103.761790
21,500.00	90.00	179.89	11,788.00	-9,768.92	-120.17	393,695.50	718,353.99	32.081060	-103.761791
21,600.00	90.00	179.89	11,788.00	-9,868.92	-119.97	393,595.50	718,354.19	32.080785	-103.761792
21,700.00	90.00	179.89	11,788.00	-9,968.92	-119.77	393,495.50	718,354.39	32.080510	-103.761794
21,753.00	90.00	179.89	11,788.00	-10,021.92	-119.66	393,442.50	718,354.49	32.080364	-103.761794
LTP @ 21753' MD, 330' FSL, 1350' FEL									
21,753.86	90.00	179.89	11,788.00	-10,022.78	-119.66	393,441.64	718,354.50	32.080362	-103.761794
PBHL; 330' FSL, 1350' FEL									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Lusitano 27-34 F	0.00	0.00	0.00	-10,329.64	241.92	393,134.78	718,716.08	32.079513	-103.760632
- plan misses target center by 10332.47ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									
PBHL2 - Lusitano 736H	0.00	0.00	0.00	-10,022.78	-119.66	393,441.64	718,354.50	32.080362	-103.761794
- plan misses target center by 10023.49ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
11,219.01	11,215.04	185.00	-140.00	KOP @ 11219' MD, 50' FNL, 1350' FEL
11,462.11	11,450.91	134.20	-139.90	FTP @ 11462' MD, 100' FNL, 1350' FEL
21,753.00	11,788.00	-10,021.92	-119.66	LTP @ 21753' MD, 330' FSL, 1350' FEL
21,753.86	11,788.00	-10,022.78	-119.66	PBHL; 330' FSL, 1350' FEL

Devon Energy

WELL DETAILS: Lusitano 27_34 Fed Com 736H

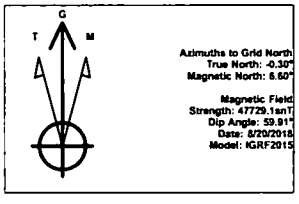
RKB @ 3362.80ft
3337.80

Northing	Easting	Latitude	Longitude
403464.40	718474.16	32.107911	-103.761236

SECTION DETAILS Permit Plan 2

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	
4158.18	1.98	322.88	4158.15	2.18	-1.65	1.25	-2.16	
10737.15	1.98	322.88	10733.21	183.19	-138.63	0.00	-181.52	
10868.97	0.00	0.00	10865.00	185.00	-140.00	1.50	-183.32	
11219.01	0.00	0.00	11215.04	185.00	-140.00	0.00	-183.32	KOP @ 11219' MD, 50' FNL, 1350' FEL
12119.02	90.00	179.89	11788.00	-387.96	-138.86	10.00	389.59	
21753.86	90.00	179.89	11788.00	-10022.78	-119.66	0.00	10023.49	LTP @ 21753' MD, 330' FSL, 1350' FEL

devon



WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)
Sec 27-T25S-R31E
Lusitano 27_34 Fed Com 736H

Wellbore #1
Permit Plan 2

Anticollision Report

19 September, 2018

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Reference	Permit Plan 2		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 50.00ft	**Error Model:**	ISCWSA
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,500.00 ft	**Error Surface:**	Pedal Curve
Warning Levels Evaluated at:	2.00 **Sigma**	**Casing Method:**	Not applied

Survey Tool Program **Date** 9/19/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	21,753.86	Permit Plan 2 (Wellbore #1)	MWD+HDGM	OWSG MWD + HDGM

Summary

Site Name / Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Sec 27-T25S-R31E						
Gunnison 34 Fed #001 (P&A) - Wellbore #1 - Wellbore #						Out of range
Lusitano 27_22 Fed Com 232H - Wellbore #1 - Permit Pl						Out of range
Lusitano 27_34 Fed Com 523H - Wellbore #1 - Permit Pl						Out of range
Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Pl	8,751.15	8,793.79	1,476.07	1,413.72	23.672	CC, ES
Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Pl	8,900.00	8,892.00	1,479.47	1,416.60	23.533	SF
Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit Pl						Out of range
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Pl						Out of range
Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Pl	4,000.00	4,000.30	30.02	1.77	1.063	Major Risk, CC
Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Pl	21,753.86	21,775.98	299.25	-4.19	0.986	Collision, ES, SF
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	9,469.11	9,454.54	674.53	607.24	10.024	CC
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	9,500.00	9,479.80	674.66	607.19	9.999	ES
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	9,600.00	9,558.72	677.16	609.14	9.955	SF
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore	0.00	0.00	929.33			
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore	1,250.00	1,240.68	929.84	921.49	111.413	ES
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore	10,350.00	10,502.63	1,038.62	965.73	14.249	SF
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla						Out of range
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	3,000.00	3,000.50	59.99	38.91	2.845	Alert, CC
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	3,050.00	3,049.98	60.21	38.77	2.809	Alert, ES
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	3,100.00	3,099.45	60.86	39.07	2.793	Alert, SF
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	1,102.28	1,101.60	873.65	866.68	125.306	CC
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	21,753.86	21,666.50	992.48	697.42	3.364	Alert, ES, SF
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	5,882.85	5,910.10	759.78	717.81	18.102	CC
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	6,000.00	6,020.25	760.27	717.46	17.761	ES
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	8,550.00	8,545.79	804.09	743.46	13.261	SF
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	7,018.50	7,053.45	529.49	478.92	10.470	CC
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	8,750.00	8,794.30	536.01	473.68	8.600	ES
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	8,800.00	8,830.87	537.31	474.80	8.596	SF
Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Pla	2,500.00	2,499.00	729.89	712.39	41.707	CC
Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Pla	21,753.86	21,589.21	959.15	656.22	3.166	Alert, ES, SF
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	1,369.07	1,368.78	839.91	831.64	101.615	CC
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	20,950.00	21,164.50	944.80	664.86	3.375	Alert, ES
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	21,650.00	21,839.92	980.12	681.38	3.281	Alert, SF
Lusitano 27-34 Fed Com 733H - Wellbore #1 - Permit Pla						Out of range
Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Pla	4,000.00	3,998.70	699.89	671.65	24.781	CC
Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Pla	4,150.00	4,130.60	700.35	671.12	23.959	ES
Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Pla	21,753.86	22,066.33	1,006.37	713.15	3.432	Alert, SF

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,850.00	7,847.77	7,960.59	7,897.95	27.89	30.36	-50.45	169.35	-1,575.37	1,499.31	1,442.63	56.68	26.452	
7,900.00	7,897.74	8,000.00	7,937.33	28.07	30.49	-50.46	169.91	-1,574.07	1,496.59	1,439.59	57.00	26.258	
7,950.00	7,947.71	8,034.45	7,971.77	28.25	30.61	-50.48	170.28	-1,573.24	1,494.29	1,437.00	57.29	26.085	
8,000.00	7,997.68	8,071.42	8,008.73	28.43	30.74	-50.51	170.53	-1,572.66	1,492.43	1,434.85	57.58	25.918	
8,050.00	8,047.65	8,108.40	8,045.71	28.61	30.86	-50.54	170.64	-1,572.42	1,491.00	1,433.13	57.87	25.763	
8,100.00	8,097.62	8,155.11	8,092.42	28.79	31.01	-50.59	170.64	-1,572.40	1,489.89	1,431.69	58.21	25.596	
8,150.00	8,147.59	8,205.08	8,142.39	28.97	31.18	-50.64	170.64	-1,572.40	1,488.80	1,430.24	58.56	25.426	
8,200.00	8,197.56	8,255.05	8,192.36	29.15	31.34	-50.69	170.64	-1,572.40	1,487.71	1,428.80	58.90	25.257	
8,250.00	8,247.53	8,305.02	8,242.33	29.33	31.50	-50.75	170.64	-1,572.40	1,486.61	1,427.36	59.25	25.090	
8,300.00	8,297.50	8,354.99	8,292.30	29.51	31.67	-50.80	170.64	-1,572.40	1,485.52	1,425.92	59.60	24.925	
8,350.00	8,347.47	8,404.96	8,342.27	29.69	31.83	-50.85	170.64	-1,572.40	1,484.43	1,424.48	59.95	24.762	
8,400.00	8,397.44	8,454.93	8,392.24	29.86	32.00	-50.90	170.64	-1,572.40	1,483.34	1,423.05	60.30	24.601	
8,450.00	8,447.41	8,508.59	8,445.87	30.04	32.16	-51.01	169.18	-1,572.40	1,482.21	1,421.56	60.65	24.438	
8,500.00	8,497.38	8,562.56	8,499.44	30.22	32.32	-51.31	162.81	-1,572.39	1,480.94	1,419.95	60.99	24.282	
8,550.00	8,547.35	8,614.61	8,550.32	30.40	32.46	-51.79	151.92	-1,572.38	1,479.59	1,418.29	61.31	24.134	
8,600.00	8,597.32	8,664.05	8,597.54	30.58	32.58	-52.40	137.33	-1,572.35	1,478.29	1,416.69	61.60	23.998	
8,650.00	8,647.29	8,710.39	8,640.52	30.76	32.69	-53.12	120.02	-1,572.33	1,477.17	1,415.30	61.87	23.874	
8,700.00	8,697.26	8,753.38	8,679.00	30.94	32.78	-53.90	100.90	-1,572.30	1,476.38	1,414.25	62.12	23.765	
8,750.00	8,747.23	8,792.92	8,713.05	31.12	32.85	-54.72	80.81	-1,572.27	1,476.07	1,413.72	62.35	23.674	
8,751.15	8,748.39	8,793.79	8,713.78	31.13	32.85	-54.74	80.34	-1,572.27	1,476.07	1,413.72	62.35	23.672	CC, ES
8,800.00	8,797.20	8,829.09	8,742.91	31.30	32.91	-55.54	60.42	-1,572.24	1,476.40	1,413.84	62.55	23.603	
8,850.00	8,847.18	8,862.04	8,768.96	31.48	32.96	-56.35	40.23	-1,572.21	1,477.49	1,414.76	62.72	23.555	
8,900.00	8,897.15	8,892.00	8,791.59	31.66	33.00	-57.14	20.60	-1,572.18	1,479.47	1,416.60	62.87	23.533	SF
8,950.00	8,947.12	8,919.21	8,811.23	31.84	33.03	-57.89	1.77	-1,572.15	1,482.44	1,419.46	62.98	23.540	
9,000.00	8,997.09	8,943.94	8,828.28	32.02	33.05	-58.60	-16.12	-1,572.12	1,486.48	1,423.44	63.05	23.577	
9,050.00	9,047.06	8,966.41	8,843.10	32.20	33.07	-59.26	-33.02	-1,572.10	1,491.68	1,428.60	63.08	23.647	
9,100.00	9,097.03	8,986.87	8,856.01	32.38	33.09	-59.89	-48.90	-1,572.07	1,498.08	1,435.00	63.07	23.751	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.30	0.30	0.50	0.50	-90.40	-0.21	-30.02	30.02				
50.00	50.00	50.30	50.30	0.50	0.50	-90.40	-0.21	-30.02	30.02	29.01	1.01	29.825	
100.00	100.00	100.30	100.30	0.52	0.52	-90.40	-0.21	-30.02	30.02	28.99	1.04	28.983	
150.00	150.00	150.30	150.30	0.59	0.59	-90.40	-0.21	-30.02	30.02	28.84	1.18	25.419	
200.00	200.00	200.30	200.30	0.70	0.70	-90.40	-0.21	-30.02	30.02	28.62	1.40	21.368	
250.00	250.00	250.30	250.30	0.84	0.84	-90.40	-0.21	-30.02	30.02	28.34	1.68	17.909	
300.00	300.00	300.30	300.30	0.99	0.99	-90.40	-0.21	-30.02	30.02	28.05	1.98	15.196	
350.00	350.00	350.30	350.30	1.15	1.15	-90.40	-0.21	-30.02	30.02	27.73	2.29	13.098	
400.00	400.00	400.30	400.30	1.31	1.31	-90.40	-0.21	-30.02	30.02	27.40	2.62	11.462	
450.00	450.00	450.30	450.30	1.48	1.48	-90.40	-0.21	-30.02	30.02	27.07	2.95	10.164	
500.00	500.00	500.30	500.30	1.65	1.65	-90.40	-0.21	-30.02	30.02	26.73	3.29	9.116	
550.00	550.00	550.30	550.30	1.82	1.82	-90.40	-0.21	-30.02	30.02	26.38	3.64	8.256	
600.00	600.00	600.30	600.30	1.99	1.99	-90.40	-0.21	-30.02	30.02	26.04	3.98	7.539	
650.00	650.00	650.30	650.30	2.16	2.17	-90.40	-0.21	-30.02	30.02	25.69	4.33	6.933	
700.00	700.00	700.30	700.30	2.34	2.34	-90.40	-0.21	-30.02	30.02	25.34	4.68	6.415	
750.00	750.00	750.30	750.30	2.51	2.52	-90.40	-0.21	-30.02	30.02	24.99	5.03	5.968	
800.00	800.00	800.30	800.30	2.69	2.69	-90.40	-0.21	-30.02	30.02	24.64	5.38	5.578	
850.00	850.00	850.30	850.30	2.87	2.87	-90.40	-0.21	-30.02	30.02	24.29	5.73	5.235	
900.00	900.00	900.30	900.30	3.04	3.04	-90.40	-0.21	-30.02	30.02	23.93	6.09	4.931	Alert
950.00	950.00	950.30	950.30	3.22	3.22	-90.40	-0.21	-30.02	30.02	23.58	6.44	4.660	Alert
1,000.00	1,000.00	1,000.30	1,000.30	3.40	3.40	-90.40	-0.21	-30.02	30.02	23.22	6.80	4.417	Alert
1,050.00	1,050.00	1,050.30	1,050.30	3.58	3.58	-90.40	-0.21	-30.02	30.02	22.87	7.15	4.198	Alert
1,100.00	1,100.00	1,100.30	1,100.30	3.75	3.75	-90.40	-0.21	-30.02	30.02	22.51	7.51	3.999	Alert
1,150.00	1,150.00	1,150.30	1,150.30	3.93	3.93	-90.40	-0.21	-30.02	30.02	22.16	7.86	3.819	Alert
1,200.00	1,200.00	1,200.30	1,200.30	4.11	4.11	-90.40	-0.21	-30.02	30.02	21.80	8.22	3.653	Alert
1,250.00	1,250.00	1,250.30	1,250.30	4.29	4.29	-90.40	-0.21	-30.02	30.02	21.45	8.57	3.502	Alert
1,300.00	1,300.00	1,300.30	1,300.30	4.46	4.47	-90.40	-0.21	-30.02	30.02	21.09	8.93	3.362	Alert
1,350.00	1,350.00	1,350.30	1,350.30	4.64	4.64	-90.40	-0.21	-30.02	30.02	20.74	9.29	3.233	Alert
1,400.00	1,400.00	1,400.30	1,400.30	4.82	4.82	-90.40	-0.21	-30.02	30.02	20.38	9.64	3.113	Alert
1,450.00	1,450.00	1,450.30	1,450.30	5.00	5.00	-90.40	-0.21	-30.02	30.02	20.02	10.00	3.002	Alert
1,500.00	1,500.00	1,500.30	1,500.30	5.18	5.18	-90.40	-0.21	-30.02	30.02	19.67	10.36	2.899	Alert
1,550.00	1,550.00	1,550.30	1,550.30	5.36	5.36	-90.40	-0.21	-30.02	30.02	19.31	10.71	2.802	Alert
1,600.00	1,600.00	1,600.30	1,600.30	5.53	5.54	-90.40	-0.21	-30.02	30.02	18.95	11.07	2.712	Alert
1,650.00	1,650.00	1,650.30	1,650.30	5.71	5.71	-90.40	-0.21	-30.02	30.02	18.59	11.43	2.627	Alert
1,700.00	1,700.00	1,700.30	1,700.30	5.89	5.89	-90.40	-0.21	-30.02	30.02	18.24	11.78	2.548	Alert
1,750.00	1,750.00	1,750.30	1,750.30	6.07	6.07	-90.40	-0.21	-30.02	30.02	17.88	12.14	2.473	Minor Risk
1,800.00	1,800.00	1,800.30	1,800.30	6.25	6.25	-90.40	-0.21	-30.02	30.02	17.52	12.50	2.402	Minor Risk
1,850.00	1,850.00	1,850.30	1,850.30	6.43	6.43	-90.40	-0.21	-30.02	30.02	17.17	12.86	2.335	Minor Risk
1,900.00	1,900.00	1,900.30	1,900.30	6.61	6.61	-90.40	-0.21	-30.02	30.02	16.81	13.21	2.272	Minor Risk
1,950.00	1,950.00	1,950.30	1,950.30	6.78	6.79	-90.40	-0.21	-30.02	30.02	16.45	13.57	2.212	Minor Risk
2,000.00	2,000.00	2,000.30	2,000.30	6.96	6.96	-90.40	-0.21	-30.02	30.02	16.09	13.93	2.155	Minor Risk
2,050.00	2,050.00	2,050.30	2,050.30	7.14	7.14	-90.40	-0.21	-30.02	30.02	15.74	14.29	2.102	Minor Risk
2,100.00	2,100.00	2,100.30	2,100.30	7.32	7.32	-90.40	-0.21	-30.02	30.02	15.38	14.64	2.050	Minor Risk
2,150.00	2,150.00	2,150.30	2,150.30	7.50	7.50	-90.40	-0.21	-30.02	30.02	15.02	15.00	2.001	Minor Risk
2,200.00	2,200.00	2,200.30	2,200.30	7.68	7.68	-90.40	-0.21	-30.02	30.02	14.66	15.36	1.955	Minor Risk
2,250.00	2,250.00	2,250.30	2,250.30	7.86	7.86	-90.40	-0.21	-30.02	30.02	14.30	15.72	1.910	Minor Risk
2,300.00	2,300.00	2,300.30	2,300.30	8.04	8.04	-90.40	-0.21	-30.02	30.02	13.95	16.07	1.868	Minor Risk
2,350.00	2,350.00	2,350.30	2,350.30	8.22	8.22	-90.40	-0.21	-30.02	30.02	13.59	16.43	1.827	Minor Risk
2,400.00	2,400.00	2,400.30	2,400.30	8.39	8.40	-90.40	-0.21	-30.02	30.02	13.23	16.79	1.788	Minor Risk
2,450.00	2,450.00	2,450.30	2,450.30	8.57	8.57	-90.40	-0.21	-30.02	30.02	12.87	17.15	1.751	Minor Risk
2,500.00	2,500.00	2,500.30	2,500.30	8.75	8.75	-90.40	-0.21	-30.02	30.02	12.52	17.51	1.715	Minor Risk
2,550.00	2,550.00	2,550.30	2,550.30	8.93	8.93	-90.40	-0.21	-30.02	30.02	12.16	17.86	1.681	Minor Risk

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,600.00	2,600.00	2,600.30	2,600.30	9.11	9.11	-90.40	-0.21	-30.02	30.02	11.80	18.22	1.648	Minor Risk
2,650.00	2,650.00	2,650.30	2,650.30	9.29	9.29	-90.40	-0.21	-30.02	30.02	11.44	18.58	1.616	Minor Risk
2,700.00	2,700.00	2,700.30	2,700.30	9.47	9.47	-90.40	-0.21	-30.02	30.02	11.08	18.94	1.585	Minor Risk
2,750.00	2,750.00	2,750.30	2,750.30	9.65	9.65	-90.40	-0.21	-30.02	30.02	10.73	19.29	1.556	Minor Risk
2,800.00	2,800.00	2,800.30	2,800.30	9.83	9.83	-90.40	-0.21	-30.02	30.02	10.37	19.65	1.528	Minor Risk
2,850.00	2,850.00	2,850.30	2,850.30	10.00	10.01	-90.40	-0.21	-30.02	30.02	10.01	20.01	1.500	Minor Risk
2,900.00	2,900.00	2,900.30	2,900.30	10.18	10.18	-90.40	-0.21	-30.02	30.02	9.65	20.37	1.474	Major Risk
2,950.00	2,950.00	2,950.30	2,950.30	10.36	10.36	-90.40	-0.21	-30.02	30.02	9.29	20.73	1.448	Major Risk
3,000.00	3,000.00	3,000.30	3,000.30	10.54	10.54	-90.40	-0.21	-30.02	30.02	8.94	21.09	1.424	Major Risk
3,050.00	3,050.00	3,050.30	3,050.30	10.72	10.72	-90.40	-0.21	-30.02	30.02	8.58	21.44	1.400	Major Risk
3,100.00	3,100.00	3,100.30	3,100.30	10.90	10.90	-90.40	-0.21	-30.02	30.02	8.22	21.80	1.377	Major Risk
3,150.00	3,150.00	3,150.30	3,150.30	11.08	11.08	-90.40	-0.21	-30.02	30.02	7.86	22.16	1.355	Major Risk
3,200.00	3,200.00	3,200.30	3,200.30	11.26	11.26	-90.40	-0.21	-30.02	30.02	7.50	22.52	1.333	Major Risk
3,250.00	3,250.00	3,250.30	3,250.30	11.44	11.44	-90.40	-0.21	-30.02	30.02	7.15	22.88	1.312	Major Risk
3,300.00	3,300.00	3,300.30	3,300.30	11.62	11.62	-90.40	-0.21	-30.02	30.02	6.79	23.23	1.292	Major Risk
3,350.00	3,350.00	3,350.30	3,350.30	11.80	11.80	-90.40	-0.21	-30.02	30.02	6.43	23.59	1.273	Major Risk
3,400.00	3,400.00	3,400.30	3,400.30	11.97	11.98	-90.40	-0.21	-30.02	30.02	6.07	23.95	1.253	Major Risk
3,450.00	3,450.00	3,450.30	3,450.30	12.15	12.15	-90.40	-0.21	-30.02	30.02	5.71	24.31	1.235	Major Risk
3,500.00	3,500.00	3,500.30	3,500.30	12.33	12.33	-90.40	-0.21	-30.02	30.02	5.35	24.67	1.217	Major Risk
3,550.00	3,550.00	3,550.30	3,550.30	12.51	12.51	-90.40	-0.21	-30.02	30.02	5.00	25.02	1.200	Major Risk
3,600.00	3,600.00	3,600.30	3,600.30	12.69	12.69	-90.40	-0.21	-30.02	30.02	4.64	25.38	1.183	Major Risk
3,650.00	3,650.00	3,650.30	3,650.30	12.87	12.87	-90.40	-0.21	-30.02	30.02	4.28	25.74	1.166	Major Risk
3,700.00	3,700.00	3,700.30	3,700.30	13.05	13.05	-90.40	-0.21	-30.02	30.02	3.92	26.10	1.150	Major Risk
3,750.00	3,750.00	3,750.30	3,750.30	13.23	13.23	-90.40	-0.21	-30.02	30.02	3.56	26.46	1.135	Major Risk
3,800.00	3,800.00	3,800.30	3,800.30	13.41	13.41	-90.40	-0.21	-30.02	30.02	3.21	26.82	1.120	Major Risk
3,850.00	3,850.00	3,850.30	3,850.30	13.59	13.59	-90.40	-0.21	-30.02	30.02	2.85	27.17	1.105	Major Risk
3,900.00	3,900.00	3,900.30	3,900.30	13.77	13.77	-90.40	-0.21	-30.02	30.02	2.49	27.53	1.090	Major Risk
3,950.00	3,950.00	3,950.30	3,950.30	13.94	13.95	-90.40	-0.21	-30.02	30.02	2.13	27.89	1.076	Major Risk
4,000.00	4,000.00	4,000.30	4,000.30	14.12	14.12	-90.40	-0.21	-30.02	30.02	1.77	28.25	1.063	Major Risk, CC
4,050.00	4,050.00	4,050.00	4,050.00	14.30	14.30	-53.48	-0.10	-30.27	30.11	1.51	28.60	1.053	Major Risk
4,100.00	4,099.99	4,099.70	4,099.69	14.48	14.48	-54.08	0.23	-31.01	30.37	1.41	28.95	1.049	Major Risk
4,150.00	4,149.97	4,149.40	4,149.37	14.66	14.65	-55.04	0.78	-32.24	30.80	1.50	29.29	1.051	Major Risk
4,200.00	4,199.94	4,199.09	4,199.03	14.84	14.82	-56.07	1.55	-33.97	31.53	1.89	29.64	1.064	Major Risk
4,250.00	4,249.91	4,248.76	4,248.64	15.01	15.00	-56.62	2.53	-36.19	32.74	2.76	29.98	1.092	Major Risk
4,300.00	4,299.88	4,298.41	4,298.20	15.19	15.17	-56.71	3.74	-38.89	34.43	4.12	30.31	1.136	Major Risk
4,350.00	4,349.85	4,348.25	4,347.92	15.37	15.34	-56.47	5.12	-42.00	36.50	5.85	30.66	1.191	Major Risk
4,400.00	4,399.82	4,398.21	4,397.76	15.55	15.52	-56.24	6.52	-45.15	38.61	7.60	31.01	1.245	Major Risk
4,450.00	4,449.79	4,448.16	4,447.60	15.72	15.69	-56.02	7.92	-48.30	40.72	9.36	31.36	1.298	Major Risk
4,500.00	4,499.77	4,501.88	4,497.43	15.90	15.88	-55.83	9.32	-51.45	42.82	11.10	31.72	1.350	Major Risk
4,550.00	4,549.74	4,548.07	4,547.27	16.08	16.05	-55.66	10.72	-54.60	44.93	12.87	32.06	1.401	Major Risk
4,600.00	4,599.71	4,601.97	4,597.11	16.26	16.24	-55.50	12.12	-57.74	47.04	14.61	32.43	1.451	Major Risk
4,650.00	4,649.68	4,647.98	4,646.94	16.44	16.40	-55.36	13.52	-60.89	49.15	16.38	32.77	1.500	Major Risk
4,700.00	4,699.65	4,702.06	4,696.78	16.61	16.59	-55.22	14.92	-64.04	51.26	18.12	33.13	1.547	Minor Risk
4,750.00	4,749.62	4,747.89	4,746.61	16.79	16.75	-55.10	16.32	-67.19	53.37	19.89	33.47	1.594	Minor Risk
4,800.00	4,799.59	4,802.15	4,796.45	16.97	16.94	-54.99	17.72	-70.34	55.47	21.64	33.84	1.639	Minor Risk
4,850.00	4,849.56	4,847.80	4,846.29	17.15	17.11	-54.88	19.12	-73.49	57.58	23.41	34.18	1.685	Minor Risk
4,900.00	4,899.53	4,902.24	4,896.12	17.33	17.30	-54.79	20.52	-76.63	59.69	25.15	34.54	1.728	Minor Risk
4,950.00	4,949.50	4,947.71	4,945.96	17.50	17.46	-54.70	21.92	-79.78	61.80	26.92	34.88	1.772	Minor Risk
5,000.00	4,999.47	5,002.33	4,995.80	17.68	17.65	-54.61	23.32	-82.93	63.91	28.66	35.25	1.813	Minor Risk
5,050.00	5,049.44	5,047.63	5,045.63	17.86	17.82	-54.53	24.72	-86.08	66.02	30.43	35.59	1.855	Minor Risk
5,100.00	5,099.41	5,102.42	5,095.47	18.04	18.01	-54.46	26.12	-89.23	68.13	32.17	35.96	1.895	Minor Risk
5,150.00	5,149.38	5,147.54	5,145.31	18.22	18.17	-54.39	27.52	-92.38	70.24	33.95	36.30	1.935	Minor Risk

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,199.35	5,202.51	5,195.14	18.40	18.37	-54.32	28.92	-95.52	72.35	35.69	36.67	1.973	Minor Risk
5,250.00	5,249.32	5,247.45	5,244.98	18.57	18.53	-54.26	30.32	-98.67	74.46	37.46	37.00	2.012	Minor Risk
5,300.00	5,299.29	5,302.60	5,294.81	18.75	18.72	-54.20	31.72	-101.82	76.57	39.20	37.38	2.049	Minor Risk
5,350.00	5,349.26	5,347.36	5,344.65	18.93	18.88	-54.15	33.12	-104.97	78.68	40.97	37.71	2.086	Minor Risk
5,400.00	5,399.23	5,402.69	5,394.49	19.11	19.08	-54.09	34.52	-108.12	80.79	42.71	38.09	2.121	Minor Risk
5,450.00	5,449.20	5,447.27	5,444.32	19.29	19.24	-54.04	35.92	-111.27	82.90	44.48	38.42	2.158	Minor Risk
5,500.00	5,499.17	5,497.22	5,494.16	19.47	19.42	-54.00	37.32	-114.42	85.02	46.24	38.78	2.193	Minor Risk
5,550.00	5,549.14	5,547.18	5,544.00	19.65	19.60	-53.95	38.72	-117.56	87.13	48.00	39.13	2.227	Minor Risk
5,600.00	5,599.11	5,602.87	5,593.83	19.82	19.80	-53.91	40.12	-120.71	89.24	49.73	39.50	2.259	Minor Risk
5,650.00	5,649.08	5,647.09	5,643.67	20.00	19.96	-53.87	41.52	-123.86	91.35	51.51	39.84	2.293	Minor Risk
5,700.00	5,699.05	5,697.05	5,693.51	20.18	20.14	-53.83	42.92	-127.01	93.46	53.26	40.19	2.325	Minor Risk
5,750.00	5,749.02	5,747.00	5,743.34	20.36	20.32	-53.79	44.32	-130.16	95.57	55.02	40.55	2.357	Minor Risk
5,800.00	5,798.99	5,803.04	5,793.18	20.54	20.52	-53.75	45.72	-133.31	97.68	56.75	40.93	2.387	Minor Risk
5,850.00	5,848.96	5,846.91	5,843.02	20.72	20.67	-53.72	47.12	-136.45	99.79	58.53	41.26	2.419	Minor Risk
5,900.00	5,898.93	5,903.13	5,892.85	20.90	20.88	-53.69	48.52	-139.60	101.90	60.26	41.64	2.447	Minor Risk
5,950.00	5,948.90	5,946.82	5,942.69	21.08	21.03	-53.66	49.92	-142.75	104.01	62.04	41.97	2.478	Minor Risk
6,000.00	5,998.87	6,003.22	5,992.52	21.26	21.24	-53.63	51.32	-145.90	106.12	63.77	42.35	2.506	Alert
6,050.00	6,048.84	6,046.73	6,042.36	21.43	21.39	-53.60	52.72	-149.05	108.24	65.55	42.68	2.536	Alert
6,100.00	6,098.81	6,103.31	6,092.20	21.61	21.60	-53.57	54.12	-152.20	110.35	67.28	43.06	2.563	Alert
6,150.00	6,148.78	6,146.64	6,142.03	21.79	21.75	-53.54	55.52	-155.35	112.46	69.06	43.39	2.592	Alert
6,200.00	6,198.75	6,203.40	6,191.87	21.97	21.96	-53.52	56.92	-158.49	114.57	70.79	43.77	2.617	Alert
6,250.00	6,248.72	6,246.55	6,241.71	22.15	22.11	-53.49	58.32	-161.64	116.68	72.57	44.11	2.645	Alert
6,300.00	6,298.69	6,303.49	6,291.54	22.33	22.32	-53.47	59.72	-164.79	118.79	74.30	44.49	2.670	Alert
6,350.00	6,348.66	6,346.47	6,341.38	22.51	22.48	-53.44	61.12	-167.94	120.90	76.08	44.82	2.698	Alert
6,400.00	6,398.63	6,403.58	6,391.22	22.69	22.68	-53.42	62.52	-171.09	123.01	77.81	45.20	2.722	Alert
6,450.00	6,448.60	6,446.38	6,441.05	22.87	22.84	-53.40	63.92	-174.24	125.12	79.59	45.53	2.748	Alert
6,500.00	6,498.57	6,503.67	6,490.89	23.05	23.04	-53.38	65.32	-177.38	127.24	81.32	45.91	2.771	Alert
6,550.00	6,548.54	6,546.29	6,540.72	23.23	23.20	-53.36	66.72	-180.53	129.35	83.10	46.24	2.797	Alert
6,600.00	6,598.51	6,603.76	6,590.56	23.40	23.41	-53.34	68.12	-183.68	131.46	84.83	46.63	2.819	Alert
6,650.00	6,648.49	6,646.20	6,640.40	23.58	23.56	-53.32	69.52	-186.83	133.57	86.61	46.96	2.845	Alert
6,700.00	6,698.46	6,703.85	6,690.23	23.76	23.77	-53.30	70.93	-189.98	135.68	88.34	47.34	2.866	Alert
6,750.00	6,748.43	6,746.11	6,740.07	23.94	23.92	-53.28	72.33	-193.13	137.79	90.12	47.67	2.891	Alert
6,800.00	6,798.40	6,803.94	6,789.91	24.12	24.13	-53.27	73.73	-196.27	139.90	91.85	48.06	2.911	Alert
6,850.00	6,848.37	6,846.02	6,839.74	24.30	24.28	-53.25	75.13	-199.42	142.02	93.63	48.38	2.935	Alert
6,900.00	6,898.34	6,904.03	6,889.58	24.48	24.49	-53.23	76.53	-202.57	144.13	95.36	48.77	2.955	Alert
6,950.00	6,948.31	6,945.93	6,939.42	24.66	24.64	-53.22	77.93	-205.72	146.24	97.14	49.10	2.978	Alert
7,000.00	6,998.28	6,995.89	6,989.25	24.84	24.83	-53.20	79.33	-208.87	148.35	98.89	49.46	3.000	Alert
7,050.00	7,048.25	7,045.84	7,039.09	25.02	25.01	-53.19	80.73	-212.02	150.46	100.65	49.81	3.021	Alert
7,100.00	7,098.22	7,104.20	7,088.93	25.20	25.22	-53.17	82.13	-215.17	152.57	102.37	50.20	3.039	Alert
7,150.00	7,148.19	7,145.75	7,138.76	25.38	25.37	-53.16	83.53	-218.31	154.68	104.16	50.53	3.061	Alert
7,200.00	7,198.16	7,204.29	7,188.60	25.56	25.58	-53.14	84.93	-221.46	156.79	105.88	50.91	3.080	Alert
7,250.00	7,248.13	7,245.66	7,238.43	25.74	25.73	-53.13	86.33	-224.61	158.91	107.67	51.24	3.101	Alert
7,300.00	7,298.10	7,304.38	7,288.27	25.91	25.95	-53.12	87.73	-227.76	161.02	109.39	51.63	3.119	Alert
7,350.00	7,348.07	7,345.57	7,338.11	26.09	26.10	-53.11	89.13	-230.91	163.13	111.17	51.96	3.140	Alert
7,400.00	7,398.04	7,404.47	7,387.94	26.27	26.31	-53.09	90.53	-234.06	165.24	112.90	52.35	3.157	Alert
7,450.00	7,448.01	7,445.48	7,437.78	26.45	26.46	-53.08	91.93	-237.20	167.35	114.68	52.67	3.177	Alert
7,500.00	7,497.98	7,504.56	7,487.62	26.63	26.67	-53.07	93.33	-240.35	169.46	116.40	53.06	3.194	Alert
7,550.00	7,547.95	7,545.39	7,537.45	26.81	26.82	-53.06	94.73	-243.50	171.58	118.19	53.39	3.214	Alert
7,600.00	7,597.92	7,604.65	7,587.29	26.99	27.04	-53.05	96.13	-246.65	173.69	119.91	53.78	3.230	Alert
7,650.00	7,647.89	7,645.31	7,637.13	27.17	27.19	-53.04	97.53	-249.80	175.80	121.70	54.10	3.249	Alert
7,700.00	7,697.86	7,704.74	7,686.96	27.35	27.40	-53.02	98.93	-252.95	177.91	123.42	54.49	3.265	Alert
7,750.00	7,747.83	7,745.22	7,736.80	27.53	27.55	-53.01	100.33	-256.10	180.02	125.20	54.82	3.284	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,800.00	7,797.80	7,804.83	7,786.64	27.71	27.77	-53.00	101.73	-259.24	182.13	126.92	55.21	3.299	Alert
7,850.00	7,847.77	7,845.13	7,836.47	27.89	27.91	-52.99	103.13	-262.39	184.24	128.71	55.53	3.318	Alert
7,900.00	7,897.74	7,904.92	7,886.31	28.07	28.13	-52.98	104.53	-265.54	186.36	130.43	55.93	3.332	Alert
7,950.00	7,947.71	7,945.04	7,936.14	28.25	28.28	-52.97	105.93	-268.69	188.47	132.22	56.25	3.351	Alert
8,000.00	7,997.68	8,005.01	7,985.98	28.43	28.50	-52.97	107.33	-271.84	190.58	133.94	56.64	3.365	Alert
8,050.00	8,047.65	8,044.95	8,035.82	28.61	28.64	-52.96	108.73	-274.99	192.69	135.73	56.96	3.383	Alert
8,100.00	8,097.62	8,105.10	8,085.65	28.79	28.86	-52.95	110.13	-278.13	194.80	137.44	57.36	3.396	Alert
8,150.00	8,147.59	8,144.86	8,135.49	28.97	29.01	-52.94	111.53	-281.28	196.91	139.23	57.68	3.414	Alert
8,200.00	8,197.56	8,194.81	8,185.33	29.15	29.19	-52.93	112.93	-284.43	199.03	140.99	58.04	3.429	Alert
8,250.00	8,247.53	8,244.77	8,235.16	29.33	29.37	-52.92	114.33	-287.58	201.14	142.74	58.40	3.444	Alert
8,300.00	8,297.50	8,305.27	8,285.00	29.51	29.59	-52.91	115.73	-290.73	203.25	144.46	58.79	3.457	Alert
8,350.00	8,347.47	8,344.68	8,334.84	29.69	29.74	-52.91	117.13	-293.88	205.36	146.25	59.11	3.474	Alert
8,400.00	8,397.44	8,405.36	8,384.67	29.86	29.96	-52.90	118.53	-297.02	207.47	147.96	59.51	3.486	Alert
8,450.00	8,447.41	8,444.59	8,434.51	30.04	30.10	-52.89	119.93	-300.17	209.58	149.75	59.83	3.503	Alert
8,500.00	8,497.38	8,505.45	8,484.34	30.22	30.32	-52.88	121.33	-303.32	211.69	151.47	60.23	3.515	Alert
8,550.00	8,547.35	8,544.50	8,534.18	30.40	30.47	-52.88	122.73	-306.47	213.81	153.26	60.55	3.531	Alert
8,600.00	8,597.32	8,594.46	8,584.02	30.58	30.65	-52.87	124.13	-309.62	215.92	155.01	60.90	3.545	Alert
8,650.00	8,647.29	8,644.41	8,633.85	30.76	30.83	-52.86	125.53	-312.77	218.03	156.77	61.26	3.559	Alert
8,700.00	8,697.26	8,705.63	8,683.69	30.94	31.05	-52.85	126.93	-315.92	220.14	158.48	61.66	3.570	Alert
8,750.00	8,747.23	8,744.32	8,733.53	31.12	31.20	-52.85	128.33	-319.06	222.25	160.27	61.98	3.586	Alert
8,800.00	8,797.20	8,805.72	8,783.36	31.30	31.42	-52.84	129.73	-322.21	224.36	161.99	62.38	3.597	Alert
8,850.00	8,847.18	8,844.23	8,833.20	31.48	31.56	-52.83	131.13	-325.36	226.48	163.78	62.70	3.612	Alert
8,900.00	8,897.15	8,905.81	8,883.04	31.66	31.79	-52.83	132.53	-328.51	228.59	165.49	63.10	3.623	Alert
8,950.00	8,947.12	8,944.15	8,932.87	31.84	31.93	-52.82	133.93	-331.66	230.70	167.29	63.41	3.638	Alert
9,000.00	8,997.09	9,005.90	8,982.71	32.02	32.15	-52.81	135.33	-334.81	232.81	169.00	63.81	3.648	Alert
9,050.00	9,047.06	9,044.06	9,032.55	32.20	32.29	-52.81	136.73	-337.95	234.92	170.79	64.13	3.663	Alert
9,100.00	9,097.03	9,094.01	9,082.38	32.38	32.47	-52.80	138.13	-341.10	237.03	172.54	64.49	3.676	Alert
9,150.00	9,147.00	9,143.97	9,132.22	32.56	32.66	-52.80	139.53	-344.25	239.15	174.30	64.85	3.688	Alert
9,200.00	9,196.97	9,193.92	9,182.05	32.74	32.84	-52.79	140.93	-347.40	241.26	176.05	65.21	3.700	Alert
9,250.00	9,246.94	9,243.88	9,231.89	32.92	33.02	-52.79	142.33	-350.55	243.37	177.80	65.57	3.712	Alert
9,300.00	9,296.91	9,306.17	9,281.73	33.10	33.25	-52.78	143.73	-353.70	245.48	179.51	65.97	3.721	Alert
9,350.00	9,346.88	9,343.79	9,331.56	33.28	33.39	-52.77	145.13	-356.85	247.59	181.31	66.28	3.735	Alert
9,400.00	9,396.85	9,406.26	9,381.40	33.46	33.62	-52.77	146.53	-359.99	249.70	183.02	66.69	3.744	Alert
9,450.00	9,446.82	9,443.70	9,431.24	33.64	33.75	-52.76	147.93	-363.14	251.82	184.82	67.00	3.758	Alert
9,500.00	9,496.79	9,506.35	9,481.07	33.82	33.98	-52.76	149.33	-366.29	253.93	186.52	67.40	3.767	Alert
9,550.00	9,546.76	9,543.61	9,530.91	34.00	34.12	-52.75	150.73	-369.44	256.04	188.32	67.72	3.781	Alert
9,600.00	9,596.73	9,606.43	9,580.75	34.18	34.35	-52.75	152.13	-372.59	258.15	190.03	68.12	3.789	Alert
9,650.00	9,646.70	9,643.52	9,630.58	34.36	34.49	-52.74	153.53	-375.74	260.26	191.83	68.44	3.803	Alert
9,700.00	9,696.67	9,693.48	9,680.42	34.54	34.67	-52.74	154.93	-378.88	262.37	193.58	68.79	3.814	Alert
9,750.00	9,746.64	9,743.43	9,730.25	34.72	34.85	-52.73	156.33	-382.03	264.49	195.33	69.15	3.825	Alert
9,800.00	9,796.61	9,806.61	9,780.09	34.90	35.08	-52.73	157.73	-385.18	266.60	197.04	69.56	3.833	Alert
9,850.00	9,846.58	9,843.34	9,829.93	35.08	35.22	-52.72	159.13	-388.33	268.71	198.84	69.87	3.846	Alert
9,900.00	9,896.55	9,906.70	9,879.76	35.26	35.45	-52.72	160.53	-391.48	270.82	200.54	70.28	3.854	Alert
9,950.00	9,946.52	9,943.25	9,929.60	35.44	35.58	-52.71	161.93	-394.63	272.93	202.34	70.59	3.866	Alert
10,000.00	9,996.49	10,006.79	9,979.44	35.62	35.82	-52.71	163.33	-397.77	275.04	204.05	71.00	3.874	Alert
10,050.00	10,046.46	10,043.16	10,029.27	35.80	35.95	-52.71	164.73	-400.92	277.16	205.85	71.31	3.887	Alert
10,100.00	10,096.43	10,106.88	10,079.11	35.98	36.18	-52.70	166.14	-404.07	279.27	207.55	71.72	3.894	Alert
10,150.00	10,146.40	10,143.07	10,128.95	36.16	36.32	-52.70	167.54	-407.22	281.38	209.35	72.03	3.907	Alert
10,200.00	10,196.37	10,206.97	10,178.78	36.34	36.55	-52.69	168.94	-410.37	283.49	211.06	72.44	3.914	Alert
10,250.00	10,246.34	10,242.99	10,228.62	36.52	36.68	-52.69	170.34	-413.52	285.60	212.86	72.74	3.926	Alert
10,300.00	10,296.31	10,307.06	10,278.46	36.70	36.92	-52.69	171.74	-416.67	287.71	214.56	73.15	3.933	Alert
10,350.00	10,346.28	10,342.90	10,328.29	36.88	37.05	-52.68	173.14	-419.81	289.83	216.36	73.46	3.945	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,400.00	10,396.25	10,392.85	10,378.13	37.06	37.23	-52.68	174.54	-422.96	291.94	218.12	73.82	3.955	Alert
10,450.00	10,446.22	10,442.81	10,427.96	37.24	37.42	-52.67	175.94	-426.11	294.05	219.87	74.18	3.964	Alert
10,500.00	10,496.19	10,492.76	10,477.80	37.42	37.60	-52.67	177.34	-429.26	296.16	221.62	74.54	3.973	Alert
10,550.00	10,546.16	10,542.72	10,527.64	37.60	37.78	-52.67	178.74	-432.41	298.27	223.37	74.90	3.982	Alert
10,600.00	10,596.13	10,592.67	10,577.47	37.78	37.97	-52.66	180.14	-435.56	300.38	225.13	75.26	3.991	Alert
10,650.00	10,646.10	10,643.86	10,628.55	37.96	38.15	-52.66	181.56	-438.75	302.46	226.83	75.63	3.999	Alert
10,700.00	10,696.07	10,697.75	10,682.35	38.14	38.35	-52.70	182.81	-441.58	304.05	228.02	76.02	3.999	Alert
10,750.00	10,746.04	10,751.67	10,736.21	38.32	38.55	-52.80	183.77	-443.72	305.00	228.59	76.41	3.992	Alert
10,800.00	10,796.03	10,805.61	10,790.13	38.50	38.74	-52.89	184.41	-445.16	305.60	228.81	76.78	3.980	Alert
10,850.00	10,846.03	10,859.55	10,844.06	38.67	38.93	-52.92	184.74	-445.91	305.94	228.80	77.15	3.966	Alert
10,900.00	10,896.03	10,911.82	10,896.33	38.85	39.11	-90.04	184.79	-446.02	306.02	228.52	77.50	3.949	Alert
10,950.00	10,946.03	10,961.82	10,946.33	39.03	39.29	-90.04	184.79	-446.02	306.02	228.16	77.86	3.931	Alert
11,000.00	10,996.03	11,011.82	10,996.33	39.21	39.46	-90.04	184.79	-446.02	306.02	227.81	78.21	3.913	Alert
11,050.00	11,046.03	11,061.82	11,046.33	39.39	39.64	-90.04	184.79	-446.02	306.02	227.46	78.57	3.895	Alert
11,100.00	11,096.03	11,111.82	11,096.33	39.57	39.81	-90.04	184.79	-446.02	306.02	227.10	78.92	3.878	Alert
11,150.00	11,146.03	11,161.82	11,146.33	39.74	39.99	-90.04	184.79	-446.02	306.02	226.75	79.27	3.860	Alert
11,200.00	11,196.03	11,211.82	11,196.33	39.92	40.17	-90.04	184.79	-446.02	306.02	226.39	79.63	3.843	Alert
11,250.00	11,246.01	11,261.84	11,246.35	40.09	40.34	90.16	184.39	-446.02	306.02	226.05	79.97	3.827	Alert
11,300.00	11,295.76	11,311.97	11,296.29	40.25	40.50	90.32	180.34	-446.01	306.02	225.73	80.29	3.812	Alert
11,350.00	11,344.89	11,362.16	11,345.76	40.41	40.65	90.47	171.93	-445.99	306.02	225.43	80.59	3.797	Alert
11,400.00	11,393.03	11,412.43	11,394.37	40.55	40.80	90.62	159.20	-445.95	306.02	225.13	80.89	3.783	Alert
11,450.00	11,439.82	11,462.77	11,441.74	40.69	40.94	90.77	142.23	-445.91	306.02	224.85	81.17	3.770	Alert
11,500.00	11,484.90	11,513.17	11,487.51	40.82	41.07	90.91	121.14	-445.85	306.02	224.58	81.44	3.758	Alert
11,550.00	11,527.92	11,563.64	11,531.30	40.94	41.19	91.04	96.07	-445.78	306.01	224.31	81.70	3.746	Alert
11,600.00	11,568.56	11,614.17	11,572.76	41.05	41.30	91.17	67.22	-445.71	306.00	224.06	81.94	3.734	Alert
11,650.00	11,606.52	11,664.76	11,611.56	41.15	41.40	91.29	34.78	-445.62	306.00	223.81	82.18	3.723	Alert
11,700.00	11,641.49	11,715.41	11,647.39	41.25	41.48	91.40	-0.99	-445.52	305.98	223.58	82.41	3.713	Alert
11,750.00	11,673.22	11,766.10	11,679.95	41.36	41.55	91.49	-39.82	-445.42	305.97	223.34	82.63	3.703	Alert
11,800.00	11,701.46	11,816.84	11,708.97	41.47	41.62	91.58	-81.42	-445.31	305.96	223.11	82.85	3.693	Alert
11,850.00	11,726.00	11,867.61	11,734.22	41.58	41.68	91.65	-125.45	-445.19	305.94	222.87	83.06	3.683	Alert
11,900.00	11,746.65	11,918.41	11,755.48	41.68	41.76	91.71	-171.57	-445.07	305.91	222.64	83.27	3.674	Alert
11,950.00	11,763.25	11,969.24	11,772.58	41.79	41.85	91.76	-219.41	-444.94	305.89	222.41	83.48	3.664	Alert
12,000.00	11,775.68	12,020.09	11,785.39	41.90	41.96	91.79	-268.61	-444.81	305.86	222.17	83.69	3.655	Alert
12,050.00	11,783.85	12,070.94	11,793.78	42.00	42.07	91.81	-318.75	-444.68	305.83	221.93	83.90	3.645	Alert
12,100.00	11,787.68	12,121.81	11,797.69	42.11	42.19	91.82	-369.44	-444.54	305.80	221.69	84.10	3.636	Alert
12,150.00	11,788.00	12,172.12	11,798.00	42.22	42.31	91.82	-419.76	-444.41	305.76	221.44	84.32	3.626	Alert
12,200.00	11,788.00	12,222.12	11,798.00	42.33	42.43	91.82	-469.76	-444.27	305.73	221.18	84.55	3.616	Alert
12,250.00	11,788.00	12,272.12	11,798.00	42.46	42.57	91.82	-519.76	-444.14	305.70	220.89	84.81	3.605	Alert
12,300.00	11,788.00	12,322.12	11,798.00	42.60	42.72	91.82	-569.76	-444.00	305.66	220.58	85.08	3.593	Alert
12,350.00	11,788.00	12,372.12	11,798.00	42.76	42.87	91.82	-619.76	-443.87	305.63	220.24	85.39	3.579	Alert
12,400.00	11,788.00	12,422.12	11,798.00	42.91	43.04	91.82	-669.76	-443.74	305.59	219.88	85.71	3.565	Alert
12,450.00	11,788.00	12,472.12	11,798.00	43.09	43.22	91.82	-719.76	-443.60	305.56	219.49	86.07	3.550	Alert
12,500.00	11,788.00	12,522.12	11,798.00	43.27	43.41	91.82	-769.76	-443.47	305.53	219.10	86.43	3.535	Alert
12,550.00	11,788.00	12,572.12	11,798.00	43.48	43.62	91.82	-819.76	-443.34	305.49	218.66	86.83	3.518	Alert
12,600.00	11,788.00	12,622.12	11,798.00	43.68	43.83	91.82	-869.76	-443.20	305.46	218.21	87.24	3.501	Alert
12,650.00	11,788.00	12,672.12	11,798.00	43.91	44.05	91.82	-919.76	-443.07	305.42	217.73	87.69	3.483	Alert
12,700.00	11,788.00	12,722.12	11,798.00	44.13	44.29	91.82	-969.76	-442.94	305.39	217.25	88.15	3.465	Alert
12,750.00	11,788.00	12,772.12	11,798.00	44.38	44.53	91.82	-1,019.76	-442.80	305.36	216.72	88.63	3.445	Alert
12,800.00	11,788.00	12,822.12	11,798.00	44.63	44.79	91.82	-1,069.75	-442.67	305.32	216.19	89.13	3.426	Alert
12,850.00	11,788.00	12,872.12	11,798.00	44.89	45.05	91.82	-1,119.75	-442.54	305.29	215.63	89.66	3.405	Alert
12,900.00	11,788.00	12,922.12	11,798.00	45.16	45.32	91.82	-1,169.75	-442.40	305.26	215.05	90.20	3.384	Alert
12,950.00	11,788.00	12,972.12	11,798.00	45.45	45.61	91.82	-1,219.75	-442.27	305.22	214.45	90.77	3.363	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,000.00	11,788.00	13,022.12	11,798.00	45.73	45.90	91.82	-1,269.75	-442.13	305.19	213.84	91.35	3.341	Alert
13,050.00	11,788.00	13,072.12	11,798.00	46.04	46.21	91.82	-1,319.75	-442.00	305.15	213.19	91.96	3.318	Alert
13,100.00	11,788.00	13,122.12	11,798.00	46.35	46.52	91.82	-1,369.75	-441.87	305.12	212.54	92.58	3.296	Alert
13,150.00	11,788.00	13,172.12	11,798.00	46.67	46.84	91.82	-1,419.75	-441.73	305.09	211.86	93.22	3.273	Alert
13,200.00	11,788.00	13,222.12	11,798.00	47.00	47.17	91.82	-1,469.75	-441.60	305.05	211.17	93.88	3.249	Alert
13,250.00	11,788.00	13,272.12	11,798.00	47.34	47.51	91.82	-1,519.75	-441.47	305.02	210.46	94.56	3.226	Alert
13,300.00	11,788.00	13,322.12	11,798.00	47.68	47.86	91.82	-1,569.75	-441.33	304.98	209.73	95.25	3.202	Alert
13,350.00	11,788.00	13,372.12	11,798.00	48.04	48.22	91.82	-1,619.75	-441.20	304.95	208.98	95.97	3.178	Alert
13,400.00	11,788.00	13,422.12	11,798.00	48.40	48.58	91.82	-1,669.75	-441.07	304.92	208.23	96.69	3.154	Alert
13,450.00	11,788.00	13,472.12	11,798.00	48.78	48.95	91.82	-1,719.75	-440.93	304.88	207.44	97.44	3.129	Alert
13,500.00	11,788.00	13,522.12	11,798.00	49.15	49.33	91.82	-1,769.75	-440.80	304.85	206.65	98.19	3.105	Alert
13,550.00	11,788.00	13,572.12	11,798.00	49.54	49.72	91.82	-1,819.75	-440.67	304.81	205.84	98.97	3.080	Alert
13,600.00	11,788.00	13,622.12	11,798.00	49.94	50.12	91.82	-1,869.75	-440.53	304.78	205.02	99.76	3.055	Alert
13,650.00	11,788.00	13,672.12	11,798.00	50.34	50.52	91.82	-1,919.75	-440.40	304.75	204.18	100.57	3.030	Alert
13,700.00	11,788.00	13,722.12	11,798.00	50.75	50.93	91.82	-1,969.75	-440.27	304.71	203.33	101.39	3.005	Alert
13,750.00	11,788.00	13,772.12	11,798.00	51.17	51.35	91.82	-2,019.75	-440.13	304.68	202.46	102.22	2.981	Alert
13,800.00	11,788.00	13,822.12	11,798.00	51.59	51.77	91.82	-2,069.75	-440.00	304.64	201.58	103.07	2.956	Alert
13,850.00	11,788.00	13,872.12	11,798.00	52.02	52.20	91.82	-2,119.75	-439.86	304.61	200.68	103.93	2.931	Alert
13,900.00	11,788.00	13,922.12	11,798.00	52.45	52.64	91.83	-2,169.75	-439.73	304.58	199.77	104.80	2.906	Alert
13,950.00	11,788.00	13,972.12	11,798.00	52.90	53.09	91.83	-2,219.75	-439.60	304.54	198.85	105.69	2.881	Alert
14,000.00	11,788.00	14,022.12	11,798.00	53.35	53.53	91.83	-2,269.75	-439.46	304.51	197.92	106.59	2.857	Alert
14,050.00	11,788.00	14,072.12	11,798.00	53.81	53.99	91.83	-2,319.75	-439.33	304.48	196.97	107.50	2.832	Alert
14,100.00	11,788.00	14,122.12	11,798.00	54.26	54.45	91.83	-2,369.75	-439.20	304.44	196.02	108.42	2.808	Alert
14,150.00	11,788.00	14,172.12	11,798.00	54.73	54.92	91.83	-2,419.75	-439.06	304.41	195.05	109.36	2.783	Alert
14,200.00	11,788.00	14,222.12	11,798.00	55.20	55.39	91.83	-2,469.75	-438.93	304.37	194.07	110.30	2.759	Alert
14,250.00	11,788.00	14,272.12	11,798.00	55.68	55.87	91.83	-2,519.75	-438.80	304.34	193.07	111.26	2.735	Alert
14,300.00	11,788.00	14,322.12	11,798.00	56.17	56.35	91.83	-2,569.75	-438.66	304.31	192.08	112.23	2.711	Alert
14,350.00	11,788.00	14,372.12	11,798.00	56.66	56.84	91.83	-2,619.75	-438.53	304.27	191.06	113.21	2.688	Alert
14,400.00	11,788.00	14,422.12	11,798.00	57.15	57.34	91.83	-2,669.75	-438.40	304.24	190.04	114.20	2.664	Alert
14,450.00	11,788.00	14,472.12	11,798.00	57.65	57.84	91.83	-2,719.75	-438.26	304.20	189.01	115.20	2.641	Alert
14,500.00	11,788.00	14,522.12	11,798.00	58.15	58.34	91.83	-2,769.75	-438.13	304.17	187.97	116.20	2.618	Alert
14,550.00	11,788.00	14,572.12	11,798.00	58.66	58.85	91.83	-2,819.75	-437.99	304.14	186.92	117.22	2.595	Alert
14,600.00	11,788.00	14,622.12	11,798.00	59.17	59.36	91.83	-2,869.75	-437.86	304.10	185.86	118.24	2.572	Alert
14,650.00	11,788.00	14,672.12	11,798.00	59.69	59.88	91.83	-2,919.75	-437.73	304.07	184.79	119.28	2.549	Alert
14,700.00	11,788.00	14,722.12	11,798.00	60.21	60.40	91.83	-2,969.75	-437.59	304.03	183.71	120.32	2.527	Alert
14,750.00	11,788.00	14,772.12	11,798.00	60.74	60.93	91.83	-3,019.75	-437.46	304.00	182.62	121.38	2.505	Alert
14,800.00	11,788.00	14,822.12	11,798.00	61.27	61.45	91.83	-3,069.75	-437.33	303.97	181.53	122.44	2.483	Minor Risk
14,850.00	11,788.00	14,872.12	11,798.00	61.80	61.99	91.83	-3,119.75	-437.19	303.93	180.43	123.51	2.461	Minor Risk
14,900.00	11,788.00	14,922.12	11,798.00	62.34	62.53	91.83	-3,169.75	-437.06	303.90	179.32	124.58	2.439	Minor Risk
14,950.00	11,788.00	14,972.12	11,798.00	62.88	63.07	91.83	-3,219.75	-436.93	303.87	178.20	125.67	2.418	Minor Risk
15,000.00	11,788.00	15,022.12	11,798.00	63.42	63.61	91.83	-3,269.75	-436.79	303.83	177.08	126.75	2.397	Minor Risk
15,050.00	11,788.00	15,072.12	11,798.00	63.97	64.16	91.83	-3,319.75	-436.66	303.80	175.94	127.85	2.376	Minor Risk
15,100.00	11,788.00	15,122.12	11,798.00	64.52	64.71	91.83	-3,369.75	-436.53	303.76	174.81	128.96	2.356	Minor Risk
15,150.00	11,788.00	15,172.12	11,798.00	65.08	65.27	91.83	-3,419.75	-436.39	303.73	173.66	130.07	2.335	Minor Risk
15,200.00	11,788.00	15,222.12	11,798.00	65.64	65.83	91.83	-3,469.75	-436.26	303.70	172.51	131.19	2.315	Minor Risk
15,250.00	11,788.00	15,272.12	11,798.00	66.20	66.39	91.83	-3,519.75	-436.13	303.66	171.35	132.32	2.295	Minor Risk
15,300.00	11,788.00	15,322.12	11,798.00	66.77	66.96	91.83	-3,569.75	-435.99	303.63	170.18	133.45	2.275	Minor Risk
15,350.00	11,788.00	15,372.12	11,798.00	67.34	67.52	91.83	-3,619.75	-435.86	303.59	169.01	134.59	2.256	Minor Risk
15,400.00	11,788.00	15,422.12	11,798.00	67.91	68.10	91.83	-3,669.75	-435.72	303.56	167.83	135.73	2.237	Minor Risk
15,450.00	11,788.00	15,472.12	11,798.00	68.48	68.67	91.83	-3,719.74	-435.59	303.53	166.65	136.88	2.217	Minor Risk
15,500.00	11,788.00	15,522.12	11,798.00	69.06	69.25	91.83	-3,769.74	-435.46	303.49	165.46	138.03	2.199	Minor Risk
15,550.00	11,788.00	15,572.12	11,798.00	69.64	69.83	91.83	-3,819.74	-435.32	303.46	164.26	139.19	2.180	Minor Risk

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,600.00	11,788.00	15,622.12	11,798.00	70.22	70.41	91.83	-3,869.74	-435.19	303.42	163.06	140.36	2.162	Minor Risk
15,650.00	11,788.00	15,672.12	11,798.00	70.81	71.00	91.83	-3,919.74	-435.06	303.39	161.86	141.53	2.144	Minor Risk
15,700.00	11,788.00	15,722.12	11,798.00	71.40	71.58	91.83	-3,969.74	-434.92	303.36	160.65	142.71	2.126	Minor Risk
15,750.00	11,788.00	15,772.12	11,798.00	71.99	72.18	91.83	-4,019.74	-434.79	303.32	159.43	143.89	2.108	Minor Risk
15,800.00	11,788.00	15,822.12	11,798.00	72.58	72.77	91.83	-4,069.74	-434.66	303.29	158.21	145.08	2.091	Minor Risk
15,850.00	11,788.00	15,872.12	11,798.00	73.18	73.36	91.83	-4,119.74	-434.52	303.25	156.98	146.27	2.073	Minor Risk
15,900.00	11,788.00	15,922.12	11,798.00	73.77	73.96	91.83	-4,169.74	-434.39	303.22	155.76	147.47	2.056	Minor Risk
15,950.00	11,788.00	15,972.12	11,798.00	74.38	74.56	91.83	-4,219.74	-434.26	303.19	154.52	148.67	2.039	Minor Risk
16,000.00	11,788.00	16,022.12	11,798.00	74.98	75.16	91.83	-4,269.74	-434.12	303.15	153.28	149.87	2.023	Minor Risk
16,050.00	11,788.00	16,072.12	11,798.00	75.58	75.77	91.83	-4,319.74	-433.99	303.12	152.04	151.08	2.006	Minor Risk
16,100.00	11,788.00	16,122.12	11,798.00	76.19	76.38	91.83	-4,369.74	-433.85	303.09	150.79	152.30	1.990	Minor Risk
16,150.00	11,788.00	16,172.12	11,798.00	76.80	76.98	91.83	-4,419.74	-433.72	303.05	149.54	153.51	1.974	Minor Risk
16,200.00	11,788.00	16,222.12	11,798.00	77.41	77.59	91.83	-4,469.74	-433.59	303.02	148.28	154.74	1.958	Minor Risk
16,250.00	11,788.00	16,272.12	11,798.00	78.02	78.21	91.83	-4,519.74	-433.45	302.98	147.02	155.96	1.943	Minor Risk
16,300.00	11,788.00	16,322.12	11,798.00	78.64	78.82	91.83	-4,569.74	-433.32	302.95	145.76	157.19	1.927	Minor Risk
16,350.00	11,788.00	16,372.12	11,798.00	79.25	79.44	91.84	-4,619.74	-433.19	302.92	144.49	158.43	1.912	Minor Risk
16,400.00	11,788.00	16,422.12	11,798.00	79.87	80.06	91.84	-4,669.74	-433.05	302.88	143.22	159.66	1.897	Minor Risk
16,450.00	11,788.00	16,472.12	11,798.00	80.49	80.68	91.84	-4,719.74	-432.92	302.85	141.94	160.91	1.882	Minor Risk
16,500.00	11,788.00	16,522.12	11,798.00	81.12	81.30	91.84	-4,769.74	-432.79	302.81	140.66	162.15	1.868	Minor Risk
16,550.00	11,788.00	16,572.12	11,798.00	81.74	81.92	91.84	-4,819.74	-432.65	302.78	139.38	163.40	1.853	Minor Risk
16,600.00	11,788.00	16,622.12	11,798.00	82.36	82.55	91.84	-4,869.74	-432.52	302.75	138.10	164.65	1.839	Minor Risk
16,650.00	11,788.00	16,672.12	11,798.00	82.99	83.18	91.84	-4,919.74	-432.39	302.71	136.81	165.90	1.825	Minor Risk
16,700.00	11,788.00	16,722.12	11,798.00	83.62	83.80	91.84	-4,969.74	-432.25	302.68	135.52	167.16	1.811	Minor Risk
16,750.00	11,788.00	16,772.12	11,798.00	84.25	84.44	91.84	-5,019.74	-432.12	302.64	134.22	168.42	1.797	Minor Risk
16,800.00	11,788.00	16,822.12	11,798.00	84.88	85.07	91.84	-5,069.74	-431.99	302.61	132.92	169.69	1.783	Minor Risk
16,850.00	11,788.00	16,872.12	11,798.00	85.52	85.70	91.84	-5,119.74	-431.85	302.58	131.62	170.95	1.770	Minor Risk
16,900.00	11,788.00	16,922.12	11,798.00	86.15	86.34	91.84	-5,169.74	-431.72	302.54	130.32	172.22	1.757	Minor Risk
16,950.00	11,788.00	16,972.12	11,798.00	86.79	86.97	91.84	-5,219.74	-431.58	302.51	129.01	173.50	1.744	Minor Risk
17,000.00	11,788.00	17,022.12	11,798.00	87.43	87.61	91.84	-5,269.74	-431.45	302.47	127.70	174.77	1.731	Minor Risk
17,050.00	11,788.00	17,072.12	11,798.00	88.07	88.25	91.84	-5,319.74	-431.32	302.44	126.39	176.05	1.718	Minor Risk
17,100.00	11,788.00	17,122.12	11,798.00	88.71	88.89	91.84	-5,369.74	-431.18	302.41	125.07	177.33	1.705	Minor Risk
17,150.00	11,788.00	17,172.12	11,798.00	89.35	89.53	91.84	-5,419.74	-431.05	302.37	123.76	178.62	1.693	Minor Risk
17,200.00	11,788.00	17,222.12	11,798.00	89.99	90.17	91.84	-5,469.74	-430.92	302.34	122.44	179.90	1.681	Minor Risk
17,250.00	11,788.00	17,272.12	11,798.00	90.64	90.82	91.84	-5,519.74	-430.78	302.31	121.11	181.19	1.668	Minor Risk
17,300.00	11,788.00	17,322.12	11,798.00	91.28	91.46	91.84	-5,569.74	-430.65	302.27	119.79	182.48	1.656	Minor Risk
17,350.00	11,788.00	17,372.12	11,798.00	91.93	92.11	91.84	-5,619.74	-430.52	302.24	118.46	183.78	1.645	Minor Risk
17,400.00	11,788.00	17,422.12	11,798.00	92.58	92.76	91.84	-5,669.74	-430.38	302.20	117.13	185.07	1.633	Minor Risk
17,450.00	11,788.00	17,472.12	11,798.00	93.23	93.41	91.84	-5,719.74	-430.25	302.17	115.80	186.37	1.621	Minor Risk
17,500.00	11,788.00	17,522.12	11,798.00	93.88	94.06	91.84	-5,769.74	-430.12	302.14	114.46	187.67	1.610	Minor Risk
17,550.00	11,788.00	17,572.12	11,798.00	94.53	94.71	91.84	-5,819.74	-429.98	302.10	113.13	188.98	1.599	Minor Risk
17,600.00	11,788.00	17,622.12	11,798.00	95.18	95.36	91.84	-5,869.74	-429.85	302.07	111.79	190.28	1.587	Minor Risk
17,650.00	11,788.00	17,672.12	11,798.00	95.83	96.01	91.84	-5,919.74	-429.71	302.03	110.45	191.59	1.576	Minor Risk
17,700.00	11,788.00	17,722.12	11,798.00	96.49	96.67	91.84	-5,969.74	-429.58	302.00	109.10	192.90	1.566	Minor Risk
17,750.00	11,788.00	17,772.12	11,798.00	97.14	97.32	91.84	-6,019.74	-429.45	301.97	107.76	194.21	1.555	Minor Risk
17,800.00	11,788.00	17,822.12	11,798.00	97.80	97.98	91.84	-6,069.74	-429.31	301.93	106.41	195.52	1.544	Minor Risk
17,850.00	11,788.00	17,872.12	11,798.00	98.46	98.64	91.84	-6,119.74	-429.18	301.90	105.06	196.84	1.534	Minor Risk
17,900.00	11,788.00	17,922.12	11,798.00	99.12	99.30	91.84	-6,169.74	-429.05	301.86	103.71	198.16	1.523	Minor Risk
17,950.00	11,788.00	17,972.12	11,798.00	99.78	99.96	91.84	-6,219.74	-428.91	301.83	102.36	199.48	1.513	Minor Risk
18,000.00	11,788.00	18,022.12	11,798.00	100.44	100.62	91.84	-6,269.74	-428.78	301.80	101.00	200.80	1.503	Minor Risk
18,050.00	11,788.00	18,072.12	11,798.00	101.10	101.28	91.84	-6,319.74	-428.65	301.76	99.64	202.12	1.493	Major Risk
18,100.00	11,788.00	18,122.12	11,798.00	101.76	101.94	91.84	-6,369.73	-428.51	301.73	98.29	203.44	1.483	Major Risk
18,150.00	11,788.00	18,172.12	11,798.00	102.42	102.60	91.84	-6,419.73	-428.38	301.70	96.92	204.77	1.473	Major Risk

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
18,200.00	11,788.00	18,222.12	11,798.00	103.09	103.27	91.84	-6,469.73	-428.25	301.66	95.56	206.10	1.464	Major Risk
18,250.00	11,788.00	18,272.12	11,798.00	103.75	103.93	91.84	-6,519.73	-428.11	301.63	94.20	207.43	1.454	Major Risk
18,300.00	11,788.00	18,322.12	11,798.00	104.42	104.60	91.84	-6,569.73	-427.98	301.59	92.83	208.76	1.445	Major Risk
18,350.00	11,788.00	18,372.12	11,798.00	105.08	105.26	91.84	-6,619.73	-427.85	301.56	91.47	210.09	1.435	Major Risk
18,400.00	11,788.00	18,422.12	11,798.00	105.75	105.93	91.84	-6,669.73	-427.71	301.53	90.10	211.43	1.426	Major Risk
18,450.00	11,788.00	18,472.12	11,798.00	106.42	106.60	91.84	-6,719.73	-427.58	301.49	88.73	212.76	1.417	Major Risk
18,500.00	11,788.00	18,522.12	11,798.00	107.09	107.27	91.84	-6,769.73	-427.44	301.46	87.36	214.10	1.408	Major Risk
18,550.00	11,788.00	18,572.12	11,798.00	107.76	107.94	91.84	-6,819.73	-427.31	301.42	85.98	215.44	1.399	Major Risk
18,600.00	11,788.00	18,622.12	11,798.00	108.43	108.61	91.84	-6,869.73	-427.18	301.39	84.61	216.78	1.390	Major Risk
18,650.00	11,788.00	18,672.12	11,798.00	109.10	109.28	91.84	-6,919.73	-427.04	301.36	83.23	218.12	1.382	Major Risk
18,700.00	11,788.00	18,722.12	11,798.00	109.77	109.95	91.84	-6,969.73	-426.91	301.32	81.86	219.47	1.373	Major Risk
18,750.00	11,788.00	18,772.12	11,798.00	110.44	110.62	91.84	-7,019.73	-426.78	301.29	80.48	220.81	1.364	Major Risk
18,800.00	11,788.00	18,822.12	11,798.00	111.12	111.30	91.85	-7,069.73	-426.64	301.25	79.10	222.16	1.356	Major Risk
18,850.00	11,788.00	18,872.12	11,798.00	111.79	111.97	91.85	-7,119.73	-426.51	301.22	77.72	223.51	1.348	Major Risk
18,900.00	11,788.00	18,922.12	11,798.00	112.47	112.64	91.85	-7,169.73	-426.38	301.19	76.33	224.85	1.339	Major Risk
18,950.00	11,788.00	18,972.12	11,798.00	113.14	113.32	91.85	-7,219.73	-426.24	301.15	74.95	226.20	1.331	Major Risk
19,000.00	11,788.00	19,022.12	11,798.00	113.82	113.99	91.85	-7,269.73	-426.11	301.12	73.56	227.56	1.323	Major Risk
19,050.00	11,788.00	19,072.12	11,798.00	114.49	114.67	91.85	-7,319.73	-425.98	301.08	72.18	228.91	1.315	Major Risk
19,100.00	11,788.00	19,122.12	11,798.00	115.17	115.35	91.85	-7,369.73	-425.84	301.05	70.79	230.26	1.307	Major Risk
19,150.00	11,788.00	19,172.12	11,798.00	115.85	116.03	91.85	-7,419.73	-425.71	301.02	69.40	231.62	1.300	Major Risk
19,200.00	11,788.00	19,222.12	11,798.00	116.53	116.70	91.85	-7,469.73	-425.57	300.98	68.01	232.97	1.292	Major Risk
19,250.00	11,788.00	19,272.12	11,798.00	117.20	117.38	91.85	-7,519.73	-425.44	300.95	66.62	234.33	1.284	Major Risk
19,300.00	11,788.00	19,322.12	11,798.00	117.88	118.06	91.85	-7,569.73	-425.31	300.92	65.23	235.69	1.277	Major Risk
19,350.00	11,788.00	19,372.12	11,798.00	118.56	118.74	91.85	-7,619.73	-425.17	300.88	63.83	237.05	1.269	Major Risk
19,400.00	11,788.00	19,422.12	11,798.00	119.24	119.42	91.85	-7,669.73	-425.04	300.85	62.44	238.41	1.262	Major Risk
19,450.00	11,788.00	19,472.12	11,798.00	119.92	120.10	91.85	-7,719.73	-424.91	300.81	61.04	239.77	1.255	Major Risk
19,500.00	11,788.00	19,522.12	11,798.00	120.61	120.78	91.85	-7,769.73	-424.77	300.78	59.64	241.14	1.247	Major Risk
19,550.00	11,788.00	19,572.12	11,798.00	121.29	121.47	91.85	-7,819.73	-424.64	300.75	58.25	242.50	1.240	Major Risk
19,600.00	11,788.00	19,622.12	11,798.00	121.97	122.15	91.85	-7,869.73	-424.51	300.71	56.85	243.86	1.233	Major Risk
19,650.00	11,788.00	19,672.12	11,798.00	122.65	122.83	91.85	-7,919.73	-424.37	300.68	55.45	245.23	1.226	Major Risk
19,700.00	11,788.00	19,722.12	11,798.00	123.34	123.52	91.85	-7,969.73	-424.24	300.64	54.05	246.60	1.219	Major Risk
19,750.00	11,788.00	19,772.12	11,798.00	124.02	124.20	91.85	-8,019.73	-424.11	300.61	52.64	247.97	1.212	Major Risk
19,800.00	11,788.00	19,822.12	11,798.00	124.71	124.88	91.85	-8,069.73	-423.97	300.58	51.24	249.33	1.206	Major Risk
19,850.00	11,788.00	19,872.12	11,798.00	125.39	125.57	91.85	-8,119.73	-423.84	300.54	49.84	250.71	1.199	Major Risk
19,900.00	11,788.00	19,922.12	11,798.00	126.08	126.25	91.85	-8,169.73	-423.71	300.51	48.43	252.08	1.192	Major Risk
19,950.00	11,788.00	19,972.12	11,798.00	126.76	126.94	91.85	-8,219.73	-423.57	300.47	47.03	253.45	1.186	Major Risk
20,000.00	11,788.00	20,022.12	11,798.00	127.45	127.63	91.85	-8,269.73	-423.44	300.44	45.62	254.82	1.179	Major Risk
20,050.00	11,788.00	20,072.12	11,798.00	128.14	128.31	91.85	-8,319.73	-423.30	300.41	44.21	256.19	1.173	Major Risk
20,100.00	11,788.00	20,122.12	11,798.00	128.82	129.00	91.85	-8,369.73	-423.17	300.37	42.80	257.57	1.166	Major Risk
20,150.00	11,788.00	20,172.12	11,798.00	129.51	129.69	91.85	-8,419.73	-423.04	300.34	41.40	258.94	1.160	Major Risk
20,200.00	11,788.00	20,222.12	11,798.00	130.20	130.38	91.85	-8,469.73	-422.90	300.31	39.99	260.32	1.154	Major Risk
20,250.00	11,788.00	20,272.12	11,798.00	130.89	131.06	91.85	-8,519.73	-422.77	300.27	38.57	261.70	1.147	Major Risk
20,300.00	11,788.00	20,322.12	11,798.00	131.58	131.75	91.85	-8,569.73	-422.64	300.24	37.16	263.07	1.141	Major Risk
20,350.00	11,788.00	20,372.12	11,798.00	132.27	132.44	91.85	-8,619.73	-422.50	300.20	35.75	264.45	1.135	Major Risk
20,400.00	11,788.00	20,422.12	11,798.00	132.96	133.13	91.85	-8,669.73	-422.37	300.17	34.34	265.83	1.129	Major Risk
20,450.00	11,788.00	20,472.12	11,798.00	133.65	133.82	91.85	-8,719.73	-422.24	300.14	32.92	267.21	1.123	Major Risk
20,500.00	11,788.00	20,522.12	11,798.00	134.34	134.51	91.85	-8,769.73	-422.10	300.10	31.51	268.59	1.117	Major Risk
20,550.00	11,788.00	20,572.12	11,798.00	135.03	135.20	91.85	-8,819.73	-421.97	300.07	30.09	269.98	1.111	Major Risk
20,600.00	11,788.00	20,622.12	11,798.00	135.72	135.90	91.85	-8,869.73	-421.84	300.03	28.68	271.36	1.106	Major Risk
20,650.00	11,788.00	20,672.12	11,798.00	136.41	136.59	91.85	-8,919.73	-421.70	300.00	27.26	272.74	1.100	Major Risk
20,700.00	11,788.00	20,722.12	11,798.00	137.10	137.28	91.85	-8,969.73	-421.57	299.97	25.84	274.13	1.094	Major Risk
20,750.00	11,788.00	20,772.12	11,798.00	137.79	137.97	91.85	-9,019.72	-421.43	299.93	24.42	275.51	1.089	Major Risk

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
20,800.00	11,788.00	20,822.12	11,798.00	138.49	138.66	91.85	-9,069.72	-421.30	299.90	23.00	276.90	1.083	Major Risk
20,850.00	11,788.00	20,872.12	11,798.00	139.18	139.36	91.85	-9,119.72	-421.17	299.86	21.58	278.28	1.078	Major Risk
20,900.00	11,788.00	20,922.12	11,798.00	139.87	140.05	91.85	-9,169.72	-421.03	299.83	20.16	279.67	1.072	Major Risk
20,950.00	11,788.00	20,972.12	11,798.00	140.57	140.74	91.85	-9,219.72	-420.90	299.80	18.74	281.06	1.067	Major Risk
21,000.00	11,788.00	21,022.12	11,798.00	141.26	141.44	91.85	-9,269.72	-420.77	299.76	17.32	282.44	1.061	Major Risk
21,050.00	11,788.00	21,072.12	11,798.00	141.96	142.13	91.85	-9,319.72	-420.63	299.73	15.90	283.83	1.056	Major Risk
21,100.00	11,788.00	21,122.12	11,798.00	142.65	142.83	91.85	-9,369.72	-420.50	299.69	14.47	285.22	1.051	Major Risk
21,150.00	11,788.00	21,172.12	11,798.00	143.35	143.52	91.85	-9,419.72	-420.37	299.66	13.05	286.61	1.046	Major Risk
21,200.00	11,788.00	21,222.12	11,798.00	144.04	144.22	91.86	-9,469.72	-420.23	299.63	11.62	288.00	1.040	Major Risk
21,250.00	11,788.00	21,272.12	11,798.00	144.74	144.91	91.86	-9,519.72	-420.10	299.59	10.20	289.39	1.035	Major Risk
21,300.00	11,788.00	21,322.12	11,798.00	145.43	145.61	91.86	-9,569.72	-419.97	299.56	8.77	290.79	1.030	Major Risk
21,350.00	11,788.00	21,372.12	11,798.00	146.13	146.31	91.86	-9,619.72	-419.83	299.53	7.35	292.18	1.025	Major Risk
21,400.00	11,788.00	21,422.12	11,798.00	146.83	147.00	91.86	-9,669.72	-419.70	299.49	5.92	293.57	1.020	Major Risk
21,450.00	11,788.00	21,472.12	11,798.00	147.52	147.70	91.86	-9,719.72	-419.56	299.46	4.49	294.96	1.015	Major Risk
21,500.00	11,788.00	21,522.12	11,798.00	148.22	148.40	91.86	-9,769.72	-419.43	299.42	3.07	296.36	1.010	Major Risk
21,550.00	11,788.00	21,572.12	11,798.00	148.92	149.09	91.86	-9,819.72	-419.30	299.39	1.64	297.75	1.005	Major Risk
21,600.00	11,788.00	21,622.12	11,798.00	149.62	149.79	91.86	-9,869.72	-419.16	299.36	0.21	299.15	1.001	Major Risk
21,650.00	11,788.00	21,672.12	11,798.00	150.31	150.49	91.86	-9,919.72	-419.03	299.32	-1.22	300.54	0.996	Collision
21,700.00	11,788.00	21,722.12	11,798.00	151.01	151.19	91.86	-9,969.72	-418.90	299.29	-2.65	301.94	0.991	Collision
21,750.00	11,788.00	21,772.12	11,798.00	151.71	151.89	91.86	-10,019.72	-418.76	299.25	-4.08	303.34	0.987	Collision
21,753.86	11,788.00	21,775.98	11,798.00	151.76	151.94	91.86	-10,023.58	-418.75	299.25	-4.19	303.45	0.986	Collision, ES, SF

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+IFR1 — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	4.60	-4.60	0.50	0.50	-101.95	-154.54	-729.90	746.08				
50.00	50.00	45.40	45.40	0.50	0.50	-101.95	-154.54	-729.90	746.08	745.08	1.01	741.843	
100.00	100.00	104.60	95.40	0.52	0.52	-101.95	-154.54	-729.90	746.08	745.04	1.04	717.363	
150.00	150.00	145.40	145.40	0.59	0.58	-101.95	-154.54	-729.90	746.08	744.91	1.17	636.651	
200.00	200.00	204.60	195.40	0.70	0.71	-101.95	-154.54	-729.90	746.08	744.67	1.42	526.939	
250.00	250.00	245.40	245.40	0.84	0.82	-101.95	-154.54	-729.90	746.08	744.42	1.66	448.837	
300.00	300.00	304.60	295.40	0.99	1.00	-101.95	-154.54	-729.90	746.08	744.09	1.99	375.119	
350.00	350.00	345.40	345.40	1.15	1.13	-101.95	-154.54	-729.90	746.08	743.81	2.28	327.780	
400.00	400.00	404.60	395.40	1.31	1.32	-101.95	-154.54	-729.90	746.08	743.45	2.63	283.312	
450.00	450.00	445.40	445.40	1.48	1.46	-101.95	-154.54	-729.90	746.08	743.15	2.94	254.016	
500.00	500.00	504.60	495.40	1.65	1.66	-101.95	-154.54	-729.90	746.08	742.77	3.31	225.546	
550.00	550.00	545.40	545.40	1.82	1.80	-101.95	-154.54	-729.90	746.08	742.46	3.62	206.129	
600.00	600.00	604.60	595.40	1.99	2.01	-101.95	-154.54	-729.90	746.08	742.09	4.00	186.653	
650.00	650.00	645.40	645.40	2.16	2.15	-101.95	-154.54	-729.90	746.08	741.77	4.31	172.981	
700.00	700.00	704.60	695.40	2.34	2.36	-101.95	-154.54	-729.90	746.08	741.39	4.69	158.919	
750.00	750.00	745.40	745.40	2.51	2.50	-101.95	-154.54	-729.90	746.08	741.07	5.01	148.822	
800.00	800.00	804.60	795.40	2.69	2.71	-101.95	-154.54	-729.90	746.08	740.68	5.40	138.230	
850.00	850.00	845.40	845.40	2.87	2.85	-101.95	-154.54	-729.90	746.08	740.36	5.72	130.489	
900.00	900.00	904.60	895.40	3.04	3.06	-101.95	-154.54	-729.90	746.08	739.98	6.10	122.241	
950.00	950.00	945.40	945.40	3.22	3.20	-101.95	-154.54	-729.90	746.08	739.66	6.42	116.127	
1,000.00	1,000.00	1,004.60	995.40	3.40	3.41	-101.95	-154.54	-729.90	746.08	739.27	6.81	109.531	
1,050.00	1,050.00	1,045.40	1,045.40	3.58	3.56	-101.95	-154.54	-729.90	746.08	738.95	7.13	104.585	
1,100.00	1,100.00	1,104.60	1,095.40	3.75	3.77	-101.95	-154.54	-729.90	746.08	738.56	7.52	99.193	
1,150.00	1,150.00	1,145.40	1,145.40	3.93	3.91	-101.95	-154.54	-729.90	746.08	738.24	7.84	95.112	
1,200.00	1,200.00	1,204.60	1,195.40	4.11	4.12	-101.95	-154.54	-729.90	746.08	737.85	8.23	90.625	
1,250.00	1,250.00	1,245.40	1,245.40	4.29	4.27	-101.95	-154.54	-729.90	746.08	737.53	8.56	87.201	
1,300.00	1,300.00	1,304.60	1,295.40	4.46	4.48	-101.95	-154.54	-729.90	746.08	737.14	8.94	83.410	
1,350.00	1,350.00	1,345.40	1,345.40	4.64	4.63	-101.95	-154.54	-729.90	746.08	736.81	9.27	80.499	
1,400.00	1,400.00	1,404.60	1,395.40	4.82	4.84	-101.95	-154.54	-729.90	746.08	736.42	9.66	77.254	
1,450.00	1,450.00	1,445.40	1,445.40	5.00	4.98	-101.95	-154.54	-729.90	746.08	736.10	9.98	74.748	
1,500.00	1,500.00	1,504.60	1,495.40	5.18	5.19	-101.95	-154.54	-729.90	746.08	735.71	10.37	71.940	
1,550.00	1,550.00	1,545.40	1,545.40	5.36	5.34	-101.95	-154.54	-729.90	746.08	735.39	10.69	69.761	
1,600.00	1,600.00	1,604.60	1,595.40	5.53	5.55	-101.95	-154.54	-729.90	746.08	735.00	11.08	67.307	
1,650.00	1,650.00	1,645.40	1,645.40	5.71	5.70	-101.95	-154.54	-729.90	746.08	734.67	11.41	65.395	
1,700.00	1,700.00	1,704.60	1,695.40	5.89	5.91	-101.95	-154.54	-729.90	746.08	734.28	11.80	63.233	
1,750.00	1,750.00	1,745.40	1,745.40	6.07	6.05	-101.95	-154.54	-729.90	746.08	733.96	12.12	61.542	
1,800.00	1,800.00	1,804.60	1,795.40	6.25	6.26	-101.95	-154.54	-729.90	746.08	733.57	12.51	59.623	
1,850.00	1,850.00	1,845.40	1,845.40	6.43	6.41	-101.95	-154.54	-729.90	746.08	733.24	12.84	58.116	
1,900.00	1,900.00	1,904.60	1,895.40	6.61	6.62	-101.95	-154.54	-729.90	746.08	732.85	13.23	56.401	
1,950.00	1,950.00	1,945.40	1,945.40	6.78	6.77	-101.95	-154.54	-729.90	746.08	732.53	13.55	55.050	
2,000.00	2,000.00	2,004.60	1,995.40	6.96	6.98	-101.95	-154.54	-729.90	746.08	732.14	13.94	53.509	
2,050.00	2,050.00	2,045.40	2,045.40	7.14	7.13	-101.95	-154.54	-729.90	746.08	731.81	14.27	52.291	
2,100.00	2,100.00	2,104.60	2,095.40	7.32	7.34	-101.95	-154.54	-729.90	746.08	731.42	14.66	50.898	
2,150.00	2,150.00	2,145.40	2,145.40	7.50	7.48	-101.95	-154.54	-729.90	746.08	731.10	14.98	49.795	
2,200.00	2,200.00	2,204.60	2,195.40	7.68	7.70	-101.95	-154.54	-729.90	746.08	730.71	15.37	48.530	
2,250.00	2,250.00	2,245.40	2,245.40	7.86	7.84	-101.95	-154.54	-729.90	746.08	730.38	15.70	47.526	
2,300.00	2,300.00	2,304.60	2,295.40	8.04	8.05	-101.95	-154.54	-729.90	746.08	729.99	16.09	46.372	
2,350.00	2,350.00	2,345.40	2,345.40	8.22	8.20	-101.95	-154.54	-729.90	746.08	729.67	16.41	45.454	
2,400.00	2,400.00	2,404.60	2,395.40	8.39	8.41	-101.95	-154.54	-729.90	746.08	729.28	16.80	44.397	
2,450.00	2,450.00	2,445.40	2,445.40	8.57	8.56	-101.95	-154.54	-729.90	746.08	728.95	17.13	43.555	
2,500.00	2,500.00	2,504.60	2,495.40	8.75	8.77	-101.95	-154.54	-729.90	746.08	728.56	17.52	42.583	
2,550.00	2,550.00	2,545.40	2,545.40	8.93	8.91	-101.95	-154.54	-729.90	746.08	728.24	17.85	41.808	

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+IFR1 — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,600.00	2,600.00	2,604.60	2,595.40	9.11	9.13	-101.95	-154.54	-729.90	746.08	727.85	18.24	40.912	
2,650.00	2,650.00	2,645.40	2,645.40	9.29	9.27	-101.95	-154.54	-729.90	746.08	727.52	18.56	40.195	
2,700.00	2,700.00	2,704.60	2,695.40	9.47	9.48	-101.95	-154.54	-729.90	746.08	727.13	18.95	39.366	
2,750.00	2,750.00	2,745.40	2,745.40	9.65	9.63	-101.95	-154.54	-729.90	746.08	726.81	19.28	38.703	
2,800.00	2,800.00	2,804.60	2,795.40	9.83	9.84	-101.95	-154.54	-729.90	746.08	726.41	19.67	37.933	
2,850.00	2,850.00	2,845.40	2,845.40	10.00	9.99	-101.95	-154.54	-729.90	746.08	726.09	19.99	37.317	
2,900.00	2,900.00	2,904.60	2,895.40	10.18	10.20	-101.95	-154.54	-729.90	746.08	725.70	20.38	36.601	
2,950.00	2,950.00	2,945.40	2,945.40	10.36	10.35	-101.95	-154.54	-729.90	746.08	725.37	20.71	36.026	
3,000.00	3,000.00	3,004.60	2,995.40	10.54	10.56	-101.95	-154.54	-729.90	746.08	724.98	21.10	35.359	
3,050.00	3,050.00	3,045.40	3,045.40	10.72	10.70	-101.95	-154.54	-729.90	746.08	724.66	21.43	34.822	
3,100.00	3,100.00	3,104.60	3,095.40	10.90	10.92	-101.95	-154.54	-729.90	746.08	724.27	21.82	34.198	
3,150.00	3,150.00	3,145.40	3,145.40	11.08	11.06	-101.95	-154.54	-729.90	746.08	723.94	22.14	33.696	
3,200.00	3,200.00	3,204.60	3,195.40	11.26	11.27	-101.95	-154.54	-729.90	746.08	723.55	22.53	33.111	
3,250.00	3,250.00	3,245.40	3,245.40	11.44	11.42	-101.95	-154.54	-729.90	746.08	723.22	22.86	32.640	
3,300.00	3,300.00	3,304.60	3,295.40	11.62	11.63	-101.95	-154.54	-729.90	746.08	722.83	23.25	32.091	
3,350.00	3,350.00	3,345.40	3,345.40	11.80	11.78	-101.95	-154.54	-729.90	746.08	722.51	23.57	31.648	
3,400.00	3,400.00	3,404.60	3,395.40	11.97	11.99	-101.95	-154.54	-729.90	746.08	722.12	23.97	31.132	
3,450.00	3,450.00	3,445.40	3,445.40	12.15	12.14	-101.95	-154.54	-729.90	746.08	721.79	24.29	30.715	
3,500.00	3,500.00	3,504.60	3,495.40	12.33	12.35	-101.95	-154.54	-729.90	746.08	721.40	24.68	30.228	
3,550.00	3,550.00	3,545.40	3,545.40	12.51	12.50	-101.95	-154.54	-729.90	746.08	721.08	25.01	29.835	
3,600.00	3,600.00	3,604.60	3,595.40	12.69	12.71	-101.95	-154.54	-729.90	746.08	720.68	25.40	29.376	
3,650.00	3,650.00	3,645.40	3,645.40	12.87	12.85	-101.95	-154.54	-729.90	746.08	720.36	25.72	29.004	
3,700.00	3,700.00	3,704.60	3,695.40	13.05	13.07	-101.95	-154.54	-729.90	746.08	719.97	26.11	28.570	
3,750.00	3,750.00	3,745.40	3,745.40	13.23	13.21	-101.95	-154.54	-729.90	746.08	719.64	26.44	28.218	
3,800.00	3,800.00	3,804.60	3,795.40	13.41	13.42	-101.95	-154.54	-729.90	746.08	719.25	26.83	27.807	
3,850.00	3,850.00	3,845.40	3,845.40	13.59	13.57	-101.95	-154.54	-729.90	746.08	718.93	27.16	27.474	
3,900.00	3,900.00	3,904.60	3,895.40	13.77	13.78	-101.95	-154.54	-729.90	746.08	718.54	27.55	27.084	
3,950.00	3,950.00	3,945.40	3,945.40	13.94	13.93	-101.95	-154.54	-729.90	746.08	718.21	27.87	26.768	
4,000.00	4,000.00	3,995.40	3,995.40	14.12	14.11	-101.95	-154.54	-729.90	746.08	717.85	28.23	26.428	
4,050.00	4,050.00	4,045.14	4,045.14	14.30	14.29	-64.84	-154.32	-729.96	745.97	717.39	28.59	26.095	
4,100.00	4,099.99	4,094.86	4,094.85	14.48	14.46	-64.84	-153.59	-730.14	745.65	716.71	28.94	25.763	
4,150.00	4,149.97	4,144.57	4,144.55	14.66	14.64	-64.84	-152.33	-730.45	745.12	715.82	29.30	25.433	
4,200.00	4,199.94	4,205.63	4,194.31	14.84	14.86	-64.82	-150.57	-730.89	744.45	714.76	29.69	25.072	
4,250.00	4,249.91	4,244.36	4,244.27	15.01	15.00	-64.79	-148.68	-731.36	743.79	713.78	30.01	24.787	
4,300.00	4,299.88	4,305.64	4,294.23	15.19	15.22	-64.76	-146.78	-731.83	743.12	712.72	30.40	24.442	
4,350.00	4,349.85	4,344.35	4,344.18	15.37	15.36	-64.73	-144.89	-732.30	742.46	711.74	30.72	24.170	
4,400.00	4,399.82	4,394.35	4,394.14	15.55	15.53	-64.70	-143.00	-732.77	741.79	710.72	31.07	23.872	
4,450.00	4,449.79	4,444.34	4,444.09	15.72	15.71	-64.67	-141.11	-733.24	741.13	709.70	31.43	23.581	
4,500.00	4,499.77	4,505.67	4,494.05	15.90	15.93	-64.64	-139.22	-733.71	740.47	708.64	31.83	23.266	
4,550.00	4,549.74	4,544.33	4,544.01	16.08	16.07	-64.61	-137.33	-734.18	739.80	707.66	32.14	23.017	
4,600.00	4,599.71	4,605.68	4,593.96	16.26	16.29	-64.58	-135.44	-734.65	739.14	706.60	32.54	22.716	
4,650.00	4,649.68	4,644.32	4,643.92	16.44	16.43	-64.55	-133.54	-735.12	738.48	705.62	32.85	22.478	
4,700.00	4,699.65	4,705.69	4,693.87	16.61	16.65	-64.52	-131.65	-735.59	737.81	704.56	33.25	22.190	
4,750.00	4,749.62	4,744.31	4,743.83	16.79	16.79	-64.49	-129.76	-736.06	737.15	703.58	33.57	21.962	
4,800.00	4,799.59	4,805.70	4,793.79	16.97	17.01	-64.46	-127.87	-736.53	736.49	702.52	33.96	21.685	
4,850.00	4,849.56	4,844.29	4,843.74	17.15	17.14	-64.43	-125.98	-737.00	735.82	701.55	34.28	21.466	
4,900.00	4,899.53	4,905.71	4,893.70	17.33	17.36	-64.40	-124.09	-737.47	735.16	700.49	34.68	21.201	
4,950.00	4,949.50	4,944.28	4,943.65	17.50	17.50	-64.37	-122.20	-737.94	734.50	699.51	34.99	20.991	
5,000.00	4,999.47	5,005.72	4,993.61	17.68	17.72	-64.34	-120.30	-738.41	733.84	698.45	35.39	20.737	
5,050.00	5,049.44	5,044.27	5,043.57	17.86	17.86	-64.31	-118.41	-738.88	733.18	697.47	35.70	20.535	
5,100.00	5,099.41	5,105.74	5,093.52	18.04	18.08	-64.28	-116.52	-739.35	732.52	696.41	36.10	20.290	
5,150.00	5,149.38	5,144.26	5,143.48	18.22	18.22	-64.25	-114.63	-739.83	731.85	695.44	36.42	20.096	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+IFR1 — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,199.35	5,205.75	5,193.43	18.40	18.44	-64.22	-112.74	-740.30	731.19	694.38	36.81	19.861	
5,250.00	5,249.32	5,244.25	5,243.39	18.57	18.58	-64.19	-110.85	-740.77	730.53	693.40	37.13	19.675	
5,300.00	5,299.29	5,305.76	5,293.35	18.75	18.80	-64.16	-108.96	-741.24	729.87	692.34	37.53	19.448	
5,350.00	5,349.26	5,344.23	5,343.30	18.93	18.93	-64.12	-107.06	-741.71	729.21	691.37	37.84	19.269	
5,400.00	5,399.23	5,405.77	5,393.26	19.11	19.15	-64.09	-105.17	-742.18	728.55	690.31	38.24	19.051	
5,450.00	5,449.20	5,444.22	5,443.22	19.29	19.29	-64.06	-103.28	-742.65	727.89	689.33	38.56	18.878	
5,500.00	5,499.17	5,505.78	5,493.17	19.47	19.51	-64.03	-101.39	-743.12	727.23	688.28	38.96	18.668	
5,550.00	5,549.14	5,544.21	5,543.13	19.65	19.65	-64.00	-99.50	-743.59	726.57	687.30	39.27	18.501	
5,600.00	5,599.11	5,605.80	5,593.08	19.82	19.87	-63.97	-97.61	-744.06	725.91	686.24	39.67	18.298	
5,650.00	5,649.08	5,644.20	5,643.04	20.00	20.01	-63.94	-95.72	-744.53	725.25	685.27	39.99	18.138	
5,700.00	5,699.05	5,705.81	5,693.00	20.18	20.23	-63.91	-93.82	-745.00	724.60	684.21	40.39	17.942	
5,750.00	5,749.02	5,744.19	5,742.95	20.36	20.37	-63.87	-91.93	-745.47	723.94	683.24	40.70	17.787	
5,800.00	5,798.99	5,805.82	5,792.91	20.54	20.59	-63.84	-90.04	-745.94	723.28	682.18	41.10	17.598	
5,850.00	5,848.96	5,844.18	5,842.86	20.72	20.73	-63.81	-88.15	-746.41	722.62	681.20	41.42	17.448	
5,900.00	5,898.93	5,905.83	5,892.82	20.90	20.95	-63.78	-86.26	-746.88	721.96	680.15	41.81	17.266	
5,950.00	5,948.90	5,944.16	5,942.78	21.08	21.08	-63.75	-84.37	-747.35	721.30	679.17	42.13	17.121	
6,000.00	5,998.87	6,005.84	5,992.73	21.26	21.30	-63.72	-82.48	-747.82	720.65	678.12	42.53	16.945	
6,050.00	6,048.84	6,044.15	6,042.69	21.43	21.44	-63.68	-80.58	-748.29	719.99	677.14	42.84	16.805	
6,100.00	6,098.81	6,105.85	6,092.64	21.61	21.66	-63.65	-78.69	-748.76	719.33	676.09	43.24	16.634	
6,150.00	6,148.78	6,144.14	6,142.60	21.79	21.80	-63.62	-76.80	-749.23	718.68	675.12	43.56	16.499	
6,200.00	6,198.75	6,205.87	6,192.56	21.97	22.02	-63.59	-74.91	-749.70	718.02	674.06	43.96	16.334	
6,250.00	6,248.72	6,244.13	6,242.51	22.15	22.16	-63.56	-73.02	-750.17	717.36	673.09	44.27	16.203	
6,300.00	6,298.69	6,305.88	6,292.47	22.33	22.38	-63.52	-71.13	-750.64	716.71	672.03	44.67	16.043	
6,350.00	6,348.66	6,344.12	6,342.42	22.51	22.52	-63.49	-69.24	-751.11	716.05	671.06	44.99	15.916	
6,400.00	6,398.63	6,405.89	6,392.38	22.69	22.74	-63.46	-67.34	-751.58	715.39	670.01	45.39	15.761	
6,450.00	6,448.60	6,444.10	6,442.34	22.87	22.88	-63.43	-65.45	-752.05	714.74	669.03	45.71	15.638	
6,500.00	6,498.57	6,505.90	6,492.29	23.05	23.10	-63.40	-63.56	-752.52	714.08	667.98	46.11	15.488	
6,550.00	6,548.54	6,544.09	6,542.25	23.23	23.23	-63.36	-61.67	-752.99	713.43	667.01	46.42	15.369	
6,600.00	6,598.51	6,605.91	6,592.20	23.40	23.46	-63.33	-59.78	-753.46	712.77	665.95	46.82	15.224	
6,650.00	6,648.49	6,644.08	6,642.16	23.58	23.59	-63.30	-57.89	-753.93	712.12	664.98	47.14	15.108	
6,700.00	6,698.46	6,705.93	6,692.12	23.76	23.82	-63.27	-55.99	-754.40	711.47	663.93	47.54	14.967	
6,750.00	6,748.43	6,744.07	6,742.07	23.94	23.95	-63.23	-54.10	-754.87	710.81	662.96	47.85	14.854	
6,800.00	6,798.40	6,805.94	6,792.03	24.12	24.17	-63.20	-52.21	-755.35	710.16	661.91	48.25	14.718	
6,850.00	6,848.37	6,844.06	6,841.99	24.30	24.31	-63.17	-50.32	-755.82	709.50	660.94	48.57	14.609	
6,900.00	6,898.34	6,905.95	6,891.94	24.48	24.53	-63.13	-48.43	-756.29	708.85	659.88	48.97	14.476	
6,950.00	6,948.31	6,944.05	6,941.90	24.66	24.67	-63.10	-46.54	-756.76	708.20	658.91	49.28	14.370	
7,000.00	6,998.28	7,005.96	6,991.85	24.84	24.89	-63.07	-44.65	-757.23	707.54	657.86	49.68	14.241	
7,050.00	7,048.25	7,044.03	7,041.81	25.02	25.03	-63.04	-42.75	-757.70	706.89	656.89	50.00	14.138	
7,100.00	7,098.22	7,105.97	7,091.77	25.20	25.25	-63.00	-40.86	-758.17	706.24	655.84	50.40	14.013	
7,150.00	7,148.19	7,144.02	7,141.72	25.38	25.39	-62.97	-38.97	-758.64	705.59	654.87	50.71	13.913	
7,200.00	7,198.16	7,205.98	7,191.68	25.56	25.61	-62.94	-37.08	-759.11	704.93	653.82	51.12	13.791	
7,250.00	7,248.13	7,244.01	7,241.63	25.74	25.75	-62.90	-35.19	-759.58	704.28	652.85	51.43	13.694	
7,300.00	7,298.10	7,306.00	7,291.59	25.91	25.97	-62.87	-33.30	-760.05	703.63	651.80	51.83	13.575	
7,350.00	7,348.07	7,344.00	7,341.55	26.09	26.10	-62.84	-31.41	-760.52	702.98	650.83	52.15	13.481	
7,400.00	7,398.04	7,393.99	7,391.50	26.27	26.28	-62.80	-29.51	-760.99	702.33	649.82	52.50	13.376	
7,450.00	7,448.01	7,443.99	7,441.46	26.45	26.46	-62.77	-27.62	-761.46	701.68	648.81	52.86	13.274	
7,500.00	7,497.98	7,506.02	7,491.41	26.63	26.69	-62.74	-25.73	-761.93	701.03	647.76	53.26	13.161	
7,550.00	7,547.95	7,543.97	7,541.37	26.81	26.82	-62.70	-23.84	-762.40	700.38	646.80	53.58	13.072	
7,600.00	7,597.92	7,606.03	7,591.33	26.99	27.04	-62.67	-21.95	-762.87	699.73	645.75	53.98	12.963	
7,650.00	7,647.89	7,643.96	7,641.28	27.17	27.18	-62.64	-20.06	-763.34	699.08	644.78	54.30	12.875	
7,700.00	7,697.86	7,706.04	7,691.24	27.35	27.40	-62.60	-18.17	-763.81	698.43	643.73	54.70	12.769	
7,750.00	7,747.83	7,743.95	7,741.19	27.53	27.54	-62.57	-16.27	-764.28	697.78	642.77	55.01	12.684	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+IFR1

Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,800.00	7,797.80	7,806.06	7,791.15	27.71	27.76	-62.53	-14.38	-764.75	697.13	641.72	55.41	12.581	
7,850.00	7,847.77	7,843.94	7,841.11	27.89	27.90	-62.50	-12.49	-765.22	696.48	640.75	55.73	12.498	
7,900.00	7,897.74	7,906.07	7,891.06	28.07	28.12	-62.47	-10.60	-765.69	695.83	639.70	56.13	12.397	
7,950.00	7,947.71	7,943.93	7,941.02	28.25	28.26	-62.43	-8.71	-766.16	695.18	638.74	56.44	12.316	
8,000.00	7,997.68	8,006.08	7,990.98	28.43	28.48	-62.40	-6.82	-766.63	694.53	637.69	56.85	12.218	
8,050.00	8,047.65	8,043.91	8,040.93	28.61	28.62	-62.36	-4.93	-767.10	693.89	636.73	57.16	12.139	
8,100.00	8,097.62	8,106.09	8,090.89	28.79	28.84	-62.33	-3.03	-767.57	693.24	635.68	57.56	12.043	
8,150.00	8,147.59	8,143.90	8,140.84	28.97	28.97	-62.29	-1.14	-768.04	692.59	634.71	57.88	11.966	
8,200.00	8,197.56	8,206.10	8,190.80	29.15	29.20	-62.26	0.75	-768.51	691.94	633.66	58.28	11.873	
8,250.00	8,247.53	8,243.89	8,240.76	29.33	29.33	-62.23	2.64	-768.98	691.30	632.70	58.59	11.798	
8,300.00	8,297.50	8,306.12	8,290.71	29.51	29.56	-62.19	4.53	-769.45	690.65	631.65	59.00	11.707	
8,350.00	8,347.47	8,343.88	8,340.67	29.69	29.69	-62.16	6.42	-769.92	690.00	630.69	59.31	11.634	
8,400.00	8,397.44	8,406.13	8,390.62	29.86	29.92	-62.12	8.31	-770.40	689.36	629.64	59.71	11.544	
8,450.00	8,447.41	8,443.87	8,440.58	30.04	30.05	-62.09	10.21	-770.87	688.71	628.68	60.03	11.473	
8,500.00	8,497.38	8,506.14	8,490.54	30.22	30.27	-62.05	12.10	-771.34	688.07	627.64	60.43	11.386	
8,550.00	8,547.35	8,543.86	8,540.49	30.40	30.41	-62.02	13.99	-771.81	687.42	626.68	60.74	11.317	
8,600.00	8,597.32	8,606.15	8,590.45	30.58	30.63	-61.98	15.88	-772.28	686.78	625.63	61.15	11.232	
8,650.00	8,647.29	8,643.84	8,640.40	30.76	30.77	-61.95	17.77	-772.75	686.13	624.67	61.46	11.164	
8,700.00	8,697.26	8,706.16	8,690.36	30.94	30.99	-61.91	19.66	-773.22	685.49	623.62	61.86	11.081	
8,750.00	8,747.23	8,743.83	8,740.32	31.12	31.13	-61.88	21.55	-773.69	684.84	622.66	62.18	11.014	
8,800.00	8,797.20	8,806.17	8,790.27	31.30	31.35	-61.84	23.45	-774.16	684.20	621.62	62.58	10.933	
8,850.00	8,847.18	8,843.82	8,840.23	31.48	31.49	-61.81	25.34	-774.63	683.55	620.66	62.89	10.868	
8,900.00	8,897.15	8,893.81	8,890.18	31.66	31.67	-61.77	27.23	-775.10	682.91	619.66	63.25	10.796	
8,950.00	8,947.12	8,944.44	8,940.78	31.84	31.85	-61.75	28.94	-775.52	682.25	618.64	63.61	10.725	
9,000.00	8,997.09	8,995.24	8,991.56	32.02	32.03	-61.79	30.03	-775.79	681.53	617.55	63.98	10.653	
9,050.00	9,047.06	9,046.01	9,042.34	32.20	32.21	-61.88	30.45	-775.90	680.75	616.42	64.34	10.581	
9,100.00	9,097.03	9,103.90	9,092.43	32.38	32.42	-62.01	30.46	-775.90	679.94	615.22	64.72	10.505	
9,150.00	9,147.00	9,146.07	9,142.40	32.56	32.57	-62.14	30.46	-775.90	679.13	614.08	65.05	10.440	
9,200.00	9,196.97	9,203.96	9,192.37	32.74	32.78	-62.27	30.46	-775.90	678.33	612.89	65.44	10.366	
9,250.00	9,246.94	9,246.01	9,242.34	32.92	32.93	-62.40	30.46	-775.90	677.53	611.76	65.77	10.301	
9,300.00	9,296.91	9,304.02	9,292.31	33.10	33.14	-62.53	30.46	-775.90	676.73	610.57	66.16	10.229	
9,350.00	9,346.88	9,345.95	9,342.28	33.28	33.29	-62.65	30.46	-775.90	675.93	609.45	66.49	10.166	
9,400.00	9,396.85	9,395.92	9,392.25	33.46	33.46	-62.78	30.46	-775.90	675.14	608.30	66.85	10.100	
9,450.00	9,446.82	9,438.77	9,435.08	33.64	33.61	-62.99	29.39	-775.90	674.58	607.41	67.17	10.043	
9,469.11	9,465.92	9,454.54	9,450.80	33.71	33.66	-63.13	28.21	-775.90	674.53	607.24	67.29	10.024	CC
9,500.00	9,496.79	9,479.80	9,475.90	33.82	33.74	-63.43	25.42	-775.89	674.66	607.19	67.47	9.999	ES
9,550.00	9,546.76	9,519.90	9,515.43	34.00	33.87	-64.09	18.72	-775.87	675.48	607.72	67.76	9.969	
9,600.00	9,596.73	9,558.72	9,553.16	34.18	33.98	-64.94	9.62	-775.85	677.16	609.14	68.02	9.955	SF
9,650.00	9,646.70	9,596.00	9,588.74	34.36	34.09	-65.96	-1.50	-775.81	679.83	611.59	68.24	9.962	
9,700.00	9,696.67	9,631.52	9,621.89	34.54	34.19	-67.09	-14.23	-775.78	683.66	615.24	68.42	9.992	
9,750.00	9,746.64	9,665.16	9,652.50	34.72	34.28	-68.30	-28.16	-775.74	688.82	620.28	68.54	10.050	
9,800.00	9,796.61	9,700.00	9,683.30	34.90	34.37	-69.69	-44.45	-775.70	695.46	626.83	68.63	10.133	
9,850.00	9,846.58	9,726.56	9,706.07	35.08	34.44	-70.83	-58.12	-775.66	703.71	635.15	68.56	10.264	
9,900.00	9,896.55	9,750.00	9,725.62	35.26	34.50	-71.90	-71.04	-775.63	713.72	645.35	68.37	10.439	
9,950.00	9,946.52	9,780.26	9,750.06	35.44	34.57	-73.34	-88.88	-775.58	725.51	657.29	68.22	10.635	
10,000.00	9,996.49	9,800.00	9,765.48	35.62	34.62	-74.32	-101.21	-775.55	739.24	671.40	67.83	10.898	
10,050.00	10,046.46	9,826.85	9,785.75	35.80	34.68	-75.70	-118.81	-775.50	754.83	687.32	67.51	11.181	
10,100.00	10,096.43	9,850.00	9,802.55	35.98	34.74	-76.91	-134.74	-775.45	772.36	705.29	67.07	11.515	
10,150.00	10,146.40	9,867.15	9,814.57	36.16	34.78	-77.83	-146.96	-775.42	791.77	725.31	66.46	11.913	
10,200.00	10,196.37	9,885.21	9,826.83	36.34	34.82	-78.81	-160.22	-775.39	813.03	747.19	65.84	12.349	
10,250.00	10,246.34	9,900.00	9,836.55	36.52	34.85	-79.62	-171.37	-775.36	836.06	770.94	65.12	12.839	
10,300.00	10,296.31	9,917.68	9,847.80	36.70	34.89	-80.59	-185.01	-775.32	860.79	796.34	64.45	13.356	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+IFR1 — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,350.00	10,346.28	9,932.28	9,856.76	36.88	34.92	-81.40	-196.54	-775.29	887.15	823.43	63.71	13.924	
10,400.00	10,396.25	9,950.00	9,867.24	37.06	34.96	-82.39	-210.82	-775.25	915.04	851.99	63.06	14.512	
10,450.00	10,446.22	9,950.00	9,867.24	37.24	34.96	-82.39	-210.82	-775.25	944.42	882.42	62.01	15.231	
10,500.00	10,496.19	9,970.57	9,878.84	37.42	35.01	-83.53	-227.81	-775.20	974.99	913.53	61.45	15.865	
10,550.00	10,546.16	9,981.74	9,884.88	37.60	35.03	-84.15	-237.20	-775.18	1,006.89	946.17	60.72	16.584	
10,600.00	10,596.13	10,000.00	9,894.37	37.78	35.07	-85.16	-252.81	-775.13	1,040.02	979.85	60.17	17.285	
10,650.00	10,646.10	10,000.00	9,894.37	37.96	35.07	-85.16	-252.81	-775.13	1,074.09	1,014.83	59.26	18.126	
10,700.00	10,696.07	10,000.00	9,894.37	38.14	35.07	-85.16	-252.81	-775.13	1,109.37	1,050.98	58.39	18.999	
10,750.00	10,746.04	10,020.05	9,904.20	38.32	35.11	-86.48	-270.28	-775.09	1,145.28	1,087.29	57.99	19.748	
10,800.00	10,796.03	10,028.40	9,908.12	38.50	35.12	-87.75	-277.66	-775.07	1,182.21	1,124.82	57.39	20.600	
10,850.00	10,846.03	10,050.00	9,917.74	38.67	35.16	-89.75	-296.99	-775.02	1,220.15	1,163.06	57.09	21.373	
10,900.00	10,896.03	10,050.00	9,917.74	38.85	35.16	-127.20	-296.99	-775.02	1,258.42	1,202.03	56.40	22.313	
10,950.00	10,946.03	10,050.00	9,917.74	39.03	35.16	-127.20	-296.99	-775.02	1,297.50	1,241.74	55.75	23.272	
11,000.00	10,996.03	10,050.00	9,917.74	39.21	35.16	-127.20	-296.99	-775.02	1,337.30	1,282.14	55.16	24.246	
11,050.00	11,046.03	10,050.00	9,917.74	39.39	35.16	-127.20	-296.99	-775.02	1,377.77	1,323.16	54.60	25.233	
11,100.00	11,096.03	10,071.47	9,926.57	39.57	35.20	-128.31	-316.56	-774.96	1,418.32	1,363.86	54.46	26.042	
11,150.00	11,146.03	10,077.46	9,928.90	39.74	35.21	-128.61	-322.08	-774.95	1,459.62	1,405.54	54.08	26.989	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 175-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.50	0.50	102.07	-194.25	908.80	929.33				
50.00	50.00	45.28	45.28	0.50	0.50	102.07	-194.27	908.87	929.41	928.40	1.01	923.079	
100.00	100.00	92.25	92.25	0.52	0.52	102.07	-194.35	909.08	929.64	928.61	1.04	895.865	
150.00	150.00	139.22	139.22	0.59	0.54	102.07	-194.47	909.44	930.05	928.91	1.13	819.789	
200.00	200.00	187.63	187.62	0.70	0.59	102.07	-194.64	909.96	930.60	929.31	1.29	719.650	
250.00	250.00	240.62	240.62	0.84	0.71	102.08	-194.83	910.44	931.09	929.54	1.55	601.426	
300.00	300.00	292.36	292.35	0.99	0.85	102.08	-194.99	910.78	931.43	929.59	1.84	506.403	
350.00	350.00	343.09	343.08	1.15	1.01	102.09	-195.09	911.06	931.73	929.58	2.15	433.311	
400.00	400.00	394.99	394.98	1.31	1.17	102.09	-195.15	911.30	931.96	929.49	2.48	376.524	
450.00	450.00	447.47	447.46	1.48	1.33	102.09	-195.25	911.39	932.07	929.26	2.81	331.798	
500.00	500.00	499.95	499.94	1.65	1.50	102.10	-195.41	911.33	932.04	928.89	3.15	295.962	
550.00	550.00	552.43	552.42	1.82	1.68	102.12	-195.61	911.11	931.88	928.39	3.49	266.745	
600.00	600.00	601.15	601.14	1.99	1.84	102.14	-195.88	910.87	931.70	927.87	3.83	243.398	
650.00	650.00	650.42	650.41	2.16	2.00	102.16	-196.23	910.66	931.56	927.40	4.17	223.576	
700.00	700.00	701.56	701.54	2.34	2.18	102.19	-196.71	910.40	931.42	926.90	4.52	206.258	
750.00	750.00	751.92	751.90	2.51	2.35	102.23	-197.28	910.07	931.21	926.35	4.86	191.448	
800.00	800.00	800.54	800.52	2.69	2.52	102.27	-197.89	909.77	931.05	925.84	5.21	178.761	
850.00	850.00	850.02	849.99	2.87	2.69	102.31	-198.54	909.54	930.95	925.40	5.56	167.535	
900.00	900.00	900.93	900.90	3.04	2.87	102.36	-199.19	909.27	930.83	924.92	5.91	157.466	
950.00	950.00	951.85	951.80	3.22	3.05	102.40	-199.82	908.95	930.67	924.40	6.27	148.514	
1,000.00	1,000.00	1,002.76	1,002.71	3.40	3.22	102.44	-200.43	908.59	930.45	923.82	6.62	140.503	
1,050.00	1,050.00	1,056.65	1,056.60	3.58	3.41	102.49	-201.16	908.07	930.12	923.13	6.99	133.086	
1,100.00	1,100.00	1,103.84	1,103.78	3.75	3.58	102.54	-201.87	907.52	929.71	922.38	7.33	126.788	
1,150.00	1,150.00	1,149.87	1,149.81	3.93	3.74	102.57	-202.30	907.24	929.52	921.85	7.67	121.140	
1,168.55	1,168.55	1,166.82	1,166.75	4.00	3.80	102.58	-202.40	907.20	929.50	921.71	7.80	119.190	
1,200.00	1,200.00	1,195.34	1,195.27	4.11	3.90	102.58	-202.54	907.22	929.55	921.54	8.01	116.052	
1,250.00	1,250.00	1,240.68	1,240.61	4.29	4.06	102.59	-202.67	907.45	929.84	921.49	8.35	111.413 ES	
1,300.00	1,300.00	1,286.58	1,286.51	4.46	4.22	102.59	-202.71	907.93	930.36	921.68	8.68	107.164	
1,350.00	1,350.00	1,332.66	1,332.58	4.64	4.38	102.57	-202.62	908.64	931.09	922.08	9.02	103.254	
1,400.00	1,400.00	1,381.93	1,381.85	4.82	4.54	102.54	-202.31	909.60	931.97	922.61	9.36	99.531	
1,450.00	1,450.00	1,432.37	1,432.27	5.00	4.72	102.48	-201.62	910.65	932.84	923.13	9.71	96.033	
1,500.00	1,500.00	1,481.74	1,481.61	5.18	4.88	102.40	-200.54	911.77	933.71	923.65	10.06	92.817	
1,550.00	1,550.00	1,530.95	1,530.79	5.36	5.05	102.30	-199.05	913.01	934.62	924.21	10.41	89.823	
1,600.00	1,600.00	1,576.90	1,576.68	5.53	5.21	102.18	-197.35	914.35	935.66	924.92	10.74	87.121	
1,650.00	1,650.00	1,622.74	1,622.45	5.71	5.36	102.04	-195.39	915.96	936.92	925.84	11.07	84.606	
1,700.00	1,700.00	1,670.16	1,669.78	5.89	5.53	101.88	-193.08	917.84	938.36	926.95	11.41	82.204	
1,750.00	1,750.00	1,717.68	1,717.19	6.07	5.69	101.70	-190.48	919.92	939.95	928.19	11.76	79.952	
1,800.00	1,800.00	1,769.31	1,768.66	6.25	5.87	101.48	-187.37	922.25	941.56	929.44	12.11	77.724	
1,850.00	1,850.00	1,820.90	1,820.10	6.43	6.05	101.26	-184.01	924.53	943.08	930.61	12.47	75.615	
1,900.00	1,900.00	1,871.63	1,870.66	6.61	6.23	101.02	-180.54	926.74	944.56	931.73	12.83	73.633	
1,950.00	1,950.00	1,923.86	1,922.71	6.78	6.41	100.77	-176.79	928.97	945.99	932.80	13.19	71.720	
2,000.00	2,000.00	1,978.72	1,977.36	6.96	6.60	100.50	-172.55	931.13	947.21	933.65	13.56	69.841	
2,050.00	2,050.00	2,034.55	2,032.96	7.14	6.80	100.20	-167.90	933.07	948.17	934.24	13.94	68.024	
2,100.00	2,100.00	2,090.97	2,089.13	7.32	7.00	99.88	-162.84	934.69	948.81	934.50	14.32	66.270	
2,150.00	2,150.00	2,142.40	2,140.32	7.50	7.18	99.59	-158.10	935.96	949.25	934.57	14.68	64.668	
2,200.00	2,200.00	2,193.46	2,191.16	7.68	7.36	99.30	-153.50	937.13	949.65	934.61	15.04	63.146	
2,250.00	2,250.00	2,244.40	2,241.89	7.86	7.54	99.03	-149.02	938.21	950.00	934.60	15.40	61.691	
2,300.00	2,300.00	2,295.37	2,292.67	8.04	7.73	98.76	-144.66	939.22	950.31	934.55	15.76	60.299	
2,350.00	2,350.00	2,339.45	2,336.58	8.22	7.89	98.52	-140.88	940.23	950.79	934.70	16.10	59.068	
2,400.00	2,400.00	2,384.87	2,381.81	8.39	8.05	98.27	-136.92	941.49	951.54	935.10	16.44	57.888	
2,450.00	2,450.00	2,433.59	2,430.32	8.57	8.22	98.01	-132.70	942.98	952.44	935.64	16.79	56.721	
2,500.00	2,500.00	2,482.47	2,479.00	8.75	8.40	97.75	-128.55	944.51	953.41	936.27	17.15	55.605	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.00 ft

Survey Program: 175-MWD+HDGM

Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,550.00	2,550.00	2,532.43	2,528.76	8.93	8.58	97.49	-124.40	946.08	954.42	936.92	17.51	54.522	
2,600.00	2,600.00	2,582.22	2,578.36	9.11	8.76	97.24	-120.34	947.63	955.45	937.59	17.86	53.485	
2,650.00	2,650.00	2,631.45	2,627.40	9.29	8.94	96.99	-116.39	949.18	956.51	938.29	18.22	52.496	
2,700.00	2,700.00	2,681.51	2,677.29	9.47	9.12	96.74	-112.44	950.76	957.62	939.04	18.58	51.539	
2,750.00	2,750.00	2,733.73	2,729.32	9.65	9.31	96.49	-108.32	952.33	958.66	939.71	18.95	50.592	
2,800.00	2,800.00	2,784.47	2,779.88	9.83	9.49	96.24	-104.29	953.75	959.61	940.29	19.31	49.690	
2,850.00	2,850.00	2,833.48	2,828.73	10.00	9.67	96.01	-100.51	955.12	960.59	940.92	19.67	48.840	
2,900.00	2,900.00	2,884.04	2,879.12	10.18	9.86	95.77	-96.73	956.54	961.61	941.58	20.03	48.008	
2,950.00	2,950.00	2,935.99	2,930.90	10.36	10.05	95.53	-92.74	957.92	962.56	942.16	20.40	47.188	
3,000.00	3,000.00	2,986.67	2,981.41	10.54	10.23	95.28	-88.70	959.19	963.43	942.67	20.76	46.405	
3,050.00	3,050.00	3,036.76	3,031.31	10.72	10.41	95.03	-84.54	960.44	964.30	943.18	21.12	45.652	
3,100.00	3,100.00	3,082.30	3,076.66	10.90	10.58	94.80	-80.68	961.66	965.28	943.81	21.47	44.966	
3,150.00	3,150.00	3,126.66	3,120.85	11.08	10.74	94.57	-77.00	963.08	966.54	944.74	21.81	44.325	
3,200.00	3,200.00	3,174.94	3,168.93	11.26	10.92	94.33	-73.03	964.84	968.04	945.88	22.16	43.683	
3,250.00	3,250.00	3,225.25	3,219.03	11.44	11.10	94.07	-68.75	966.67	969.55	947.02	22.52	43.045	
3,300.00	3,300.00	3,275.48	3,269.03	11.62	11.29	93.80	-64.40	968.47	971.05	948.16	22.89	42.428	
3,350.00	3,350.00	3,325.70	3,319.04	11.80	11.47	93.55	-60.15	970.25	972.55	949.30	23.25	41.830	
3,400.00	3,400.00	3,378.35	3,371.48	11.97	11.67	93.29	-55.82	972.03	973.99	950.37	23.62	41.231	
3,450.00	3,450.00	3,431.37	3,424.31	12.15	11.86	93.03	-51.55	973.64	975.29	951.30	24.00	40.642	
3,500.00	3,500.00	3,482.49	3,475.26	12.33	12.05	92.80	-47.61	975.06	976.50	952.13	24.36	40.081	
3,550.00	3,550.00	3,533.77	3,526.39	12.51	12.24	92.57	-43.89	976.41	977.64	952.91	24.73	39.533	
3,600.00	3,600.00	3,583.34	3,575.81	12.69	12.42	92.36	-40.35	977.69	978.78	953.69	25.09	39.012	
3,650.00	3,650.00	3,632.26	3,624.59	12.87	12.60	92.16	-36.85	978.96	979.94	954.49	25.45	38.511	
3,700.00	3,700.00	3,678.80	3,670.99	13.05	12.77	91.96	-33.53	980.28	981.23	955.44	25.79	38.042	
3,750.00	3,750.00	3,726.72	3,718.77	13.23	12.95	91.76	-30.11	981.60	982.70	956.56	26.15	37.585	
3,800.00	3,800.00	3,778.94	3,770.82	13.41	13.14	91.53	-26.26	983.41	984.15	957.63	26.52	37.114	
3,850.00	3,850.00	3,830.46	3,822.16	13.59	13.33	91.30	-22.26	984.90	985.49	958.61	26.89	36.655	
3,900.00	3,900.00	3,881.01	3,872.52	13.77	13.51	91.05	-18.08	986.30	986.80	959.55	27.25	36.213	
3,950.00	3,950.00	3,931.02	3,922.32	13.94	13.70	90.80	-13.75	987.67	988.10	960.49	27.61	35.784	
4,000.00	4,000.00	3,980.62	3,971.73	14.12	13.88	90.56	-9.66	989.02	989.43	961.45	27.97	35.370	
4,050.00	4,050.00	4,029.15	4,020.09	14.30	14.06	127.45	-5.86	990.38	990.96	962.63	28.33	34.980	
4,100.00	4,099.99	4,077.02	4,067.80	14.48	14.24	127.25	-2.11	991.80	992.93	964.25	28.68	34.619	
4,150.00	4,149.97	4,127.69	4,118.29	14.66	14.42	127.06	1.85	993.36	995.29	966.25	29.05	34.267	
4,200.00	4,199.94	4,179.91	4,170.33	14.84	14.62	126.91	5.89	994.87	997.77	968.36	29.41	33.921	
4,250.00	4,249.91	4,229.65	4,219.90	15.01	14.80	126.77	9.77	996.23	1,000.20	970.43	29.77	33.593	
4,300.00	4,299.88	4,278.86	4,268.93	15.19	14.98	126.61	13.79	997.61	1,002.66	972.53	30.13	33.276	
4,350.00	4,349.85	4,328.71	4,318.59	15.37	15.17	126.46	17.95	999.02	1,005.15	974.66	30.49	32.964	
4,400.00	4,399.82	4,379.62	4,369.30	15.55	15.36	126.30	22.15	1,000.46	1,007.64	976.78	30.86	32.655	
4,450.00	4,449.79	4,431.91	4,421.39	15.72	15.55	126.14	26.42	1,001.82	1,010.03	978.80	31.23	32.344	
4,500.00	4,499.77	4,480.50	4,469.81	15.90	15.73	125.99	30.36	1,003.01	1,012.34	980.75	31.58	32.053	
4,550.00	4,549.74	4,522.66	4,511.80	16.08	15.89	125.86	33.88	1,004.27	1,014.94	983.02	31.91	31.805	
4,600.00	4,599.71	4,565.82	4,554.77	16.26	16.05	125.72	37.63	1,005.89	1,017.92	985.67	32.24	31.570	
4,650.00	4,649.68	4,615.54	4,604.27	16.44	16.23	125.56	41.88	1,007.89	1,021.05	988.44	32.60	31.317	
4,700.00	4,699.65	4,665.84	4,654.36	16.61	16.42	125.41	45.97	1,009.93	1,024.19	991.22	32.97	31.067	
4,750.00	4,749.62	4,717.98	4,706.28	16.79	16.61	125.26	50.33	1,011.95	1,027.26	993.92	33.34	30.813	
4,800.00	4,799.59	4,772.41	4,760.46	16.97	16.82	125.08	55.13	1,013.91	1,030.20	996.48	33.72	30.551	
4,850.00	4,849.56	4,830.27	4,818.09	17.15	17.03	124.90	60.07	1,015.61	1,032.82	998.70	34.12	30.273	
4,900.00	4,899.53	4,884.27	4,871.90	17.33	17.23	124.74	64.41	1,016.86	1,035.12	1,000.63	34.49	30.008	
4,950.00	4,949.50	4,937.09	4,924.56	17.50	17.43	124.61	68.35	1,017.94	1,037.28	1,002.42	34.87	29.750	
5,000.00	4,999.47	4,979.94	4,967.28	17.68	17.59	124.51	71.50	1,018.90	1,039.55	1,004.35	35.20	29.533	
5,050.00	5,049.44	5,022.56	5,009.76	17.86	17.74	124.39	74.81	1,020.15	1,042.16	1,006.64	35.53	29.333	
5,100.00	5,099.41	5,070.54	5,057.56	18.04	17.92	124.26	78.64	1,021.79	1,045.04	1,009.15	35.88	29.125	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 175-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,150.00	5,149.38	5,120.28	5,107.11	18.22	18.11	124.13	82.54	1,023.50	1,047.93	1,011.69	36.24	28.914	
5,200.00	5,199.35	5,174.13	5,160.78	18.40	18.30	124.00	86.55	1,025.29	1,050.75	1,014.13	36.62	28.693	
5,250.00	5,249.32	5,228.67	5,215.17	18.57	18.51	123.89	90.22	1,026.88	1,053.36	1,016.35	37.00	28.468	
5,300.00	5,299.29	5,276.56	5,262.93	18.75	18.68	123.79	93.47	1,028.24	1,055.92	1,018.57	37.35	28.269	
5,350.00	5,349.26	5,326.31	5,312.52	18.93	18.87	123.68	97.11	1,029.68	1,058.55	1,020.83	37.71	28.068	
5,400.00	5,399.23	5,381.02	5,367.08	19.11	19.07	123.56	101.00	1,031.13	1,061.04	1,022.95	38.09	27.853	
5,450.00	5,449.20	5,434.31	5,420.24	19.29	19.26	123.46	104.51	1,032.34	1,063.33	1,024.86	38.47	27.642	
5,500.00	5,499.17	5,485.70	5,471.52	19.47	19.45	123.37	107.70	1,033.41	1,065.52	1,026.69	38.83	27.438	
5,550.00	5,549.14	5,537.68	5,523.40	19.65	19.64	123.29	110.75	1,034.43	1,067.64	1,028.44	39.20	27.234	
5,600.00	5,599.11	5,590.05	5,575.68	19.82	19.83	123.21	113.74	1,035.35	1,069.66	1,030.09	39.57	27.031	
5,650.00	5,649.08	5,647.28	5,632.82	20.00	20.04	123.14	116.78	1,036.13	1,071.47	1,031.51	39.96	26.816	
5,700.00	5,699.05	5,705.83	5,691.31	20.18	20.25	123.09	119.42	1,036.51	1,072.89	1,032.54	40.35	26.592	
5,750.00	5,749.02	5,754.43	5,739.87	20.36	20.42	123.07	121.21	1,036.72	1,074.18	1,033.48	40.70	26.394	
5,800.00	5,798.99	5,804.78	5,790.20	20.54	20.60	123.07	122.68	1,036.96	1,075.46	1,034.40	41.05	26.196	
5,850.00	5,848.96	5,856.00	5,841.41	20.72	20.78	123.10	123.61	1,037.20	1,076.70	1,035.28	41.41	25.999	
5,900.00	5,898.93	5,906.82	5,892.24	20.90	20.96	123.16	123.99	1,037.42	1,077.88	1,036.11	41.77	25.805	
5,950.00	5,948.90	5,957.15	5,942.56	21.08	21.14	123.22	124.31	1,037.62	1,079.05	1,036.92	42.13	25.615	
6,000.00	5,998.87	6,007.47	5,992.88	21.26	21.31	123.28	124.65	1,037.80	1,080.19	1,037.71	42.48	25.428	
6,050.00	6,048.84	6,057.80	6,043.21	21.43	21.49	123.35	124.94	1,037.97	1,081.33	1,038.49	42.84	25.244	
6,100.00	6,098.81	6,108.54	6,093.95	21.61	21.66	123.41	125.17	1,038.12	1,082.44	1,039.25	43.19	25.061	
6,150.00	6,148.78	6,159.50	6,144.91	21.79	21.84	123.48	125.30	1,038.23	1,083.51	1,039.96	43.55	24.881	
6,200.00	6,198.75	6,211.13	6,196.54	21.97	22.02	123.56	125.36	1,038.29	1,084.52	1,040.62	43.90	24.702	
6,250.00	6,248.72	6,262.93	6,248.34	22.15	22.19	123.64	125.38	1,038.27	1,085.45	1,041.20	44.26	24.525	
6,300.00	6,298.69	6,314.06	6,299.47	22.33	22.37	123.71	125.39	1,038.17	1,086.32	1,041.71	44.61	24.352	
6,350.00	6,348.66	6,365.16	6,350.57	22.51	22.54	123.79	125.40	1,038.02	1,087.13	1,042.18	44.96	24.181	
6,400.00	6,398.63	6,415.54	6,400.94	22.69	22.70	123.87	125.39	1,037.84	1,087.92	1,042.61	45.30	24.014	
6,450.00	6,448.60	6,465.61	6,451.01	22.87	22.87	123.94	125.34	1,037.65	1,088.68	1,043.03	45.65	23.849	
6,500.00	6,498.57	6,514.48	6,499.88	23.05	23.03	124.02	125.22	1,037.49	1,089.48	1,043.49	45.99	23.689	
6,550.00	6,548.54	6,563.91	6,549.32	23.23	23.19	124.11	125.02	1,037.38	1,090.32	1,043.99	46.33	23.532	
6,600.00	6,598.51	6,614.72	6,600.13	23.40	23.36	124.19	124.82	1,037.25	1,091.16	1,044.48	46.68	23.376	
6,650.00	6,648.49	6,665.95	6,651.35	23.58	23.53	124.28	124.64	1,037.08	1,091.95	1,044.92	47.03	23.219	
6,700.00	6,698.46	6,717.75	6,703.15	23.76	23.70	124.36	124.54	1,036.82	1,092.66	1,045.29	47.38	23.063	
6,750.00	6,748.43	6,768.72	6,754.13	23.94	23.87	124.44	124.48	1,036.48	1,093.31	1,045.59	47.73	22.908	
6,800.00	6,798.40	6,819.12	6,804.52	24.12	24.04	124.52	124.32	1,036.14	1,093.94	1,045.86	48.07	22.756	
6,850.00	6,848.37	6,869.39	6,854.79	24.30	24.21	124.61	124.03	1,035.78	1,094.54	1,046.13	48.42	22.606	
6,900.00	6,898.34	6,919.61	6,905.01	24.48	24.37	124.70	123.66	1,035.41	1,095.15	1,046.38	48.76	22.458	
6,950.00	6,948.31	6,967.06	6,952.45	24.66	24.53	124.79	123.31	1,035.10	1,095.79	1,046.68	49.10	22.316	
7,000.00	6,998.28	7,013.88	6,999.27	24.84	24.69	124.87	123.15	1,034.92	1,096.57	1,047.13	49.44	22.180	
7,050.00	7,048.25	7,062.43	7,047.82	25.02	24.85	124.94	123.09	1,034.84	1,097.48	1,047.69	49.78	22.046	
7,100.00	7,098.22	7,111.45	7,096.84	25.20	25.01	125.02	122.99	1,034.80	1,098.42	1,048.30	50.12	21.914	
7,150.00	7,148.19	7,160.29	7,145.69	25.38	25.17	125.10	122.86	1,034.81	1,099.42	1,048.95	50.47	21.785	
7,200.00	7,198.16	7,209.10	7,194.50	25.56	25.34	125.18	122.68	1,034.87	1,100.47	1,049.66	50.81	21.658	
7,250.00	7,248.13	7,259.53	7,244.92	25.74	25.51	125.27	122.45	1,034.96	1,101.55	1,050.39	51.16	21.532	
7,300.00	7,298.10	7,310.14	7,295.53	25.91	25.68	125.36	122.16	1,035.02	1,102.59	1,051.09	51.51	21.406	
7,350.00	7,348.07	7,359.29	7,344.68	26.09	25.84	125.45	121.80	1,035.08	1,103.65	1,051.80	51.85	21.285	
7,400.00	7,398.04	7,408.88	7,394.27	26.27	26.01	125.54	121.38	1,035.18	1,104.74	1,052.54	52.20	21.164	
7,450.00	7,448.01	7,461.60	7,446.99	26.45	26.18	125.63	121.06	1,035.22	1,105.77	1,053.21	52.55	21.040	
7,500.00	7,497.98	7,513.53	7,498.91	26.63	26.36	125.71	121.00	1,035.13	1,106.68	1,053.77	52.91	20.917	
7,550.00	7,547.95	7,563.63	7,549.01	26.81	26.53	125.79	120.95	1,035.00	1,107.57	1,054.31	53.26	20.796	
7,600.00	7,597.92	7,613.29	7,598.67	26.99	26.70	125.87	120.83	1,034.88	1,108.45	1,054.84	53.60	20.678	
7,650.00	7,647.89	7,662.38	7,647.76	27.17	26.86	125.94	120.69	1,034.79	1,109.36	1,055.42	53.95	20.563	
7,700.00	7,697.86	7,711.29	7,696.68	27.35	27.02	126.02	120.52	1,034.74	1,110.33	1,056.03	54.29	20.451	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1 — Offset Site Error: 0.00 ft

Survey Program: 175-MWD+HDGM — Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,750.00	7,747.83	7,760.03	7,745.42	27.53	27.19	126.10	120.32	1,034.74	1,111.34	1,056.70	54.64	20.340	
7,800.00	7,797.80	7,808.52	7,793.90	27.71	27.35	126.18	120.12	1,034.80	1,112.42	1,057.44	54.98	20.233	
7,850.00	7,847.77	7,856.80	7,842.19	27.89	27.52	126.25	120.10	1,034.93	1,113.57	1,058.24	55.33	20.127	
7,900.00	7,897.74	7,905.90	7,891.28	28.07	27.69	126.32	120.25	1,035.12	1,114.79	1,059.11	55.68	20.023	
7,950.00	7,947.71	7,955.57	7,940.96	28.25	27.86	126.38	120.34	1,035.33	1,116.03	1,060.00	56.03	19.919	
8,000.00	7,997.68	8,006.40	7,991.79	28.43	28.04	126.45	120.44	1,035.55	1,117.26	1,060.88	56.39	19.815	
8,050.00	8,047.65	8,057.77	8,043.15	28.61	28.22	126.50	120.86	1,035.70	1,118.44	1,061.70	56.74	19.710	
8,100.00	8,097.62	8,108.25	8,093.62	28.79	28.39	126.54	121.44	1,035.80	1,119.57	1,062.47	57.10	19.607	
8,150.00	8,147.59	8,158.55	8,143.93	28.97	28.57	126.59	121.94	1,035.89	1,120.69	1,063.23	57.46	19.505	
8,200.00	8,197.56	8,211.97	8,197.34	29.15	28.76	126.64	122.38	1,035.89	1,121.73	1,063.91	57.82	19.400	
8,250.00	8,247.53	8,265.54	8,250.91	29.33	28.95	126.70	122.72	1,035.73	1,122.61	1,064.42	58.19	19.293	
8,300.00	8,297.50	8,316.38	8,301.75	29.51	29.12	126.76	122.98	1,035.48	1,123.40	1,064.86	58.54	19.190	
8,350.00	8,347.47	8,367.10	8,352.47	29.69	29.30	126.82	123.21	1,035.18	1,124.14	1,065.25	58.90	19.087	
8,400.00	8,397.44	8,416.73	8,402.10	29.86	29.47	126.88	123.37	1,034.89	1,124.88	1,065.64	59.25	18.986	
8,450.00	8,447.41	8,465.96	8,451.33	30.04	29.64	126.94	123.50	1,034.62	1,125.65	1,066.05	59.60	18.888	
8,500.00	8,497.38	8,514.66	8,500.02	30.22	29.81	127.00	123.76	1,034.40	1,126.46	1,066.51	59.95	18.791	
8,550.00	8,547.35	8,564.97	8,550.34	30.40	29.98	127.05	124.21	1,034.21	1,127.31	1,067.01	60.30	18.695	
8,600.00	8,597.32	8,617.05	8,602.41	30.58	30.16	127.09	124.88	1,033.94	1,128.09	1,067.43	60.66	18.596	
8,650.00	8,647.29	8,673.64	8,658.99	30.76	30.36	127.13	125.65	1,033.46	1,128.72	1,067.68	61.03	18.493	
8,700.00	8,697.26	8,732.58	8,717.92	30.94	30.56	127.19	125.93	1,032.53	1,128.96	1,067.55	61.41	18.384	
8,750.00	8,747.23	8,785.93	8,771.26	31.12	30.75	127.27	125.87	1,031.39	1,128.94	1,067.17	61.77	18.277	
8,800.00	8,797.20	8,836.04	8,821.36	31.30	30.92	127.35	125.70	1,030.19	1,128.79	1,066.67	62.12	18.171	
8,813.85	8,811.05	8,847.58	8,832.89	31.35	30.96	127.37	125.67	1,029.93	1,128.77	1,066.56	62.21	18.144	
8,850.00	8,847.18	8,877.67	8,862.98	31.48	31.06	127.41	125.63	1,029.38	1,128.87	1,066.42	62.45	18.077	
8,900.00	8,897.15	8,919.33	8,904.64	31.66	31.20	127.47	125.69	1,028.89	1,129.32	1,066.55	62.78	17.990	
8,950.00	8,947.12	8,965.40	8,950.71	31.84	31.36	127.53	125.75	1,028.59	1,130.05	1,066.94	63.11	17.905	
9,000.00	8,997.09	9,011.46	8,996.76	32.02	31.52	127.59	125.69	1,028.45	1,130.95	1,067.50	63.45	17.824	
9,050.00	9,047.06	9,059.44	9,044.75	32.20	31.68	127.66	125.61	1,028.43	1,131.98	1,068.19	63.80	17.744	
9,100.00	9,097.03	9,107.54	9,092.85	32.38	31.85	127.73	125.64	1,028.49	1,133.10	1,068.96	64.14	17.666	
9,150.00	9,147.00	9,158.16	9,143.46	32.56	32.02	127.79	125.73	1,028.58	1,134.25	1,069.75	64.50	17.586	
9,200.00	9,196.97	9,209.78	9,195.08	32.74	32.20	127.86	125.80	1,028.65	1,135.37	1,070.51	64.86	17.506	
9,250.00	9,246.94	9,267.76	9,253.06	32.92	32.40	127.95	125.66	1,028.44	1,136.26	1,071.02	65.23	17.418	
9,300.00	9,296.91	9,323.27	9,308.57	33.10	32.59	128.04	125.29	1,027.89	1,136.82	1,071.22	65.60	17.329	
9,350.00	9,346.88	9,376.29	9,361.58	33.28	32.77	128.12	125.18	1,027.19	1,137.23	1,071.27	65.96	17.241	
9,400.00	9,396.85	9,428.43	9,413.72	33.46	32.95	128.19	125.33	1,026.38	1,137.51	1,071.20	66.32	17.152	
9,450.00	9,446.82	9,480.20	9,465.48	33.64	33.13	128.25	125.54	1,025.49	1,137.72	1,071.05	66.67	17.064	
9,500.00	9,496.79	9,530.34	9,515.60	33.82	33.30	128.30	125.89	1,024.59	1,137.88	1,070.85	67.03	16.976	
9,550.00	9,546.76	9,580.27	9,565.53	34.00	33.48	128.34	126.55	1,023.70	1,138.05	1,070.67	67.38	16.890	
9,600.00	9,596.73	9,624.94	9,610.18	34.18	33.63	128.36	127.37	1,023.01	1,138.33	1,070.61	67.72	16.809	
9,650.00	9,646.70	9,669.63	9,654.86	34.36	33.79	128.37	128.40	1,022.54	1,138.85	1,070.79	68.06	16.733	
9,700.00	9,696.67	9,711.68	9,696.89	34.54	33.94	128.37	129.49	1,022.34	1,139.65	1,071.26	68.39	16.664	
9,750.00	9,746.64	9,753.35	9,738.55	34.72	34.09	128.37	130.60	1,022.44	1,140.82	1,072.10	68.72	16.601	
9,800.00	9,796.61	10,279.64	10,222.32	34.90	35.65	134.85	25.22	929.16	1,139.78	1,072.86	66.92	17.032	
9,850.00	9,846.58	10,317.10	10,247.35	35.08	35.73	136.30	0.78	915.76	1,122.57	1,055.07	67.50	16.631	
9,900.00	9,896.55	10,350.28	10,268.28	35.26	35.80	137.66	-22.17	904.08	1,106.33	1,038.19	68.13	16.237	
9,950.00	9,946.52	10,367.52	10,278.57	35.44	35.84	138.41	-34.71	898.25	1,091.50	1,022.62	68.87	15.848	
10,000.00	9,996.49	10,385.81	10,289.03	35.62	35.87	139.22	-48.46	892.27	1,078.26	1,008.68	69.58	15.498	
10,050.00	10,046.46	10,402.38	10,298.08	35.80	35.91	139.99	-61.32	887.04	1,066.76	996.51	70.25	15.186	
10,100.00	10,096.43	10,417.43	10,305.93	35.98	35.94	140.69	-73.31	882.47	1,057.11	986.24	70.87	14.917	
10,150.00	10,146.40	10,436.00	10,315.14	36.16	35.98	141.59	-88.51	877.06	1,049.44	978.02	71.42	14.694	
10,200.00	10,196.37	10,449.09	10,321.34	36.34	36.01	142.23	-99.43	873.35	1,043.74	971.83	71.91	14.514	
10,250.00	10,246.34	10,468.61	10,330.26	36.52	36.05	143.20	-115.89	867.83	1,040.00	967.68	72.32	14.380	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 175-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.00	10,296.31	10,486.38	10,338.02	36.70	36.08	144.09	-131.07	862.83	1,038.27	965.62	72.65	14.292	
10,316.79	10,313.09	10,492.00	10,340.41	36.76	36.09	144.37	-135.91	861.26	1,038.16	965.42	72.74	14.272	
10,350.00	10,346.28	10,502.63	10,344.83	36.88	36.12	144.91	-145.10	858.29	1,038.62	965.73	72.89	14.249	SF
10,400.00	10,396.25	10,517.51	10,350.81	37.06	36.15	145.67	-158.09	854.14	1,041.07	968.04	73.04	14.254	
10,450.00	10,446.22	10,530.00	10,355.64	37.24	36.17	146.31	-169.07	850.69	1,045.66	972.58	73.08	14.308	
10,500.00	10,496.19	10,530.00	10,355.64	37.42	36.17	146.31	-169.07	850.69	1,052.51	979.53	72.98	14.422	
10,550.00	10,546.16	10,530.00	10,355.64	37.60	36.17	146.31	-169.07	850.69	1,061.67	988.90	72.77	14.590	
10,600.00	10,596.13	10,530.00	10,355.64	37.78	36.17	146.31	-169.07	850.69	1,073.08	1,000.62	72.46	14.809	
10,650.00	10,646.10	10,560.36	10,366.70	37.96	36.24	147.87	-196.20	842.70	1,085.65	1,013.38	72.27	15.023	
10,700.00	10,696.07	10,566.94	10,368.97	38.14	36.25	148.21	-202.16	841.08	1,100.84	1,028.98	71.86	15.320	
10,750.00	10,746.04	10,573.24	10,371.09	38.32	36.26	148.58	-207.89	839.57	1,117.95	1,046.56	71.39	15.661	
10,800.00	10,796.03	10,579.37	10,373.12	38.50	36.28	149.05	-213.49	838.13	1,136.55	1,065.69	70.86	16.040	
10,850.00	10,846.03	10,585.40	10,375.07	38.67	36.29	149.52	-219.02	836.75	1,156.41	1,086.13	70.29	16.453	
10,900.00	10,896.03	10,591.29	10,376.94	38.85	36.30	112.77	-224.45	835.43	1,177.58	1,107.91	69.67	16.901	
10,950.00	10,946.03	10,596.96	10,378.70	39.03	36.31	113.06	-229.70	834.19	1,200.35	1,131.31	69.04	17.387	
11,000.00	10,996.03	10,626.00	10,387.17	39.21	36.38	114.53	-256.85	828.32	1,225.31	1,156.73	68.58	17.866	
11,050.00	11,046.03	10,626.00	10,387.17	39.39	36.38	114.53	-256.85	828.32	1,250.84	1,182.96	67.88	18.428	
11,100.00	11,096.03	10,626.00	10,387.17	39.57	36.38	114.53	-256.85	828.32	1,277.81	1,210.64	67.16	19.025	
11,150.00	11,146.03	10,626.00	10,387.17	39.74	36.38	114.53	-256.85	828.32	1,306.14	1,239.68	66.46	19.654	
11,200.00	11,196.03	10,626.00	10,387.17	39.92	36.38	114.53	-256.85	828.32	1,335.74	1,269.99	65.76	20.314	
11,250.00	11,246.01	10,626.00	10,387.17	40.09	36.38	-63.20	-256.85	828.32	1,366.25	1,301.19	65.06	20.999	
11,300.00	11,295.76	10,626.00	10,387.17	40.25	36.38	-59.87	-256.85	828.32	1,396.46	1,332.10	64.36	21.699	
11,350.00	11,344.89	10,626.00	10,387.17	40.41	36.38	-56.75	-256.85	828.32	1,426.06	1,362.40	63.65	22.403	
11,400.00	11,393.03	10,626.00	10,387.17	40.55	36.38	-53.85	-256.85	828.32	1,454.87	1,391.91	62.96	23.107	
11,450.00	11,439.82	10,626.00	10,387.17	40.69	36.38	-51.19	-256.85	828.32	1,482.73	1,420.45	62.29	23.805	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.50	0.50	0.50	0.50	-90.35	-0.37	-59.99	59.99				
50.00	50.00	50.50	50.50	0.50	0.50	-90.35	-0.37	-59.99	59.99	58.98	1.01	59.598	
100.00	100.00	100.50	100.50	0.52	0.52	-90.35	-0.37	-59.99	59.99	58.96	1.04	57.908	
150.00	150.00	150.50	150.50	0.59	0.59	-90.35	-0.37	-59.99	59.99	58.81	1.18	50.778	
200.00	200.00	200.50	200.50	0.70	0.70	-90.35	-0.37	-59.99	59.99	58.59	1.41	42.684	
250.00	250.00	250.50	250.50	0.84	0.84	-90.35	-0.37	-59.99	59.99	58.31	1.68	35.776	
300.00	300.00	300.50	300.50	0.99	0.99	-90.35	-0.37	-59.99	59.99	58.02	1.98	30.357	
350.00	350.00	350.50	350.50	1.15	1.15	-90.35	-0.37	-59.99	59.99	57.70	2.29	26.167	
400.00	400.00	400.50	400.50	1.31	1.31	-90.35	-0.37	-59.99	59.99	57.37	2.62	22.899	
450.00	450.00	450.50	450.50	1.48	1.48	-90.35	-0.37	-59.99	59.99	57.04	2.95	20.306	
500.00	500.00	500.50	500.50	1.65	1.65	-90.35	-0.37	-59.99	59.99	56.70	3.29	18.213	
550.00	550.00	550.50	550.50	1.82	1.82	-90.35	-0.37	-59.99	59.99	56.35	3.64	16.494	
600.00	600.00	600.50	600.50	1.99	1.99	-90.35	-0.37	-59.99	59.99	56.01	3.98	15.062	
650.00	650.00	650.50	650.50	2.16	2.17	-90.35	-0.37	-59.99	59.99	55.66	4.33	13.852	
700.00	700.00	700.50	700.50	2.34	2.34	-90.35	-0.37	-59.99	59.99	55.31	4.68	12.818	
750.00	750.00	750.50	750.50	2.51	2.52	-90.35	-0.37	-59.99	59.99	54.96	5.03	11.924	
800.00	800.00	800.50	800.50	2.69	2.69	-90.35	-0.37	-59.99	59.99	54.61	5.38	11.145	
850.00	850.00	850.50	850.50	2.87	2.87	-90.35	-0.37	-59.99	59.99	54.26	5.74	10.460	
900.00	900.00	900.50	900.50	3.04	3.05	-90.35	-0.37	-59.99	59.99	53.90	6.09	9.853	
950.00	950.00	950.50	950.50	3.22	3.22	-90.35	-0.37	-59.99	59.99	53.55	6.44	9.311	
1,000.00	1,000.00	1,000.50	1,000.50	3.40	3.40	-90.35	-0.37	-59.99	59.99	53.19	6.80	8.826	
1,050.00	1,050.00	1,050.50	1,050.50	3.58	3.58	-90.35	-0.37	-59.99	59.99	52.84	7.15	8.388	
1,100.00	1,100.00	1,100.50	1,100.50	3.75	3.75	-90.35	-0.37	-59.99	59.99	52.48	7.51	7.991	
1,150.00	1,150.00	1,150.50	1,150.50	3.93	3.93	-90.35	-0.37	-59.99	59.99	52.13	7.86	7.630	
1,200.00	1,200.00	1,200.50	1,200.50	4.11	4.11	-90.35	-0.37	-59.99	59.99	51.77	8.22	7.300	
1,250.00	1,250.00	1,250.50	1,250.50	4.29	4.29	-90.35	-0.37	-59.99	59.99	51.42	8.57	6.997	
1,300.00	1,300.00	1,300.50	1,300.50	4.46	4.47	-90.35	-0.37	-59.99	59.99	51.06	8.93	6.718	
1,350.00	1,350.00	1,350.50	1,350.50	4.64	4.64	-90.35	-0.37	-59.99	59.99	50.70	9.29	6.460	
1,400.00	1,400.00	1,400.50	1,400.50	4.82	4.82	-90.35	-0.37	-59.99	59.99	50.35	9.64	6.221	
1,450.00	1,450.00	1,450.50	1,450.50	5.00	5.00	-90.35	-0.37	-59.99	59.99	49.99	10.00	5.999	
1,500.00	1,500.00	1,500.50	1,500.50	5.18	5.18	-90.35	-0.37	-59.99	59.99	49.64	10.36	5.793	
1,550.00	1,550.00	1,550.50	1,550.50	5.36	5.36	-90.35	-0.37	-59.99	59.99	49.28	10.71	5.600	
1,600.00	1,600.00	1,600.50	1,600.50	5.53	5.54	-90.35	-0.37	-59.99	59.99	48.92	11.07	5.419	
1,650.00	1,650.00	1,650.50	1,650.50	5.71	5.71	-90.35	-0.37	-59.99	59.99	48.56	11.43	5.250	
1,700.00	1,700.00	1,700.50	1,700.50	5.89	5.89	-90.35	-0.37	-59.99	59.99	48.21	11.78	5.091	
1,750.00	1,750.00	1,750.50	1,750.50	6.07	6.07	-90.35	-0.37	-59.99	59.99	47.85	12.14	4.941	Alert
1,800.00	1,800.00	1,800.50	1,800.50	6.25	6.25	-90.35	-0.37	-59.99	59.99	47.49	12.50	4.800	Alert
1,850.00	1,850.00	1,850.50	1,850.50	6.43	6.43	-90.35	-0.37	-59.99	59.99	47.14	12.86	4.666	Alert
1,900.00	1,900.00	1,900.50	1,900.50	6.61	6.61	-90.35	-0.37	-59.99	59.99	46.78	13.21	4.540	Alert
1,950.00	1,950.00	1,950.50	1,950.50	6.78	6.79	-90.35	-0.37	-59.99	59.99	46.42	13.57	4.421	Alert
2,000.00	2,000.00	2,000.50	2,000.50	6.96	6.97	-90.35	-0.37	-59.99	59.99	46.06	13.93	4.307	Alert
2,050.00	2,050.00	2,050.50	2,050.50	7.14	7.14	-90.35	-0.37	-59.99	59.99	45.71	14.29	4.199	Alert
2,100.00	2,100.00	2,100.50	2,100.50	7.32	7.32	-90.35	-0.37	-59.99	59.99	45.35	14.64	4.097	Alert
2,150.00	2,150.00	2,150.50	2,150.50	7.50	7.50	-90.35	-0.37	-59.99	59.99	44.99	15.00	3.999	Alert
2,200.00	2,200.00	2,200.50	2,200.50	7.68	7.68	-90.35	-0.37	-59.99	59.99	44.63	15.36	3.906	Alert
2,250.00	2,250.00	2,250.50	2,250.50	7.86	7.86	-90.35	-0.37	-59.99	59.99	44.27	15.72	3.817	Alert
2,300.00	2,300.00	2,300.50	2,300.50	8.04	8.04	-90.35	-0.37	-59.99	59.99	43.92	16.07	3.732	Alert
2,350.00	2,350.00	2,350.50	2,350.50	8.22	8.22	-90.35	-0.37	-59.99	59.99	43.56	16.43	3.651	Alert
2,400.00	2,400.00	2,400.50	2,400.50	8.39	8.40	-90.35	-0.37	-59.99	59.99	43.20	16.79	3.573	Alert
2,450.00	2,450.00	2,450.50	2,450.50	8.57	8.57	-90.35	-0.37	-59.99	59.99	42.84	17.15	3.498	Alert
2,500.00	2,500.00	2,500.50	2,500.50	8.75	8.75	-90.35	-0.37	-59.99	59.99	42.49	17.51	3.427	Alert
2,550.00	2,550.00	2,550.50	2,550.50	8.93	8.93	-90.35	-0.37	-59.99	59.99	42.13	17.86	3.358	Alert

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
18,100.00	11,788.00	17,342.09	11,173.00	101.76	100.54	26.11	-6,369.75	-428.65	685.47	550.63	134.85	5.083	
18,150.00	11,788.00	17,407.91	11,173.00	102.42	101.42	26.11	-6,419.75	-428.52	685.46	549.61	135.85	5.046	
18,200.00	11,788.00	17,442.09	11,173.00	103.09	101.88	26.11	-6,469.75	-428.38	685.44	548.87	136.57	5.019	
18,250.00	11,788.00	17,507.91	11,173.00	103.75	102.76	26.11	-6,519.75	-428.25	685.43	547.85	137.57	4.982	Alert
18,300.00	11,788.00	17,542.09	11,173.00	104.42	103.22	26.10	-6,569.75	-428.11	685.41	547.11	138.30	4.956	Alert
18,350.00	11,788.00	17,607.91	11,173.00	105.08	104.10	26.10	-6,619.75	-427.98	685.39	546.09	139.30	4.920	Alert
18,400.00	11,788.00	17,642.09	11,173.00	105.75	104.56	26.10	-6,669.74	-427.84	685.38	545.35	140.03	4.895	Alert
18,450.00	11,788.00	17,707.91	11,173.00	106.42	105.45	26.10	-6,719.74	-427.71	685.36	544.33	141.03	4.860	Alert
18,500.00	11,788.00	17,742.09	11,173.00	107.09	105.91	26.09	-6,769.74	-427.57	685.35	543.58	141.76	4.834	Alert
18,550.00	11,788.00	17,807.91	11,173.00	107.76	106.80	26.09	-6,819.74	-427.44	685.33	542.56	142.77	4.800	Alert
18,600.00	11,788.00	17,842.09	11,173.00	108.43	107.26	26.09	-6,869.74	-427.30	685.32	541.81	143.50	4.776	Alert
18,650.00	11,788.00	17,907.91	11,173.00	109.10	108.15	26.08	-6,919.74	-427.17	685.30	540.79	144.51	4.742	Alert
18,700.00	11,788.00	17,942.09	11,173.00	109.77	108.61	26.08	-6,969.74	-427.03	685.28	540.04	145.25	4.718	Alert
18,750.00	11,788.00	18,007.91	11,173.00	110.44	109.50	26.08	-7,019.74	-426.90	685.27	539.01	146.26	4.685	Alert
18,800.00	11,788.00	18,042.09	11,173.00	111.12	109.97	26.08	-7,069.74	-426.76	685.25	538.26	146.99	4.662	Alert
18,850.00	11,788.00	18,107.91	11,173.00	111.79	110.86	26.07	-7,119.74	-426.62	685.24	537.23	148.01	4.630	Alert
18,900.00	11,788.00	18,142.09	11,173.00	112.47	111.32	26.07	-7,169.74	-426.49	685.22	536.48	148.74	4.607	Alert
18,950.00	11,788.00	18,207.91	11,173.00	113.14	112.22	26.07	-7,219.74	-426.35	685.21	535.45	149.76	4.575	Alert
19,000.00	11,788.00	18,242.09	11,173.00	113.82	112.68	26.07	-7,269.74	-426.22	685.19	534.69	150.50	4.553	Alert
19,050.00	11,788.00	18,307.91	11,173.00	114.49	113.58	26.06	-7,319.74	-426.08	685.17	533.66	151.51	4.522	Alert
19,100.00	11,788.00	18,342.09	11,173.00	115.17	114.04	26.06	-7,369.74	-425.95	685.16	532.91	152.25	4.500	Alert
19,150.00	11,788.00	18,407.91	11,173.00	115.85	114.94	26.06	-7,419.74	-425.81	685.14	531.87	153.27	4.470	Alert
19,200.00	11,788.00	18,442.09	11,173.00	116.53	115.41	26.05	-7,469.74	-425.68	685.13	531.12	154.01	4.449	Alert
19,250.00	11,788.00	18,507.91	11,173.00	117.20	116.31	26.05	-7,519.74	-425.54	685.11	530.08	155.03	4.419	Alert
19,300.00	11,788.00	18,542.09	11,173.00	117.88	116.78	26.05	-7,569.74	-425.41	685.10	529.32	155.77	4.398	Alert
19,350.00	11,788.00	18,607.91	11,173.00	118.56	117.68	26.05	-7,619.74	-425.27	685.08	528.28	156.80	4.369	Alert
19,400.00	11,788.00	18,642.09	11,173.00	119.24	118.14	26.04	-7,669.74	-425.14	685.06	527.53	157.54	4.349	Alert
19,450.00	11,788.00	18,707.91	11,173.00	119.92	119.05	26.04	-7,719.74	-425.00	685.05	526.49	158.56	4.320	Alert
19,500.00	11,788.00	18,742.09	11,173.00	120.61	119.51	26.04	-7,769.74	-424.87	685.03	525.73	159.30	4.300	Alert
19,550.00	11,788.00	18,807.91	11,173.00	121.29	120.42	26.04	-7,819.74	-424.73	685.02	524.69	160.33	4.273	Alert
19,600.00	11,788.00	18,842.09	11,173.00	121.97	120.89	26.03	-7,869.74	-424.59	685.00	523.93	161.08	4.253	Alert
19,650.00	11,788.00	18,907.91	11,173.00	122.65	121.79	26.03	-7,919.74	-424.46	684.99	522.88	162.10	4.226	Alert
19,700.00	11,788.00	18,942.09	11,173.00	123.34	122.26	26.03	-7,969.74	-424.32	684.97	522.12	162.85	4.206	Alert
19,750.00	11,788.00	19,007.91	11,173.00	124.02	123.17	26.03	-8,019.74	-424.19	684.95	521.08	163.88	4.180	Alert
19,800.00	11,788.00	19,042.09	11,173.00	124.71	123.64	26.02	-8,069.74	-424.05	684.94	520.32	164.62	4.161	Alert
19,850.00	11,788.00	19,107.91	11,173.00	125.39	124.54	26.02	-8,119.74	-423.92	684.92	519.27	165.65	4.135	Alert
19,900.00	11,788.00	19,142.09	11,173.00	126.08	125.02	26.02	-8,169.74	-423.78	684.91	518.51	166.40	4.116	Alert
19,950.00	11,788.00	19,207.91	11,173.00	126.76	125.92	26.01	-8,219.74	-423.65	684.89	517.46	167.43	4.091	Alert
20,000.00	11,788.00	19,242.09	11,173.00	127.45	126.40	26.01	-8,269.74	-423.51	684.88	516.70	168.18	4.072	Alert
20,050.00	11,788.00	19,307.91	11,173.00	128.14	127.30	26.01	-8,319.74	-423.38	684.86	515.65	169.21	4.047	Alert
20,100.00	11,788.00	19,342.09	11,173.00	128.82	127.78	26.01	-8,369.74	-423.24	684.84	514.88	169.96	4.029	Alert
20,150.00	11,788.00	19,407.91	11,173.00	129.51	128.69	26.00	-8,419.74	-423.11	684.83	513.83	171.00	4.005	Alert
20,200.00	11,788.00	19,442.09	11,173.00	130.20	129.16	26.00	-8,469.74	-422.97	684.81	513.07	171.75	3.987	Alert
20,250.00	11,788.00	19,507.91	11,173.00	130.89	130.07	26.00	-8,519.74	-422.84	684.80	512.02	172.78	3.963	Alert
20,300.00	11,788.00	19,542.09	11,173.00	131.58	130.54	26.00	-8,569.74	-422.70	684.78	511.25	173.53	3.946	Alert
20,350.00	11,788.00	19,607.91	11,173.00	132.27	131.46	25.99	-8,619.74	-422.56	684.77	510.20	174.57	3.923	Alert
20,400.00	11,788.00	19,642.09	11,173.00	132.96	131.93	25.99	-8,669.74	-422.43	684.75	509.43	175.32	3.906	Alert
20,450.00	11,788.00	19,707.91	11,173.00	133.65	132.84	25.99	-8,719.74	-422.29	684.74	508.38	176.36	3.883	Alert
20,500.00	11,788.00	19,742.09	11,173.00	134.34	133.32	25.99	-8,769.74	-422.16	684.72	507.61	177.11	3.866	Alert
20,550.00	11,788.00	19,807.91	11,173.00	135.03	134.23	25.98	-8,819.74	-422.02	684.70	506.56	178.15	3.843	Alert
20,600.00	11,788.00	19,842.09	11,173.00	135.72	134.71	25.98	-8,869.74	-421.89	684.69	505.79	178.90	3.827	Alert
20,650.00	11,788.00	19,907.91	11,173.00	136.41	135.62	25.98	-8,919.74	-421.75	684.67	504.73	179.94	3.805	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
20,700.00	11,788.00	19,942.09	11,173.00	137.10	136.10	25.97	-8,969.74	-421.62	684.66	503.96	180.70	3.789	Alert
20,750.00	11,788.00	20,007.91	11,173.00	137.79	137.01	25.97	-9,019.74	-421.48	684.64	502.91	181.74	3.767	Alert
20,800.00	11,788.00	20,042.09	11,173.00	138.49	137.49	25.97	-9,069.74	-421.35	684.63	502.14	182.49	3.752	Alert
20,850.00	11,788.00	20,107.91	11,173.00	139.18	138.40	25.97	-9,119.74	-421.21	684.61	501.08	183.53	3.730	Alert
20,900.00	11,788.00	20,142.09	11,173.00	139.87	138.88	25.96	-9,169.74	-421.08	684.59	500.31	184.29	3.715	Alert
20,950.00	11,788.00	20,207.91	11,173.00	140.57	139.80	25.96	-9,219.73	-420.94	684.58	499.25	185.33	3.694	Alert
21,000.00	11,788.00	20,242.09	11,173.00	141.26	140.27	25.96	-9,269.73	-420.81	684.56	498.48	186.09	3.679	Alert
21,050.00	11,788.00	20,307.91	11,173.00	141.96	141.19	25.96	-9,319.73	-420.67	684.55	497.42	187.13	3.658	Alert
21,100.00	11,788.00	20,342.09	11,173.00	142.65	141.67	25.95	-9,369.73	-420.53	684.53	496.65	187.89	3.643	Alert
21,150.00	11,788.00	20,407.91	11,173.00	143.35	142.59	25.95	-9,419.73	-420.40	684.52	495.59	188.93	3.623	Alert
21,200.00	11,788.00	20,442.09	11,173.00	144.04	143.07	25.95	-9,469.73	-420.26	684.50	494.81	189.69	3.609	Alert
21,250.00	11,788.00	20,507.91	11,173.00	144.74	143.98	25.94	-9,519.73	-420.13	684.48	493.75	190.73	3.589	Alert
21,300.00	11,788.00	20,542.09	11,173.00	145.43	144.46	25.94	-9,569.73	-419.99	684.47	492.98	191.49	3.574	Alert
21,350.00	11,788.00	20,607.91	11,173.00	146.13	145.38	25.94	-9,619.73	-419.86	684.45	491.92	192.54	3.555	Alert
21,400.00	11,788.00	20,642.09	11,173.00	146.83	145.86	25.94	-9,669.73	-419.72	684.44	491.14	193.29	3.541	Alert
21,450.00	11,788.00	20,707.91	11,173.00	147.52	146.78	25.93	-9,719.73	-419.59	684.42	490.08	194.34	3.522	Alert
21,500.00	11,788.00	20,742.09	11,173.00	148.22	147.26	25.93	-9,769.73	-419.45	684.41	489.31	195.10	3.508	Alert
21,550.00	11,788.00	20,807.91	11,173.00	148.92	148.18	25.93	-9,819.73	-419.32	684.39	488.24	196.15	3.489	Alert
21,600.00	11,788.00	20,842.09	11,173.00	149.62	148.66	25.93	-9,869.73	-419.18	684.38	487.47	196.91	3.476	Alert
21,650.00	11,788.00	20,907.91	11,173.00	150.31	149.58	25.92	-9,919.73	-419.05	684.36	486.40	197.96	3.457	Alert
21,700.00	11,788.00	20,942.09	11,173.00	151.01	150.06	25.92	-9,969.73	-418.91	684.34	485.63	198.72	3.444	Alert
21,750.00	11,788.00	21,007.91	11,173.00	151.71	150.99	25.92	-10,019.73	-418.77	684.33	484.56	199.76	3.426	Alert
21,753.86	11,788.00	21,004.05	11,173.00	151.76	150.93	25.92	-10,023.59	-418.76	684.33	484.56	199.76	3.426	Alert

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.50	0.50	89.64	5.56	878.86	878.88				
50.00	50.00	48.56	48.56	0.50	0.51	89.63	5.70	878.88	878.90	877.89	1.01	872.497	
100.00	100.00	97.91	97.91	0.52	0.52	89.60	6.14	878.93	878.95	877.91	1.04	845.884	
150.00	150.00	147.43	147.42	0.59	0.55	89.55	6.87	879.02	879.04	877.90	1.14	770.940	
200.00	200.00	199.46	199.44	0.70	0.65	89.50	7.68	879.05	879.09	877.74	1.35	651.497	
229.42	229.42	228.64	228.62	0.78	0.72	89.47	8.11	879.04	879.08	877.58	1.50	587.276	
250.00	250.00	248.92	248.90	0.84	0.77	89.45	8.43	879.04	879.08	877.48	1.61	546.750	
300.00	300.00	298.19	298.16	0.99	0.91	89.39	9.32	879.07	879.12	877.23	1.90	463.438	
350.00	350.00	347.53	347.50	1.15	1.06	89.34	10.13	879.14	879.20	877.00	2.20	398.897	
400.00	400.00	397.36	397.32	1.31	1.22	89.30	10.73	879.25	879.31	876.79	2.52	348.315	
450.00	450.00	451.58	451.53	1.48	1.39	89.27	11.25	879.23	879.30	876.44	2.87	306.839	
500.00	500.00	504.77	504.73	1.65	1.56	89.24	11.71	878.96	879.06	875.85	3.21	273.910	
550.00	550.00	556.05	556.00	1.82	1.73	89.22	12.00	878.60	878.71	875.16	3.55	247.501	
600.00	600.00	605.34	605.29	1.99	1.90	89.19	12.34	878.24	878.35	874.46	3.89	225.898	
650.00	650.00	655.08	655.02	2.16	2.07	89.17	12.73	877.90	878.01	873.78	4.23	207.550	
700.00	700.00	704.81	704.76	2.34	2.23	89.14	13.14	877.57	877.69	873.11	4.57	191.881	
750.00	750.00	754.54	754.49	2.51	2.40	89.12	13.55	877.26	877.38	872.46	4.92	178.358	
800.00	800.00	806.65	806.59	2.69	2.58	89.08	14.03	876.90	877.04	871.77	5.27	166.307	
850.00	850.00	860.15	860.08	2.87	2.77	89.04	14.67	876.33	876.52	870.89	5.63	155.581	
900.00	900.00	911.78	911.70	3.04	2.95	88.99	15.44	875.62	875.85	869.86	5.99	146.238	
950.00	950.00	963.13	963.04	3.22	3.13	88.93	16.32	874.83	875.10	868.75	6.34	137.935	
1,000.00	1,000.00	1,010.65	1,010.54	3.40	3.18	88.87	17.29	874.11	874.35	867.77	6.58	132.903	
1,050.00	1,050.00	1,055.54	1,055.42	3.58	3.19	88.81	18.11	873.64	873.85	867.08	6.77	129.145	
1,100.00	1,100.00	1,099.61	1,099.49	3.75	3.21	88.77	18.79	873.45	873.65	866.69	6.96	125.471	
1,102.28	1,102.28	1,101.60	1,101.48	3.76	3.21	88.77	18.83	873.45	873.65	866.68	6.97	125.306	CC
1,150.00	1,150.00	1,143.21	1,143.08	3.93	3.24	88.72	19.58	873.58	873.82	866.66	7.16	121.964	
1,200.00	1,200.00	1,187.91	1,187.77	4.11	3.27	88.65	20.53	874.02	874.34	866.96	7.38	118.549	
1,250.00	1,250.00	1,233.51	1,233.35	4.29	3.31	88.58	21.71	874.70	875.12	867.52	7.59	115.242	
1,300.00	1,300.00	1,280.00	1,279.81	4.46	3.36	88.49	23.13	875.61	876.13	868.31	7.82	112.029	
1,350.00	1,350.00	1,327.44	1,327.21	4.64	3.42	88.38	24.78	876.69	877.31	869.26	8.06	108.893	
1,400.00	1,400.00	1,374.61	1,374.32	4.82	3.48	88.26	26.61	877.89	878.65	870.35	8.30	105.868	
1,450.00	1,450.00	1,421.50	1,421.15	5.00	3.55	88.13	28.65	879.24	880.15	871.60	8.55	102.954	
1,500.00	1,500.00	1,467.38	1,466.95	5.18	3.63	87.99	30.86	880.72	881.85	873.04	8.80	100.174	
1,550.00	1,550.00	1,512.39	1,511.87	5.36	3.71	87.84	33.25	882.40	883.82	874.76	9.06	97.538	
1,600.00	1,600.00	1,559.99	1,559.35	5.53	3.80	87.67	36.01	884.41	886.04	876.70	9.33	94.958	
1,650.00	1,650.00	1,610.21	1,609.42	5.71	3.91	87.47	39.23	886.52	888.28	878.67	9.61	92.411	
1,700.00	1,700.00	1,658.29	1,657.34	5.89	4.01	87.26	42.60	888.55	890.55	880.66	9.90	89.999	
1,750.00	1,750.00	1,705.17	1,704.04	6.07	4.12	87.04	46.09	890.66	892.99	882.81	10.18	87.731	
1,800.00	1,800.00	1,755.23	1,753.89	6.25	4.24	86.80	49.94	893.01	895.55	885.07	10.48	85.476	
1,850.00	1,850.00	1,806.81	1,805.28	6.43	4.37	86.57	53.74	895.35	898.04	887.25	10.78	83.285	
1,900.00	1,900.00	1,855.58	1,853.87	6.61	4.50	86.35	57.29	897.54	900.51	889.42	11.09	81.222	
1,950.00	1,950.00	1,903.85	1,901.95	6.78	4.63	86.12	61.03	899.77	903.07	891.68	11.39	79.282	
2,000.00	2,000.00	1,955.37	1,953.25	6.96	4.77	85.87	65.13	902.15	905.66	893.95	11.71	77.337	
2,050.00	2,050.00	2,007.35	2,005.01	7.14	4.91	85.62	69.21	904.43	908.15	896.11	12.03	75.468	
2,100.00	2,100.00	2,060.13	2,057.60	7.32	5.07	85.38	73.25	906.60	910.50	898.14	12.36	73.641	
2,150.00	2,150.00	2,111.24	2,108.53	7.50	5.22	85.15	77.04	908.56	912.73	900.04	12.69	71.923	
2,200.00	2,200.00	2,157.56	2,154.69	7.68	5.35	84.95	80.41	910.43	915.06	902.05	13.00	70.367	
2,250.00	2,250.00	2,203.45	2,200.41	7.86	5.49	84.76	83.74	912.46	917.59	904.28	13.32	68.904	
2,300.00	2,300.00	2,247.70	2,244.48	8.04	5.63	84.56	87.10	914.64	920.41	906.78	13.63	67.542	
2,350.00	2,350.00	2,292.31	2,288.87	8.22	5.77	84.35	90.74	917.09	923.54	909.60	13.94	66.259	
2,400.00	2,400.00	2,342.96	2,339.26	8.39	5.93	84.10	95.00	919.96	926.79	912.51	14.28	64.922	
2,450.00	2,450.00	2,393.61	2,389.66	8.57	6.09	83.86	99.25	922.78	930.01	915.39	14.61	63.644	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,500.00	2,500.00	2,443.86	2,439.66	8.75	6.25	83.63	103.39	925.55	933.20	918.25	14.95	62.414	
2,550.00	2,550.00	2,494.44	2,489.99	8.93	6.42	83.40	107.45	928.31	936.38	921.09	15.29	61.232	
2,600.00	2,600.00	2,545.60	2,540.93	9.11	6.59	83.17	111.44	931.06	939.52	923.88	15.64	60.084	
2,650.00	2,650.00	2,596.27	2,593.38	9.29	6.76	82.95	115.41	933.81	942.57	926.58	15.99	58.956	
2,700.00	2,700.00	2,652.82	2,647.71	9.47	6.94	82.73	119.44	936.42	945.41	929.06	16.35	57.835	
2,750.00	2,750.00	2,706.10	2,700.80	9.65	7.12	82.51	123.36	938.73	948.04	931.34	16.70	56.761	
2,800.00	2,800.00	2,758.83	2,753.33	9.83	7.30	82.29	127.35	940.83	950.52	933.46	17.06	55.728	
2,850.00	2,850.00	2,810.77	2,805.09	10.00	7.47	82.07	131.33	942.76	952.88	935.47	17.41	54.735	
2,900.00	2,900.00	2,862.65	2,856.79	10.18	7.65	81.85	135.24	944.57	955.15	937.39	17.76	53.777	
2,950.00	2,950.00	2,908.18	2,902.16	10.36	7.80	81.66	138.70	946.23	957.50	939.40	18.09	52.925	
3,000.00	3,000.00	2,953.99	2,947.79	10.54	7.96	81.47	142.26	948.07	960.06	941.64	18.42	52.115	
3,050.00	3,050.00	2,999.46	2,993.07	10.72	8.12	81.27	145.90	950.08	962.86	944.11	18.75	51.345	
3,100.00	3,100.00	3,044.88	3,038.28	10.90	8.28	81.07	149.68	952.28	965.89	946.81	19.08	50.616	
3,150.00	3,150.00	3,096.17	3,089.33	11.08	8.45	80.84	153.93	954.85	969.03	949.59	19.44	49.853	
3,200.00	3,200.00	3,148.09	3,141.03	11.26	8.64	80.63	157.98	957.38	972.07	952.27	19.80	49.105	
3,250.00	3,250.00	3,195.86	3,188.61	11.44	8.80	80.44	161.60	959.73	975.13	954.99	20.14	48.425	
3,300.00	3,300.00	3,243.92	3,236.47	11.62	8.97	80.25	165.26	962.18	978.28	957.80	20.48	47.770	
3,350.00	3,350.00	3,289.00	3,281.34	11.80	9.13	80.07	168.85	964.61	981.62	960.81	20.81	47.170	
3,400.00	3,400.00	3,334.35	3,326.44	11.97	9.29	79.87	172.73	967.21	985.20	964.06	21.14	46.600	
3,450.00	3,450.00	3,388.41	3,380.22	12.15	9.49	79.64	177.36	970.30	988.79	967.28	21.51	45.963	
3,500.00	3,500.00	3,442.55	3,434.10	12.33	9.68	79.42	181.72	973.22	992.17	970.29	21.88	45.339	
3,550.00	3,550.00	3,494.50	3,485.83	12.51	9.87	79.23	185.70	975.89	995.42	973.17	22.24	44.749	
3,600.00	3,600.00	3,545.80	3,536.92	12.69	10.05	79.04	189.47	978.43	998.55	975.95	22.60	44.178	
3,650.00	3,650.00	3,595.67	3,586.60	12.87	10.23	78.86	193.16	980.88	1,001.68	978.72	22.96	43.635	
3,700.00	3,700.00	3,648.07	3,638.79	13.05	10.41	78.67	197.06	983.40	1,004.77	981.45	23.32	43.088	
3,750.00	3,750.00	3,702.73	3,693.26	13.23	10.61	78.48	200.98	985.83	1,007.66	983.97	23.69	42.531	
3,800.00	3,800.00	3,757.76	3,748.12	13.41	10.80	78.30	204.67	988.05	1,010.32	986.25	24.07	41.981	
3,850.00	3,850.00	3,813.08	3,803.31	13.59	11.00	78.14	207.97	990.07	1,012.72	988.28	24.44	41.436	
3,900.00	3,900.00	3,870.31	3,860.42	13.77	11.20	77.98	211.21	991.82	1,014.80	989.98	24.82	40.885	
3,950.00	3,950.00	3,926.86	3,916.86	13.94	11.40	77.82	214.41	993.15	1,016.54	991.35	25.20	40.343	
4,000.00	4,000.00	3,982.38	3,972.30	14.12	11.59	77.68	217.16	994.21	1,018.00	992.43	25.57	39.813	
4,050.00	4,050.00	4,033.85	4,023.72	14.30	11.77	114.69	219.26	995.07	1,019.37	993.44	25.93	39.320	
4,100.00	4,099.99	4,083.42	4,073.26	14.48	11.94	114.63	220.93	995.98	1,020.97	994.70	26.27	38.859	
4,150.00	4,149.97	4,132.09	4,121.89	14.66	12.11	114.61	222.31	996.96	1,022.83	996.22	26.62	38.427	
4,200.00	4,199.94	4,180.43	4,170.20	14.84	12.27	114.64	223.64	998.03	1,024.92	997.96	26.96	38.015	
4,250.00	4,249.91	4,236.80	4,226.54	15.01	12.47	114.67	225.15	999.19	1,026.94	999.61	27.33	37.573	
4,300.00	4,299.88	4,295.45	4,285.16	15.19	12.67	114.70	226.64	999.93	1,028.55	1,000.84	27.71	37.118	
4,350.00	4,349.85	4,350.80	4,340.50	15.37	12.85	114.73	227.83	1,000.30	1,029.83	1,001.76	28.08	36.681	
4,400.00	4,399.82	4,404.01	4,393.71	15.55	13.04	114.78	228.71	1,000.44	1,030.86	1,002.42	28.43	36.255	
4,450.00	4,449.79	4,454.15	4,443.84	15.72	13.21	114.83	229.45	1,000.54	1,031.83	1,003.05	28.78	35.850	
4,500.00	4,499.77	4,505.13	4,494.81	15.90	13.38	114.88	230.16	1,000.63	1,032.79	1,003.66	29.13	35.451	
4,550.00	4,549.74	4,556.74	4,546.42	16.08	13.55	114.93	230.84	1,000.65	1,033.68	1,004.20	29.49	35.056	
4,600.00	4,599.71	4,606.81	4,596.48	16.26	13.72	114.99	231.44	1,000.63	1,034.52	1,004.69	29.83	34.675	
4,650.00	4,649.68	4,656.27	4,645.95	16.44	13.89	115.04	231.97	1,000.65	1,035.38	1,005.20	30.18	34.305	
4,700.00	4,699.65	4,705.71	4,695.38	16.61	14.06	115.10	232.45	1,000.70	1,036.26	1,005.74	30.53	33.944	
4,750.00	4,749.62	4,755.14	4,744.81	16.79	14.23	115.16	232.93	1,000.78	1,037.18	1,006.30	30.88	33.592	
4,800.00	4,799.59	4,804.82	4,794.49	16.97	14.39	115.22	233.43	1,000.88	1,038.11	1,006.89	31.22	33.247	
4,850.00	4,849.56	4,854.54	4,844.20	17.15	14.56	115.28	233.97	1,000.99	1,039.06	1,007.49	31.57	32.909	
4,900.00	4,899.53	4,906.05	4,895.71	17.33	14.74	115.34	234.50	1,001.07	1,039.98	1,008.06	31.93	32.573	
4,950.00	4,949.50	4,957.62	4,947.28	17.50	14.92	115.40	234.96	1,001.08	1,040.83	1,008.55	32.28	32.241	
5,000.00	4,999.47	5,007.84	4,997.50	17.68	15.09	115.47	235.40	1,001.06	1,041.64	1,009.01	32.63	31.920	
5,050.00	5,049.44	5,058.26	5,047.91	17.86	15.26	115.53	235.87	1,001.01	1,042.43	1,009.44	32.98	31.605	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.00	5,099.41	5,108.81	5,098.46	18.04	15.43	115.59	236.34	1,000.94	1,043.19	1,009.86	33.33	31.295	
5,150.00	5,149.38	5,158.37	5,148.02	18.22	15.60	115.65	236.78	1,000.85	1,043.94	1,010.26	33.68	30.993	
5,200.00	5,199.35	5,206.17	5,195.82	18.40	15.76	115.71	237.06	1,000.87	1,044.77	1,010.74	34.03	30.706	
5,250.00	5,249.32	5,254.87	5,244.52	18.57	15.93	115.79	237.18	1,001.02	1,045.69	1,011.32	34.37	30.424	
5,300.00	5,299.29	5,305.09	5,294.74	18.75	16.10	115.88	237.25	1,001.20	1,046.63	1,011.91	34.72	30.145	
5,350.00	5,349.26	5,355.28	5,344.93	18.93	16.27	115.96	237.31	1,001.36	1,047.56	1,012.49	35.07	29.871	
5,400.00	5,399.23	5,405.45	5,395.10	19.11	16.44	116.04	237.36	1,001.52	1,048.48	1,013.06	35.42	29.602	
5,450.00	5,449.20	5,455.89	5,445.53	19.29	16.61	116.13	237.42	1,001.66	1,049.39	1,013.62	35.77	29.337	
5,500.00	5,499.17	5,506.51	5,496.15	19.47	16.78	116.21	237.50	1,001.77	1,050.27	1,014.15	36.12	29.075	
5,550.00	5,549.14	5,556.89	5,546.54	19.65	16.95	116.29	237.59	1,001.85	1,051.13	1,014.65	36.48	28.818	
5,600.00	5,599.11	5,607.17	5,596.82	19.82	17.13	116.37	237.67	1,001.92	1,051.97	1,015.14	36.83	28.565	
5,650.00	5,649.08	5,657.76	5,647.40	20.00	17.30	116.45	237.77	1,001.96	1,052.80	1,015.62	37.18	28.316	
5,700.00	5,699.05	5,708.42	5,698.07	20.18	17.47	116.53	237.90	1,001.96	1,053.59	1,016.06	37.53	28.070	
5,750.00	5,749.02	5,758.70	5,748.35	20.36	17.65	116.61	238.06	1,001.93	1,054.36	1,016.48	37.89	27.830	
5,800.00	5,798.99	5,808.95	5,798.60	20.54	17.82	116.68	238.23	1,001.88	1,055.13	1,016.89	38.24	27.594	
5,850.00	5,848.96	5,858.91	5,848.56	20.72	17.99	116.76	238.38	1,001.84	1,055.88	1,017.30	38.59	27.363	
5,900.00	5,898.93	5,908.94	5,898.59	20.90	18.16	116.83	238.48	1,001.80	1,056.64	1,017.70	38.94	27.137	
5,950.00	5,948.90	5,959.48	5,949.13	21.08	18.33	116.91	238.60	1,001.74	1,057.39	1,018.10	39.29	26.913	
6,000.00	5,998.87	6,009.93	5,999.57	21.26	18.51	116.99	238.76	1,001.65	1,058.11	1,018.47	39.64	26.693	
6,050.00	6,048.84	6,060.08	6,049.73	21.43	18.68	117.06	238.95	1,001.54	1,058.82	1,018.83	39.99	26.476	
6,100.00	6,098.81	6,110.34	6,099.98	21.61	18.85	117.13	239.18	1,001.41	1,059.52	1,019.18	40.34	26.263	
6,150.00	6,148.78	6,160.77	6,150.42	21.79	19.02	117.20	239.43	1,001.26	1,060.20	1,019.51	40.69	26.053	
6,200.00	6,198.75	6,211.33	6,200.97	21.97	19.19	117.27	239.69	1,001.09	1,060.87	1,019.82	41.04	25.847	
6,250.00	6,248.72	6,262.03	6,251.67	22.15	19.36	117.34	239.85	1,000.90	1,061.50	1,020.10	41.39	25.644	
6,300.00	6,298.69	6,312.51	6,302.15	22.33	19.53	117.42	239.92	1,000.69	1,062.10	1,020.36	41.74	25.445	
6,350.00	6,348.66	6,362.85	6,352.49	22.51	19.70	117.49	240.01	1,000.46	1,062.69	1,020.60	42.09	25.249	
6,400.00	6,398.63	6,411.81	6,401.45	22.69	19.86	117.57	240.13	1,000.24	1,063.28	1,020.85	42.43	25.058	
6,450.00	6,448.60	6,460.18	6,449.82	22.87	20.03	117.63	240.31	1,000.08	1,063.95	1,021.17	42.78	24.872	
6,500.00	6,498.57	6,509.34	6,498.98	23.05	20.20	117.70	240.52	999.97	1,064.68	1,021.55	43.13	24.688	
6,550.00	6,548.54	6,558.79	6,548.43	23.23	20.37	117.78	240.66	999.91	1,065.44	1,021.96	43.48	24.506	
6,600.00	6,598.51	6,608.84	6,598.48	23.40	20.54	117.86	240.72	999.86	1,066.21	1,022.39	43.83	24.329	
6,650.00	6,648.49	6,659.05	6,648.69	23.58	20.71	117.94	240.76	999.82	1,066.98	1,022.80	44.18	24.153	
6,700.00	6,698.46	6,710.03	6,699.66	23.76	20.88	118.02	240.79	999.74	1,067.72	1,023.19	44.53	23.980	
6,750.00	6,748.43	6,761.09	6,750.73	23.94	21.05	118.09	240.89	999.60	1,068.41	1,023.53	44.88	23.808	
6,800.00	6,798.40	6,809.40	6,799.03	24.12	21.22	118.17	240.97	999.49	1,069.12	1,023.90	45.22	23.641	
6,850.00	6,848.37	6,857.93	6,847.57	24.30	21.38	118.24	240.99	999.45	1,069.91	1,024.34	45.57	23.478	
6,900.00	6,898.34	6,907.94	6,897.58	24.48	21.55	118.33	240.98	999.45	1,070.72	1,024.81	45.92	23.318	
6,950.00	6,948.31	6,957.98	6,947.62	24.66	21.72	118.41	240.96	999.45	1,071.54	1,025.28	46.26	23.162	
7,000.00	6,998.28	7,008.16	6,997.80	24.84	21.88	118.49	240.94	999.45	1,072.35	1,025.75	46.60	23.010	
7,050.00	7,048.25	7,058.29	7,047.93	25.02	22.04	118.57	240.90	999.43	1,073.16	1,026.21	46.95	22.860	
7,100.00	7,098.22	7,108.28	7,097.91	25.20	22.20	118.66	240.86	999.41	1,073.96	1,026.67	47.29	22.712	
7,150.00	7,148.19	7,158.13	7,147.77	25.38	22.36	118.74	240.78	999.40	1,074.77	1,027.14	47.63	22.566	
7,200.00	7,198.16	7,207.77	7,197.41	25.56	22.52	118.83	240.63	999.42	1,075.59	1,027.62	47.97	22.423	
7,250.00	7,248.13	7,257.28	7,246.91	25.74	22.68	118.92	240.40	999.46	1,076.43	1,028.12	48.31	22.283	
7,300.00	7,298.10	7,306.65	7,296.29	25.91	22.84	119.01	240.17	999.52	1,077.30	1,028.65	48.65	22.145	
7,350.00	7,348.07	7,356.10	7,345.73	26.09	23.01	119.11	239.94	999.61	1,078.20	1,029.21	48.99	22.009	
7,400.00	7,398.04	7,405.62	7,395.25	26.27	23.17	119.20	239.72	999.73	1,079.12	1,029.79	49.33	21.875	
7,450.00	7,448.01	7,454.87	7,444.51	26.45	23.33	119.29	239.49	999.86	1,080.07	1,030.39	49.67	21.743	
7,500.00	7,497.98	7,503.96	7,493.59	26.63	23.49	119.38	239.27	1,000.04	1,081.06	1,031.04	50.02	21.614	
7,550.00	7,547.95	7,554.05	7,543.68	26.81	23.66	119.47	239.05	1,000.24	1,082.08	1,031.72	50.36	21.486	
7,600.00	7,597.92	7,604.63	7,594.26	26.99	23.82	119.57	238.82	1,000.42	1,083.07	1,032.37	50.71	21.359	
7,650.00	7,647.89	7,655.30	7,644.93	27.17	23.99	119.66	238.57	1,000.57	1,084.04	1,032.99	51.06	21.232	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM

Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,700.00	7,697.86	7,706.00	7,695.63	27.35	24.16	119.75	238.33	1,000.69	1,084.98	1,033.58	51.40	21.107	
7,750.00	7,747.83	7,756.12	7,745.75	27.53	24.32	119.85	238.10	1,000.78	1,085.90	1,034.15	51.75	20.984	
7,800.00	7,797.80	7,806.18	7,795.81	27.71	24.49	119.94	237.87	1,000.87	1,086.82	1,034.72	52.09	20.863	
7,850.00	7,847.77	7,857.54	7,847.17	27.89	24.66	120.04	237.57	1,000.93	1,087.70	1,035.26	52.44	20.741	
7,900.00	7,897.74	7,908.90	7,898.53	28.07	24.83	120.14	237.18	1,000.93	1,088.53	1,035.74	52.79	20.620	
7,950.00	7,947.71	7,958.22	7,947.84	28.25	24.99	120.24	236.73	1,000.94	1,089.34	1,036.21	53.13	20.502	
8,000.00	7,997.68	8,007.75	7,997.38	28.43	25.15	120.34	236.24	1,000.96	1,090.18	1,036.70	53.48	20.386	
8,050.00	8,047.65	8,057.12	8,046.74	28.61	25.32	120.45	235.67	1,001.02	1,091.05	1,037.23	53.82	20.272	
8,100.00	8,097.62	8,106.75	8,096.37	28.79	25.48	120.56	235.00	1,001.11	1,091.94	1,037.78	54.16	20.160	
8,150.00	8,147.59	8,156.98	8,146.59	28.97	25.64	120.68	234.22	1,001.22	1,092.83	1,038.32	54.51	20.049	
8,200.00	8,197.56	8,207.32	8,196.92	29.15	25.81	120.80	233.37	1,001.31	1,093.72	1,038.86	54.85	19.938	
8,250.00	8,247.53	8,257.85	8,247.44	29.33	25.98	120.92	232.55	1,001.38	1,094.58	1,039.38	55.20	19.829	
8,300.00	8,297.50	8,308.84	8,298.43	29.51	26.15	121.04	231.79	1,001.41	1,095.42	1,039.87	55.55	19.720	
8,350.00	8,347.47	8,360.26	8,349.85	29.69	26.32	121.16	231.07	1,001.37	1,096.20	1,040.30	55.90	19.610	
8,400.00	8,397.44	8,409.12	8,398.70	29.86	26.48	121.27	230.46	1,001.30	1,096.96	1,040.72	56.24	19.504	
8,450.00	8,447.41	8,456.86	8,446.43	30.04	26.64	121.36	230.03	1,001.30	1,097.81	1,041.23	56.58	19.402	
8,500.00	8,497.38	8,506.63	8,496.21	30.22	26.80	121.45	229.73	1,001.36	1,098.74	1,041.81	56.93	19.301	
8,550.00	8,547.35	8,557.35	8,546.93	30.40	26.97	121.54	229.60	1,001.37	1,099.64	1,042.36	57.28	19.199	
8,600.00	8,597.32	8,606.84	8,596.41	30.58	27.14	121.61	229.62	1,001.36	1,100.53	1,042.91	57.62	19.098	
8,650.00	8,647.29	8,656.04	8,645.61	30.76	27.31	121.68	229.81	1,001.37	1,101.46	1,043.49	57.97	19.000	
8,700.00	8,697.26	8,710.01	8,699.58	30.94	27.50	121.74	230.17	1,001.29	1,102.33	1,043.99	58.34	18.895	
8,750.00	8,747.23	8,764.73	8,754.30	31.12	27.69	121.80	230.64	1,000.97	1,102.99	1,044.28	58.71	18.788	
8,800.00	8,797.20	8,819.93	8,809.49	31.30	27.88	121.85	231.23	1,000.39	1,103.43	1,044.35	59.08	18.678	
8,850.00	8,847.18	8,873.65	8,863.20	31.48	28.07	121.89	231.90	999.58	1,103.64	1,044.20	59.44	18.568	
8,900.00	8,897.15	8,925.16	8,914.70	31.66	28.24	121.94	232.55	998.70	1,103.76	1,043.96	59.80	18.459	
8,950.00	8,947.12	8,975.81	8,965.34	31.84	28.42	121.98	233.19	997.77	1,103.81	1,043.67	60.15	18.351	
9,000.00	8,997.09	9,025.78	9,015.30	32.02	28.59	122.01	233.94	996.84	1,103.87	1,043.37	60.50	18.245	
9,050.00	9,047.06	9,073.32	9,062.82	32.20	28.76	122.03	234.78	995.97	1,103.96	1,043.11	60.85	18.143	
9,100.00	9,097.03	9,119.57	9,109.06	32.38	28.92	122.06	235.61	995.28	1,104.21	1,043.01	61.19	18.045	
9,150.00	9,147.00	9,166.04	9,155.52	32.56	29.08	122.08	236.44	994.74	1,104.62	1,043.09	61.54	17.951	
9,200.00	9,196.97	9,212.66	9,202.13	32.74	29.24	122.11	237.20	994.35	1,105.19	1,043.31	61.88	17.860	
9,250.00	9,246.94	9,260.62	9,250.09	32.92	29.41	122.15	237.90	994.09	1,105.90	1,043.67	62.23	17.772	
9,300.00	9,296.91	9,315.89	9,305.35	33.10	29.60	122.19	238.57	993.70	1,106.53	1,043.93	62.60	17.677	
9,350.00	9,346.88	9,371.34	9,360.79	33.28	29.79	122.25	238.96	993.07	1,106.90	1,043.94	62.97	17.579	
9,400.00	9,396.85	9,423.27	9,412.71	33.46	29.97	122.32	239.12	992.29	1,107.10	1,043.77	63.32	17.483	
9,450.00	9,446.82	9,468.31	9,457.75	33.64	30.13	122.37	239.42	991.69	1,107.38	1,043.72	63.66	17.394	
9,500.00	9,496.79	9,513.36	9,502.79	33.82	30.28	122.40	240.06	991.26	1,107.88	1,043.88	64.00	17.310	
9,550.00	9,546.76	9,559.58	9,549.00	34.00	30.45	122.43	240.96	990.98	1,108.59	1,044.24	64.34	17.229	
9,600.00	9,596.73	9,605.82	9,595.23	34.18	30.61	122.44	241.95	990.85	1,109.46	1,044.77	64.69	17.151	
9,650.00	9,646.70	9,658.96	9,648.36	34.36	30.80	122.46	243.12	990.72	1,110.36	1,045.30	65.05	17.068	
9,700.00	9,696.67	9,713.16	9,702.54	34.54	30.99	122.49	244.25	990.42	1,111.09	1,045.66	65.42	16.983	
9,750.00	9,746.64	9,770.15	9,759.53	34.72	31.19	122.53	244.96	989.84	1,111.56	1,045.76	65.80	16.894	
9,800.00	9,796.61	9,824.37	9,813.75	34.90	31.37	122.60	245.08	989.02	1,111.74	1,045.58	66.16	16.804	
9,850.00	9,846.58	9,875.79	9,865.16	35.08	31.55	122.66	245.37	988.13	1,111.84	1,045.32	66.52	16.715	
9,900.00	9,896.55	9,931.95	9,921.30	35.26	31.74	122.71	246.07	986.98	1,111.79	1,044.91	66.89	16.622	
9,950.00	9,946.52	9,990.69	9,980.00	35.44	31.95	122.72	247.38	985.29	1,111.38	1,044.12	67.26	16.524	
10,000.00	9,996.49	10,034.71	10,023.98	35.62	32.10	122.72	248.56	983.96	1,110.91	1,043.31	67.60	16.434	
10,050.00	10,046.46	10,078.89	10,068.14	35.80	32.26	122.72	249.75	982.86	1,110.70	1,042.76	67.94	16.348	
10,060.00	10,056.45	10,087.73	10,076.97	35.83	32.29	122.72	249.99	982.66	1,110.69	1,042.68	68.01	16.332	
10,100.00	10,096.43	10,117.45	10,106.67	35.98	32.39	122.72	250.83	982.17	1,110.86	1,042.59	68.26	16.273	
10,150.00	10,146.40	10,155.09	10,144.30	36.16	32.53	122.72	251.97	981.92	1,111.57	1,042.99	68.58	16.208	
10,200.00	10,196.37	10,194.56	10,183.74	36.34	32.67	122.71	253.25	982.08	1,112.83	1,043.93	68.90	16.152	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,250.00	10,246.34	10,237.61	10,226.77	36.52	32.82	122.70	254.69	982.57	1,114.45	1,045.22	69.23	16.098	
10,300.00	10,296.31	10,280.63	10,269.76	36.70	32.97	122.70	256.14	983.32	1,116.38	1,046.82	69.56	16.050	
10,350.00	10,346.28	10,323.51	10,312.60	36.88	33.12	122.69	257.59	984.33	1,118.62	1,048.74	69.88	16.008	
10,400.00	10,396.25	10,366.35	10,355.40	37.06	33.28	122.68	259.05	985.62	1,121.18	1,050.98	70.20	15.971	
10,450.00	10,446.22	10,410.50	10,399.49	37.24	33.43	122.68	260.44	987.21	1,124.03	1,053.50	70.53	15.937	
10,500.00	10,496.19	10,454.86	10,443.80	37.42	33.59	122.70	261.54	989.06	1,127.13	1,056.27	70.86	15.907	
10,550.00	10,546.16	10,501.81	10,490.70	37.60	33.76	122.74	262.31	991.23	1,130.43	1,059.24	71.19	15.878	
10,600.00	10,596.13	10,549.84	10,538.67	37.78	33.92	122.81	262.53	993.58	1,133.83	1,062.29	71.54	15.849	
10,650.00	10,646.10	10,653.52	10,642.28	37.96	34.28	123.03	261.46	996.73	1,136.42	1,064.29	72.12	15.757	
10,700.00	10,696.07	10,708.93	10,697.68	38.14	34.46	123.16	260.49	996.76	1,137.32	1,064.83	72.49	15.690	
10,750.00	10,746.04	10,761.77	10,750.52	38.32	34.64	123.27	259.67	996.64	1,138.08	1,065.24	72.84	15.624	
10,800.00	10,796.03	10,808.17	10,796.92	38.50	34.80	123.35	259.31	996.54	1,138.63	1,065.44	73.18	15.559	
10,850.00	10,846.03	10,856.20	10,844.94	38.67	34.96	123.37	259.39	996.52	1,138.93	1,065.40	73.53	15.490	
10,900.00	10,896.03	10,907.80	10,896.54	38.85	35.15	86.24	259.67	996.48	1,138.93	1,065.04	73.89	15.414	
10,950.00	10,946.03	10,965.93	10,954.67	39.03	35.35	86.23	259.91	996.29	1,138.79	1,064.53	74.27	15.334	
11,000.00	10,996.03	11,339.09	11,311.55	39.21	36.49	89.86	187.63	944.56	1,129.75	1,056.07	73.68	15.334	
11,050.00	11,046.03	11,365.69	11,333.61	39.39	36.56	90.58	174.15	938.33	1,116.28	1,042.07	74.21	15.043	
11,100.00	11,096.03	11,390.48	11,353.46	39.57	36.62	91.32	160.28	933.05	1,103.96	1,029.22	74.74	14.770	
11,150.00	11,146.03	11,422.00	11,377.60	39.74	36.70	92.37	140.91	927.10	1,092.99	1,017.76	75.23	14.528	
11,200.00	11,196.03	11,454.82	11,401.47	39.92	36.77	93.55	119.17	921.26	1,083.12	1,007.41	75.71	14.306	
11,250.00	11,246.01	11,503.21	11,434.53	40.09	36.88	-85.06	84.99	912.38	1,073.86	997.74	76.12	14.107	
11,300.00	11,295.76	11,553.16	11,465.77	40.25	36.99	-84.04	47.21	902.83	1,064.94	988.41	76.53	13.915	
11,350.00	11,344.89	11,601.54	11,493.00	40.41	37.10	-83.06	8.44	893.12	1,056.21	979.27	76.94	13.728	
11,400.00	11,393.03	11,639.83	11,512.36	40.55	37.18	-82.44	-23.63	885.21	1,047.80	970.46	77.33	13.549	
11,450.00	11,439.82	11,675.13	11,528.51	40.69	37.26	-81.92	-54.17	877.96	1,039.90	962.21	77.69	13.385	
11,500.00	11,484.90	11,709.85	11,542.77	40.82	37.34	-81.40	-85.02	870.88	1,032.50	954.50	78.00	13.237	
11,550.00	11,527.92	11,730.46	11,550.55	40.94	37.38	-81.36	-103.68	866.90	1,025.82	947.59	78.24	13.112	
11,600.00	11,568.56	11,752.49	11,558.40	41.05	37.43	-81.24	-123.89	862.99	1,020.05	941.63	78.42	13.008	
11,650.00	11,608.52	11,775.16	11,565.97	41.15	37.49	-81.09	-144.95	859.36	1,015.11	936.56	78.55	12.924	
11,700.00	11,641.49	11,802.00	11,574.25	41.25	37.55	-80.81	-170.20	855.59	1,010.96	932.31	78.65	12.854	
11,750.00	11,673.22	11,830.75	11,582.60	41.36	37.62	-80.54	-197.47	851.97	1,007.35	928.60	78.74	12.793	
11,800.00	11,701.46	11,865.58	11,592.40	41.47	37.71	-80.24	-230.65	847.94	1,003.91	925.07	78.85	12.732	
11,850.00	11,726.00	11,897.00	11,600.93	41.58	37.78	-80.11	-260.71	844.62	1,000.56	921.62	78.94	12.675	
11,900.00	11,746.65	11,932.02	11,609.32	41.68	37.88	-80.03	-294.53	841.29	997.31	918.26	79.05	12.616	
11,950.00	11,763.25	11,963.38	11,615.19	41.79	37.96	-80.04	-325.23	838.62	994.28	915.12	79.16	12.561	
12,000.00	11,775.68	11,992.00	11,619.18	41.90	38.04	-80.11	-353.48	836.47	991.45	912.18	79.27	12.508	
12,050.00	11,783.85	12,029.93	11,622.55	42.00	38.14	-80.19	-391.16	833.91	988.69	909.26	79.42	12.448	
12,100.00	11,787.68	12,071.00	11,623.84	42.11	38.25	-80.34	-432.14	831.46	985.99	906.38	79.61	12.385	
12,150.00	11,788.00	12,107.27	11,623.51	42.22	38.35	-80.40	-468.35	829.47	983.25	903.45	79.80	12.321	
12,200.00	11,788.00	12,158.47	11,622.65	42.33	38.51	-80.33	-519.47	826.69	980.61	900.55	80.06	12.248	
12,250.00	11,788.00	12,209.80	11,622.15	42.46	38.67	-80.27	-570.72	823.88	977.90	897.55	80.35	12.171	
12,300.00	11,788.00	12,257.72	11,621.68	42.60	38.85	-80.21	-618.57	821.29	975.22	894.57	80.65	12.093	
12,350.00	11,788.00	12,304.75	11,621.08	42.76	39.02	-80.15	-665.53	818.80	972.62	891.66	80.96	12.013	
12,400.00	11,788.00	12,345.35	11,620.65	42.91	39.18	-80.11	-706.09	816.95	970.37	889.10	81.27	11.940	
12,450.00	11,788.00	12,385.99	11,620.43	43.09	39.35	-80.08	-746.70	815.53	968.60	887.00	81.60	11.870	
12,500.00	11,788.00	12,427.79	11,620.42	43.27	39.53	-80.07	-788.49	814.50	967.28	885.33	81.96	11.803	
12,550.00	11,788.00	12,469.84	11,620.61	43.48	39.72	-80.07	-830.53	813.84	966.38	884.04	82.34	11.737	
12,600.00	11,788.00	12,508.34	11,620.97	43.68	39.91	-80.09	-869.02	813.63	965.94	883.23	82.71	11.678	
12,607.09	11,788.00	12,513.45	11,621.02	43.71	39.93	-80.09	-874.13	813.64	965.93	883.17	82.77	11.670	
12,650.00	11,788.00	12,544.38	11,621.40	43.91	40.08	-80.12	-905.06	813.97	966.20	883.10	83.10	11.627	
12,700.00	11,788.00	12,582.00	11,621.94	44.13	40.27	-80.16	-942.66	814.90	967.18	883.68	83.50	11.583	
12,750.00	11,788.00	12,632.05	11,622.67	44.38	40.54	-80.22	-992.69	816.46	968.50	884.48	84.02	11.527	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,800.00	11,788.00	12,684.45	11,623.33	44.63	40.82	-80.27	-1,045.06	817.95	969.70	885.14	84.55	11.468	
12,850.00	11,788.00	12,731.90	11,624.04	44.89	41.10	-80.32	-1,092.48	819.34	970.91	885.81	85.10	11.409	
12,900.00	11,788.00	12,779.62	11,624.96	45.16	41.38	-80.39	-1,140.17	820.86	972.23	886.58	85.65	11.351	
12,950.00	11,788.00	12,825.58	11,625.59	45.45	41.66	-80.44	-1,186.10	822.44	973.71	887.50	86.22	11.294	
13,000.00	11,788.00	12,872.13	11,625.73	45.73	41.95	-80.47	-1,232.61	824.16	975.40	888.61	86.79	11.239	
13,050.00	11,788.00	12,922.91	11,625.51	46.04	42.29	-80.47	-1,283.37	826.01	977.15	889.72	87.42	11.177	
13,100.00	11,788.00	12,977.46	11,624.96	46.35	42.65	-80.46	-1,337.88	827.88	978.82	890.73	88.09	11.111	
13,150.00	11,788.00	13,043.32	11,624.14	46.67	43.11	-80.42	-1,403.71	829.32	979.91	891.02	88.89	11.024	
13,200.00	11,788.00	13,096.43	11,623.33	47.00	43.50	-80.38	-1,456.81	829.87	980.44	890.86	89.59	10.944	
13,250.00	11,788.00	13,146.49	11,622.33	47.34	43.87	-80.32	-1,506.86	830.33	980.96	890.68	90.28	10.866	
13,300.00	11,788.00	13,210.14	11,620.76	47.68	44.35	-80.23	-1,570.49	830.44	981.16	890.06	91.10	10.770	
13,350.00	11,788.00	13,271.52	11,619.18	48.04	44.83	-80.13	-1,631.85	829.65	980.65	888.72	91.93	10.668	
13,400.00	11,788.00	13,328.75	11,618.69	48.40	45.29	-80.09	-1,689.06	828.59	979.71	886.98	92.73	10.565	
13,450.00	11,788.00	13,381.75	11,618.93	48.78	45.73	-80.09	-1,742.06	827.42	978.48	884.95	93.53	10.462	
13,500.00	11,788.00	13,433.72	11,619.04	49.15	46.15	-80.09	-1,794.01	826.14	977.15	882.83	94.33	10.359	
13,550.00	11,788.00	13,489.96	11,619.02	49.54	46.63	-80.07	-1,850.23	824.49	975.61	880.43	95.18	10.250	
13,600.00	11,788.00	13,546.29	11,618.91	49.94	47.11	-80.04	-1,906.51	822.45	973.75	877.71	96.04	10.139	
13,650.00	11,788.00	13,598.39	11,618.69	50.34	47.57	-80.00	-1,958.58	820.35	971.70	874.81	96.89	10.029	
13,700.00	11,788.00	13,646.31	11,618.45	50.75	48.00	-79.97	-2,006.45	818.30	969.55	871.84	97.70	9.923	
13,750.00	11,788.00	13,689.10	11,618.55	51.17	48.39	-79.96	-2,049.21	816.80	967.70	869.20	98.50	9.824	
13,800.00	11,788.00	13,731.09	11,618.99	51.59	48.77	-79.97	-2,091.18	815.71	966.23	866.94	99.29	9.731	
13,850.00	11,788.00	13,771.19	11,619.49	52.02	49.14	-79.99	-2,131.28	815.07	965.24	865.15	100.09	9.644	
13,900.00	11,788.00	13,811.31	11,619.97	52.45	49.52	-80.02	-2,171.39	814.84	964.76	863.87	100.89	9.563	
13,950.00	11,788.00	13,860.72	11,620.55	52.90	49.99	-80.05	-2,220.80	814.84	964.56	862.76	101.80	9.475	
14,000.00	11,788.00	13,910.81	11,621.13	53.35	50.47	-80.08	-2,270.88	814.85	964.36	861.64	102.72	9.388	
14,050.00	11,788.00	13,957.15	11,621.38	53.81	50.92	-80.10	-2,317.23	814.89	964.26	860.64	103.62	9.306	
14,052.58	11,788.00	13,959.55	11,621.37	53.83	50.95	-80.10	-2,319.62	814.89	964.26	860.59	103.67	9.301	
14,100.00	11,788.00	14,003.63	11,621.07	54.26	51.38	-80.08	-2,363.70	815.00	964.35	859.83	104.52	9.227	
14,150.00	11,788.00	14,057.79	11,620.24	54.73	51.92	-80.03	-2,417.85	815.04	964.41	858.90	105.51	9.140	
14,200.00	11,788.00	14,112.00	11,619.15	55.20	52.46	-79.96	-2,472.05	814.79	964.26	857.76	106.51	9.054	
14,250.00	11,788.00	14,157.67	11,617.99	55.68	52.93	-79.89	-2,517.71	814.60	964.17	856.75	107.42	8.975	
14,262.80	11,788.00	14,169.82	11,617.65	55.81	53.06	-79.87	-2,529.85	814.55	964.17	856.51	107.66	8.955	
14,300.00	11,788.00	14,203.75	11,616.63	56.17	53.41	-79.81	-2,563.76	814.48	964.21	855.87	108.34	8.900	
14,350.00	11,788.00	14,245.91	11,615.61	56.66	53.85	-79.75	-2,605.92	814.70	964.59	855.35	109.23	8.830	
14,400.00	11,788.00	14,288.10	11,614.98	57.15	54.28	-79.72	-2,648.10	815.34	965.37	855.24	110.13	8.766	
14,450.00	11,788.00	14,337.18	11,614.40	57.65	54.80	-79.70	-2,697.16	816.33	966.37	855.24	111.13	8.696	
14,500.00	11,788.00	14,386.60	11,613.69	58.15	55.33	-79.67	-2,746.56	817.36	967.42	855.29	112.13	8.627	
14,550.00	11,788.00	14,440.87	11,612.96	58.66	55.91	-79.63	-2,800.82	818.38	968.37	855.15	113.22	8.553	
14,600.00	11,788.00	14,494.13	11,612.47	59.17	56.49	-79.61	-2,854.07	819.19	969.11	854.81	114.29	8.479	
14,650.00	11,788.00	14,545.34	11,612.05	59.69	57.05	-79.59	-2,905.28	819.88	969.74	854.39	115.36	8.407	
14,700.00	11,788.00	14,597.49	11,611.76	60.21	57.62	-79.58	-2,957.42	820.53	970.31	853.87	116.44	8.333	
14,750.00	11,788.00	14,650.66	11,612.37	60.74	58.21	-79.62	-3,010.59	821.20	970.72	853.16	117.56	8.257	
14,800.00	11,788.00	14,699.83	11,613.66	61.27	58.76	-79.70	-3,059.73	821.85	971.04	852.40	118.64	8.185	
14,850.00	11,788.00	14,747.22	11,614.93	61.80	59.29	-79.79	-3,107.10	822.60	971.49	851.77	119.71	8.115	
14,900.00	11,788.00	14,795.53	11,616.20	62.34	59.84	-79.87	-3,155.38	823.48	972.05	851.25	120.80	8.047	
14,950.00	11,788.00	14,844.26	11,617.44	62.88	60.40	-79.95	-3,204.08	824.42	972.68	850.78	121.91	7.979	
15,000.00	11,788.00	14,895.35	11,618.72	63.42	60.98	-80.03	-3,255.16	825.43	973.33	850.29	123.05	7.910	
15,050.00	11,788.00	14,947.20	11,620.03	63.97	61.58	-80.12	-3,306.98	826.35	973.90	849.69	124.21	7.841	
15,100.00	11,788.00	14,993.60	11,621.18	64.52	62.12	-80.19	-3,353.36	827.20	974.50	849.20	125.30	7.777	
15,150.00	11,788.00	15,039.56	11,622.22	65.08	62.66	-80.26	-3,399.30	828.23	975.30	848.91	126.39	7.717	
15,200.00	11,788.00	15,099.83	11,623.34	65.64	63.36	-80.33	-3,459.55	829.37	975.99	848.31	127.68	7.644	
15,250.00	11,788.00	15,160.04	11,624.02	66.20	64.07	-80.38	-3,519.75	829.72	976.08	847.11	128.97	7.568	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,300.00	11,788.00	15,216.60	11,624.24	66.77	64.74	-80.39	-3,576.31	829.52	975.77	845.58	130.19	7.495	
15,350.00	11,788.00	15,266.84	11,624.21	67.34	65.33	-80.38	-3,626.54	829.07	975.24	843.89	131.34	7.425	
15,400.00	11,788.00	15,314.02	11,624.47	67.91	65.89	-80.39	-3,673.72	828.81	974.82	842.36	132.46	7.359	
15,450.00	11,788.00	15,361.09	11,624.97	68.48	66.45	-80.42	-3,720.79	828.73	974.55	840.95	133.59	7.295	
15,500.00	11,788.00	15,408.11	11,625.48	69.06	67.02	-80.45	-3,767.81	828.80	974.43	839.71	134.73	7.233	
15,550.00	11,788.00	15,458.63	11,625.84	69.64	67.63	-80.47	-3,818.32	828.94	974.41	838.50	135.91	7.169	
15,600.00	11,788.00	15,511.09	11,625.51	70.22	68.26	-80.45	-3,870.78	828.85	974.28	837.17	137.11	7.106	
15,650.00	11,788.00	15,572.67	11,624.35	70.81	69.01	-80.37	-3,932.34	828.20	973.83	835.41	138.42	7.035	
15,700.00	11,788.00	15,634.03	11,622.70	71.40	69.75	-80.26	-3,993.66	826.67	972.72	833.02	139.70	6.963	
15,750.00	11,788.00	15,691.53	11,620.88	71.99	70.45	-80.13	-4,051.10	824.65	971.16	830.23	140.93	6.891	
15,800.00	11,788.00	15,742.55	11,619.29	72.58	71.08	-80.02	-4,102.05	822.57	969.33	827.23	142.10	6.822	
15,850.00	11,788.00	15,790.80	11,618.45	73.18	71.66	-79.95	-4,150.26	820.80	967.56	824.31	143.25	6.754	
15,900.00	11,788.00	15,832.40	11,618.24	73.77	72.18	-79.92	-4,191.84	819.53	966.02	821.67	144.35	6.692	
15,950.00	11,788.00	15,871.52	11,618.36	74.38	72.66	-79.92	-4,230.95	818.83	965.02	819.59	145.43	6.636	
16,000.00	11,788.00	15,912.67	11,618.80	74.98	73.17	-79.95	-4,272.11	818.62	964.56	818.03	146.53	6.583	
16,050.00	11,788.00	15,958.62	11,619.65	75.58	73.75	-80.00	-4,318.04	818.71	964.40	816.69	147.71	6.529	
16,062.24	11,788.00	15,969.86	11,619.91	75.73	73.89	-80.01	-4,329.28	818.77	964.40	816.40	148.00	6.516	
16,100.00	11,788.00	16,006.71	11,620.89	76.19	74.35	-80.07	-4,366.12	819.07	964.44	815.52	148.92	6.476	
16,150.00	11,788.00	16,062.13	11,621.71	76.80	75.04	-80.12	-4,421.53	819.22	964.35	814.11	150.24	6.419	
16,200.00	11,788.00	16,109.73	11,621.68	77.41	75.64	-80.11	-4,469.13	819.04	964.08	812.65	151.43	6.367	
16,210.69	11,788.00	16,118.33	11,621.66	77.54	75.75	-80.11	-4,477.73	819.05	964.07	812.41	151.66	6.357	
16,250.00	11,788.00	16,149.96	11,621.63	78.02	76.15	-80.11	-4,509.36	819.23	964.23	811.71	152.52	6.322	
16,300.00	11,788.00	16,191.12	11,621.68	78.64	76.67	-80.12	-4,550.52	819.87	964.87	811.26	153.62	6.281	
16,350.00	11,788.00	16,236.53	11,621.94	79.25	77.25	-80.15	-4,595.91	820.90	965.85	811.06	154.79	6.240	
16,400.00	11,788.00	16,283.56	11,622.45	79.87	77.85	-80.19	-4,642.92	822.24	967.06	811.06	156.00	6.199	
16,450.00	11,788.00	16,347.90	11,622.67	80.49	78.67	-80.21	-4,707.25	823.55	967.93	810.45	157.49	6.146	
16,500.00	11,788.00	16,401.29	11,622.26	81.12	79.36	-80.19	-4,760.63	823.92	968.24	809.46	158.78	6.098	
16,550.00	11,788.00	16,447.66	11,622.49	81.74	79.95	-80.21	-4,807.00	824.46	968.67	808.68	159.99	6.055	
16,600.00	11,788.00	16,508.25	11,623.52	82.36	80.73	-80.28	-4,867.57	825.22	969.07	807.65	161.42	6.003	
16,650.00	11,788.00	16,579.96	11,624.52	82.99	81.66	-80.33	-4,939.27	824.68	968.48	805.51	162.98	5.942	
16,700.00	11,788.00	16,614.15	11,624.46	83.62	82.10	-80.32	-4,973.46	824.47	967.99	803.95	164.04	5.901	
16,738.70	11,788.00	16,646.42	11,624.05	84.11	82.51	-80.30	-5,005.73	824.35	967.86	802.94	164.92	5.869	
16,750.00	11,788.00	16,655.84	11,623.86	84.25	82.63	-80.28	-5,015.15	824.35	967.87	802.70	165.17	5.860	
16,800.00	11,788.00	16,699.35	11,622.77	84.88	83.20	-80.22	-5,058.65	824.48	968.14	801.82	166.32	5.821	
16,850.00	11,788.00	16,742.90	11,621.43	85.52	83.77	-80.15	-5,102.17	824.87	968.74	801.28	167.46	5.785	
16,900.00	11,788.00	16,794.38	11,619.65	86.15	84.44	-80.05	-5,153.62	825.47	969.51	800.79	168.72	5.746	
16,950.00	11,788.00	16,848.27	11,617.78	86.79	85.14	-79.94	-5,207.47	825.89	970.10	800.08	170.02	5.706	
17,000.00	11,788.00	16,900.85	11,616.16	87.43	85.83	-79.85	-5,260.02	826.17	970.53	799.23	171.30	5.666	
17,050.00	11,788.00	16,954.88	11,614.85	88.07	86.54	-79.77	-5,314.04	826.35	970.82	798.20	172.62	5.624	
17,100.00	11,788.00	17,013.88	11,612.83	88.71	87.31	-79.65	-5,373.00	826.01	970.74	796.76	173.98	5.580	
17,150.00	11,788.00	17,065.67	11,610.47	89.35	87.99	-79.51	-5,424.74	825.24	970.32	795.09	175.23	5.537	
17,200.00	11,788.00	17,113.23	11,608.98	89.99	88.61	-79.41	-5,472.27	824.73	969.99	793.54	176.44	5.497	
17,250.00	11,788.00	17,165.40	11,608.03	90.64	89.29	-79.35	-5,524.43	824.36	969.70	791.97	177.73	5.456	
17,300.00	11,788.00	17,220.29	11,607.09	91.28	90.02	-79.29	-5,579.30	823.72	969.20	790.14	179.06	5.413	
17,350.00	11,788.00	17,292.64	11,605.16	91.93	90.96	-79.15	-5,651.60	821.77	968.03	787.50	180.53	5.362	
17,400.00	11,788.00	17,346.95	11,602.75	92.58	91.67	-78.98	-5,705.79	819.12	965.95	784.17	181.78	5.314	
17,450.00	11,788.00	17,389.66	11,600.73	93.23	92.23	-78.84	-5,748.41	817.23	964.13	781.19	182.94	5.270	
17,500.00	11,788.00	17,429.03	11,598.87	93.88	92.75	-78.72	-5,787.71	815.81	962.73	778.67	184.07	5.230	
17,550.00	11,788.00	17,463.56	11,597.45	94.53	93.21	-78.63	-5,822.20	815.12	962.06	776.94	185.13	5.197	
17,566.66	11,788.00	17,475.07	11,597.04	94.74	93.36	-78.60	-5,833.71	815.03	962.02	776.54	185.47	5.187	
17,600.00	11,788.00	17,498.12	11,596.30	95.18	93.67	-78.56	-5,856.75	815.05	962.20	776.04	186.16	5.169	
17,650.00	11,788.00	17,540.87	11,595.18	95.83	94.24	-78.50	-5,899.48	815.62	962.99	775.68	187.31	5.141	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
17,700.00	11,788.00	17,587.90	11,594.13	96.49	94.87	-78.44	-5,946.49	816.44	963.98	775.45	188.54	5.113	
17,750.00	11,788.00	17,643.67	11,593.02	97.14	95.61	-78.39	-6,002.23	817.45	964.98	775.06	189.92	5.081	
17,800.00	11,788.00	17,703.99	11,591.67	97.80	96.42	-78.32	-6,062.54	817.91	965.48	774.12	191.36	5.045	
17,850.00	11,788.00	17,763.61	11,591.10	98.46	97.22	-78.28	-6,122.15	817.89	965.46	772.67	192.79	5.008	
17,900.00	11,788.00	17,821.73	11,591.79	99.12	98.00	-78.32	-6,180.27	817.57	964.97	770.74	194.23	4.968	Alert
17,950.00	11,788.00	17,878.23	11,592.80	99.78	98.75	-78.37	-6,236.75	816.90	964.11	768.48	195.64	4.928	Alert
18,000.00	11,788.00	17,925.94	11,593.53	100.44	99.39	-78.40	-6,284.46	816.17	963.11	766.17	196.94	4.890	Alert
18,050.00	11,788.00	17,971.60	11,593.54	101.10	100.00	-78.39	-6,330.11	815.52	962.32	764.13	198.19	4.855	Alert
18,100.00	11,788.00	18,013.11	11,592.99	101.76	100.56	-78.35	-6,371.61	815.07	961.83	762.45	199.37	4.824	Alert
18,122.30	11,788.00	18,030.86	11,592.62	102.06	100.80	-78.33	-6,389.36	814.99	961.77	761.89	199.88	4.812	Alert
18,150.00	11,788.00	18,052.89	11,592.04	102.42	101.10	-78.29	-6,411.38	814.98	961.86	761.35	200.51	4.797	Alert
18,200.00	11,788.00	18,091.29	11,590.77	103.09	101.62	-78.22	-6,449.76	815.23	962.43	760.83	201.59	4.774	Alert
18,250.00	11,788.00	18,126.77	11,589.49	103.75	102.10	-78.15	-6,485.20	815.96	963.70	761.10	202.60	4.757	Alert
18,300.00	11,788.00	18,162.21	11,588.19	104.42	102.58	-78.09	-6,520.60	817.23	965.73	762.16	203.58	4.744	Alert
18,350.00	11,788.00	18,205.51	11,586.80	105.08	103.17	-78.04	-6,563.83	819.37	968.38	763.67	204.72	4.730	Alert
18,400.00	11,788.00	18,253.28	11,586.24	105.75	103.83	-78.04	-6,611.51	822.09	971.19	765.19	205.99	4.715	Alert
18,450.00	11,788.00	18,307.81	11,586.59	106.42	104.58	-78.10	-6,665.94	825.38	973.98	766.51	207.47	4.695	Alert
18,500.00	11,788.00	18,365.71	11,587.21	107.09	105.37	-78.17	-6,723.75	828.49	976.40	767.37	209.03	4.671	Alert
18,550.00	11,788.00	18,418.76	11,587.19	107.76	106.10	-78.20	-6,776.74	830.91	978.54	768.09	210.45	4.650	Alert
18,600.00	11,788.00	18,473.73	11,585.93	108.43	106.85	-78.15	-6,831.66	832.96	980.51	768.64	211.87	4.628	Alert
18,650.00	11,788.00	18,534.26	11,584.65	109.10	107.68	-78.09	-6,892.15	834.71	982.04	768.65	213.39	4.602	Alert
18,700.00	11,788.00	18,597.40	11,583.70	109.77	108.55	-78.05	-6,955.27	835.86	983.00	768.05	214.94	4.573	Alert
18,750.00	11,788.00	18,661.77	11,582.04	110.44	109.43	-77.96	-7,019.62	835.94	983.23	766.78	216.45	4.543	Alert
18,800.00	11,788.00	18,718.79	11,580.37	111.12	110.20	-77.85	-7,076.62	835.37	982.95	765.14	217.82	4.513	Alert
18,850.00	11,788.00	18,768.87	11,578.79	111.79	110.88	-77.75	-7,126.66	834.54	982.37	763.28	219.09	4.484	Alert
18,900.00	11,788.00	18,812.69	11,576.89	112.47	111.48	-77.63	-7,170.44	833.91	982.04	761.77	220.27	4.458	Alert
18,950.00	11,788.00	18,860.77	11,574.27	113.14	112.13	-77.48	-7,218.45	833.37	981.98	760.49	221.49	4.434	Alert
19,000.00	11,788.00	18,915.35	11,571.45	113.82	112.88	-77.31	-7,272.94	832.64	981.80	759.01	222.78	4.407	Alert
19,029.55	11,788.00	18,947.61	11,569.95	114.22	113.32	-77.21	-7,305.17	832.12	981.58	758.02	223.55	4.391	Alert
19,050.00	11,788.00	18,957.32	11,569.45	114.49	113.45	-77.18	-7,314.86	832.08	981.60	757.66	223.93	4.383	Alert
19,100.00	11,788.00	18,993.25	11,567.61	115.17	113.95	-77.08	-7,350.75	832.06	982.07	757.09	224.97	4.365	Alert
19,150.00	11,788.00	19,029.26	11,565.63	115.85	114.44	-76.97	-7,386.70	832.57	983.25	757.28	225.97	4.351	Alert
19,200.00	11,788.00	19,084.49	11,562.50	116.53	115.20	-76.80	-7,441.83	833.55	984.66	757.35	227.32	4.332	Alert
19,250.00	11,788.00	19,135.05	11,559.73	117.20	115.90	-76.66	-7,492.32	834.22	985.84	757.27	228.58	4.313	Alert
19,300.00	11,788.00	19,173.88	11,558.17	117.88	116.44	-76.58	-7,531.10	835.16	987.38	757.74	229.64	4.300	Alert
19,350.00	11,788.00	19,212.72	11,557.37	118.56	116.98	-76.55	-7,569.89	836.72	989.48	758.77	230.71	4.289	Alert
19,400.00	11,788.00	19,255.06	11,557.10	119.24	117.57	-76.57	-7,612.18	838.99	992.07	760.19	231.88	4.278	Alert
19,450.00	11,788.00	19,298.05	11,557.01	119.92	118.17	-76.60	-7,655.08	841.65	995.00	761.94	233.06	4.269	Alert
19,500.00	11,788.00	19,357.55	11,556.90	120.61	119.00	-76.64	-7,714.46	845.42	998.03	763.33	234.70	4.252	Alert
19,550.00	11,788.00	19,426.93	11,555.81	121.29	119.97	-76.62	-7,783.77	848.35	1,000.18	763.69	236.49	4.229	Alert
19,600.00	11,788.00	19,472.81	11,555.41	121.97	120.60	-76.62	-7,829.62	850.17	1,002.09	764.34	237.75	4.215	Alert
19,650.00	11,788.00	19,527.26	11,555.34	122.65	121.36	-76.64	-7,884.02	852.28	1,003.90	764.68	239.22	4.197	Alert
19,700.00	11,788.00	19,587.70	11,554.69	123.34	122.20	-76.62	-7,944.43	853.96	1,005.28	764.51	240.77	4.175	Alert
19,750.00	11,788.00	19,644.76	11,553.52	124.02	123.00	-76.57	-8,001.47	854.89	1,006.21	764.00	242.22	4.154	Alert
19,800.00	11,788.00	19,701.05	11,552.34	124.71	123.78	-76.51	-8,057.75	855.43	1,006.83	763.19	243.63	4.133	Alert
19,850.00	11,788.00	19,745.77	11,551.74	125.39	124.40	-76.48	-8,102.46	855.96	1,007.45	762.57	244.88	4.114	Alert
19,900.00	11,788.00	19,793.48	11,551.66	126.08	125.06	-76.49	-8,150.16	856.84	1,008.27	762.07	246.19	4.095	Alert
19,950.00	11,788.00	19,867.58	11,551.53	126.76	126.09	-76.49	-8,224.26	857.31	1,008.50	760.59	247.92	4.068	Alert
20,000.00	11,788.00	19,925.90	11,550.84	127.45	126.89	-76.44	-8,282.57	856.50	1,007.86	758.53	249.33	4.042	Alert
20,050.00	11,788.00	19,980.09	11,549.49	128.14	127.64	-76.34	-8,336.73	855.30	1,006.98	756.33	250.65	4.017	Alert
20,100.00	11,788.00	20,035.79	11,547.79	128.82	128.41	-76.23	-8,392.38	853.71	1,005.86	753.89	251.97	3.992	Alert
20,150.00	11,788.00	20,086.26	11,546.29	129.51	129.10	-76.12	-8,442.80	852.03	1,004.50	751.26	253.24	3.967	Alert

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
20,200.00	11,788.00	20,126.24	11,545.36	130.20	129.65	-76.05	-8,482.76	851.03	1,003.46	749.02	254.44	3.944	Alert
20,250.00	11,788.00	20,168.00	11,544.72	130.89	130.23	-76.01	-8,524.51	850.50	1,002.93	747.27	255.66	3.923	Alert
20,300.00	11,788.00	20,216.34	11,544.38	131.58	130.90	-75.98	-8,572.84	850.23	1,002.65	745.67	256.97	3.902	Alert
20,350.00	11,788.00	20,268.16	11,544.45	132.27	131.62	-75.98	-8,624.67	850.02	1,002.34	743.99	258.35	3.880	Alert
20,400.00	11,788.00	20,335.51	11,544.63	132.96	132.55	-75.98	-8,692.00	849.07	1,001.52	741.64	259.89	3.854	Alert
20,450.00	11,788.00	20,400.55	11,544.65	133.65	133.45	-75.95	-8,757.01	847.01	999.88	738.56	261.32	3.826	Alert
20,500.00	11,788.00	20,464.38	11,544.83	134.34	134.32	-75.92	-8,820.77	844.09	997.53	734.85	262.69	3.797	Alert
20,550.00	11,788.00	20,501.22	11,544.60	135.03	134.83	-75.88	-8,857.57	842.43	995.28	731.32	263.96	3.771	Alert
20,600.00	11,788.00	20,542.15	11,543.85	135.72	135.39	-75.81	-8,898.47	840.79	993.47	728.27	265.20	3.746	Alert
20,650.00	11,788.00	20,582.21	11,542.71	136.41	135.95	-75.73	-8,938.49	839.48	992.14	725.73	266.41	3.724	Alert
20,700.00	11,788.00	20,622.15	11,541.42	137.10	136.50	-75.64	-8,978.39	838.55	991.31	723.72	267.58	3.705	Alert
20,750.00	11,788.00	20,668.33	11,539.76	137.79	137.14	-75.54	-9,024.54	837.85	990.91	722.11	268.81	3.686	Alert
20,800.00	11,788.00	20,721.33	11,537.89	138.49	137.88	-75.42	-9,077.50	836.97	990.46	720.36	270.10	3.667	Alert
20,850.00	11,788.00	20,761.72	11,536.61	139.18	138.44	-75.34	-9,117.87	836.37	990.07	718.81	271.26	3.650	Alert
20,852.77	11,788.00	20,763.64	11,536.56	139.22	138.47	-75.34	-9,119.78	836.36	990.07	718.75	271.32	3.649	Alert
20,900.00	11,788.00	20,796.35	11,535.98	139.87	138.93	-75.30	-9,152.49	836.53	990.42	718.07	272.34	3.637	Alert
20,950.00	11,788.00	20,833.00	11,535.83	140.57	139.44	-75.31	-9,189.13	837.43	991.54	718.10	273.44	3.626	Alert
21,000.00	11,788.00	20,884.87	11,535.99	141.26	140.17	-75.34	-9,240.97	839.11	992.98	718.10	274.88	3.612	Alert
21,050.00	11,788.00	20,939.99	11,536.18	141.96	140.95	-75.37	-9,296.07	840.61	994.16	717.78	276.38	3.597	Alert
21,100.00	11,788.00	20,993.36	11,535.79	142.65	141.70	-75.36	-9,349.42	841.70	995.14	717.34	277.80	3.582	Alert
21,150.00	11,788.00	21,049.67	11,534.79	143.35	142.49	-75.32	-9,405.72	842.43	995.90	716.66	279.24	3.566	Alert
21,200.00	11,788.00	21,109.23	11,534.67	144.04	143.33	-75.32	-9,465.28	842.92	996.23	715.46	280.76	3.548	Alert
21,250.00	11,788.00	21,164.75	11,535.10	144.74	144.10	-75.34	-9,520.79	843.07	996.16	713.93	282.23	3.530	Alert
21,300.00	11,788.00	21,220.22	11,535.06	145.43	144.88	-75.33	-9,576.27	842.80	995.85	712.19	283.66	3.511	Alert
21,350.00	11,788.00	21,279.17	11,534.71	146.13	145.70	-75.30	-9,635.21	841.99	995.16	710.07	285.09	3.491	Alert
21,400.00	11,788.00	21,330.59	11,534.21	146.83	146.42	-75.25	-9,686.61	840.86	994.12	707.70	286.42	3.471	Alert
21,450.00	11,788.00	21,375.29	11,533.47	147.52	147.04	-75.20	-9,731.30	839.96	993.26	705.59	287.68	3.453	Alert
21,500.00	11,788.00	21,420.01	11,532.38	148.22	147.67	-75.13	-9,776.00	839.22	992.68	703.76	288.91	3.436	Alert
21,550.00	11,788.00	21,464.75	11,530.74	148.92	148.29	-75.02	-9,820.70	838.58	992.36	702.24	290.11	3.421	Alert
21,584.42	11,788.00	21,495.52	11,529.26	149.40	148.72	-74.93	-9,851.44	838.18	992.29	701.38	290.92	3.411	Alert
21,600.00	11,788.00	21,510.59	11,528.46	149.62	148.94	-74.89	-9,866.48	838.00	992.30	701.01	291.29	3.407	Alert
21,650.00	11,788.00	21,559.41	11,525.95	150.31	149.62	-74.74	-9,915.23	837.48	992.36	699.86	292.49	3.393	Alert
21,700.00	11,788.00	21,609.51	11,523.49	151.01	150.32	-74.59	-9,965.28	837.02	992.47	698.75	293.72	3.379	Alert
21,750.00	11,788.00	21,662.42	11,520.75	151.71	151.06	-74.43	-10,018.11	836.38	992.48	697.52	294.96	3.365	Alert
21,753.86	11,788.00	21,666.50	11,520.53	151.76	151.12	-74.41	-10,022.18	836.32	992.48	697.42	295.06	3.364	Alert, ES, SF

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 149-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.50	0.50	102.92	-194.64	848.73	870.76				
50.00	50.00	51.74	51.74	0.50	0.51	102.92	-194.64	848.65	870.69	869.68	1.01	863.913	
100.00	100.00	104.33	104.32	0.52	0.52	102.92	-194.66	848.41	870.47	869.43	1.04	836.027	
150.00	150.00	156.91	156.90	0.59	0.55	102.93	-194.68	848.01	870.10	868.96	1.14	762.052	
200.00	200.00	202.96	202.95	0.70	0.65	102.93	-194.69	847.73	869.80	868.45	1.35	643.410	
250.00	250.00	251.79	251.79	0.84	0.77	102.94	-194.67	847.59	869.66	868.05	1.61	539.895	
300.00	300.00	305.85	305.85	0.99	0.93	102.94	-194.68	847.29	869.40	867.48	1.92	453.601	
350.00	350.00	357.91	357.90	1.15	1.09	102.95	-194.72	846.78	868.93	866.69	2.24	388.482	
400.00	400.00	408.02	408.01	1.31	1.25	102.96	-194.74	846.26	868.42	865.86	2.56	338.873	
450.00	450.00	457.73	457.72	1.48	1.42	102.97	-194.76	845.74	867.92	865.02	2.89	299.800	
500.00	500.00	507.20	507.19	1.65	1.59	102.98	-194.86	845.24	867.44	864.21	3.23	268.409	
550.00	550.00	557.06	557.04	1.82	1.76	103.00	-195.01	844.74	866.99	863.42	3.57	242.604	
600.00	600.00	607.05	607.03	1.99	1.93	103.02	-195.16	844.24	866.54	862.62	3.92	221.118	
650.00	650.00	656.32	656.30	2.16	2.10	103.03	-195.30	843.77	866.10	861.84	4.26	203.136	
700.00	700.00	705.46	705.44	2.34	2.27	103.04	-195.37	843.36	865.72	861.11	4.61	187.808	
750.00	750.00	754.61	754.58	2.51	2.44	103.05	-195.39	843.02	865.38	860.43	4.96	174.585	
800.00	800.00	803.76	803.73	2.69	2.62	103.05	-195.35	842.74	865.10	859.79	5.31	163.069	
850.00	850.00	854.43	854.41	2.87	2.79	103.06	-195.39	842.44	864.82	859.16	5.66	152.821	
900.00	900.00	905.11	905.08	3.04	2.97	103.08	-195.64	842.05	864.50	858.48	6.01	143.756	
950.00	950.00	954.59	954.55	3.22	3.15	103.10	-195.92	841.66	864.18	857.81	6.36	135.781	
1,000.00	1,000.00	1,006.49	1,006.46	3.40	3.33	103.13	-196.16	841.24	863.84	857.11	6.72	128.455	
1,050.00	1,050.00	1,060.06	1,060.02	3.58	3.52	103.14	-196.30	840.63	863.32	856.22	7.09	121.736	
1,100.00	1,100.00	1,109.95	1,109.91	3.75	3.70	103.17	-196.49	839.95	862.70	855.25	7.45	115.856	
1,150.00	1,150.00	1,160.41	1,160.36	3.93	3.87	103.20	-196.87	839.22	862.07	854.27	7.80	110.478	
1,200.00	1,200.00	1,212.82	1,212.76	4.11	4.06	103.25	-197.38	838.33	861.36	853.19	8.17	105.468	
1,250.00	1,250.00	1,264.06	1,263.99	4.29	4.24	103.30	-197.97	837.30	860.51	851.98	8.53	100.915	
1,300.00	1,300.00	1,313.59	1,313.51	4.46	4.42	103.35	-198.46	836.32	859.67	850.78	8.88	96.792	
1,350.00	1,350.00	1,362.27	1,362.18	4.64	4.59	103.39	-198.80	835.44	858.86	849.63	9.23	93.021	
1,400.00	1,400.00	1,410.25	1,410.15	4.82	4.76	103.40	-198.85	834.74	858.16	848.58	9.58	89.564	
1,450.00	1,450.00	1,460.55	1,460.44	5.00	4.94	103.39	-198.57	834.16	857.54	847.61	9.94	86.298	
1,500.00	1,500.00	1,512.33	1,512.21	5.18	5.12	103.36	-197.98	833.55	856.84	846.54	10.30	83.215	
1,550.00	1,550.00	1,563.66	1,563.54	5.36	5.30	103.31	-197.07	832.92	856.04	845.38	10.65	80.356	
1,600.00	1,600.00	1,614.87	1,614.72	5.53	5.48	103.24	-195.81	832.30	855.16	844.15	11.01	77.680	
1,650.00	1,650.00	1,663.57	1,663.40	5.71	5.65	103.14	-194.23	831.80	854.29	842.94	11.35	75.237	
1,700.00	1,700.00	1,712.44	1,712.23	5.89	5.81	103.02	-192.22	831.47	853.50	841.80	11.70	72.941	
1,750.00	1,750.00	1,763.39	1,763.11	6.07	5.99	102.85	-189.64	831.24	852.71	840.66	12.05	70.739	
1,800.00	1,800.00	1,814.43	1,814.05	6.25	6.16	102.65	-186.57	831.06	851.87	839.46	12.41	68.655	
1,850.00	1,850.00	1,865.85	1,865.36	6.43	6.34	102.43	-183.09	830.87	850.96	838.20	12.76	66.670	
1,900.00	1,900.00	1,919.30	1,918.67	6.61	6.53	102.17	-179.14	830.63	849.95	836.82	13.13	64.748	
1,950.00	1,950.00	1,975.67	1,974.87	6.78	6.72	101.90	-174.86	830.01	848.62	835.12	13.50	62.860	
2,000.00	2,000.00	2,030.46	2,029.48	6.96	6.91	101.63	-170.62	829.04	846.96	833.09	13.87	61.066	
2,050.00	2,050.00	2,084.64	2,083.48	7.14	7.10	101.36	-166.37	827.80	845.05	830.81	14.24	59.356	
2,100.00	2,100.00	2,137.82	2,136.48	7.32	7.29	101.10	-162.17	826.34	842.93	828.33	14.60	57.725	
2,150.00	2,150.00	2,191.00	2,189.46	7.50	7.48	100.84	-157.96	824.67	840.63	825.66	14.97	56.161	
2,200.00	2,200.00	2,238.23	2,236.53	7.68	7.65	100.62	-154.33	823.19	838.36	823.04	15.32	54.734	
2,250.00	2,250.00	2,286.82	2,284.96	7.86	7.82	100.40	-150.74	821.70	836.18	820.51	15.67	53.364	
2,300.00	2,300.00	2,335.79	2,333.79	8.04	8.00	100.18	-147.24	820.25	834.07	818.05	16.02	52.053	
2,350.00	2,350.00	2,384.25	2,382.11	8.22	8.17	99.97	-143.89	818.84	832.04	815.66	16.38	50.808	
2,400.00	2,400.00	2,431.81	2,429.55	8.39	8.34	99.77	-140.77	817.55	830.14	813.41	16.73	49.631	
2,450.00	2,450.00	2,480.33	2,477.96	8.57	8.51	99.58	-137.72	816.34	828.37	811.29	17.08	48.502	
2,500.00	2,500.00	2,530.50	2,528.02	8.75	8.70	99.37	-134.55	815.10	826.63	809.20	17.44	47.405	
2,550.00	2,550.00	2,579.44	2,576.84	8.93	8.87	99.17	-131.36	813.91	824.90	807.11	17.79	46.363	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 149-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,600.00	2,600.00	2,627.10	2,624.37	9.11	9.04	98.95	-128.04	812.90	823.30	805.16	18.14	45.379	
2,650.00	2,650.00	2,673.92	2,671.06	9.29	9.21	98.72	-124.59	812.07	821.86	803.37	18.49	44.447	
2,700.00	2,700.00	2,719.93	2,716.94	9.47	9.38	98.50	-121.20	811.46	820.66	801.82	18.84	43.568	
2,750.00	2,750.00	2,768.54	2,765.42	9.65	9.55	98.25	-117.64	811.02	819.67	800.48	19.19	42.714	
2,800.00	2,800.00	2,820.52	2,817.23	9.83	9.74	97.98	-113.63	810.49	818.62	799.06	19.56	41.862	
2,850.00	2,850.00	2,870.87	2,867.42	10.00	9.92	97.70	-109.56	809.91	817.49	797.58	19.92	41.048	
2,900.00	2,900.00	2,920.19	2,916.57	10.18	10.10	97.43	-105.57	809.36	816.40	796.13	20.27	40.271	
2,950.00	2,950.00	2,967.64	2,963.87	10.36	10.27	97.17	-101.79	808.89	815.41	794.78	20.62	39.538	
3,000.00	3,000.00	3,014.31	3,010.41	10.54	10.44	96.93	-98.24	808.59	814.61	793.64	20.97	38.844	
3,050.00	3,050.00	3,063.70	3,059.65	10.72	10.62	96.67	-94.57	808.40	813.98	792.65	21.33	38.163	
3,100.00	3,100.00	3,114.54	3,110.34	10.90	10.80	96.39	-90.55	808.18	813.31	791.62	21.69	37.495	
3,150.00	3,150.00	3,169.17	3,164.77	11.08	11.00	96.07	-85.89	807.81	812.51	790.45	22.07	36.818	
3,200.00	3,200.00	3,224.93	3,220.28	11.26	11.20	95.71	-80.70	807.09	811.39	788.94	22.45	36.144	
3,250.00	3,250.00	3,282.92	3,277.99	11.44	11.41	95.33	-75.16	805.84	809.85	787.02	22.84	35.463	
3,300.00	3,300.00	3,337.97	3,332.77	11.62	11.62	94.97	-69.98	804.14	807.88	784.66	23.21	34.801	
3,350.00	3,350.00	3,389.45	3,384.02	11.80	11.81	94.66	-65.44	802.34	805.76	782.18	23.58	34.170	
3,400.00	3,400.00	3,439.01	3,433.37	11.97	11.99	94.39	-61.40	800.51	803.59	779.65	23.94	33.564	
3,450.00	3,450.00	3,487.31	3,481.51	12.15	12.17	94.14	-57.80	798.78	801.52	777.22	24.30	32.986	
3,500.00	3,500.00	3,535.22	3,529.28	12.33	12.34	93.91	-54.48	797.14	799.57	774.91	24.65	32.431	
3,550.00	3,550.00	3,582.90	3,576.82	12.51	12.52	93.68	-51.17	795.64	797.76	772.75	25.01	31.898	
3,600.00	3,600.00	3,630.22	3,624.00	12.69	12.69	93.45	-47.85	794.29	796.11	770.75	25.36	31.389	
3,650.00	3,650.00	3,677.31	3,670.95	12.87	12.86	93.21	-44.44	793.11	794.65	768.93	25.72	30.901	
3,700.00	3,700.00	3,725.93	3,719.42	13.05	13.04	92.95	-40.76	792.04	793.35	767.27	26.07	30.427	
3,750.00	3,750.00	3,775.43	3,768.75	13.23	13.22	92.66	-36.79	790.99	792.09	765.66	26.43	29.964	
3,800.00	3,800.00	3,825.82	3,818.96	13.41	13.41	92.36	-32.60	789.94	790.86	764.06	26.80	29.511	
3,850.00	3,850.00	3,876.57	3,869.53	13.59	13.59	92.07	-28.45	788.81	789.59	762.42	27.16	29.067	
3,900.00	3,900.00	3,928.81	3,921.58	13.77	13.79	91.77	-24.28	787.55	788.24	760.71	27.53	28.628	
3,950.00	3,950.00	3,981.38	3,973.97	13.94	13.98	91.47	-20.18	786.10	786.75	758.84	27.91	28.194	
4,000.00	4,000.00	4,035.74	4,028.14	14.12	14.18	91.17	-16.02	784.34	785.04	756.76	28.28	27.759	
4,050.00	4,050.00	4,088.15	4,080.36	14.30	14.37	128.04	-12.09	782.37	783.25	754.60	28.65	27.339	
4,100.00	4,099.99	4,136.33	4,128.40	14.48	14.55	127.85	-8.68	780.56	781.82	752.82	29.01	26.954	
4,150.00	4,149.97	4,185.87	4,177.79	14.66	14.73	127.70	-5.40	778.79	780.83	751.47	29.37	26.590	
4,200.00	4,199.94	4,237.90	4,229.68	14.84	14.93	127.55	-1.98	776.85	779.99	750.26	29.73	26.235	
4,250.00	4,249.91	4,288.46	4,280.08	15.01	15.11	127.41	1.35	774.86	779.04	748.95	30.09	25.888	
4,300.00	4,299.88	4,337.75	4,329.24	15.19	15.29	127.28	4.48	772.94	778.13	747.67	30.45	25.553	
4,350.00	4,349.85	4,387.56	4,378.92	15.37	15.48	127.16	7.50	771.03	777.24	746.43	30.81	25.227	
4,400.00	4,399.82	4,437.69	4,428.93	15.55	15.66	127.04	10.45	769.10	776.36	745.19	31.17	24.907	
4,450.00	4,449.79	4,489.40	4,480.50	15.72	15.85	126.92	13.53	767.07	775.44	743.90	31.54	24.589	
4,500.00	4,499.77	4,541.83	4,532.76	15.90	16.04	126.76	17.05	764.84	774.36	742.46	31.90	24.272	
4,550.00	4,549.74	4,592.64	4,583.39	16.08	16.23	126.59	20.86	762.57	773.18	740.91	32.27	23.962	
4,600.00	4,599.71	4,643.22	4,633.74	16.26	16.42	126.38	25.00	760.26	771.96	739.33	32.63	23.657	
4,650.00	4,649.68	4,695.16	4,685.44	16.44	16.61	126.16	29.39	757.79	770.67	737.67	33.00	23.354	
4,700.00	4,699.65	4,747.10	4,737.13	16.61	16.81	125.94	33.74	755.19	769.25	735.88	33.37	23.054	
4,750.00	4,749.62	4,791.72	4,781.53	16.79	16.97	125.74	37.66	753.09	767.99	734.27	33.72	22.776	
4,800.00	4,799.59	4,837.68	4,827.24	16.97	17.15	125.50	41.99	751.15	767.01	732.94	34.07	22.511	
4,850.00	4,849.56	4,886.20	4,875.50	17.15	17.33	125.25	46.68	749.27	766.21	731.78	34.43	22.252	
4,900.00	4,899.53	4,934.97	4,924.01	17.33	17.51	125.00	51.37	747.46	765.51	730.72	34.80	22.000	
4,950.00	4,949.50	4,985.28	4,974.05	17.50	17.70	124.74	56.14	745.61	764.84	729.68	35.16	21.752	
5,000.00	4,999.47	5,035.61	5,024.13	17.68	17.89	124.49	60.84	743.74	764.16	728.63	35.53	21.509	
5,050.00	5,049.44	5,085.96	5,074.23	17.86	18.08	124.24	65.49	741.83	763.46	727.57	35.89	21.270	
5,100.00	5,099.41	5,135.93	5,123.95	18.04	18.27	124.00	70.10	739.92	762.75	726.49	36.26	21.036	
5,150.00	5,149.38	5,185.30	5,173.08	18.22	18.45	123.76	74.61	738.05	762.08	725.46	36.62	20.809	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 149-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,199.35	5,233.57	5,221.12	18.40	18.63	123.52	79.00	736.27	761.47	724.49	36.98	20.589	
5,250.00	5,249.32	5,280.55	5,267.86	18.57	18.81	123.28	83.42	734.69	761.04	723.70	37.34	20.381	
5,300.00	5,299.29	5,327.95	5,315.01	18.75	18.99	123.03	88.02	733.27	760.82	723.12	37.70	20.182	
5,350.00	5,349.26	5,375.92	5,362.76	18.93	19.16	122.79	92.55	731.96	760.74	722.69	38.06	19.990	
5,351.97	5,351.23	5,377.81	5,364.64	18.94	19.17	122.78	92.72	731.92	760.74	722.67	38.07	19.982	
5,400.00	5,399.23	5,426.24	5,412.85	19.11	19.35	122.55	97.10	730.70	760.77	722.35	38.42	19.800	
5,450.00	5,449.20	5,479.34	5,465.73	19.29	19.55	122.31	101.71	729.21	760.65	721.85	38.80	19.605	
5,500.00	5,499.17	5,527.98	5,514.17	19.47	19.73	122.10	105.88	727.75	760.43	721.28	39.16	19.419	
5,525.07	5,524.22	5,551.24	5,537.32	19.56	19.82	121.99	107.99	727.10	760.40	721.07	39.34	19.331	
5,550.00	5,549.14	5,574.36	5,560.33	19.65	19.91	121.87	110.17	726.51	760.43	720.92	39.51	19.245	
5,600.00	5,599.11	5,623.68	5,609.39	19.82	20.09	121.60	115.08	725.34	760.62	720.74	39.88	19.074	
5,650.00	5,649.08	5,674.80	5,660.22	20.00	20.28	121.31	120.37	724.04	760.76	720.52	40.25	18.902	
5,700.00	5,699.05	5,729.29	5,714.38	20.18	20.49	120.98	126.16	722.45	760.76	720.13	40.63	18.723	
5,750.00	5,749.02	5,784.83	5,769.56	20.36	20.70	120.64	132.09	720.43	760.41	719.39	41.02	18.538	
5,800.00	5,798.99	5,831.55	5,815.99	20.54	20.88	120.36	137.06	718.66	760.01	718.64	41.38	18.368	
5,850.00	5,848.96	5,878.74	5,862.88	20.72	21.06	120.08	142.03	717.05	759.81	718.08	41.74	18.205	
5,882.85	5,881.79	5,910.10	5,894.06	20.84	21.18	119.90	145.28	716.06	759.78	717.81	41.97	18.102 CC	
5,900.00	5,898.93	5,926.47	5,910.34	20.90	21.24	119.81	146.95	715.58	759.79	717.69	42.10	18.049	
5,950.00	5,948.90	5,974.24	5,957.85	21.08	21.42	119.55	151.69	714.27	759.92	717.46	42.46	17.899	
6,000.00	5,998.87	6,020.25	6,003.66	21.26	21.59	119.33	155.84	713.24	760.27	717.46	42.81	17.761 ES	
6,050.00	6,048.84	6,066.40	6,049.68	21.43	21.76	119.16	159.40	712.53	760.87	717.72	43.16	17.631	
6,100.00	6,098.81	6,117.66	6,100.81	21.61	21.95	119.01	162.91	711.89	761.57	718.05	43.52	17.498	
6,150.00	6,148.78	6,169.02	6,152.05	21.79	22.14	118.87	166.24	711.18	762.18	718.29	43.89	17.365	
6,200.00	6,198.75	6,220.58	6,203.51	21.97	22.32	118.74	169.43	710.38	762.70	718.44	44.26	17.233	
6,250.00	6,248.72	6,270.88	6,253.71	22.15	22.51	118.62	172.42	709.53	763.12	718.50	44.62	17.102	
6,300.00	6,298.69	6,318.11	6,300.84	22.33	22.68	118.49	175.51	708.80	763.66	718.69	44.97	16.980	
6,350.00	6,348.66	6,365.57	6,348.16	22.51	22.86	118.33	179.04	708.16	764.38	719.06	45.33	16.864	
6,400.00	6,398.63	6,413.64	6,396.08	22.69	23.03	118.15	182.89	707.61	765.25	719.56	45.68	16.751	
6,450.00	6,448.60	6,462.35	6,444.60	22.87	23.21	117.95	187.00	707.13	766.23	720.19	46.04	16.642	
6,500.00	6,498.57	6,512.39	6,494.47	23.05	23.40	117.75	191.15	706.66	767.25	720.85	46.41	16.533	
6,550.00	6,548.54	6,562.12	6,544.05	23.23	23.58	117.57	195.12	706.23	768.28	721.51	46.77	16.427	
6,600.00	6,598.51	6,611.43	6,593.21	23.40	23.76	117.40	198.84	705.86	769.34	722.21	47.13	16.324	
6,650.00	6,648.49	6,661.53	6,643.19	23.58	23.95	117.26	202.34	705.57	770.44	722.94	47.49	16.222	
6,700.00	6,698.46	6,712.37	6,693.94	23.76	24.13	117.16	205.18	705.35	771.49	723.64	47.86	16.121	
6,750.00	6,748.43	6,764.14	6,745.67	23.94	24.32	117.12	207.40	705.16	772.47	724.25	48.22	16.019	
6,800.00	6,798.40	6,816.36	6,797.85	24.12	24.50	117.09	209.36	704.88	773.31	724.73	48.59	15.915	
6,850.00	6,848.37	6,865.88	6,847.35	24.30	24.68	117.08	211.01	704.57	774.09	725.14	48.94	15.816	
6,900.00	6,898.34	6,914.94	6,896.38	24.48	24.86	117.08	212.48	704.35	774.92	725.62	49.30	15.719	
6,950.00	6,948.31	6,968.80	6,950.22	24.66	25.05	117.09	213.93	704.06	775.66	726.00	49.67	15.617	
7,000.00	6,998.28	7,023.09	7,004.49	24.84	25.24	117.11	215.20	703.49	776.14	726.10	50.04	15.510	
7,050.00	7,048.25	7,071.70	7,053.09	25.02	25.41	117.15	216.19	702.94	776.55	726.16	50.39	15.410	
7,100.00	7,098.22	7,121.06	7,102.44	25.20	25.59	117.19	217.03	702.45	776.99	726.25	50.75	15.312	
7,150.00	7,148.19	7,170.22	7,151.60	25.38	25.76	117.25	217.68	702.04	777.48	726.39	51.10	15.216	
7,200.00	7,198.16	7,219.22	7,200.59	25.56	25.93	117.32	218.14	701.72	778.03	726.58	51.45	15.123	
7,250.00	7,248.13	7,267.86	7,249.23	25.74	26.10	117.40	218.52	701.49	778.66	726.86	51.80	15.033	
7,300.00	7,298.10	7,317.36	7,298.73	25.91	26.27	117.48	218.88	701.34	779.37	727.22	52.15	14.946	
7,350.00	7,348.07	7,368.39	7,349.76	26.09	26.45	117.59	219.05	701.18	780.04	727.54	52.50	14.858	
7,400.00	7,398.04	7,417.80	7,399.17	26.27	26.61	117.70	219.00	701.02	780.67	727.83	52.85	14.772	
7,450.00	7,448.01	7,465.72	7,447.08	26.45	26.77	117.81	218.96	700.97	781.42	728.23	53.18	14.693	
7,500.00	7,497.98	7,513.06	7,494.43	26.63	26.93	117.92	218.93	701.06	782.31	728.79	53.52	14.618	
7,550.00	7,547.95	7,559.90	7,541.27	26.81	27.08	118.04	218.76	701.35	783.39	729.55	53.84	14.549	
7,600.00	7,597.92	7,608.90	7,590.26	26.99	27.24	118.18	218.40	701.84	784.65	730.46	54.18	14.482	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 149-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,650.00	7,647.89	7,659.82	7,641.18	27.17	27.40	118.33	217.89	702.34	785.87	731.35	54.52	14.413	
7,700.00	7,697.86	7,708.63	7,689.98	27.35	27.56	118.48	217.39	702.80	787.08	732.22	54.86	14.347	
7,750.00	7,747.83	7,756.39	7,737.74	27.53	27.72	118.60	217.33	703.31	788.43	733.23	55.19	14.285	
7,800.00	7,797.80	7,807.48	7,788.82	27.71	27.89	118.68	217.76	703.85	789.84	734.29	55.55	14.219	
7,850.00	7,847.77	7,860.19	7,841.53	27.89	28.07	118.74	218.70	704.17	791.10	735.19	55.91	14.149	
7,900.00	7,897.74	7,912.65	7,893.97	28.07	28.26	118.77	219.87	704.28	792.20	735.92	56.28	14.077	
7,950.00	7,947.71	7,965.07	7,946.38	28.25	28.44	118.81	220.90	704.25	793.14	736.49	56.64	14.002	
8,000.00	7,997.68	8,013.65	7,994.96	28.43	28.62	118.86	221.71	704.22	794.06	737.07	56.99	13.933	
8,050.00	8,047.65	8,062.50	8,043.80	28.61	28.79	118.92	222.37	704.27	795.05	737.71	57.34	13.865	
8,100.00	8,097.62	8,111.26	8,092.55	28.79	28.95	118.99	222.79	704.44	796.11	738.43	57.69	13.801	
8,150.00	8,147.59	8,160.98	8,142.27	28.97	29.12	119.10	222.90	704.73	797.25	739.22	58.03	13.738	
8,200.00	8,197.56	8,215.00	8,196.30	29.15	29.30	119.22	222.85	704.91	798.25	739.86	58.39	13.670	
8,250.00	8,247.53	8,267.22	8,248.51	29.33	29.47	119.34	222.71	704.85	799.02	740.27	58.75	13.601	
8,300.00	8,297.50	8,317.35	8,298.64	29.51	29.64	119.46	222.60	704.75	799.76	740.66	59.09	13.534	
8,350.00	8,347.47	8,373.77	8,355.06	29.69	29.83	119.60	222.23	704.53	800.38	740.92	59.46	13.461	
8,400.00	8,397.44	8,423.24	8,404.44	29.86	29.98	119.91	219.39	704.41	800.75	740.95	59.79	13.392	
8,450.00	8,447.41	8,467.93	8,448.73	30.04	30.11	120.42	213.55	704.78	801.24	741.14	60.10	13.332	
8,500.00	8,497.38	8,508.60	8,488.51	30.22	30.23	121.10	205.22	705.85	802.30	741.92	60.38	13.287	
8,550.00	8,547.35	8,545.79	8,524.26	30.40	30.33	121.91	195.12	707.46	804.09	743.46	60.64	13.261 SF	
8,600.00	8,597.32	8,576.89	8,553.68	30.58	30.41	122.68	185.23	709.46	807.03	746.20	60.83	13.267	
8,650.00	8,647.29	8,605.41	8,580.17	30.76	30.47	123.48	174.98	711.94	811.33	750.36	60.97	13.308	
8,700.00	8,697.26	8,625.00	8,597.99	30.94	30.52	124.08	167.12	714.04	817.19	756.21	60.98	13.400	
8,750.00	8,747.23	8,646.56	8,617.16	31.12	30.57	124.79	157.69	716.96	824.93	763.98	60.95	13.535	
8,800.00	8,797.20	8,657.00	8,626.24	31.30	30.59	125.15	152.84	718.68	834.82	774.11	60.72	13.750	
8,850.00	8,847.18	8,689.00	8,653.17	31.48	30.66	126.35	136.76	724.96	846.65	785.97	60.68	13.952	
8,900.00	8,897.15	8,702.03	8,663.71	31.66	30.68	126.86	129.66	727.82	860.26	799.91	60.34	14.256	
8,950.00	8,947.12	8,724.83	8,681.47	31.84	30.72	127.82	116.32	732.98	875.59	815.51	60.09	14.572	
9,000.00	8,997.09	8,752.00	8,701.53	32.02	30.77	129.03	99.09	739.16	892.48	832.64	59.85	14.913	
9,050.00	9,047.06	8,787.75	8,726.59	32.20	30.83	130.71	74.78	746.87	910.59	850.89	59.70	15.253	
9,100.00	9,097.03	8,812.62	8,743.20	32.38	30.88	131.91	56.97	751.92	929.91	870.55	59.36	15.666	
9,150.00	9,147.00	8,833.86	8,756.77	32.56	30.91	132.96	41.19	756.12	950.71	891.78	58.93	16.132	
9,200.00	9,196.97	8,846.00	8,764.27	32.74	30.93	133.57	31.94	758.50	973.05	914.71	58.35	16.677	
9,250.00	9,246.94	8,865.01	8,775.50	32.92	30.97	134.54	17.06	762.19	996.91	939.07	57.84	17.234	
9,300.00	9,296.91	8,878.00	8,782.74	33.10	30.99	135.21	6.57	764.71	1,022.35	965.11	57.23	17.862	
9,350.00	9,346.88	8,887.42	8,787.75	33.28	31.00	135.70	-1.19	766.53	1,049.27	992.71	56.56	18.550	
9,400.00	9,396.85	8,896.63	8,792.45	33.46	31.02	136.19	-8.92	768.31	1,077.62	1,021.73	55.89	19.281	
9,450.00	9,446.82	8,910.00	8,798.90	33.64	31.04	136.91	-20.34	770.89	1,107.35	1,052.06	55.28	20.030	
9,500.00	9,496.79	8,910.00	8,798.90	33.82	31.04	136.91	-20.34	770.89	1,138.29	1,083.79	54.49	20.888	
9,550.00	9,546.76	8,910.00	8,798.90	34.00	31.04	136.91	-20.34	770.89	1,170.54	1,116.82	53.72	21.788	
9,600.00	9,596.73	8,925.25	8,805.66	34.18	31.06	137.74	-33.69	773.81	1,203.68	1,150.49	53.20	22.627	
9,650.00	9,646.70	8,941.00	8,811.93	34.36	31.09	138.60	-47.83	776.76	1,238.13	1,185.43	52.69	23.498	
9,700.00	9,696.67	8,941.00	8,811.93	34.54	31.09	138.60	-47.83	776.76	1,273.27	1,221.27	52.00	24.486	
9,750.00	9,746.64	8,941.00	8,811.93	34.72	31.09	138.60	-47.83	776.76	1,309.38	1,258.04	51.34	25.503	
9,800.00	9,796.61	8,941.00	8,811.93	34.90	31.09	138.60	-47.83	776.76	1,346.38	1,295.66	50.72	26.547	
9,850.00	9,846.58	8,941.00	8,811.93	35.08	31.09	138.60	-47.83	776.76	1,384.19	1,334.07	50.13	27.614	
9,900.00	9,896.55	8,954.31	8,816.67	35.26	31.11	139.34	-60.02	779.18	1,422.53	1,372.80	49.73	28.606	
9,950.00	9,946.52	8,958.24	8,817.97	35.44	31.11	139.56	-63.67	779.88	1,461.62	1,412.38	49.25	29.680	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 175-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.50	0.50	102.48	-194.47	878.78	900.04				
50.00	50.00	52.99	52.99	0.50	0.51	102.48	-194.50	878.66	899.94	898.93	1.01	892.297	
100.00	100.00	106.83	106.83	0.52	0.53	102.49	-194.61	878.29	899.62	898.58	1.04	861.606	
150.00	150.00	160.67	160.67	0.59	0.56	102.51	-194.78	877.66	899.09	897.94	1.15	783.227	
200.00	200.00	212.47	212.45	0.70	0.64	102.54	-194.98	876.87	898.39	897.04	1.34	668.211	
250.00	250.00	263.52	263.50	0.84	0.77	102.56	-195.17	876.03	897.62	896.01	1.61	558.188	
300.00	300.00	312.24	312.21	0.99	0.91	102.58	-195.32	875.23	896.86	894.96	1.90	472.631	
350.00	350.00	360.90	360.87	1.15	1.06	102.60	-195.43	874.52	896.17	893.96	2.21	406.284	
400.00	400.00	409.49	409.46	1.31	1.22	102.61	-195.57	873.88	895.56	893.03	2.53	354.568	
450.00	450.00	458.38	458.34	1.48	1.38	102.63	-195.76	873.30	895.02	892.17	2.85	313.531	
500.00	500.00	510.45	510.40	1.65	1.56	102.66	-195.98	872.65	894.46	891.26	3.20	279.516	
550.00	550.00	562.97	562.92	1.82	1.73	102.68	-196.17	871.87	893.77	890.22	3.55	251.687	
600.00	600.00	616.77	616.71	1.99	1.92	102.70	-196.31	870.87	892.89	888.98	3.91	228.376	
650.00	650.00	666.48	666.41	2.16	2.09	102.72	-196.41	869.80	891.87	887.61	4.26	209.536	
700.00	700.00	712.30	712.22	2.34	2.25	102.74	-196.54	868.97	891.02	886.43	4.59	194.075	
750.00	750.00	762.35	762.27	2.51	2.43	102.77	-196.73	868.24	890.35	885.41	4.94	180.162	
800.00	800.00	817.34	817.25	2.69	2.62	102.79	-196.88	867.22	889.48	884.16	5.31	167.474	
850.00	850.00	869.98	869.87	2.87	2.81	102.81	-196.95	866.02	888.37	882.70	5.67	156.606	
900.00	900.00	921.83	921.70	3.04	2.99	102.83	-196.91	864.73	887.15	881.12	6.03	147.074	
950.00	950.00	973.67	973.53	3.22	3.18	102.84	-196.76	863.36	885.83	879.44	6.39	138.585	
1,000.00	1,000.00	1,025.52	1,025.35	3.40	3.36	102.84	-196.52	861.90	884.41	877.65	6.75	130.977	
1,050.00	1,050.00	1,077.35	1,077.16	3.58	3.55	102.84	-196.17	860.35	882.88	875.76	7.11	124.118	
1,100.00	1,100.00	1,126.00	1,125.79	3.75	3.72	102.82	-195.48	859.00	881.36	873.90	7.46	118.125	
1,150.00	1,150.00	1,175.74	1,175.50	3.93	3.89	102.77	-194.40	857.72	879.87	872.05	7.81	112.617	
1,200.00	1,200.00	1,225.71	1,225.43	4.11	4.07	102.69	-192.86	856.54	878.37	870.21	8.16	107.585	
1,250.00	1,250.00	1,276.48	1,276.15	4.29	4.24	102.57	-190.81	855.43	876.86	868.35	8.52	102.941	
1,300.00	1,300.00	1,327.69	1,327.29	4.46	4.42	102.43	-188.30	854.34	875.29	866.42	8.87	98.645	
1,350.00	1,350.00	1,382.93	1,382.42	4.64	4.61	102.25	-185.14	853.07	873.56	864.32	9.24	94.518	
1,400.00	1,400.00	1,439.02	1,438.37	4.82	4.81	102.04	-181.54	851.47	871.49	861.87	9.61	90.647	
1,450.00	1,450.00	1,488.39	1,487.59	5.00	4.98	101.83	-178.08	849.99	869.29	859.32	9.97	87.229	
1,500.00	1,500.00	1,540.69	1,539.72	5.18	5.17	101.60	-174.13	848.43	867.06	856.73	10.33	83.960	
1,550.00	1,550.00	1,597.44	1,596.25	5.36	5.37	101.33	-169.52	846.44	864.53	853.83	10.70	80.772	
1,600.00	1,600.00	1,650.59	1,649.16	5.53	5.56	101.05	-164.91	844.28	861.69	850.62	11.07	77.847	
1,650.00	1,650.00	1,702.11	1,700.41	5.71	5.74	100.77	-160.12	842.13	858.75	847.32	11.43	75.130	
1,700.00	1,700.00	1,760.82	1,758.77	5.89	5.95	100.41	-154.29	839.40	855.54	843.73	11.81	72.413	
1,750.00	1,750.00	1,820.52	1,818.03	6.07	6.17	100.04	-147.96	836.00	851.78	839.58	12.20	69.811	
1,800.00	1,800.00	1,867.95	1,865.13	6.25	6.34	99.75	-143.10	833.16	847.93	835.37	12.55	67.543	
1,850.00	1,850.00	1,918.67	1,915.50	6.43	6.53	99.45	-138.08	830.01	844.03	831.11	12.92	65.347	
1,900.00	1,900.00	1,969.85	1,966.32	6.61	6.72	99.14	-132.99	826.75	840.06	826.78	13.28	63.257	
1,950.00	1,950.00	2,022.31	2,018.41	6.78	6.92	98.82	-127.77	823.29	836.01	822.37	13.65	61.255	
2,000.00	2,000.00	2,075.70	2,071.42	6.96	7.12	98.52	-122.76	819.49	831.77	817.76	14.02	59.332	
2,050.00	2,050.00	2,126.53	2,121.91	7.14	7.31	98.25	-118.30	815.66	827.39	813.01	14.38	57.527	
2,100.00	2,100.00	2,176.84	2,171.90	7.32	7.50	98.01	-114.17	811.78	822.99	808.24	14.75	55.815	
2,150.00	2,150.00	2,224.11	2,218.88	7.50	7.67	97.78	-110.48	808.16	818.65	803.55	15.10	54.218	
2,200.00	2,200.00	2,271.33	2,265.84	7.68	7.85	97.57	-106.87	804.68	814.48	799.02	15.45	52.705	
2,250.00	2,250.00	2,321.77	2,316.00	7.86	8.04	97.33	-103.09	801.01	810.37	794.55	15.82	51.236	
2,300.00	2,300.00	2,372.67	2,366.62	8.04	8.23	97.10	-99.34	797.24	806.23	790.05	16.18	49.827	
2,350.00	2,350.00	2,427.11	2,420.75	8.22	8.44	96.86	-95.41	792.99	801.91	785.36	16.55	48.442	
2,400.00	2,400.00	2,479.91	2,473.24	8.39	8.64	96.63	-91.67	788.57	797.33	780.40	16.92	47.115	
2,450.00	2,450.00	2,529.86	2,522.88	8.57	8.83	96.42	-88.21	784.30	792.68	775.40	17.28	45.860	
2,500.00	2,500.00	2,578.81	2,571.54	8.75	9.01	96.21	-84.90	780.11	788.04	770.40	17.64	44.663	
2,550.00	2,550.00	2,626.68	2,619.14	8.93	9.19	96.01	-81.69	776.10	783.52	765.52	18.00	43.526	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1

Offset Site Error: 0.00 ft

Survey Program: 175-MWD+HDGM

Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,600.00	2,600.00	2,673.23	2,665.43	9.11	9.37	95.81	-78.61	772.33	779.14	760.78	18.36	42.448	
2,650.00	2,650.00	2,718.42	2,710.40	9.29	9.54	95.62	-75.62	768.91	775.04	756.33	18.71	41.434	
2,700.00	2,700.00	2,765.06	2,756.82	9.47	9.71	95.41	-72.53	765.64	771.23	752.17	19.06	40.465	
2,750.00	2,750.00	2,813.92	2,805.45	9.65	9.90	95.19	-69.29	762.32	767.53	748.11	19.42	39.525	
2,800.00	2,800.00	2,865.12	2,856.43	9.83	10.09	94.97	-65.93	758.86	763.86	744.08	19.78	38.609	
2,850.00	2,850.00	2,919.22	2,910.27	10.00	10.29	94.73	-62.44	754.95	759.98	739.82	20.16	37.702	
2,900.00	2,900.00	2,972.24	2,963.02	10.18	10.49	94.50	-59.08	750.83	755.85	735.32	20.53	36.822	
2,950.00	2,950.00	3,024.75	3,015.26	10.36	10.69	94.28	-55.83	746.55	751.54	730.65	20.90	35.967	
3,000.00	3,000.00	3,072.78	3,063.03	10.54	10.87	94.07	-52.79	742.59	747.19	725.94	21.25	35.155	
3,050.00	3,050.00	3,120.20	3,110.19	10.72	11.05	93.84	-49.55	738.84	743.00	721.39	21.61	34.380	
3,100.00	3,100.00	3,168.84	3,158.55	10.90	11.24	93.58	-46.03	735.12	738.95	716.98	21.97	33.630	
3,150.00	3,150.00	3,217.64	3,207.08	11.08	11.42	93.31	-42.37	731.46	734.97	712.64	22.33	32.908	
3,200.00	3,200.00	3,269.95	3,259.10	11.26	11.62	93.03	-38.55	727.48	730.96	708.26	22.70	32.196	
3,250.00	3,250.00	3,322.53	3,311.40	11.44	11.82	92.78	-35.09	723.26	726.77	703.70	23.07	31.498	
3,300.00	3,300.00	3,374.74	3,363.33	11.62	12.02	92.55	-31.99	718.85	722.42	698.98	23.44	30.819	
3,350.00	3,350.00	3,426.68	3,414.99	11.80	12.22	92.34	-29.19	714.28	717.90	694.09	23.81	30.155	
3,400.00	3,400.00	3,477.94	3,465.98	11.97	12.41	92.15	-26.58	709.64	713.27	689.10	24.17	29.509	
3,450.00	3,450.00	3,526.78	3,514.55	12.15	12.60	91.97	-24.23	705.14	708.58	684.05	24.53	28.885	
3,500.00	3,500.00	3,572.95	3,560.49	12.33	12.77	91.81	-22.20	701.07	704.10	679.21	24.89	28.293	
3,550.00	3,550.00	3,619.05	3,606.40	12.51	12.95	91.67	-20.34	697.24	699.87	674.63	25.24	27.729	
3,600.00	3,600.00	3,665.03	3,652.19	12.69	13.12	91.52	-18.41	693.66	695.93	670.33	25.59	27.192	
3,650.00	3,650.00	3,711.20	3,698.20	12.87	13.29	91.36	-16.34	690.33	692.26	666.31	25.95	26.681	
3,700.00	3,700.00	3,757.71	3,744.56	13.05	13.46	91.18	-14.16	687.20	688.84	662.54	26.30	26.192	
3,750.00	3,750.00	3,805.07	3,791.76	13.23	13.64	91.00	-11.89	684.24	685.66	659.01	26.66	25.723	
3,800.00	3,800.00	3,854.27	3,840.82	13.41	13.82	90.80	-9.56	681.25	682.59	655.57	27.02	25.266	
3,850.00	3,850.00	3,904.00	3,890.40	13.59	14.01	90.61	-7.24	678.27	679.56	652.18	27.38	24.822	
3,900.00	3,900.00	3,954.49	3,940.74	13.77	14.20	90.40	-4.74	675.21	676.51	648.77	27.74	24.387	
3,950.00	3,950.00	4,005.78	3,991.86	13.94	14.39	90.17	-2.00	672.05	673.40	645.30	28.11	23.959	
4,000.00	4,000.00	4,057.79	4,043.68	14.12	14.58	89.92	0.96	668.68	670.16	641.69	28.48	23.535	
4,050.00	4,050.00	4,108.62	4,094.30	14.30	14.77	126.82	4.04	665.26	666.96	638.12	28.84	23.126	
4,100.00	4,099.99	4,158.95	4,144.40	14.48	14.96	126.62	7.28	661.83	664.06	634.85	29.20	22.738	
4,150.00	4,149.97	4,209.98	4,195.19	14.66	15.16	126.44	10.81	658.29	661.43	631.86	29.57	22.368	
4,200.00	4,199.94	4,261.14	4,246.07	14.84	15.35	126.22	14.73	654.63	658.92	628.99	29.94	22.011	
4,250.00	4,249.91	4,312.17	4,296.79	15.01	15.55	125.97	18.94	650.89	656.34	626.04	30.30	21.659	
4,300.00	4,299.88	4,363.38	4,347.66	15.19	15.74	125.70	23.39	647.04	653.68	623.01	30.67	21.312	
4,350.00	4,349.85	4,416.13	4,400.04	15.37	15.95	125.40	28.10	642.89	650.86	619.82	31.04	20.966	
4,400.00	4,399.82	4,467.30	4,450.82	15.55	16.15	125.11	32.72	638.66	647.86	616.45	31.41	20.624	
4,450.00	4,449.79	4,515.72	4,498.89	15.72	16.33	124.84	37.00	634.70	644.91	613.14	31.78	20.294	
4,500.00	4,499.77	4,567.52	4,550.33	15.90	16.53	124.56	41.42	630.52	642.03	609.89	32.15	19.971	
4,550.00	4,549.74	4,623.96	4,606.34	16.08	16.75	124.25	46.21	625.50	638.76	606.23	32.53	19.639	
4,600.00	4,599.71	4,675.93	4,657.87	16.26	16.96	123.96	50.62	620.48	635.11	602.21	32.90	19.307	
4,650.00	4,649.68	4,726.27	4,707.78	16.44	17.15	123.68	54.94	615.54	631.41	598.14	33.26	18.982	
4,700.00	4,699.65	4,773.45	4,754.58	16.61	17.34	123.41	58.99	610.97	627.79	594.16	33.63	18.668	
4,750.00	4,749.62	4,820.11	4,800.87	16.79	17.52	123.14	62.95	606.69	624.43	590.43	33.99	18.368	
4,800.00	4,799.59	4,868.86	4,849.26	16.97	17.71	122.87	67.02	602.40	621.26	586.90	34.36	18.080	
4,850.00	4,849.56	4,918.11	4,898.15	17.15	17.90	122.60	71.05	598.12	618.16	583.43	34.73	17.800	
4,900.00	4,899.53	4,968.90	4,948.58	17.33	18.10	122.32	75.14	593.70	615.07	579.97	35.10	17.524	
4,950.00	4,949.50	5,019.88	4,999.20	17.50	18.30	122.04	79.20	589.17	611.89	576.43	35.47	17.252	
5,000.00	4,999.47	5,070.55	5,049.51	17.68	18.49	121.77	83.19	584.58	608.65	572.81	35.84	16.983	
5,050.00	5,049.44	5,121.23	5,099.82	17.86	18.69	121.50	87.11	579.93	605.35	569.14	36.21	16.719	
5,100.00	5,099.41	5,171.53	5,149.75	18.04	18.89	121.23	90.98	575.27	602.01	565.43	36.58	16.459	
5,150.00	5,149.38	5,221.73	5,199.58	18.22	19.08	120.96	94.83	570.57	598.64	561.69	36.95	16.203	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 175-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,199.35	5,271.54	5,249.03	18.40	19.27	120.69	98.55	565.91	595.27	557.95	37.31	15.953	
5,250.00	5,249.32	5,321.02	5,298.17	18.57	19.47	120.44	102.12	561.29	591.91	554.23	37.68	15.708	
5,300.00	5,299.29	5,369.96	5,346.79	18.75	19.66	120.21	105.42	556.81	588.63	550.58	38.05	15.470	
5,350.00	5,349.26	5,418.73	5,395.27	18.93	19.84	120.00	108.52	552.45	585.44	547.02	38.42	15.240	
5,400.00	5,399.23	5,467.22	5,443.45	19.11	20.03	119.76	111.93	548.18	582.36	543.58	38.78	15.016	
5,450.00	5,449.20	5,516.90	5,492.78	19.29	20.22	119.46	115.84	543.84	579.39	540.24	39.15	14.799	
5,500.00	5,499.17	5,567.94	5,543.46	19.47	20.42	119.15	119.96	539.29	576.36	536.84	39.52	14.583	
5,550.00	5,549.14	5,614.51	5,589.68	19.65	20.60	118.85	123.74	535.15	573.36	533.47	39.89	14.373	
5,600.00	5,599.11	5,658.23	5,633.12	19.82	20.77	118.58	127.34	531.68	570.86	530.61	40.25	14.182	
5,650.00	5,649.08	5,705.01	5,679.62	20.00	20.95	118.29	131.21	528.42	568.85	528.24	40.62	14.006	
5,700.00	5,699.05	5,755.75	5,730.07	20.18	21.15	117.97	135.35	524.92	566.88	525.90	40.99	13.830	
5,750.00	5,749.02	5,806.15	5,780.18	20.36	21.34	117.67	139.37	521.38	564.86	523.50	41.36	13.657	
5,800.00	5,798.99	5,856.29	5,830.05	20.54	21.53	117.38	143.23	517.85	562.83	521.10	41.73	13.487	
5,850.00	5,848.96	5,907.40	5,880.89	20.72	21.73	117.09	147.02	514.23	560.76	518.65	42.10	13.319	
5,900.00	5,898.93	5,958.97	5,932.19	20.90	21.92	116.80	150.80	510.43	558.55	516.08	42.48	13.150	
5,950.00	5,948.90	6,008.80	5,981.75	21.08	22.12	116.54	154.33	506.69	556.27	513.43	42.84	12.984	
6,000.00	5,998.87	6,058.29	6,030.99	21.26	22.30	116.29	157.59	503.06	554.04	510.83	43.21	12.821	
6,050.00	6,048.84	6,105.42	6,077.90	21.43	22.48	116.06	160.68	499.73	551.95	508.38	43.58	12.666	
6,100.00	6,098.81	6,152.29	6,124.55	21.61	22.66	115.80	164.09	496.61	550.15	506.21	43.94	12.521	
6,150.00	6,148.78	6,202.22	6,174.23	21.79	22.85	115.51	167.93	493.41	548.51	504.20	44.31	12.379	
6,200.00	6,198.75	6,252.59	6,224.35	21.97	23.04	115.21	171.75	490.14	546.84	502.16	44.68	12.239	
6,250.00	6,248.72	6,302.04	6,273.56	22.15	23.23	114.92	175.45	486.95	545.19	500.14	45.05	12.102	
6,300.00	6,298.69	6,351.51	6,322.78	22.33	23.42	114.63	179.13	483.80	543.59	498.17	45.42	11.968	
6,350.00	6,348.66	6,401.18	6,372.23	22.51	23.61	114.36	182.71	480.69	542.04	496.25	45.79	11.838	
6,400.00	6,398.63	6,450.88	6,421.71	22.69	23.79	114.10	186.12	477.64	540.52	494.36	46.16	11.710	
6,450.00	6,448.60	6,500.19	6,470.84	22.87	23.98	113.86	189.36	474.69	539.05	492.52	46.52	11.587	
6,500.00	6,498.57	6,549.84	6,520.30	23.05	24.17	113.63	192.48	471.80	537.63	490.74	46.89	11.466	
6,550.00	6,548.54	6,600.19	6,570.47	23.23	24.36	113.40	195.64	468.85	536.21	488.95	47.26	11.346	
6,600.00	6,598.51	6,648.87	6,618.97	23.40	24.54	113.17	198.70	465.99	534.79	487.17	47.62	11.230	
6,650.00	6,648.49	6,694.96	6,664.93	23.58	24.71	113.01	201.13	463.68	533.67	485.69	47.98	11.124	
6,700.00	6,698.46	6,742.33	6,712.22	23.76	24.88	112.92	203.05	461.77	532.89	484.56	48.33	11.026	
6,750.00	6,748.43	6,792.01	6,761.84	23.94	25.06	112.87	204.78	459.95	532.21	483.52	48.69	10.931	
6,800.00	6,798.40	6,841.51	6,811.29	24.12	25.24	112.83	206.31	458.22	531.56	482.52	49.04	10.839	
6,850.00	6,848.37	6,890.77	6,860.50	24.30	25.41	112.82	207.62	456.61	530.98	481.58	49.40	10.749	
6,900.00	6,898.34	6,940.38	6,910.08	24.48	25.59	112.83	208.72	455.11	530.45	480.70	49.75	10.662	
6,950.00	6,948.31	6,990.33	6,960.00	24.66	25.77	112.87	209.63	453.66	529.94	479.83	50.11	10.576	
7,000.00	6,998.28	7,036.98	7,006.63	24.84	25.93	112.92	210.37	452.42	529.53	479.08	50.45	10.496	
7,018.50	7,016.77	7,053.45	7,023.09	24.90	25.99	112.94	210.69	452.08	529.49	478.92	50.57	10.470	CC
7,050.00	7,048.25	7,081.48	7,051.11	25.02	26.08	112.95	211.33	451.63	529.60	478.82	50.78	10.430	
7,100.00	7,098.22	7,129.24	7,098.85	25.20	26.25	112.97	212.60	451.15	530.11	478.99	51.12	10.370	
7,150.00	7,148.19	7,180.65	7,150.24	25.38	26.43	113.00	213.88	450.62	530.58	479.10	51.48	10.306	
7,200.00	7,198.16	7,231.45	7,201.03	25.56	26.61	113.04	214.97	450.01	530.94	479.10	51.84	10.242	
7,250.00	7,248.13	7,281.88	7,251.44	25.74	26.78	113.11	215.86	449.41	531.25	479.05	52.20	10.178	
7,300.00	7,298.10	7,332.44	7,301.99	25.91	26.96	113.19	216.57	448.80	531.51	478.96	52.55	10.114	
7,350.00	7,348.07	7,383.03	7,352.58	26.09	27.14	113.29	217.16	448.16	531.72	478.82	52.91	10.050	
7,400.00	7,398.04	7,433.58	7,403.12	26.27	27.31	113.39	217.61	447.51	531.88	478.62	53.26	9.987	
7,450.00	7,448.01	7,484.11	7,453.65	26.45	27.49	113.52	217.89	446.83	531.99	478.38	53.61	9.923	
7,500.00	7,497.98	7,533.04	7,502.57	26.63	27.65	113.66	218.02	446.24	532.12	478.17	53.96	9.862	
7,550.00	7,547.95	7,581.96	7,551.49	26.81	27.82	113.81	218.02	445.78	532.36	478.06	54.30	9.804	
7,600.00	7,597.92	7,630.25	7,599.78	26.99	27.98	113.97	217.97	445.47	532.73	478.10	54.64	9.750	
7,650.00	7,647.89	7,678.74	7,648.27	27.17	28.14	114.14	217.91	445.31	533.26	478.29	54.97	9.700	
7,700.00	7,697.86	7,728.48	7,698.01	27.35	28.30	114.32	217.80	445.24	533.87	478.56	55.31	9.652	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 175-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,750.00	7,747.83	7,778.22	7,747.75	27.53	28.46	114.51	217.61	445.20	534.51	478.86	55.65	9.604	
7,800.00	7,797.80	7,827.95	7,797.47	27.71	28.62	114.70	217.32	445.21	535.17	479.18	55.99	9.559	
7,850.00	7,847.77	7,877.48	7,847.00	27.89	28.78	114.91	216.94	445.26	535.87	479.54	56.32	9.514	
7,900.00	7,897.74	7,926.61	7,896.14	28.07	28.93	115.10	216.71	445.35	536.63	479.98	56.65	9.472	
7,950.00	7,947.71	7,976.19	7,945.72	28.25	29.09	115.27	216.68	445.46	537.47	480.48	56.99	9.431	
8,000.00	7,997.68	8,026.47	7,996.00	28.43	29.25	115.45	216.62	445.57	538.31	480.98	57.33	9.390	
8,050.00	8,047.65	8,076.86	8,046.39	28.61	29.41	115.63	216.47	445.67	539.12	481.45	57.66	9.349	
8,100.00	8,097.62	8,127.38	8,096.90	28.79	29.57	115.83	216.18	445.75	539.88	481.88	58.00	9.308	
8,150.00	8,147.59	8,177.78	8,147.30	28.97	29.73	116.04	215.75	445.80	540.61	482.27	58.34	9.266	
8,200.00	8,197.56	8,228.12	8,197.64	29.15	29.89	116.26	215.24	445.83	541.31	482.62	58.68	9.224	
8,250.00	8,247.53	8,278.50	8,248.01	29.33	30.05	116.47	214.84	445.81	541.97	482.95	59.03	9.182	
8,300.00	8,297.50	8,328.92	8,298.44	29.51	30.22	116.61	215.03	445.63	542.61	483.23	59.37	9.139	
8,350.00	8,347.47	8,379.73	8,349.24	29.69	30.40	116.71	215.59	445.32	543.18	483.45	59.73	9.094	
8,400.00	8,397.44	8,430.59	8,400.10	29.86	30.57	116.82	216.04	444.95	543.68	483.60	60.09	9.048	
8,450.00	8,447.41	8,481.14	8,450.64	30.04	30.75	116.94	216.35	444.55	544.12	483.68	60.44	9.002	
8,500.00	8,497.38	8,532.77	8,502.28	30.22	30.93	117.08	216.52	444.06	544.47	483.67	60.80	8.955	
8,550.00	8,547.35	8,599.50	8,568.90	30.40	31.14	117.57	213.69	442.82	543.98	482.79	61.19	8.890	
8,600.00	8,597.32	8,664.84	8,633.24	30.58	31.33	118.89	202.75	440.96	542.04	480.54	61.51	8.813	
8,650.00	8,647.29	8,725.78	8,691.36	30.76	31.50	120.94	184.71	438.78	539.07	477.27	61.79	8.724	
8,700.00	8,697.26	8,760.50	8,723.36	30.94	31.57	122.46	171.29	437.97	536.67	474.58	62.09	8.643	
8,742.56	8,739.80	8,789.42	8,749.31	31.10	31.63	123.90	158.53	437.94	535.99	473.69	62.30	8.604	
8,750.00	8,747.23	8,794.30	8,753.62	31.12	31.64	124.16	156.23	437.99	536.01	473.68	62.33	8.600 ES	
8,800.00	8,797.20	8,830.87	8,785.20	31.30	31.71	126.22	137.83	438.84	537.31	474.80	62.50	8.596 SF	
8,850.00	8,847.18	8,876.12	8,822.57	31.48	31.78	129.04	112.35	439.75	539.94	477.27	62.67	8.616	
8,900.00	8,897.15	8,916.55	8,854.22	31.66	31.85	131.79	87.21	440.14	544.06	481.31	62.74	8.671	
8,950.00	8,947.12	8,947.07	8,877.05	31.84	31.88	133.97	66.96	440.39	550.32	487.68	62.64	8.786	
9,000.00	8,997.09	8,975.79	8,897.71	32.02	31.92	136.10	47.02	440.71	559.07	496.68	62.39	8.960	
9,050.00	9,047.06	9,002.21	8,915.99	32.20	31.95	138.09	27.94	441.08	570.42	508.42	62.00	9.200	
9,100.00	9,097.03	9,041.98	8,942.21	32.38	31.99	141.16	-1.95	441.15	584.06	522.33	61.73	9.461	
9,150.00	9,147.00	9,080.56	8,966.23	32.56	32.02	144.20	-32.11	439.85	599.45	538.07	61.38	9.766	
9,200.00	9,196.97	9,114.63	8,986.20	32.74	32.05	146.94	-59.61	437.58	616.80	555.92	60.88	10.131	
9,250.00	9,246.94	9,138.39	8,999.49	32.92	32.07	148.85	-79.21	435.61	636.42	576.28	60.14	10.582	
9,300.00	9,296.91	9,162.00	9,012.16	33.10	32.08	150.76	-99.00	433.33	658.26	598.91	59.35	11.091	
9,350.00	9,346.88	9,183.66	9,023.31	33.28	32.10	152.50	-117.41	430.98	682.23	623.73	58.49	11.663	
9,400.00	9,396.85	9,197.00	9,029.95	33.46	32.11	153.57	-128.88	429.41	708.24	650.79	57.45	12.328	
9,450.00	9,446.82	9,197.00	9,029.95	33.64	32.11	153.57	-128.88	429.41	736.60	680.48	56.12	13.124	
9,500.00	9,496.79	9,197.00	9,029.95	33.82	32.11	153.57	-128.88	429.41	767.17	712.35	54.82	13.993	
9,550.00	9,546.76	9,197.00	9,029.95	34.00	32.11	153.57	-128.88	429.41	799.70	746.12	53.58	14.927	
9,600.00	9,596.73	9,229.47	9,044.82	34.18	32.12	156.16	-157.53	426.08	831.97	778.86	53.11	15.665	
9,650.00	9,646.70	9,235.63	9,047.40	34.36	32.12	156.65	-163.11	425.59	866.96	814.84	52.12	16.634	
9,700.00	9,696.67	9,241.40	9,049.74	34.54	32.12	157.10	-168.37	425.17	903.22	852.03	51.19	17.644	
9,750.00	9,746.64	9,246.80	9,051.86	34.72	32.13	157.52	-173.33	424.81	940.64	890.32	50.32	18.691	
9,800.00	9,796.61	9,251.87	9,053.80	34.90	32.13	157.92	-178.00	424.51	979.08	929.56	49.52	19.771	
9,850.00	9,846.58	9,256.64	9,055.57	35.08	32.13	158.28	-182.42	424.25	1,018.45	969.66	48.78	20.877	
9,900.00	9,896.55	9,291.00	9,066.84	35.26	32.17	160.85	-214.85	423.21	1,060.23	1,011.55	48.69	21.776	
9,950.00	9,946.52	9,291.00	9,066.84	35.44	32.17	160.85	-214.85	423.21	1,100.73	1,052.76	47.97	22.947	
10,000.00	9,996.49	9,291.00	9,066.84	35.62	32.17	160.85	-214.85	423.21	1,141.98	1,094.66	47.31	24.136	
10,050.00	10,046.46	9,291.00	9,066.84	35.80	32.17	160.85	-214.85	423.21	1,183.90	1,137.18	46.72	25.341	
10,100.00	10,096.43	9,291.00	9,066.84	35.98	32.17	160.85	-214.85	423.21	1,226.43	1,180.25	46.18	26.557	
10,150.00	10,146.40	9,291.00	9,066.84	36.16	32.17	160.85	-214.85	423.21	1,269.50	1,223.80	45.70	27.782	
10,200.00	10,196.37	9,291.00	9,066.84	36.34	32.17	160.85	-214.85	423.21	1,313.06	1,267.81	45.26	29.013	
10,250.00	10,246.34	9,291.00	9,066.84	36.52	32.17	160.85	-214.85	423.21	1,357.07	1,312.21	44.87	30.247	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 175-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,300.00	10,296.31	9,291.00	9,066.84	36.70	32.17	160.85	-214.85	423.21	1,401.48	1,356.97	44.52	31.483	
10,350.00	10,346.28	9,291.00	9,066.84	36.88	32.17	160.85	-214.85	423.21	1,446.26	1,402.05	44.20	32.718	
10,400.00	10,396.25	9,291.00	9,066.84	37.06	32.17	160.85	-214.85	423.21	1,491.36	1,447.44	43.93	33.952	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	1.00	-1.00	0.50	0.50	-90.36	-4.58	-729.87	729.89				
50.00	50.00	49.00	49.00	0.50	0.50	-90.36	-4.58	-729.87	729.89	728.88	1.01	725.299	
100.00	100.00	101.00	99.00	0.52	0.52	-90.36	-4.58	-729.87	729.89	728.85	1.04	704.215	
150.00	150.00	149.00	149.00	0.59	0.59	-90.36	-4.58	-729.87	729.89	728.71	1.18	619.290	
200.00	200.00	201.00	199.00	0.70	0.70	-90.36	-4.58	-729.87	729.89	728.48	1.41	518.854	
250.00	250.00	249.00	249.00	0.84	0.83	-90.36	-4.58	-729.87	729.89	728.21	1.67	436.390	
300.00	300.00	301.00	299.00	0.99	0.99	-90.36	-4.58	-729.87	729.89	727.91	1.98	369.046	
350.00	350.00	349.00	349.00	1.15	1.14	-90.36	-4.58	-729.87	729.89	727.60	2.29	319.040	
400.00	400.00	401.00	399.00	1.31	1.31	-90.36	-4.58	-729.87	729.89	727.26	2.62	278.424	
450.00	450.00	449.00	449.00	1.48	1.47	-90.36	-4.58	-729.87	729.89	726.94	2.95	247.480	
500.00	500.00	501.00	499.00	1.65	1.65	-90.36	-4.58	-729.87	729.89	726.59	3.30	221.473	
550.00	550.00	549.00	549.00	1.82	1.81	-90.36	-4.58	-729.87	729.89	726.25	3.63	200.966	
600.00	600.00	601.00	599.00	1.99	1.99	-90.36	-4.58	-729.87	729.89	725.90	3.98	183.173	
650.00	650.00	649.00	649.00	2.16	2.16	-90.36	-4.58	-729.87	729.89	725.56	4.33	168.735	
700.00	700.00	701.00	699.00	2.34	2.34	-90.36	-4.58	-729.87	729.89	725.20	4.68	155.887	
750.00	750.00	749.00	749.00	2.51	2.51	-90.36	-4.58	-729.87	729.89	724.86	5.03	145.225	
800.00	800.00	801.00	799.00	2.69	2.69	-90.36	-4.58	-729.87	729.89	724.50	5.38	135.548	
850.00	850.00	849.00	849.00	2.87	2.86	-90.36	-4.58	-729.87	729.89	724.16	5.73	127.374	
900.00	900.00	901.00	899.00	3.04	3.05	-90.36	-4.58	-729.87	729.89	723.80	6.09	119.837	
950.00	950.00	949.00	949.00	3.22	3.22	-90.36	-4.58	-729.87	729.89	723.45	6.44	113.382	
1,000.00	1,000.00	1,001.00	999.00	3.40	3.40	-90.36	-4.58	-729.87	729.89	723.09	6.80	107.354	
1,050.00	1,050.00	1,049.00	1,049.00	3.58	3.57	-90.36	-4.58	-729.87	729.89	722.74	7.15	102.131	
1,100.00	1,100.00	1,101.00	1,099.00	3.75	3.76	-90.36	-4.58	-729.87	729.89	722.38	7.51	97.205	
1,150.00	1,150.00	1,149.00	1,149.00	3.93	3.93	-90.36	-4.58	-729.87	729.89	722.03	7.86	92.895	
1,200.00	1,200.00	1,201.00	1,199.00	4.11	4.11	-90.36	-4.58	-729.87	729.89	721.67	8.22	88.795	
1,250.00	1,250.00	1,249.00	1,249.00	4.29	4.28	-90.36	-4.58	-729.87	729.89	721.32	8.57	85.181	
1,300.00	1,300.00	1,301.00	1,299.00	4.46	4.47	-90.36	-4.58	-729.87	729.89	720.95	8.93	81.717	
1,350.00	1,350.00	1,349.00	1,349.00	4.64	4.64	-90.36	-4.58	-729.87	729.89	720.60	9.28	78.642	
1,400.00	1,400.00	1,401.00	1,399.00	4.82	4.82	-90.36	-4.58	-729.87	729.89	720.24	9.64	75.678	
1,450.00	1,450.00	1,449.00	1,449.00	5.00	5.00	-90.36	-4.58	-729.87	729.89	719.89	9.99	73.031	
1,500.00	1,500.00	1,501.00	1,499.00	5.18	5.18	-90.36	-4.58	-729.87	729.89	719.53	10.36	70.466	
1,550.00	1,550.00	1,549.00	1,549.00	5.36	5.35	-90.36	-4.58	-729.87	729.89	719.18	10.71	68.164	
1,600.00	1,600.00	1,601.00	1,599.00	5.53	5.54	-90.36	-4.58	-729.87	729.89	718.81	11.07	65.923	
1,650.00	1,650.00	1,649.00	1,649.00	5.71	5.71	-90.36	-4.58	-729.87	729.89	718.46	11.42	63.903	
1,700.00	1,700.00	1,701.00	1,699.00	5.89	5.89	-90.36	-4.58	-729.87	729.89	718.10	11.79	61.928	
1,750.00	1,750.00	1,749.00	1,749.00	6.07	6.07	-90.36	-4.58	-729.87	729.89	717.75	12.14	60.142	
1,800.00	1,800.00	1,801.00	1,799.00	6.25	6.25	-90.36	-4.58	-729.87	729.89	717.39	12.50	58.388	
1,850.00	1,850.00	1,849.00	1,849.00	6.43	6.42	-90.36	-4.58	-729.87	729.89	717.04	12.85	56.797	
1,900.00	1,900.00	1,901.00	1,899.00	6.61	6.61	-90.36	-4.58	-729.87	729.89	716.67	13.22	55.230	
1,950.00	1,950.00	1,949.00	1,949.00	6.78	6.78	-90.36	-4.58	-729.87	729.89	716.32	13.57	53.804	
2,000.00	2,000.00	2,001.00	1,999.00	6.96	6.97	-90.36	-4.58	-729.87	729.89	715.96	13.93	52.396	
2,050.00	2,050.00	2,049.00	2,049.00	7.14	7.14	-90.36	-4.58	-729.87	729.89	715.61	14.28	51.110	
2,100.00	2,100.00	2,101.00	2,099.00	7.32	7.32	-90.36	-4.58	-729.87	729.89	715.24	14.65	49.837	
2,150.00	2,150.00	2,149.00	2,149.00	7.50	7.50	-90.36	-4.58	-729.87	729.89	714.89	15.00	48.672	
2,200.00	2,200.00	2,201.00	2,199.00	7.68	7.68	-90.36	-4.58	-729.87	729.89	714.53	15.36	47.516	
2,250.00	2,250.00	2,249.00	2,249.00	7.86	7.85	-90.36	-4.58	-729.87	729.89	714.17	15.71	46.456	
2,300.00	2,300.00	2,301.00	2,299.00	8.04	8.04	-90.36	-4.58	-729.87	729.89	713.81	16.08	45.401	
2,350.00	2,350.00	2,349.00	2,349.00	8.22	8.21	-90.36	-4.58	-729.87	729.89	713.46	16.43	44.432	
2,400.00	2,400.00	2,401.00	2,399.00	8.39	8.40	-90.36	-4.58	-729.87	729.89	713.09	16.79	43.466	
2,450.00	2,450.00	2,449.00	2,449.00	8.57	8.57	-90.36	-4.58	-729.87	729.89	712.74	17.14	42.577	
2,500.00	2,500.00	2,499.00	2,499.00	8.75	8.75	-90.36	-4.58	-729.87	729.89	712.39	17.50	41.707	CC
2,550.00	2,550.00	2,543.49	2,543.49	8.93	8.90	-90.36	-4.56	-730.04	730.07	712.24	17.83	40.936	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,600.00	2,600.00	2,587.86	2,587.85	9.11	9.06	-90.35	-4.52	-730.54	730.64	712.47	18.17	40.217	
2,650.00	2,650.00	2,632.21	2,632.20	9.29	9.21	-90.35	-4.44	-731.39	731.60	713.10	18.50	39.553	
2,700.00	2,700.00	2,676.56	2,676.53	9.47	9.36	-90.34	-4.33	-732.58	732.94	714.11	18.82	38.936	
2,750.00	2,750.00	2,720.88	2,720.82	9.65	9.52	-90.33	-4.19	-734.11	734.66	715.51	19.15	38.362	
2,800.00	2,800.00	2,765.17	2,765.08	9.83	9.67	-90.31	-4.01	-735.98	736.77	717.30	19.48	37.829	
2,850.00	2,850.00	2,809.44	2,809.29	10.00	9.82	-90.30	-3.81	-738.19	739.27	719.47	19.80	37.335	
2,900.00	2,900.00	2,854.39	2,854.17	10.18	9.98	-90.28	-3.56	-740.78	742.14	722.01	20.13	36.871	
2,950.00	2,950.00	2,904.30	2,903.98	10.36	10.15	-90.25	-3.28	-743.79	745.16	724.68	20.48	36.387	
3,000.00	3,000.00	2,954.21	2,953.80	10.54	10.33	-90.23	-3.00	-746.81	748.18	727.35	20.83	35.919	
3,050.00	3,050.00	3,004.12	3,003.61	10.72	10.50	-90.21	-2.72	-749.83	751.20	730.02	21.18	35.466	
3,100.00	3,100.00	3,054.02	3,053.43	10.90	10.67	-90.19	-2.44	-752.84	754.22	732.69	21.53	35.027	
3,150.00	3,150.00	3,103.93	3,103.25	11.08	10.85	-90.16	-2.16	-755.86	757.25	735.36	21.88	34.602	
3,200.00	3,200.00	3,153.84	3,153.06	11.26	11.02	-90.14	-1.88	-758.87	760.27	738.03	22.24	34.190	
3,250.00	3,250.00	3,203.75	3,202.88	11.44	11.20	-90.12	-1.60	-761.89	763.29	740.70	22.59	33.791	
3,300.00	3,300.00	3,253.66	3,252.69	11.62	11.37	-90.10	-1.32	-764.91	766.31	743.37	22.94	33.403	
3,350.00	3,350.00	3,303.56	3,302.51	11.80	11.55	-90.08	-1.04	-767.92	769.33	746.04	23.29	33.027	
3,400.00	3,400.00	3,353.47	3,352.33	11.97	11.73	-90.06	-0.76	-770.94	772.35	748.71	23.65	32.662	
3,450.00	3,450.00	3,403.38	3,402.14	12.15	11.90	-90.04	-0.48	-773.96	775.37	751.37	24.00	32.308	
3,500.00	3,500.00	3,453.29	3,451.96	12.33	12.08	-90.01	-0.20	-776.97	778.40	754.04	24.35	31.963	
3,550.00	3,550.00	3,503.19	3,501.77	12.51	12.26	-89.99	0.09	-779.99	781.42	756.71	24.71	31.628	
3,600.00	3,600.00	3,553.10	3,551.59	12.69	12.43	-89.97	0.37	-783.01	784.44	759.38	25.06	31.303	
3,650.00	3,650.00	3,603.01	3,601.40	12.87	12.61	-89.95	0.65	-786.02	787.46	762.05	25.41	30.986	
3,700.00	3,700.00	3,652.92	3,651.22	13.05	12.79	-89.93	0.93	-789.04	790.48	764.72	25.77	30.678	
3,750.00	3,750.00	3,702.83	3,701.04	13.23	12.96	-89.91	1.21	-792.05	793.51	767.38	26.12	30.378	
3,800.00	3,800.00	3,752.73	3,750.85	13.41	13.14	-89.89	1.49	-795.07	796.53	770.05	26.48	30.085	
3,850.00	3,850.00	3,802.64	3,800.67	13.59	13.32	-89.87	1.77	-798.09	799.55	772.72	26.83	29.801	
3,900.00	3,900.00	3,852.55	3,850.48	13.77	13.50	-89.85	2.05	-801.10	802.57	775.39	27.18	29.524	
3,950.00	3,950.00	3,902.46	3,900.30	13.94	13.68	-89.83	2.33	-804.12	805.60	778.06	27.54	29.253	
4,000.00	4,000.00	3,952.36	3,950.11	14.12	13.85	-89.81	2.61	-807.14	808.62	780.73	27.89	28.990	
4,050.00	4,050.00	4,002.28	3,999.94	14.30	14.03	-52.67	2.89	-810.15	811.48	783.23	28.25	28.728	
4,100.00	4,099.99	4,052.22	4,049.78	14.48	14.21	-52.67	3.17	-813.17	814.00	785.40	28.60	28.461	
4,150.00	4,149.97	4,102.16	4,099.64	14.66	14.39	-52.70	3.45	-816.19	816.20	787.25	28.95	28.190	
4,200.00	4,199.94	4,152.11	4,149.49	14.84	14.57	-52.78	3.74	-819.21	818.19	788.88	29.31	27.918	
4,250.00	4,249.91	4,202.06	4,199.35	15.01	14.75	-52.85	4.02	-822.23	820.17	790.51	29.66	27.652	
4,300.00	4,299.88	4,252.01	4,249.21	15.19	14.93	-52.93	4.30	-825.24	822.15	792.14	30.01	27.392	
4,350.00	4,349.85	4,301.96	4,299.06	15.37	15.11	-53.00	4.58	-828.26	824.13	793.77	30.37	27.138	
4,400.00	4,399.82	4,351.91	4,348.92	15.55	15.28	-53.08	4.86	-831.28	826.12	795.40	30.72	26.890	
4,450.00	4,449.79	4,401.85	4,398.78	15.72	15.46	-53.15	5.14	-834.30	828.11	797.03	31.08	26.648	
4,500.00	4,499.77	4,451.80	4,448.63	15.90	15.64	-53.23	5.42	-837.32	830.09	798.66	31.43	26.411	
4,550.00	4,549.74	4,501.75	4,498.49	16.08	15.82	-53.30	5.70	-840.34	832.08	800.30	31.78	26.179	
4,600.00	4,599.71	4,551.70	4,548.35	16.26	16.00	-53.38	5.98	-843.36	834.07	801.94	32.14	25.953	
4,650.00	4,649.68	4,601.65	4,598.20	16.44	16.18	-53.45	6.26	-846.38	836.07	803.57	32.49	25.731	
4,700.00	4,699.65	4,651.60	4,648.06	16.61	16.36	-53.53	6.55	-849.39	838.06	805.21	32.85	25.514	
4,750.00	4,749.62	4,701.55	4,697.92	16.79	16.54	-53.60	6.83	-852.41	840.06	806.85	33.20	25.301	
4,800.00	4,799.59	4,751.50	4,747.77	16.97	16.72	-53.67	7.11	-855.43	842.05	808.50	33.56	25.093	
4,850.00	4,849.56	4,801.44	4,797.63	17.15	16.90	-53.74	7.39	-858.45	844.05	810.14	33.91	24.889	
4,900.00	4,899.53	4,851.39	4,847.49	17.33	17.08	-53.81	7.67	-861.47	846.05	811.78	34.27	24.690	
4,950.00	4,949.50	4,901.34	4,897.34	17.50	17.26	-53.89	7.95	-864.49	848.05	813.43	34.62	24.494	
5,000.00	4,999.47	4,951.29	4,947.20	17.68	17.44	-53.96	8.23	-867.51	850.05	815.07	34.98	24.303	
5,050.00	5,049.44	5,001.24	4,997.06	17.86	17.63	-54.03	8.51	-870.53	852.06	816.72	35.33	24.115	
5,100.00	5,099.41	5,051.19	5,046.91	18.04	17.81	-54.10	8.79	-873.54	854.06	818.37	35.69	23.931	
5,150.00	5,149.38	5,101.14	5,096.77	18.22	17.99	-54.17	9.07	-876.56	856.07	820.02	36.04	23.750	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,199.35	5,151.09	5,146.63	18.40	18.17	-54.24	9.36	-879.58	858.07	821.67	36.40	23.573	
5,250.00	5,249.32	5,201.03	5,196.48	18.57	18.35	-54.31	9.64	-882.60	860.08	823.33	36.76	23.400	
5,300.00	5,299.29	5,250.98	5,246.34	18.75	18.53	-54.38	9.92	-885.62	862.09	824.98	37.11	23.230	
5,350.00	5,349.26	5,300.93	5,296.20	18.93	18.71	-54.45	10.20	-888.64	864.10	826.63	37.47	23.063	
5,400.00	5,399.23	5,350.88	5,346.05	19.11	18.89	-54.52	10.48	-891.66	866.11	828.29	37.82	22.899	
5,450.00	5,449.20	5,400.83	5,395.91	19.29	19.07	-54.58	10.76	-894.68	868.13	829.95	38.18	22.738	
5,500.00	5,499.17	5,450.78	5,445.77	19.47	19.25	-54.65	11.04	-897.69	870.14	831.61	38.54	22.580	
5,550.00	5,549.14	5,500.73	5,495.62	19.65	19.43	-54.72	11.32	-900.71	872.16	833.27	38.89	22.425	
5,600.00	5,599.11	5,550.68	5,545.48	19.82	19.61	-54.79	11.60	-903.73	874.17	834.93	39.25	22.273	
5,650.00	5,649.08	5,600.62	5,595.34	20.00	19.80	-54.85	11.88	-906.75	876.19	836.59	39.61	22.123	
5,700.00	5,699.05	5,650.57	5,645.19	20.18	19.98	-54.92	12.17	-909.77	878.21	838.25	39.96	21.976	
5,750.00	5,749.02	5,700.52	5,695.05	20.36	20.16	-54.99	12.45	-912.79	880.23	839.91	40.32	21.832	
5,800.00	5,798.99	5,750.47	5,744.91	20.54	20.34	-55.05	12.73	-915.81	882.25	841.58	40.67	21.691	
5,850.00	5,848.96	5,800.42	5,794.76	20.72	20.52	-55.12	13.01	-918.83	884.28	843.25	41.03	21.551	
5,900.00	5,898.93	5,850.37	5,844.62	20.90	20.70	-55.19	13.29	-921.84	886.30	844.91	41.39	21.414	
5,950.00	5,948.90	5,900.32	5,894.48	21.08	20.88	-55.25	13.57	-924.86	888.33	846.58	41.74	21.280	
6,000.00	5,998.87	5,950.27	5,944.33	21.26	21.07	-55.32	13.85	-927.88	890.35	848.25	42.10	21.148	
6,050.00	6,048.84	6,000.21	5,994.19	21.43	21.25	-55.38	14.13	-930.90	892.38	849.92	42.46	21.018	
6,100.00	6,098.81	6,050.16	6,044.05	21.61	21.43	-55.45	14.41	-933.92	894.41	851.59	42.82	20.890	
6,150.00	6,148.78	6,100.11	6,093.90	21.79	21.61	-55.51	14.69	-936.94	896.44	853.27	43.17	20.764	
6,200.00	6,198.75	6,150.06	6,143.76	21.97	21.79	-55.57	14.98	-939.96	898.47	854.94	43.53	20.640	
6,250.00	6,248.72	6,200.01	6,193.62	22.15	21.97	-55.64	15.26	-942.98	900.50	856.62	43.89	20.519	
6,300.00	6,298.69	6,249.96	6,243.47	22.33	22.16	-55.70	15.54	-945.99	902.54	858.29	44.24	20.399	
6,350.00	6,348.66	6,300.09	6,293.33	22.51	22.34	-55.76	15.82	-949.01	904.57	859.97	44.60	20.281	
6,400.00	6,398.63	6,349.86	6,343.19	22.69	22.52	-55.83	16.10	-952.03	906.61	861.65	44.96	20.165	
6,450.00	6,448.60	6,399.80	6,393.04	22.87	22.70	-55.89	16.38	-955.05	908.64	863.33	45.32	20.051	
6,500.00	6,498.57	6,449.75	6,442.90	23.05	22.88	-55.95	16.66	-958.07	910.68	865.01	45.67	19.939	
6,550.00	6,548.54	6,500.30	6,492.76	23.23	23.07	-56.01	16.94	-961.09	912.72	866.68	46.03	19.828	
6,600.00	6,598.51	6,549.65	6,542.61	23.40	23.25	-56.07	17.22	-964.11	914.76	868.37	46.39	19.720	
6,650.00	6,648.49	6,599.60	6,592.47	23.58	23.43	-56.13	17.50	-967.13	916.80	870.05	46.75	19.613	
6,700.00	6,698.46	6,649.55	6,642.33	23.76	23.61	-56.20	17.79	-970.14	918.84	871.74	47.10	19.507	
6,750.00	6,748.43	6,700.50	6,692.18	23.94	23.80	-56.26	18.07	-973.16	920.88	873.42	47.46	19.402	
6,800.00	6,798.40	6,749.45	6,742.04	24.12	23.97	-56.32	18.35	-976.18	922.93	875.11	47.82	19.301	
6,850.00	6,848.37	6,800.61	6,791.90	24.30	24.16	-56.38	18.63	-979.20	924.97	876.79	48.18	19.198	
6,900.00	6,898.34	6,849.34	6,841.75	24.48	24.34	-56.44	18.91	-982.22	927.02	878.48	48.53	19.100	
6,950.00	6,948.31	6,900.71	6,891.61	24.66	24.53	-56.50	19.19	-985.24	929.06	880.17	48.90	19.001	
7,000.00	6,998.28	6,949.24	6,941.46	24.84	24.70	-56.56	19.47	-988.26	931.11	881.86	49.25	18.906	
7,050.00	7,048.25	7,000.81	6,991.32	25.02	24.89	-56.62	19.75	-991.27	933.16	883.55	49.61	18.809	
7,100.00	7,098.22	7,049.14	7,041.18	25.20	25.07	-56.67	20.03	-994.29	935.21	885.24	49.96	18.717	
7,150.00	7,148.19	7,099.09	7,091.03	25.38	25.25	-56.73	20.31	-997.31	937.26	886.94	50.32	18.625	
7,200.00	7,198.16	7,149.04	7,140.89	25.56	25.43	-56.79	20.60	-1,000.33	939.31	888.63	50.68	18.534	
7,250.00	7,248.13	7,201.02	7,190.75	25.74	25.62	-56.85	20.88	-1,003.35	941.36	890.32	51.05	18.441	
7,300.00	7,298.10	7,248.93	7,240.60	25.91	25.80	-56.91	21.16	-1,006.37	943.42	892.02	51.40	18.356	
7,350.00	7,348.07	7,301.12	7,290.46	26.09	25.99	-56.96	21.44	-1,009.39	945.47	893.71	51.76	18.265	
7,400.00	7,398.04	7,348.83	7,340.32	26.27	26.16	-57.02	21.72	-1,012.41	947.53	895.42	52.11	18.182	
7,450.00	7,448.01	7,401.22	7,390.17	26.45	26.35	-57.08	22.00	-1,015.42	949.59	897.11	52.48	18.094	
7,500.00	7,497.98	7,448.73	7,440.03	26.63	26.53	-57.14	22.28	-1,018.44	951.64	898.81	52.83	18.014	
7,550.00	7,547.95	7,501.32	7,489.89	26.81	26.72	-57.19	22.56	-1,021.46	953.70	900.50	53.20	17.928	
7,600.00	7,597.92	7,548.63	7,539.74	26.99	26.89	-57.25	22.84	-1,024.48	955.76	902.21	53.55	17.850	
7,650.00	7,647.89	7,601.43	7,589.60	27.17	27.08	-57.31	23.12	-1,027.50	957.82	903.91	53.91	17.766	
7,700.00	7,697.86	7,648.52	7,639.46	27.35	27.26	-57.36	23.41	-1,030.52	959.88	905.62	54.26	17.690	
7,750.00	7,747.83	7,701.53	7,689.31	27.53	27.45	-57.42	23.69	-1,033.54	961.94	907.31	54.63	17.608	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,800.00	7,797.80	7,748.42	7,739.17	27.71	27.62	-57.47	23.97	-1,036.56	964.01	909.03	54.98	17.534	
7,850.00	7,847.77	7,801.63	7,789.03	27.89	27.82	-57.53	24.25	-1,039.57	966.07	910.72	55.35	17.454	
7,900.00	7,897.74	7,848.32	7,838.88	28.07	27.99	-57.58	24.53	-1,042.59	968.14	912.44	55.70	17.383	
7,950.00	7,947.71	7,901.73	7,888.74	28.25	28.18	-57.64	24.81	-1,045.61	970.20	914.13	56.07	17.305	
8,000.00	7,997.68	7,948.22	7,938.60	28.43	28.35	-57.69	25.09	-1,048.63	972.27	915.86	56.41	17.235	
8,050.00	8,047.65	8,001.84	7,988.45	28.61	28.55	-57.75	25.37	-1,051.65	974.33	917.55	56.78	17.159	
8,100.00	8,097.62	8,048.11	8,038.31	28.79	28.72	-57.80	25.65	-1,054.67	976.40	919.27	57.13	17.091	
8,150.00	8,147.59	8,098.06	8,088.17	28.97	28.90	-57.85	25.93	-1,057.69	978.47	920.98	57.49	17.021	
8,200.00	8,197.56	8,148.01	8,138.02	29.15	29.08	-57.91	26.22	-1,060.71	980.54	922.70	57.85	16.951	
8,250.00	8,247.53	8,202.04	8,187.88	29.33	29.28	-57.96	26.50	-1,063.72	982.61	924.39	58.22	16.878	
8,300.00	8,297.50	8,247.91	8,237.74	29.51	29.45	-58.01	26.78	-1,066.74	984.68	926.12	58.56	16.814	
8,350.00	8,347.47	8,302.14	8,287.59	29.69	29.65	-58.07	27.06	-1,069.76	986.76	927.82	58.94	16.743	
8,400.00	8,397.44	8,347.81	8,337.45	29.86	29.81	-58.12	27.34	-1,072.78	988.83	929.55	59.28	16.681	
8,450.00	8,447.41	8,402.25	8,387.31	30.04	30.01	-58.17	27.62	-1,075.80	990.90	931.25	59.66	16.611	
8,500.00	8,497.38	8,447.70	8,437.16	30.22	30.18	-58.22	27.90	-1,078.82	992.98	932.98	60.00	16.550	
8,550.00	8,547.35	8,497.65	8,487.02	30.40	30.36	-58.28	28.18	-1,081.84	995.06	934.70	60.36	16.486	
8,600.00	8,597.32	8,547.60	8,536.88	30.58	30.54	-58.33	28.46	-1,084.86	997.13	936.42	60.71	16.423	
8,650.00	8,647.29	8,597.55	8,586.73	30.76	30.73	-58.38	28.74	-1,087.87	999.21	938.14	61.07	16.361	
8,700.00	8,697.26	8,647.50	8,636.59	30.94	30.91	-58.43	29.03	-1,090.89	1,001.29	939.86	61.43	16.299	
8,750.00	8,747.23	8,702.55	8,686.45	31.12	31.11	-58.48	29.31	-1,093.91	1,003.37	941.56	61.81	16.233	
8,800.00	8,797.20	8,747.40	8,736.30	31.30	31.27	-58.53	29.59	-1,096.93	1,005.45	943.30	62.15	16.178	
8,850.00	8,847.18	8,803.65	8,792.46	31.48	31.48	-58.59	29.90	-1,100.25	1,007.47	944.93	62.54	16.109	
8,900.00	8,897.15	8,871.08	8,859.82	31.66	31.72	-58.67	30.18	-1,103.31	1,008.81	945.83	62.98	16.018	
8,950.00	8,947.12	8,938.55	8,927.26	31.84	31.97	-58.76	30.36	-1,105.18	1,009.28	945.88	63.40	15.919	
9,000.00	8,997.09	9,006.01	8,994.72	32.02	32.21	-58.87	30.42	-1,105.87	1,008.89	945.08	63.81	15.811	
9,050.00	9,047.06	9,057.35	9,046.06	32.20	32.38	-58.95	30.42	-1,105.87	1,008.00	943.83	64.17	15.709	
9,100.00	9,097.03	9,107.32	9,096.03	32.38	32.56	-59.04	30.42	-1,105.87	1,007.11	942.59	64.52	15.609	
9,150.00	9,147.00	9,157.29	9,146.00	32.56	32.73	-59.12	30.42	-1,105.87	1,006.22	941.35	64.87	15.510	
9,200.00	9,196.97	9,207.26	9,195.97	32.74	32.90	-59.21	30.42	-1,105.87	1,005.34	940.11	65.23	15.413	
9,250.00	9,246.94	9,257.23	9,245.94	32.92	33.07	-59.29	30.42	-1,105.87	1,004.45	938.87	65.58	15.316	
9,300.00	9,296.91	9,307.20	9,295.91	33.10	33.25	-59.38	30.42	-1,105.87	1,003.57	937.64	65.94	15.221	
9,350.00	9,346.88	9,357.17	9,345.88	33.28	33.42	-59.46	30.42	-1,105.87	1,002.70	936.41	66.29	15.126	
9,400.00	9,396.85	9,407.14	9,395.85	33.46	33.59	-59.55	30.42	-1,105.87	1,001.82	935.18	66.64	15.033	
9,450.00	9,446.82	9,457.11	9,445.82	33.64	33.77	-59.63	30.42	-1,105.87	1,000.95	933.95	67.00	14.940	
9,500.00	9,496.79	9,507.08	9,495.79	33.82	33.94	-59.72	30.42	-1,105.87	1,000.08	932.72	67.35	14.849	
9,550.00	9,546.76	9,557.05	9,545.76	34.00	34.11	-59.80	30.42	-1,105.87	999.21	931.50	67.70	14.758	
9,600.00	9,596.73	9,607.02	9,595.73	34.18	34.29	-59.89	30.42	-1,105.87	998.34	930.28	68.06	14.669	
9,650.00	9,646.70	9,656.99	9,645.70	34.36	34.46	-59.97	30.42	-1,105.87	997.47	929.06	68.41	14.580	
9,700.00	9,696.67	9,706.96	9,695.67	34.54	34.63	-60.06	30.42	-1,105.87	996.61	927.84	68.77	14.492	
9,750.00	9,746.64	9,756.93	9,745.64	34.72	34.81	-60.14	30.42	-1,105.87	995.75	926.63	69.12	14.406	
9,800.00	9,796.61	9,806.90	9,795.61	34.90	34.98	-60.23	30.42	-1,105.87	994.89	925.42	69.48	14.320	
9,850.00	9,846.58	9,856.87	9,845.58	35.08	35.16	-60.32	30.42	-1,105.87	994.04	924.21	69.83	14.235	
9,900.00	9,896.55	9,906.84	9,895.55	35.26	35.33	-60.40	30.42	-1,105.87	993.18	923.00	70.19	14.151	
9,950.00	9,946.52	9,956.81	9,945.52	35.44	35.50	-60.49	30.42	-1,105.87	992.33	921.79	70.54	14.068	
10,000.00	9,996.49	10,006.78	9,995.49	35.62	35.68	-60.58	30.42	-1,105.87	991.48	920.59	70.89	13.985	
10,050.00	10,046.46	10,056.75	10,045.46	35.80	35.85	-60.66	30.42	-1,105.87	990.64	919.39	71.25	13.904	
10,100.00	10,096.43	10,106.72	10,095.43	35.98	36.03	-60.75	30.42	-1,105.87	989.79	918.19	71.60	13.823	
10,150.00	10,146.40	10,156.69	10,145.40	36.16	36.20	-60.84	30.42	-1,105.87	988.95	916.99	71.96	13.743	
10,200.00	10,196.37	10,206.66	10,195.37	36.34	36.37	-60.93	30.42	-1,105.87	988.11	915.80	72.31	13.664	
10,250.00	10,246.34	10,256.63	10,245.34	36.52	36.55	-61.01	30.42	-1,105.87	987.27	914.60	72.67	13.586	
10,300.00	10,296.31	10,306.60	10,295.31	36.70	36.72	-61.10	30.42	-1,105.87	986.44	913.41	73.02	13.509	
10,350.00	10,346.28	10,356.57	10,345.28	36.88	36.90	-61.19	30.42	-1,105.87	985.60	912.23	73.38	13.432	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,400.00	10,396.25	10,406.55	10,395.25	37.06	37.07	-61.28	30.42	-1,105.87	984.77	911.04	73.73	13.356	
10,450.00	10,446.22	10,456.52	10,445.22	37.24	37.24	-61.36	30.42	-1,105.87	983.95	909.86	74.09	13.281	
10,500.00	10,496.19	10,506.49	10,495.19	37.42	37.42	-61.45	30.42	-1,105.87	983.12	908.68	74.44	13.206	
10,550.00	10,546.16	10,556.46	10,545.16	37.60	37.59	-61.54	30.42	-1,105.87	982.30	907.50	74.80	13.133	
10,600.00	10,596.13	10,606.43	10,595.13	37.78	37.77	-61.63	30.42	-1,105.87	981.47	906.32	75.15	13.060	
10,650.00	10,646.10	10,656.40	10,645.10	37.96	37.94	-61.72	30.42	-1,105.87	980.66	905.15	75.51	12.987	
10,700.00	10,696.07	10,706.37	10,695.07	38.14	38.12	-61.81	30.42	-1,105.87	979.84	903.97	75.86	12.916	
10,750.00	10,746.04	10,756.34	10,745.04	38.32	38.29	-61.89	30.42	-1,105.87	979.03	902.82	76.22	12.845	
10,800.00	10,796.03	10,806.32	10,795.03	38.50	38.47	-61.95	30.42	-1,105.87	978.46	901.88	76.57	12.778	
10,850.00	10,846.03	10,856.32	10,845.03	38.67	38.64	-61.97	30.42	-1,105.87	978.19	901.26	76.93	12.715	
10,899.38	10,895.41	10,905.70	10,894.41	38.85	38.81	-99.10	30.42	-1,105.87	978.13	900.85	77.28	12.657	
10,900.00	10,896.03	10,906.32	10,895.03	38.85	38.82	-99.09	30.42	-1,105.87	978.16	900.88	77.28	12.657	
10,950.00	10,946.03	10,956.32	10,945.03	39.03	38.99	-99.09	30.42	-1,105.87	978.16	900.53	77.64	12.599	
11,000.00	10,996.03	11,006.32	10,995.03	39.21	39.17	-99.09	30.42	-1,105.87	978.16	900.17	77.99	12.542	
11,050.00	11,046.03	11,056.32	11,045.03	39.39	39.34	-99.09	30.42	-1,105.87	978.16	899.82	78.34	12.486	
11,100.00	11,096.03	11,106.32	11,095.03	39.57	39.52	-99.09	30.42	-1,105.87	978.16	899.47	78.70	12.429	
11,150.00	11,146.03	11,156.32	11,145.03	39.74	39.69	-99.09	30.42	-1,105.87	978.16	899.11	79.05	12.374	
11,200.00	11,196.03	11,206.32	11,195.03	39.92	39.87	-99.09	30.42	-1,105.87	978.16	898.76	79.41	12.319	
11,250.00	11,246.01	11,245.81	11,234.49	40.09	40.00	80.97	29.06	-1,105.87	978.30	898.58	79.72	12.272	
11,300.00	11,295.76	11,285.27	11,273.73	40.25	40.13	80.95	24.99	-1,105.86	978.34	898.33	80.01	12.228	
11,350.00	11,344.89	11,324.73	11,312.60	40.41	40.26	80.99	18.23	-1,105.84	978.23	897.95	80.28	12.185	
11,400.00	11,393.03	11,364.24	11,350.96	40.55	40.38	81.09	8.80	-1,105.81	977.98	897.44	80.55	12.142	
11,450.00	11,439.82	11,403.83	11,388.65	40.69	40.50	81.24	-3.28	-1,105.78	977.59	896.80	80.79	12.100	
11,500.00	11,484.90	11,443.54	11,425.53	40.82	40.62	81.45	-17.99	-1,105.74	977.07	896.04	81.03	12.058	
11,550.00	11,527.92	11,483.40	11,461.44	40.94	40.73	81.71	-35.28	-1,105.69	976.43	895.17	81.26	12.016	
11,600.00	11,568.56	11,523.47	11,496.23	41.05	40.84	82.02	-55.13	-1,105.64	975.68	894.20	81.48	11.974	
11,650.00	11,606.52	11,563.77	11,529.74	41.15	40.94	82.38	-77.50	-1,105.58	974.85	893.14	81.70	11.932	
11,700.00	11,641.49	11,604.35	11,561.81	41.25	41.04	82.80	-102.35	-1,105.51	973.94	892.02	81.92	11.889	
11,750.00	11,673.22	11,645.26	11,592.28	41.36	41.14	83.26	-129.64	-1,105.44	972.98	890.84	82.14	11.845	
11,800.00	11,701.46	11,686.54	11,620.97	41.47	41.23	83.76	-159.31	-1,105.36	971.99	889.63	82.37	11.801	
11,850.00	11,726.00	11,728.25	11,647.71	41.58	41.32	84.30	-191.30	-1,105.27	971.00	888.41	82.60	11.756	
11,900.00	11,746.65	11,770.43	11,672.32	41.68	41.41	84.89	-225.55	-1,105.18	970.03	887.20	82.83	11.711	
11,950.00	11,763.25	11,813.15	11,694.61	41.79	41.51	85.50	-261.99	-1,105.08	969.11	886.04	83.07	11.666	
12,000.00	11,775.68	11,856.47	11,714.37	41.90	41.61	86.15	-300.52	-1,104.97	968.25	884.94	83.31	11.622	
12,050.00	11,783.85	11,900.44	11,731.40	42.00	41.72	86.83	-341.05	-1,104.86	967.49	883.94	83.55	11.579	
12,100.00	11,787.68	11,945.15	11,745.47	42.11	41.84	87.53	-383.47	-1,104.75	966.84	883.05	83.79	11.539	
12,150.00	11,788.00	11,990.83	11,756.39	42.22	41.96	88.19	-427.81	-1,104.63	966.36	882.33	84.03	11.500	
12,200.00	11,788.00	12,037.96	11,763.92	42.33	42.08	88.63	-474.33	-1,104.50	966.10	881.83	84.27	11.464	
12,250.00	11,788.00	12,086.04	11,767.64	42.46	42.21	88.85	-522.24	-1,104.37	965.98	881.45	84.53	11.428	
12,300.00	11,788.00	12,135.35	11,768.00	42.60	42.35	88.87	-571.56	-1,104.24	965.93	881.13	84.80	11.391	
12,350.00	11,788.00	12,185.35	11,768.00	42.76	42.50	88.87	-621.56	-1,104.10	965.90	880.80	85.10	11.350	
12,400.00	11,788.00	12,235.35	11,768.00	42.91	42.66	88.87	-671.56	-1,103.97	965.86	880.45	85.41	11.308	
12,450.00	11,788.00	12,285.35	11,768.00	43.09	42.83	88.87	-721.56	-1,103.83	965.83	880.07	85.76	11.262	
12,500.00	11,788.00	12,335.35	11,768.00	43.27	43.01	88.87	-771.56	-1,103.70	965.79	879.67	86.12	11.215	
12,550.00	11,788.00	12,385.35	11,768.00	43.48	43.20	88.87	-821.56	-1,103.56	965.75	879.24	86.51	11.164	
12,600.00	11,788.00	12,435.35	11,768.00	43.68	43.41	88.87	-871.56	-1,103.43	965.72	878.80	86.92	11.111	
12,650.00	11,788.00	12,485.35	11,768.00	43.91	43.62	88.87	-921.56	-1,103.29	965.68	878.33	87.35	11.055	
12,700.00	11,788.00	12,535.35	11,768.00	44.13	43.85	88.87	-971.56	-1,103.16	965.65	877.84	87.80	10.998	
12,750.00	11,788.00	12,585.35	11,768.00	44.38	44.08	88.87	-1,021.56	-1,103.02	965.61	877.33	88.28	10.938	
12,800.00	11,788.00	12,635.35	11,768.00	44.63	44.33	88.87	-1,071.56	-1,102.88	965.57	876.80	88.78	10.877	
12,850.00	11,788.00	12,685.35	11,768.00	44.89	44.58	88.87	-1,121.56	-1,102.75	965.54	876.24	89.30	10.813	
12,900.00	11,788.00	12,735.35	11,768.00	45.16	44.85	88.87	-1,171.56	-1,102.61	965.50	875.67	89.83	10.748	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,950.00	11,788.00	12,785.35	11,768.00	45.45	45.12	88.87	-1,221.56	-1,102.48	965.47	875.07	90.39	10.681	
13,000.00	11,788.00	12,835.35	11,768.00	45.73	45.41	88.87	-1,271.56	-1,102.34	965.43	874.46	90.97	10.613	
13,050.00	11,788.00	12,885.35	11,768.00	46.04	45.71	88.87	-1,321.56	-1,102.21	965.39	873.83	91.57	10.543	
13,100.00	11,788.00	12,935.35	11,768.00	46.35	46.01	88.87	-1,371.56	-1,102.07	965.36	873.18	92.18	10.472	
13,150.00	11,788.00	12,985.35	11,768.00	46.67	46.33	88.87	-1,421.55	-1,101.94	965.32	872.50	92.82	10.400	
13,200.00	11,788.00	13,035.35	11,768.00	47.00	46.65	88.87	-1,471.55	-1,101.80	965.29	871.81	93.47	10.327	
13,250.00	11,788.00	13,085.35	11,768.00	47.34	46.98	88.87	-1,521.55	-1,101.67	965.25	871.10	94.15	10.253	
13,300.00	11,788.00	13,135.35	11,768.00	47.68	47.33	88.87	-1,571.55	-1,101.53	965.22	870.38	94.83	10.178	
13,350.00	11,788.00	13,185.35	11,768.00	48.04	47.67	88.87	-1,621.55	-1,101.39	965.18	869.64	95.54	10.102	
13,400.00	11,788.00	13,235.35	11,768.00	48.40	48.03	88.87	-1,671.55	-1,101.26	965.14	868.88	96.26	10.026	
13,450.00	11,788.00	13,285.35	11,768.00	48.78	48.40	88.87	-1,721.55	-1,101.12	965.11	868.10	97.01	9.949	
13,500.00	11,788.00	13,335.35	11,768.00	49.15	48.78	88.87	-1,771.55	-1,100.99	965.07	867.31	97.76	9.872	
13,550.00	11,788.00	13,385.35	11,768.00	49.54	49.16	88.87	-1,821.55	-1,100.85	965.04	866.50	98.53	9.794	
13,600.00	11,788.00	13,435.35	11,768.00	49.94	49.55	88.87	-1,871.55	-1,100.72	965.00	865.68	99.32	9.716	
13,650.00	11,788.00	13,485.35	11,768.00	50.34	49.95	88.87	-1,921.55	-1,100.58	964.96	864.84	100.12	9.638	
13,700.00	11,788.00	13,535.35	11,768.00	50.75	50.35	88.87	-1,971.55	-1,100.45	964.93	863.99	100.93	9.560	
13,750.00	11,788.00	13,585.35	11,768.00	51.17	50.76	88.87	-2,021.55	-1,100.31	964.89	863.13	101.77	9.481	
13,800.00	11,788.00	13,635.35	11,768.00	51.59	51.18	88.87	-2,071.55	-1,100.17	964.86	862.25	102.61	9.403	
13,850.00	11,788.00	13,685.35	11,768.00	52.02	51.61	88.87	-2,121.55	-1,100.04	964.82	861.35	103.47	9.325	
13,900.00	11,788.00	13,735.35	11,768.00	52.45	52.04	88.87	-2,171.55	-1,099.90	964.78	860.45	104.34	9.247	
13,950.00	11,788.00	13,785.35	11,768.00	52.90	52.48	88.87	-2,221.55	-1,099.77	964.75	859.53	105.22	9.169	
14,000.00	11,788.00	13,835.35	11,768.00	53.35	52.93	88.87	-2,271.55	-1,099.63	964.71	858.60	106.12	9.091	
14,050.00	11,788.00	13,885.35	11,768.00	53.81	53.38	88.87	-2,321.55	-1,099.50	964.68	857.65	107.03	9.013	
14,100.00	11,788.00	13,935.35	11,768.00	54.26	53.84	88.87	-2,371.55	-1,099.36	964.64	856.70	107.95	8.936	
14,150.00	11,788.00	13,985.35	11,768.00	54.73	54.30	88.87	-2,421.55	-1,099.23	964.61	855.73	108.88	8.859	
14,200.00	11,788.00	14,035.35	11,768.00	55.20	54.77	88.87	-2,471.55	-1,099.09	964.57	854.75	109.82	8.783	
14,250.00	11,788.00	14,085.35	11,768.00	55.68	55.24	88.87	-2,521.55	-1,098.95	964.53	853.76	110.78	8.707	
14,300.00	11,788.00	14,135.35	11,768.00	56.17	55.72	88.87	-2,571.55	-1,098.82	964.50	852.76	111.74	8.632	
14,350.00	11,788.00	14,185.35	11,768.00	56.66	56.21	88.87	-2,621.55	-1,098.68	964.46	851.74	112.72	8.556	
14,400.00	11,788.00	14,235.35	11,768.00	57.15	56.70	88.87	-2,671.55	-1,098.55	964.43	850.72	113.70	8.482	
14,450.00	11,788.00	14,285.35	11,768.00	57.65	57.20	88.87	-2,721.55	-1,098.41	964.39	849.69	114.70	8.408	
14,500.00	11,788.00	14,335.35	11,768.00	58.15	57.70	88.87	-2,771.55	-1,098.28	964.35	848.65	115.70	8.335	
14,550.00	11,788.00	14,385.35	11,768.00	58.66	58.20	88.87	-2,821.55	-1,098.14	964.32	847.60	116.72	8.262	
14,600.00	11,788.00	14,435.35	11,768.00	59.17	58.71	88.87	-2,871.55	-1,098.01	964.28	846.54	117.74	8.190	
14,650.00	11,788.00	14,485.35	11,768.00	59.69	59.23	88.87	-2,921.55	-1,097.87	964.25	845.47	118.78	8.118	
14,700.00	11,788.00	14,535.35	11,768.00	60.21	59.75	88.87	-2,971.55	-1,097.74	964.21	844.39	119.82	8.047	
14,750.00	11,788.00	14,585.35	11,768.00	60.74	60.27	88.87	-3,021.55	-1,097.60	964.17	843.31	120.87	7.977	
14,800.00	11,788.00	14,635.35	11,768.00	61.27	60.80	88.87	-3,071.55	-1,097.46	964.14	842.21	121.93	7.908	
14,850.00	11,788.00	14,685.35	11,768.00	61.80	61.33	88.87	-3,121.55	-1,097.33	964.10	841.11	122.99	7.839	
14,900.00	11,788.00	14,735.35	11,768.00	62.34	61.86	88.87	-3,171.55	-1,097.19	964.07	840.00	124.07	7.771	
14,950.00	11,788.00	14,785.35	11,768.00	62.88	62.40	88.87	-3,221.55	-1,097.06	964.03	838.88	125.15	7.703	
15,000.00	11,788.00	14,835.35	11,768.00	63.42	62.95	88.87	-3,271.55	-1,096.92	964.00	837.76	126.24	7.636	
15,050.00	11,788.00	14,885.35	11,768.00	63.97	63.49	88.87	-3,321.55	-1,096.79	963.96	836.62	127.34	7.570	
15,100.00	11,788.00	14,935.35	11,768.00	64.52	64.04	88.87	-3,371.55	-1,096.65	963.92	835.48	128.44	7.505	
15,150.00	11,788.00	14,985.35	11,768.00	65.08	64.60	88.87	-3,421.55	-1,096.52	963.89	834.34	129.55	7.440	
15,200.00	11,788.00	15,035.35	11,768.00	65.64	65.15	88.87	-3,471.55	-1,096.38	963.85	833.18	130.67	7.376	
15,250.00	11,788.00	15,085.35	11,768.00	66.20	65.71	88.87	-3,521.55	-1,096.24	963.82	832.02	131.79	7.313	
15,300.00	11,788.00	15,135.35	11,768.00	66.77	66.28	88.87	-3,571.55	-1,096.11	963.78	830.86	132.92	7.251	
15,350.00	11,788.00	15,185.35	11,768.00	67.34	66.85	88.87	-3,621.55	-1,095.97	963.74	829.68	134.06	7.189	
15,400.00	11,788.00	15,235.35	11,768.00	67.91	67.42	88.87	-3,671.55	-1,095.84	963.71	828.51	135.20	7.128	
15,450.00	11,788.00	15,285.35	11,768.00	68.48	67.99	88.87	-3,721.55	-1,095.70	963.67	827.32	136.35	7.068	
15,500.00	11,788.00	15,335.35	11,768.00	69.06	68.57	88.87	-3,771.55	-1,095.57	963.64	826.13	137.50	7.008	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,550.00	11,788.00	15,385.35	11,768.00	69.64	69.14	88.87	-3,821.55	-1,095.43	963.60	824.93	138.67	6.949	
15,600.00	11,788.00	15,435.35	11,768.00	70.22	69.73	88.87	-3,871.55	-1,095.30	963.56	823.73	139.83	6.891	
15,650.00	11,788.00	15,485.35	11,768.00	70.81	70.31	88.87	-3,921.55	-1,095.16	963.53	822.53	141.00	6.833	
15,700.00	11,788.00	15,535.35	11,768.00	71.40	70.90	88.87	-3,971.54	-1,095.02	963.49	821.32	142.18	6.777	
15,750.00	11,788.00	15,585.35	11,768.00	71.99	71.49	88.87	-4,021.54	-1,094.89	963.46	820.10	143.36	6.721	
15,800.00	11,788.00	15,635.35	11,768.00	72.58	72.08	88.87	-4,071.54	-1,094.75	963.42	818.88	144.55	6.665	
15,850.00	11,788.00	15,685.35	11,768.00	73.18	72.67	88.87	-4,121.54	-1,094.62	963.39	817.65	145.74	6.610	
15,900.00	11,788.00	15,735.35	11,768.00	73.77	73.27	88.87	-4,171.54	-1,094.48	963.35	816.42	146.93	6.556	
15,950.00	11,788.00	15,785.35	11,768.00	74.38	73.87	88.87	-4,221.54	-1,094.35	963.31	815.18	148.13	6.503	
16,000.00	11,788.00	15,835.35	11,768.00	74.98	74.47	88.87	-4,271.54	-1,094.21	963.28	813.94	149.34	6.450	
16,050.00	11,788.00	15,885.35	11,768.00	75.58	75.07	88.87	-4,321.54	-1,094.08	963.24	812.69	150.55	6.398	
16,100.00	11,788.00	15,935.35	11,768.00	76.19	75.68	88.87	-4,371.54	-1,093.94	963.21	811.45	151.76	6.347	
16,150.00	11,788.00	15,985.35	11,768.00	76.80	76.29	88.87	-4,421.54	-1,093.81	963.17	810.19	152.98	6.296	
16,200.00	11,788.00	16,035.35	11,768.00	77.41	76.90	88.87	-4,471.54	-1,093.67	963.13	808.93	154.20	6.246	
16,250.00	11,788.00	16,085.35	11,768.00	78.02	77.51	88.87	-4,521.54	-1,093.53	963.10	807.67	155.43	6.197	
16,300.00	11,788.00	16,135.35	11,768.00	78.64	78.12	88.87	-4,571.54	-1,093.40	963.06	806.41	156.66	6.148	
16,350.00	11,788.00	16,185.35	11,768.00	79.25	78.74	88.87	-4,621.54	-1,093.26	963.03	805.14	157.89	6.099	
16,400.00	11,788.00	16,235.35	11,768.00	79.87	79.36	88.87	-4,671.54	-1,093.13	962.99	803.86	159.13	6.052	
16,450.00	11,788.00	16,285.35	11,768.00	80.49	79.98	88.87	-4,721.54	-1,092.99	962.95	802.59	160.37	6.005	
16,500.00	11,788.00	16,335.35	11,768.00	81.12	80.60	88.87	-4,771.54	-1,092.86	962.92	801.31	161.61	5.958	
16,550.00	11,788.00	16,385.35	11,768.00	81.74	81.22	88.87	-4,821.54	-1,092.72	962.88	800.02	162.86	5.912	
16,600.00	11,788.00	16,435.35	11,768.00	82.36	81.85	88.87	-4,871.54	-1,092.59	962.85	798.74	164.11	5.867	
16,650.00	11,788.00	16,485.35	11,768.00	82.99	82.47	88.87	-4,921.54	-1,092.45	962.81	797.45	165.37	5.822	
16,700.00	11,788.00	16,535.35	11,768.00	83.62	83.10	88.87	-4,971.54	-1,092.31	962.78	796.15	166.62	5.778	
16,750.00	11,788.00	16,585.35	11,768.00	84.25	83.73	88.87	-5,021.54	-1,092.18	962.74	794.86	167.88	5.735	
16,800.00	11,788.00	16,635.35	11,768.00	84.88	84.36	88.87	-5,071.54	-1,092.04	962.70	793.56	169.15	5.692	
16,850.00	11,788.00	16,685.35	11,768.00	85.52	85.00	88.87	-5,121.54	-1,091.91	962.67	792.25	170.41	5.649	
16,900.00	11,788.00	16,735.35	11,768.00	86.15	85.63	88.87	-5,171.54	-1,091.77	962.63	790.95	171.68	5.607	
16,950.00	11,788.00	16,785.35	11,768.00	86.79	86.27	88.87	-5,221.54	-1,091.64	962.60	789.64	172.96	5.565	
17,000.00	11,788.00	16,835.35	11,768.00	87.43	86.90	88.87	-5,271.54	-1,091.50	962.56	788.33	174.23	5.525	
17,050.00	11,788.00	16,885.35	11,768.00	88.07	87.54	88.87	-5,321.54	-1,091.37	962.52	787.01	175.51	5.484	
17,100.00	11,788.00	16,935.35	11,768.00	88.71	88.18	88.87	-5,371.54	-1,091.23	962.49	785.70	176.79	5.444	
17,150.00	11,788.00	16,985.35	11,768.00	89.35	88.82	88.87	-5,421.54	-1,091.10	962.45	784.38	178.08	5.405	
17,200.00	11,788.00	17,035.35	11,768.00	89.99	89.47	88.87	-5,471.54	-1,090.96	962.42	783.05	179.36	5.366	
17,250.00	11,788.00	17,085.35	11,768.00	90.64	90.11	88.87	-5,521.54	-1,090.82	962.38	781.73	180.65	5.327	
17,300.00	11,788.00	17,135.35	11,768.00	91.28	90.75	88.87	-5,571.54	-1,090.69	962.34	780.40	181.94	5.289	
17,350.00	11,788.00	17,185.35	11,768.00	91.93	91.40	88.87	-5,621.54	-1,090.55	962.31	779.07	183.24	5.252	
17,400.00	11,788.00	17,235.35	11,768.00	92.58	92.05	88.87	-5,671.54	-1,090.42	962.27	777.74	184.53	5.215	
17,450.00	11,788.00	17,285.35	11,768.00	93.23	92.70	88.87	-5,721.54	-1,090.28	962.24	776.40	185.83	5.178	
17,500.00	11,788.00	17,335.35	11,768.00	93.88	93.35	88.87	-5,771.54	-1,090.15	962.20	775.07	187.13	5.142	
17,550.00	11,788.00	17,385.35	11,768.00	94.53	94.00	88.87	-5,821.54	-1,090.01	962.17	773.73	188.44	5.106	
17,600.00	11,788.00	17,435.35	11,768.00	95.18	94.65	88.87	-5,871.54	-1,089.88	962.13	772.39	189.74	5.071	
17,650.00	11,788.00	17,485.35	11,768.00	95.83	95.30	88.87	-5,921.54	-1,089.74	962.09	771.04	191.05	5.036	
17,700.00	11,788.00	17,535.35	11,768.00	96.49	95.96	88.87	-5,971.54	-1,089.60	962.06	769.70	192.36	5.001	
17,750.00	11,788.00	17,585.35	11,768.00	97.14	96.61	88.87	-6,021.54	-1,089.47	962.02	768.35	193.67	4.967	Alert
17,800.00	11,788.00	17,635.35	11,768.00	97.80	97.27	88.87	-6,071.54	-1,089.33	961.99	767.00	194.98	4.934	Alert
17,850.00	11,788.00	17,685.35	11,768.00	98.46	97.93	88.87	-6,121.54	-1,089.20	961.95	765.65	196.30	4.900	Alert
17,900.00	11,788.00	17,735.35	11,768.00	99.12	98.59	88.87	-6,171.54	-1,089.06	961.91	764.30	197.62	4.868	Alert
17,950.00	11,788.00	17,785.35	11,768.00	99.78	99.25	88.87	-6,221.54	-1,088.93	961.88	762.94	198.94	4.835	Alert
18,000.00	11,788.00	17,835.35	11,768.00	100.44	99.91	88.87	-6,271.54	-1,088.79	961.84	761.59	200.26	4.803	Alert
18,050.00	11,788.00	17,885.35	11,768.00	101.10	100.57	88.87	-6,321.54	-1,088.66	961.81	760.23	201.58	4.771	Alert
18,100.00	11,788.00	17,935.35	11,768.00	101.76	101.23	88.87	-6,371.54	-1,088.52	961.77	758.87	202.90	4.740	Alert

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
18,150.00	11,788.00	17,985.35	11,768.00	102.42	101.89	88.87	-6,421.54	-1,088.38	961.73	757.50	204.23	4.709	Alert
18,200.00	11,788.00	18,035.35	11,768.00	103.09	102.56	88.87	-6,471.54	-1,088.25	961.70	756.14	205.56	4.678	Alert
18,250.00	11,788.00	18,085.35	11,768.00	103.75	103.22	88.87	-6,521.53	-1,088.11	961.66	754.77	206.89	4.648	Alert
18,300.00	11,788.00	18,135.35	11,768.00	104.42	103.89	88.87	-6,571.53	-1,087.98	961.63	753.41	208.22	4.618	Alert
18,350.00	11,788.00	18,185.35	11,768.00	105.08	104.55	88.87	-6,621.53	-1,087.84	961.59	752.04	209.55	4.589	Alert
18,400.00	11,788.00	18,235.35	11,768.00	105.75	105.22	88.87	-6,671.53	-1,087.71	961.56	750.67	210.89	4.560	Alert
18,450.00	11,788.00	18,285.35	11,768.00	106.42	105.89	88.87	-6,721.53	-1,087.57	961.52	749.29	212.23	4.531	Alert
18,500.00	11,788.00	18,335.35	11,768.00	107.09	106.56	88.87	-6,771.53	-1,087.44	961.48	747.92	213.56	4.502	Alert
18,550.00	11,788.00	18,385.35	11,768.00	107.76	107.22	88.87	-6,821.53	-1,087.30	961.45	746.54	214.90	4.474	Alert
18,600.00	11,788.00	18,435.35	11,768.00	108.43	107.90	88.87	-6,871.53	-1,087.17	961.41	745.17	216.24	4.446	Alert
18,650.00	11,788.00	18,485.35	11,768.00	109.10	108.57	88.87	-6,921.53	-1,087.03	961.38	743.79	217.59	4.418	Alert
18,700.00	11,788.00	18,535.35	11,768.00	109.77	109.24	88.87	-6,971.53	-1,086.89	961.34	742.41	218.93	4.391	Alert
18,750.00	11,788.00	18,585.35	11,768.00	110.44	109.91	88.87	-7,021.53	-1,086.76	961.30	741.03	220.27	4.364	Alert
18,800.00	11,788.00	18,635.35	11,768.00	111.12	110.58	88.87	-7,071.53	-1,086.62	961.27	739.65	221.62	4.337	Alert
18,850.00	11,788.00	18,685.35	11,768.00	111.79	111.26	88.87	-7,121.53	-1,086.49	961.23	738.26	222.97	4.311	Alert
18,900.00	11,788.00	18,735.35	11,768.00	112.47	111.93	88.87	-7,171.53	-1,086.35	961.20	736.88	224.32	4.285	Alert
18,950.00	11,788.00	18,785.35	11,768.00	113.14	112.61	88.87	-7,221.53	-1,086.22	961.16	735.49	225.67	4.259	Alert
19,000.00	11,788.00	18,835.35	11,768.00	113.82	113.28	88.87	-7,271.53	-1,086.08	961.12	734.10	227.02	4.234	Alert
19,050.00	11,788.00	18,885.35	11,768.00	114.49	113.96	88.87	-7,321.53	-1,085.95	961.09	732.72	228.37	4.208	Alert
19,100.00	11,788.00	18,935.35	11,768.00	115.17	114.64	88.87	-7,371.53	-1,085.81	961.05	731.33	229.73	4.183	Alert
19,150.00	11,788.00	18,985.35	11,768.00	115.85	115.31	88.87	-7,421.53	-1,085.67	961.02	729.93	231.08	4.159	Alert
19,200.00	11,788.00	19,035.35	11,768.00	116.53	115.99	88.87	-7,471.53	-1,085.54	960.98	728.54	232.44	4.134	Alert
19,250.00	11,788.00	19,085.35	11,768.00	117.20	116.67	88.87	-7,521.53	-1,085.40	960.95	727.15	233.80	4.110	Alert
19,300.00	11,788.00	19,135.35	11,768.00	117.88	117.35	88.87	-7,571.53	-1,085.27	960.91	725.75	235.16	4.086	Alert
19,350.00	11,788.00	19,185.35	11,768.00	118.56	118.03	88.87	-7,621.53	-1,085.13	960.87	724.36	236.52	4.063	Alert
19,400.00	11,788.00	19,235.35	11,768.00	119.24	118.71	88.87	-7,671.53	-1,085.00	960.84	722.96	237.88	4.039	Alert
19,450.00	11,788.00	19,285.35	11,768.00	119.92	119.39	88.87	-7,721.53	-1,084.86	960.80	721.56	239.24	4.016	Alert
19,500.00	11,788.00	19,335.35	11,768.00	120.61	120.07	88.87	-7,771.53	-1,084.73	960.77	720.16	240.60	3.993	Alert
19,550.00	11,788.00	19,385.35	11,768.00	121.29	120.75	88.87	-7,821.53	-1,084.59	960.73	718.76	241.97	3.970	Alert
19,600.00	11,788.00	19,435.35	11,768.00	121.97	121.44	88.87	-7,871.53	-1,084.45	960.69	717.36	243.33	3.948	Alert
19,650.00	11,788.00	19,485.35	11,768.00	122.65	122.12	88.87	-7,921.53	-1,084.32	960.66	715.96	244.70	3.926	Alert
19,700.00	11,788.00	19,535.35	11,768.00	123.34	122.80	88.87	-7,971.53	-1,084.18	960.62	714.56	246.07	3.904	Alert
19,750.00	11,788.00	19,585.35	11,768.00	124.02	123.49	88.87	-8,021.53	-1,084.05	960.59	713.15	247.44	3.882	Alert
19,800.00	11,788.00	19,635.35	11,768.00	124.71	124.17	88.87	-8,071.53	-1,083.91	960.55	711.75	248.80	3.861	Alert
19,850.00	11,788.00	19,685.35	11,768.00	125.39	124.86	88.87	-8,121.53	-1,083.78	960.51	710.34	250.17	3.839	Alert
19,900.00	11,788.00	19,735.35	11,768.00	126.08	125.54	88.87	-8,171.53	-1,083.64	960.48	708.93	251.55	3.818	Alert
19,950.00	11,788.00	19,785.35	11,768.00	126.76	126.23	88.87	-8,221.53	-1,083.51	960.44	707.53	252.92	3.797	Alert
20,000.00	11,788.00	19,835.35	11,768.00	127.45	126.91	88.87	-8,271.53	-1,083.37	960.41	706.12	254.29	3.777	Alert
20,050.00	11,788.00	19,885.35	11,768.00	128.14	127.60	88.87	-8,321.53	-1,083.24	960.37	704.71	255.66	3.756	Alert
20,100.00	11,788.00	19,935.35	11,768.00	128.82	128.29	88.87	-8,371.53	-1,083.10	960.34	703.30	257.04	3.736	Alert
20,150.00	11,788.00	19,985.35	11,768.00	129.51	128.98	88.87	-8,421.53	-1,082.96	960.30	701.88	258.42	3.716	Alert
20,200.00	11,788.00	20,035.35	11,768.00	130.20	129.66	88.87	-8,471.53	-1,082.83	960.26	700.47	259.79	3.696	Alert
20,250.00	11,788.00	20,085.35	11,768.00	130.89	130.35	88.87	-8,521.53	-1,082.69	960.23	699.06	261.17	3.677	Alert
20,300.00	11,788.00	20,135.35	11,768.00	131.58	131.04	88.87	-8,571.53	-1,082.56	960.19	697.64	262.55	3.657	Alert
20,350.00	11,788.00	20,185.35	11,768.00	132.27	131.73	88.87	-8,621.53	-1,082.42	960.16	696.23	263.93	3.638	Alert
20,400.00	11,788.00	20,235.35	11,768.00	132.96	132.42	88.87	-8,671.53	-1,082.29	960.12	694.81	265.31	3.619	Alert
20,450.00	11,788.00	20,285.35	11,768.00	133.65	133.11	88.87	-8,721.53	-1,082.15	960.08	693.40	266.69	3.600	Alert
20,500.00	11,788.00	20,335.35	11,768.00	134.34	133.80	88.87	-8,771.53	-1,082.02	960.05	691.98	268.07	3.581	Alert
20,550.00	11,788.00	20,385.35	11,768.00	135.03	134.49	88.87	-8,821.53	-1,081.88	960.01	690.56	269.45	3.563	Alert
20,600.00	11,788.00	20,435.35	11,768.00	135.72	135.18	88.87	-8,871.53	-1,081.74	959.98	689.14	270.83	3.545	Alert
20,650.00	11,788.00	20,485.35	11,768.00	136.41	135.88	88.87	-8,921.53	-1,081.61	959.94	687.72	272.22	3.526	Alert
20,700.00	11,788.00	20,535.35	11,768.00	137.10	136.57	88.87	-8,971.53	-1,081.47	959.91	686.30	273.60	3.508	Alert

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Plan 2 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
20,750.00	11,788.00	20,585.35	11,768.00	137.79	137.26	88.87	-9,021.53	-1,081.34	959.87	684.88	274.99	3.491	Alert
20,800.00	11,788.00	20,635.35	11,768.00	138.49	137.95	88.87	-9,071.52	-1,081.20	959.83	683.46	276.37	3.473	Alert
20,850.00	11,788.00	20,685.35	11,768.00	139.18	138.65	88.87	-9,121.52	-1,081.07	959.80	682.04	277.76	3.456	Alert
20,900.00	11,788.00	20,735.35	11,768.00	139.87	139.34	88.87	-9,171.52	-1,080.93	959.76	680.62	279.14	3.438	Alert
20,950.00	11,788.00	20,785.35	11,768.00	140.57	140.03	88.87	-9,221.52	-1,080.80	959.73	679.19	280.53	3.421	Alert
21,000.00	11,788.00	20,835.35	11,768.00	141.26	140.73	88.87	-9,271.52	-1,080.66	959.69	677.77	281.92	3.404	Alert
21,050.00	11,788.00	20,885.35	11,768.00	141.96	141.42	88.87	-9,321.52	-1,080.52	959.65	676.34	283.31	3.387	Alert
21,100.00	11,788.00	20,935.35	11,768.00	142.65	142.12	88.87	-9,371.52	-1,080.39	959.62	674.92	284.70	3.371	Alert
21,150.00	11,788.00	20,985.35	11,768.00	143.35	142.81	88.87	-9,421.52	-1,080.25	959.58	673.49	286.09	3.354	Alert
21,200.00	11,788.00	21,035.35	11,768.00	144.04	143.51	88.87	-9,471.52	-1,080.12	959.55	672.07	287.48	3.338	Alert
21,250.00	11,788.00	21,085.35	11,768.00	144.74	144.20	88.87	-9,521.52	-1,079.98	959.51	670.64	288.87	3.322	Alert
21,300.00	11,788.00	21,135.35	11,768.00	145.43	144.90	88.87	-9,571.52	-1,079.85	959.47	669.21	290.26	3.306	Alert
21,350.00	11,788.00	21,185.35	11,768.00	146.13	145.60	88.87	-9,621.52	-1,079.71	959.44	667.78	291.66	3.290	Alert
21,400.00	11,788.00	21,235.35	11,768.00	146.83	146.29	88.87	-9,671.52	-1,079.58	959.40	666.35	293.05	3.274	Alert
21,450.00	11,788.00	21,285.35	11,768.00	147.52	146.99	88.87	-9,721.52	-1,079.44	959.37	664.92	294.44	3.258	Alert
21,500.00	11,788.00	21,335.35	11,768.00	148.22	147.69	88.87	-9,771.52	-1,079.31	959.33	663.49	295.84	3.243	Alert
21,550.00	11,788.00	21,385.35	11,768.00	148.92	148.38	88.86	-9,821.52	-1,079.17	959.30	662.06	297.23	3.227	Alert
21,600.00	11,788.00	21,435.35	11,768.00	149.62	149.08	88.86	-9,871.52	-1,079.03	959.26	660.63	298.63	3.212	Alert
21,650.00	11,788.00	21,485.35	11,768.00	150.31	149.78	88.86	-9,921.52	-1,078.90	959.22	659.20	300.03	3.197	Alert
21,700.00	11,788.00	21,535.35	11,768.00	151.01	150.48	88.86	-9,971.52	-1,078.76	959.19	657.76	301.42	3.182	Alert
21,750.00	11,788.00	21,585.35	11,768.00	151.71	151.18	88.86	-10,021.52	-1,078.63	959.15	656.33	302.82	3.167	Alert
21,753.86	11,788.00	21,589.21	11,768.00	151.76	151.23	88.86	-10,025.38	-1,078.62	959.15	656.22	302.93	3.166	Alert, ES, SF

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.50	0.50	89.64	5.33	848.83	848.85				
50.00	50.00	48.74	48.74	0.50	0.51	89.63	5.41	848.84	848.86	847.85	1.01	842.885	
100.00	100.00	98.27	98.27	0.52	0.52	89.62	5.67	848.88	848.90	847.86	1.04	817.725	
150.00	150.00	147.79	147.79	0.59	0.54	89.59	6.09	848.95	848.97	847.84	1.14	747.838	
200.00	200.00	196.51	196.51	0.70	0.63	89.56	6.56	849.06	849.09	847.76	1.33	636.311	
250.00	250.00	245.56	245.55	0.84	0.75	89.53	6.96	849.25	849.29	847.70	1.59	534.979	
300.00	300.00	297.31	297.30	0.99	0.89	89.50	7.40	849.42	849.45	847.57	1.88	451.775	
350.00	350.00	348.45	348.44	1.15	1.05	89.47	7.91	849.48	849.52	847.33	2.19	387.643	
400.00	400.00	398.10	398.09	1.31	1.20	89.43	8.39	849.53	849.57	847.06	2.51	338.392	
450.00	450.00	448.41	448.39	1.48	1.36	89.40	8.85	849.59	849.64	846.80	2.84	299.157	
500.00	500.00	499.78	499.76	1.65	1.53	89.36	9.53	849.59	849.65	846.47	3.18	267.259	
550.00	550.00	551.75	551.72	1.82	1.71	89.30	10.38	849.49	849.56	846.04	3.52	241.058	
600.00	600.00	603.95	603.92	1.99	1.88	89.25	11.06	849.26	849.35	845.47	3.87	219.280	
650.00	650.00	655.21	655.17	2.16	2.06	89.22	11.59	848.93	849.03	844.81	4.22	201.154	
700.00	700.00	706.15	706.11	2.34	2.23	89.19	12.05	848.53	848.65	844.08	4.57	185.756	
750.00	750.00	757.09	757.05	2.51	2.40	89.16	12.46	848.08	848.21	843.29	4.92	172.478	
800.00	800.00	808.03	807.98	2.69	2.58	89.13	12.81	847.58	847.72	842.45	5.27	160.917	
850.00	850.00	858.35	858.30	2.87	2.75	89.11	13.18	847.04	847.20	841.58	5.62	150.816	
900.00	900.00	908.70	908.64	3.04	2.93	89.08	13.65	846.49	846.65	840.68	5.97	141.874	
950.00	950.00	959.04	958.98	3.22	3.10	89.04	14.20	845.91	846.08	839.76	6.32	133.909	
1,000.00	1,000.00	1,011.34	1,011.26	3.40	3.23	88.99	14.91	845.24	845.46	838.83	6.63	127.584	
1,050.00	1,050.00	1,065.24	1,065.15	3.58	3.33	88.92	15.95	844.33	844.63	837.73	6.90	122.423	
1,100.00	1,100.00	1,115.04	1,114.93	3.75	3.35	88.83	17.28	843.36	843.69	836.59	7.10	118.837	
1,150.00	1,150.00	1,164.57	1,164.41	3.93	3.37	88.71	19.03	842.42	842.77	835.47	7.30	115.520	
1,200.00	1,200.00	1,215.04	1,214.83	4.11	3.41	88.55	21.26	841.44	841.85	834.35	7.51	112.120	
1,250.00	1,250.00	1,263.90	1,263.60	4.29	3.44	88.37	23.85	840.46	840.93	833.20	7.72	108.866	
1,300.00	1,300.00	1,307.93	1,307.55	4.46	3.49	88.20	26.45	839.79	840.25	832.30	7.95	105.709	
1,350.00	1,350.00	1,351.96	1,351.49	4.64	3.54	88.00	29.26	839.42	839.93	831.76	8.17	102.748	
1,369.07	1,369.07	1,368.78	1,368.27	4.71	3.56	87.93	30.40	839.36	839.91	831.64	8.27	101.615 CC	
1,400.00	1,400.00	1,396.04	1,395.46	4.82	3.60	87.79	32.36	839.34	839.98	831.56	8.41	99.845	
1,450.00	1,450.00	1,440.19	1,439.48	5.00	3.66	87.56	35.79	839.56	840.38	831.73	8.65	97.142	
1,500.00	1,500.00	1,488.88	1,488.00	5.18	3.74	87.29	39.80	839.98	841.00	832.09	8.91	94.389	
1,550.00	1,550.00	1,537.72	1,536.66	5.36	3.82	87.01	43.95	840.47	841.71	832.54	9.17	91.785	
1,600.00	1,600.00	1,588.31	1,587.06	5.53	3.92	86.71	48.29	840.97	842.44	833.00	9.45	89.182	
1,650.00	1,650.00	1,638.84	1,637.40	5.71	4.01	86.42	52.59	841.43	843.15	833.43	9.72	86.702	
1,700.00	1,700.00	1,689.14	1,687.53	5.89	4.12	86.14	56.75	841.86	843.85	833.84	10.01	84.287	
1,750.00	1,750.00	1,739.25	1,737.49	6.07	4.23	85.88	60.70	842.27	844.54	834.24	10.30	81.984	
1,800.00	1,800.00	1,788.98	1,787.07	6.25	4.35	85.63	64.43	842.70	845.24	834.65	10.60	79.770	
1,850.00	1,850.00	1,841.27	1,839.22	6.43	4.47	85.38	68.18	843.13	845.94	835.04	10.90	77.601	
1,900.00	1,900.00	1,896.79	1,894.59	6.61	4.61	85.10	72.37	843.26	846.37	835.15	11.22	75.437	
1,950.00	1,950.00	1,949.37	1,947.00	6.78	4.75	84.81	76.53	843.08	846.55	835.01	11.54	73.383	
2,000.00	2,000.00	2,000.84	1,998.31	6.96	4.89	84.54	80.59	842.79	846.64	834.79	11.85	71.435	
2,050.00	2,050.00	2,051.39	2,048.71	7.14	5.03	84.27	84.52	842.45	846.67	834.50	12.17	69.568	
2,100.00	2,100.00	2,101.84	2,099.02	7.32	5.17	84.01	88.30	842.08	846.70	834.21	12.49	67.793	
2,150.00	2,150.00	2,153.41	2,150.44	7.50	5.32	83.75	92.11	841.64	846.66	833.85	12.82	66.059	
2,200.00	2,200.00	2,204.97	2,201.86	7.68	5.47	83.49	95.93	841.09	846.55	833.40	13.14	64.405	
2,250.00	2,250.00	2,252.74	2,249.48	7.86	5.61	83.24	99.59	840.60	846.48	833.01	13.47	62.860	
2,257.49	2,257.49	2,259.97	2,256.69	7.88	5.63	83.20	100.16	840.53	846.48	832.96	13.51	62.635	
2,300.00	2,300.00	2,301.27	2,297.85	8.04	5.75	82.98	103.49	840.17	846.52	832.73	13.79	61.384	
2,350.00	2,350.00	2,351.01	2,347.43	8.22	5.91	82.70	107.53	839.75	846.61	832.49	14.12	59.951	
2,400.00	2,400.00	2,400.74	2,396.99	8.39	6.06	82.43	111.51	839.35	846.73	832.27	14.45	58.581	
2,450.00	2,450.00	2,450.44	2,446.54	8.57	6.22	82.16	115.45	838.96	846.87	832.08	14.79	57.266	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0 50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,500.00	2,500.00	2,500.72	2,496.66	8.75	6.37	81.89	119.43	838.57	847.04	831.91	15.13	55.998	
2,550.00	2,550.00	2,552.05	2,547.79	8.93	6.54	81.59	123.93	838.04	847.15	831.68	15.47	54.761	
2,600.00	2,600.00	2,601.60	2,597.10	9.11	6.70	81.26	128.74	837.39	847.23	831.42	15.81	53.589	
2,650.00	2,650.00	2,649.28	2,644.55	9.29	6.86	80.94	133.40	836.85	847.43	831.28	16.15	52.487	
2,700.00	2,700.00	2,696.93	2,691.97	9.47	7.01	80.63	137.98	836.44	847.78	831.30	16.48	51.437	
2,750.00	2,750.00	2,744.55	2,739.39	9.65	7.17	80.34	142.37	836.19	848.28	831.46	16.82	50.437	
2,800.00	2,800.00	2,793.40	2,788.05	9.83	7.34	80.05	146.68	836.07	848.91	831.75	17.16	49.471	
2,850.00	2,850.00	2,843.42	2,837.89	10.00	7.50	79.76	150.98	835.98	849.58	832.07	17.51	48.531	
2,900.00	2,900.00	2,894.26	2,888.55	10.18	7.67	79.48	155.23	835.87	850.23	832.38	17.86	47.618	
2,950.00	2,950.00	2,945.65	2,939.77	10.36	7.85	79.20	159.38	835.71	850.82	832.61	18.21	46.731	
3,000.00	3,000.00	2,995.51	2,989.48	10.54	8.01	78.94	163.25	835.52	851.37	832.82	18.55	45.887	
3,050.00	3,050.00	3,044.91	3,038.74	10.72	8.18	78.70	166.94	835.38	851.97	833.07	18.90	45.080	
3,100.00	3,100.00	3,100.57	3,094.25	10.90	8.37	78.43	170.98	835.11	852.45	833.18	19.27	44.244	
3,150.00	3,150.00	3,157.44	3,150.97	11.08	8.56	78.15	175.08	834.37	852.54	832.90	19.64	43.412	
3,200.00	3,200.00	3,208.00	3,201.40	11.26	8.73	77.90	178.69	833.51	852.46	832.47	19.99	42.644	
3,250.00	3,250.00	3,256.98	3,250.25	11.44	8.90	77.66	182.19	832.61	852.31	831.97	20.34	41.910	
3,258.15	3,258.15	3,264.11	3,257.35	11.47	8.93	77.62	182.71	832.49	852.31	831.92	20.39	41.799	
3,300.00	3,300.00	3,300.68	3,293.81	11.62	9.05	77.43	185.48	832.00	852.44	831.77	20.67	41.247	
3,350.00	3,350.00	3,345.83	3,338.82	11.80	9.21	77.19	189.15	831.64	852.94	831.94	21.00	40.614	
3,400.00	3,400.00	3,399.73	3,392.53	11.97	9.40	76.89	193.62	831.16	853.44	832.07	21.37	39.940	
3,450.00	3,450.00	3,451.57	3,444.18	12.15	9.58	76.60	197.91	830.47	853.74	832.01	21.73	39.292	
3,500.00	3,500.00	3,500.07	3,492.50	12.33	9.75	76.31	202.08	829.81	854.09	832.01	22.08	38.685	
3,550.00	3,550.00	3,549.73	3,541.95	12.51	9.92	76.01	206.51	829.15	854.51	832.08	22.43	38.095	
3,600.00	3,600.00	3,601.03	3,593.06	12.69	10.10	75.72	210.86	828.47	854.90	832.11	22.79	37.510	
3,650.00	3,650.00	3,650.67	3,642.55	12.87	10.28	75.46	214.73	827.84	855.26	832.11	23.14	36.954	
3,700.00	3,700.00	3,699.10	3,690.87	13.05	10.45	75.24	217.95	827.43	855.70	832.21	23.49	36.426	
3,750.00	3,750.00	3,749.22	3,740.91	13.23	10.62	75.05	220.83	827.19	856.20	832.36	23.84	35.908	
3,800.00	3,800.00	3,800.46	3,792.06	13.41	10.80	74.85	223.85	826.86	856.65	832.45	24.20	35.398	
3,850.00	3,850.00	3,851.11	3,842.62	13.59	10.97	74.65	226.84	826.46	857.05	832.49	24.55	34.903	
3,900.00	3,900.00	3,901.58	3,893.02	13.77	11.15	74.48	229.44	826.13	857.42	832.51	24.91	34.423	
3,950.00	3,950.00	3,953.01	3,944.40	13.94	11.32	74.34	231.56	825.88	857.74	832.48	25.26	33.953	
4,000.00	4,000.00	4,004.64	3,996.02	14.12	11.50	74.24	232.96	825.74	857.98	832.36	25.62	33.491	
4,050.00	4,050.00	4,054.58	4,045.95	14.30	11.66	111.33	233.73	825.72	858.26	832.30	25.96	33.060	
4,100.00	4,099.99	4,104.54	4,095.91	14.48	11.83	111.35	234.02	825.83	858.75	832.45	26.30	32.647	
4,150.00	4,149.97	4,154.39	4,145.76	14.66	11.99	111.43	234.08	826.02	859.45	832.81	26.64	32.262	
4,200.00	4,199.94	4,204.17	4,195.54	14.84	12.15	111.54	234.07	826.23	860.28	833.30	26.98	31.890	
4,250.00	4,249.91	4,253.71	4,245.08	15.01	12.31	111.65	234.08	826.46	861.13	833.82	27.31	31.530	
4,300.00	4,299.88	4,303.20	4,294.57	15.19	12.46	111.75	234.14	826.69	862.02	834.37	27.65	31.178	
4,350.00	4,349.85	4,352.54	4,343.91	15.37	12.62	111.86	234.19	826.97	862.94	834.96	27.98	30.836	
4,400.00	4,399.82	4,401.88	4,393.25	15.55	12.78	111.97	234.18	827.29	863.90	835.58	28.32	30.504	
4,450.00	4,449.79	4,451.22	4,442.58	15.72	12.94	112.08	234.17	827.65	864.90	836.25	28.66	30.181	
4,500.00	4,499.77	4,500.42	4,491.79	15.90	13.10	112.19	234.19	828.05	865.94	836.95	28.99	29.867	
4,550.00	4,549.74	4,549.44	4,540.80	16.08	13.26	112.30	234.21	828.49	867.04	837.71	29.33	29.561	
4,600.00	4,599.71	4,599.29	4,590.64	16.26	13.42	112.41	234.25	828.98	868.18	838.51	29.67	29.261	
4,650.00	4,649.68	4,650.06	4,641.41	16.44	13.59	112.53	234.28	829.45	869.29	839.28	30.01	28.963	
4,700.00	4,699.65	4,700.84	4,692.19	16.61	13.75	112.64	234.31	829.87	870.36	840.00	30.36	28.670	
4,750.00	4,749.62	4,751.62	4,742.98	16.79	13.92	112.75	234.32	830.24	871.39	840.68	30.70	28.382	
4,800.00	4,799.59	4,802.32	4,793.67	16.97	14.09	112.86	234.35	830.56	872.37	841.32	31.05	28.097	
4,850.00	4,849.56	4,853.00	4,844.35	17.15	14.26	112.96	234.46	830.81	873.31	841.92	31.39	27.817	
4,900.00	4,899.53	4,903.79	4,895.14	17.33	14.43	113.06	234.60	831.02	874.22	842.48	31.74	27.541	
4,950.00	4,949.50	4,954.59	4,945.94	17.50	14.60	113.17	234.67	831.19	875.08	842.99	32.09	27.269	
5,000.00	4,999.47	5,003.66	4,995.01	17.68	14.76	113.27	234.73	831.36	875.94	843.51	32.43	27.007	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,050.00	5,049.44	5,052.85	5,044.20	17.86	14.93	113.37	234.81	831.58	876.86	844.08	32.78	26.753	
5,100.00	5,099.41	5,104.56	5,095.91	18.04	15.10	113.47	234.89	831.78	877.75	844.62	33.13	26.496	
5,150.00	5,149.38	5,156.26	5,147.61	18.22	15.27	113.58	234.90	831.89	878.54	845.06	33.48	26.242	
5,200.00	5,199.35	5,204.17	5,195.52	18.40	15.43	113.68	234.95	832.01	879.37	845.55	33.82	26.003	
5,250.00	5,249.32	5,253.24	5,244.58	18.57	15.60	113.77	235.07	832.19	880.27	846.11	34.16	25.768	
5,300.00	5,299.29	5,303.64	5,294.99	18.75	15.77	113.87	235.24	832.37	881.18	846.67	34.51	25.532	
5,350.00	5,349.26	5,353.96	5,345.30	18.93	15.94	113.96	235.47	832.51	882.07	847.21	34.86	25.301	
5,400.00	5,399.23	5,404.12	5,395.46	19.11	16.11	114.05	235.64	832.65	882.94	847.73	35.21	25.074	
5,450.00	5,449.20	5,455.12	5,446.46	19.29	16.29	114.15	235.75	832.78	883.80	848.24	35.56	24.850	
5,500.00	5,499.17	5,507.10	5,498.45	19.47	16.46	114.25	235.82	832.82	884.56	848.64	35.92	24.627	
5,550.00	5,549.14	5,557.14	5,548.48	19.65	16.63	114.35	235.86	832.79	885.24	848.98	36.27	24.409	
5,600.00	5,599.11	5,606.06	5,597.40	19.82	16.80	114.45	235.91	832.80	885.98	849.37	36.61	24.200	
5,650.00	5,649.08	5,655.14	5,646.48	20.00	16.97	114.55	235.96	832.86	886.77	849.82	36.96	23.995	
5,700.00	5,699.05	5,704.29	5,695.64	20.18	17.13	114.64	236.03	832.97	887.62	850.31	37.30	23.794	
5,750.00	5,749.02	5,754.02	5,745.37	20.36	17.31	114.74	236.12	833.12	888.49	850.84	37.65	23.597	
5,800.00	5,798.99	5,803.94	5,795.28	20.54	17.48	114.84	236.23	833.26	889.38	851.38	38.00	23.403	
5,850.00	5,848.96	5,855.72	5,847.06	20.72	17.65	114.93	236.35	833.36	890.23	851.87	38.36	23.208	
5,900.00	5,898.93	5,907.81	5,899.15	20.90	17.83	115.03	236.42	833.35	890.96	852.24	38.71	23.014	
5,950.00	5,948.90	5,958.83	5,950.18	21.08	18.00	115.13	236.46	833.25	891.60	852.54	39.06	22.825	
6,000.00	5,998.87	6,009.88	6,001.22	21.26	18.17	115.23	236.50	833.08	892.19	852.78	39.41	22.638	
6,050.00	6,048.84	6,059.08	6,050.42	21.43	18.34	115.32	236.58	832.92	892.78	853.03	39.76	22.456	
6,100.00	6,098.81	6,109.04	6,100.38	21.61	18.51	115.41	236.71	832.77	893.40	853.30	40.10	22.277	
6,150.00	6,148.78	6,160.67	6,152.01	21.79	18.68	115.51	236.82	832.56	893.96	853.51	40.46	22.097	
6,200.00	6,198.75	6,212.03	6,203.37	21.97	18.85	115.60	236.86	832.27	894.44	853.63	40.81	21.919	
6,250.00	6,248.72	6,262.96	6,254.30	22.15	19.02	115.70	236.82	831.93	894.86	853.70	41.15	21.745	
6,300.00	6,298.69	6,313.31	6,304.65	22.33	19.19	115.80	236.72	831.57	895.23	853.73	41.50	21.573	
6,350.00	6,348.66	6,363.14	6,354.48	22.51	19.35	115.90	236.62	831.21	895.61	853.77	41.84	21.406	
6,400.00	6,398.63	6,412.38	6,403.72	22.69	19.51	116.01	236.50	830.88	896.01	853.83	42.18	21.242	
6,450.00	6,448.60	6,461.26	6,452.60	22.87	19.67	116.11	236.26	830.63	896.47	853.95	42.52	21.084	
6,500.00	6,498.57	6,510.48	6,501.82	23.05	19.83	116.23	235.90	830.45	896.99	854.13	42.86	20.929	
6,550.00	6,548.54	6,559.86	6,551.19	23.23	19.99	116.35	235.51	830.32	897.54	854.35	43.20	20.778	
6,600.00	6,598.51	6,609.56	6,600.89	23.40	20.15	116.47	235.12	830.21	898.13	854.59	43.54	20.629	
6,650.00	6,648.49	6,659.36	6,650.69	23.58	20.32	116.59	234.75	830.10	898.73	854.85	43.88	20.482	
6,700.00	6,698.46	6,708.61	6,699.93	23.76	20.48	116.71	234.35	830.02	899.35	855.13	44.22	20.339	
6,750.00	6,748.43	6,757.74	6,749.07	23.94	20.64	116.84	233.82	830.02	900.03	855.47	44.56	20.199	
6,800.00	6,798.40	6,812.34	6,803.66	24.12	20.82	116.99	233.16	829.92	900.62	855.70	44.91	20.052	
6,850.00	6,848.37	6,867.60	6,858.91	24.30	21.00	117.13	232.56	829.49	900.92	855.65	45.27	19.900	
6,900.00	6,898.34	6,912.90	6,904.21	24.48	21.15	117.22	232.42	829.10	901.26	855.65	45.61	19.761	
6,950.00	6,948.31	6,960.14	6,951.45	24.66	21.31	117.29	232.77	828.77	901.76	855.81	45.95	19.626	
7,000.00	6,998.28	7,010.03	7,001.33	24.84	21.49	117.35	233.35	828.45	902.34	856.04	46.30	19.489	
7,050.00	7,048.25	7,060.22	7,051.53	25.02	21.66	117.40	233.97	828.13	902.92	856.26	46.65	19.353	
7,100.00	7,098.22	7,111.42	7,102.72	25.20	21.84	117.47	234.46	827.77	903.45	856.44	47.01	19.218	
7,150.00	7,148.19	7,162.12	7,153.42	25.38	22.01	117.55	234.74	827.39	903.93	856.56	47.36	19.084	
7,200.00	7,198.16	7,212.02	7,203.31	25.56	22.18	117.62	234.98	827.02	904.40	856.68	47.72	18.954	
7,250.00	7,248.13	7,261.62	7,252.91	25.74	22.35	117.70	235.18	826.66	904.87	856.81	48.06	18.826	
7,300.00	7,298.10	7,310.87	7,302.16	25.91	22.52	117.79	235.29	826.35	905.39	856.98	48.41	18.702	
7,350.00	7,348.07	7,360.98	7,352.27	26.09	22.69	117.88	235.29	826.09	905.93	857.17	48.76	18.579	
7,400.00	7,398.04	7,411.86	7,403.15	26.27	22.86	117.98	235.23	825.79	906.44	857.33	49.11	18.457	
7,450.00	7,448.01	7,462.11	7,453.39	26.45	23.03	118.08	235.09	825.47	906.91	857.45	49.46	18.337	
7,500.00	7,497.98	7,512.03	7,503.31	26.63	23.20	118.19	234.86	825.16	907.39	857.58	49.81	18.219	
7,550.00	7,547.95	7,560.52	7,551.80	26.81	23.36	118.30	234.61	824.90	907.90	857.75	50.15	18.105	
7,600.00	7,597.92	7,608.61	7,599.89	26.99	23.52	118.40	234.49	824.72	908.51	858.03	50.49	17.995	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,650.00	7,647.89	7,658.00	7,649.28	27.17	23.69	118.49	234.43	824.60	909.21	858.37	50.83	17.886	
7,700.00	7,697.86	7,707.74	7,699.03	27.35	23.86	118.60	234.28	824.50	909.92	858.74	51.18	17.779	
7,750.00	7,747.83	7,755.25	7,746.54	27.53	24.02	118.69	234.23	824.46	910.69	859.18	51.52	17.677	
7,800.00	7,797.80	7,802.40	7,793.68	27.71	24.18	118.76	234.56	824.52	911.63	859.77	51.86	17.579	
7,850.00	7,847.77	7,851.33	7,842.61	27.89	24.35	118.82	235.14	824.65	912.68	860.47	52.21	17.481	
7,900.00	7,897.74	7,900.61	7,891.89	28.07	24.52	118.88	235.68	824.83	913.77	861.21	52.56	17.385	
7,950.00	7,947.71	7,951.04	7,942.31	28.25	24.70	118.94	236.19	825.02	914.87	861.95	52.92	17.289	
8,000.00	7,997.68	8,001.62	7,992.89	28.43	24.88	119.01	236.69	825.19	915.94	862.67	53.27	17.193	
8,050.00	8,047.65	8,053.48	8,044.75	28.61	25.06	119.08	237.09	825.31	916.95	863.31	53.63	17.096	
8,100.00	8,097.62	8,105.34	8,096.61	28.79	25.24	119.17	237.30	825.35	917.85	863.85	54.00	16.999	
8,150.00	8,147.59	8,155.86	8,147.13	28.97	25.42	119.25	237.48	825.33	918.70	864.34	54.35	16.903	
8,200.00	8,197.56	8,206.08	8,197.34	29.15	25.59	119.33	237.68	825.26	919.51	864.80	54.71	16.808	
8,250.00	8,247.53	8,255.57	8,246.83	29.33	25.77	119.42	237.85	825.22	920.34	865.28	55.06	16.715	
8,300.00	8,297.50	8,305.60	8,296.87	29.51	25.94	119.50	237.96	825.21	921.18	865.77	55.41	16.624	
8,350.00	8,347.47	8,356.16	8,347.43	29.69	26.11	119.60	237.91	825.19	922.01	866.25	55.76	16.534	
8,400.00	8,397.44	8,405.48	8,396.75	29.86	26.28	119.70	237.80	825.17	922.83	866.72	56.11	16.446	
8,450.00	8,447.41	8,454.02	8,445.29	30.04	26.45	119.77	238.04	825.17	923.72	867.26	56.46	16.361	
8,500.00	8,497.38	8,506.56	8,497.82	30.22	26.63	119.84	238.55	825.15	924.62	867.80	56.82	16.273	
8,550.00	8,547.35	8,561.24	8,552.50	30.40	26.82	119.93	238.69	824.91	925.28	868.09	57.19	16.180	
8,600.00	8,597.32	8,617.75	8,609.01	30.58	27.01	120.05	238.42	824.38	925.65	868.10	57.55	16.083	
8,650.00	8,647.29	8,674.42	8,665.67	30.76	27.20	120.19	237.78	823.49	925.66	867.74	57.92	15.981	
8,653.29	8,650.58	8,678.15	8,669.39	30.78	27.21	120.19	237.73	823.41	925.65	867.70	57.95	15.975	
8,700.00	8,697.26	8,718.22	8,709.46	30.94	27.35	120.27	237.69	822.81	925.74	867.49	58.26	15.891	
8,750.00	8,747.23	8,765.58	8,756.82	31.12	27.52	120.32	238.15	822.18	926.01	867.41	58.60	15.802	
8,800.00	8,797.20	8,817.67	8,808.90	31.30	27.70	120.37	238.86	821.45	926.26	867.30	58.96	15.710	
8,850.00	8,847.18	8,866.95	8,858.16	31.48	27.87	120.42	239.47	820.68	926.43	867.11	59.31	15.619	
8,900.00	8,897.15	8,910.79	8,902.00	31.66	28.02	120.47	239.84	820.22	926.83	867.18	59.65	15.539	
8,950.00	8,947.12	8,955.19	8,946.40	31.84	28.18	120.54	240.00	820.07	927.56	867.58	59.98	15.464	
9,000.00	8,997.09	9,002.39	8,993.60	32.02	28.34	120.62	240.16	820.12	928.51	868.19	60.33	15.392	
9,050.00	9,047.06	9,050.56	9,041.77	32.20	28.51	120.69	240.43	820.30	929.61	868.94	60.67	15.322	
9,100.00	9,097.03	9,103.78	9,094.99	32.38	28.69	120.78	240.52	820.45	930.64	869.61	61.03	15.248	
9,150.00	9,147.00	9,156.99	9,148.20	32.56	28.88	120.90	240.24	820.46	931.51	870.11	61.39	15.173	
9,200.00	9,196.97	9,210.21	9,201.41	32.74	29.05	121.02	239.79	820.30	932.20	870.45	61.75	15.096	
9,250.00	9,246.94	9,260.89	9,252.09	32.92	29.22	121.15	239.24	820.03	932.76	870.66	62.10	15.020	
9,300.00	9,296.91	9,309.79	9,300.99	33.10	29.39	121.28	238.49	819.82	933.37	870.93	62.44	14.947	
9,350.00	9,346.88	9,358.18	9,349.36	33.28	29.55	121.42	237.62	819.69	934.04	871.26	62.78	14.877	
9,400.00	9,396.85	9,406.30	9,397.49	33.46	29.71	121.54	236.98	819.63	934.82	871.69	63.12	14.809	
9,450.00	9,446.82	9,454.61	9,445.79	33.64	29.87	121.65	236.68	819.63	935.69	872.22	63.47	14.743	
9,500.00	9,496.79	9,503.03	9,494.21	33.82	30.04	121.71	237.06	819.65	936.65	872.84	63.81	14.678	
9,550.00	9,546.76	9,553.48	9,544.65	34.00	30.22	121.74	238.07	819.65	937.66	873.49	64.17	14.612	
9,600.00	9,596.73	9,604.76	9,595.91	34.18	30.40	121.75	239.38	819.56	938.60	874.07	64.53	14.545	
9,650.00	9,646.70	9,661.27	9,652.41	34.36	30.60	121.77	240.68	819.27	939.36	874.45	64.91	14.472	
9,700.00	9,696.67	9,718.63	9,709.76	34.54	30.80	121.85	241.10	818.60	939.72	874.43	65.29	14.394	
9,750.00	9,746.64	9,771.62	9,762.74	34.72	30.98	121.96	240.75	817.78	939.84	874.19	65.65	14.317	
9,800.00	9,796.61	9,822.66	9,813.76	34.90	31.15	122.10	239.80	816.88	939.78	873.79	66.00	14.240	
9,815.03	9,811.63	9,836.99	9,828.08	34.95	31.20	122.15	239.46	816.64	939.78	873.68	66.10	14.218	
9,850.00	9,846.58	9,870.30	9,861.39	35.08	31.31	122.26	238.58	816.13	939.81	873.47	66.34	14.167	
9,900.00	9,896.55	9,917.37	9,908.43	35.26	31.47	122.43	237.14	815.53	939.97	873.30	66.68	14.098	
9,950.00	9,946.52	9,963.73	9,954.77	35.44	31.62	122.59	235.79	815.10	940.32	873.31	67.01	14.032	
10,000.00	9,996.49	10,010.34	10,001.36	35.62	31.78	122.74	234.61	814.83	940.87	873.52	67.35	13.970	
10,050.00	10,046.46	10,057.33	10,048.34	35.80	31.94	122.87	233.88	814.68	941.58	873.89	67.69	13.911	
10,100.00	10,096.43	10,105.13	10,096.14	35.98	32.10	122.96	233.66	814.63	942.45	874.42	68.03	13.854	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,150.00	10,146.40	10,154.27	10,145.28	36.16	32.27	123.05	233.64	814.62	943.38	875.01	68.37	13.797	
10,200.00	10,196.37	10,209.49	10,200.50	36.34	32.46	123.15	233.67	814.58	944.29	875.55	68.75	13.736	
10,250.00	10,246.34	10,272.57	10,263.58	36.52	32.68	123.27	233.44	813.82	944.63	875.49	69.14	13.663	
10,300.00	10,296.31	10,331.99	10,322.98	36.70	32.88	123.40	232.90	812.42	944.37	874.85	69.51	13.585	
10,350.00	10,346.28	10,391.16	10,382.11	36.88	33.09	123.55	232.07	810.46	943.62	873.74	69.88	13.503	
10,400.00	10,396.25	10,437.84	10,428.76	37.06	33.25	123.64	231.80	808.85	942.83	872.60	70.23	13.425	
10,450.00	10,446.22	10,483.85	10,474.75	37.24	33.41	123.71	231.90	807.26	942.06	871.49	70.57	13.349	
10,500.00	10,496.19	10,524.58	10,515.45	37.42	33.55	123.74	232.42	806.16	941.71	870.81	70.90	13.281	
10,510.86	10,507.05	10,533.43	10,524.30	37.46	33.58	123.75	232.59	805.97	941.70	870.72	70.98	13.268	
10,550.00	10,546.16	10,566.09	10,556.95	37.60	33.69	123.75	233.39	805.42	941.85	870.61	71.23	13.222	
10,600.00	10,596.13	10,616.43	10,607.24	37.78	33.87	123.71	235.42	804.67	942.18	870.59	71.59	13.160	
10,650.00	10,646.10	10,666.71	10,657.41	37.96	34.05	123.61	238.56	803.84	942.50	870.55	71.95	13.099	
10,700.00	10,696.07	10,713.50	10,704.12	38.14	34.22	123.52	241.34	803.16	942.92	870.62	72.30	13.042	
10,750.00	10,746.04	10,761.51	10,752.07	38.32	34.39	123.47	243.53	802.64	943.46	870.81	72.65	12.986	
10,800.00	10,796.03	10,812.88	10,803.41	38.50	34.57	123.43	245.29	802.12	943.74	870.72	73.01	12.926	
10,850.00	10,846.03	10,864.29	10,854.80	38.67	34.76	123.38	246.56	801.55	943.58	870.21	73.37	12.860	
10,900.00	10,896.03	10,915.77	10,906.27	38.85	34.94	86.19	247.70	800.91	943.06	869.33	73.73	12.790	
10,950.00	10,946.03	10,966.21	10,956.68	39.03	35.12	86.12	248.78	800.22	942.45	868.36	74.09	12.720	
11,000.00	10,996.03	11,015.46	11,005.93	39.21	35.29	86.06	249.75	799.58	941.86	867.42	74.44	12.652	
11,050.00	11,046.03	11,066.68	11,057.13	39.39	35.47	86.00	250.64	798.92	941.29	866.49	74.80	12.584	
11,100.00	11,096.03	11,119.56	11,110.00	39.57	35.66	85.95	251.43	798.11	940.58	865.41	75.16	12.514	
11,150.00	11,146.03	11,169.34	11,159.77	39.74	35.84	85.91	252.08	797.27	939.78	864.26	75.52	12.444	
11,200.00	11,196.03	11,217.96	11,208.38	39.92	36.01	85.87	252.67	796.51	939.04	863.17	75.87	12.377	
11,250.00	11,246.01	11,267.24	11,257.65	40.09	36.18	-94.14	253.26	795.79	938.42	862.21	76.21	12.313	
11,300.00	11,295.76	11,320.78	11,311.18	40.25	36.37	-94.54	253.79	794.96	938.05	861.50	76.56	12.253	
11,350.00	11,344.89	11,374.43	11,364.81	40.41	36.55	-95.12	253.11	793.96	937.84	860.95	76.89	12.197	
11,367.79	11,362.15	11,393.48	11,383.84	40.46	36.62	-95.36	252.34	793.59	937.83	860.82	77.01	12.179	
11,400.00	11,393.03	11,430.55	11,420.83	40.55	36.74	-95.86	249.96	792.84	937.88	860.66	77.22	12.146	
11,450.00	11,439.82	11,503.34	11,492.50	40.69	36.97	-96.74	237.80	790.97	937.62	860.08	77.54	12.092	
11,500.00	11,484.90	11,564.70	11,550.84	40.82	37.15	-97.32	219.01	789.18	936.96	859.14	77.82	12.041	
11,550.00	11,527.92	11,624.69	11,604.96	40.94	37.32	-97.72	193.29	787.78	936.35	858.27	78.07	11.993	
11,569.22	11,543.84	11,637.25	11,615.85	40.98	37.35	-97.79	187.02	787.67	936.31	858.13	78.17	11.978	
11,600.00	11,568.56	11,663.08	11,637.69	41.05	37.42	-97.89	173.24	787.58	936.49	858.16	78.32	11.957	
11,650.00	11,606.52	11,699.47	11,667.30	41.15	37.51	-97.95	152.11	788.13	937.79	859.23	78.56	11.937	
11,700.00	11,641.49	11,745.35	11,702.74	41.25	37.62	-98.00	123.02	789.73	940.21	861.43	78.78	11.934	
11,750.00	11,673.22	11,811.27	11,750.86	41.36	37.79	-98.23	78.04	792.07	942.83	863.83	79.00	11.935	
11,800.00	11,701.46	11,853.74	11,780.25	41.47	37.89	-98.33	47.44	793.76	945.95	866.74	79.21	11.943	
11,850.00	11,726.00	11,903.98	11,812.87	41.58	38.02	-98.49	9.34	796.56	950.11	870.71	79.40	11.966	
11,900.00	11,746.65	12,047.66	11,888.93	41.68	38.38	-99.39	-112.18	798.99	951.15	871.59	79.56	11.955	
11,950.00	11,763.25	12,131.90	11,923.25	41.79	38.59	-99.85	-189.05	797.39	950.84	871.09	79.75	11.923	
12,000.00	11,775.68	12,196.07	11,941.68	41.90	38.76	-100.12	-250.44	795.46	949.52	869.55	79.97	11.874	
12,035.61	11,781.94	12,221.53	11,946.77	41.97	38.82	-100.19	-275.38	795.15	949.20	869.09	80.11	11.848	
12,050.00	11,783.85	12,229.08	11,948.10	42.00	38.84	-100.19	-282.81	795.18	949.34	869.17	80.17	11.842	
12,100.00	11,787.68	12,259.00	11,952.62	42.11	38.92	-100.15	-312.37	795.96	951.12	870.79	80.33	11.840	
12,150.00	11,788.00	12,295.45	11,957.14	42.22	39.03	-100.28	-348.50	797.74	954.43	873.93	80.50	11.856	
12,200.00	11,788.00	12,338.10	11,961.69	42.33	39.15	-100.53	-390.83	800.26	958.22	877.53	80.69	11.876	
12,250.00	11,788.00	12,478.47	11,964.11	42.46	39.60	-100.62	-530.91	804.51	959.63	878.32	81.31	11.802	
12,300.00	11,788.00	12,539.85	11,962.61	42.60	39.82	-100.55	-592.26	803.64	958.61	876.94	81.67	11.737	
12,350.00	11,788.00	12,585.91	11,961.90	42.76	40.00	-100.52	-638.30	802.72	957.39	875.38	82.01	11.674	
12,400.00	11,788.00	12,631.68	11,961.08	42.91	40.18	-100.48	-684.06	802.04	956.40	874.05	82.35	11.614	
12,450.00	11,788.00	12,669.59	11,960.78	43.09	40.34	-100.46	-721.96	801.71	955.80	873.12	82.69	11.559	
12,468.94	11,788.00	12,683.63	11,960.95	43.16	40.41	-100.47	-736.01	801.67	955.75	872.94	82.81	11.541	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,500.00	11,788.00	12,706.66	11,961.57	43.27	40.51	-100.51	-759.02	801.70	955.89	872.87	83.01	11.515	
12,550.00	11,788.00	12,749.20	11,963.66	43.48	40.71	-100.63	-801.51	802.02	956.60	873.21	83.38	11.472	
12,600.00	11,788.00	12,802.36	11,966.55	43.68	40.97	-100.80	-854.59	802.37	957.33	873.51	83.82	11.421	
12,650.00	11,788.00	12,863.69	11,969.06	43.91	41.29	-100.95	-915.86	802.55	957.78	873.43	84.35	11.355	
12,700.00	11,788.00	12,931.08	11,967.49	44.13	41.66	-100.86	-983.22	802.45	957.39	872.43	84.96	11.269	
12,750.00	11,788.00	12,989.47	11,963.60	44.38	42.00	-100.63	-1,041.48	802.08	956.37	870.78	85.59	11.174	
12,800.00	11,788.00	13,033.55	11,959.81	44.63	42.26	-100.41	-1,085.39	801.71	955.08	868.96	86.12	11.090	
12,850.00	11,788.00	13,066.93	11,958.05	44.89	42.47	-100.31	-1,118.72	801.74	954.56	867.97	86.59	11.024	
12,854.98	11,788.00	13,070.26	11,957.94	44.92	42.49	-100.30	-1,122.05	801.77	954.56	867.92	86.63	11.018	
12,900.00	11,788.00	13,108.00	11,957.63	45.16	42.72	-100.28	-1,159.78	802.27	954.95	867.86	87.10	10.964	
12,950.00	11,788.00	13,143.78	11,958.12	45.45	42.95	-100.30	-1,195.55	803.02	955.92	868.33	87.59	10.914	
13,000.00	11,788.00	13,190.07	11,958.77	45.73	43.25	-100.33	-1,241.83	804.14	957.14	868.98	88.16	10.857	
13,050.00	11,788.00	13,257.22	11,959.02	46.04	43.71	-100.33	-1,308.95	805.56	958.15	869.21	88.94	10.773	
13,100.00	11,788.00	13,315.73	11,957.70	46.35	44.12	-100.25	-1,367.45	805.93	958.13	868.46	89.67	10.685	
13,101.99	11,788.00	13,317.33	11,957.66	46.36	44.13	-100.25	-1,369.05	805.94	958.13	868.44	89.69	10.682	
13,150.00	11,788.00	13,356.01	11,956.82	46.67	44.41	-100.19	-1,407.71	806.36	958.37	868.09	90.27	10.617	
13,200.00	11,788.00	13,397.02	11,956.22	47.00	44.70	-100.15	-1,448.72	807.17	959.10	868.23	90.88	10.554	
13,250.00	11,788.00	13,442.00	11,955.37	47.34	45.04	-100.09	-1,493.66	808.41	960.19	868.64	91.55	10.488	
13,300.00	11,788.00	13,487.71	11,954.00	47.68	45.39	-99.99	-1,539.33	809.99	961.54	869.30	92.24	10.424	
13,350.00	11,788.00	13,544.59	11,952.06	48.04	45.84	-99.86	-1,596.14	811.90	962.80	869.72	93.08	10.344	
13,400.00	11,788.00	13,600.57	11,950.30	48.40	46.29	-99.74	-1,652.07	813.36	963.72	869.81	93.91	10.262	
13,450.00	11,788.00	13,655.17	11,949.53	48.78	46.74	-99.69	-1,706.66	814.33	964.38	869.63	94.74	10.179	
13,500.00	11,788.00	13,728.83	11,949.70	49.15	47.35	-99.70	-1,780.32	814.50	964.46	868.71	95.75	10.072	
13,550.00	11,788.00	13,807.28	11,949.78	49.54	48.01	-99.73	-1,858.74	812.32	962.98	866.17	96.81	9.947	
13,600.00	11,788.00	13,881.66	11,948.49	49.94	48.64	-99.69	-1,933.00	808.46	960.18	862.36	97.83	9.815	
13,650.00	11,788.00	13,912.74	11,947.93	50.34	48.92	-99.68	-1,964.05	807.05	957.52	859.01	98.51	9.720	
13,700.00	11,788.00	13,952.55	11,947.25	50.75	49.27	-99.65	-2,003.82	805.48	955.33	856.07	99.26	9.624	
13,750.00	11,788.00	14,000.79	11,946.86	51.17	49.70	-99.65	-2,052.03	803.83	953.49	853.38	100.11	9.525	
13,800.00	11,788.00	14,050.35	11,947.37	51.59	50.15	-99.70	-2,101.55	802.01	951.66	850.70	100.96	9.426	
13,850.00	11,788.00	14,091.81	11,948.38	52.02	50.54	-99.77	-2,142.97	800.57	950.06	848.30	101.75	9.337	
13,900.00	11,788.00	14,132.44	11,949.66	52.45	50.92	-99.86	-2,183.57	799.50	948.94	846.41	102.53	9.255	
13,950.00	11,788.00	14,172.79	11,950.99	52.90	51.30	-99.95	-2,223.89	798.85	948.32	845.00	103.32	9.178	
13,984.65	11,788.00	14,200.63	11,951.32	53.21	51.57	-99.97	-2,251.72	798.74	948.20	844.32	103.88	9.128	
14,000.00	11,788.00	14,212.96	11,951.29	53.35	51.69	-99.97	-2,264.06	798.79	948.22	844.10	104.13	9.106	
14,050.00	11,788.00	14,253.81	11,950.44	53.81	52.09	-99.91	-2,304.89	799.37	948.64	843.68	104.96	9.038	
14,100.00	11,788.00	14,297.33	11,949.29	54.26	52.52	-99.83	-2,348.39	800.37	949.45	843.61	105.84	8.971	
14,150.00	11,788.00	14,340.85	11,948.34	54.73	52.95	-99.76	-2,391.88	801.64	950.60	843.88	106.72	8.907	
14,200.00	11,788.00	14,375.78	11,947.94	55.20	53.31	-99.73	-2,426.78	803.01	952.33	844.84	107.49	8.860	
14,250.00	11,788.00	14,410.84	11,948.09	55.68	53.67	-99.72	-2,461.79	804.83	954.83	846.58	108.25	8.820	
14,300.00	11,788.00	14,447.28	11,948.80	56.17	54.05	-99.74	-2,498.14	807.21	958.10	849.08	109.02	8.788	
14,350.00	11,788.00	14,486.48	11,949.83	56.66	54.46	-99.77	-2,537.22	810.19	961.98	852.14	109.84	8.758	
14,400.00	11,788.00	14,528.00	11,951.12	57.15	54.90	-99.81	-2,578.56	813.79	966.41	855.72	110.69	8.731	
14,450.00	11,788.00	14,611.48	11,951.61	57.65	55.79	-99.77	-2,661.77	820.30	970.25	857.97	112.28	8.641	
14,500.00	11,788.00	14,736.47	11,946.15	58.15	57.13	-99.43	-2,786.57	822.56	969.95	855.55	114.40	8.479	
14,550.00	11,788.00	14,768.79	11,944.94	58.66	57.48	-99.36	-2,818.87	822.46	969.40	854.16	115.24	8.412	
14,555.21	11,788.00	14,772.16	11,944.85	58.71	57.51	-99.36	-2,822.24	822.48	969.39	854.06	115.33	8.406	
14,600.00	11,788.00	14,811.00	11,944.32	59.17	57.93	-99.32	-2,861.07	823.08	969.83	853.65	116.19	8.347	
14,650.00	11,788.00	14,650.00	11,942.50	59.69	56.18	-99.22	-2,928.60	822.69	969.08	854.06	115.02	8.425	
14,700.00	11,788.00	14,950.84	11,939.58	60.21	59.46	-99.07	-3,000.77	821.11	967.44	848.61	118.82	8.142	
14,750.00	11,788.00	14,991.55	11,937.88	60.74	59.90	-98.98	-3,041.44	820.23	965.93	846.13	119.81	8.062	
14,800.00	11,788.00	15,034.29	11,936.82	61.27	60.38	-98.92	-3,084.15	819.56	964.87	844.06	120.81	7.987	
14,850.00	11,788.00	15,077.56	11,937.40	61.80	60.86	-98.96	-3,127.41	818.93	964.16	842.35	121.80	7.916	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
14,900.00	11,788.00	15,133.74	11,939.36	62.34	61.49	-99.09	-3,183.55	818.07	963.59	840.65	122.94	7.838	
14,950.00	11,788.00	15,197.93	11,938.84	62.88	62.22	-99.07	-3,247.71	816.69	962.36	838.16	124.20	7.748	
15,000.00	11,788.00	15,251.99	11,936.94	63.42	62.83	-98.97	-3,301.72	815.28	960.70	835.33	125.37	7.663	
15,050.00	11,788.00	15,305.00	11,934.38	63.97	63.43	-98.84	-3,354.65	813.73	958.79	832.24	126.54	7.577	
15,100.00	11,788.00	15,355.03	11,932.06	64.52	64.01	-98.71	-3,404.61	812.20	956.82	829.14	127.68	7.494	
15,150.00	11,788.00	15,398.39	11,930.37	65.08	64.51	-98.63	-3,447.90	810.90	954.96	826.21	128.75	7.417	
15,200.00	11,788.00	15,436.54	11,929.69	65.64	64.95	-98.59	-3,486.05	810.07	953.65	823.91	129.75	7.350	
15,250.00	11,788.00	15,476.62	11,929.88	66.20	65.41	-98.61	-3,526.12	809.57	952.96	822.21	130.75	7.288	
15,300.00	11,788.00	15,534.14	11,930.81	66.77	66.08	-98.68	-3,583.62	808.76	952.29	820.32	131.97	7.216	
15,350.00	11,788.00	15,584.45	11,931.88	67.34	66.68	-98.75	-3,633.92	807.70	951.31	818.20	133.11	7.147	
15,400.00	11,788.00	15,626.42	11,933.36	67.91	67.17	-98.84	-3,675.85	806.99	950.64	816.50	134.14	7.087	
15,450.00	11,788.00	15,669.78	11,935.51	68.48	67.69	-98.98	-3,719.15	806.51	950.38	815.21	135.17	7.031	
15,500.00	11,788.00	15,718.93	11,937.56	69.06	68.28	-99.10	-3,768.26	806.20	950.29	814.00	136.29	6.972	
15,550.00	11,788.00	15,774.56	11,938.73	69.64	68.94	-99.18	-3,823.87	806.01	950.20	812.67	137.53	6.909	
15,600.00	11,788.00	15,844.65	11,938.25	70.22	69.78	-99.16	-3,893.95	804.96	949.31	810.36	138.96	6.832	
15,650.00	11,788.00	15,884.92	11,937.76	70.81	70.27	-99.14	-3,934.21	804.15	948.13	808.10	140.02	6.771	
15,700.00	11,788.00	15,924.16	11,938.30	71.40	70.75	-99.18	-3,973.44	803.65	947.51	806.46	141.05	6.718	
15,729.58	11,788.00	15,947.38	11,939.07	71.75	71.03	-99.22	-3,996.65	803.49	947.41	805.76	141.65	6.688	
15,750.00	11,788.00	15,963.49	11,939.53	71.99	71.23	-99.25	-4,012.75	803.48	947.45	805.39	142.07	6.669	
15,800.00	11,788.00	16,002.94	11,939.85	72.58	71.71	-99.27	-4,052.20	803.92	947.96	804.87	143.09	6.625	
15,850.00	11,788.00	16,036.00	11,939.25	73.18	72.12	-99.22	-4,085.24	804.76	949.05	805.04	144.01	6.590	
15,900.00	11,788.00	16,077.80	11,938.64	73.77	72.64	-99.17	-4,127.00	806.37	950.77	805.69	145.08	6.554	
15,950.00	11,788.00	16,113.75	11,939.18	74.38	73.09	-99.19	-4,162.90	808.15	953.24	807.24	146.00	6.529	
16,000.00	11,788.00	16,154.71	11,940.72	74.98	73.61	-99.26	-4,203.76	810.59	956.37	809.37	147.01	6.506	
16,050.00	11,788.00	16,199.86	11,942.29	75.58	74.18	-99.32	-4,248.78	813.57	959.81	811.70	148.11	6.480	
16,100.00	11,788.00	16,274.19	11,943.02	76.19	75.12	-99.32	-4,322.94	818.41	963.14	813.28	149.86	6.427	
16,150.00	11,788.00	16,340.13	11,939.01	76.80	75.96	-99.06	-4,388.68	821.26	964.58	813.11	151.47	6.368	
16,200.00	11,788.00	16,378.52	11,936.60	77.41	76.45	-98.90	-4,426.95	823.09	966.36	813.83	152.53	6.336	
16,250.00	11,788.00	16,417.30	11,934.72	78.02	76.94	-98.77	-4,465.63	825.32	968.73	815.15	153.57	6.308	
16,300.00	11,788.00	16,458.64	11,933.47	78.64	77.47	-98.68	-4,506.86	828.00	971.60	816.94	154.66	6.282	
16,350.00	11,788.00	16,499.99	11,933.09	79.25	78.01	-98.63	-4,548.10	830.91	974.92	819.19	155.73	6.260	
16,400.00	11,788.00	16,587.82	11,932.89	79.87	79.13	-98.57	-4,635.79	835.85	977.66	819.87	157.78	6.196	
16,450.00	11,788.00	16,450.00	11,930.05	80.49	77.38	-98.41	-4,722.34	836.38	977.12	820.27	156.85	6.230	
16,500.00	11,788.00	16,748.01	11,926.23	81.12	81.17	-98.20	-4,795.78	835.17	975.63	814.35	161.28	6.049	
16,550.00	11,788.00	16,795.19	11,923.83	81.74	81.77	-98.06	-4,842.89	834.35	974.30	811.77	162.53	5.995	
16,600.00	11,788.00	16,600.00	11,924.24	82.36	79.44	-98.18	-4,983.89	823.99	970.54	810.40	160.14	6.060	
16,650.00	11,788.00	16,650.00	11,925.60	82.99	80.22	-98.46	-5,112.29	800.59	960.33	800.30	160.02	6.001	
16,700.00	11,788.00	17,099.05	11,925.96	83.62	85.45	-98.55	-5,143.24	793.97	950.19	783.99	166.20	5.717	
16,750.00	11,788.00	17,117.81	11,926.40	84.25	85.68	-98.60	-5,161.71	790.72	941.71	774.08	167.63	5.618	
16,800.00	11,788.00	17,136.75	11,927.03	84.88	85.91	-98.67	-5,180.45	788.04	934.84	765.89	168.95	5.533	
16,850.00	11,788.00	17,166.00	11,928.35	85.52	86.26	-98.78	-5,209.51	785.05	929.74	759.58	170.15	5.464	
16,900.00	11,788.00	17,166.00	11,928.35	86.15	86.26	-98.78	-5,209.51	785.05	926.10	754.97	171.14	5.412	
16,950.00	11,788.00	17,205.49	11,930.16	86.79	86.77	-98.91	-5,248.89	782.74	923.60	751.34	172.26	5.362	
17,000.00	11,788.00	17,232.47	11,931.12	87.43	87.12	-98.98	-5,275.84	782.05	922.50	749.29	173.21	5.326	
17,018.96	11,788.00	17,242.70	11,931.41	87.67	87.25	-98.99	-5,286.07	781.97	922.41	748.86	173.56	5.315	
17,050.00	11,788.00	17,260.00	11,931.84	88.07	87.47	-99.02	-5,303.36	782.08	922.66	748.55	174.10	5.299	
17,100.00	11,788.00	17,295.49	11,932.72	88.71	87.94	-99.07	-5,338.84	782.85	923.81	748.72	175.09	5.276	
17,150.00	11,788.00	17,331.65	11,933.82	89.35	88.42	-99.12	-5,374.95	784.14	925.72	749.65	176.06	5.258	
17,200.00	11,788.00	17,384.15	11,935.31	89.99	89.11	-99.19	-5,427.37	786.64	928.21	750.82	177.39	5.233	
17,250.00	11,788.00	17,466.67	11,932.98	90.64	90.21	-99.02	-5,509.79	789.29	929.47	750.08	179.39	5.181	
17,300.00	11,788.00	17,503.74	11,931.24	91.28	90.70	-98.91	-5,546.81	790.46	930.48	749.99	180.49	5.155	
17,350.00	11,788.00	17,544.00	11,929.15	91.93	91.23	-98.77	-5,586.99	791.85	931.72	750.08	181.64	5.130	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
17,400.00	11,788.00	17,577.10	11,927.66	92.58	91.68	-98.66	-5,620.02	793.43	933.69	751.10	182.59	5.113	
17,450.00	11,788.00	17,606.99	11,926.72	93.23	92.08	-98.59	-5,649.81	795.48	936.75	753.34	183.41	5.107	
17,500.00	11,788.00	17,638.00	11,926.16	93.88	92.49	-98.53	-5,680.70	798.22	940.87	756.68	184.19	5.108	
17,550.00	11,788.00	17,713.47	11,924.15	94.53	93.52	-98.35	-5,755.86	804.72	944.87	758.57	186.29	5.072	
17,600.00	11,788.00	17,779.09	11,921.21	95.18	94.40	-98.14	-5,821.27	808.94	947.61	759.54	188.07	5.039	
17,650.00	11,788.00	17,840.80	11,919.28	95.83	95.23	-98.00	-5,882.88	811.96	949.72	760.02	189.70	5.006	
17,700.00	11,788.00	17,890.36	11,917.60	96.49	95.90	-97.88	-5,932.36	814.18	951.61	760.56	191.04	4.981	Alert
17,750.00	11,788.00	17,920.00	11,916.44	97.14	96.30	-97.80	-5,961.95	815.47	953.63	761.73	191.91	4.969	Alert
17,800.00	11,788.00	17,960.89	11,915.57	97.80	96.86	-97.73	-6,002.77	817.79	956.30	763.28	193.02	4.954	Alert
17,850.00	11,788.00	17,989.44	11,915.92	98.46	97.25	-97.73	-6,031.22	820.06	960.21	766.49	193.73	4.957	Alert
17,900.00	11,788.00	18,026.03	11,917.41	99.12	97.75	-97.79	-6,067.60	823.67	965.21	770.60	194.62	4.960	Alert
17,950.00	11,788.00	17,950.00	11,918.72	99.78	96.71	-97.83	-6,137.42	829.17	968.84	774.28	194.56	4.980	Alert
18,000.00	11,788.00	18,180.48	11,919.03	100.44	99.85	-97.81	-6,221.65	834.10	971.39	772.56	198.83	4.886	Alert
18,050.00	11,788.00	18,247.18	11,919.70	101.10	100.76	-97.83	-6,288.29	836.82	973.40	772.88	200.52	4.854	Alert
18,100.00	11,788.00	18,332.30	11,921.35	101.76	101.90	-97.92	-6,373.39	837.93	974.17	771.73	202.44	4.812	Alert
18,150.00	11,788.00	18,407.48	11,921.01	102.42	102.91	-97.91	-6,448.54	836.16	972.71	768.64	204.07	4.767	Alert
18,200.00	11,788.00	18,440.07	11,920.62	103.09	103.35	-97.89	-6,481.11	835.51	971.53	766.34	205.20	4.735	Alert
18,240.53	11,788.00	18,466.50	11,920.38	103.63	103.70	-97.88	-6,507.54	835.40	971.24	765.17	206.07	4.713	Alert
18,250.00	11,788.00	18,472.67	11,920.34	103.75	103.78	-97.88	-6,513.72	835.43	971.26	764.98	206.27	4.709	Alert
18,300.00	11,788.00	18,538.80	11,918.60	104.42	104.67	-97.77	-6,579.81	835.88	971.41	763.54	207.87	4.673	Alert
18,350.00	11,788.00	18,611.26	11,912.45	105.08	105.64	-97.42	-6,652.00	834.79	969.92	760.36	209.57	4.628	Alert
18,400.00	11,788.00	18,665.83	11,909.72	105.75	106.37	-97.28	-6,706.46	833.14	968.00	757.03	210.98	4.588	Alert
18,450.00	11,788.00	18,769.00	11,907.72	106.42	107.72	-97.22	-6,809.28	825.31	963.40	750.94	212.46	4.534	Alert
18,500.00	11,788.00	18,797.48	11,907.34	107.09	108.10	-97.22	-6,837.62	822.56	958.74	744.96	213.79	4.485	Alert
18,550.00	11,788.00	18,815.66	11,907.37	107.76	108.35	-97.23	-6,855.77	821.55	955.89	740.94	214.95	4.447	Alert
18,600.00	11,788.00	18,833.88	11,907.61	108.43	108.59	-97.25	-6,873.98	821.11	954.69	738.77	215.92	4.422	Alert
18,607.26	11,788.00	18,836.52	11,907.67	108.53	108.62	-97.25	-6,876.63	821.10	954.66	738.62	216.04	4.419	Alert
18,650.00	11,788.00	18,864.00	11,908.48	109.10	108.99	-97.29	-6,904.08	821.67	955.37	738.46	216.91	4.404	Alert
18,700.00	11,788.00	18,891.59	11,909.28	109.77	109.37	-97.33	-6,931.64	822.81	957.10	739.33	217.77	4.395	Alert
18,750.00	11,788.00	18,971.46	11,908.61	110.44	110.47	-97.28	-7,011.47	824.77	958.17	738.42	219.75	4.360	Alert
18,800.00	11,788.00	19,029.55	11,906.54	111.12	111.26	-97.15	-7,069.52	825.34	958.35	737.08	221.27	4.331	Alert
18,850.00	11,788.00	19,077.64	11,904.35	111.79	111.91	-97.02	-7,117.56	825.51	958.14	735.51	222.63	4.304	Alert
18,852.77	11,788.00	19,079.89	11,904.25	111.83	111.95	-97.02	-7,119.80	825.52	958.14	735.44	222.70	4.302	Alert
18,900.00	11,788.00	19,118.17	11,902.69	112.47	112.47	-96.92	-7,158.05	825.97	958.36	734.51	223.85	4.281	Alert
18,950.00	11,788.00	19,159.70	11,901.30	113.14	113.04	-96.83	-7,199.55	826.82	959.07	734.00	225.07	4.261	Alert
19,000.00	11,788.00	19,203.45	11,900.93	113.82	113.64	-96.80	-7,243.28	827.89	960.15	733.83	226.31	4.243	Alert
19,050.00	11,788.00	19,252.35	11,902.01	114.49	114.32	-96.86	-7,292.15	829.22	961.52	733.89	227.63	4.224	Alert
19,100.00	11,788.00	19,327.64	11,902.31	115.17	115.35	-96.87	-7,367.43	830.30	962.16	732.70	229.46	4.193	Alert
19,116.03	11,788.00	19,351.77	11,901.71	115.39	115.68	-96.84	-7,391.55	830.31	962.09	732.06	230.02	4.183	Alert
19,150.00	11,788.00	19,362.33	11,901.98	115.85	115.83	-96.85	-7,402.11	830.58	962.45	731.89	230.55	4.175	Alert
19,200.00	11,788.00	19,393.24	11,902.67	116.53	116.26	-96.89	-7,433.00	831.35	963.72	732.22	231.50	4.163	Alert
19,250.00	11,788.00	19,429.00	11,904.65	117.20	116.75	-96.99	-7,468.67	832.87	966.00	733.53	232.47	4.155	Alert
19,300.00	11,788.00	19,478.76	11,906.88	117.88	117.45	-97.11	-7,518.32	835.41	968.72	734.92	233.79	4.144	Alert
19,350.00	11,788.00	19,538.19	11,905.83	118.56	118.28	-97.02	-7,577.65	838.38	970.98	735.55	235.43	4.124	Alert
19,400.00	11,788.00	19,571.33	11,905.50	119.24	118.74	-96.99	-7,610.73	840.30	973.62	737.25	236.37	4.119	Alert
19,450.00	11,788.00	19,609.78	11,905.67	119.92	119.28	-96.98	-7,649.10	842.82	976.80	739.39	237.41	4.114	Alert
19,500.00	11,788.00	19,693.15	11,907.62	120.61	120.44	-97.07	-7,732.31	847.37	979.64	739.98	239.66	4.088	Alert
19,550.00	11,788.00	19,813.27	11,911.71	121.29	122.10	-97.31	-7,852.33	847.18	979.75	737.70	242.04	4.048	Alert
19,600.00	11,788.00	19,858.98	11,912.94	121.97	122.72	-97.39	-7,898.00	845.68	978.19	734.86	243.33	4.020	Alert
19,650.00	11,788.00	19,908.34	11,913.44	122.65	123.39	-97.43	-7,947.34	844.13	976.59	731.93	244.66	3.992	Alert
19,700.00	11,788.00	19,952.67	11,914.10	123.34	124.00	-97.48	-7,991.64	842.87	975.18	729.23	245.95	3.965	Alert
19,750.00	11,788.00	19,998.65	11,915.48	124.02	124.62	-97.57	-8,037.59	841.74	974.06	726.83	247.23	3.940	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
19,800.00	11,788.00	20,067.86	11,915.97	124.71	125.57	-97.62	-8,106.76	839.65	972.51	723.77	248.74	3.910	Alert
19,850.00	11,788.00	20,123.31	11,914.17	125.39	126.32	-97.53	-8,162.14	837.45	970.22	720.06	250.17	3.878	Alert
19,900.00	11,788.00	20,173.13	11,912.22	126.08	127.00	-97.43	-8,211.88	835.48	967.90	716.34	251.56	3.848	Alert
19,950.00	11,788.00	20,217.46	11,910.48	126.76	127.61	-97.34	-8,256.14	833.83	965.71	712.79	252.92	3.818	Alert
20,000.00	11,788.00	20,260.63	11,909.14	127.45	128.20	-97.27	-8,299.27	832.48	963.86	709.60	254.25	3.791	Alert
20,050.00	11,788.00	20,307.59	11,908.02	128.14	128.84	-97.22	-8,346.20	831.24	962.30	706.68	255.61	3.765	Alert
20,100.00	11,788.00	20,356.62	11,907.00	128.82	129.51	-97.17	-8,395.21	829.99	960.80	703.82	256.99	3.739	Alert
20,150.00	11,788.00	20,404.99	11,905.76	129.51	130.18	-97.10	-8,443.54	828.85	959.38	701.01	258.36	3.713	Alert
20,200.00	11,788.00	20,452.98	11,903.23	130.20	130.84	-96.96	-8,491.46	827.97	958.05	698.28	259.76	3.688	Alert
20,250.00	11,788.00	20,504.46	11,899.35	130.89	131.55	-96.73	-8,542.78	827.21	956.76	695.53	261.23	3.663	Alert
20,300.00	11,788.00	20,557.07	11,894.96	131.58	132.27	-96.48	-8,595.20	826.33	955.35	692.63	262.72	3.636	Alert
20,350.00	11,788.00	20,587.44	11,892.61	132.27	132.69	-96.34	-8,625.48	826.05	954.37	690.45	263.91	3.616	Alert
20,370.64	11,788.00	20,599.66	11,891.86	132.55	132.86	-96.30	-8,637.68	826.10	954.28	689.91	264.37	3.610	Alert
20,400.00	11,788.00	20,617.06	11,891.00	132.96	133.11	-96.24	-8,655.05	826.34	954.46	689.48	264.99	3.602	Alert
20,450.00	11,788.00	20,653.00	11,889.95	133.65	133.61	-96.17	-8,690.96	827.45	955.66	689.57	266.09	3.591	Alert
20,500.00	11,788.00	20,687.56	11,889.35	134.34	134.09	-96.13	-8,725.47	829.00	957.62	690.51	267.11	3.585	Alert
20,550.00	11,788.00	20,731.38	11,888.37	135.03	134.71	-96.06	-8,769.23	831.25	959.95	691.60	268.35	3.577	Alert
20,600.00	11,788.00	20,779.52	11,887.44	135.72	135.39	-95.99	-8,817.29	833.94	962.52	692.81	269.71	3.569	Alert
20,650.00	11,788.00	20,989.60	11,889.22	136.41	138.27	-96.15	-9,026.55	825.87	959.27	686.95	272.31	3.523	Alert
20,700.00	11,788.00	21,030.00	11,889.59	137.10	138.80	-96.19	-9,066.74	821.76	954.09	680.33	273.75	3.485	Alert
20,750.00	11,788.00	21,049.36	11,889.98	137.79	139.07	-96.23	-9,086.03	820.17	949.80	674.48	275.31	3.450	Alert
20,800.00	11,788.00	21,076.15	11,890.77	138.49	139.43	-96.29	-9,112.75	818.51	946.78	670.12	276.65	3.422	Alert
20,850.00	11,788.00	21,102.98	11,891.85	139.18	139.80	-96.36	-9,139.54	817.47	944.97	667.13	277.84	3.401	Alert
20,900.00	11,788.00	21,124.00	11,892.90	139.87	140.09	-96.43	-9,160.54	817.10	944.43	665.65	278.78	3.388	Alert
20,904.17	11,788.00	21,133.99	11,893.45	139.93	140.23	-96.46	-9,170.51	817.04	944.39	665.40	278.99	3.385	Alert
20,950.00	11,788.00	21,164.50	11,895.21	140.57	140.66	-96.57	-9,200.97	817.17	944.80	664.86	279.93	3.375	Alert, ES
21,000.00	11,788.00	21,197.75	11,897.27	141.26	141.12	-96.69	-9,234.15	817.86	946.09	665.21	280.88	3.368	Alert
21,050.00	11,788.00	21,237.65	11,899.89	141.96	141.69	-96.83	-9,273.93	819.35	948.21	666.27	281.94	3.363	Alert
21,100.00	11,788.00	21,288.01	11,903.00	142.65	142.40	-97.01	-9,324.15	821.36	950.47	667.20	283.27	3.355	Alert
21,150.00	11,788.00	21,336.31	11,905.72	143.35	143.09	-97.15	-9,372.34	823.33	952.75	668.19	284.56	3.348	Alert
21,200.00	11,788.00	21,382.72	11,908.13	144.04	143.75	-97.28	-9,418.64	825.40	955.19	669.39	285.79	3.342	Alert
21,250.00	11,788.00	21,431.79	11,910.43	144.74	144.45	-97.40	-9,467.60	827.76	957.78	670.67	287.11	3.336	Alert
21,300.00	11,788.00	21,483.55	11,912.50	145.43	145.18	-97.51	-9,519.26	830.24	960.31	671.79	288.52	3.328	Alert
21,350.00	11,788.00	21,525.25	11,914.00	146.13	145.78	-97.58	-9,560.88	832.31	962.93	673.30	289.62	3.325	Alert
21,400.00	11,788.00	21,562.20	11,915.63	146.83	146.31	-97.66	-9,597.72	834.59	966.18	675.64	290.54	3.325	Alert
21,450.00	11,788.00	21,604.53	11,917.83	147.52	146.91	-97.76	-9,639.88	837.73	970.08	678.47	291.61	3.327	Alert
21,500.00	11,788.00	21,681.63	11,918.48	148.22	148.01	-97.76	-9,716.79	842.89	973.36	679.41	293.95	3.311	Alert
21,550.00	11,788.00	21,737.26	11,915.83	148.92	148.81	-97.58	-9,772.25	846.04	975.75	680.14	295.61	3.301	Alert
21,600.00	11,788.00	21,790.73	11,911.56	149.62	149.57	-97.31	-9,825.47	849.08	977.96	680.72	297.23	3.290	Alert
21,650.00	11,788.00	21,839.92	11,907.10	150.31	150.27	-97.03	-9,874.37	851.87	980.12	681.38	298.74	3.281	Alert, SF
21,700.00	11,788.00	21,852.00	11,906.00	151.01	150.44	-96.96	-9,886.39	852.56	983.03	684.14	298.89	3.289	Alert
21,750.00	11,788.00	21,852.00	11,906.00	151.71	150.44	-96.96	-9,886.39	852.56	988.38	690.38	298.00	3.317	Alert
21,753.86	11,788.00	21,852.00	11,906.00	151.76	150.44	-96.96	-9,886.39	852.56	988.90	691.00	297.90	3.320	Alert

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	1.30	-1.30	0.50	0.50	-90.36	-4.36	-699.88	699.89				
50.00	50.00	48.70	48.70	0.50	0.50	-90.36	-4.36	-699.88	699.89	698.89	1.01	695.533	
100.00	100.00	101.30	98.70	0.52	0.52	-90.36	-4.36	-699.88	699.89	698.86	1.04	675.092	
150.00	150.00	148.70	148.70	0.59	0.59	-90.36	-4.36	-699.88	699.89	698.72	1.18	594.129	
200.00	200.00	201.30	198.70	0.70	0.71	-90.36	-4.36	-699.88	699.89	698.49	1.41	497.266	
250.00	250.00	248.70	248.70	0.84	0.83	-90.36	-4.36	-699.88	699.89	698.22	1.67	418.674	
300.00	300.00	301.30	298.70	0.99	0.99	-90.36	-4.36	-699.88	699.89	697.92	1.98	353.716	
350.00	350.00	348.70	348.70	1.15	1.14	-90.36	-4.36	-699.88	699.89	697.61	2.29	306.060	
400.00	400.00	401.30	398.70	1.31	1.31	-90.36	-4.36	-699.88	699.89	697.27	2.62	266.882	
450.00	450.00	448.70	448.70	1.48	1.47	-90.36	-4.36	-699.88	699.89	696.95	2.95	237.392	
500.00	500.00	501.30	498.70	1.65	1.65	-90.36	-4.36	-699.88	699.89	696.60	3.30	212.307	
550.00	550.00	548.70	548.70	1.82	1.81	-90.36	-4.36	-699.88	699.89	696.26	3.63	192.763	
600.00	600.00	601.30	598.70	1.99	2.00	-90.36	-4.36	-699.88	699.89	695.91	3.99	175.601	
650.00	650.00	648.70	648.70	2.16	2.16	-90.36	-4.36	-699.88	699.89	695.57	4.32	161.841	
700.00	700.00	701.30	698.70	2.34	2.34	-90.36	-4.36	-699.88	699.89	695.21	4.68	149.449	
750.00	750.00	748.70	748.70	2.51	2.51	-90.36	-4.36	-699.88	699.89	694.87	5.02	139.287	
800.00	800.00	801.30	798.70	2.69	2.70	-90.36	-4.36	-699.88	699.89	694.51	5.39	129.953	
850.00	850.00	848.70	848.70	2.87	2.86	-90.36	-4.36	-699.88	699.89	694.17	5.73	122.162	
900.00	900.00	901.30	898.70	3.04	3.05	-90.36	-4.36	-699.88	699.89	693.80	6.09	114.893	
950.00	950.00	948.70	948.70	3.22	3.22	-90.36	-4.36	-699.88	699.89	693.46	6.44	108.741	
1,000.00	1,000.00	1,001.30	998.70	3.40	3.40	-90.36	-4.36	-699.88	699.89	693.10	6.80	102.927	
1,050.00	1,050.00	1,048.70	1,048.70	3.58	3.57	-90.36	-4.36	-699.88	699.89	692.75	7.15	97.949	
1,100.00	1,100.00	1,101.30	1,098.70	3.75	3.76	-90.36	-4.36	-699.88	699.89	692.39	7.51	93.197	
1,150.00	1,150.00	1,148.70	1,148.70	3.93	3.93	-90.36	-4.36	-699.88	699.89	692.04	7.86	89.090	
1,200.00	1,200.00	1,201.30	1,198.70	4.11	4.11	-90.36	-4.36	-699.88	699.89	691.67	8.22	85.136	
1,250.00	1,250.00	1,248.70	1,248.70	4.29	4.28	-90.36	-4.36	-699.88	699.89	691.33	8.57	81.691	
1,300.00	1,300.00	1,301.30	1,298.70	4.46	4.47	-90.36	-4.36	-699.88	699.89	690.96	8.93	78.350	
1,350.00	1,350.00	1,348.70	1,348.70	4.64	4.64	-90.36	-4.36	-699.88	699.89	690.61	9.28	75.420	
1,400.00	1,400.00	1,401.30	1,398.70	4.82	4.83	-90.36	-4.36	-699.88	699.89	690.25	9.65	72.560	
1,450.00	1,450.00	1,448.70	1,448.70	5.00	4.99	-90.36	-4.36	-699.88	699.89	689.90	9.99	70.038	
1,500.00	1,500.00	1,501.30	1,498.70	5.18	5.18	-90.36	-4.36	-699.88	699.89	689.54	10.36	67.563	
1,550.00	1,550.00	1,548.70	1,548.70	5.36	5.35	-90.36	-4.36	-699.88	699.89	689.19	10.71	65.370	
1,600.00	1,600.00	1,601.30	1,598.70	5.53	5.54	-90.36	-4.36	-699.88	699.89	688.82	11.07	63.208	
1,650.00	1,650.00	1,648.70	1,648.70	5.71	5.71	-90.36	-4.36	-699.88	699.89	688.47	11.42	61.283	
1,700.00	1,700.00	1,701.30	1,698.70	5.89	5.90	-90.36	-4.36	-699.88	699.89	688.11	11.79	59.378	
1,750.00	1,750.00	1,748.70	1,748.70	6.07	6.07	-90.36	-4.36	-699.88	699.89	687.76	12.14	57.676	
1,800.00	1,800.00	1,801.30	1,798.70	6.25	6.25	-90.36	-4.36	-699.88	699.89	687.39	12.50	55.984	
1,850.00	1,850.00	1,848.70	1,848.70	6.43	6.42	-90.36	-4.36	-699.88	699.89	687.05	12.85	54.468	
1,900.00	1,900.00	1,901.30	1,898.70	6.61	6.61	-90.36	-4.36	-699.88	699.89	686.68	13.22	52.957	
1,950.00	1,950.00	1,948.70	1,948.70	6.78	6.78	-90.36	-4.36	-699.88	699.89	686.33	13.56	51.597	
2,000.00	2,000.00	2,001.30	1,998.70	6.96	6.97	-90.36	-4.36	-699.88	699.89	685.96	13.93	50.239	
2,050.00	2,050.00	2,048.70	2,048.70	7.14	7.14	-90.36	-4.36	-699.88	699.89	685.62	14.28	49.013	
2,100.00	2,100.00	2,101.30	2,098.70	7.32	7.33	-90.36	-4.36	-699.88	699.89	685.25	14.65	47.786	
2,150.00	2,150.00	2,148.70	2,148.70	7.50	7.50	-90.36	-4.36	-699.88	699.89	684.90	14.99	46.676	
2,200.00	2,200.00	2,201.30	2,198.70	7.68	7.68	-90.36	-4.36	-699.88	699.89	684.53	15.36	45.560	
2,250.00	2,250.00	2,248.70	2,248.70	7.86	7.85	-90.36	-4.36	-699.88	699.89	684.18	15.71	44.550	
2,300.00	2,300.00	2,301.30	2,298.70	8.04	8.04	-90.36	-4.36	-699.88	699.89	683.82	16.08	43.533	
2,350.00	2,350.00	2,348.70	2,348.70	8.22	8.21	-90.36	-4.36	-699.88	699.89	683.47	16.43	42.609	
2,400.00	2,400.00	2,401.30	2,398.70	8.39	8.40	-90.36	-4.36	-699.88	699.89	683.10	16.79	41.678	
2,450.00	2,450.00	2,448.70	2,448.70	8.57	8.57	-90.36	-4.36	-699.88	699.89	682.75	17.14	40.830	
2,500.00	2,500.00	2,501.30	2,498.70	8.75	8.76	-90.36	-4.36	-699.88	699.89	682.39	17.51	39.974	
2,550.00	2,550.00	2,548.70	2,548.70	8.93	8.93	-90.36	-4.36	-699.88	699.89	682.04	17.86	39.194	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,600.00	2,600.00	2,601.30	2,598.70	9.11	9.11	-90.36	-4.36	-699.88	699.89	681.67	18.22	38.404	
2,650.00	2,650.00	2,648.70	2,648.70	9.29	9.28	-90.36	-4.36	-699.88	699.89	681.32	18.57	37.683	
2,700.00	2,700.00	2,701.30	2,698.70	9.47	9.47	-90.36	-4.36	-699.88	699.89	680.95	18.94	36.952	
2,750.00	2,750.00	2,748.70	2,748.70	9.65	9.64	-90.36	-4.36	-699.88	699.89	680.61	19.29	36.284	
2,800.00	2,800.00	2,801.30	2,798.70	9.83	9.83	-90.36	-4.36	-699.88	699.89	680.24	19.66	35.606	
2,850.00	2,850.00	2,848.70	2,848.70	10.00	10.00	-90.36	-4.36	-699.88	699.89	679.89	20.01	34.986	
2,900.00	2,900.00	2,901.30	2,898.70	10.18	10.19	-90.36	-4.36	-699.88	699.89	679.52	20.37	34.355	
2,950.00	2,950.00	2,948.70	2,948.70	10.36	10.36	-90.36	-4.36	-699.88	699.89	679.17	20.72	33.777	
3,000.00	3,000.00	3,001.30	2,998.70	10.54	10.55	-90.36	-4.36	-699.88	699.89	678.81	21.09	33.188	
3,050.00	3,050.00	3,048.70	3,048.70	10.72	10.72	-90.36	-4.36	-699.88	699.89	678.46	21.44	32.648	
3,100.00	3,100.00	3,101.30	3,098.70	10.90	10.90	-90.36	-4.36	-699.88	699.89	678.09	21.80	32.098	
3,150.00	3,150.00	3,148.70	3,148.70	11.08	11.07	-90.36	-4.36	-699.88	699.89	677.74	22.15	31.593	
3,200.00	3,200.00	3,201.30	3,198.70	11.26	11.26	-90.36	-4.36	-699.88	699.89	677.37	22.52	31.077	
3,250.00	3,250.00	3,248.70	3,248.70	11.44	11.43	-90.36	-4.36	-699.88	699.89	677.03	22.87	30.603	
3,300.00	3,300.00	3,301.30	3,298.70	11.62	11.62	-90.36	-4.36	-699.88	699.89	676.66	23.24	30.120	
3,350.00	3,350.00	3,348.70	3,348.70	11.80	11.79	-90.36	-4.36	-699.88	699.89	676.31	23.59	29.674	
3,400.00	3,400.00	3,401.30	3,398.70	11.97	11.98	-90.36	-4.36	-699.88	699.89	675.94	23.95	29.219	
3,450.00	3,450.00	3,448.70	3,448.70	12.15	12.15	-90.36	-4.36	-699.88	699.89	675.59	24.30	28.799	
3,500.00	3,500.00	3,501.30	3,498.70	12.33	12.34	-90.36	-4.36	-699.88	699.89	675.23	24.67	28.370	
3,550.00	3,550.00	3,548.70	3,548.70	12.51	12.51	-90.36	-4.36	-699.88	699.89	674.88	25.02	27.975	
3,600.00	3,600.00	3,601.30	3,598.70	12.69	12.70	-90.36	-4.36	-699.88	699.89	674.51	25.39	27.570	
3,650.00	3,650.00	3,648.70	3,648.70	12.87	12.87	-90.36	-4.36	-699.88	699.89	674.16	25.74	27.196	
3,700.00	3,700.00	3,701.30	3,698.70	13.05	13.05	-90.36	-4.36	-699.88	699.89	673.79	26.10	26.813	
3,750.00	3,750.00	3,748.70	3,748.70	13.23	13.22	-90.36	-4.36	-699.88	699.89	673.44	26.45	26.460	
3,800.00	3,800.00	3,801.30	3,798.70	13.41	13.41	-90.36	-4.36	-699.88	699.89	673.08	26.82	26.097	
3,850.00	3,850.00	3,848.70	3,848.70	13.59	13.58	-90.36	-4.36	-699.88	699.89	672.73	27.17	25.762	
3,900.00	3,900.00	3,901.30	3,898.70	13.77	13.77	-90.36	-4.36	-699.88	699.89	672.36	27.54	25.418	
3,950.00	3,950.00	3,948.70	3,948.70	13.94	13.94	-90.36	-4.36	-699.88	699.89	672.01	27.88	25.100	
4,000.00	4,000.00	3,998.70	3,998.70	14.12	14.12	-90.36	-4.36	-699.88	699.89	671.65	28.24	24.781 CC	
4,050.00	4,050.00	4,042.77	4,042.77	14.30	14.27	-53.25	-4.28	-700.06	699.94	671.36	28.58	24.494	
4,100.00	4,099.99	4,086.69	4,086.68	14.48	14.43	-53.27	-4.02	-700.63	700.09	671.18	28.91	24.220	
4,150.00	4,149.97	4,130.60	4,130.58	14.66	14.58	-53.31	-3.59	-701.57	700.35	671.12	29.23	23.959 ES	
4,200.00	4,199.94	4,174.51	4,174.47	14.84	14.74	-53.36	-2.98	-702.90	700.83	671.28	29.55	23.713	
4,250.00	4,249.91	4,218.41	4,218.33	15.01	14.89	-53.40	-2.20	-704.62	701.74	671.87	29.88	23.489	
4,300.00	4,299.88	4,262.30	4,262.16	15.19	15.04	-53.41	-1.25	-706.71	703.09	672.90	30.20	23.285	
4,350.00	4,349.85	4,307.57	4,307.34	15.37	15.20	-53.42	-0.09	-709.26	704.86	674.34	30.52	23.095	
4,400.00	4,399.82	4,357.53	4,357.20	15.55	15.38	-53.42	1.25	-712.19	706.76	675.89	30.87	22.894	
4,450.00	4,449.79	4,407.50	4,407.06	15.72	15.55	-53.42	2.59	-715.12	708.66	677.43	31.22	22.697	
4,500.00	4,499.77	4,457.46	4,456.92	15.90	15.73	-53.43	3.92	-718.06	710.55	678.98	31.57	22.504	
4,550.00	4,549.74	4,507.43	4,506.78	16.08	15.90	-53.43	5.26	-720.99	712.45	680.52	31.93	22.316	
4,600.00	4,599.71	4,557.39	4,556.64	16.26	16.08	-53.43	6.60	-723.93	714.35	682.07	32.28	22.131	
4,650.00	4,649.68	4,607.35	4,606.50	16.44	16.26	-53.43	7.94	-726.86	716.24	683.61	32.63	21.951	
4,700.00	4,699.65	4,657.32	4,656.36	16.61	16.43	-53.43	9.27	-729.80	718.14	685.16	32.98	21.774	
4,750.00	4,749.62	4,707.28	4,706.22	16.79	16.61	-53.43	10.61	-732.73	720.04	686.70	33.33	21.600	
4,800.00	4,799.59	4,757.25	4,756.08	16.97	16.78	-53.43	11.95	-735.67	721.94	688.25	33.69	21.431	
4,850.00	4,849.56	4,807.21	4,805.94	17.15	16.96	-53.43	13.28	-738.60	723.83	689.79	34.04	21.264	
4,900.00	4,899.53	4,857.17	4,855.80	17.33	17.14	-53.44	14.62	-741.54	725.73	691.34	34.39	21.101	
4,950.00	4,949.50	4,907.14	4,905.66	17.50	17.32	-53.44	15.96	-744.47	727.63	692.88	34.75	20.941	
5,000.00	4,999.47	4,957.10	4,955.52	17.68	17.49	-53.44	17.30	-747.41	729.53	694.43	35.10	20.785	
5,050.00	5,049.44	5,007.07	5,005.38	17.86	17.67	-53.44	18.63	-750.34	731.42	695.97	35.45	20.631	
5,100.00	5,099.41	5,057.03	5,055.24	18.04	17.85	-53.44	19.97	-753.28	733.32	697.51	35.81	20.480	
5,150.00	5,149.38	5,106.99	5,105.10	18.22	18.03	-53.44	21.31	-756.21	735.22	699.06	36.16	20.332	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,199.35	5,156.96	5,154.96	18.40	18.20	-53.44	22.65	-759.15	737.12	700.60	36.51	20.187	
5,250.00	5,249.32	5,206.92	5,204.82	18.57	18.38	-53.45	23.98	-762.08	739.01	702.14	36.87	20.045	
5,300.00	5,299.29	5,256.89	5,254.68	18.75	18.56	-53.45	25.32	-765.02	740.91	703.69	37.22	19.905	
5,350.00	5,349.26	5,306.85	5,304.54	18.93	18.74	-53.45	26.66	-767.95	742.81	705.23	37.58	19.768	
5,400.00	5,399.23	5,356.81	5,354.40	19.11	18.92	-53.45	27.99	-770.89	744.70	706.77	37.93	19.633	
5,450.00	5,449.20	5,406.78	5,404.26	19.29	19.09	-53.45	29.33	-773.82	746.60	708.32	38.29	19.501	
5,500.00	5,499.17	5,456.74	5,454.12	19.47	19.27	-53.45	30.67	-776.76	748.50	709.86	38.64	19.371	
5,550.00	5,549.14	5,506.71	5,503.98	19.65	19.45	-53.45	32.01	-779.69	750.40	711.40	38.99	19.244	
5,600.00	5,599.11	5,556.67	5,553.84	19.82	19.63	-53.46	33.34	-782.63	752.29	712.94	39.35	19.118	
5,650.00	5,649.08	5,606.63	5,603.70	20.00	19.81	-53.46	34.68	-785.56	754.19	714.49	39.70	18.995	
5,700.00	5,699.05	5,656.60	5,653.55	20.18	19.99	-53.46	36.02	-788.50	756.09	716.03	40.06	18.874	
5,750.00	5,749.02	5,706.56	5,703.41	20.36	20.17	-53.46	37.36	-791.43	757.99	717.57	40.41	18.755	
5,800.00	5,798.99	5,756.53	5,753.27	20.54	20.35	-53.46	38.69	-794.37	759.88	719.11	40.77	18.638	
5,850.00	5,848.96	5,806.49	5,803.13	20.72	20.52	-53.46	40.03	-797.30	761.78	720.66	41.12	18.524	
5,900.00	5,898.93	5,856.45	5,852.99	20.90	20.70	-53.46	41.37	-800.24	763.68	722.20	41.48	18.411	
5,950.00	5,948.90	5,906.42	5,902.85	21.08	20.88	-53.46	42.71	-803.17	765.57	723.74	41.84	18.300	
6,000.00	5,998.87	5,956.38	5,952.71	21.26	21.06	-53.47	44.04	-806.10	767.47	725.28	42.19	18.190	
6,050.00	6,048.84	6,006.35	6,002.57	21.43	21.24	-53.47	45.38	-809.04	769.37	726.82	42.55	18.083	
6,100.00	6,098.81	6,056.31	6,052.43	21.61	21.42	-53.47	46.72	-811.97	771.27	728.36	42.90	17.977	
6,150.00	6,148.78	6,106.27	6,102.29	21.79	21.60	-53.47	48.05	-814.91	773.16	729.91	43.26	17.873	
6,200.00	6,198.75	6,156.24	6,152.15	21.97	21.78	-53.47	49.39	-817.84	775.06	731.45	43.61	17.771	
6,250.00	6,248.72	6,206.20	6,202.01	22.15	21.96	-53.47	50.73	-820.78	776.96	732.99	43.97	17.670	
6,300.00	6,298.69	6,256.17	6,251.87	22.33	22.14	-53.47	52.07	-823.71	778.86	734.53	44.33	17.571	
6,350.00	6,348.66	6,306.13	6,301.73	22.51	22.32	-53.47	53.40	-826.65	780.75	736.07	44.68	17.473	
6,400.00	6,398.63	6,356.09	6,351.59	22.69	22.50	-53.47	54.74	-829.58	782.65	737.61	45.04	17.377	
6,450.00	6,448.60	6,406.06	6,401.45	22.87	22.68	-53.48	56.08	-832.52	784.55	739.15	45.40	17.283	
6,500.00	6,498.57	6,456.02	6,451.31	23.05	22.86	-53.48	57.42	-835.45	786.45	740.69	45.75	17.189	
6,550.00	6,548.54	6,505.99	6,501.17	23.23	23.04	-53.48	58.75	-838.39	788.34	742.23	46.11	17.098	
6,600.00	6,598.51	6,555.95	6,551.03	23.40	23.22	-53.48	60.09	-841.32	790.24	743.78	46.46	17.007	
6,650.00	6,648.49	6,605.91	6,600.89	23.58	23.40	-53.48	61.43	-844.26	792.14	745.32	46.82	16.918	
6,700.00	6,698.46	6,655.88	6,650.75	23.76	23.58	-53.48	62.76	-847.19	794.03	746.86	47.18	16.831	
6,750.00	6,748.43	6,705.84	6,700.61	23.94	23.76	-53.48	64.10	-850.13	795.93	748.40	47.53	16.744	
6,800.00	6,798.40	6,755.81	6,750.47	24.12	23.94	-53.48	65.44	-853.06	797.83	749.94	47.89	16.659	
6,850.00	6,848.37	6,805.77	6,800.33	24.30	24.12	-53.49	66.78	-856.00	799.73	751.48	48.25	16.575	
6,900.00	6,898.34	6,855.73	6,850.19	24.48	24.30	-53.49	68.11	-858.93	801.62	753.02	48.60	16.493	
6,950.00	6,948.31	6,905.70	6,900.05	24.66	24.49	-53.49	69.45	-861.87	803.52	754.56	48.96	16.411	
7,000.00	6,998.28	6,955.66	6,949.91	24.84	24.67	-53.49	70.79	-864.80	805.42	756.10	49.32	16.331	
7,050.00	7,048.25	7,005.63	6,999.77	25.02	24.85	-53.49	72.13	-867.74	807.32	757.64	49.68	16.252	
7,100.00	7,098.22	7,055.59	7,049.63	25.20	25.03	-53.49	73.46	-870.67	809.21	759.18	50.03	16.174	
7,150.00	7,148.19	7,105.55	7,099.49	25.38	25.21	-53.49	74.80	-873.61	811.11	760.72	50.39	16.097	
7,200.00	7,198.16	7,155.52	7,149.35	25.56	25.39	-53.49	76.14	-876.54	813.01	762.26	50.75	16.021	
7,250.00	7,248.13	7,205.48	7,199.21	25.74	25.57	-53.49	77.47	-879.48	814.91	763.80	51.10	15.946	
7,300.00	7,298.10	7,255.45	7,249.07	25.91	25.75	-53.50	78.81	-882.41	816.80	765.34	51.46	15.872	
7,350.00	7,348.07	7,305.41	7,298.93	26.09	25.93	-53.50	80.15	-885.35	818.70	766.88	51.82	15.799	
7,400.00	7,398.04	7,355.37	7,348.79	26.27	26.11	-53.50	81.49	-888.28	820.60	768.42	52.18	15.727	
7,450.00	7,448.01	7,405.34	7,398.65	26.45	26.29	-53.50	82.82	-891.22	822.49	769.96	52.53	15.656	
7,500.00	7,497.98	7,455.30	7,448.51	26.63	26.48	-53.50	84.16	-894.15	824.39	771.50	52.89	15.586	
7,550.00	7,547.95	7,505.27	7,498.37	26.81	26.66	-53.50	85.50	-897.09	826.29	773.04	53.25	15.517	
7,600.00	7,597.92	7,555.23	7,548.23	26.99	26.84	-53.50	86.84	-900.02	828.19	774.58	53.61	15.449	
7,650.00	7,647.89	7,605.19	7,598.09	27.17	27.02	-53.50	88.17	-902.95	830.08	776.12	53.96	15.382	
7,700.00	7,697.86	7,655.16	7,647.95	27.35	27.20	-53.50	89.51	-905.89	831.98	777.66	54.32	15.316	
7,750.00	7,747.83	7,705.12	7,697.81	27.53	27.38	-53.51	90.85	-908.82	833.88	779.20	54.68	15.250	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1

Offset Site Error: 0.00 ft

Survey Program: 0-MWD+HDGM

Offset Well Error: 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,800.00	7,797.80	7,755.09	7,747.67	27.71	27.56	-53.51	92.19	-911.76	835.78	780.74	55.04	15.186	
7,850.00	7,847.77	7,805.05	7,797.53	27.89	27.75	-53.51	93.52	-914.69	837.67	782.28	55.40	15.122	
7,900.00	7,897.74	7,855.01	7,847.39	28.07	27.93	-53.51	94.86	-917.63	839.57	783.82	55.75	15.059	
7,950.00	7,947.71	7,904.98	7,897.25	28.25	28.11	-53.51	96.20	-920.56	841.47	785.36	56.11	14.997	
8,000.00	7,997.68	7,954.94	7,947.11	28.43	28.29	-53.51	97.53	-923.50	843.37	786.90	56.47	14.935	
8,050.00	8,047.65	8,004.91	7,996.96	28.61	28.47	-53.51	98.87	-926.43	845.26	788.44	56.83	14.874	
8,100.00	8,097.62	8,054.87	8,046.82	28.79	28.65	-53.51	100.21	-929.37	847.16	789.98	57.18	14.815	
8,150.00	8,147.59	8,104.83	8,096.68	28.97	28.83	-53.51	101.55	-932.30	849.06	791.52	57.54	14.755	
8,200.00	8,197.56	8,154.80	8,146.54	29.15	29.02	-53.51	102.88	-935.24	850.95	793.05	57.90	14.697	
8,250.00	8,247.53	8,204.76	8,196.40	29.33	29.20	-53.52	104.22	-938.17	852.85	794.59	58.26	14.639	
8,300.00	8,297.50	8,254.73	8,246.26	29.51	29.38	-53.52	105.56	-941.11	854.75	796.13	58.62	14.582	
8,350.00	8,347.47	8,304.69	8,296.12	29.69	29.56	-53.52	106.90	-944.04	856.65	797.67	58.97	14.526	
8,400.00	8,397.44	8,354.65	8,345.98	29.86	29.74	-53.52	108.23	-946.98	858.54	799.21	59.33	14.470	
8,450.00	8,447.41	8,404.62	8,395.84	30.04	29.93	-53.52	109.57	-949.91	860.44	800.75	59.69	14.415	
8,500.00	8,497.38	8,454.58	8,445.70	30.22	30.11	-53.52	110.91	-952.85	862.34	802.29	60.05	14.361	
8,550.00	8,547.35	8,504.55	8,495.56	30.40	30.29	-53.52	112.24	-955.78	864.24	803.83	60.41	14.307	
8,600.00	8,597.32	8,554.51	8,545.42	30.58	30.47	-53.52	113.58	-958.72	866.13	805.37	60.77	14.254	
8,650.00	8,647.29	8,604.47	8,595.28	30.76	30.65	-53.52	114.92	-961.65	868.03	806.91	61.12	14.201	
8,700.00	8,697.26	8,654.44	8,645.14	30.94	30.84	-53.52	116.26	-964.59	869.93	808.45	61.48	14.149	
8,750.00	8,747.23	8,704.40	8,695.00	31.12	31.02	-53.53	117.59	-967.52	871.83	809.98	61.84	14.098	
8,800.00	8,797.20	8,754.37	8,744.86	31.30	31.20	-53.53	118.93	-970.46	873.72	811.52	62.20	14.047	
8,850.00	8,847.18	8,804.33	8,794.72	31.48	31.38	-53.53	120.27	-973.39	875.62	813.06	62.56	13.997	
8,900.00	8,897.15	8,854.29	8,844.58	31.66	31.56	-53.53	121.61	-976.33	877.52	814.60	62.92	13.947	
8,950.00	8,947.12	8,904.26	8,894.44	31.84	31.75	-53.53	122.94	-979.26	879.42	816.14	63.27	13.898	
9,000.00	8,997.09	8,954.22	8,944.30	32.02	31.93	-53.53	124.28	-982.20	881.31	817.68	63.63	13.850	
9,050.00	9,047.06	9,004.19	8,994.16	32.20	32.11	-53.53	125.62	-985.13	883.21	819.22	63.99	13.802	
9,100.00	9,097.03	9,054.15	9,044.02	32.38	32.29	-53.53	126.96	-988.07	885.11	820.76	64.35	13.755	
9,150.00	9,147.00	9,104.11	9,093.88	32.56	32.47	-53.53	128.29	-991.00	887.00	822.30	64.71	13.708	
9,200.00	9,196.97	9,154.08	9,143.74	32.74	32.66	-53.53	129.63	-993.93	888.90	823.83	65.07	13.661	
9,250.00	9,246.94	9,204.04	9,193.60	32.92	32.84	-53.53	130.97	-996.87	890.80	825.37	65.43	13.615	
9,300.00	9,296.91	9,254.01	9,243.46	33.10	33.02	-53.54	132.30	-999.80	892.70	826.91	65.78	13.570	
9,350.00	9,346.88	9,303.97	9,293.32	33.28	33.20	-53.54	133.64	-1,002.74	894.59	828.45	66.14	13.525	
9,400.00	9,396.85	9,353.93	9,343.18	33.46	33.39	-53.54	134.98	-1,005.67	896.49	829.99	66.50	13.481	
9,450.00	9,446.82	9,403.90	9,393.04	33.64	33.57	-53.54	136.32	-1,008.61	898.39	831.53	66.86	13.437	
9,500.00	9,496.79	9,453.86	9,442.90	33.82	33.75	-53.54	137.65	-1,011.54	900.29	833.07	67.22	13.393	
9,550.00	9,546.76	9,503.83	9,492.76	34.00	33.93	-53.54	138.99	-1,014.48	902.18	834.61	67.58	13.350	
9,600.00	9,596.73	9,553.79	9,542.62	34.18	34.12	-53.54	140.33	-1,017.41	904.08	836.14	67.94	13.308	
9,650.00	9,646.70	9,603.75	9,592.48	34.36	34.30	-53.54	141.67	-1,020.35	905.98	837.68	68.30	13.266	
9,700.00	9,696.67	9,653.72	9,642.34	34.54	34.48	-53.54	143.00	-1,023.28	907.88	839.22	68.65	13.224	
9,750.00	9,746.64	9,703.68	9,692.20	34.72	34.66	-53.54	144.34	-1,026.22	909.77	840.76	69.01	13.183	
9,800.00	9,796.61	9,753.65	9,742.06	34.90	34.84	-53.54	145.68	-1,029.15	911.67	842.30	69.37	13.142	
9,850.00	9,846.58	9,803.61	9,791.92	35.08	35.03	-53.55	147.01	-1,032.09	913.57	843.84	69.73	13.101	
9,900.00	9,896.55	9,853.57	9,841.78	35.26	35.21	-53.55	148.35	-1,035.02	915.46	845.37	70.09	13.061	
9,950.00	9,946.52	9,903.54	9,891.64	35.44	35.39	-53.55	149.69	-1,037.96	917.36	846.91	70.45	13.022	
10,000.00	9,996.49	9,953.50	9,941.50	35.62	35.57	-53.55	151.03	-1,040.89	919.26	848.45	70.81	12.982	
10,050.00	10,046.46	10,003.47	9,991.36	35.80	35.76	-53.55	152.36	-1,043.83	921.16	849.99	71.17	12.944	
10,100.00	10,096.43	10,053.43	10,041.22	35.98	35.94	-53.55	153.70	-1,046.76	923.05	851.53	71.53	12.905	
10,150.00	10,146.40	10,103.39	10,091.08	36.16	36.12	-53.55	155.04	-1,049.70	924.95	853.07	71.88	12.867	
10,200.00	10,196.37	10,153.36	10,140.94	36.34	36.31	-53.55	156.38	-1,052.63	926.85	854.60	72.24	12.829	
10,250.00	10,246.34	10,203.32	10,190.80	36.52	36.49	-53.55	157.71	-1,055.57	928.75	856.14	72.60	12.792	
10,300.00	10,296.31	10,253.28	10,240.66	36.70	36.67	-53.55	159.05	-1,058.50	930.64	857.68	72.96	12.755	
10,350.00	10,346.28	10,303.25	10,290.52	36.88	36.85	-53.55	160.39	-1,061.44	932.54	859.22	73.32	12.719	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,400.00	10,396.25	10,353.21	10,340.37	37.06	37.04	-53.55	161.73	-1,064.37	934.44	860.76	73.68	12.682	
10,450.00	10,446.22	10,403.18	10,390.23	37.24	37.22	-53.56	163.06	-1,067.31	936.34	862.30	74.04	12.646	
10,500.00	10,496.19	10,453.14	10,440.09	37.42	37.40	-53.56	164.40	-1,070.24	938.23	863.83	74.40	12.611	
10,550.00	10,546.16	10,503.10	10,489.95	37.60	37.58	-53.56	165.74	-1,073.18	940.13	865.37	74.76	12.576	
10,600.00	10,596.13	10,553.07	10,539.81	37.78	37.77	-53.56	167.07	-1,076.11	942.03	866.91	75.12	12.541	
10,650.00	10,646.10	10,603.03	10,589.67	37.96	37.95	-53.56	168.41	-1,079.05	943.92	868.45	75.48	12.506	
10,700.00	10,696.07	10,653.00	10,639.53	38.14	38.13	-53.56	169.75	-1,081.98	945.82	869.99	75.83	12.472	
10,750.00	10,746.04	10,702.96	10,689.39	38.32	38.31	-53.57	171.09	-1,084.91	947.73	871.54	76.19	12.438	
10,800.00	10,796.03	10,752.91	10,739.24	38.50	38.50	-53.57	172.42	-1,087.85	949.92	873.37	76.55	12.409	
10,850.00	10,846.03	10,802.84	10,789.06	38.67	38.68	-53.55	173.76	-1,090.78	952.50	875.59	76.91	12.385	
10,900.00	10,896.03	10,852.73	10,838.85	38.85	38.86	-90.60	175.10	-1,093.71	955.40	878.13	77.27	12.365	
10,950.00	10,946.03	10,902.63	10,888.65	39.03	39.05	-90.51	176.43	-1,096.64	958.32	880.70	77.62	12.346	
11,000.00	10,996.03	10,957.27	10,943.17	39.21	39.25	-90.43	177.87	-1,099.80	961.21	883.20	78.01	12.322	
11,050.00	11,046.03	11,022.00	11,007.83	39.39	39.48	-90.34	179.23	-1,102.79	963.51	885.07	78.44	12.284	
11,100.00	11,096.03	11,086.83	11,072.62	39.57	39.71	-90.29	180.14	-1,104.77	965.04	886.19	78.85	12.238	
11,150.00	11,146.03	11,151.72	11,137.49	39.74	39.94	-90.26	180.59	-1,105.76	965.80	886.54	79.26	12.186	
11,200.00	11,196.03	11,208.95	11,194.73	39.92	40.14	-90.26	180.64	-1,105.88	965.89	886.26	79.63	12.130	
11,250.00	11,246.01	11,258.94	11,244.71	40.09	40.32	89.91	180.64	-1,105.88	965.89	885.91	79.98	12.077	
11,271.86	11,267.81	11,280.74	11,266.51	40.16	40.40	90.00	180.64	-1,105.88	965.89	885.76	80.12	12.055	
11,300.00	11,295.76	11,308.68	11,294.46	40.25	40.49	90.19	180.64	-1,105.88	965.89	885.58	80.31	12.027	
11,350.00	11,344.89	11,357.81	11,343.59	40.41	40.67	90.72	180.64	-1,105.88	965.97	885.34	80.63	11.980	
11,400.00	11,393.03	11,405.96	11,391.73	40.55	40.84	91.46	180.64	-1,105.88	966.24	885.29	80.95	11.937	
11,450.00	11,439.82	11,452.75	11,438.52	40.69	41.00	92.37	180.64	-1,105.88	966.87	885.62	81.25	11.900	
11,500.00	11,484.90	11,502.18	11,483.60	40.82	41.17	93.40	180.64	-1,105.88	968.08	886.53	81.55	11.871	
11,550.00	11,527.92	11,542.28	11,528.06	40.94	41.31	94.53	180.57	-1,105.88	970.12	888.30	81.81	11.858	
11,600.00	11,568.56	11,594.08	11,579.74	41.05	41.48	95.87	177.42	-1,105.87	972.96	890.87	82.08	11.853	
11,650.00	11,606.52	11,649.18	11,634.16	41.15	41.65	97.22	168.95	-1,105.85	976.47	894.14	82.33	11.860	
11,700.00	11,641.49	11,708.18	11,691.25	41.25	41.83	98.58	154.15	-1,105.81	980.59	898.04	82.55	11.879	
11,750.00	11,673.22	11,771.76	11,750.71	41.36	42.00	99.96	131.72	-1,105.75	985.20	902.49	82.71	11.912	
11,800.00	11,701.46	11,840.66	11,811.89	41.47	42.18	101.35	100.14	-1,105.67	990.14	907.34	82.80	11.959	
11,850.00	11,726.00	11,915.61	11,873.63	41.58	42.34	102.72	57.73	-1,105.55	995.21	912.42	82.79	12.021	
11,900.00	11,746.65	11,997.28	11,933.97	41.68	42.49	104.05	2.80	-1,105.41	1,000.16	917.46	82.69	12.095	
11,950.00	11,763.25	12,086.02	11,989.95	41.79	42.61	105.28	-65.94	-1,105.22	1,004.67	922.16	82.51	12.176	
12,000.00	11,775.68	12,181.66	12,037.64	41.90	42.74	106.33	-148.72	-1,105.00	1,008.43	926.11	82.32	12.250	
12,050.00	11,783.85	12,283.22	12,072.46	42.00	42.93	107.10	-243.98	-1,104.75	1,011.12	928.92	82.20	12.301	
12,100.00	11,787.68	12,388.80	12,090.27	42.11	43.16	107.50	-347.89	-1,104.47	1,012.48	930.23	82.25	12.310	
12,150.00	11,788.00	12,462.47	12,092.00	42.22	43.32	107.55	-421.52	-1,104.27	1,012.60	930.14	82.46	12.280	
12,200.00	11,788.00	12,512.47	12,092.00	42.33	43.45	107.55	-471.52	-1,104.14	1,012.57	929.90	82.66	12.249	
12,250.00	11,788.00	12,562.47	12,092.00	42.46	43.58	107.55	-521.52	-1,104.00	1,012.53	929.63	82.91	12.213	
12,300.00	11,788.00	12,612.47	12,092.00	42.60	43.72	107.55	-571.52	-1,103.87	1,012.50	929.35	83.15	12.176	
12,350.00	11,788.00	12,662.47	12,092.00	42.76	43.88	107.55	-621.52	-1,103.74	1,012.47	929.03	83.44	12.134	
12,400.00	11,788.00	12,712.47	12,092.00	42.91	44.04	107.55	-671.52	-1,103.60	1,012.44	928.70	83.73	12.091	
12,450.00	11,788.00	12,762.47	12,092.00	43.09	44.22	107.55	-721.52	-1,103.47	1,012.40	928.34	84.07	12.043	
12,500.00	11,788.00	12,812.47	12,092.00	43.27	44.40	107.55	-771.52	-1,103.34	1,012.37	927.97	84.41	11.994	
12,550.00	11,788.00	12,862.47	12,092.00	43.48	44.60	107.55	-821.52	-1,103.20	1,012.34	927.56	84.78	11.940	
12,600.00	11,788.00	12,912.47	12,092.00	43.68	44.80	107.55	-871.52	-1,103.07	1,012.31	927.14	85.17	11.886	
12,650.00	11,788.00	12,962.47	12,092.00	43.91	45.02	107.55	-921.52	-1,102.94	1,012.28	926.69	85.59	11.828	
12,700.00	11,788.00	13,012.47	12,092.00	44.13	45.25	107.55	-971.52	-1,102.80	1,012.24	926.23	86.01	11.769	
12,750.00	11,788.00	13,062.47	12,092.00	44.38	45.49	107.55	-1,021.52	-1,102.67	1,012.21	925.74	86.47	11.706	
12,800.00	11,788.00	13,112.47	12,092.00	44.63	45.74	107.56	-1,071.52	-1,102.53	1,012.18	925.24	86.94	11.643	
12,850.00	11,788.00	13,162.47	12,092.00	44.89	46.00	107.56	-1,121.52	-1,102.40	1,012.15	924.71	87.44	11.576	
12,900.00	11,788.00	13,212.47	12,092.00	45.16	46.26	107.56	-1,171.52	-1,102.27	1,012.11	924.17	87.94	11.509	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
12,950.00	11,788.00	13,262.47	12,092.00	45.45	46.54	107.56	-1,221.52	-1,102.13	1,012.08	923.60	88.48	11.438	
13,000.00	11,788.00	13,312.47	12,092.00	45.73	46.83	107.56	-1,271.52	-1,102.00	1,012.05	923.02	89.03	11.368	
13,050.00	11,788.00	13,362.47	12,092.00	46.04	47.13	107.56	-1,321.52	-1,101.87	1,012.02	922.41	89.61	11.294	
13,100.00	11,788.00	13,412.47	12,092.00	46.35	47.43	107.56	-1,371.52	-1,101.73	1,011.98	921.79	90.19	11.221	
13,150.00	11,788.00	13,462.47	12,092.00	46.67	47.75	107.56	-1,421.52	-1,101.60	1,011.95	921.15	90.80	11.145	
13,200.00	11,788.00	13,512.47	12,092.00	47.00	48.07	107.56	-1,471.52	-1,101.47	1,011.92	920.50	91.42	11.069	
13,250.00	11,788.00	13,562.47	12,092.00	47.34	48.41	107.56	-1,521.52	-1,101.33	1,011.89	919.82	92.07	10.991	
13,300.00	11,788.00	13,612.47	12,092.00	47.68	48.74	107.56	-1,571.52	-1,101.20	1,011.85	919.13	92.72	10.913	
13,350.00	11,788.00	13,662.47	12,092.00	48.04	49.10	107.56	-1,621.52	-1,101.07	1,011.82	918.42	93.40	10.833	
13,400.00	11,788.00	13,712.47	12,092.00	48.40	49.45	107.56	-1,671.52	-1,100.93	1,011.79	917.70	94.09	10.754	
13,450.00	11,788.00	13,762.47	12,092.00	48.78	49.82	107.56	-1,721.52	-1,100.80	1,011.76	916.96	94.80	10.673	
13,500.00	11,788.00	13,812.47	12,092.00	49.15	50.19	107.56	-1,771.52	-1,100.66	1,011.72	916.21	95.52	10.592	
13,550.00	11,788.00	13,862.47	12,092.00	49.54	50.57	107.56	-1,821.52	-1,100.53	1,011.69	915.43	96.26	10.510	
13,600.00	11,788.00	13,912.47	12,092.00	49.94	50.96	107.56	-1,871.52	-1,100.40	1,011.66	914.65	97.01	10.429	
13,650.00	11,788.00	13,962.47	12,092.00	50.34	51.36	107.57	-1,921.52	-1,100.26	1,011.63	913.85	97.78	10.346	
13,700.00	11,788.00	14,012.47	12,092.00	50.75	51.76	107.57	-1,971.52	-1,100.13	1,011.59	913.04	98.55	10.264	
13,750.00	11,788.00	14,062.47	12,092.00	51.17	52.17	107.57	-2,021.52	-1,100.00	1,011.56	912.21	99.35	10.181	
13,800.00	11,788.00	14,112.47	12,092.00	51.59	52.59	107.57	-2,071.52	-1,099.86	1,011.53	911.37	100.16	10.099	
13,850.00	11,788.00	14,162.47	12,092.00	52.02	53.01	107.57	-2,121.51	-1,099.73	1,011.50	910.51	100.98	10.016	
13,900.00	11,788.00	14,212.47	12,092.00	52.45	53.44	107.57	-2,171.51	-1,099.60	1,011.46	909.65	101.81	9.935	
13,950.00	11,788.00	14,262.47	12,092.00	52.90	53.88	107.57	-2,221.51	-1,099.46	1,011.43	908.77	102.66	9.852	
14,000.00	11,788.00	14,312.47	12,092.00	53.35	54.32	107.57	-2,271.51	-1,099.33	1,011.40	907.88	103.52	9.770	
14,050.00	11,788.00	14,362.47	12,092.00	53.81	54.77	107.57	-2,321.51	-1,099.19	1,011.37	906.98	104.39	9.688	
14,100.00	11,788.00	14,412.47	12,092.00	54.26	55.22	107.57	-2,371.51	-1,099.06	1,011.34	906.06	105.27	9.607	
14,150.00	11,788.00	14,462.47	12,092.00	54.73	55.68	107.57	-2,421.51	-1,098.93	1,011.30	905.13	106.17	9.525	
14,200.00	11,788.00	14,512.47	12,092.00	55.20	56.15	107.57	-2,471.51	-1,098.79	1,011.27	904.20	107.07	9.445	
14,250.00	11,788.00	14,562.47	12,092.00	55.68	56.62	107.57	-2,521.51	-1,098.66	1,011.24	903.25	107.99	9.364	
14,300.00	11,788.00	14,612.47	12,092.00	56.17	57.09	107.57	-2,571.51	-1,098.53	1,011.21	902.30	108.91	9.285	
14,350.00	11,788.00	14,662.47	12,092.00	56.66	57.58	107.57	-2,621.51	-1,098.39	1,011.17	901.32	109.85	9.205	
14,400.00	11,788.00	14,712.47	12,092.00	57.15	58.06	107.57	-2,671.51	-1,098.26	1,011.14	900.35	110.79	9.127	
14,450.00	11,788.00	14,762.47	12,092.00	57.65	58.56	107.57	-2,721.51	-1,098.13	1,011.11	899.36	111.75	9.048	
14,500.00	11,788.00	14,812.47	12,092.00	58.15	59.05	107.58	-2,771.51	-1,097.99	1,011.08	898.37	112.71	8.971	
14,550.00	11,788.00	14,862.47	12,092.00	58.66	59.56	107.58	-2,821.51	-1,097.86	1,011.04	897.36	113.69	8.893	
14,600.00	11,788.00	14,912.47	12,092.00	59.17	60.06	107.58	-2,871.51	-1,097.72	1,011.01	896.34	114.67	8.817	
14,650.00	11,788.00	14,962.47	12,092.00	59.69	60.57	107.58	-2,921.51	-1,097.59	1,010.98	895.32	115.66	8.741	
14,700.00	11,788.00	15,012.47	12,092.00	60.21	61.09	107.58	-2,971.51	-1,097.46	1,010.95	894.29	116.66	8.666	
14,750.00	11,788.00	15,062.47	12,092.00	60.74	61.61	107.58	-3,021.51	-1,097.32	1,010.91	893.24	117.67	8.591	
14,800.00	11,788.00	15,112.47	12,092.00	61.27	62.13	107.58	-3,071.51	-1,097.19	1,010.88	892.20	118.69	8.517	
14,850.00	11,788.00	15,162.47	12,092.00	61.80	62.66	107.58	-3,121.51	-1,097.06	1,010.85	891.14	119.71	8.444	
14,900.00	11,788.00	15,212.47	12,092.00	62.34	63.19	107.58	-3,171.51	-1,096.92	1,010.82	890.07	120.74	8.372	
14,950.00	11,788.00	15,262.47	12,092.00	62.88	63.72	107.58	-3,221.51	-1,096.79	1,010.78	889.00	121.78	8.300	
15,000.00	11,788.00	15,312.47	12,092.00	63.42	64.26	107.58	-3,271.51	-1,096.66	1,010.75	887.92	122.83	8.229	
15,050.00	11,788.00	15,362.47	12,092.00	63.97	64.81	107.58	-3,321.51	-1,096.52	1,010.72	886.83	123.89	8.159	
15,100.00	11,788.00	15,412.47	12,092.00	64.52	65.35	107.58	-3,371.51	-1,096.39	1,010.69	885.74	124.94	8.089	
15,150.00	11,788.00	15,462.47	12,092.00	65.08	65.90	107.58	-3,421.51	-1,096.25	1,010.65	884.64	126.01	8.020	
15,200.00	11,788.00	15,512.47	12,092.00	65.64	66.45	107.58	-3,471.51	-1,096.12	1,010.62	883.54	127.09	7.952	
15,250.00	11,788.00	15,562.47	12,092.00	66.20	67.01	107.58	-3,521.51	-1,095.99	1,010.59	882.42	128.17	7.885	
15,300.00	11,788.00	15,612.47	12,092.00	66.77	67.57	107.58	-3,571.51	-1,095.85	1,010.56	881.30	129.25	7.818	
15,350.00	11,788.00	15,662.47	12,092.00	67.34	68.13	107.58	-3,621.51	-1,095.72	1,010.53	880.18	130.35	7.752	
15,400.00	11,788.00	15,712.47	12,092.00	67.91	68.70	107.59	-3,671.51	-1,095.59	1,010.49	879.05	131.45	7.688	
15,450.00	11,788.00	15,762.47	12,092.00	68.48	69.27	107.59	-3,721.51	-1,095.45	1,010.46	877.91	132.55	7.623	
15,500.00	11,788.00	15,812.47	12,092.00	69.06	69.84	107.59	-3,771.51	-1,095.32	1,010.43	876.77	133.66	7.560	

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,550.00	11,788.00	15,862.47	12,092.00	69.64	70.41	107.59	-3,821.51	-1,095.19	1,010.40	875.62	134.78	7.497	
15,600.00	11,788.00	15,912.47	12,092.00	70.22	70.99	107.59	-3,871.51	-1,095.05	1,010.36	874.47	135.90	7.435	
15,650.00	11,788.00	15,962.47	12,092.00	70.81	71.57	107.59	-3,921.51	-1,094.92	1,010.33	873.30	137.03	7.373	
15,700.00	11,788.00	16,012.47	12,092.00	71.40	72.15	107.59	-3,971.51	-1,094.78	1,010.30	872.14	138.16	7.313	
15,750.00	11,788.00	16,062.47	12,092.00	71.99	72.74	107.59	-4,021.51	-1,094.65	1,010.27	870.97	139.29	7.253	
15,800.00	11,788.00	16,112.47	12,092.00	72.58	73.33	107.59	-4,071.51	-1,094.52	1,010.23	869.80	140.43	7.194	
15,850.00	11,788.00	16,162.47	12,092.00	73.18	73.92	107.59	-4,121.51	-1,094.38	1,010.20	868.62	141.58	7.135	
15,900.00	11,788.00	16,212.47	12,092.00	73.77	74.51	107.59	-4,171.51	-1,094.25	1,010.17	867.44	142.73	7.077	
15,950.00	11,788.00	16,262.47	12,092.00	74.38	75.11	107.59	-4,221.51	-1,094.12	1,010.14	866.25	143.89	7.020	
16,000.00	11,788.00	16,312.47	12,092.00	74.98	75.70	107.59	-4,271.51	-1,093.98	1,010.10	865.06	145.05	6.964	
16,050.00	11,788.00	16,362.47	12,092.00	75.58	76.31	107.59	-4,321.51	-1,093.85	1,010.07	863.86	146.21	6.908	
16,100.00	11,788.00	16,412.47	12,092.00	76.19	76.91	107.59	-4,371.51	-1,093.72	1,010.04	862.66	147.38	6.853	
16,150.00	11,788.00	16,462.47	12,092.00	76.80	77.51	107.59	-4,421.51	-1,093.58	1,010.01	861.45	148.55	6.799	
16,200.00	11,788.00	16,512.47	12,092.00	77.41	78.12	107.59	-4,471.51	-1,093.45	1,009.97	860.25	149.73	6.745	
16,250.00	11,788.00	16,562.47	12,092.00	78.02	78.73	107.60	-4,521.51	-1,093.31	1,009.94	859.03	150.91	6.692	
16,300.00	11,788.00	16,612.47	12,092.00	78.64	79.34	107.60	-4,571.51	-1,093.18	1,009.91	857.82	152.09	6.640	
16,350.00	11,788.00	16,662.47	12,092.00	79.25	79.95	107.60	-4,621.51	-1,093.05	1,009.88	856.59	153.28	6.588	
16,400.00	11,788.00	16,712.47	12,092.00	79.87	80.56	107.60	-4,671.51	-1,092.91	1,009.84	855.37	154.47	6.537	
16,450.00	11,788.00	16,762.47	12,092.00	80.49	81.18	107.60	-4,721.51	-1,092.78	1,009.81	854.14	155.67	6.487	
16,500.00	11,788.00	16,812.47	12,092.00	81.12	81.80	107.60	-4,771.50	-1,092.65	1,009.78	852.91	156.87	6.437	
16,550.00	11,788.00	16,862.47	12,092.00	81.74	82.42	107.60	-4,821.50	-1,092.51	1,009.75	851.68	158.07	6.388	
16,600.00	11,788.00	16,912.47	12,092.00	82.36	83.04	107.60	-4,871.50	-1,092.38	1,009.71	850.44	159.27	6.339	
16,650.00	11,788.00	16,962.47	12,092.00	82.99	83.66	107.60	-4,921.50	-1,092.25	1,009.68	849.20	160.48	6.291	
16,700.00	11,788.00	17,012.47	12,092.00	83.62	84.28	107.60	-4,971.50	-1,092.11	1,009.65	847.96	161.70	6.244	
16,750.00	11,788.00	17,062.47	12,092.00	84.25	84.91	107.60	-5,021.50	-1,091.98	1,009.62	846.71	162.91	6.197	
16,800.00	11,788.00	17,112.47	12,092.00	84.88	85.54	107.60	-5,071.50	-1,091.84	1,009.59	845.46	164.13	6.151	
16,850.00	11,788.00	17,162.47	12,092.00	85.52	86.17	107.60	-5,121.50	-1,091.71	1,009.55	844.20	165.35	6.106	
16,900.00	11,788.00	17,212.47	12,092.00	86.15	86.80	107.60	-5,171.50	-1,091.58	1,009.52	842.95	166.57	6.061	
16,950.00	11,788.00	17,262.47	12,092.00	86.79	87.43	107.60	-5,221.50	-1,091.44	1,009.49	841.69	167.80	6.016	
17,000.00	11,788.00	17,312.47	12,092.00	87.43	88.07	107.60	-5,271.50	-1,091.31	1,009.46	840.43	169.03	5.972	
17,050.00	11,788.00	17,362.47	12,092.00	88.07	88.70	107.60	-5,321.50	-1,091.18	1,009.42	839.16	170.26	5.929	
17,100.00	11,788.00	17,412.47	12,092.00	88.71	89.34	107.61	-5,371.50	-1,091.04	1,009.39	837.89	171.50	5.886	
17,150.00	11,788.00	17,462.47	12,092.00	89.35	89.98	107.61	-5,421.50	-1,090.91	1,009.36	836.62	172.73	5.843	
17,200.00	11,788.00	17,512.47	12,092.00	89.99	90.61	107.61	-5,471.50	-1,090.78	1,009.33	835.35	173.97	5.802	
17,250.00	11,788.00	17,562.47	12,092.00	90.64	91.26	107.61	-5,521.50	-1,090.64	1,009.29	834.08	175.22	5.760	
17,300.00	11,788.00	17,612.47	12,092.00	91.28	91.90	107.61	-5,571.50	-1,090.51	1,009.26	832.80	176.46	5.719	
17,350.00	11,788.00	17,662.47	12,092.00	91.93	92.54	107.61	-5,621.50	-1,090.37	1,009.23	831.52	177.71	5.679	
17,400.00	11,788.00	17,712.47	12,092.00	92.58	93.19	107.61	-5,671.50	-1,090.24	1,009.20	830.24	178.96	5.639	
17,450.00	11,788.00	17,762.47	12,092.00	93.23	93.83	107.61	-5,721.50	-1,090.11	1,009.16	828.95	180.21	5.600	
17,500.00	11,788.00	17,812.47	12,092.00	93.88	94.48	107.61	-5,771.50	-1,089.97	1,009.13	827.67	181.46	5.561	
17,550.00	11,788.00	17,862.47	12,092.00	94.53	95.13	107.61	-5,821.50	-1,089.84	1,009.10	826.38	182.72	5.523	
17,600.00	11,788.00	17,912.47	12,092.00	95.18	95.78	107.61	-5,871.50	-1,089.71	1,009.07	825.09	183.98	5.485	
17,650.00	11,788.00	17,962.47	12,092.00	95.83	96.43	107.61	-5,921.50	-1,089.57	1,009.03	823.79	185.24	5.447	
17,700.00	11,788.00	18,012.47	12,092.00	96.49	97.08	107.61	-5,971.50	-1,089.44	1,009.00	822.50	186.50	5.410	
17,750.00	11,788.00	18,062.47	12,092.00	97.14	97.73	107.61	-6,021.50	-1,089.31	1,008.97	821.20	187.77	5.373	
17,800.00	11,788.00	18,112.47	12,092.00	97.80	98.38	107.61	-6,071.50	-1,089.17	1,008.94	819.90	189.04	5.337	
17,850.00	11,788.00	18,162.47	12,092.00	98.46	99.04	107.61	-6,121.50	-1,089.04	1,008.90	818.60	190.30	5.302	
17,900.00	11,788.00	18,212.47	12,092.00	99.12	99.69	107.61	-6,171.50	-1,088.91	1,008.87	817.30	191.57	5.266	
17,950.00	11,788.00	18,262.47	12,092.00	99.78	100.35	107.62	-6,221.50	-1,088.77	1,008.84	815.99	192.85	5.231	
18,000.00	11,788.00	18,312.47	12,092.00	100.44	101.01	107.62	-6,271.50	-1,088.64	1,008.81	814.69	194.12	5.197	
18,050.00	11,788.00	18,362.47	12,092.00	101.10	101.67	107.62	-6,321.50	-1,088.50	1,008.78	813.38	195.40	5.163	
18,100.00	11,788.00	18,412.47	12,092.00	101.76	102.32	107.62	-6,371.50	-1,088.37	1,008.74	812.07	196.68	5.129	

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

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference		Offset		Semi Major Axis			Offset Wellbore Centre		Distance				
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
18,150.00	11,788.00	18,462.47	12,092.00	102.42	102.99	107.62	-6,421.50	-1,088.24	1,008.71	810.75	197.96	5.096	
18,200.00	11,788.00	18,512.47	12,092.00	103.09	103.65	107.62	-6,471.50	-1,088.10	1,008.68	809.44	199.24	5.063	
18,250.00	11,788.00	18,562.47	12,092.00	103.75	104.31	107.62	-6,521.50	-1,087.97	1,008.65	808.13	200.52	5.030	
18,300.00	11,788.00	18,612.47	12,092.00	104.42	104.97	107.62	-6,571.50	-1,087.84	1,008.61	806.81	201.80	4.998	Alert
18,350.00	11,788.00	18,662.47	12,092.00	105.08	105.63	107.62	-6,621.50	-1,087.70	1,008.58	805.49	203.09	4.966	Alert
18,400.00	11,788.00	18,712.47	12,092.00	105.75	106.30	107.62	-6,671.50	-1,087.57	1,008.55	804.17	204.38	4.935	Alert
18,450.00	11,788.00	18,762.47	12,092.00	106.42	106.96	107.62	-6,721.50	-1,087.44	1,008.52	802.85	205.67	4.904	Alert
18,500.00	11,788.00	18,812.47	12,092.00	107.09	107.63	107.62	-6,771.50	-1,087.30	1,008.48	801.53	206.96	4.873	Alert
18,550.00	11,788.00	18,862.47	12,092.00	107.76	108.30	107.62	-6,821.50	-1,087.17	1,008.45	800.20	208.25	4.842	Alert
18,600.00	11,788.00	18,912.47	12,092.00	108.43	108.97	107.62	-6,871.50	-1,087.03	1,008.42	798.87	209.54	4.812	Alert
18,650.00	11,788.00	18,962.47	12,092.00	109.10	109.63	107.62	-6,921.50	-1,086.90	1,008.39	797.55	210.84	4.783	Alert
18,700.00	11,788.00	19,012.47	12,092.00	109.77	110.30	107.62	-6,971.50	-1,086.77	1,008.35	796.22	212.14	4.753	Alert
18,750.00	11,788.00	19,062.47	12,092.00	110.44	110.97	107.62	-7,021.50	-1,086.63	1,008.32	794.89	213.43	4.724	Alert
18,800.00	11,788.00	19,112.47	12,092.00	111.12	111.64	107.63	-7,071.50	-1,086.50	1,008.29	793.56	214.73	4.696	Alert
18,850.00	11,788.00	19,162.47	12,092.00	111.79	112.31	107.63	-7,121.50	-1,086.37	1,008.26	792.22	216.03	4.667	Alert
18,900.00	11,788.00	19,212.47	12,092.00	112.47	112.99	107.63	-7,171.50	-1,086.23	1,008.22	790.89	217.34	4.639	Alert
18,950.00	11,788.00	19,262.47	12,092.00	113.14	113.66	107.63	-7,221.50	-1,086.10	1,008.19	789.55	218.64	4.611	Alert
19,000.00	11,788.00	19,312.47	12,092.00	113.82	114.33	107.63	-7,271.50	-1,085.97	1,008.16	788.22	219.94	4.584	Alert
19,050.00	11,788.00	19,362.47	12,092.00	114.49	115.01	107.63	-7,321.50	-1,085.83	1,008.13	786.88	221.25	4.557	Alert
19,100.00	11,788.00	19,412.47	12,092.00	115.17	115.68	107.63	-7,371.50	-1,085.70	1,008.09	785.54	222.56	4.530	Alert
19,150.00	11,788.00	19,462.47	12,092.00	115.85	116.36	107.63	-7,421.49	-1,085.56	1,008.06	784.20	223.86	4.503	Alert
19,200.00	11,788.00	19,512.47	12,092.00	116.53	117.03	107.63	-7,471.49	-1,085.43	1,008.03	782.86	225.17	4.477	Alert
19,250.00	11,788.00	19,562.47	12,092.00	117.20	117.71	107.63	-7,521.49	-1,085.30	1,008.00	781.51	226.48	4.451	Alert
19,300.00	11,788.00	19,612.47	12,092.00	117.88	118.39	107.63	-7,571.49	-1,085.16	1,007.97	780.17	227.79	4.425	Alert
19,350.00	11,788.00	19,662.47	12,092.00	118.56	119.06	107.63	-7,621.49	-1,085.03	1,007.93	778.82	229.11	4.399	Alert
19,400.00	11,788.00	19,712.47	12,092.00	119.24	119.74	107.63	-7,671.49	-1,084.90	1,007.90	777.48	230.42	4.374	Alert
19,450.00	11,788.00	19,762.47	12,092.00	119.92	120.42	107.63	-7,721.49	-1,084.76	1,007.87	776.13	231.74	4.349	Alert
19,500.00	11,788.00	19,812.47	12,092.00	120.61	121.10	107.63	-7,771.49	-1,084.63	1,007.84	774.78	233.05	4.325	Alert
19,550.00	11,788.00	19,862.47	12,092.00	121.29	121.78	107.63	-7,821.49	-1,084.50	1,007.80	773.43	234.37	4.300	Alert
19,600.00	11,788.00	19,912.47	12,092.00	121.97	122.46	107.63	-7,871.49	-1,084.36	1,007.77	772.08	235.69	4.276	Alert
19,650.00	11,788.00	19,962.47	12,092.00	122.65	123.14	107.64	-7,921.49	-1,084.23	1,007.74	770.73	237.01	4.252	Alert
19,700.00	11,788.00	20,012.47	12,092.00	123.34	123.82	107.64	-7,971.49	-1,084.09	1,007.71	769.38	238.32	4.228	Alert
19,750.00	11,788.00	20,062.47	12,092.00	124.02	124.51	107.64	-8,021.49	-1,083.96	1,007.67	768.03	239.65	4.205	Alert
19,800.00	11,788.00	20,112.47	12,092.00	124.71	125.19	107.64	-8,071.49	-1,083.83	1,007.64	766.67	240.97	4.182	Alert
19,850.00	11,788.00	20,162.47	12,092.00	125.39	125.87	107.64	-8,121.49	-1,083.69	1,007.61	765.32	242.29	4.159	Alert
19,900.00	11,788.00	20,212.47	12,092.00	126.08	126.55	107.64	-8,171.49	-1,083.56	1,007.58	763.96	243.61	4.136	Alert
19,950.00	11,788.00	20,262.47	12,092.00	126.76	127.24	107.64	-8,221.49	-1,083.43	1,007.54	762.61	244.94	4.113	Alert
20,000.00	11,788.00	20,312.47	12,092.00	127.45	127.92	107.64	-8,271.49	-1,083.29	1,007.51	761.25	246.26	4.091	Alert
20,050.00	11,788.00	20,362.47	12,092.00	128.14	128.61	107.64	-8,321.49	-1,083.16	1,007.48	759.89	247.59	4.069	Alert
20,100.00	11,788.00	20,412.47	12,092.00	128.82	129.29	107.64	-8,371.49	-1,083.03	1,007.45	758.53	248.92	4.047	Alert
20,150.00	11,788.00	20,462.47	12,092.00	129.51	129.98	107.64	-8,421.49	-1,082.89	1,007.41	757.17	250.25	4.026	Alert
20,200.00	11,788.00	20,512.47	12,092.00	130.20	130.67	107.64	-8,471.49	-1,082.76	1,007.38	755.81	251.57	4.004	Alert
20,250.00	11,788.00	20,562.47	12,092.00	130.89	131.35	107.64	-8,521.49	-1,082.62	1,007.35	754.45	252.90	3.983	Alert
20,300.00	11,788.00	20,612.47	12,092.00	131.58	132.04	107.64	-8,571.49	-1,082.49	1,007.32	753.08	254.23	3.962	Alert
20,350.00	11,788.00	20,662.47	12,092.00	132.27	132.73	107.64	-8,621.49	-1,082.36	1,007.28	751.72	255.57	3.941	Alert
20,400.00	11,788.00	20,712.47	12,092.00	132.96	133.42	107.64	-8,671.49	-1,082.22	1,007.25	750.35	256.90	3.921	Alert
20,450.00	11,788.00	20,762.47	12,092.00	133.65	134.10	107.64	-8,721.49	-1,082.09	1,007.22	748.99	258.23	3.900	Alert
20,500.00	11,788.00	20,812.47	12,092.00	134.34	134.79	107.65	-8,771.49	-1,081.96	1,007.19	747.62	259.56	3.880	Alert
20,550.00	11,788.00	20,862.47	12,092.00	135.03	135.48	107.65	-8,821.49	-1,081.82	1,007.16	746.26	260.90	3.860	Alert
20,600.00	11,788.00	20,912.47	12,092.00	135.72	136.17	107.65	-8,871.49	-1,081.69	1,007.12	744.89	262.23	3.841	Alert
20,650.00	11,788.00	20,962.47	12,092.00	136.41	136.86	107.65	-8,921.49	-1,081.56	1,007.09	743.52	263.57	3.821	Alert
20,700.00	11,788.00	21,012.47	12,092.00	137.10	137.55	107.65	-8,971.49	-1,081.42	1,007.06	742.15	264.91	3.802	Alert

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

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

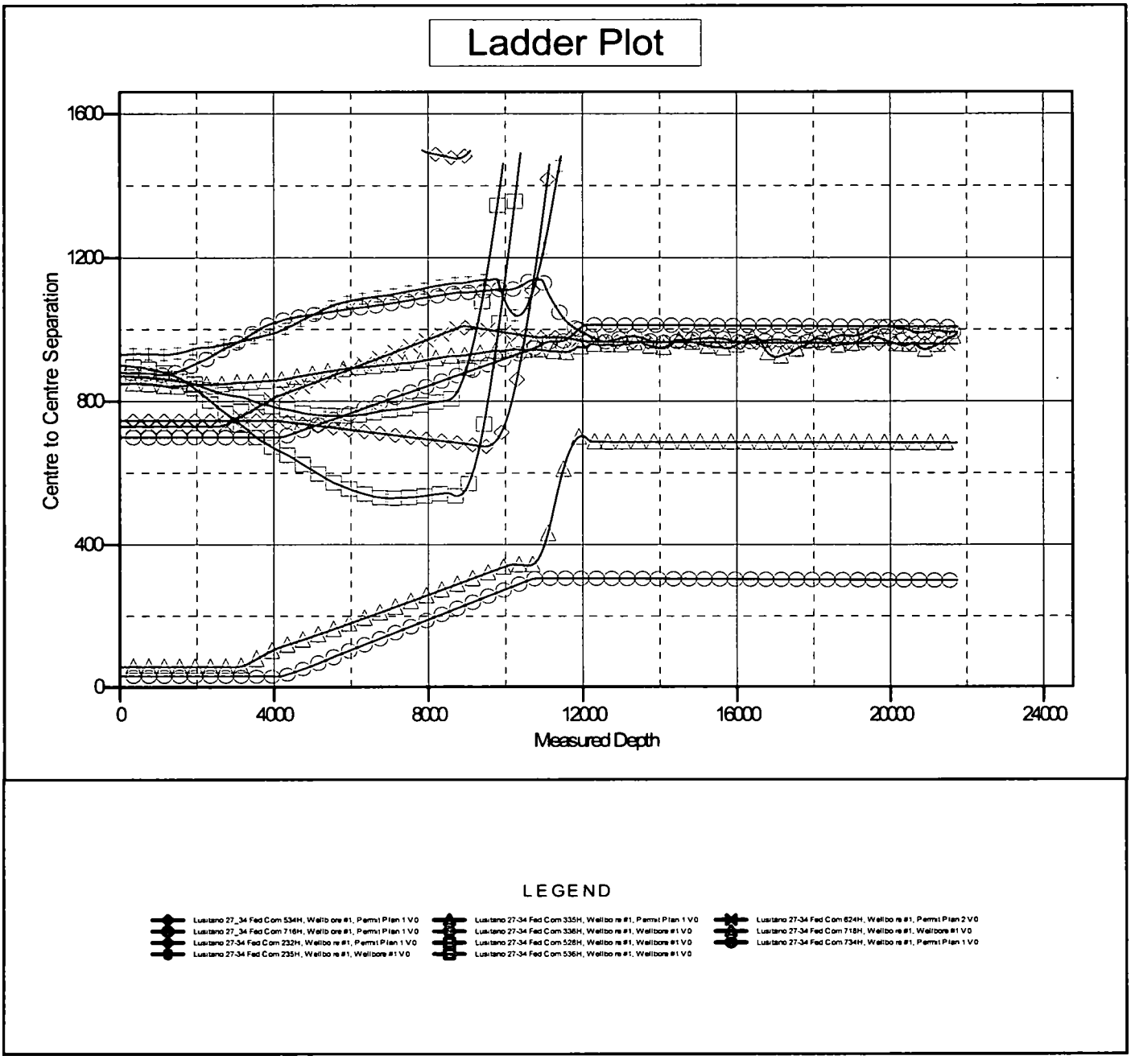
Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1 — **Offset Site Error:** 0.00 ft

Survey Program: 0-MWD+HDGM — **Offset Well Error:** 0.50 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
20,750.00	11,788.00	21,062.47	12,092.00	137.79	138.24	107.65	-9,021.49	-1,081.29	1,007.03	740.78	266.24	3.782	Alert
20,800.00	11,788.00	21,112.47	12,092.00	138.49	138.93	107.65	-9,071.49	-1,081.15	1,006.99	739.41	267.58	3.763	Alert
20,850.00	11,788.00	21,162.47	12,092.00	139.18	139.63	107.65	-9,121.49	-1,081.02	1,006.96	738.04	268.92	3.744	Alert
20,900.00	11,788.00	21,212.47	12,092.00	139.87	140.32	107.65	-9,171.49	-1,080.89	1,006.93	736.67	270.26	3.726	Alert
20,950.00	11,788.00	21,262.47	12,092.00	140.57	141.01	107.65	-9,221.49	-1,080.75	1,006.90	735.30	271.60	3.707	Alert
21,000.00	11,788.00	21,312.47	12,092.00	141.26	141.70	107.65	-9,271.49	-1,080.62	1,006.86	733.92	272.94	3.689	Alert
21,050.00	11,788.00	21,362.47	12,092.00	141.96	142.39	107.65	-9,321.49	-1,080.49	1,006.83	732.55	274.28	3.671	Alert
21,100.00	11,788.00	21,412.47	12,092.00	142.65	143.09	107.65	-9,371.49	-1,080.35	1,006.80	731.18	275.62	3.653	Alert
21,150.00	11,788.00	21,462.47	12,092.00	143.35	143.78	107.65	-9,421.49	-1,080.22	1,006.77	729.80	276.96	3.635	Alert
21,200.00	11,788.00	21,512.47	12,092.00	144.04	144.48	107.65	-9,471.49	-1,080.09	1,006.73	728.43	278.31	3.617	Alert
21,250.00	11,788.00	21,562.47	12,092.00	144.74	145.17	107.65	-9,521.49	-1,079.95	1,006.70	727.05	279.65	3.600	Alert
21,300.00	11,788.00	21,612.47	12,092.00	145.43	145.86	107.65	-9,571.49	-1,079.82	1,006.67	725.67	281.00	3.583	Alert
21,350.00	11,788.00	21,662.47	12,092.00	146.13	146.56	107.66	-9,621.49	-1,079.68	1,006.64	724.30	282.34	3.565	Alert
21,400.00	11,788.00	21,712.47	12,092.00	146.83	147.25	107.66	-9,671.49	-1,079.55	1,006.60	722.92	283.69	3.548	Alert
21,450.00	11,788.00	21,762.47	12,092.00	147.52	147.95	107.66	-9,721.49	-1,079.42	1,006.57	721.54	285.03	3.531	Alert
21,500.00	11,788.00	21,812.47	12,092.00	148.22	148.65	107.66	-9,771.49	-1,079.28	1,006.54	720.16	286.38	3.515	Alert
21,550.00	11,788.00	21,862.47	12,092.00	148.92	149.34	107.66	-9,821.49	-1,079.15	1,006.51	718.78	287.73	3.498	Alert
21,600.00	11,788.00	21,912.47	12,092.00	149.62	150.04	107.66	-9,871.49	-1,079.02	1,006.47	717.40	289.07	3.482	Alert
21,650.00	11,788.00	21,962.47	12,092.00	150.31	150.73	107.66	-9,921.49	-1,078.88	1,006.44	716.02	290.42	3.465	Alert
21,700.00	11,788.00	22,012.47	12,092.00	151.01	151.43	107.66	-9,971.49	-1,078.75	1,006.41	714.64	291.77	3.449	Alert
21,750.00	11,788.00	22,062.47	12,092.00	151.71	152.13	107.66	-10,021.49	-1,078.62	1,006.38	713.26	293.12	3.433	Alert
21,753.86	11,788.00	22,066.33	12,092.00	151.76	152.18	107.66	-10,025.34	-1,078.61	1,006.37	713.15	293.22	3.432	Alert, SF

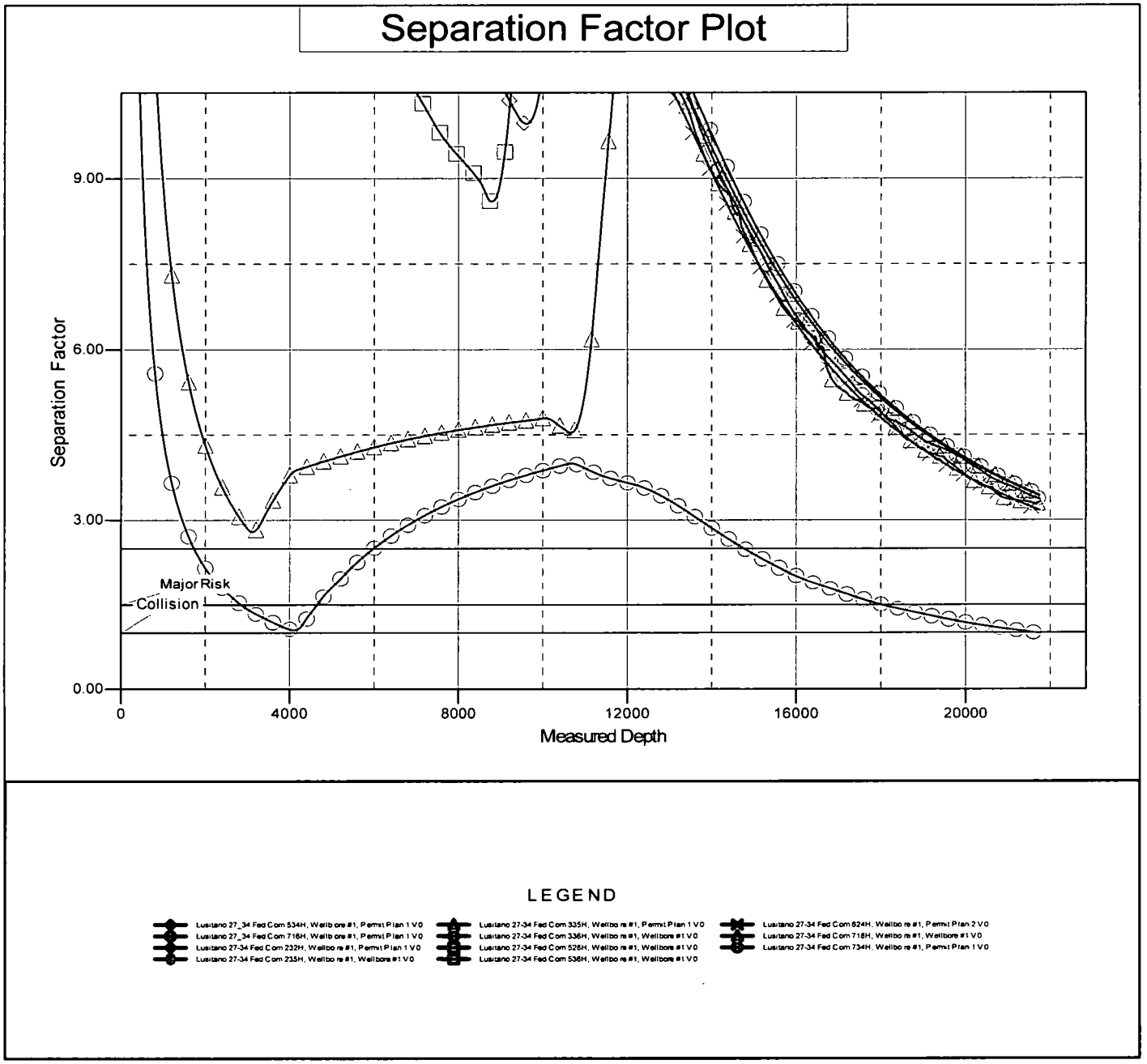
Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB @ 3362.80ft	Coordinates are relative to: Lusitano 27_34 Fed Com 736H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is -104.333334	Grid Convergence at Surface is: 0.30°



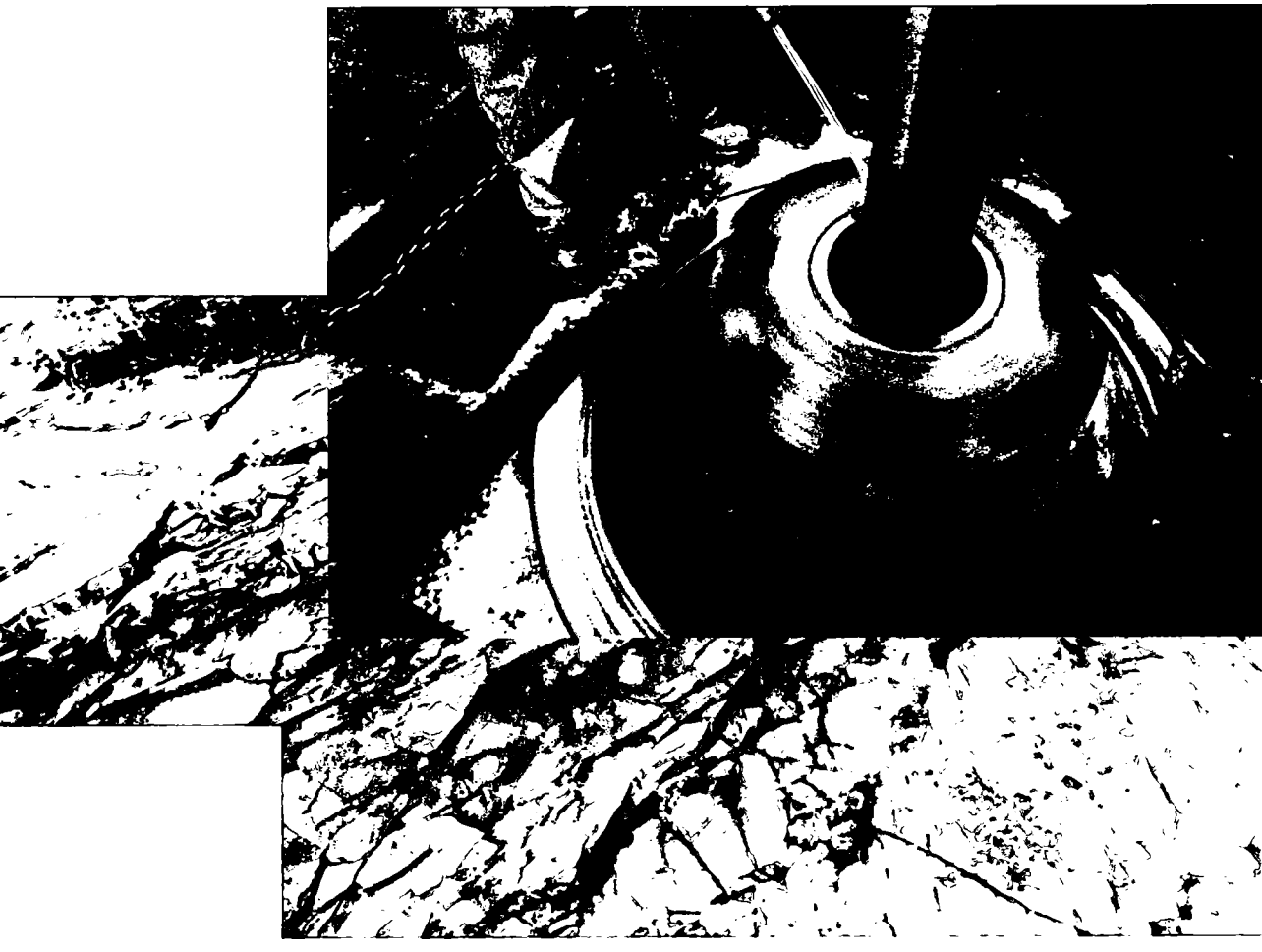
Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27_34 Fed Com 736H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3362.80ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3362.80ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27_34 Fed Com 736H	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.50 ft	**Output errors are at**	2.00 sigma
Reference Wellbore	Wellbore #1	**Database:**	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB @ 3362.80ft	Coordinates are relative to: Lusitano 27_34 Fed Com 736H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is -104.333334	Grid Convergence at Surface is: 0.30°



devon

Commitment Runs Deep



Design Plan
Operation and Maintenance Plan
Closure Plan

SENM - Closed Loop Systems
June 2010

I. Design Plan

Devon uses MI SWACO closed loop system (CLS). The MI SWACO CLS is designed to maintain drill solids at or below 5%. The equipment is arranged to progressively remove solids from the largest to the smallest size. Drilling fluids can thus be reused and savings is realized on mud and disposal costs. Dewatering may be required with the centrifuges to insure removal of ultra fine solids.

The drilling location is constructed to allow storm water to flow to a central sump normally the cellar. This insures no contamination leaves the drilling pad in the event of a spill. Storm water is reused in the mud system or stored in a reserve fluid tank farm until it can be reused. All lubricants, oils, or chemicals are removed immediately from the ground to prevent the contamination of storm water. An oil trap is normally installed on the sump if an oil spill occurs during a storm.

A tank farm is utilized to store drilling fluids including fresh water and brine fluids. The tank farm is constructed on a 20 ml plastic lined, bermed pad to prevent the contamination of the drilling site during a spill. Fluids from other sites may be stored in these tanks for processing by the solids control equipment and reused in the mud system. At the end of the well the fluids are transported from the tank farm to an adjoining well or to the next well for the rig.

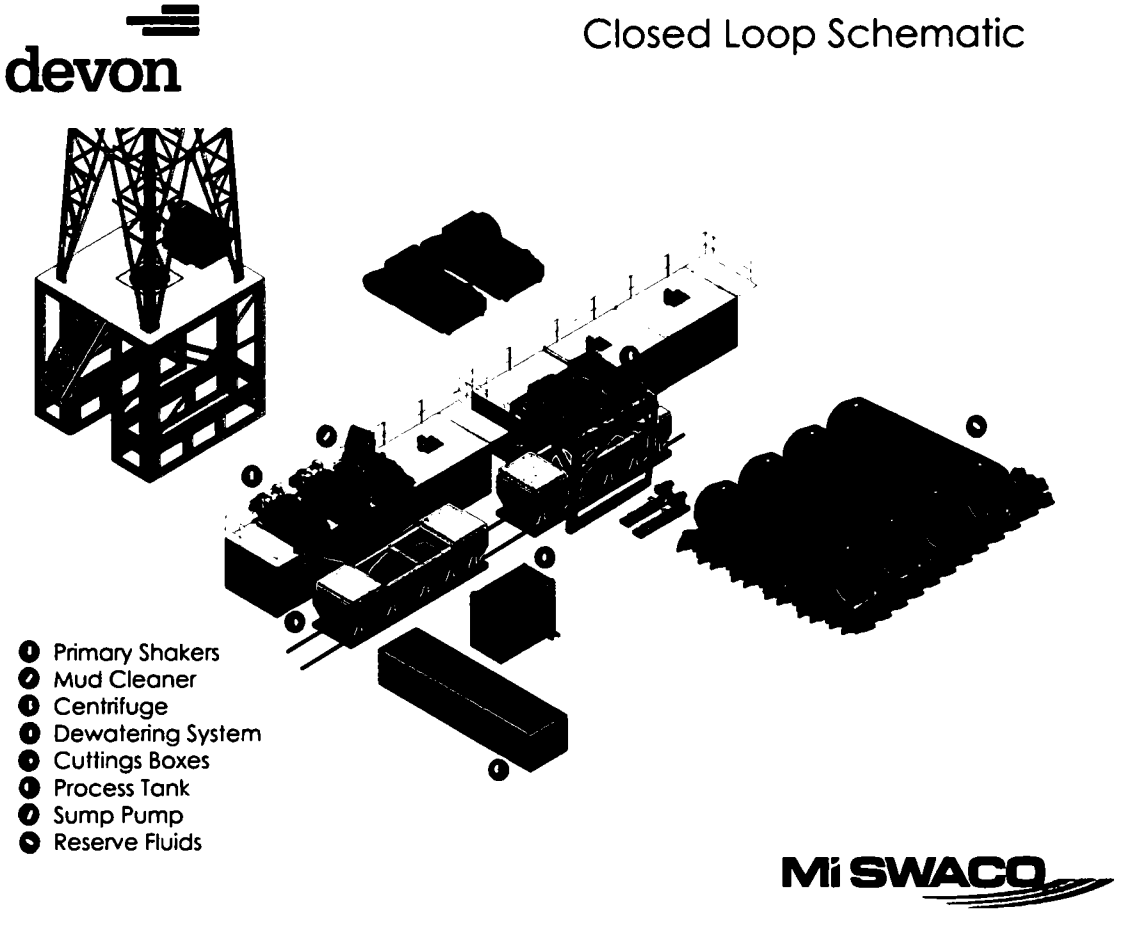
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

Signs will be posted on the fence surrounding the closed-loop system unless the closed-loop system is located on a site where there is an existing well, that is operated by Devon.

II. Operations and Maintenance Plan

Primary Shakers: The primary shakers make the first removal of drill solids from the drilling mud as it leaves the well bore. The shakers are sized to handle maximum drilling rate at optimal screen size. The shakers normally remove solids down to 74 microns.

Mud Cleaner: The Mud Cleaner cleans the fluid after it leaves the shakers. A set of hydrocyclones are sized to handle 1.25 to 1.5 times the maximum circulating rate. This ensures all the fluid is being processed to an average cut point of 25 microns. The wet discharged is dewatered on a shaker equipped with ultra fine mesh screens and generally cut at 40 microns.



Centrifuges: The centrifuges can be one or two in number depending on the well geometry or depth of well. The centrifuges are sized to maintain low gravity solids at 5% or below. They may or may not need a dewatering system to enhance the removal rates. The centrifuges can make a cut point of 8-10 microns depending on bowl speed, feed rate, solids loading and other factors.

The centrifuge system is designed to work on the active system and be flexible to process incoming fluids from other locations. This set-up is also dependant on well factors.

Dewatering System: The dewatering system is a chemical mixing and dosing system designed to enhance the solids removal of the centrifuge. Not commonly used in shallow wells. It may contain pH adjustment, coagulant mixing and dosing, and polymer mixing and dosing. Chemical flocculation binds ultra fine solids into a mass that is within the centrifuge operating design. The

dewatering system improves the centrifuge cut point to infinity or allows for the return of clear water or brine fluid. This ability allows for the ultimate control of low gravity solids.

Cuttings Boxes: Cuttings boxes are utilized to capture drill solids that are discarded from the solids control equipment. These boxes are set upon a rail system that allows for the removal and replacement of a full box of cuttings with an empty one. They are equipped with a cover that insures no product is spilled into the environment during the transportation phase.

Process Tank: (Optional) The process tank allows for the holding and process of fluids that are being transferred into the mud system. Additionally, during times of lost circulation the process tank may hold active fluids that are removed for additional treatment. It can further be used as a mixing tank during well control conditions.

Sump and Sump Pump: The sump is used to collect storm water and the pump is used to transfer this fluid to the active system or to the tank for to hold in reserve. It can also be used to collect fluids that may escape during spills. The location contains drainage ditches that allow the location fluids to drain to the sump.

Reserve Fluids (Tank Farm): A series of frac tanks are used to replace the reserve pit. These are steel tanks that are equipped with a manifold system and a transfer pump. These tanks can contain any number of fluids used during the drilling process. These can include fresh water, cut brine, and saturated salt fluid. The fluid can be from the active well or reclaimed fluid from other locations. A 20 ml liner and berm system is employed to ensure the fluids do not migrate to the environment during a spill.

If a leak develops, the appropriate division district office will be notified within 48 hours of the discovery and the leak will be addressed. Spill prevention is accomplished by maintaining pump packing, hoses, and pipe fittings to insure no leaks are occurring. During an upset condition the source of the spill is isolated and repaired as soon as it is discovered. Free liquid is removed by a diaphragm pump and returned to the mud system. Loose topsoil may be used to stabilize the spill and the contaminated soil is excavated and placed in the cuttings boxes. After the well is finished and the rig has moved, the entire location is scrapped and testing will be performed to determine if a release has occurred.

All trash is kept in a wire mesh enclosure and removed to an approved landfill when full. All spent motor oils are kept in separate containers and they are removed and sent to an approved recycling center. Any spilled lubricants, pipe

dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

These operations are monitored by Mi Swaco service technicians. Daily logs are maintained to ensure optimal equipment operation and maintenance. Screen and chemical use is logged to maintain inventory control. Fluid properties are monitored and recorded and drilling mud volumes are accounted for in the mud storage farm. This data is kept for end of well review to insure performance goals are met. Lessons learned are logged and used to help with continuous improvement.

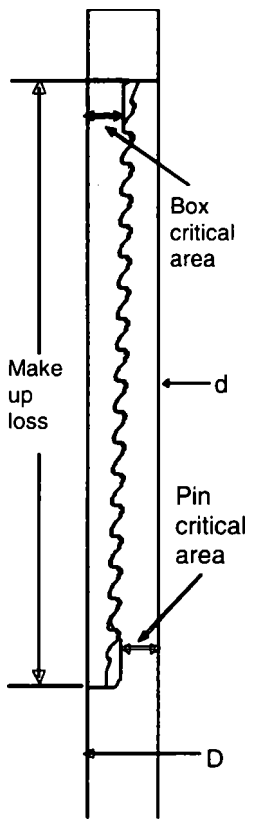
A MI SWACO field supervisor manages from 3-5 wells. They are responsible for training personnel, supervising installations, and inspecting sites for compliance of MI SWACO safety and operational policy.

III. Closure Plan

A maximum 340' X 340' caliche pad is built per well. All of the trucks and steel tanks fit on this pad. All fluid cuttings go to the steel tanks to be hauled by various trucking companies to an agency approved disposal.

Geometry

FLUSHMAX-III



Pipe Body

	Imperial		S.I.	
Grade	P110		P110	
Pipe OD (D)	7 5/8	in	193.68	mm
Weight	29.70	lb/ft	44.20	kg/m
Actual weight	29.04		43.21	kg/m
Wall Thickness (t)	0.375	in	9.53	mm
Pipe ID (d)	6.875	in	174.63	mm
Pipe body cross section	8.537	in^2	5,508	mm^2
Drift Dia.	6.750	in	171.45	mm

Connection

Box OD (W)	7.625	in	193.68	mm
PIN ID	6.875	in	174.63	mm
Make up Loss	3.040	in	77.22	mm
Box Critical Area	4.424	in^2	2854	mm^2
Joint load efficiency	60	%	60	%
Thread Taper	1 / 16 (3/4" per ft)			
Number of Threads	5 TPI			

Performance Properties for Pipe Body

M.I.Y.P.	9,470	psi	65.31	MPa

Note S.M.Y.S.= Specified Minimum YIELD Strength of Pipe body
M.I.Y.P. = Minimum Internal Yield Pressure of Pipe body

Performance Properties for Connection

Min. Compression Yield	563 kips (60% of S.M.Y.S.)
External Pressure	100% of Collapse Strength

Recommended Torque

Opti.	17,200	ft-lb	23,300	N-m
Operational Max.	23,600	ft-lb	32,000	N-m

Note : Operational Max. torque can be applied for high torque application

Devon Energy Annular Preventer Summary

General Procedure While Tripping

1. Sound alarm (alert crew)
2. Stab full opening safety valve and close
3. Space out drill string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
    a. SIDPP and SICP
    b. Pit gain
    c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to the upper pipe ram.

General Procedure While Running Casing

1. Sound alarm (alert crew)
2. Stab crossover and full opening safety valve and close
3. Space out string
4. Shut-in (uppermost applicable BOP, typically annular preventer first. HCR and choke will already be in the closed position.)
5. Confirm shut-in
6. Notify toolpusher/company representative
7. Read and record the following:
    a. SIDPP and SICP
    b. Pit gain
    c. Time
8. Regroup and identify forward plan
9. If pressure has built or is anticipated during the kill to reach the RWP of the annular preventer, confirm spacing and swap to compatible pipe ram.

General Procedure With No Pipe In Hole (Open Hole)

1. Sound alarm (alert crew)
2. Shut-in with blind rams or BSR. (HCR and choke will already be in the closed position.)
3. Confirm shut-in
4. Notify toolpusher/company representative
5. Read and record the following:
    a. SICP
    b. Pit gain
    c. Time
6. Regroup and identify forward plan

Devon Energy Annular Preventer Summary

General Procedures While Pulling BHA thru Stack

1. PRIOR to pulling last joint of drillpipe thru the stack.
    a. Perform flowcheck, if flowing:
    b. Sound alarm (alert crew)
    c. Stab full opening safety valve and close
    d. Space out drill string with tool joint just beneath the upper pipe ram.
    e. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
    f. Confirm shut-in
    g. Notify toolpusher/company representative
    h. Read and record the following:
        i. SIDPP and SICP
        ii. Pit gain
        iii. Time
    i. Regroup and identify forward plan

2. With BHA in the stack and compatible ram preventer and pipe combo immediately available.
    a. Sound alarm (alert crew)
    b. Stab crossover and full opening safety valve and close
    c. Space out drill string with upset just beneath the compatible pipe ram.
    d. Shut-in using compatible pipe ram. (HCR and choke will already be in the closed position.)
    e. Confirm shut-in
    f. Notify toolpusher/company representative
    g. Read and record the following:
        i. SIDPP and SICP
        ii. Pit gain
        iii. Time
    h. Regroup and identify forward plan

3. With BHA in the stack and NO compatible ram preventer and pipe combo immediately available.
    a. Sound alarm (alert crew)
    b. If possible to pick up high enough, pull string clear of the stack and follow "Open Hole" scenario.
    c. If impossible to pick up high enough to pull the string clear of the stack:
    d. Stab crossover, make up one joint/stand of drillpipe, and full opening safety valve and close
    e. Space out drill string with tooljoint just beneath the upper pipe ram.
    f. Shut-in using upper pipe ram. (HCR and choke will already be in the closed position.)
    g. Confirm shut-in
    h. Notify toolpusher/company representative
    i. Read and record the following:
        i. SIDPP and SICP
        ii. Pit gain
        iii. Time
    j. Regroup and identify forward plan

A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.

Devon proposes using a multi-bowl wellhead assembly. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be 5000 (5M) psi.

- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial BOP test.
- Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 5M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
- If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
- Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

After running the 10-3/4" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

After running the 7-5/8" casing 10M system will be installed and tested, with 5M annular being tested to 100% of rated working pressure.

The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 10,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

A multibowl wellhead may be used. The BOP will be tested per Onshore Order #2 after installation on the surface casing which will cover testing requirements for a maximum of 30 days. If any seal subject to test pressure is broken the system must be tested.
Devon proposes using 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 5000 (5M) psi.
• Wellhead will be installed by wellhead representatives.
• If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
• Wellhead representative will install the test plug for the initial BOP test.
• Wellhead company will install a solid steel body pack-off to completely isolate the lower head after cementing intermediate casing. After installation of the pack-off, the pack-off and the lower flange will be tested to 5M, as shown on the attached schematic. Everything above the pack-off will not have been altered whatsoever from the initial nipple up. Therefore the BOP components will not be retested at that time.
• If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head will be cut and top out operations will be conducted.
• Devon will pressure test all seals above and below the mandrel (but still above the casing) to full working pressure rating.
• Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

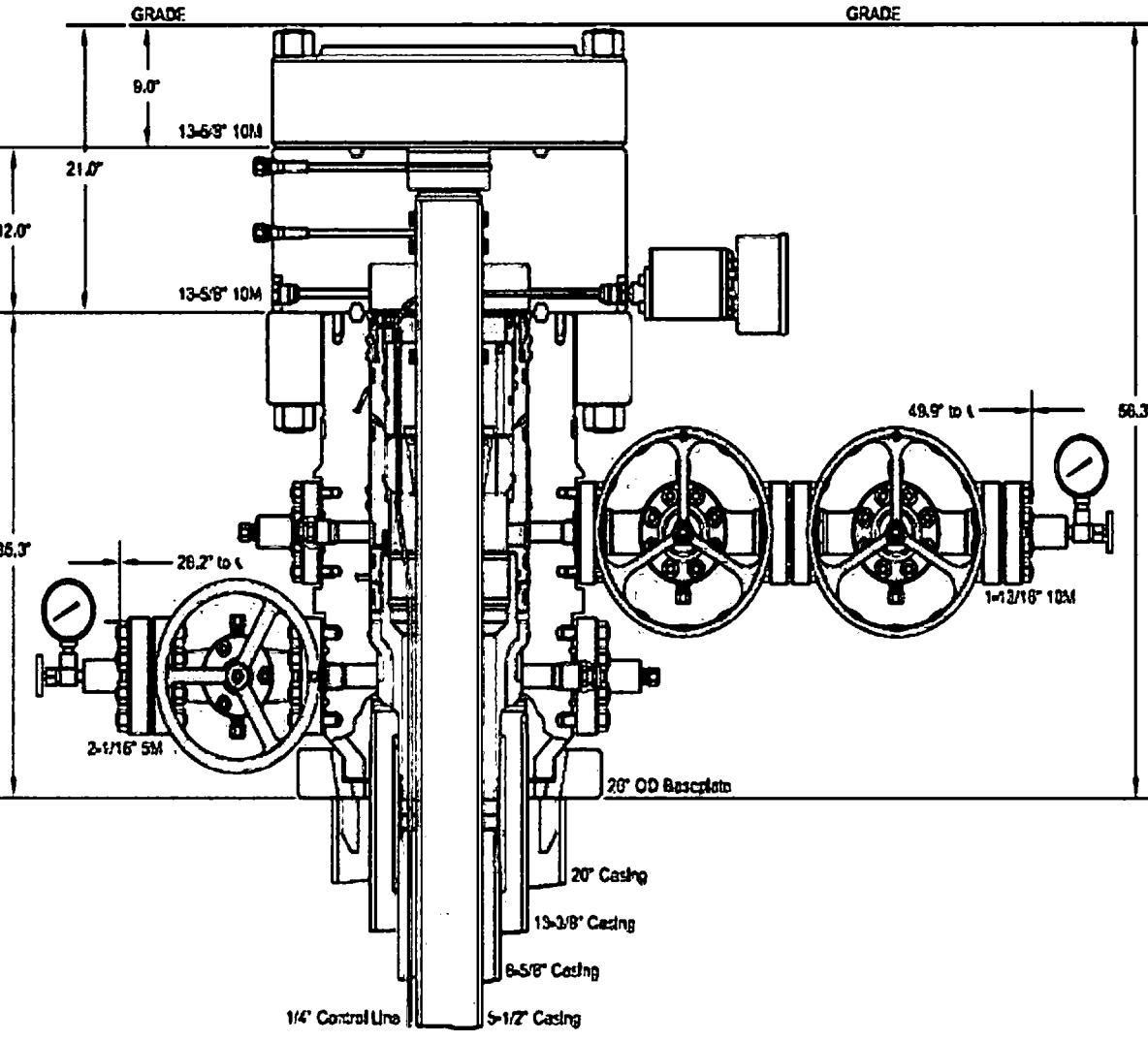
After running the surface casing, a BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, as per Onshore Order #2. If the well is not complete within 30 days of this BOP test, another full BOP test will be conducted, as per Onshore Order #2.

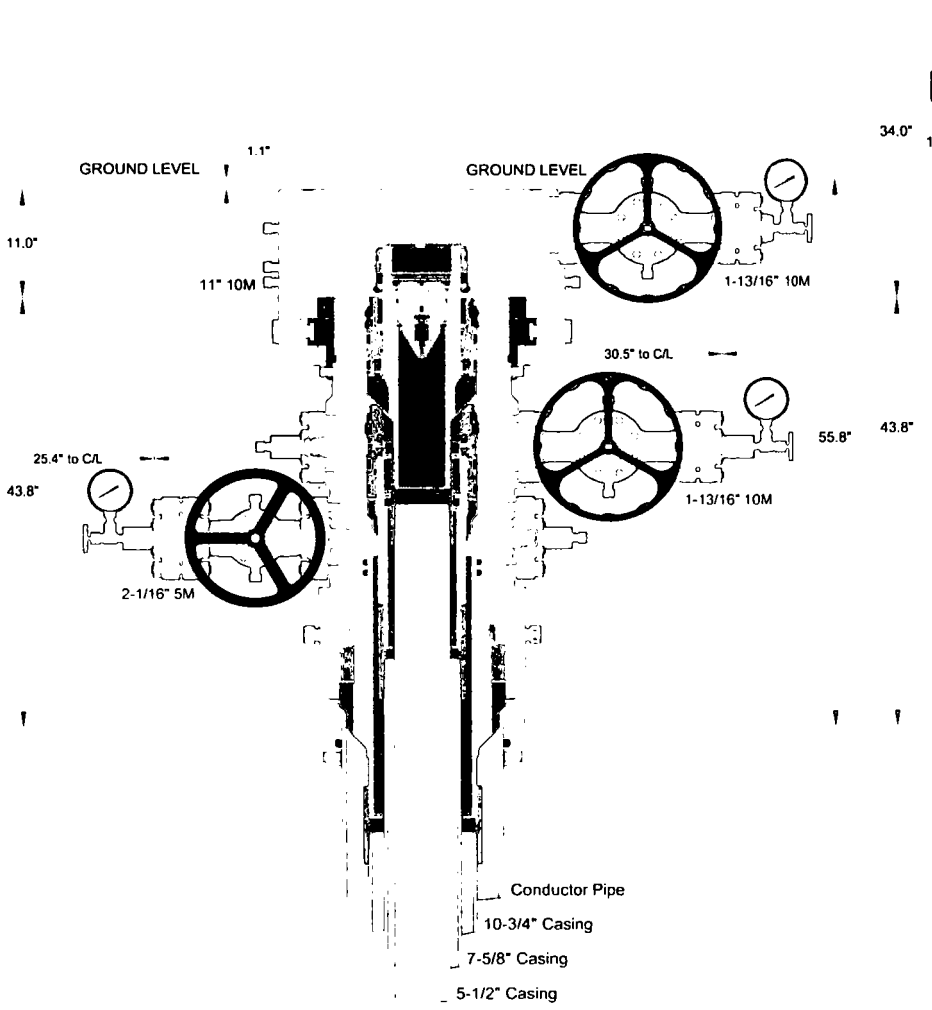
After running the intermediate casing a 10M system will be installed and tested, with 5M annular being tested to 100% of rated working pressure.

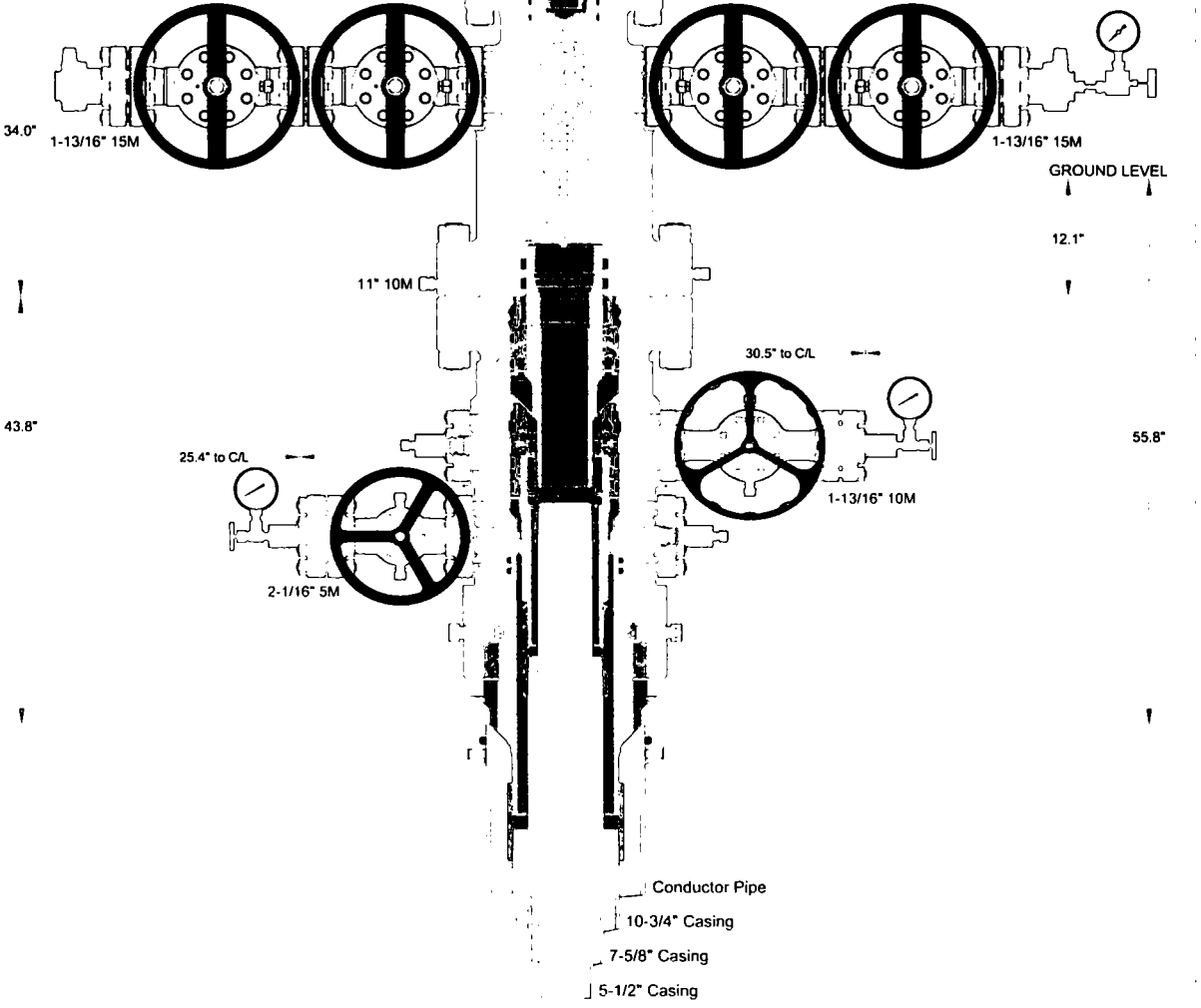
The pipe rams will be operated and checked each 24 hour period and each time the drill pipe is out of the hole. These tests will be logged in the daily driller's log. A 2" kill line and 3" choke line will be incorporated into the drilling spool below the ram BOP. In addition to the rams and annular preventer, additional BOP accessories include a kelly cock, floor safety valve, choke lines, and choke manifold rated at 5,000 psi WP.

Devon's proposed wellhead manufactures will be FMC Technologies, Cactus Wellhead, or Cameron.

MB Verb 5M WLFMP Alt Design







ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC

DEVON ENERGY CORPORATION

Cactus Wellhead

Quotation

ODESSA WAREHOUSE
8001 GROENING STREET
ODESSA TX 79765
Phone: 432-653-0306

Quote Number : ODE0001804

Date: 10/19/2018

Valid For 30 Days

Bill To: 7323

DEVON ENERGY CORPORATION
PO BOX 3198
OKLAHOMA CITY OK 73101-3198
US

Ship To: 0

DEVON ENERGY CORPORATION
PO BOX 3198
OKLAHOMA CITY OK 73101-3198
US

	Quantity	Price	Ext Price

MBU-T-CFL-R 10-3/4"
DEVON ENERGY

DELAWARE BASIN

MBU-T-CFL-R ASSEMBLY
10-3/4" X 7-5/8" X 5-1/2"

QUOTATION SUMMARY:

- MBU-T ASSEMBLY - $24,148.80
- MANDREL HANGERS & PACKOFFS - $18,231.00
- TUBING HEAD ASSEMBLY - $28,243.20
- RENTAL TOOLS = $4.075.00 PER WELL FOR THE FIRST 45 DAYS; $220.00 PER DAY THEREAFTER

CACTUS CONTACT:
SCOTT NORDQUIST
MOBILE: 832.803.5055
EMAIL: scott.nordquist@cactuswellhead.com

NOTE: PRICES ARE F.O.B. CACTUS BOSSIER CITY, LA. THE FOLLOWING QUOTATION DOES NOT INCLUDE PRO RATA FREIGHT AND OTHER APPLICABLE MILEAGE AND SERVICES THAT WILL BE CHARGED AT TIME OF INVOICING.

		Quantity	Price	Ext Price
	MBU-T-CFL-R ASSEMBLY			
1	125867	1.00	9,775.00	9,775.00
	HSG,CW,MBU-T-CFL-R-DBLO-SF,10-3/4,11 10M,W/2 1-13/16 10M FP UPR & 2 2-1/16 5M FP LWR,RND BAR,W/O 11 10M THD FLG,6A-PU-EE-NL-1-2			
2	103030	1.00	1,735.00	1,735.00
	FLG,THD,11 10M W/17.375-2 STUB ACME-2G L.H. THD,4130 75K & I/T -75 DEG F,PSL2			
3	101970	1.00	1,500.00	1,500.00
	LANDING RING,CW,CTF,16 CSG X 20 OD X 15.25 ID,W/1/2-13UNC-2B LIFT HOLE			
4	117696	1.00	7,691.00	7,691.00
	CSGHGR,CW,MBU-T-CFL-R,10-3/4,10-3/4 (45.5#) BC PIN BTM X 11.250-4 STUB ACME-2G LEFT HAND PIN TOP,9.945 MIN BORE,4140 110K,6A-U-AA-1-2			
5	125819	0.00	7,691.00	0.00
	CSGHGR,CW,MBU-T-CFL-R,10-3/4,10-3/4 (45.5#) BC PIN BTM X 11.250-4 STUB ACME-2G LEFT HAND PIN TOP,9.945 MIN BORE,4130 75K,6A-PU-DD-NL-1-2			
6	VR2	1.00	30.00	30.00
	VR PLUG,CW,1-1/2 (1.900) SHARP VEE X 1-1/4 HEX,API 6A-DD-NL			
7	610003N	1.00	759.00	759.00
	VLV,CW1,2-1/16 3/5M FE AA/DD-NL (API 6A LU AA/DD-NL PSL1 PR2) NON-MONOGRAMMED			
8	200002	2.00	73.60	147.20
	FLG,COMP,CW,2-1/16 5M X 2 LP,6A-KU-EE-NL-1			
9	BP2T	2.00	25.04	50.08
	BULL PLUG,CW,2 LP X 1/2 LP,API 6A DD-NL			
10	FTG1	1.00	6.85	6.85
	FTG,GRS,VENTED CAP,1/2 NPT,ALLOY NON-NACE			
11	R24	3.00	5.48	16.44
	RING GASKET,R24,2-1/16 3/5M			
12	780067	8.00	2.35	18.80
	STUD,ALL-THD W/2 NUTS,BLK,7/8-9UNC X 6-1/2,A193 GR B7/A194 GR 2H,NO PLATING			
13	NVA	1.00	47.25	47.25
	NEEDLE VALVE,MFA,1/2 10M			
14	PG5M	1.00	47.88	47.88
	PRESSURE GAUGE,5M,4-1/2 FACE,LIQUID FILLED,1/2 NPT			
15	VR1	1.00	39.12	39.12
	VR PLUG,CW,1-1/4 (1.660) LP X 1-1/4 HEX,API 6A-DD-NL			
16	FTG1	1.00	6.85	6.85
	FTG,GRS,VENTED CAP,1/2 NPT,ALLOY NON-NACE			
17	107412	1.00	1,950.00	1,950.00
	VLV,CW,SB100,1-13/16 10M FE BB/EE-0,5 (API 6A LU BB/EE-0,5 PSL3 PR2) QPQ TRIM, API 6A PR2 ANNEX F			

			Quantity	Price	Ext Price
18	200010		2.00	74.33	148.66
	FLG,COMP,1-13/16 10M X 2 LP,5000 PSI MAX WP,4130 60K,6A-KU-EE-NL-1				
19	BX151		3.00	6.26	18.78
	RING GASKET,BX151,1-13/16 10/15/20M				
20	780080		8.00	1.96	15.68
	STUD,ALL-THD W/2 NUTS,BLK,3/4-10UNC X 5-1/2,A193 GR B7/A194 GR 2H,NO PLATING				
21	BP2T		2.00	25.04	50.08
	BULL PLUG,CW,2 LP X 1/2 LP,API 6A DD-NL				
22	NVA		1.00	47.25	47.25
	NEEDLE VALVE,MFA,1/2 10M				
23	PG5M		1.00	47.88	47.88
	PRESSURE GAUGE,5M,4-1/2 FACE,LIQUID FILLED,1/2 NPT				
					24,148.80

CASING HANGERS & PACKOFFS

24	120272		1.00	5,955.00	5,955.00
	CSGHGR,CW,MBU-LR2-TP6,FLUTED,11 X 7-5/8 (29.7#) BC PIN BTM X 7.750-4 STUB ACME-2G RIGHT HAND BOX TOP,6A-U-AA-1-1				
25	108908T		1.00	3,600.00	3,600.00
	PACKOFF,CW,MBU-LR,MANDREL,11 10M NOM,W/7.500-4 STUB ACME-2G LH BOX TOP,A/F LANDING HGR NECK,6A-U-AA-1-1				
26	121451		1.00	6,876.00	6,876.00
	CSGHGR,CW,MBU-LR-UPR-TP8,SN,FLUTED,7-5/8,11 X 5-1/2 (20#) VAM TOP HT PIN BTM X 6.125 4 STUB ACME-2G RIGHT HAND BOX TOP,W/5 HBPV THD,SPEC FOR ROTATING CASING STRING,,6A-U-AA-1-2				
27	120079		1.00	1,800.00	1,800.00
	PACKOFF,CW,CTF-MBU-3T,11,A/F 7.75 SEAL PREP,W/8.750-4 STUB ACME-2G LH BOX TOP,10000 PSI MAX WP,A/F LANDING ON 45 DEG SHOULDER ON HANGER,6A-U-AA-2-2				
28	BPV5T		0.00	2,950.00	0.00
	BPV,H,5 ONE WAY,4130,HYDRO TESTED & API 6A MONOGRAM				
	NOTE: OPTIONAL SALE ITEM; PRICE NOT INCLUDED IN TOTAL OPTIONAL RENTAL RATE = $90.00 PER DAY				
					18,231.00

RENTAL TOOLS

29	RNM	Rental Charge Minimum	1.00	4,075.00	4,075.00

MBU-T RENTAL TOOLS = $4,075.00 PER WELL FOR THE FIRST 45 DAYS; $220.00 PER DAY THEREAFTER.

RENTAL TOOLS INCLUDE THE FOLLOWING ITEMS:

PN 119126 - LIFT RING,CSGHGR,CFL-R,W/14.000-2 STUB ACME-2G LEFT HAND THDS,4140 110K ($200.00; $10.00)

PN 120868: RUN TOOL,CW,CSGHGR,MBU-T-CFL-10-7/8,11,250-4 STUB ACME-2G LH BOX BTM X 10-3/4 BC BOX

			Quantity	Price	Ext Price

TOP,W/10.00 MIN BORE,MAX LOAD CAPACITY 1500K ($200.00; $10.00)

PN 117695: TORQUE COLLAR,CW,CSGHGR,CFL,F/13-3/8 NECK,4140 110K ($100.00; $5.00)

PN 800001: COMB TEST PLUG/RET TOOL,CW,11 X 4-1/2 IF (NC50) BOX BTM & TOP,W/1-1/4 LP BYPASS & SPRING LOADED DOGS ($250.00; $15.00)

PN 102332: WBUSH,CW,MBU-LR,LWR,11 X 10.00 ID X 25.00 LG ($250.00; $15.00)

PN 120274: RUN TOOL,CW,CSGHGR,TP6,7.750-4 STUB ACME-2G RIGHT HAND PIN BTM X 7-5/8 BC BOX TOP,W/6.535 MIN BORE & MAXIMUM TORQUE 25000 LBS-FT SPEC FOR ROTATING CASING STRING ($575.00;$30.00)

PN 117945: TORQUE COLLAR,CW,F/USE W RUN TOOL,TP,7.750-4 STUB ACME-2G RIGHT HAND PIN BTM AND A/F 9.00 OD X 5.00 LG BOX CSGHGR NECK,MAXIMUM TORQUE 25000 LBF-FT ($200.00; $10.00)

PN 103066: WASH TOOL,CW,CSGHGR,MBU-LR/MBS(2),FLUTED,11 X 4-1/2 IF (NC50) BOX TOP THDS,FAB ($400.00; $20.00)

PN 102479: RUN TOOL,CW,PACKOFF,MBU-LR-LWR,11 X 4-1/2 IF (NC50) BTM & TOP,W/7.500-4 STUB ACME-2G LH PIN BTM ($300.00; $15.00)

PN 102172: WBUSH,CW,CTH/MBS2-UPR,11 X 7.0 ID X 13.5 LG ($250.00; $15.00)

PN 118739: RUN TOOL,CW,CSGHGR,TP8,6.125-4 STUB ACME-2G RIGHT HAND PIN BTM X 5-1/2 (20#) VAM TOP HT BOX TOP,W/4.696 MIN BORE & MAX LOAD CAPACITY 500K,MAX TORQUE 23000 FT-LBS,SPEC FOR ROTATING CASING STRING,4140 110K ($550.00; $30.00)

PN 103164: WASH TOOL,CW,CSGHGR,MBU-2LR/MBS2-R (3T),FLUTED,11 X 4-1/2 IF (NC50) BOX TOP THDS,FAB ($250.00; $15.00)

PN 115167: RUN TOOL,CW,PACKOFF,CTF-SN,7-5/8,W/8.750-4 STUB ACME-2G LEFT HAND PIN BTM X 4-1/2 IF (NC50) BOX TOP,W/BALL BEARINGS ($275.00; $15.00)

PN 102045: RUN TOOL,PACKOFF,CW,CTF,11 X 4-1/2 IF (NC50),W/5 HBPV MALE THD ($275.00; $15.00)

NOTE: CUSTOMER RESPONSIBLE FOR REPAIRS AND LOST, DAMAGED, OR BEYOND REPAIR TOOLS. RENTAL CHARGES MAY NOT BE APPLIED TO THE PURCHASE PRICE OF EQUIPMENT.

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30	RNM	Rental Charge Minimum	0.00	1,500.00	0.00

11 10M TA CAP RENTAL = $1,500.00 PER WELL FOR THE FIRST 45 DAYS; $65.00 PER DAY THEREAFTER.

RENTAL CONSISTS OF THE FOLLOWING ITEMS:

PN 121517: TA CAP,CW,DBLHPS,7-5/8,11 10M FLG,W/2 LP OUTLET,F/5.75 CUTOFF,5000 PSI MAX WP,6A-PU-EE-NL-1-1

NOTE: CUSTOMER RESPONSIBLE FOR LOST, DAMAGED OR BEYOND REPAIR RENTAL TOOLS. RENTAL CHARGES MAY NOT BE APPLIED TO THE PURCHASE PRICE OF EQUIPMENT.

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		Quantity	Price	Ext Price
				4,075.00
	TUBING HEAD ASSEMBLY			
31	123779	1.00	13,374.00	13,374.00
	TBGHD,CW,CTH-DBLHPS-SB,7-5/8,11 10M X 7-1/16 15M,W/2 1-13/16 15M FP,ACME VR THD,5.13 MIN BORE & 17-4PH LDS,34.0 LG,RND BAR,6A-PU-EE-0,5-1-2			
32	104700	4.00	3,015.00	12,060.00
	VLV,DSG-22,1-13/16 15M FE EE-0,5 (6A PU EE-0,5 PSL3 PR1),QPQ TRIM			
33	100203	2.00	550.00	1,100.00
	ADPT,TS,FH,1-13/16 15M X 2 FIG 1502 X 9/16 AUTOCLAVE,NON-NACE (INCLUDES SEAL RING) FH25099462-3			
34	100048	1.00	34.55	34.55
	FTG,GRS,VENTED CAP,1/2 NPT,4140 -50F W/ELECTROLESS NICKEL COATING NACE,K-MONEL BALL,INCONEL X-750 SPRING			
35	BX151	6.00	6.26	37.56
	RING GASKET,BX151,1-13/16 10/15/20M			
36	105477	32.00	3.99	127.68
	STUD,ALL-THD W/2 NUTS,BLK,7/8-9UNC X 6,A193 GR B7/A194 GR 2H,NO PLATING			
37	BX158	1.00	91.35	91.35
	RING GASKET,BX158,11 10/15/20M			
38	780083	16.00	42.00	672.00
	STUD,ALL-THD W/2 NUTS,BLK,1-3/4-8UN X 15-1/4,A193 GR B7/A194 GR 2H,NO PLATING			
39	810023	1.00	422.53	422.53
	NEEDLE VALVE,2 WAY ANGLE,9/16,20KSI,SOUR SERVICE,W/O COLLARS & GLANDS			
40	106012	1.00	93.49	93.49
	ADPT,AUTOCLAVE,HIGH PRESSURE, 9/16 MALE TO 9/16 MALE,316SS			
41	PG15M	1.00	230.04	230.04
	PRESSURE GAUGE,15M,9/16 AUTOCLAVE,LIQUID FILLED			
				28,243.20
	CONTINGENCY EQUIPMENT			
	EMERGENCY EQUIPMENT; INVOICED AS REQUIRED			
42	102470	0.00	3,325.00	0.00
	CSGHGR,CW,MBU-LR,11 X 7-5/8,6A-PU-DD-3-1			
43	102472	0.00	6,170.00	0.00
	PACKOFF,CW,MBU-LR,EMERG,11 10M X 7-5/8,W/7.500-4 STUB ACME-2G LH BOX TOP,6A-U-AA-1-1			
44	102474	0.00	6,135.00	0.00
	CSGHGR,CW,MBU-LR,UPR,11 X 5-1/2,6A-PU-DD-3-1			
45	115873	0.00	5,550.00	0.00
	PACKOFF,CW,CTF-SN,7-5/8,11 X 5-1/2,EMERG,W/5 HBPV BOX THD & 4.93 MIN BORE,10000 PSI MAX WP,4140 80K,6A-U-DD-NL-2-2 (REF115873)			

	Quantity	Price	Ext Price
NOTE: MUST USE RX RING GASKET			0.00

For Acceptance of this Quotation
Please Contact Ph: 713-626-8800
sales@cactuswellhead.com

Matl:	70,623.00
Labor:	0.00
Misc:	4,075.00
Sales Tax:	0.00
Total:	74,698.00

CACTUS WELLHEAD, LLC PURCHASE TERMS AND CONDITIONS

1. ACCEPTANCE: Acceptance of Cactus Wellhead, LLC (herein: Company) Purchase Terms and Conditions (herein: CACTUS Purchase Terms) shall be deemed effective upon shipment of the goods and/or rendering of services which are the subject of an order by Customer (defined as the party purchasing CACTUS goods and or services referred on the invoice). Any proposal made by Customer for additional or different terms and conditions or any attempt by Purchaser to vary in any degree any of the terms and conditions of CACTUS Purchase Terms is hereby rejected. **TO THE EXTENT A PART OF A PROVISION EXCLUSIVELY APPLIES TO GOODS OR SERVICES AND THESE TERMS DOES NOT REQUEST OR CONTEMPLATE SUCH, THE PROVISION DOES NOT APPLY.**

2. **Pricing**. Each Product and Service shall be invoiced at (and Customer shall pay) the respective price shown on the reverse side hereof, or if no price is shown on the reverse side hereof, at the price shown in the current price list of Company. In addition, Customer shall pay any and all additional charges for mileage, transportation, freight, packing and other related charges, as well as any federal, state or local tax, excise, or charge applicable on the sale, transportation, or use of Products and Services, unless otherwise specified.

3. **Terms of Payment**. Customer agrees to pay Company any and all payments due on or before thirty (30) days from invoice date at the designated address of Company. Amounts unpaid after such thirty (30) day period shall bear interest at the lesser of (i) one and one-half percent (1½%) per month or (ii) the maximum rate allowed by law. Customer shall also pay any and all of Company's attorney's fees and court costs if any amounts hereunder are collected by an attorney or through legal proceedings. Company reserves the right, among other remedies, either to terminate this agreement or to suspend further deliveries upon failure of Customer to make any payment as provided herein.

4. **Limited Warranty**. **COMPANY MAKES NO WARRANTY, EXPRESSED OR IMPLIED, AS TO THE MERCHANTABILITY, FITNESS FOR PURPOSE, DESCRIPTION, QUALITY, PRODUCTIVENESS, ACCURACY OR ANY OTHER MATTER WITH RESPECT TO PRODUCTS OR SERVICES, ALL SUCH WARRANTIES BEING HEREBY SPECIFICALLY AND EXPRESSLY DISCLAIMED BY COMPANY.** COMPANY MAY OFFER TECHNICAL ADVICE OR ASSISTANCE WITH REGARD TO THE PRODUCTS AND SERVICES BASED ON LABORATORY AND/OR FIELD EXPERIENCE AND CUSTOMER UNDERSTANDS AND AGREES THAT SUCH ADVICE REPRESENTS ONLY GOOD FAITH OPINIONS AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE. THE SOLE AND EXPRESS WARRANTY PROVIDED BY COMPANY IS TO WARRANT THAT THE PRODUCTS SOLD AS LISTED ON THE REVERSE SIDE HEREOF COMPLIES WITH COMPANY'S SOLE SPECIFICATION AT THE DATE AND TIME OF MANUFACTURE. COMPANY MAKES NO WARRANTY THAT SUCH PRODUCTS SHALL MEET SUCH SPECIFICATION AT ANY TIME AFTER SHIPMENT OF PRODUCTS. USE OF SUCH PRODUCTS IS SPECIFICALLY NOT WARRANTED.

5. **Remedy**. The exclusive remedy for this warranty for products shall be limited to, in Company's sole discretion and judgment, the replacement of defective part(s), F.O.B. Company's plant (transportation, redesign, dismantling, disposal of material and installation are not included and shall be borne and paid for by Customer), or repair of defective part(s). . The exclusive remedy for this warranty for service shall be limited to, in Company's sole discretion and judgment, the repeat of services performed F.O.B. Company's plant (transportation, redesign, dismantling, disposal of material and installation are not included and shall be borne and paid for by Customer). Any such repeat of services or replacement or repair of goods shall not include any materials not sold by Company hereunder, and specifically excludes any obligation by Company related to other property of the Customer or any property of third parties. Provided, however, Company may in its sole discretion, decide to instead give Customer credit memorandum for the amounts already paid by Customer to Company for such product or service. **IN ANY EVENT AND NOTWITHSTANDING THE LANGUAGE TO THE CONTRARY HEREIN, CUSTOMER ACKNOWLEDGES THAT ANY CLAIM IT MAY HAVE ARISING OUT OF OR IN CONNECTION WITH ANY ORIGINAL PRODUCTS AND SERVICES, ANY REPLACEMENT PRODUCTS OR REPEAT OF SERVICES AND THESE TERMS AND CONDITIONS SHALL BE LIMITED TO AND NOT EXCEED THE AMOUNT CUSTOMER HAS ACTUALLY PAID TO COMPANY FOR SUCH PRODUCTS AND/OR SERVICES PURSUANT HERETO.** If Customer fails to make any such claim within thirty (30) days after completion of Service or delivery of Product, Customer hereby waives (to the extent permitted by applicable law) any and all claims it may or does have with respect to such Products and Services. **Unless Customer is an authorized reseller of Company, Company's liability in connection with Products and Services shall extend only to Customer. CUSTOMER HEREBY INDEMNIFIES AND HOLDS COMPANY (AND ITS AGENTS, REPRESENTATIVES, OFFICERS DIRECTORS AND EMPLOYEES) HARMLESS FOR ANY LOSS, EXPENSE OR DAMAGE (WHETHER OF CUSTOMER OR OF ANY THIRD PARTY) ARISING FROM OR IN CONNECTION WITH PRODUCTS AND SERVICES, INCLUDING WITHOUT LIMITATION ANY FAILURE OF SUCH PRODUCTS AND SERVICES TO CONFORM TO CUSTOMER'S ORDER OR SPECIFICATION OR ANY OTHER STANDARD, OR ANY NEGLIGENCE OR BREACH OF WARRANTY BY COMPANY WITH RESPECT TO ANYTHING DONE OR FAILED TO HAVE BEEN DONE BY COMPANY, IF AND TO THE EXTENT THAT SUCH LOSS, EXPENSE OR DAMAGE EXCEEDS THE AMOUNT CUSTOMER HAS ACTUALLY PAID COMPANY PURSUANT HERETO FOR SUCH PRODUCTS OR SERVICES.**

6. **Inspection**. The results of any inspection or testing reported by the Company to Customer represents only good faith opinions and are not to be construed as warranties or guarantees of the quality, classification, merchantability, fitness for purpose, condition, or liability of any equipment or material that has been inspected or tested by the Company.

7. **Insurance**. Each party agrees to maintain comprehensive general liability insurance in the amount of $1,000,000 each occurrence, $2,000,000 general aggregate, and Workers Compensation insurance per statutory requirements providing coverage for the indemnity obligations in this agreement. The Company (and such of its affiliates as it shall designate) including their officers, directors, members, shareholders, partners, joint ventures, employees, agents and representatives shall be named as additional insureds under the policies of Customer on a primary basis to the extent of its indemnification obligations set forth in these Terms and Conditions, and the policies shall also provide a waiver of subrogation rights in favor of the Company (and such of its affiliates as it shall designate) and their officers, directors, members, shareholders, employees, agents and representatives. **The provisions of this Section 6 shall apply and the obligation to maintain insurance of each party in the coverages and amounts set forth herein shall remain in force regardless and independent of the validity or enforce ability of the indemnity provisions of Section 7, below; the obligation to obtain insurance is a separate and independent obligation. If the insurance required herein is more or less than allowed by prevailing law, the Indemnity obligations in Section 7 below shall be effective only to the maximum extent permitted under applicable law.**

8. **Indemnification**. The following indemnifications and releases of liability will apply to any goods or Services provided under this contract. **COMPANY AND CUSTOMER EXPRESSLY AGREE THAT, TO THE EXTENT REQUIRED BY APPLICABLE LAW TO BE EFFECTIVE, THE INDEMNITIES AND DISCLAIMERS OF WARRANTIES CONTAINED HEREIN ARE "CONSPICUOUS."**

A. **Customer Indemnity Obligations**. Customer hereby releases Company from any liability for, and shall protect, defend, indemnify, and hold harmless Company, its parents, affiliates, subsidiaries, partners, joint owners, joint venturers, and its contractors and subcontractors of any tier, and the officers, directors, agents, representatives, employees, insurers, and consultants (specifically excluding any member of Customer Group) of all of the foregoing, and its and their respective successors, heirs and assigns (**"Company Group"**) from and against all costs (including the payment of reasonable attorneys' fees), losses, liabilities, demands, causes of action, damages, or claims of every type and character (**"Claims"**), arising out of or resulting from or related, directly or indirectly, to (i) injury to, illness or death of Customer its parents, affiliates, subsidiaries, partners, joint owners, joint venturers, and its contractors and subcontractors of any tier, and the officers, directors, agents, representatives, employees, customers, insurers, invitees and consultants of all of the foregoing, and its and their respective successors, heirs and assigns (**"Customer Group"**), or (ii) loss of or damage to any property of any member of Customer Group, **REGARDLESS OF THE CAUSE OF SUCH CLAIMS, INCLUDING THE NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.**

B. **Company Indemnity Obligations**. Company hereby releases Customer from any liability for, and shall protect, defend, indemnify, and hold harmless Customer from and against all Claims arising out of or resulting from or related, directly or indirectly, to (i) injury to, illness or death of any member of Company Group, or (ii) loss of or damage to any property of any member of Company Group, **REGARDLESS OF THE CAUSE OF SUCH CLAIMS, INCLUDING THE NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF CUSTOMER GROUP.**

C. **Third Party Claims**. Notwithstanding the foregoing, to the extent of its negligence, Company and Customer shall each indemnify, defend and hold harmless Claims, of every type and character, which are asserted by third parties for bodily injury, death or loss or destruction of property or interests in property in any manner caused by, directly or indirectly resulting from, incident to, connected with or arising out of the work to be performed, Services to be rendered or materials to be furnished by Customer. When personal injury, death or loss of or damage to property is the result of joint or concurrent negligence of Customer or Company, the indemnitor's duty of indemnification shall be in proportion to its allocable share of such negligence.

D. **Pollution**. Company agrees that it shall be totally responsible for, and shall protect, defend and indemnify, Customer for all losses, damages, claims, demands, costs, charges, and other expenses, including attorneys' fees, for any and all waste and/or hazardous substances which are in Company Group's exclusive possession and control and directly associated with Company Group's equipment and facilities, **EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF CUSTOMER GROUP.** Customer shall assume all responsibility for, including control and removal of, and shall protect, defend and indemnify Company Group from and against all Claims arising directly or indirectly *from all other pollution or contamination* which may occur during the conduct of operations hereunder, including, but not limited to, that which may result from fire, blowout, cratering, seepage or any other uncontrolled flow of oil, gas, water or other substance, **EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF COMPANY GROUP.**

E. **Wild Well**. Customer shall release Company Group of any liability for, and shall protect, defend and indemnify Company Group for any damages, expenses, losses, fines, penalties, costs, expert fees and attorneys' fees arising out of a fire, blow out, cratering, seepage or wild well, including regaining control thereof, debris removal and property restoration and remediation. **THIS INDEMNITY APPLIES EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.**

F. **Underground Damage**. Customer shall release Company Group of any liability for, and shall protect, defend and indemnify Company Group from and against any and all claims, liability and expenses resulting from operations related to the work under this agreement on account of injury to, destruction of, or loss or impairment of any property right in or to oil, gas or other mineral substance or water, if at the time of the act or omission causing such injury, destruction, loss or impairment said substance and not been reduced to physical possession above the surface of the earth, and for any loss or damage to any formation, strata, or reservoir beneath the surface of the earth. **THIS INDEMNITY APPLIES EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.**

G. **Compliance With Laws, Rules And Regulations**. Customer expressly agrees to comply with and abide by all of the laws of the united states and of the state in which goods are delivered or services are performed, including, but not limited to, OSHA, EPA and all rules and regulations now existing or that may be hereafter promulgated under and in accordance with any such law or laws, and **Customer hereby agrees to indemnify and hold Company Group harmless from any and all claims, demands, or damages incurred by Company Group arising from Customer Group's failure to comply with all laws and governmental regulations.**

H. **The foregoing indemnities set forth in these Terms and Conditions are intended to be enforceable against the parties hereto in accordance with the express terms and scope hereof notwithstanding Texas' Express Negligence Rule or any similar directive that would prohibit or otherwise limit indemnities because of the negligence (whether sole, concurrent, active or passive, ordinary or gross) or other fault or strict liability of Company or Customer.**

I. If a claim is asserted against one of the parties to this agreement which may give rise to a claim for indemnity against the other party hereto, the party against whom the claim is first asserted must notify the potential indemnitor in writing and give the potential indemnitor the right to defend or assist in the defense of the claim.

7. **Risk Of Loss**. a.Title and risk of loss shall pass to Customer upon delivery as specified in Article 9. Customer's receipt of any material delivered hereunder shall be an unqualified acceptance of, and a waiver by Customer of any and all claims with respect to, such material unless Customer gives Company written notice of claim within thirty (30) days after such receipt. Notwithstanding the foregoing, installation or use of materials or equipment shall unequivocally constitute irrevocable acceptance of said materials. Customer assumes all risk and liability for the results obtained by the use of any material or products delivered

ereunder in work performed by on behalf of Customer or in combination with other substances or products. No claim of any kind, whether as to material delivered or for non-delivery of material, and whether or ot based on negligence, shall be greater in amount than the purchase price of the material in respect of which such claim is made. **In no event shall Company be liable for special, indirect or consequential lamages, whether or not caused by or resulting from the negligence of Company.** b. For services, Company shall not be liable for loss or deterioration of any equipment and material of Customer under Company's control or stored on Company's premises after Company has completed its work if such loss or deterioration results from atmospheric condition, Act of God or other occurrence not within the easonable control of Company.

. **Termination**. Company reserves the right to terminate the order at issue, or any part hereof, solely for its convenience at any time without cause with notice to Customer. Company shall have the right to ancel any unfilled order without notice to Customer in the event that Customer becomes insolvent, adjudicated bankrupt, petitions for or consents to any relief under any bankruptcy reorganization statute, violates term of these Terms and Conditions, or is unable to meet its financial obligations in the normal course of business. In the event of such termination, Company shall immediately stop all work hereunder. Prior to elivery, Customer may terminate this order without cause upon thirty (30) day notice in writing to Company. In the event of such termination, Company at its sole option shall cease work up to thirty (30) days fter such notice. Upon the cessation of work, Customer agrees to pay Company a reasonable termination charge consisting of a percentage of the Invoice price, such percentage to reflect the value of the goods, ervices or work in progress completed upon the cessation of work. Customer shall also pay promptly to Company any costs incurred due to paying and settling claims of Company's vendors or subcontractors rising out of the termination of the order by Customer.

. **Delivery**. Unless different terms are provided on the face of this order, all items are sold FOB Company'smanufacturing facility in Bossier City, LA., and Customer shall bear the cost of transportation to any ther named destination. Upon notification of Company of delivery, Customer shall become liable and shall bear all risk of loss associated with the goods at issues regardless of whether the goods are at a ocation controlled by Company and whether or not caused by the negligence of Company. In the case of Customer pick-up, the truck furnished by Customer is the destination and Company's obligations egarding shipments are fulfilled when the goods are loaded on the truck. Items to be shipped to any other destination outside of the United States are sold FOB port of shipment (Customer will deliver and bear he cost of transportation to the named port and will bear the cost of transportation thereafter to the final destination). The means of shipment and carrier to the point at which Company's liability for transportation osts ceases shall be chosen by Company. Excess packing, marking, shipping, and transportation charges resulting from compliance with Customer's request shall be for Customer's account. Unless otherwise greed in writing, delivery time is not of the essence.

0. **Returns/Refund**. Within ninety (90) days of delivery, Customer has the option to return any non-defective goods (any goods found to be defective will be subject to the warranty and remedies expressed in aragraphs three (3) and four (4) above). Customer shall bear all costs of shipment and/or transportation for such return and risk of loss for the returned goods shall remain with Customer until re-delivered to Company's Yard. Customer shall receive a full refund for any returns, less a twenty percent (20%) restocking fee. Company at all times reserves the right to designate certain goods as non-refundable in Company's Sales Quote or Sales Order. In addition, any made-to-order , special order, and/or product manufactured to Customer specifications goods are NOT returnable.

1. **Delays**. If a specific shipping date is either not given or is estimated only, and is not promised on the face of this order or in a separate writing signed by Company, Company will not be responsible for delays filling this order nor liable for any loss or damages resulting from such delays. If a specific shipping date is promised, Company will not be liable for delays resulting from causes beyond Company's control, ncluding without limitation accidents to machinery, fire, flood, act of God or other casualty, vendor delays, labor disputes, labor shortages, lack of transportation facilities, priorities required by, requested by, or ranted for the benefit of any governmental agency, or restrictions imposed by law or governmental regulation.

2. **Limitation Of Damages**. **Notwithstanding any other provision contained herein, Company shall not be liable to Customer Group of any third party for consequential (whether direct or indirect lamages), indirect, incidental, special or punitive damages, howsoever arising, including, but not limited to loss of profits (whether direct or indirect damages), revenues, production or business pportunities, WHETHER OR NOT SUCH LOSSES ARE THE RESULT IN WHOLE OR IN PART FROM THE NEGLIGENCE (WHETHER SOLE, JOINT, CONCURRENT OR COMPARATIVE, ACTIVE OR PASSIVE, ORDINARY OR GROSS) OF COMPANY GROUP, OR ANY DEFECT IN THE PREMISES, PRE-EXISTING CONDITIONS, PATENT OR LATENT, BREACH OF STATUTORY DUTY, STRICT LIABILITY OR ANY OTHER THEORY OF LEGAL LIABILITY OF COMPANY GROUP (EXCLUDING ONLY LOSSES CAUSED BY THE WILLFUL MISCONDUCT OF COMPANY GROUP).**

3. **Security Interest**,. Customer grants Company, and Company reserves, a security interest, covering all Customer's obligations under these terms (including any liability for breach of Customer's obligations), nd applying to all of Customer's right, title, and interest in the Leased Equipment, together with all accessions thereto and any proceeds that may arise in connection with the sale or disposition thereof. Customer hall cooperate with Company in the filing of Financing Statements to perfect such security interest. Furthermore, Customer authorizes Company to execute and file Financing Statements without Customer's ignature in any jurisdiction in which such procedure is authorized. Customer warrants, covenants and agrees that it will not, without prior written consent of Company, sell, contract to sell, lease, encumber, or ispose of the Leased Equipment or any interest in it until all obligations secured by this security interest have been fully satisfied.

4. **Patent And Intellectual Property**. Company Retains its Intellectual Property: The sale of any products hereunder does not convey any license by implication, estoppel or otherwise covering combinations of he products with other equipment data or programs. Company retains the copyright in all documents, catalogs and plans supplied to Customer pursuant to or ancillary to the contract. Unless otherwise agreed in riting, Customer shall obtain no interest in any tooling used in the production of any Company product.

5. **Taxes**. Unless otherwise specifically provided for herein, Customer shall be liable for all federal, state, or local taxes or import duties assessed by any governmental entity of any jurisdiction in connection with he goods or services furnished hereunder.

6. **Deceptive Trade Practices**. Customer acknowledges the application of Section 17.45(4) of the Texas Deceptive Trade Practices Act (Texas Business Commission Code §17.41 et. seq.) (the "**Act**") to any ransaction contemplated hereby and represents that it is not a "consumer" for the purposes of the Act.

7. **No Waiver**. Failure to enforce any or all of the provisions in these Terms and Conditions in any particular instance shall not constitute or be deemed to constitute a waiver of or preclude subsequent nforcement of the same provision or any other provision of these Terms and Conditions. Should any provision of these Terms and Conditions be declared invalid or unenforceable all other provisions of these Terms and Conditions shall remain in full force and effect.

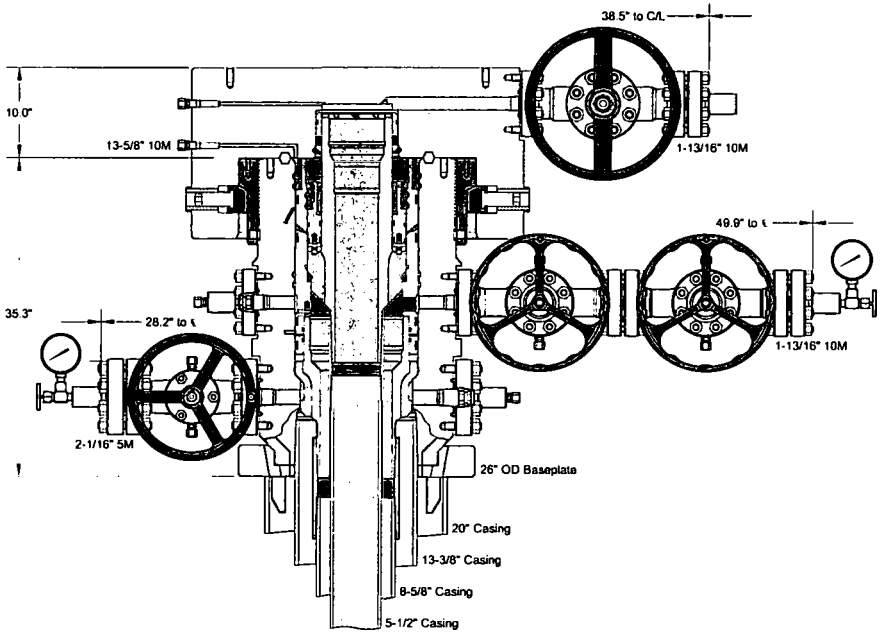
8. **Choice Of Law**. THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND SHALL BE PERFORMABLE IN HARRIS COUNTY, TEXAS. WITHOUT REGARD TO CONFLICTS OF LAW PRINCIPALS AND WAIVER OF SAME, EACH PARTY HERETO SUBMITS TO THE JURISDICTION OF THE COURTS OF THE STATE OF TEXAS IN HARRIS COUNTY, TEXAS AND THE FEDERAL COURTS IN AND FOR THE SOUTHERN DISTRICT OF TEXAS SITTING IN HOUSTON, TEXAS IN CONNECTION WITH ANY DISPUTE ARISING UNDER THIS AGREEMENT OR ANY DOCUMENT OR INSTRUMENT ENTERED INTO IN CONNECTION HEREWITH.

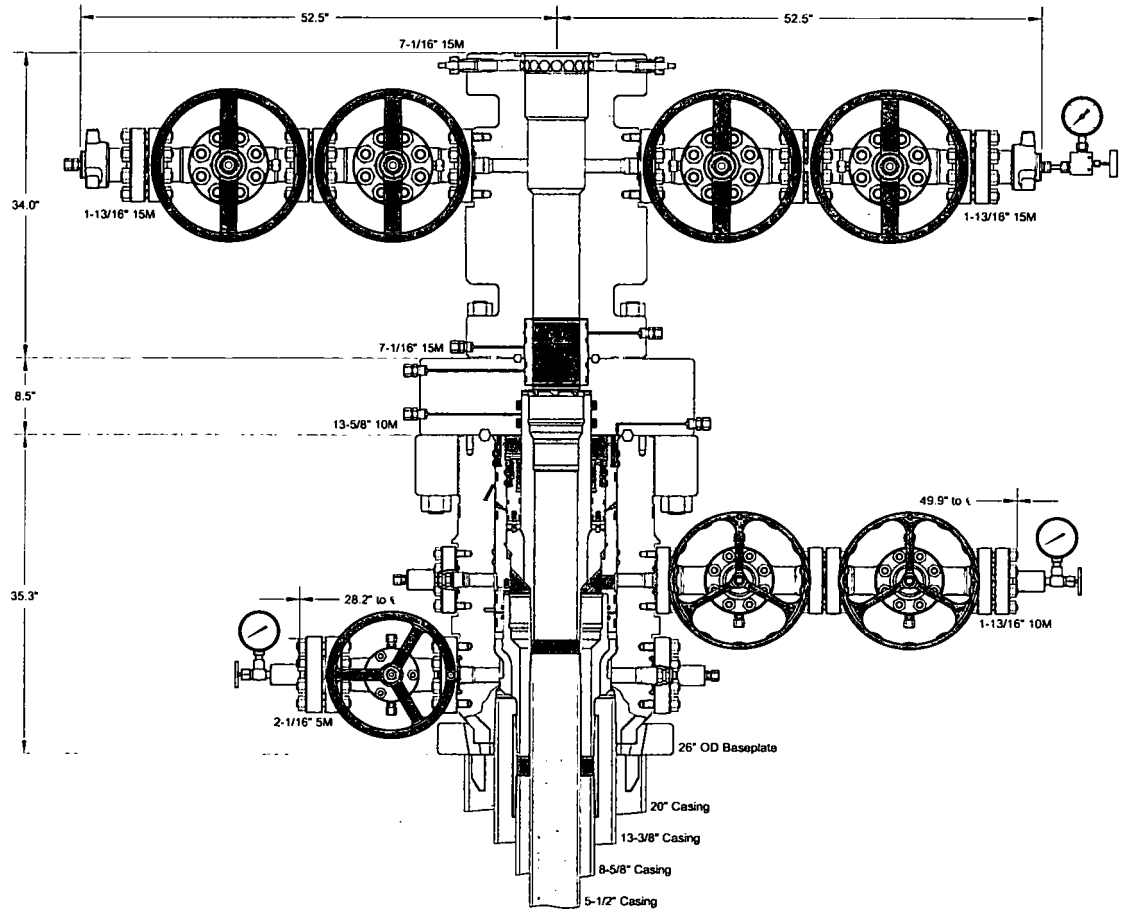
9. **Authority**. Customer warrants and represents that the individual receiving this order at issue on behalf of Customer has the authority to enter into these Terms and Conditions on behalf of Customer, and that pon receipt these Terms and Conditions shall be binding upon Customer.

0. **Force Majeure**. If Company is unable to carry out its obligations hereunder by reason of force majeure, then upon Company's giving of notice and reasonably full particulars of such force majeure in writing to Customer, Company's obligations that are affected by force majeure shall be suspended during the continuance of the force majeure and Company shall not be liable to Customer for any damages incurred by the Customer as a result thereof.

1. **Confidentiality**. Customer acknowledges the highly secret and valuable nature of all proprietary inventions, methods, processes, designs, know-how, and trade secrets embodied in the Company's quipment, products and services and its components (hereinafter referred to as "**Confidential Data**"). Accordingly, Customer agrees not to disclose or use any Confidential Data. Customer further agrees to take ny and all necessary precautions to prevent disclosure of the Confidential Data associated with the Company's equipment, products and services and components thereof to persons other than those employees f Customer for whom such disclosure is necessary for performance of the work hereunder.

2. **Compliance**. Customer expressly agrees to comply with and abide by, all of the laws of the United States and of the State of Texas, including, but not limited to, OSHA, EPA and all rules and regulations now existing or that may be hereafter promulgated under and in accordance with any such law or laws, and hereby agrees to indemnify and hold Company harmless from any and all claims, demands, or damages ncurred by Company arising from Customer's failure to comply with all laws and governmental regulations. The indemnities in this paragraph shall be in addition to any other indemnity obligations between Customer and Company, including any other indemnity obligations contained herein.





ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC

13-3/8" x 8-5/8" x 5-1/2" 10M MBU-3T Wellhead System
With 8-5/8" And 5-1/2" Mandrel Casing Hangers
And 7-1/16" 15M x 7-1/16" 15M CTH-EN Tubing Head

DEVON ENERGY CORPORATION
DELAWARE BASIN

DRAWN	DLE	01NOV18
APPRV		

DRAWING NO. HBE0000013

CASING PERFORMANCE Data Sheet

vallourec

O.D.	PE LB/FT	T&C LB/FT	GRADE
8.625	31.13	32.00	P110EC

Grade - Material Properties

Minimum Yield Strength:	125	ksi
Maximum Yield Strength:	140	ksi
Minimum Tensile Strength:	135	ksi

Pipe Body Data (PE)

Geometry

Nominal ID:	7.921	inch
Wall:	0.352	inch
Min. Wall % (API = 87.5%):	87.5	%
API Drift:	7.796	inch
Special Drift*:	7.875	inch

Performance

Pipe Body Yield Strength:	1,144	kips
Collapse Resistance:	3,470	psi
Internal Yield Pressure (*API Historical*):	8,930	psi

API Connection Data

SC Internal Pressure:	8,930	psi
SC Joint Strength:	793	kips
LC Internal Pressure:	8,930	psi
LC Joint Strength:	887	kips
BC Internal Pressure:	8,930	psi
BC Joint Strength:	1,121	kips

SC Torque (ft-lbs)

minimum:	optimum:	maximum:
5,950	7,933	9,916

LC Torque (ft-lbs)

minimum:	optimum:	maximum:
6,651	8,868	11,085

*Special drift must be ordered or API drift will be used for actual drifting of product.

**If above API connections do not suit your needs, VAM® premium connections are available up to 100% of pipe body ratings.

Lusitano 27-34 Fed Com 736H

1. Geologic Formations

TVD of target	11788	Pilot hole depth	N/A
MD at TD:	21753	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	858		
Top of Salt	1135	Salt	
Base of Salt	4260		
Delaware Group	4295	Water	
Bone Spring	8230	Oil/Gas	
Wolfcamp	11660	Target Zone	
Rustler	858		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program (Primary Design)

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Wt (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
14.75"	0	903	10.75"	40.5	J-55	STC	1.125	1.25	1.6
9.875"	0	11219 MD / 11215 TVD	7.625"	29.7	P110	BTC	1.125	1.25	1.6
8.75"	11219 MD / 12215 TVD	12119 MD / 11788 TVD				Flushmax III			
6.75"	0	TD	5.5"	20	P110	Vam SG	1.125	1.25	1.6
			BLM Minimum Safety Factor				1.125	1.00	1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Must have table for contingency casing
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.
- A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.

Casing Program (Alternate Design)

Hole Size	Casing Interval From	Casing Interval To	Csg. Size	Wt. (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
17.5"	0	903	13.375"	48	H-40	STC	1.125	1.25	1.6
10.625"	0	5000 MD /	8.625"	32	P110EC	BTC	1.125	1.25	1.6

		5000 TVD							
9.875"	5000 MD / 5000 TVD	12119 MD / 11788 TVD				VAM FJL			
7.875"	0	TD	5.5"	20	P110	BTC	1.125	1.25	1.6
				BLM Minimum Safety Factor			1.125	1.00	1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Must have table for contingency casing
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int 1 casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.
- A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.
- Variance is requested for collapse rating on intermediate casing. Operator will keep pipe full while running casing. No losses are expected in subsequent hole section.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	
Is 2nd string set 100' to 600' below the base of salt?	
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program (Primary Design)

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	599	Surf	13.2	1.33	Lead: Class C Cement + additives
Int 1	1197	Surf	9	3.31	Lead: Class C Cement + additives
	747	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Int 1 Two Stage w DV @ ~4500	617	Surf	9	3.31	1st stage Lead: Class C Cement + additives
	55	500' above shoe	13.2	1.33	1st stage Tail: Class H / C + additives
	600	Surf	9	3.31	2st stage Lead: Class C Cement + additives
	55	500' above DV	13.2	1.33	2st stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	13.2	1.33	Squeeze Lead: Class C Cement + additives
	1197	Surf	9	3.31	Lead: Class C Cement + additives
	747	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	641	500' tieback	13.2	1.33	Lead: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

Cementing Program (Alternate Design)

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	768	Surf	13.2	1.33	Lead: Class C Cement + additives
Int 1	1293	Surf	9	3.31	Lead: Class C Cement + additives
	831	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Int 1 Two Stage w DV @ ~4500	653	Surf	9	3.31	1st stage Lead: Class C Cement + additives
	55	500' above shoe	13.2	1.33	1st stage Tail: Class H / C + additives
	625	Surf	9	3.31	2st stage Lead: Class C Cement + additives
	55	500' above DV	13.2	1.33	2st stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	13.2	1.33	Squeeze Lead: Class C Cement + additives
	1293	Surf	9	3.31	Lead: Class C Cement + additives
	831	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	1172	500' tieback	13.2	1.33	Lead: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

4. Pressure Control Equipment (Three String Design)

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-5/8"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
Production	13-5/8"	10M	Annular (5M)	X	100% of rated working pressure
			Blind Ram	X	10M
			Pipe Ram		
			Double Ram	X	
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other *		

N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.
Y	A variance is requested to run a 5M annular on a 10M system.

5. Mud Program (3 String Design)

Depth		Type	Weight (ppg)	Vis	Water Loss
From	To				
0	903	FW Gel	8.5 - 9	28-34	N/C
903	12119	DBE / Cut Brine	9 - 10	28-34	N/C
12119	TD	OBM	10-10.5	28-34	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring

6. Logging and Testing Procedures

Logging, Coring and Testing.	
x	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned		Interval
	Resistivity	Int. shoe to KOP
	Density	Int. shoe to KOP
X	CBL	Production casing
X	Mud log	Intermediate shoe to TD
	PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6436 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H2S) monitors will be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.	
N	H2S is present
Y	H2S Plan attached

8. Other facets of operation

Is this a walking operation? Potentially

1. If operator elects, drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
2. The drilling rig will then batch drill the intermediate sections and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
3. The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Potentially

1. Spudder rig will move in and drill surface hole.
    a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.
2. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
3. The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
4. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
5. Spudder rig operations is expected to take 4-5 days per well on a multi well pad.
6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.

7. Drilling operations will be performed with the drilling rig. At that time an approved BOP stack will be nippled up and tested on the wellhead before drilling operations commences on each well.
    a. The NMOCD will be contacted / notified 24 hours before the drilling rig moves back on to the pad with the pre-set surface casing.

Attachments
_x_ Directional Plan
___ Other, describe

Continental CONTITECH

Fluid Technology

ContiTech Beattie Corp.
Website: www.contitechbeattie.com

Monday, June 14, 2010

RE: Drilling & Production Hoses
Lifting & Safety Equipment

To Helmerich & Payne,

A Continental ContiTech hose assembly can perform as intended and suitable for the application regardless of whether the hose is secured or unsecured in its configuration. As a manufacturer of High Pressure Hose Assemblies for use in Drilling & Production, we do offer the corresponding lifting and safety equipment, this has the added benefit of easing the lifting and handling of each hose assembly whilst affording hose longevity by ensuring correct handling methods and procedures as well as securing the hose in the unlikely event of a failure; but in no way does the lifting and safety equipment affect the performance of the hoses providing the hoses have been handled and installed correctly it is good practice to use lifting & safety equipment but not mandatory

Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

ContiTech Beattie is part of the Continental AG Corporation and can offer the full support resources associated with a global organization.

Best regards,

Robin Hodgson
Sales Manager
ContiTech Beattie Corp

ContiTech Beattie Corp,
11535 Brittmoore Park Drive,
Houston, TX 77041
Phone: +1 (832) 327-0141
Fax: +1 (832) 327-0148
www.contitechbeattie.com

RIG 212

PHOENIX

QUALITY DOCUMENT

PHOENIX RUBBER INDUSTRIAL LTD.

6728 Szeged, Budapesti út 10. Hungary • H-6701 Szeged, P. O. Box 152
Phone: (3662) 566-737 • Fax: (3662) 566-738

SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44. Hungary • H-1440 Budapest, P. O. Box 26
Phone: (361) 456-4200 · Fax: (361) 217-2972, 456-4273 · www.taurusemerge.hu

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 552
PURCHASER: Phoenix Beattie Co.				P.O. N°: 1519FA-871
PHOENIX RUBBER order N°: 170466		HOSE TYPE: 3" ID		Choke and Kill Hose
HOSE SERIAL N°: 34128		NOMINAL / ACTUAL LENGTH:		11,43 m
W.P. 68,96 MPa	10000 psi	T.P. 103,4 MPa	15000 psi	Duration: 60 min.

Pressure test with water at ambient temperature

See attachment. (1 page)

↑ 10 mm = 10 Min.

→ 10 mm = 25 MPa

COUPLINGS

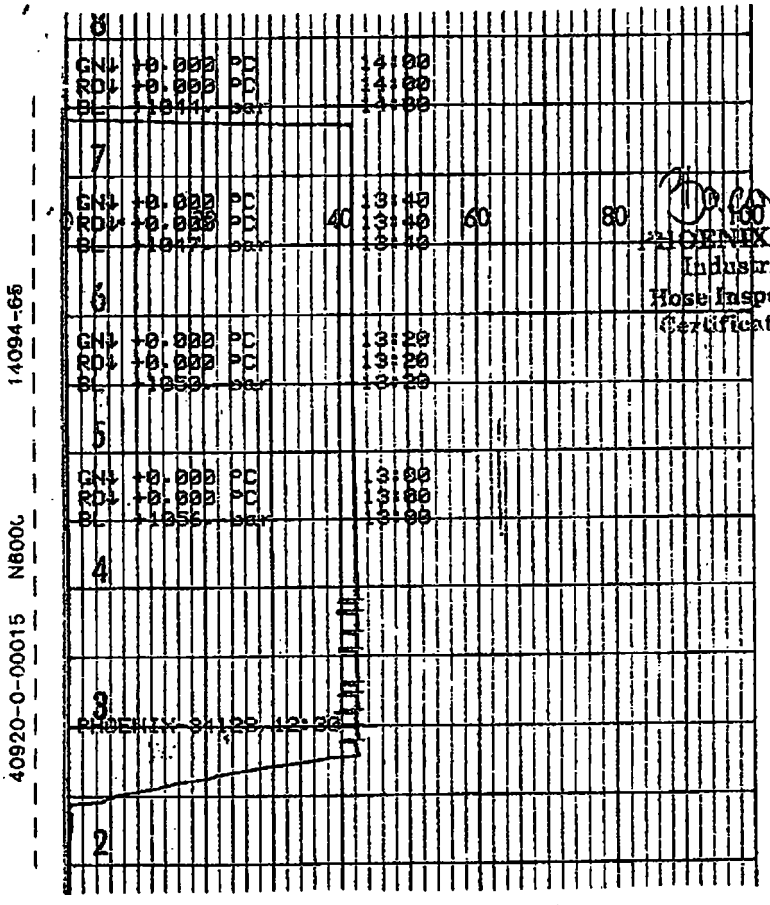
Type	Serial N°	Quality	Heat N°
3" coupling with 4 1/16" Flange end	720 719	AISI 4130 AISI 4130	C7626 47357

API Spec 16 C
Temperature rate:"B"

All metal parts are flawless

WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.

Date:	Inspector	Quality Control
29. April. 2002.		PHOENIX RUBBER Industrial Ltd. Hose Inspection and Certification Dept. VERIFIED TRUE COPY PHOENIX RUBBER Q.C.



PHOENIX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

VERIFIED TRUE COPY
PHOENIX RUBBER I.C.

APD ID: 10400034289 **Submission Date:** 09/24/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H

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

Show Final Text

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Lusitano_27_34_Fed_Com_736H_Ex_Access_Rd_20180919120924.pdf

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

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Lusitano_27_34_Fed_Com_736H_Access_Rds_20180919120958.pdf

New road type: COLLECTOR,RESOURCE

Length: 1952 Feet **Width (ft.):** 30

Max slope (%): 6 **Max grade (%):** 4

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 20

New road access erosion control: WATER DRAINAGE DITCH

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Access surfacing type: GRAVEL

Access topsoil source: ONSITE

Access surfacing type description:

Access onsite topsoil source depth: 6

Offsite topsoil source description:

Onsite topsoil removal process: SEE INTERIM RECLAMATION DIAGRAM

Access other construction information:

Access miscellaneous information:

Number of access turnouts: **Access turnout map:**

Drainage Control

New road drainage crossing: CULVERT

Drainage Control comments: N/A

Road Drainage Control Structures (DCS) description: N/A

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:

Lusitano_27_34_Fed_Com_736H_1mile_Map_20180919121044.pdf

Existing Wells description:

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

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: All flowlines will be buried going to the Lusitano 27 CTB 6 (also known as CDU CTB 6).

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 736H

Water source use type: STIMULATION **Water source type:** RECYCLED

Describe type:

Source latitude: **Source longitude:**

Source datum:

Water source permit type: OTHER

Source land ownership: FEDERAL

Water source transport method: PIPELINE,TRUCKING

Source transportation land ownership: FEDERAL

Water source volume (barrels): 500000 **Source volume (acre-feet):** 64.44655

Source volume (gal): 21000000

Water source and transportation map:

Lusitano_27_34_Fed_Com_736H_Wtr_Xfr_Map_20180919121134.PDF

Water source comments: The attached Water Transfer Map is a proposal only and the final route and documentation will be provided by a Devon contractor prior to installation. When available Devon will always follow existing disturbance.

New water well? NO

New Water Well Info

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

Well target aquifer:

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

Aquifer comments:

Aquifer documentation:

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

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

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

Drilling method: **Drill material:**

Grout material: **Grout depth:**

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

Well Production type: **Completion Method:**

Water well additional information:

State appropriation permit:

Additional information attachment:

Section 6 - Construction Materials

Construction Materials description: Dirt fill and caliche will be used to construct well pad

Construction Materials source location attachment:

Lusitano_27_34_Fed_Com_736H_Caliche_Pit_20180919121200.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: DRILL CUTTINGS

Amount of waste: 1236 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

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

Disposal type description:

Disposal location description: ALL CUTTINGS WILL BE DISPOSED OF AT R360, SUNDANCE OR EQUIVALENT.

Waste type: COMPLETIONS/STIMULATION

Waste content description: Flow back water during completion operations.

Amount of waste: 3000 barrels

Waste disposal frequency : One Time Only

Safe containment description: N.A

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Various disposal locations in Lea and Eddy counties.

Waste type: PRODUCED WATER

Waste content description: Produced water during production operations. This amount is a daily average during the first year of production (BWPD).

Amount of waste: 1000 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

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

Disposal type description:

Disposal location description: One of three company owned SWD facilities in the area: CDU 181, CDU 89, CDU 84.

Waste type: FLOWBACK

Waste content description: Produced water during flowback operations. This amount is a daily average during flowback (BWPD).
Amount of waste: 1500 barrels

Waste disposal frequency : Daily

Safe containment description: N/A

Safe containmant attachment:

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

Disposal type description:

Disposal location description: One of three company owned SWD facilities in the area: CDU 181, CDU 89, CDU 84.

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? NO

Description of cuttings location

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

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

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

WCuttings area liner

Cuttings area liner specifications and installation description

Section 8 - Ancillary Facilities

Are you requesting any Ancillary Facilities?: NO

Ancillary Facilities attachment:

Comments:

Section 9 - Well Site Layout

Well Site Layout Diagram:

Lusitano_27_34_Fed_Com_736H_Rig_Layout_20180919121331.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance **Multiple Well Pad Name:** LUSITANO 27 WELLPAD

Multiple Well Pad Number: 5

Recontouring attachment:

Lusitano_27_34_Fed_Com_736H_Reclamation_20180919121418.pdf

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.

Well pad proposed disturbance (acres): 3.471
Road proposed disturbance (acres): 1.344
Powerline proposed disturbance (acres): 0.11
Pipeline proposed disturbance (acres): 0.978
Other proposed disturbance (acres): 0

Total proposed disturbance: 5.903

Well pad interim reclamation (acres): 1.479
Road interim reclamation (acres): 0
Powerline interim reclamation (acres): 0
Pipeline interim reclamation (acres): 0
Other interim reclamation (acres): 0

Total interim reclamation: 1.479

Well pad long term disturbance (acres): 1.992
Road long term disturbance (acres): 1.344
Powerline long term disturbance (acres): 0.11
Pipeline long term disturbance (acres): 0.978
Other long term disturbance (acres): 0

Total long term disturbance: 4.424

Disturbance Comments:

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:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? 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: JACOB **Last Name:** OCHOA

Phone: (575)748-9934 **Email:** jacob.ochoa@dvn.com

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: N/A

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

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: LUSITANO 27-34 FED COM **Well Number:** 736H

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

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:**

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

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: LUSITANO 27-34 FED COM **Well Number:** 736H

Disturbance type: PIPELINE

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

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:**

Section 12 - Other Information

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

ROW Type(s):

ROW Applications

SUPO Additional Information: GAS & WTR BATTERY CONNECT CTB 6 ELECTRIC FLOWLINE

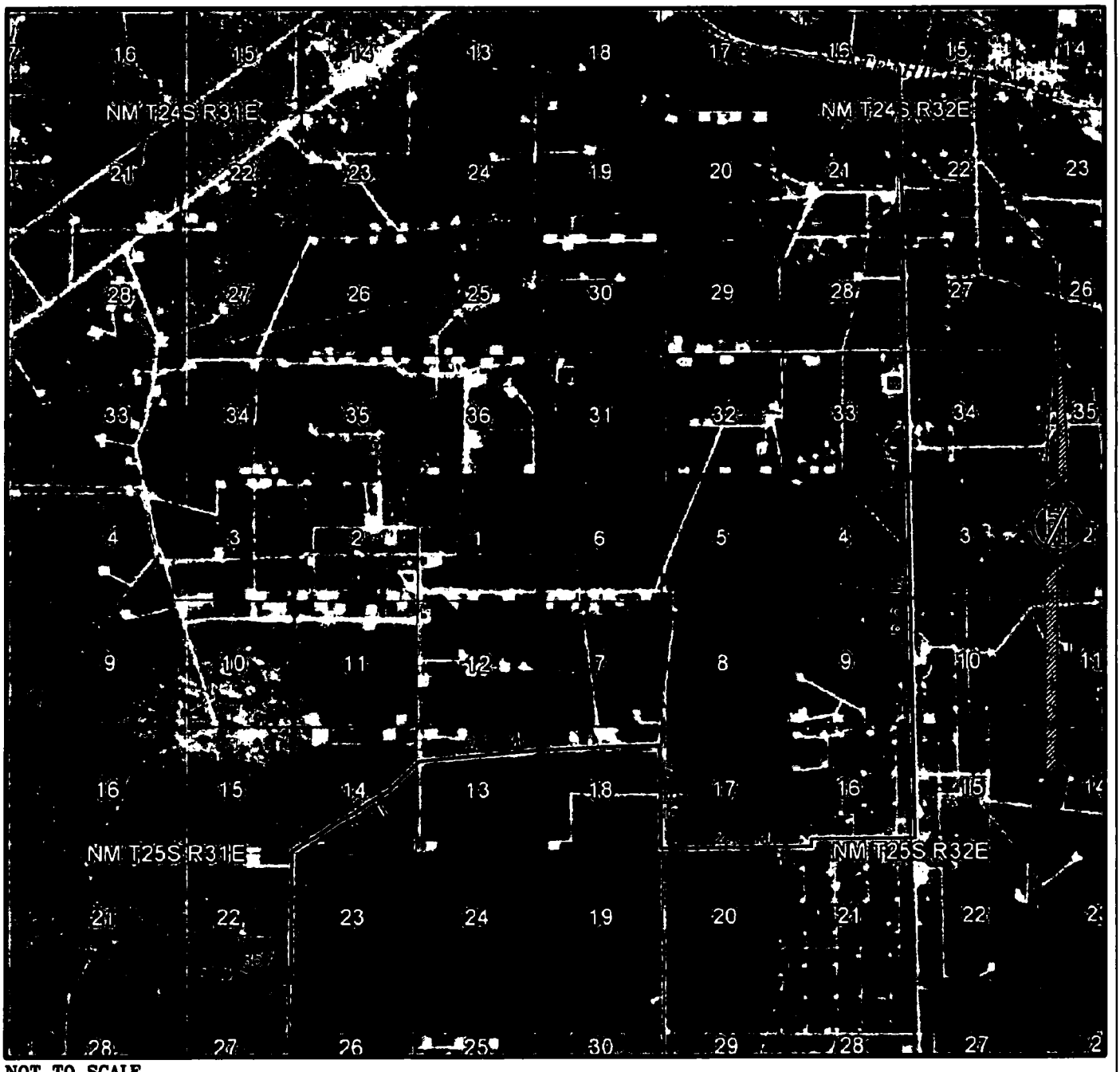
Use a previously conducted onsite? YES

Previous Onsite information: 6/1/2016 - Cotton Draw Unit MDP 1

Other SUPO Attachment

Lusitano_27_34_Fed_Com_736H_Gas_Wtr_Battery_Connect_20180919121722.pdf
Lusitano_27_34_Fed_Com_736H_CDU_27_27_CTB_6_20180919121737.pdf
Lusitano_27_34_Fed_Com_736H_Electric_20180919130602.pdf
Lusitano_27_34_Fed_Com_736H_Flowline_20180919130626.pdf

SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
ACCESS AERIAL ROUTE MAP



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 736H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1210 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

SEPTEMBER 13, 2018

SURVEY NO. 6440A

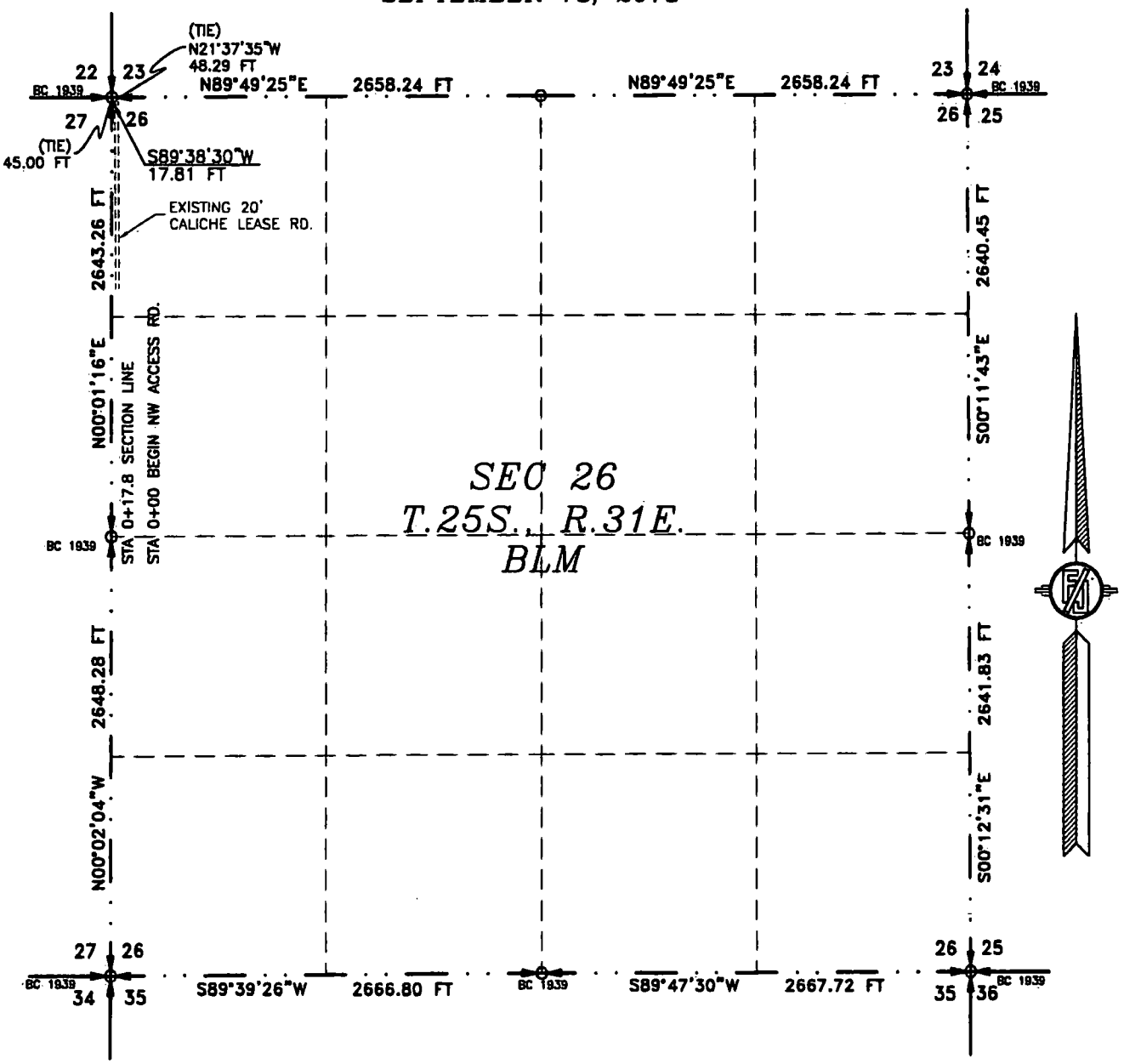
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 336H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 13, 2018



SEE NEXT SHEET (2-4) FOR DESCRIPTION

1000 0 1000
Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, I THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 13 DAY OF SEPTEMBER 2018

FILIMON F. JARAMILLO, PLS. 12797
301 SOUTH CANAL
(575) 234-3341

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 1-4

SURVEY NO. 6440A

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 13, 2018

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

NORTHWEST ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NW/4 NW/4 OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N21°37'35"W, A DISTANCE OF 48.29 FEET;
THENCE S89°38'30"W A DISTANCE OF 17.81 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 45.00 FEET;

SAID STRIP OF LAND BEING 17.81 FEET OR 1.08 RODS IN LENGTH, CONTAINING 0.012 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NW/4 17.81 L.F. 1.08 RODS 0.012 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 21 DAY OF SEPTEMBER 2018

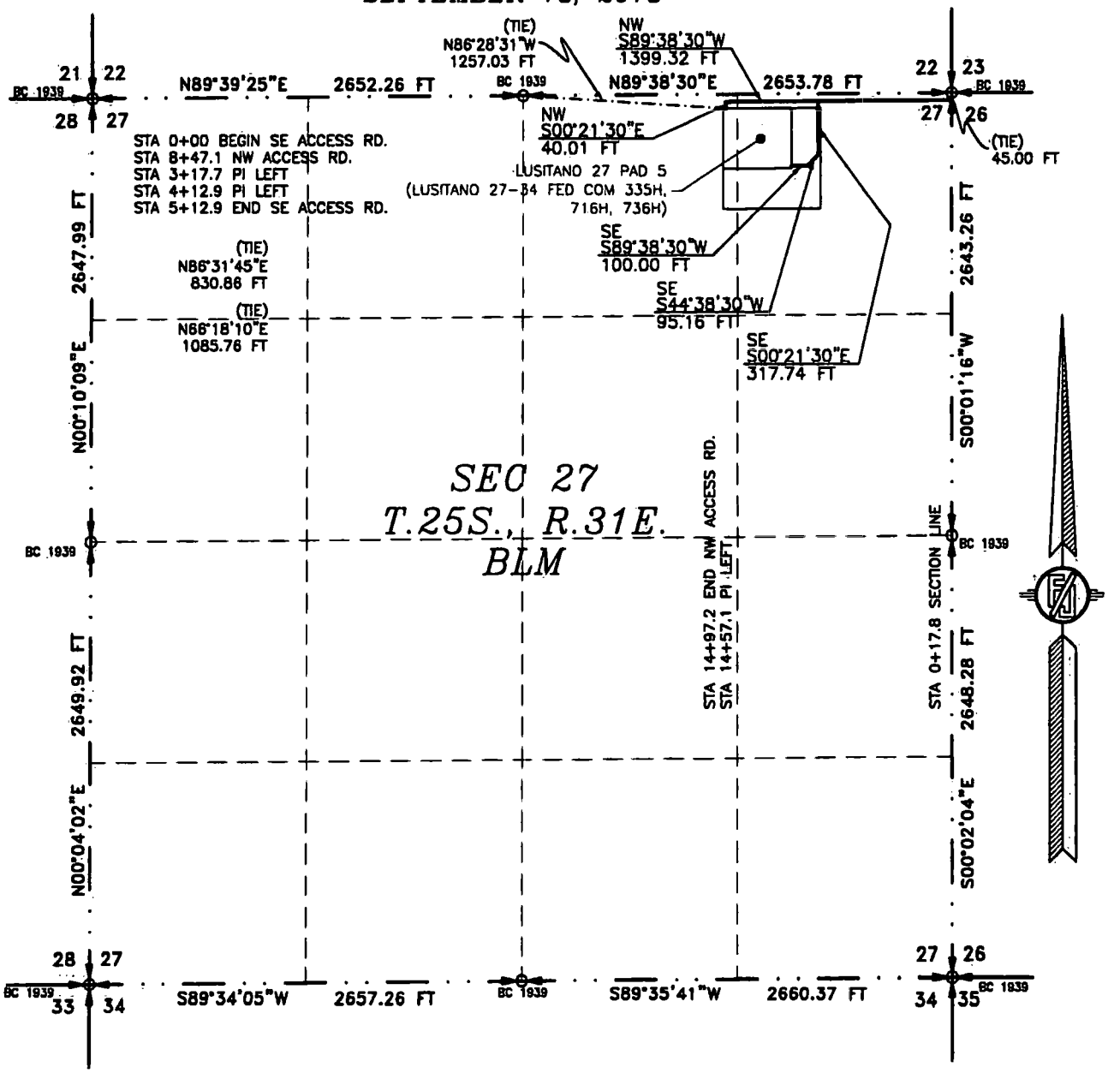
FILIMON F. JARAMILLO PLS 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 13, 2018



SEE NEXT SHEET (4-4) FOR DESCRIPTION

1000 0 1000

Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 21 DAY OF SEPTEMBER 2018

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO, PLS 12797

SHEET: 3-4

SURVEY NO. 6440A

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
SEPTEMBER 13, 2018

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

NORTHWEST ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 45.00 FEET;
THENCE S89°38'30"W A DISTANCE OF 1399.32 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S00°21'30"E A DISTANCE OF 40.01 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°28'31"W, A DISTANCE OF 1257.03 FEET;

SAID STRIP OF LAND BEING 1439.33 FEET OR 87.23 RODS IN LENGTH, CONTAINING 0.991 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	1326.90 L.F.	80.42 RODS	0.914 ACRES
NW/4 NE/4	112.43 L.F.	6.81 RODS	0.077 ACRES

SOUTHEAST ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°31'45"E, A DISTANCE OF 830.86 FEET;
THENCE S00°21'30"E A DISTANCE OF 317.74 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S44°38'30"W A DISTANCE OF 95.16 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S89°38'30"W A DISTANCE OF 100.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N66°18'10"E, A DISTANCE OF 1085.76 FEET;

SAID STRIP OF LAND BEING 512.90 FEET OR 31.08 RODS IN LENGTH, CONTAINING 0.353 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	512.90 L.F.	31.08 RODS	0.353 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 23 DAY OF SEPTEMBER 2018

FILIMON F. JARAMILLO, PLS# 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 4-4

SURVEY NO. 6440A

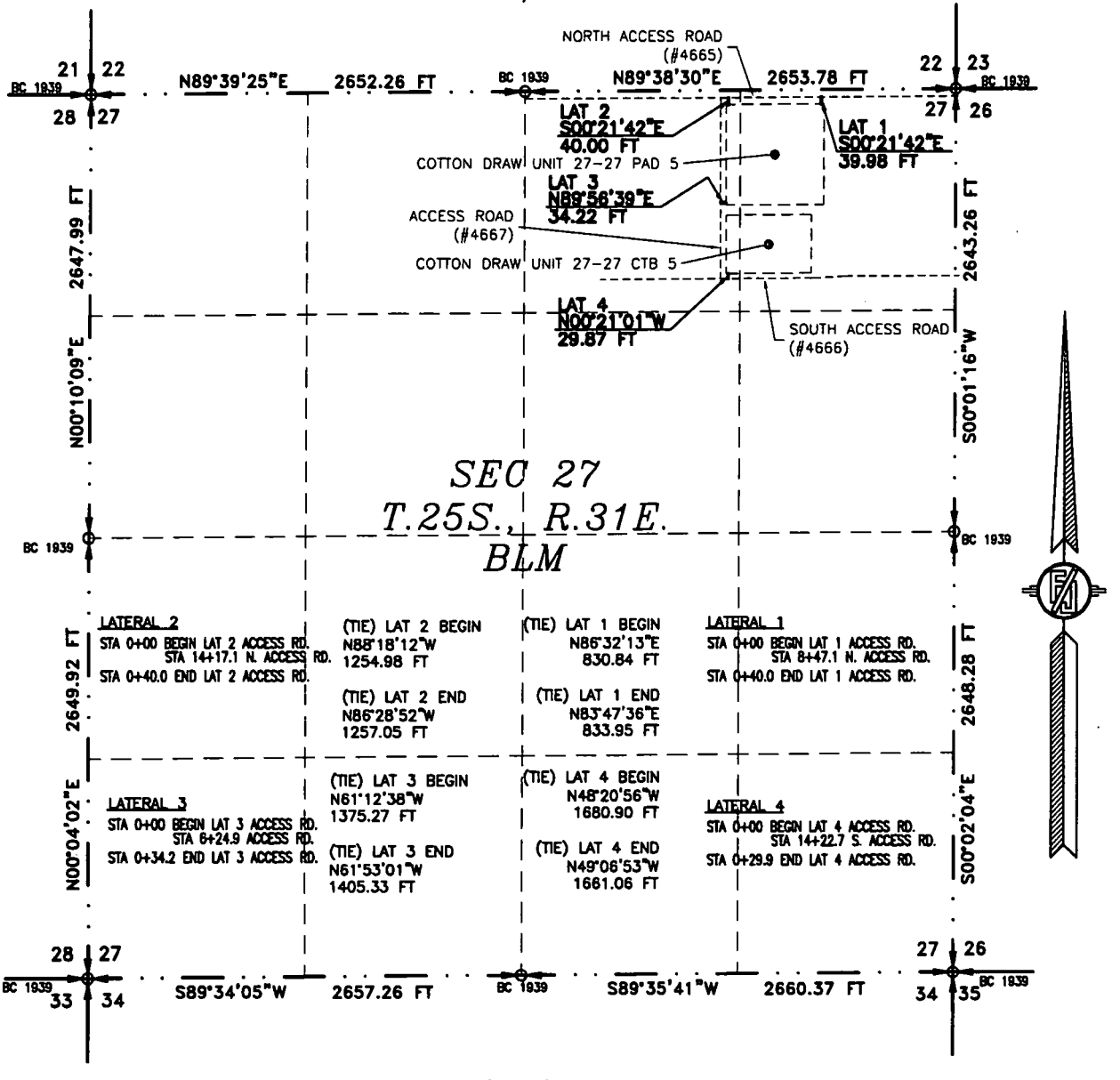
MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 5 & TO THE COTTON DRAW UNIT 27-27 CTB 5

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SEE NEXT SHEET (2-4) FOR DESCRIPTION

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Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 10TH DAY OF MAY 2016

FILIMON F. JARAMILLO NEW MEXICO 12797

FILIMON F. JARAMILLO PLS. 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 5 & TO THE COTTON DRAW UNIT 27-27 CTB 5

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

LATERAL 1 ACCESS ROAD
BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°32'13"E, A DISTANCE OF 830.84 FEET;
THENCE S00°21'42"E A DISTANCE OF 39.98 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N83°47'36"E, A DISTANCE OF 833.95 FEET;

SAID STRIP OF LAND BEING 39.98 FEET OR 2.42 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4 39.98 L.F. 2.42 RODS 0.028 ACRES

LATERAL 2 ACCESS ROAD
BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N88°18'12"W, A DISTANCE OF 1254.98 FEET;
THENCE S00°21'42"E A DISTANCE OF 40.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°28'52"W, A DISTANCE OF 1257.05 FEET;

SAID STRIP OF LAND BEING 40.00 FEET OR 2.42 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 40.00 L.F. 2.42 RODS 0.028 ACRES

LATERAL 3 ACCESS ROAD
BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N61°12'38"W, A DISTANCE OF 1375.27 FEET;
THENCE N89°56'39"E A DISTANCE OF 34.22 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N61°53'01"W, A DISTANCE OF 1405.33 FEET;

SAID STRIP OF LAND BEING 34.22 FEET OR 2.07 RODS IN LENGTH, CONTAINING 0.024 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 34.22 L.F. 2.07 RODS 0.024 ACRES

LATERAL 4 ACCESS ROAD
BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N48°20'56"W, A DISTANCE OF 1680.90 FEET;
THENCE N00°21'01"W A DISTANCE OF 29.87 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N49°06'53"W, A DISTANCE OF 1661.06 FEET;

SAID STRIP OF LAND BEING 29.87 FEET OR 1.81 RODS IN LENGTH, CONTAINING 0.021 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 29.87 L.F. 1.81 RODS 0.021 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 12 DAY OF MAY 2016

FILIMON F. JARAMILLO, PLS 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

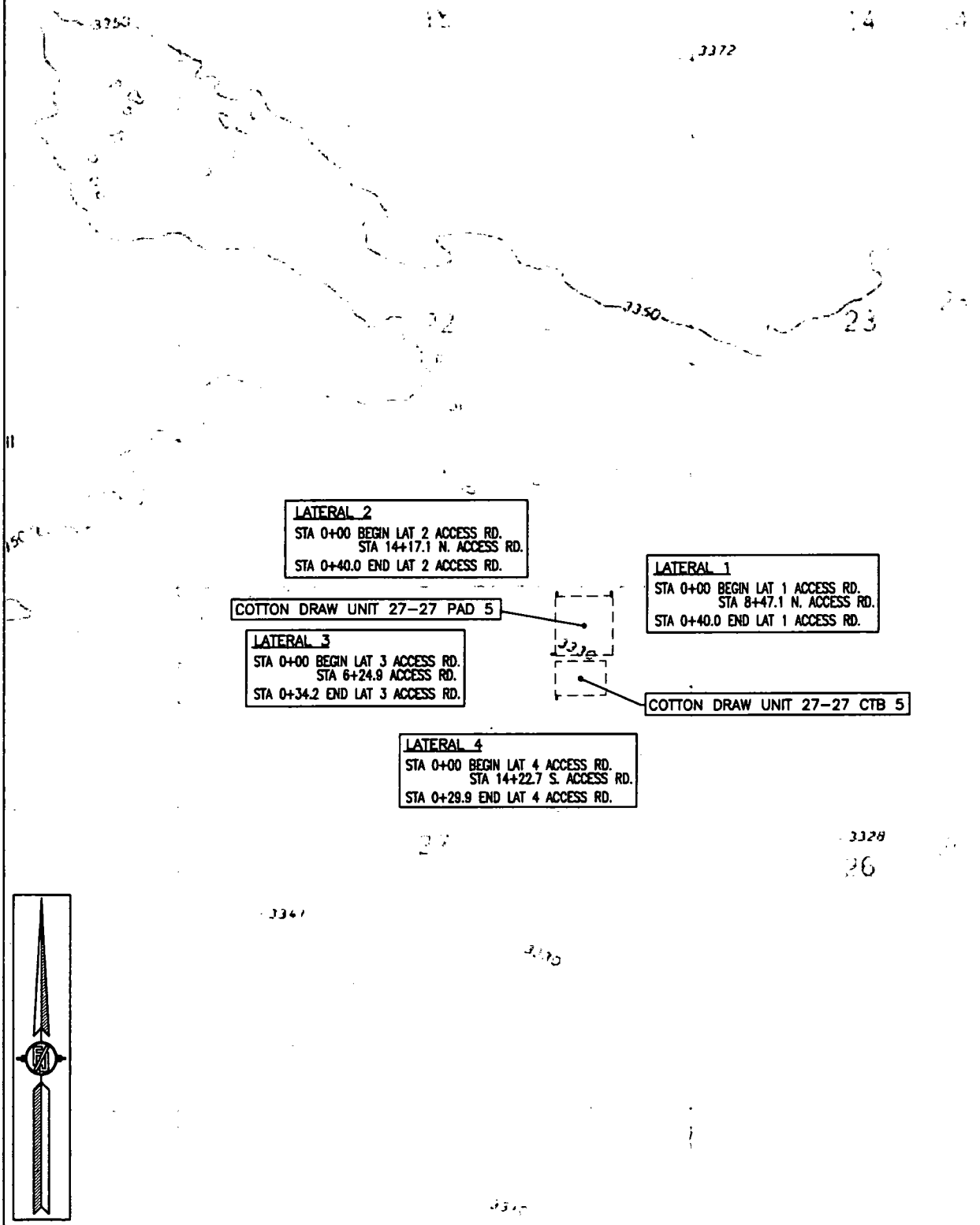
SURVEY NO. 4668

ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 5 & TO THE COTTON DRAW UNIT 27-27 CTB 5

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SHEET: 3-4

SURVEY NO. 4668

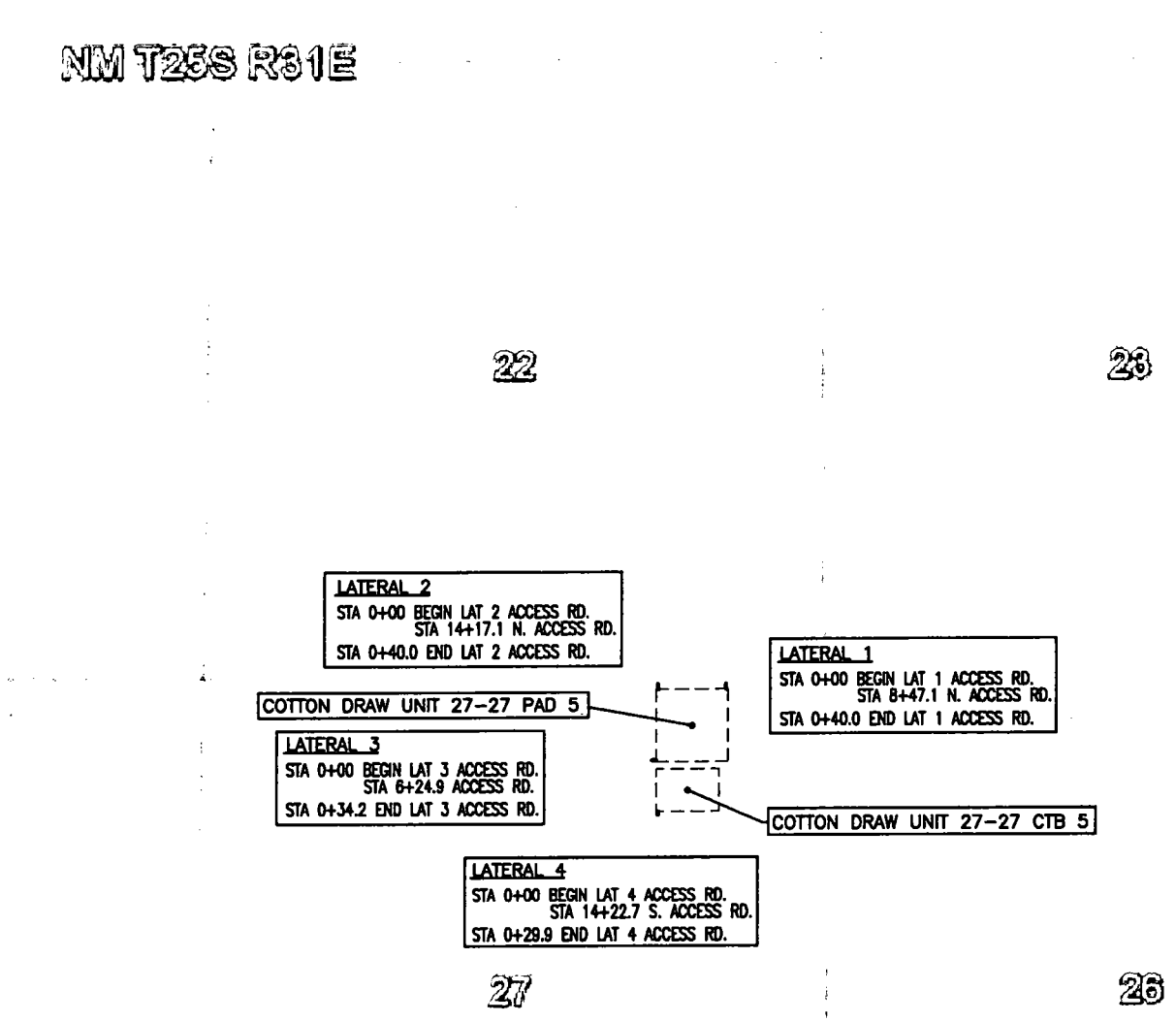
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 5 & TO THE COTTON DRAW UNIT 27-27 CTB 5

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SHEET: 4-4 SURVEY NO. 4668

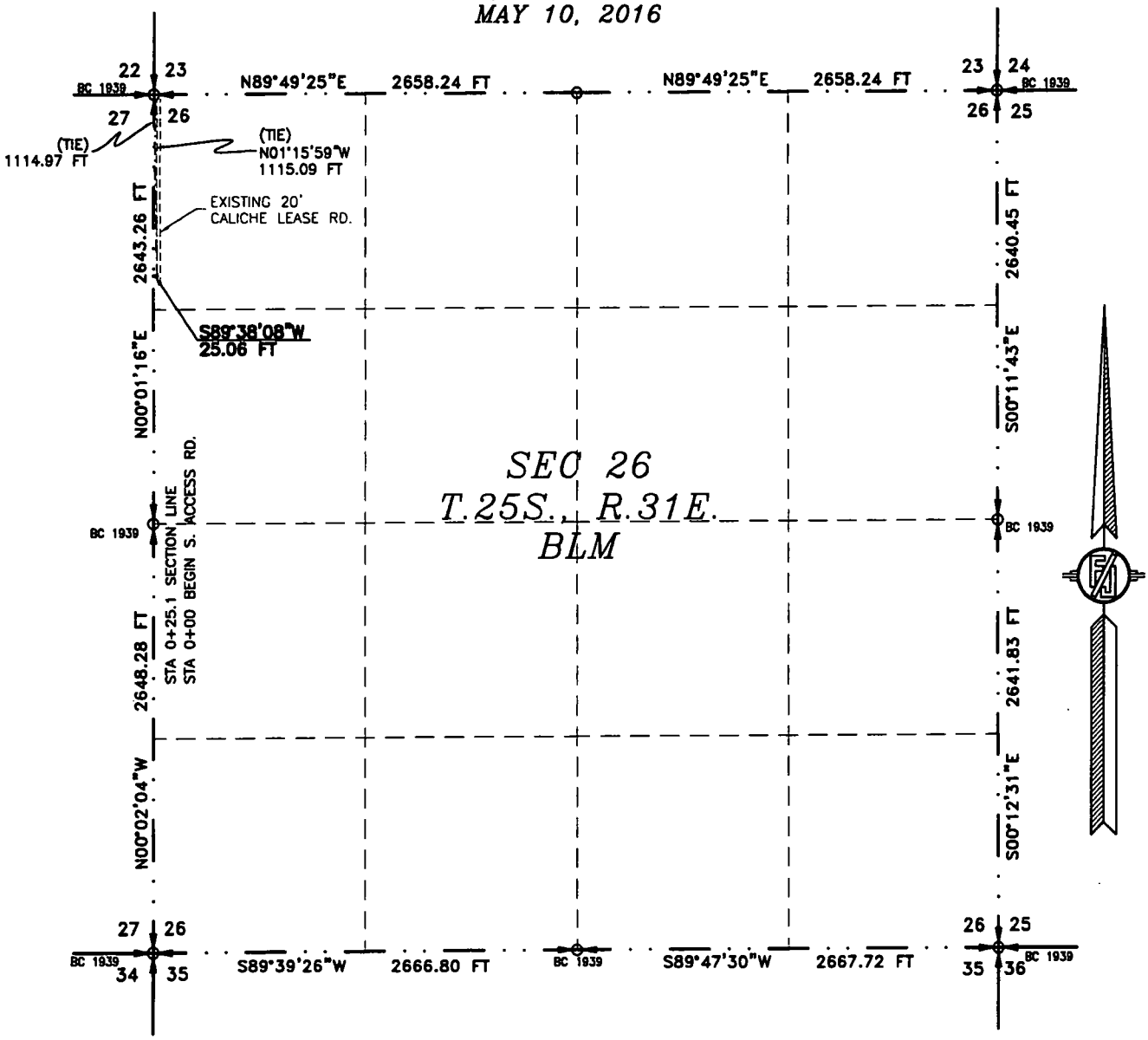
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE COTTON DRAW UNIT 27-34 CTB 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SEE NEXT SHEET (2-6) FOR DESCRIPTION

1000 0 1000
Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 11 DAY OF MAY 2016

FILIMON F. JARAMILLO PLS 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO PLS 12797
301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SHEET: 1-6

SURVEY NO. 4666

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE COTTON DRAW UNIT 27-34 CTB 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE NW/4 NW/4 OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N01°15'59"W, A DISTANCE OF 1115.09 FEET;
THENCE S89°38'08"W A DISTANCE OF 25.06 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 1114.97 FEET;

SAID STRIP OF LAND BEING 25.06 FEET OR 1.52 RODS IN LENGTH, CONTAINING 0.017 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NW/4	25.06 L.F.	1.52 RODS	0.017 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 11 DAY OF MAY 2016.

FILIMON F. JARAMILLO — NEW MEXICO — 12797 — REGISTERED PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO PLS 12797

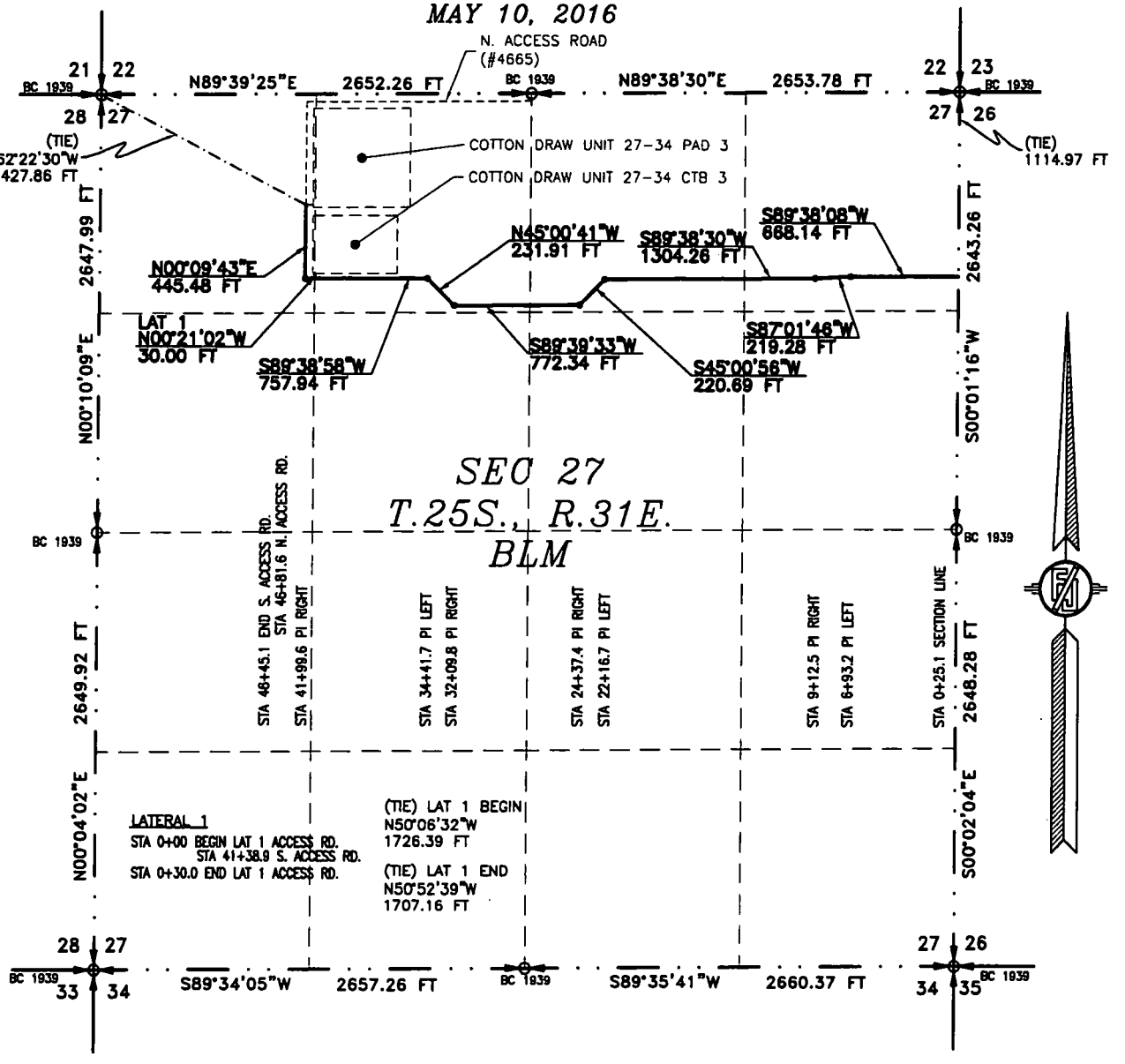
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

ACCESS ROAD PLAT (AA000055110)

SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE COTTON DRAW UNIT 27-34 CTB 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SEE NEXT SHEET (4-6) FOR DESCRIPTION

1000 0 1000
Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 11 DAY OF MAY 2016

FILIMON F. JARAMILLO, NEW MEXICO 12797 REGISTERED PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO, PLS. 12797
301 SOUTH CANAL
CARLSBAD, NEW MEXICO
(575) 234-3341

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SURVEY NO. 4666

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE COTTON DRAW UNIT 27-34 CTB 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

MAY 10, 2016

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

SOUTH ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 1114.97 FEET;
THENCE S89°38'08"W A DISTANCE OF 668.14 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S87°01'46"W A DISTANCE OF 219.28 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S89°38'30"W A DISTANCE OF 1304.26 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S45°00'56"W A DISTANCE OF 220.69 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S89°39'33"W A DISTANCE OF 772.34 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N45°00'41"W A DISTANCE OF 231.91 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S89°38'58"W A DISTANCE OF 757.94 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N00°09'43"E A DISTANCE OF 445.48 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N62°22'30"W, A DISTANCE OF 1427.86 FEET;

SAID STRIP OF LAND BEING 4620.04 FEET OR 280.01 RODS IN LENGTH, CONTAINING 3.182 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	1327.61 L.F.	80.46 RODS	0.914 ACRES
NW/4 NE/4	1392.08 L.F.	84.37 RODS	0.959 ACRES
NE/4 NW/4	1394.86 L.F.	84.54 RODS	0.961 ACRES
NW/4 NW/4	505.49 L.F.	30.64 RODS	0.348 ACRES

LATERAL 1 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NW/4 NW/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N50°06'32"W, A DISTANCE OF 1726.39 FEET;
THENCE N00°21'02"W A DISTANCE OF 30.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N50°52'39"W, A DISTANCE OF 1707.16 FEET;

SAID STRIP OF LAND BEING 30.00 FEET OR 1.82 RODS IN LENGTH, CONTAINING 0.021 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NW/4	30.00 L.F.	1.82 RODS	0.021 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 10TH DAY OF MAY 2016

FILIMON F. JARAMILLO NEW MEXICO 12797 REGISTERED PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO P.L.S. 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 4-6

SURVEY NO. 4666

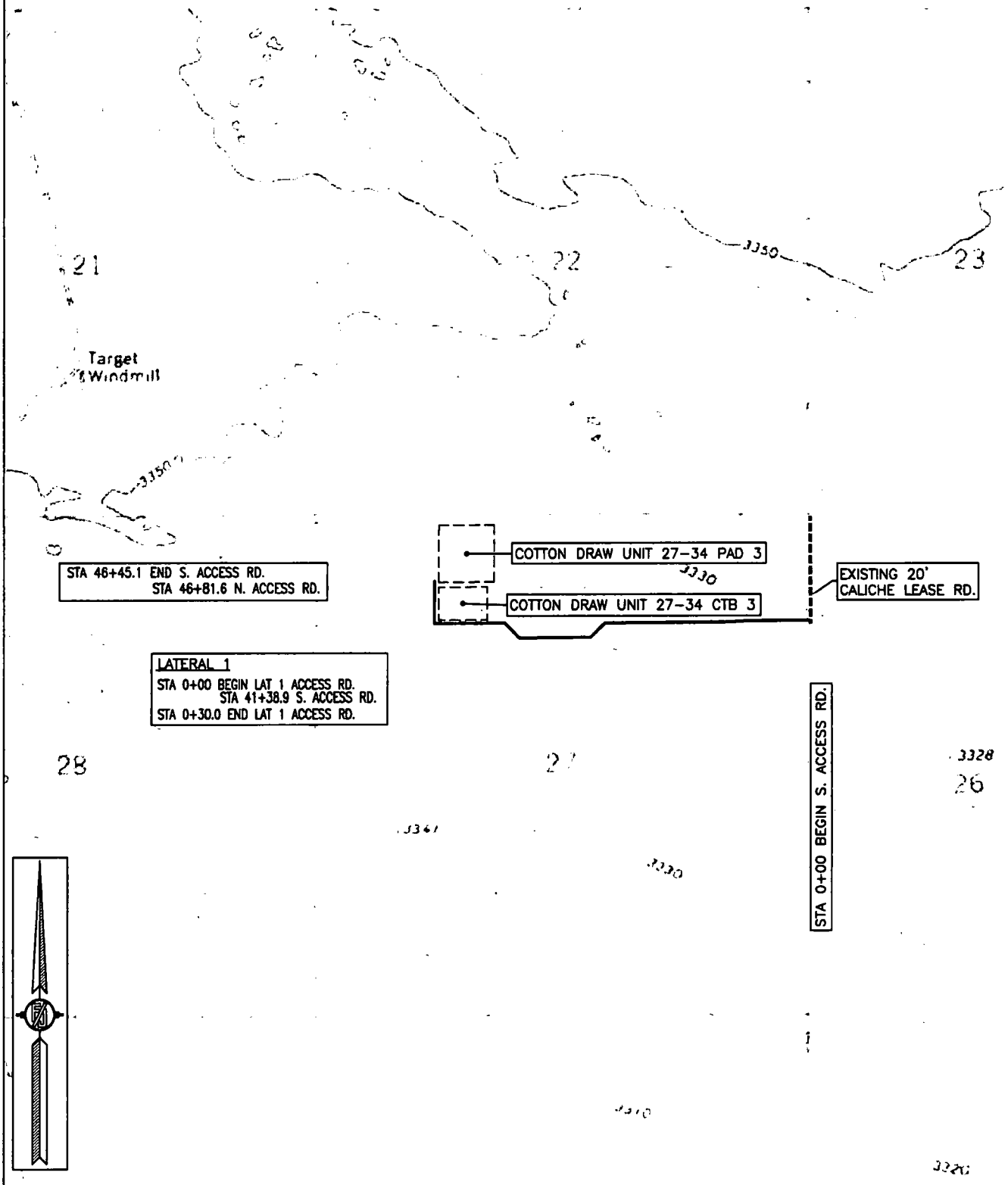
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE COTTON DRAW UNIT 27-34 CTB 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTIONS 26, 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SHEET: 5-6

SURVEY NO. 4666

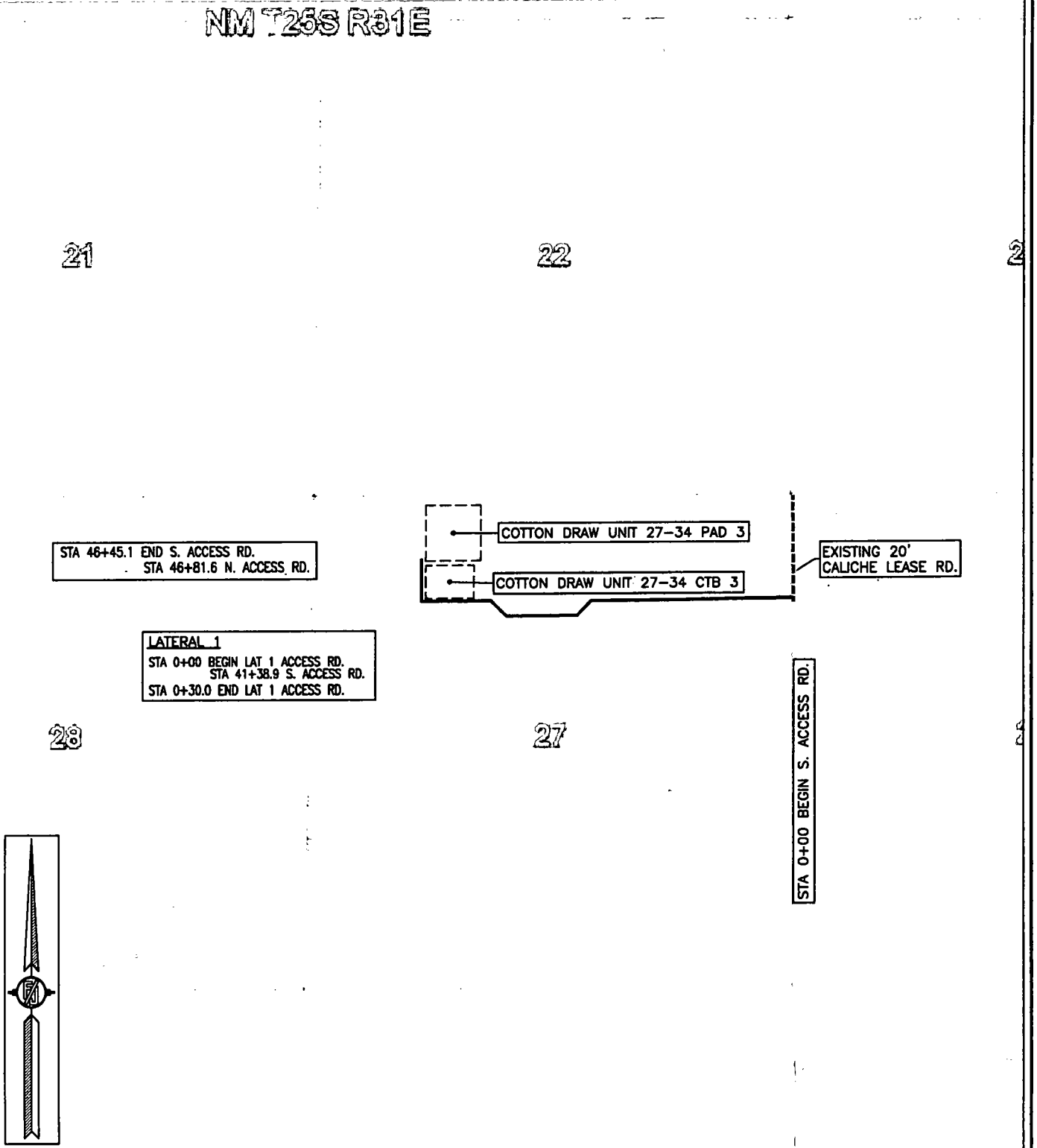
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE COTTON DRAW UNIT 27-34 CTB 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTIONS 26, 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SHEET: 6-6

SURVEY NO. 4666

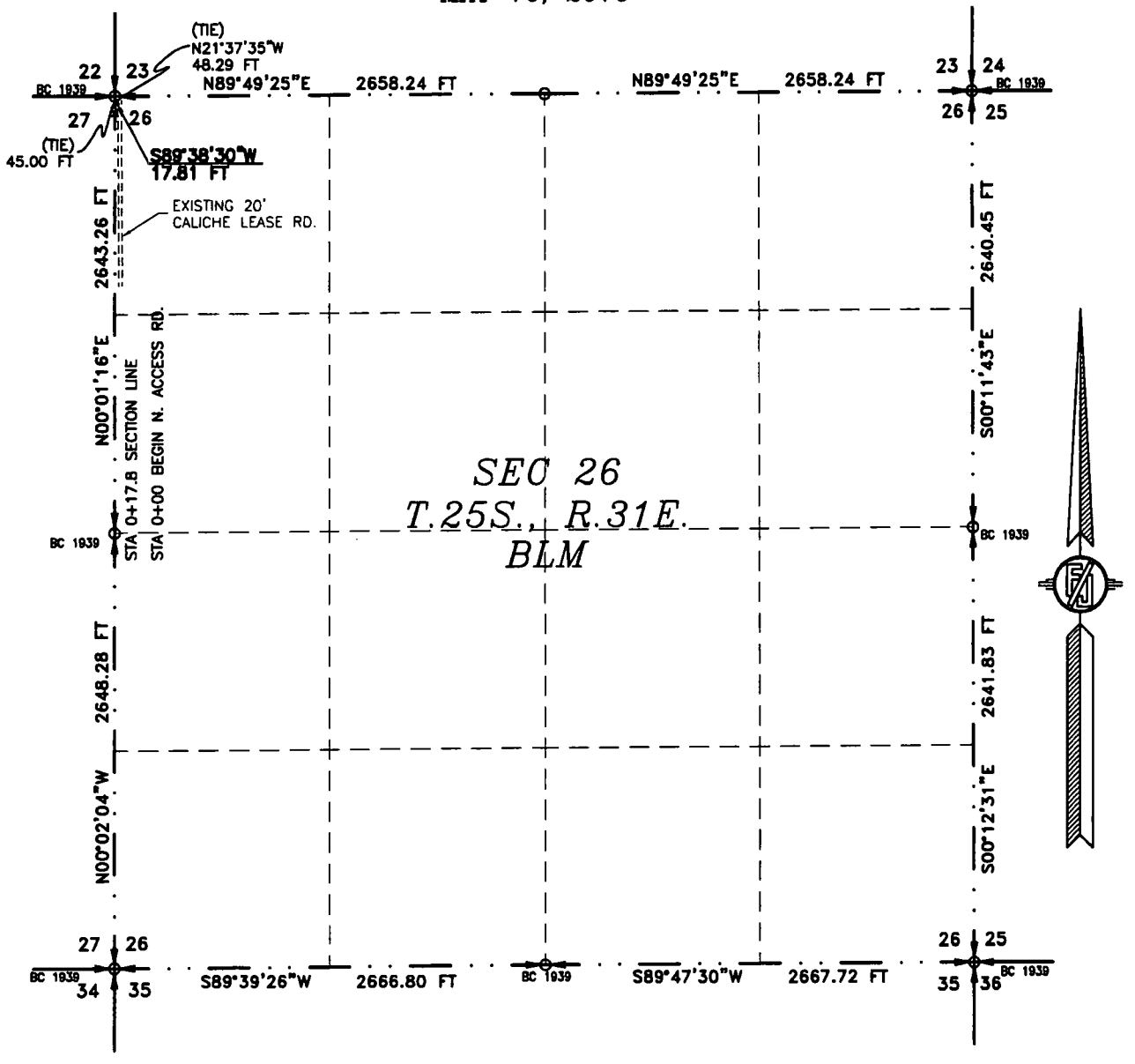
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SEE NEXT SHEET (2-6) FOR DESCRIPTION

1000 0 1000
Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 11TH DAY OF MAY 2016

FILIMON F. JARAMILLO, PLS. 12797
301 SOUTH CANAL
(575) 234-3341

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 1-6

SURVEY NO. 4665

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE NW/4 NW/4 OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N21°37'35"W, A DISTANCE OF 48.29 FEET;
THENCE S89°38'30"W A DISTANCE OF 17.81 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 45.00 FEET;

SAID STRIP OF LAND BEING 17.81 FEET OR 1.08 RODS IN LENGTH, CONTAINING 0.012 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NW/4	17.81 L.F.	1.08 RODS	0.012 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 12TH DAY OF MAY 2016

FILIMON F. JARAMILLO NEW MEXICO 12797 REGISTERED PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO, P.S. 12797

301 SOUTH CANAL
(575) 234-3341

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SURVEY NO. 4665

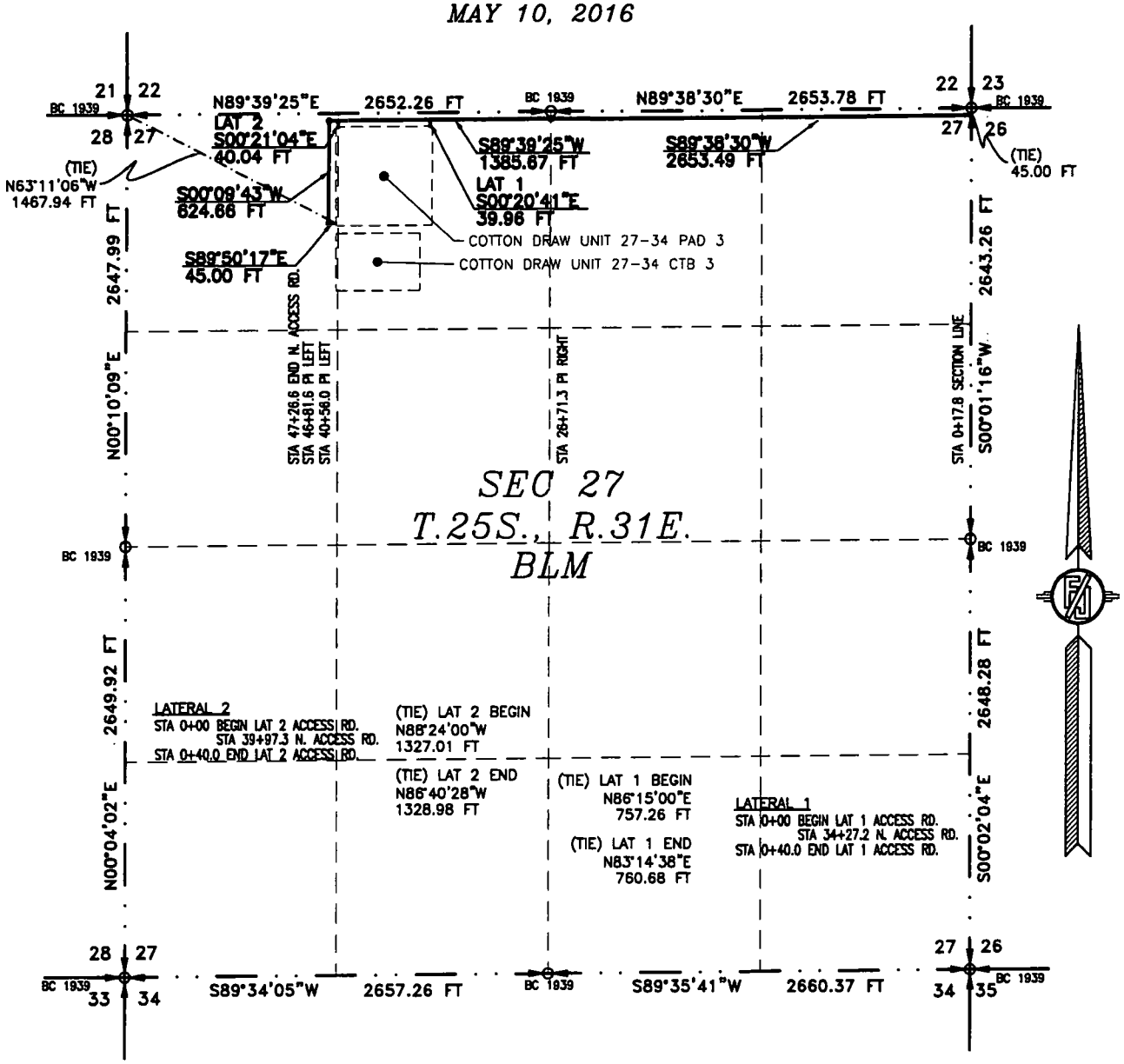
MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SEE NEXT SHEET (4-6) FOR DESCRIPTION

1000 0 1000
Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS ____ DAY OF MAY 2016

FILIMON F. JARAMILLO
NEW MEXICO
12797
REGISTERED
PROFESSIONAL SURVEYOR

FILIMON F. JARAMILLO, P.S. 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 3-6

SURVEY NO. 4665

ACCESS ROAD PLAT (AA000055110)

NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

NORTH ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 45.00 FEET;
THENCE S89°38'30"W A DISTANCE OF 2653.49 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S89°39'25"W A DISTANCE OF 1385.67 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S00°09'43"W A DISTANCE OF 624.66 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S89°50'17"E A DISTANCE OF 45.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N63°11'06"W, A DISTANCE OF 1467.94 FEET;

SAID STRIP OF LAND BEING 4708.82 FEET OR 285.38 RODS IN LENGTH, CONTAINING 3.243 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	1326.91 L.F.	80.42 RODS	0.914 ACRES
NW/4 NE/4	1326.91 L.F.	80.42 RODS	0.914 ACRES
NE/4 NW/4	1326.17 L.F.	80.37 RODS	0.913 ACRES
NW/4 NW/4	728.83 L.F.	44.17 RODS	0.502 ACRES

LATERAL 1 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NW/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°15'00"E, A DISTANCE OF 757.26 FEET;
THENCE S00°20'41"E A DISTANCE OF 39.96 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N83°14'38"E, A DISTANCE OF 760.68 FEET;

SAID STRIP OF LAND BEING 39.96 FEET OR 2.42 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NW/4	39.96 L.F.	2.42 RODS	0.028 ACRES

LATERAL 2 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NW/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N88°24'00"W, A DISTANCE OF 1327.01 FEET;
THENCE S00°21'04"E A DISTANCE OF 40.04 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°40'28"W, A DISTANCE OF 1328.98 FEET;

SAID STRIP OF LAND BEING 40.04 FEET OR 2.43 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NW/4	40.04 L.F.	2.43 RODS	0.028 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS ____ DAY OF MAY 2016

FILIMON F. JARAMILLO, PLS 12797
301 SOUTH CANAL
(575) 234-3341

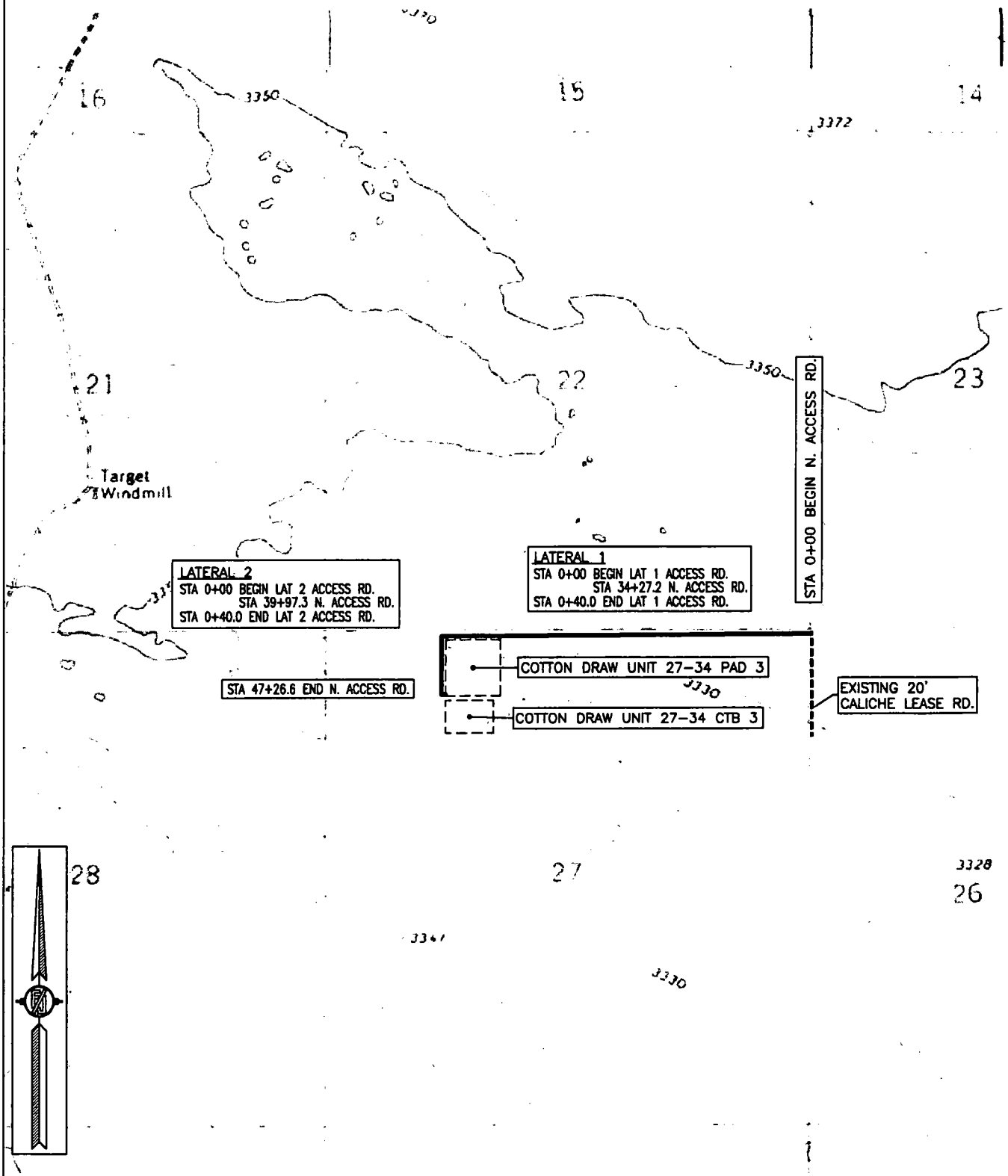
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

ACCESS ROAD PLAT (AA000055110)

NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTIONS 26, 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SHEET: 5-6

SURVEY NO. 4665

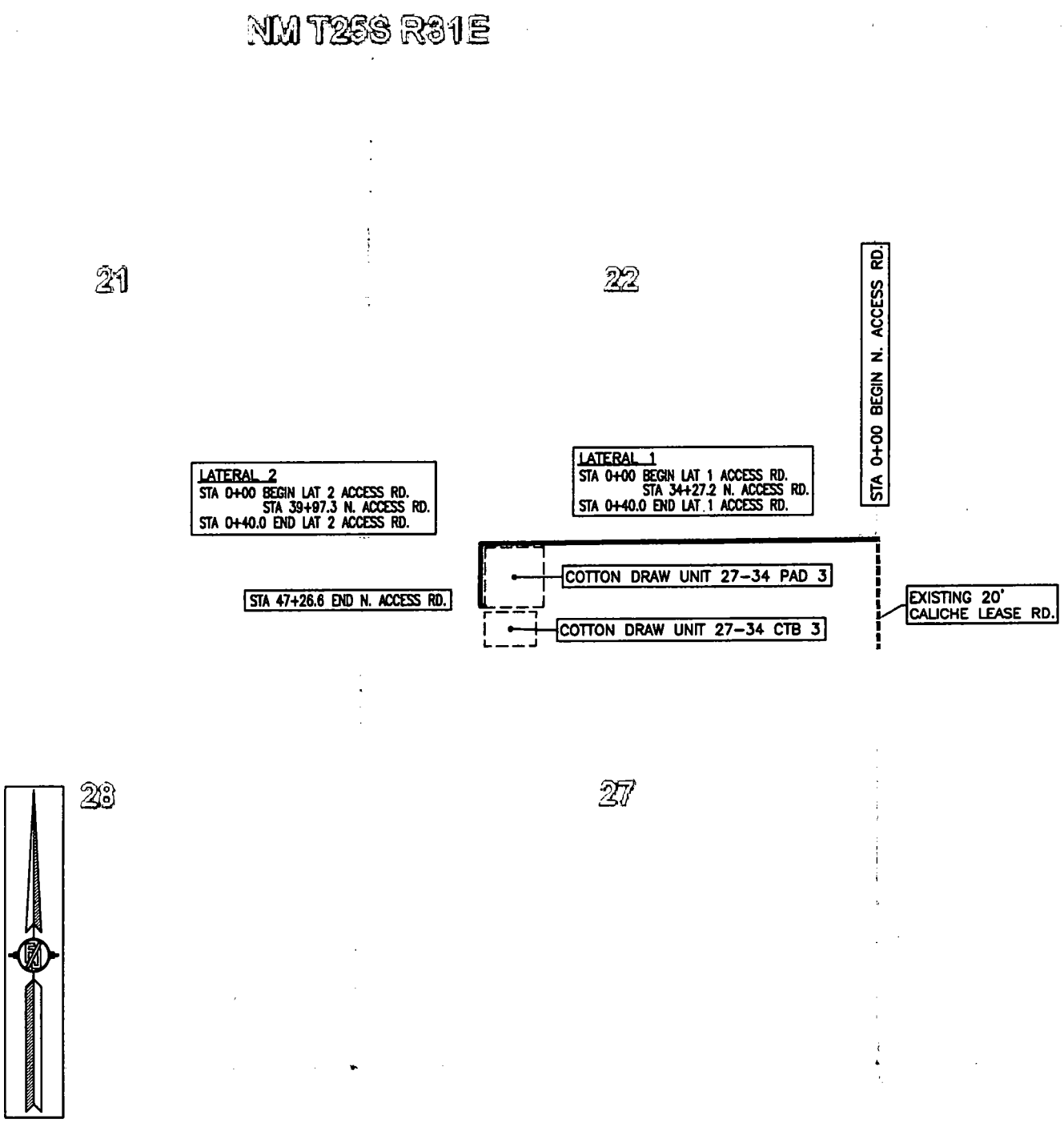
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055110)

NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTIONS 26, 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016



SHEET: 6-6

SURVEY NO. 4665

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

PLAT

One Mile Radius Map

devon

This map is for illustrative purposes only and is neither a legally recorded map nor a survey and is not intended to be used as one. Devon makes no warranty,representation, or guarantee of any kind regarding this map.

USA Contiguous Equidistant Conic
Datum: North American 1983
Created by: FME Server
Map is current as of 8/20/2018

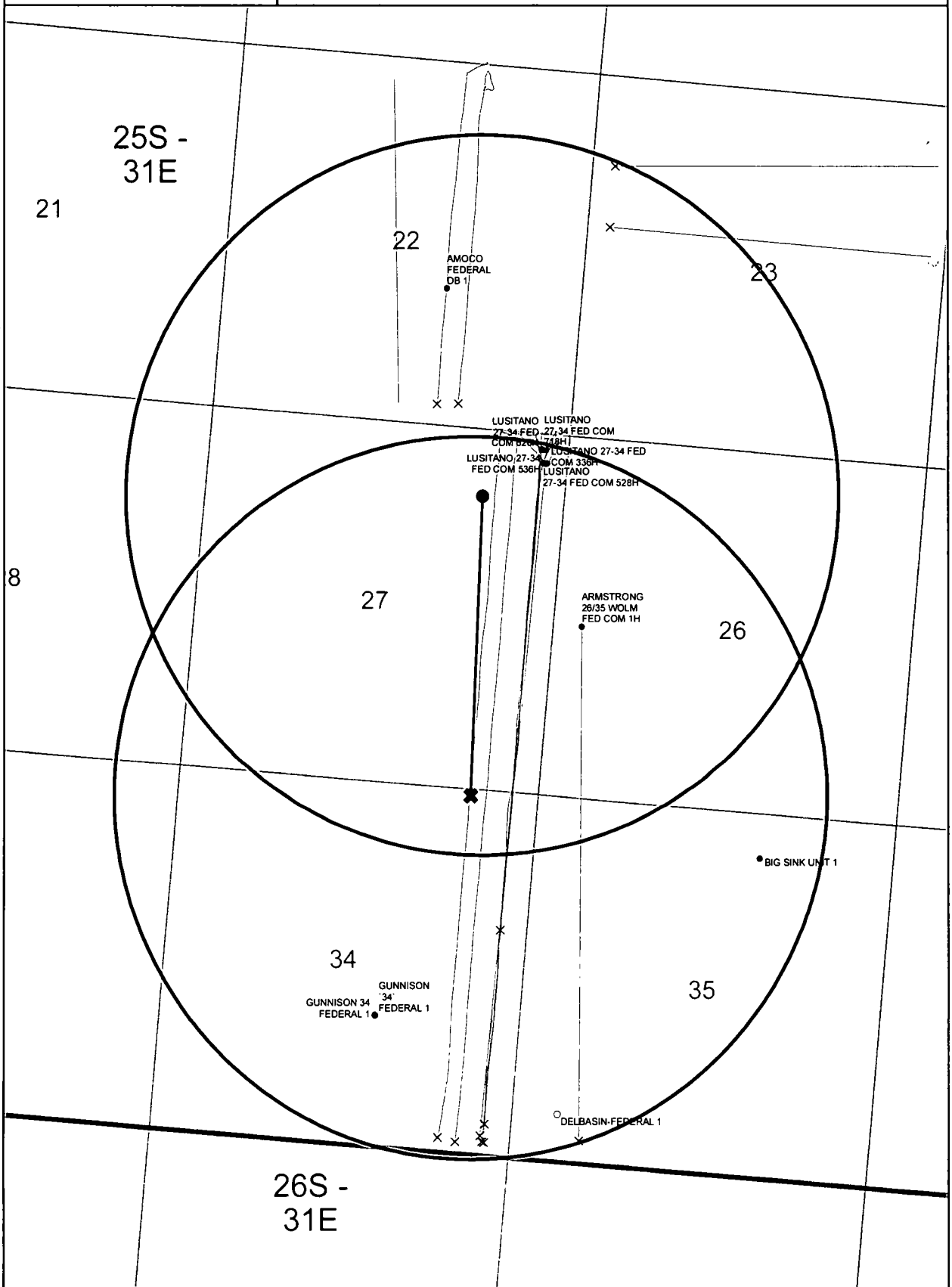
Miles
0 0.24 1 inch = 0.32 miles

LUSITANO 27-34 FED COM 736H
WA017421164

LUSITANO 27-34 FED COM 626H
Nearest wellbore to SHL: 180 ft.

LUSITANO 27-34 FED COM 626H
Nearest wellbore to BHL: 17 ft.

- ○ Unknown SHL
- • Active SHL
- ○ Inactive SHL
- × BHL



LUSITANO 27-34 FED COM 736H

devon

This map is for illustrative purposes only and is neither a legally recorded map nor survey and is not intended to be used as one. Devon makes no warranty, representation, or guarantee of any kind regarding this map.

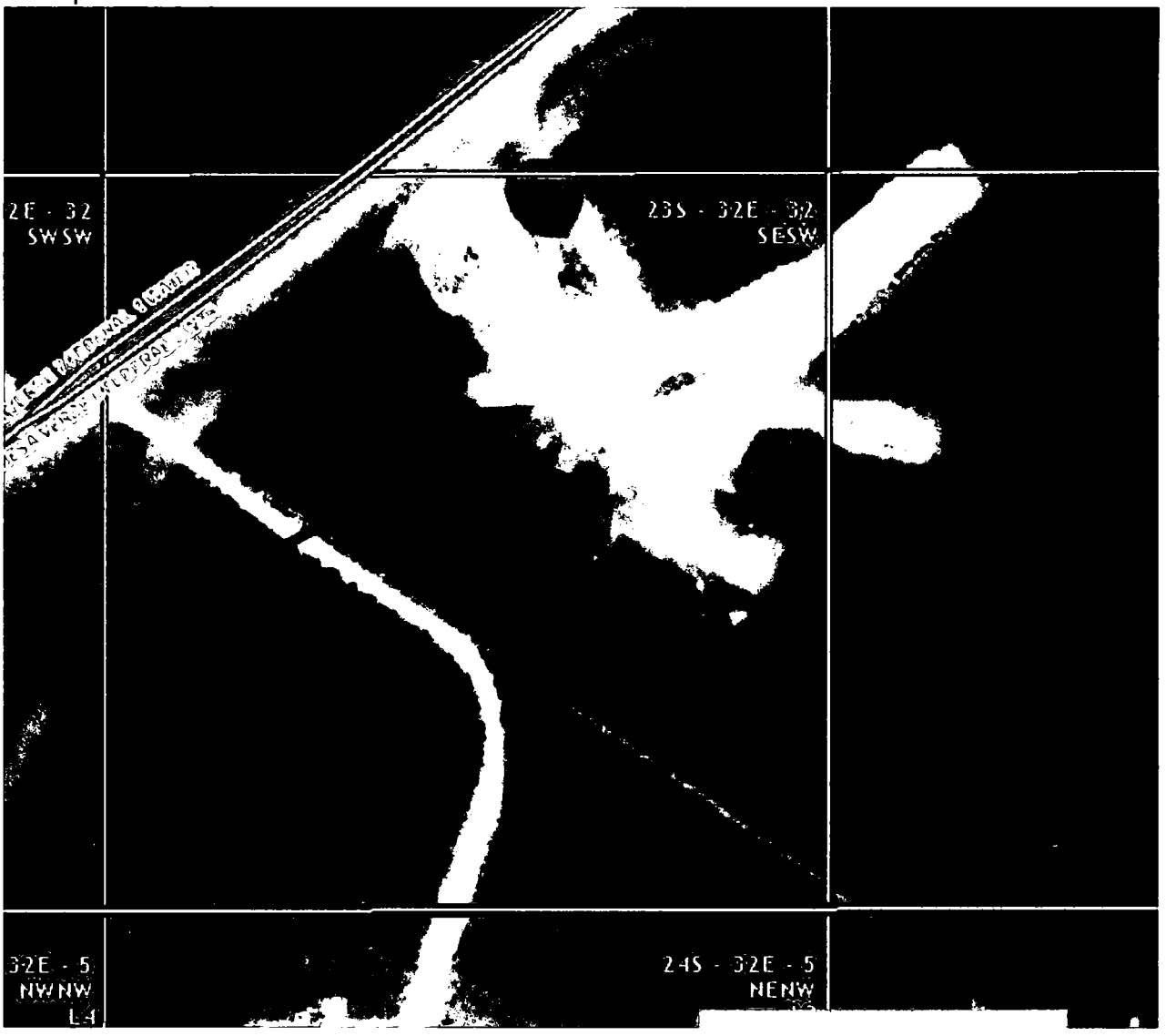
WGS_1984_Web_Mercator_Auxiliary_Sphere
Prepared by: _User
Map is current as of: 23-Aug-2018

N

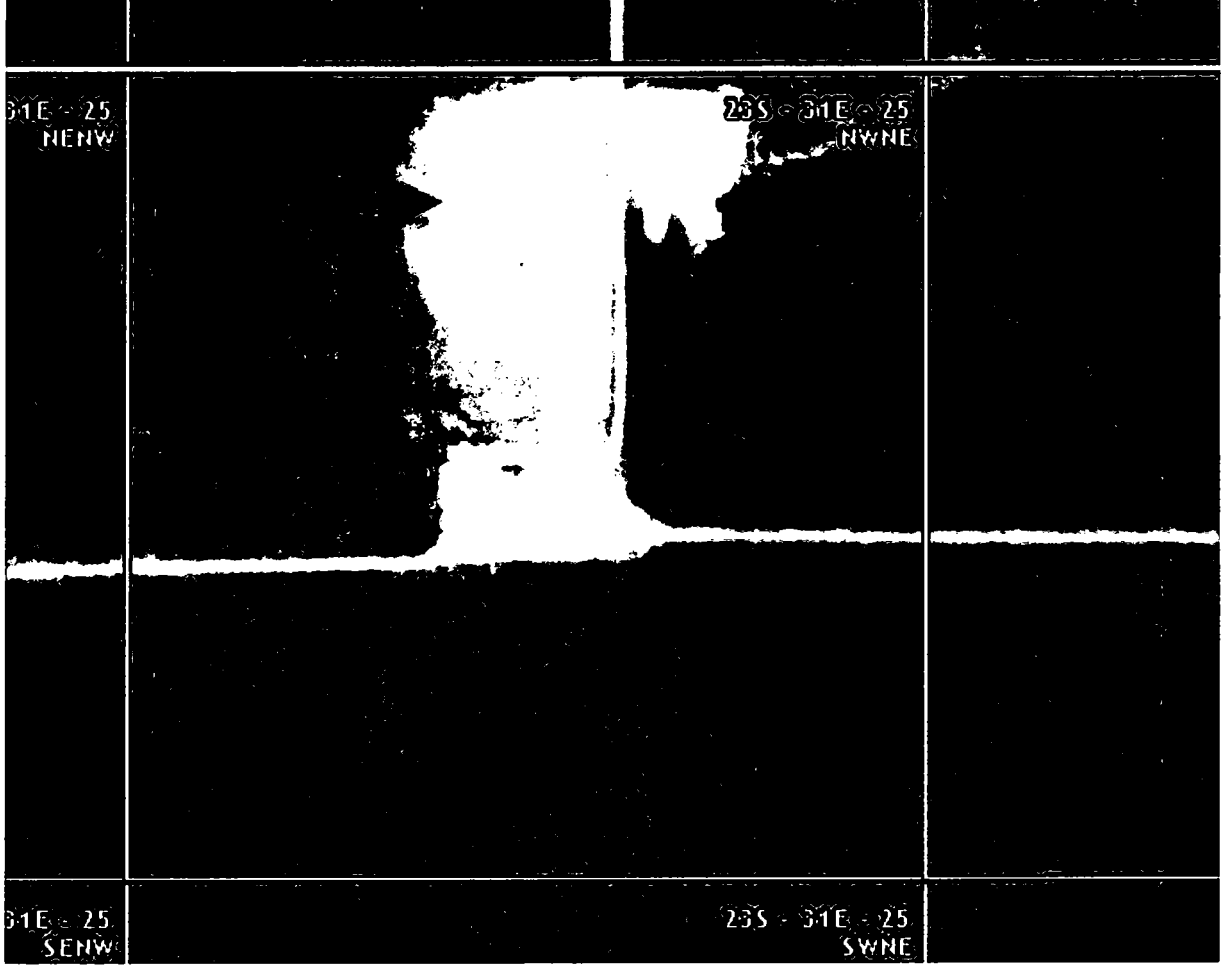
Miles
0 0.14 0.28 0.14
1:28,457

DVN Currently Drilling
DVN Currently Fracing

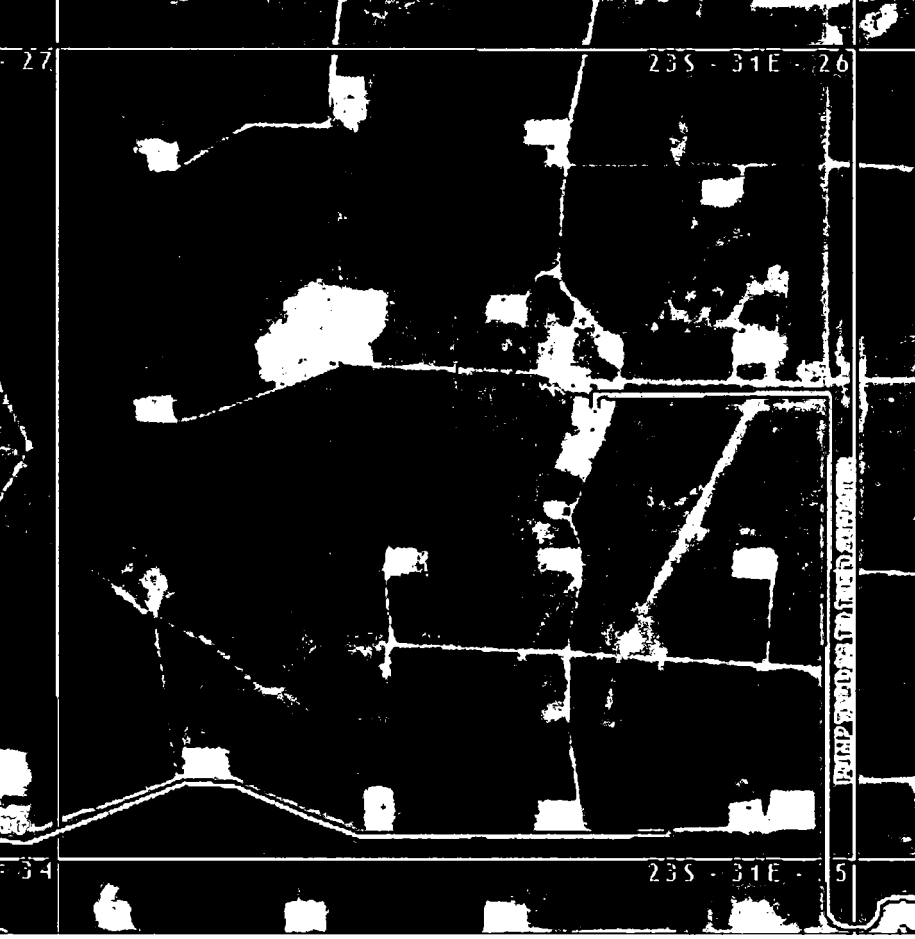
- State pit 616 and 617 32- 23S- 32E



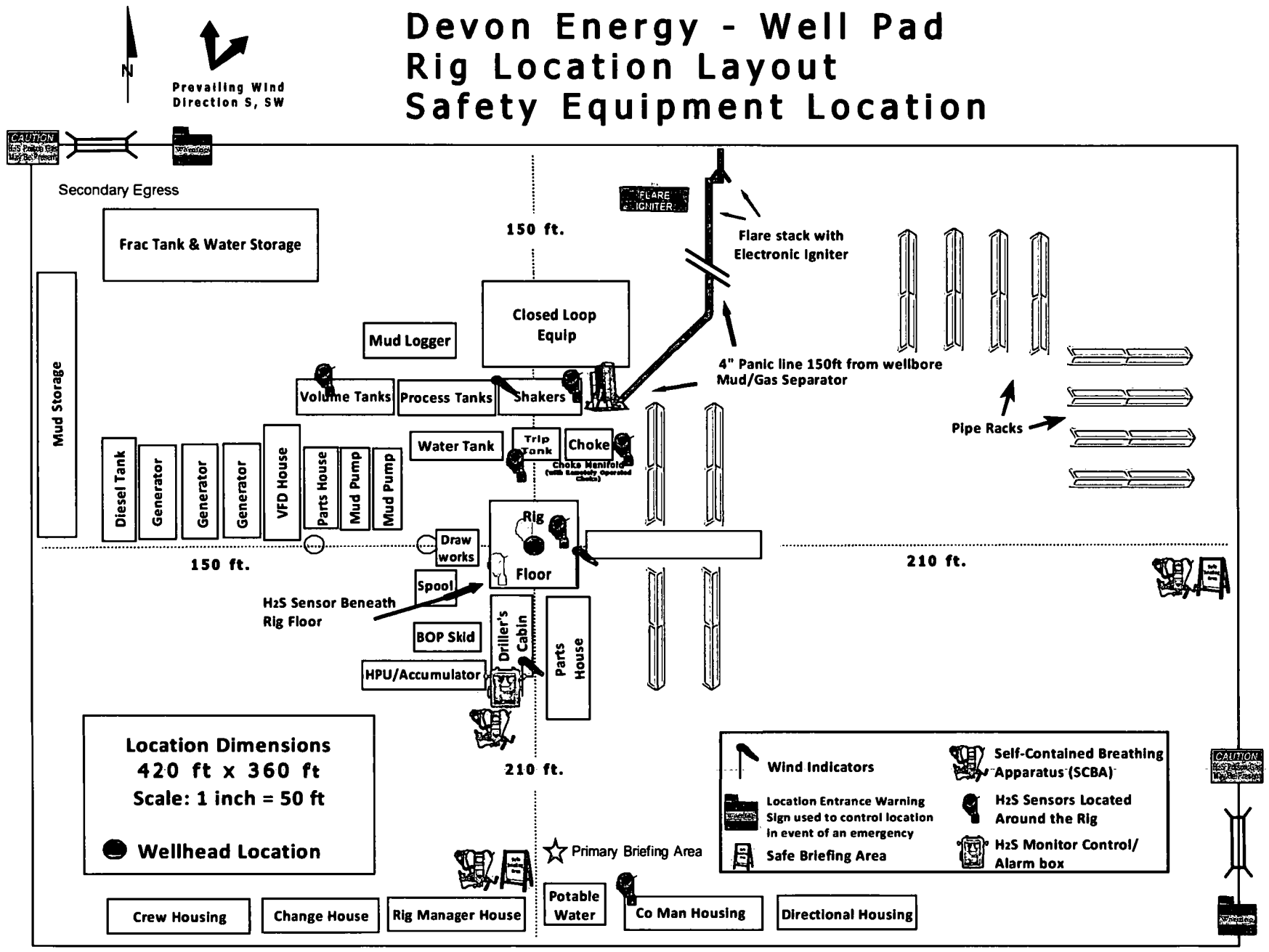
- Fed pit 25- 23S- 31E



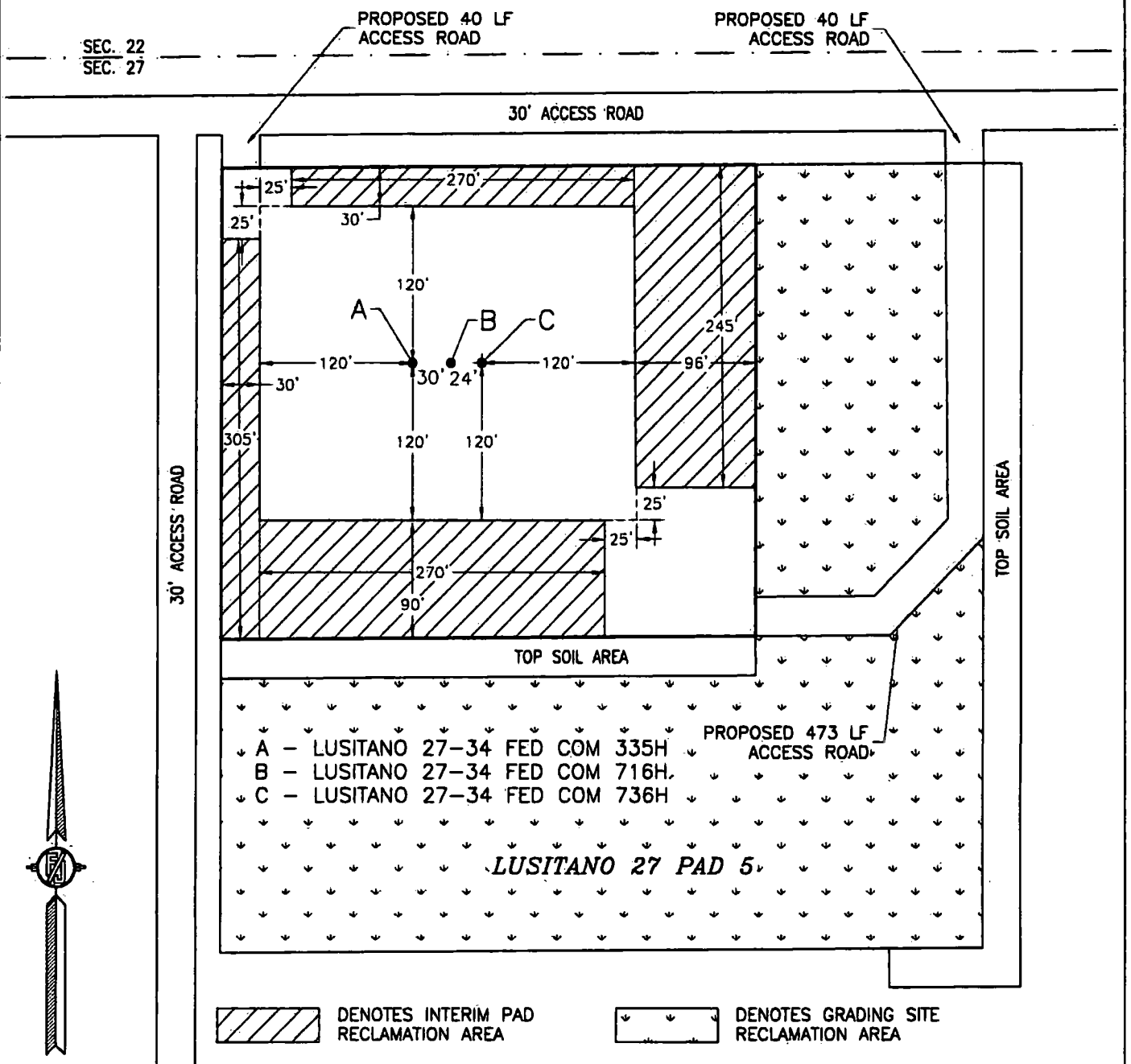
- Private pit 26- 23S- 31E


27
23S - 31E - 26
34
23S - 31E - 5

Devon Energy - Well Pad
Rig Location Layout
Safety Equipment Location



SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
INTERIM SITE BUILD PLAN



1.497± ACRES INTERIM PAD RECLAMATION AREA
4.473± ACRES GRADING SITE RECLAMATION AREA
2.294± ACRES NON-RECLAIMED AREA
8.264± ACRES LUSITANO 27 PAD 5

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 736H

LOCATED 235 FT. FROM THE NORTH LINE AND 1210 FT. FROM THE EAST LINE OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO

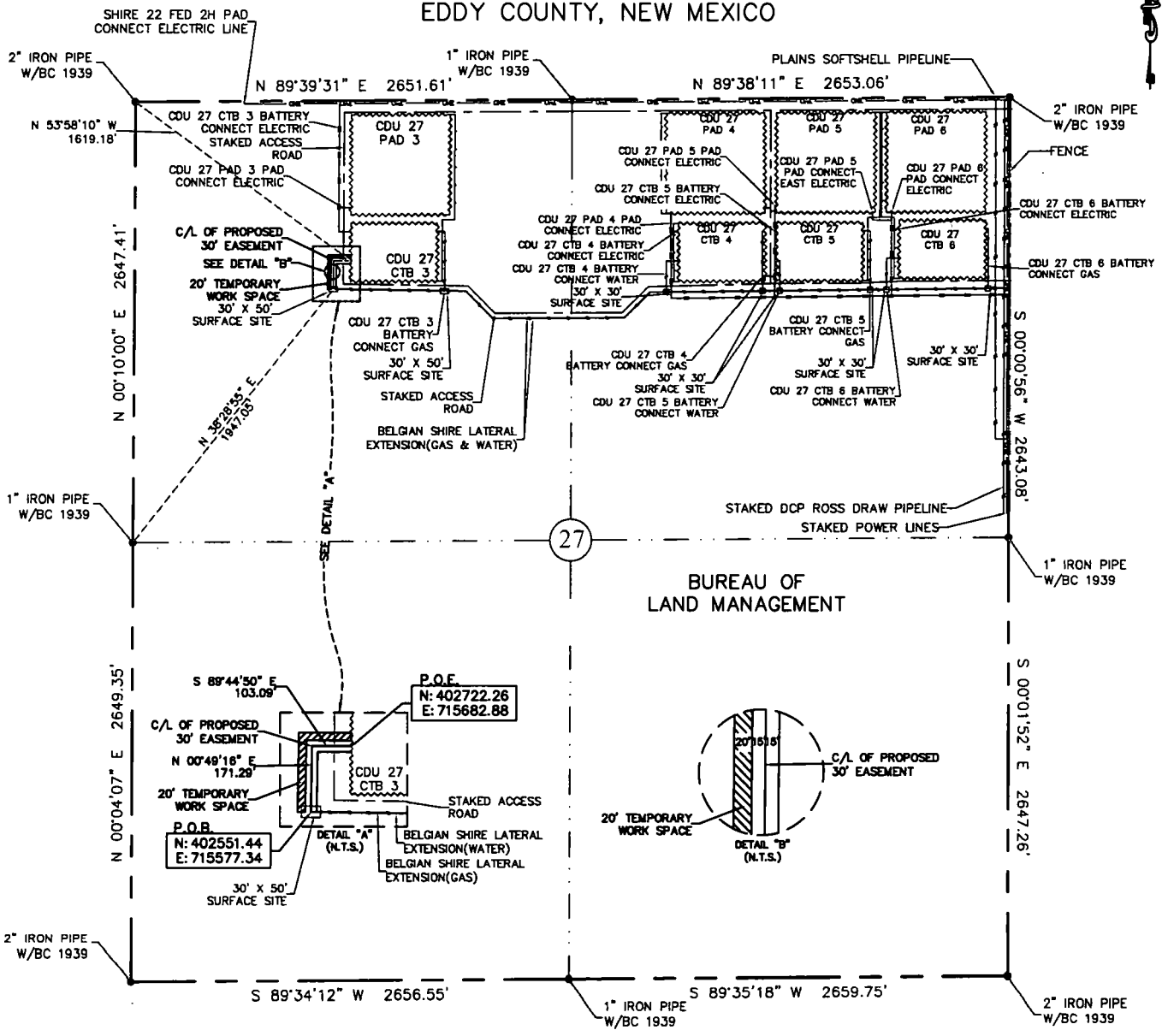
LAND STATUS: BLM

SEPTEMBER 13, 2018

SURVEY NO. 6440A

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 *CARLSBAD, NEW MEXICO*

EXHIBIT "A"
PAGE 1 of 18
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.189 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.149 ACRE(S)
274.38 FEET OR 16.63 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (WATER)
0+16.0 EXIT 30' X 50' SURFACE SITE
2+29.7 C/L STAKED ACCESS ROAD
2+74.4 P.O.E./CDU 27 CTB 3

SEE THE ATTACHED LEGAL DESCRIPTION
Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. LAMAN NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX. 75951
(409) 202-5111
Employee of Horizonrow, LLC

0 1000 2000

HORIZON ROW LLC
Drawn for: devon
Drawn by: CHRIS MAAS
Date: 05/03/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 CTB 3 BATTERY CONNECT (WATER)
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S–R31E, N.M.P.M.

LINE NUMBER: 760067Z
WBS NUMBER: CC-110133.03
SCALE: 1" = 1000'
REVISIONS:
SHEET: 1 OF 18

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northwest quarter (NW ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the west quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 38°28'55" E, a distance of 1947.05' to the **Point of Beginning** of this easement having coordinates of Northing=402551.44 feet, Easting=715577.34 feet, being in the northwest quarter (NW ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°49'16" E, a distance of 171.29' to an angle point;

Thence S 89°44'50" E, a distance of 103.09' to the **Point of Ending** having coordinates of Northing=402722.26 feet, Easting=715682.88 feet, from said point a 2" iron pipe w/ BC1939 found for the northwest corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 53°58'10" W a distance of 1619.18', covering **274.38' or 16.63 rods** and having an area of **0.189 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the left side and adjoining the left side of the above described thirty (30) feet easement, having a total area of **0.149 acres.**

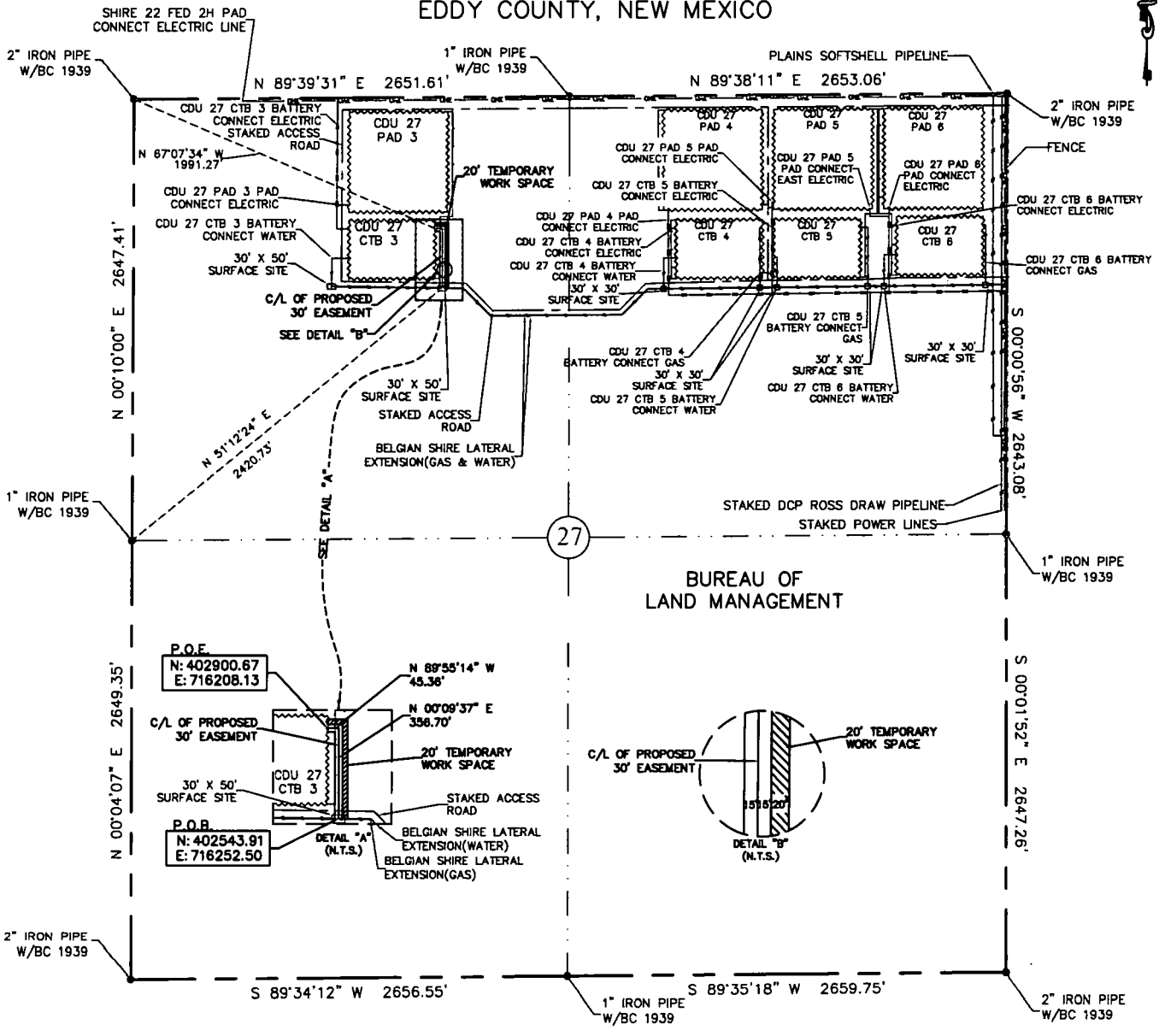
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 3 of 18
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.277 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.208 ACRE(S)
402.06 FEET OR 24.37 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+13.0 EXIT 30' X 50' SURFACE SITE
0+30.0 C/L STAKED ACCESS ROAD
4+02.1 P.O.E./CDU 27 CTB 3

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. LAMAN NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

0 1000 2000

HORIZON ROW LLC

Drawn for: devon

Drawn by: CHRIS MAAS

Date: 05/03/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 CTB 3 BATTERY CONNECT (GAS)
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

LINE NUMBER: 7600687X
WBS NUMBER: CC-110133.01
SCALE: 1" = 1000'
REVISIONS:
SHEET: 3 OF 18

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northwest quarter (NW ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the west quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 51°12'24" E, a distance of 2420.73' to the **Point of Beginning** of this easement having coordinates of Northing=402543.91 feet, Easting=716252.50 feet, being in the northwest quarter (NW ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°09'37" E, a distance of 356.70' to an angle point;

Thence N 89°55'14" W, a distance of 45.36' to the **Point of Ending** having coordinates of Northing=402900.67 feet, Easting=716208.13 feet, from said point a 2" iron pipe w/ BC1939 found for the northwest corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 67°07'34" W a distance of 1991.27', covering **402.06' or 24.37 rods** and having an area of **0.277 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the right side and adjoining the right side of the above described thirty (30) feet easement, having a total area of **0.208 acres.**

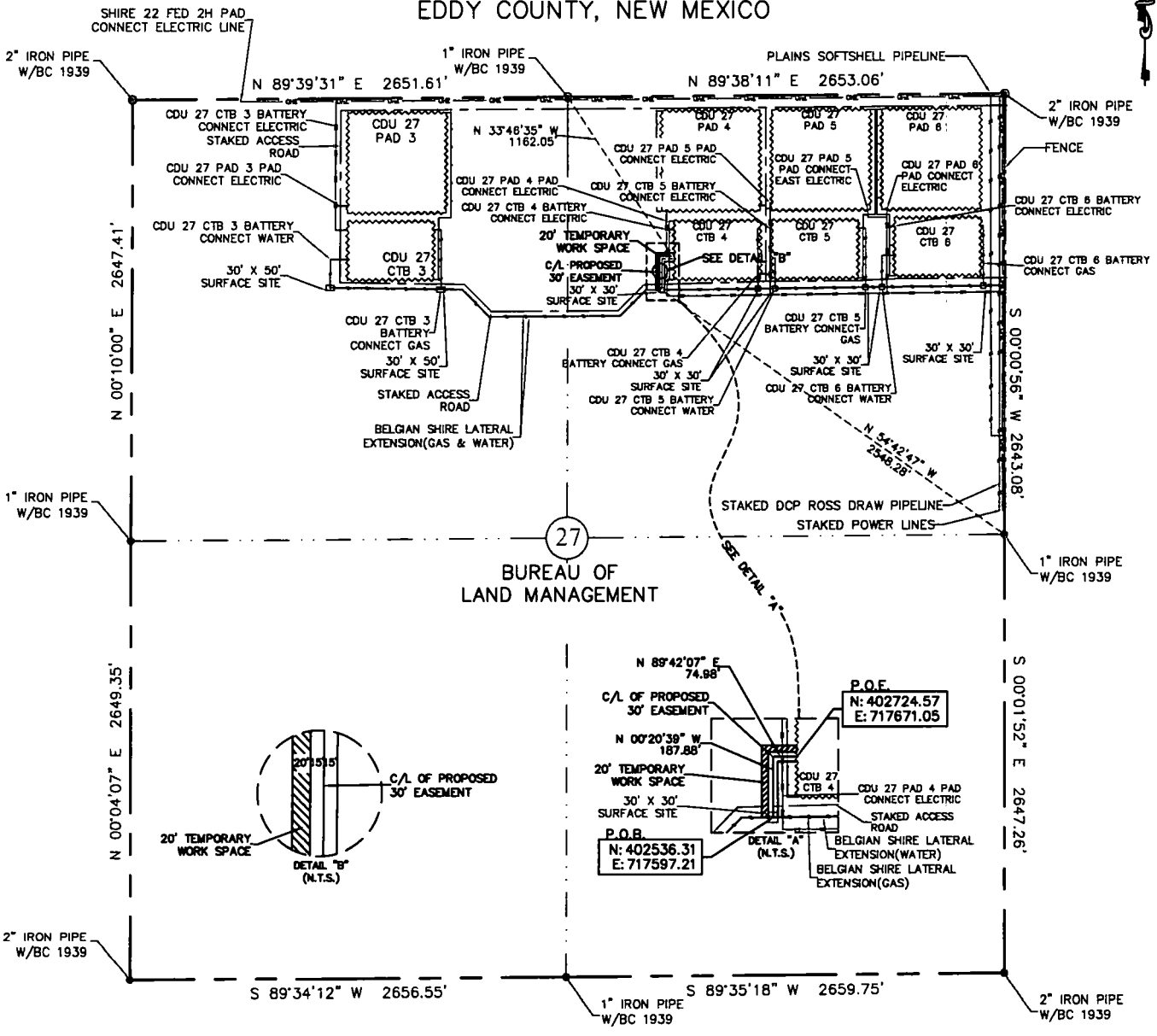
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 5 of 18
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.181 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.144 ACRE(S)
262.86 FEET OR 15.93 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (WATER)
0+02.0 BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+16.0 EXIT 30' X 30' SURFACE SITE
0+35.2 C/L STAKED ACCESS ROAD
2+17.9 CDU 27 PAD 4 PAD CONNECT ELECTRIC LINE
2+62.9 P.O.E./CDU 27 CTB 4

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

0 1000 2000

I, B.L. Laman, New Mexico PLS No: 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. LAMAN
NEW MEXICO
22404
PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

HORIZON ROW LLC
Drawn for: devon
Drawn by: CHRIS MAAS
Date: 05/03/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 CTB 4 BATTERY CONNECT (WATER)
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S–R31E, N.M.P.M.

LINE NUMBER: 760068Z
WBS NUMBER: CC-110133.03
SCALE: 1" = 1000'
REVISIONS:
SHEET: 5 OF 18

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 54°42'47" W, a distance of 2548.28' to the **Point of Beginning** of this easement having coordinates of Northing=402536.31 feet, Easting=717597.21 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°20'39" W, a distance of 187.88' to an angle point;

Thence N 89°42'07" E, a distance of 74.98' to the **Point of Ending** having coordinates of Northing=402724.57 feet, Easting=717671.05 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 33°46'35" W a distance of 1162.05', covering **262.86' or 15.93 rods** and having an area of **0.181 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the left side and adjoining the left side of the above described thirty (30) feet easement, having a total area of **0.144 acres.**

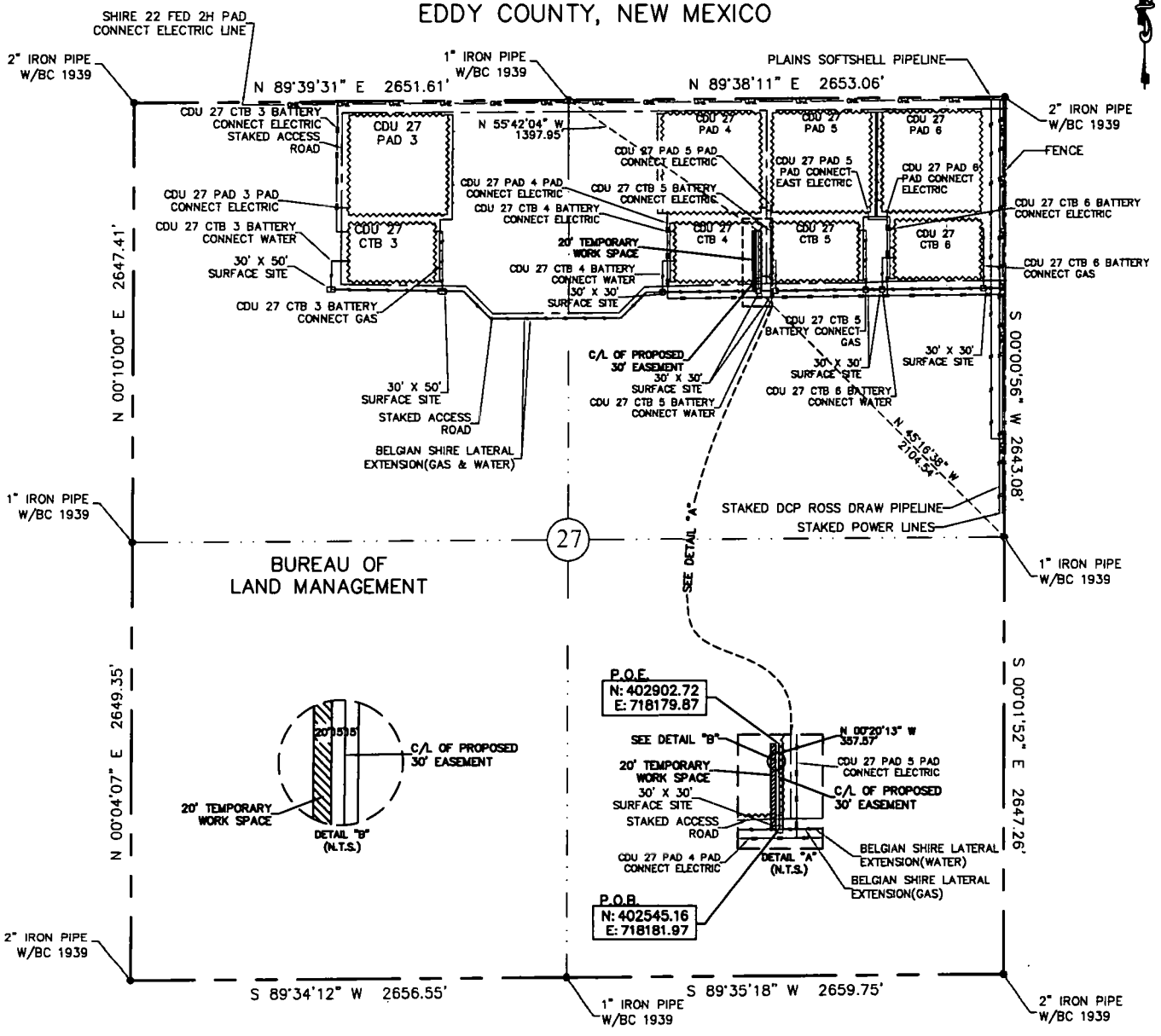
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 7 of 18
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.246 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.164 ACRE(S)
357.57 FEET OR 21.67 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+14.0 EXIT 30' X 30' SURFACE SITE
0+41.9 C/L STAKED ACCESS ROAD
0+57.7 ENTER CDU 27 CTB 4
3+57.6 P.O.E.

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. LAMAN NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Hortzonrow, LLC
571 State Street Jasper, TX
(409) 202-5111 75951
Employee of Hortzonrow, LLC

0 1000 2000

HORIZON ROW LLC
Drawn for: devon
Drawn by: CHRIS MAAS
Date: 05/03/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 CTB 4 BATTERY CONNECT (GAS)
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

LINE NUMBER: 760068X
WBS NUMBER: CC-110133.01
SCALE: 1" = 1000'
REVISIONS:
SHEET: 7 OF 18

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 45°16'38" W, a distance of 2104.54' to the **Point of Beginning** of this easement having coordinates of Northing=402545.16 feet, Easting=718181.97 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following course;

Thence N 00°20'13" W, a distance of 357.57' to the **Point of Ending** having coordinates of Northing=402902.72 feet, Easting=718179.87 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 55°42'04" W a distance of 1397.95', covering **357.57' or 21.67 rods** and having an area of **0.246 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the left side and adjoining the left side of the above described thirty (30) feet easement, having a total area of **0.164 acres.**

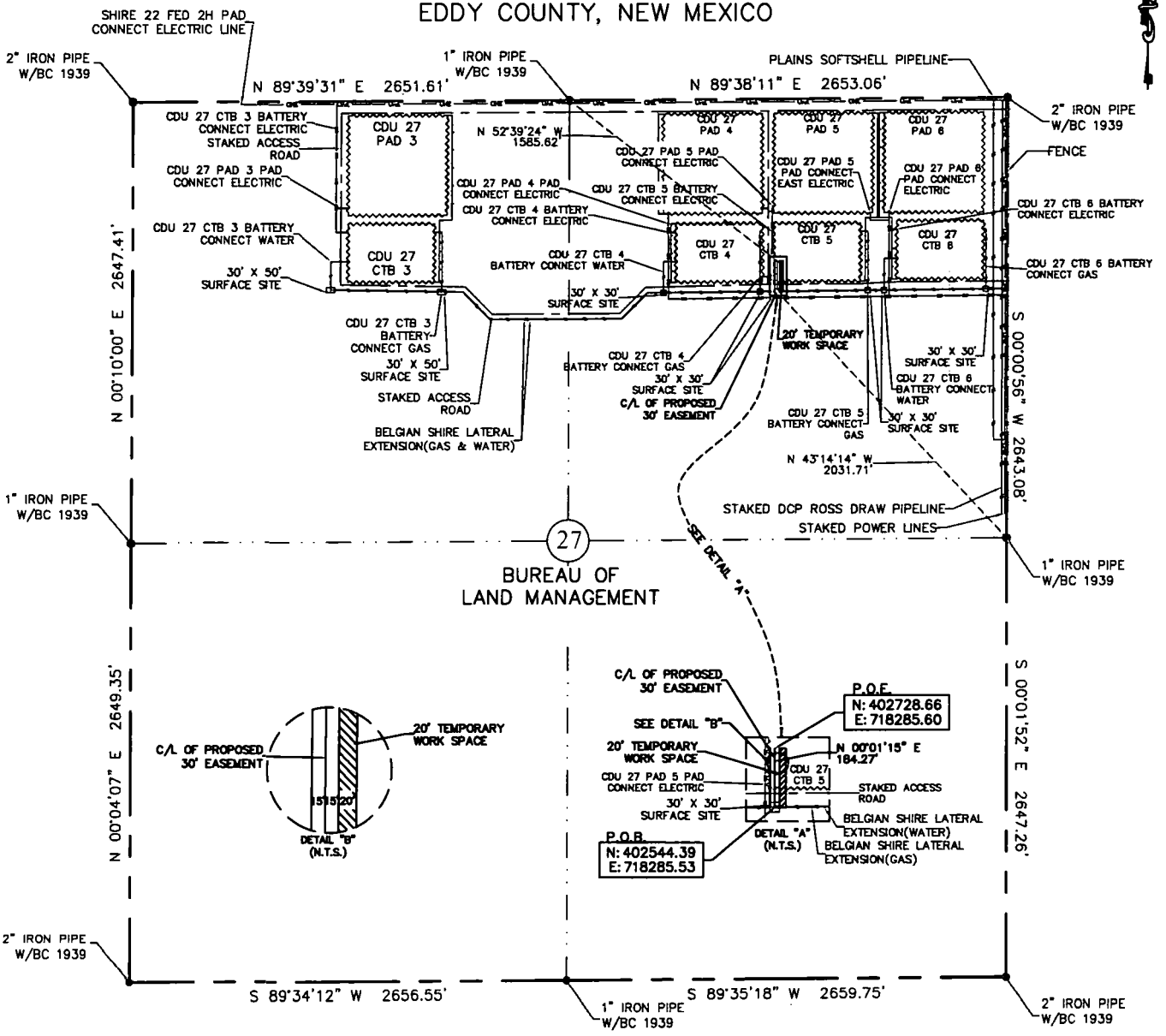
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 9 of 18
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.127 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.085 ACRE(S)
184.27 FEET OR 11.17 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (WATER)
0+02.0 BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+16.0 EXIT 30' X 30' SURFACE SITE
0+44.3 C/L STAKED ACCESS ROAD
0+59.3 ENTER CDU 27 CTB 5
1+84.3 P.O.E.

SEE THE ATTACHED LEGAL DESCRIPTION
Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

0 1000 2000

HORIZON ROW LLC
Drawn for: devon
Drawn by: CHRIS MAAS
Date: 05/03/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 CTB 5 BATTERY CONNECT (WATER)
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

LINE NUMBER: 760069Z
WBS NUMBER: CC-110133.03
SCALE: 1" = 1000'
REVISIONS:
SHEET: 9 OF 18

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 43°14'14" W, a distance of 2031.71' to the **Point of Beginning** of this easement having coordinates of Northing=402544.39 feet, Easting=718285.53 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°01'15" E, a distance of 184.27' to the **Point of Ending** having coordinates of Northing=402728.66 feet, Easting=718285.60 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 52°39'24" W a distance of 1585.62', covering **184.27' or 11.17 rods** and having an area of **0.127 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the right side and adjoining the right side of the above described thirty (30) feet easement, having a total area of **0.085 acres.**

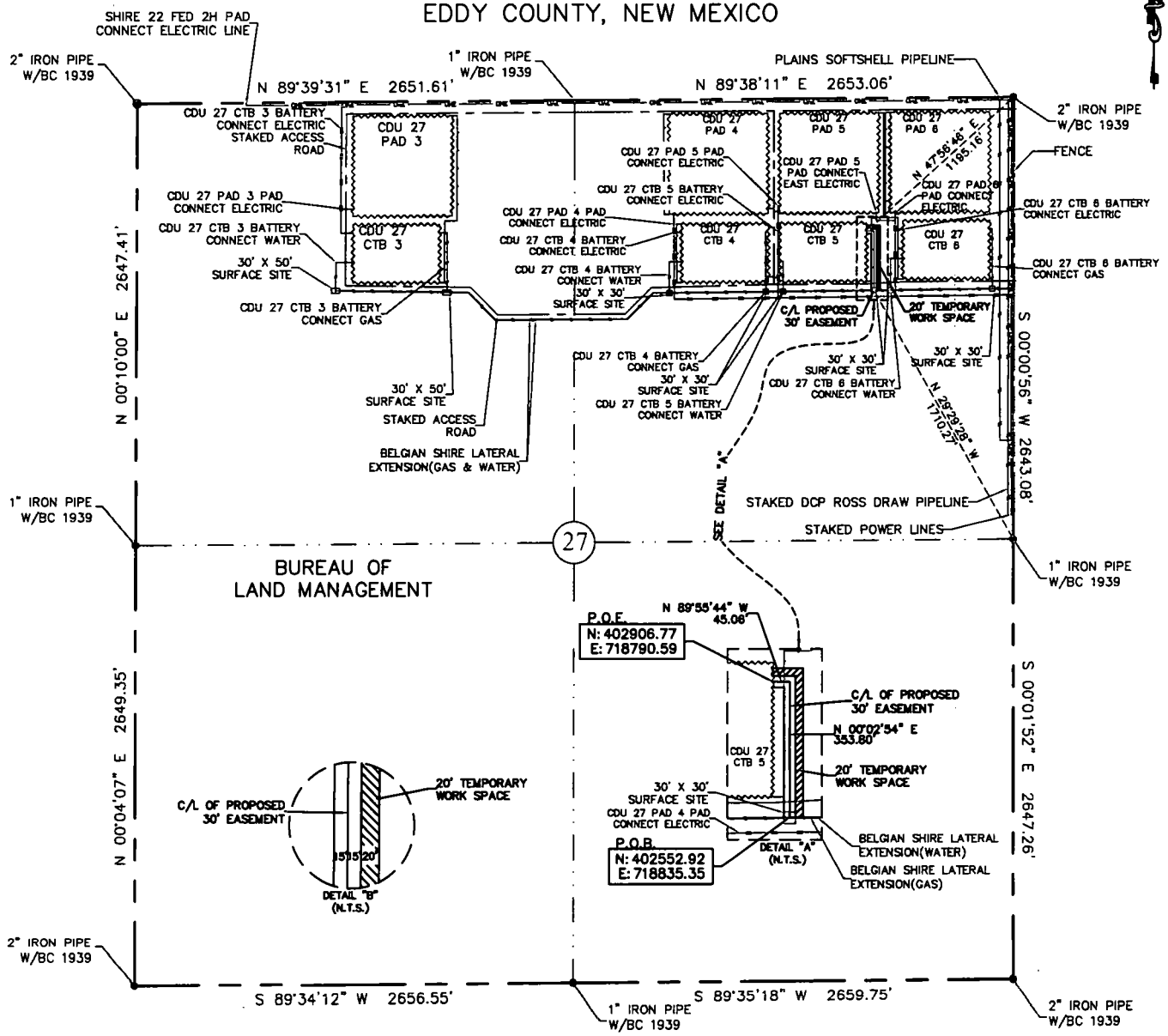
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 11 of 18
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.275 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.206 ACRE(S)
398.86 FEET OR 24.17 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+14.0 EXIT 30' X 30' SURFACE SITE
0+41.9 C/L STAKED ACCESS ROAD
3+98.9 P.O.E./CDU 27 CTB 5

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to represent an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. LAMAN NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX. 75951
(409) 202-5111
Employee of Horizonrow, LLC

0 1000 2000

HORIZON ROW LLC Drawn for: devon	DEVON ENERGY PRODUCTION COMPANY, L.P. CDU 27 CTB 5 BATTERY CONNECT (GAS)		LINE NUMBER: 7600689X
			WBS NUMBER: CC-110133.01
	PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S–R31E, N.M.P.M.		SCALE: 1" = 1000'
			REVISIONS:
Drawn by: CHRIS MAAS	Date: 05/03/2016		SHEET: 11 OF 18

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 29°29'28" W, a distance of 1710.27' to the **Point of Beginning** of this easement having coordinates of Northing=402552.92 feet, Easting=718835.35 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°02'54" E, a distance of 353.80' to an angle point;

Thence N 89°55'44" W, a distance of 45.06' to the **Point of Ending** having coordinates of Northing=402906.77 feet, Easting=718790.59 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 47°56'46" E a distance of 1195.16', covering **398.86' or 24.17 rods** and having an area of **0.275 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the right side and adjoining the right side of the above described thirty (30) feet easement, having a total area of **0.206 acres.**

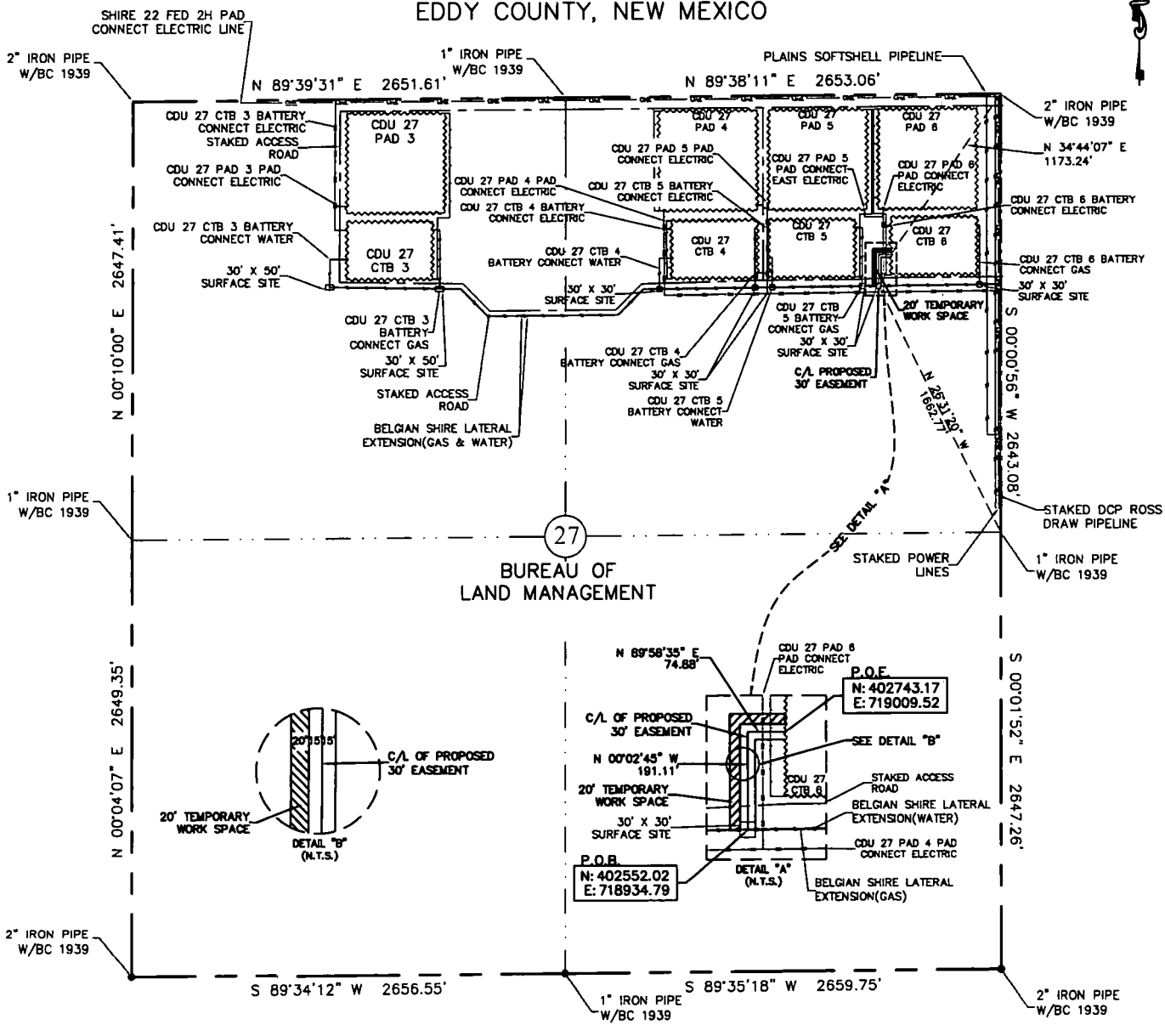
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 13 of 18
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.183 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.145 ACRE(S)
265.99 FEET OR 16.12 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (WATER)
0+02.0 BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+16.0 EXIT 30' X 30' SURFACE SITE
0+47.1 C/L STAKED ACCESS ROAD
2+21.1 CDU 27 PAD 6 PAD CONNECT ELECTRIC LINE
2+66.0 P.O.E./CDU 27 CTB 6

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

0 1000 2000

HORIZON ROW LLC
Drawn for: devon
Drawn by: CHRIS MAAS
Date: 05/04/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 CTB 6 BATTERY CONNECT (WATER)
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

LINE NUMBER: 760070Z
WBS NUMBER: CC-110133.03
SCALE: 1" = 1000'
REVISIONS:
SHEET: 13 OF 18

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 26°31'20" W, a distance of 1662.77' to the **Point of Beginning** of this easement having coordinates of Northing=402552.02 feet, Easting=718934.79 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°02'45" W, a distance of 191.11' to an angle point;

Thence N 89°58'35" E, a distance of 74.88' to the **Point of Ending** having coordinates of Northing=402743.17 feet, Easting=719009.52 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 34°44'07" E a distance of 1173.24', covering **265.99' or 16.12 rods** and having an area of **0.183 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the left side and adjoining the left side of the above described thirty (30) feet easement, having a total area of **0.145 acres.**

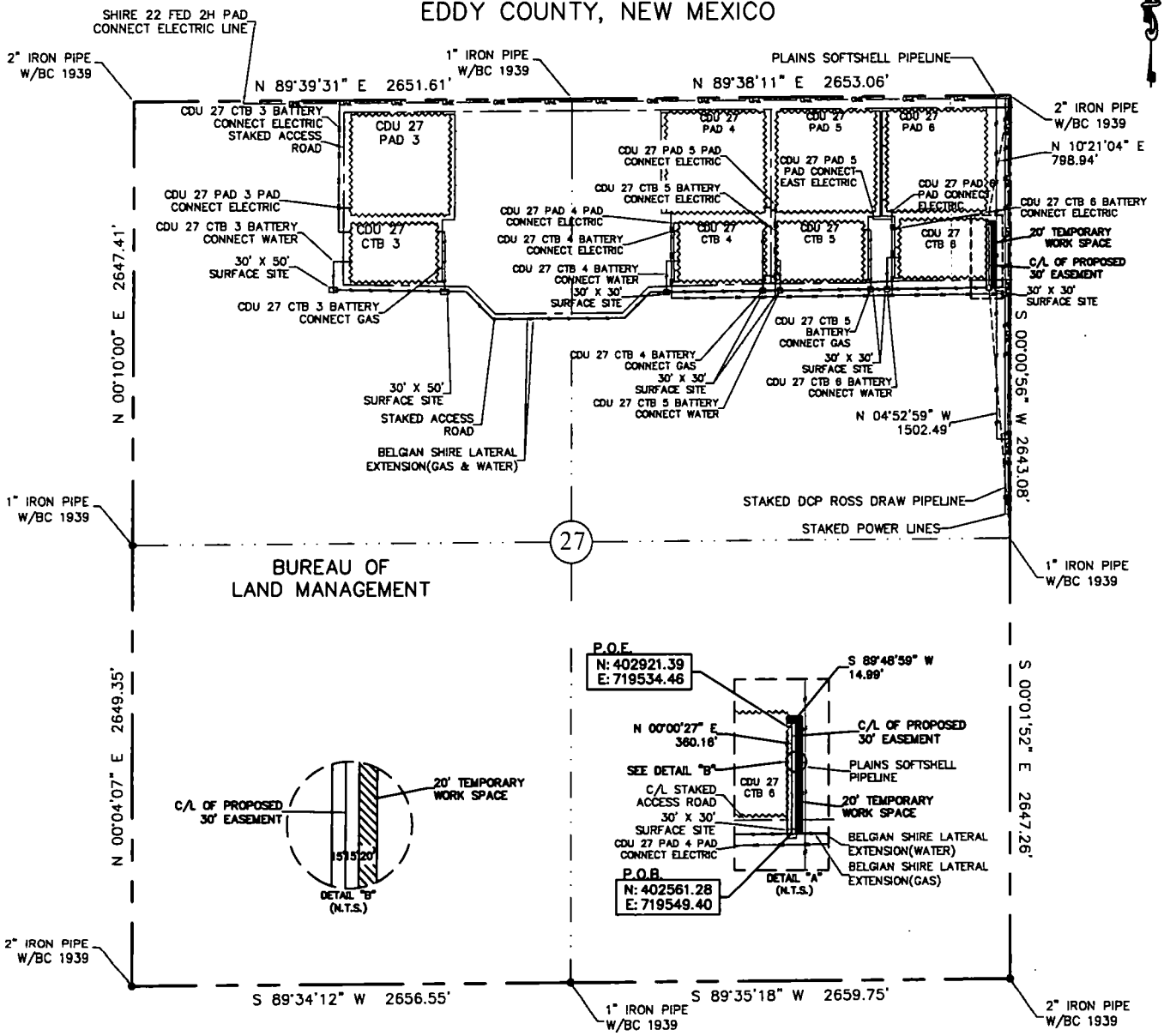
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 15 of 18
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.258 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.195 ACRE(S)
375.15 FEET OR 22.74 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+14.0 EXIT 30' X 30' SURFACE SITE
0+45.1 C/L STAKED ACCESS ROAD
3+75.2 P.O.E./CDU 27 CTB 6

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. LAMAN NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX. 75951
(409) 202-5111
Employee of Horizonrow, LLC

0 1000 2000

HORIZON ROW LLC Drawn for: devon	DEVON ENERGY PRODUCTION COMPANY, L.P. CDU 27 CTB 6 BATTERY CONNECT (GAS)	LINE NUMBER: 760070X WBS NUMBER: CC-110133.01 SCALE: 1" = 1000'	
Drawn by: CHRIS MAAS Date: 05/04/2016	PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S–R31E, N.M.P.M.	REVISIONS: SHEET: 15 OF 18	

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 04°52'59" W, a distance of 1502.49' to the **Point of Beginning** of this easement having coordinates of Northing=402561.28 feet, Easting=719549.40 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°00'27" E, a distance of 360.16' to an angle point;

Thence S 89°48'59" W, a distance of 14.99' to the **Point of Ending** having coordinates of Northing=402921.39 feet, Easting=719534.46 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 10°21'04" E a distance of 798.94', covering **375.15' or 22.74 rods** and having an area of **0.258 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

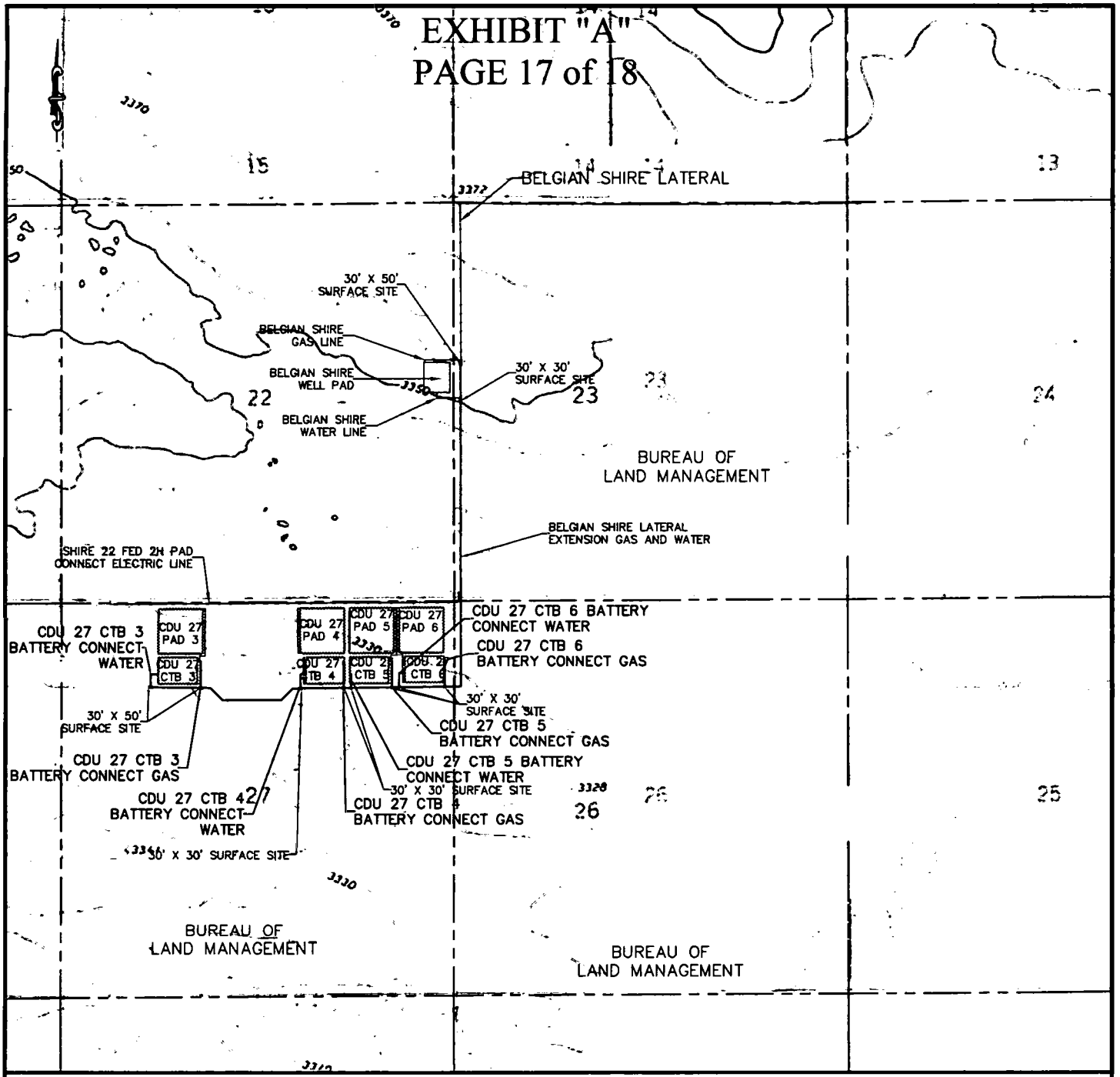
Being a temporary work space twenty (20) feet in width lying on the right side and adjoining the right side of the above described thirty (30) feet easement, having a total area of **0.195 acres.**

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC



QUAD MAP

SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

HORIZON ROW LLC	WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)	CC-110133.01	7600677.2
CDU 27 CTB 4 BATTERY CONNECT (GAS & WATER)	CC-110133.01	7600685.2
CDU 27 CTB 5 BATTERY CONNECT (GAS & WATER)	CC-110133.01	7600693.2
CDU 27 CTB 6 BATTERY CONNECT (GAS & WATER)	CC-110133.01	7600703.2

Drawn for: devon

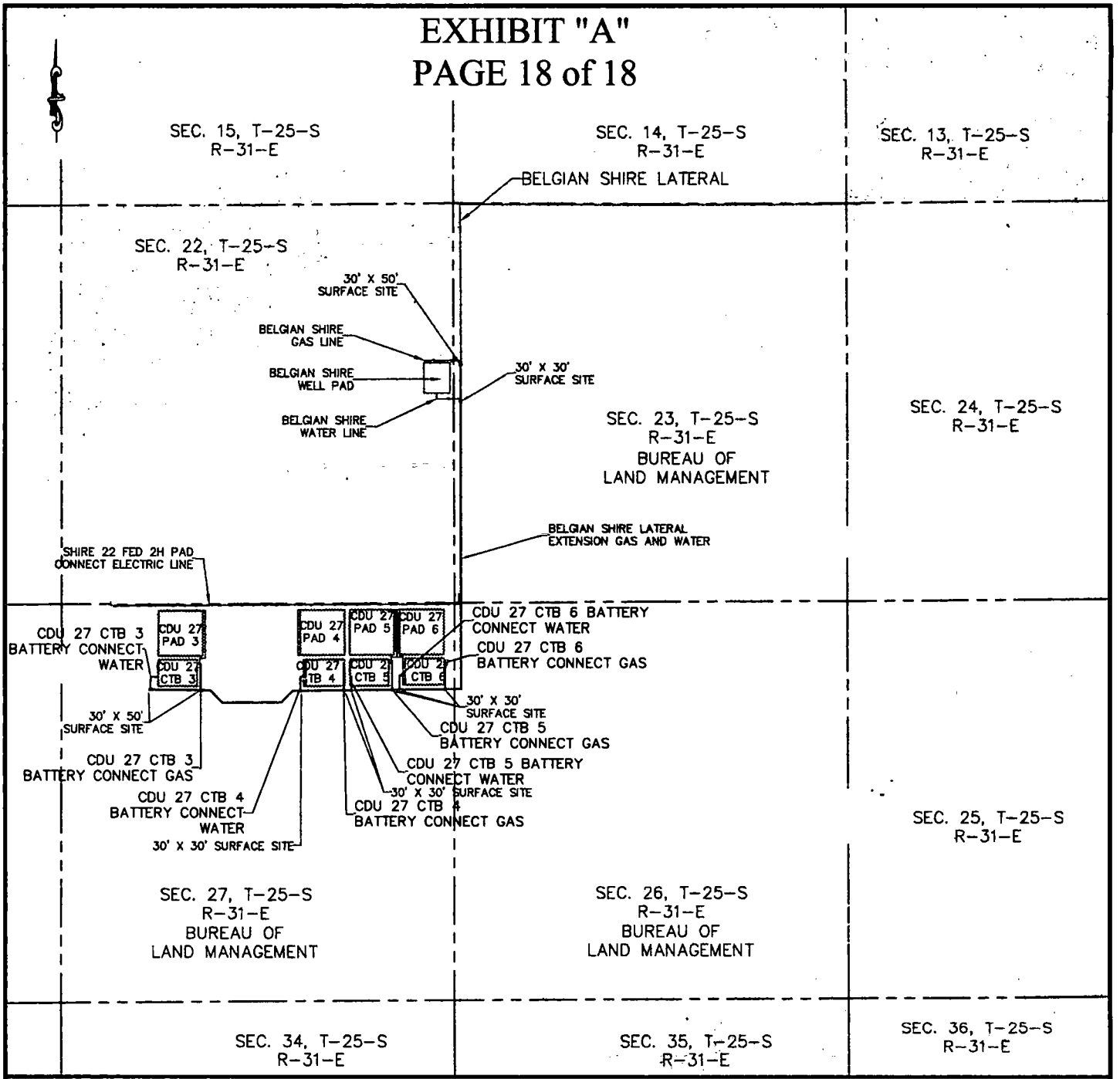
DEVON ENERGY PRODUCTION COMPANY, L.P.

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT

SCALE: 1" = 2000'
REVISIONS:
SHEET: 17 OF 18

Drawn by: CHRIS MAAS
Date: 05/04/2018

EXHIBIT "A"
PAGE 18 of 18



AERIAL MAP

SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

HORIZON ROW LLC	WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)	CC-110133.01	760067XLZ
CDU 27 CTB 4 BATTERY CONNECT (GAS & WATER)	CC-110133.01	760068XLZ
CDU 27 CTB 5 BATTERY CONNECT (GAS & WATER)	CC-110133.01	760069XLZ
CDU 27 CTB 6 BATTERY CONNECT (GAS & WATER)	CC-110133.01	760070XLZ

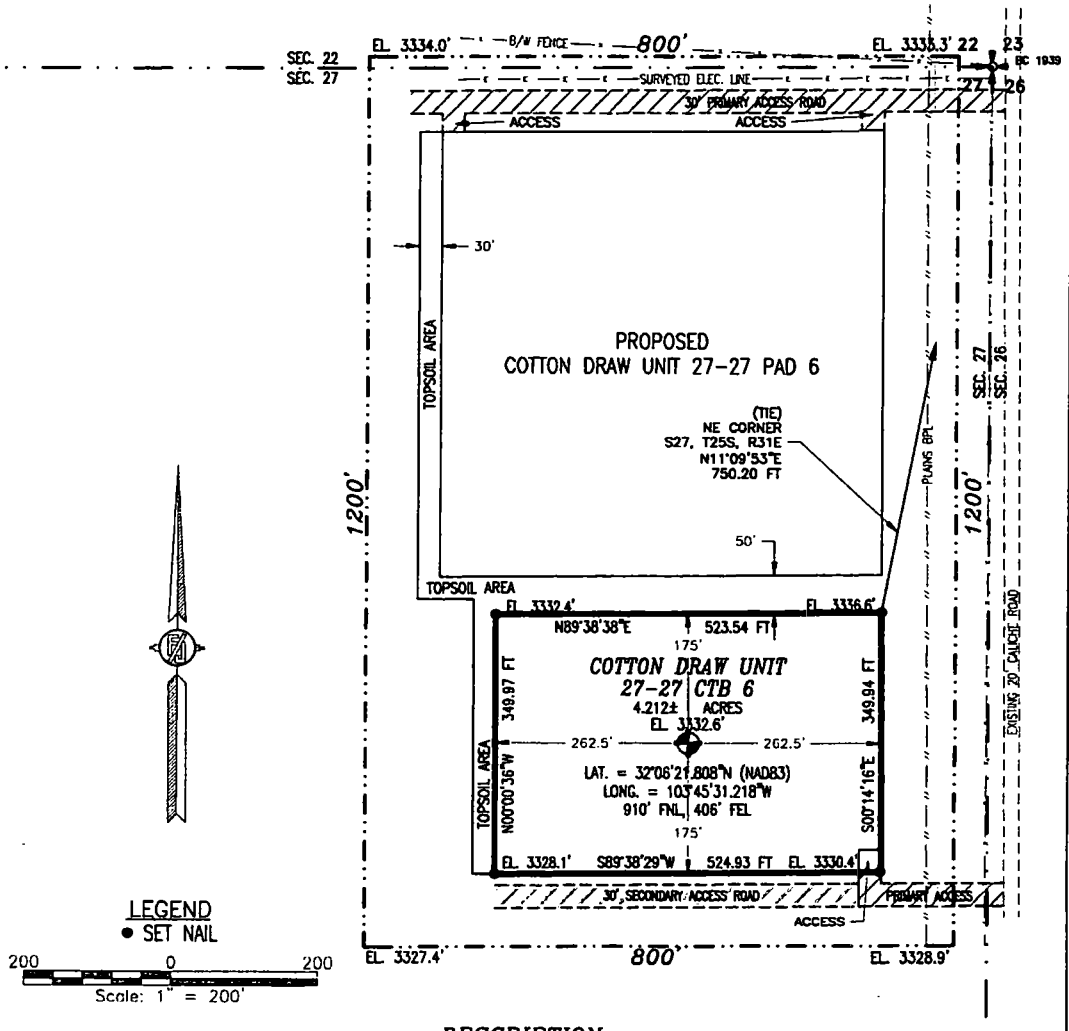
Drawn for: devon	DEVON ENERGY PRODUCTION COMPANY, L.P.	
Drawn by: CHRIS MAAS — Date: 05/04/2016	PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT	SCALE: 1" = 2000'
		REVISIONS:
		SHEET: 18 OF 18

COTTON DRAW UNIT 27-27 CTB 6 (AA000056018)

DEVON ENERGY PRODUCTION COMPANY, L.P.

IN THE NE/4 NE/4 OF
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 17, 2016



DESCRIPTION

A CERTAIN PIECE OR PARCEL OF LAND AND REAL ESTATE LYING IN THE NE/4 NE/4 OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST N.M.P.M., EDDY COUNTY, NEW MEXICO.

BEGINNING AT THE NORTHEAST CORNER OF THE PARCEL, WHENCE THE NORTHEAST CORNER OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N11°09'53"E, A DISTANCE OF 750.20 FEET;
THENCE S00°14'16"E A DISTANCE OF 349.94 FEET TO THE SOUTHEAST CORNER OF THE PARCEL;
THENCE S89°38'29"W A DISTANCE OF 524.93 FEET TO THE SOUTHWEST CORNER OF THE PARCEL;
THENCE N00°00'36"W A DISTANCE OF 349.97 FEET TO THE NORTHWEST CORNER OF THE PARCEL;
THENCE N89°38'38"E A DISTANCE OF 523.54 FEET TO THE NORTHEAST CORNER OF THE PARCEL, TO THE POINT OF BEGINNING;
CONTAINING 4.212 ACRES MORE OR LESS.

GENERAL NOTES

1.) THE INTENT OF THIS SURVEY IS TO ACQUIRE A BUSINESS LEASE FOR THE PURPOSE OF BUILDING A CENTRAL TANK BATTERY

2.) BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST ZONE MODIFIED TO THE SURFACE (NAD83)

DRIVING DIRECTION: FROM STATE HIGHWAY 128 AND CR 1 (ORLA HIGHWAY) GO SOUTH ON CR 1 6.5 MILES TO MONSANTO ROAD, TURN RIGHT GO WEST 2.1 MILES, TURN RIGHT GO NORTH 0.8 OF A MILE, TURN LEFT GO WEST 2.1 MILES, BEND LEFT GO SOUTHWEST 1.3 MILES, TURN LEFT GO SOUTH 1.2 MILE TO BEGIN ROAD SURVEY, GO WEST 178' TO THE SOUTHEAST CORNER FOR THIS LOCATION.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 17 DAY OF JUNE 2016.

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FILIMON F. JARAMILLO, P.S. 12797

SURVEY NO. 4497B

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

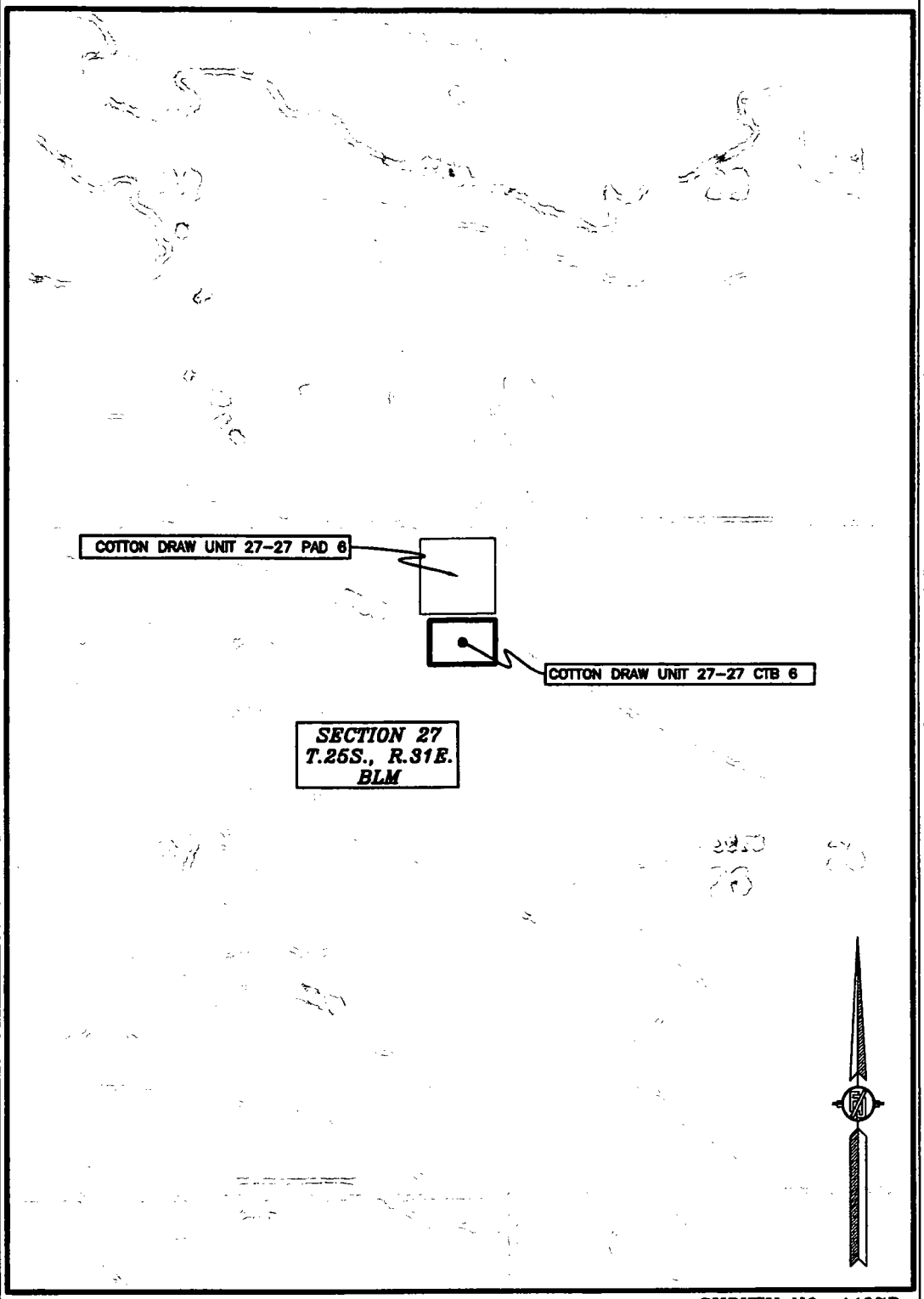
COTTON DRAW UNIT 27-27 CTB 6 (AA000056018)

DEVON ENERGY PRODUCTION COMPANY, L.P.

IN THE NE/4 NE/4 OF
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 17, 2016

QUAD MAP



SHEET: 2-3

SURVEY NO. 4497B

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

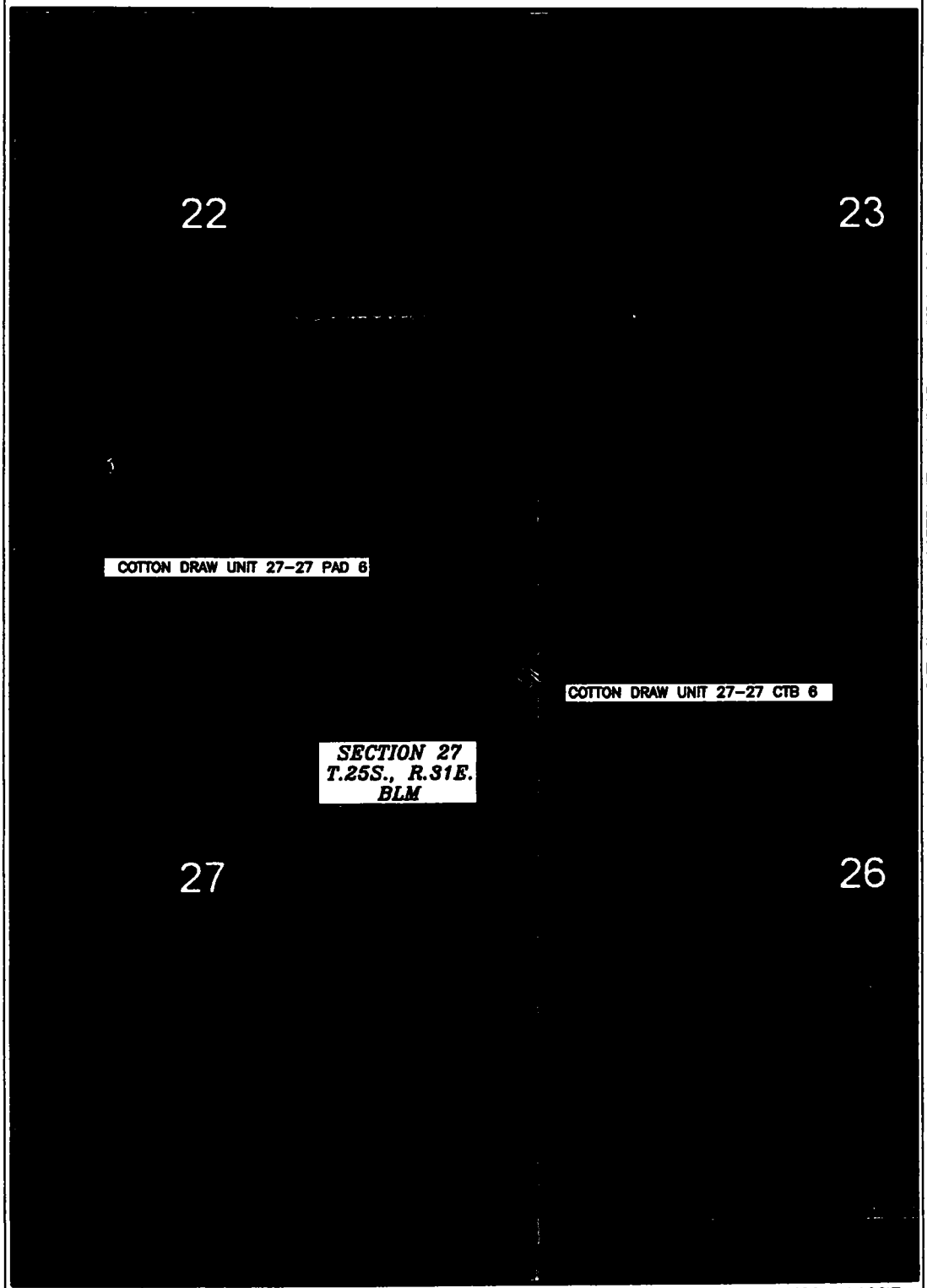
COTTON DRAW UNIT 27-27 CTB 6 (AA000056018)

DEVON ENERGY PRODUCTION COMPANY, L.P.

IN THE NE/4 NE/4 OF
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 17, 2016

AERIAL PHOTO

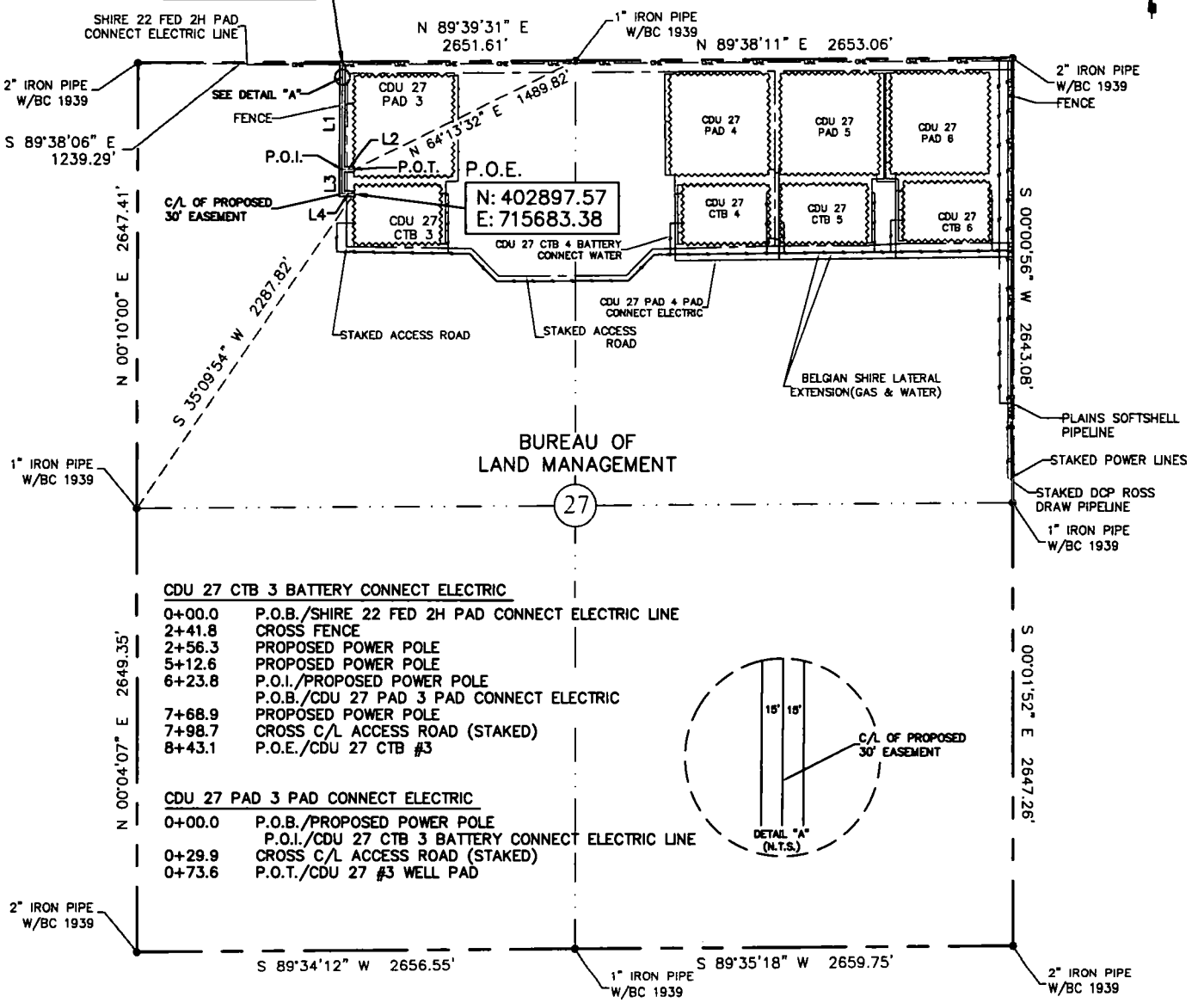


SHEET: 3-3

SURVEY NO. 4497B

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

EXHIBIT "A"
PAGE 1 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



CDU 27 CTB 3 BATTERY CONNECT ELECTRIC

0+00.0	P.O.B./SHIRE 22 FED 2H PAD CONNECT ELECTRIC LINE
2+41.8	CROSS FENCE
2+56.3	PROPOSED POWER POLE
5+12.6	PROPOSED POWER POLE
6+23.8	P.O.I./PROPOSED POWER POLE
	P.O.B./CDU 27 PAD 3 PAD CONNECT ELECTRIC
7+68.9	PROPOSED POWER POLE
7+98.7	CROSS C/L ACCESS ROAD (STAKED)
8+43.1	P.O.E./CDU 27 CTB #3

CDU 27 PAD 3 PAD CONNECT ELECTRIC

0+00.0	P.O.B./PROPOSED POWER POLE
	P.O.I./CDU 27 CTB 3 BATTERY CONNECT ELECTRIC LINE
0+29.9	CROSS C/L ACCESS ROAD (STAKED)
0+73.6	P.O.T./CDU 27 #3 WELL PAD

30' EASEMENT AREA = 0.621 ACRE(S)
916.72 FEET OR 55.56 RODS

LINE	BEARING	DISTANCE
L1	S 00°16'02" W	623.83'
L2	S 89°45'48" E	73.61'
L3	S 00°16'02" W	145.03'
L4	S 89°42'35" E	74.25'

SEE THE ATTACHED LEGAL DESCRIPTION
Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

0 1000 2000

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-13-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

	WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT ELECTRIC LINE	CC-112971.AL	EL7794
CDU 27 PAD 3 PAD CONNECT ELECTRIC LINE	CC-112971.AL	EL7800

HORIZON ROW LLC
Drawn for: devon

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 CTB 3 BATTERY CONNECT AND CDU 27 PAD 3 PAD CONNECT ELECTRIC LINES

SCALE: 1" = 1000'
REVISIONS:
SHEET: 1 OF 17

Drawn by: WAYNE BEETS
Date: 05/09/2016

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northwest quarter (NW ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 2" iron pipe w/ BC 1939 for the northwest corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence S 89°38'06" E a distance of 1239.29' to the **Point of Beginning** of this easement having coordinates of Northing=403666.79 feet, Easting=715612.71 feet, and continuing the following courses;

Thence S 00°16'02" W, a distance of 623.83' to the Point of Intersection;

Thence S 89°45'48" E, a distance of 73.61' to the point of termination of this portion of said easement, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 64°13'32" E a distance of 1489.82';

Thence continuing from said point of intersection the following courses;

Thence S 00°16'02" W, a distance of 145.03' to an angle point;

Thence S 89°42'35" E, a distance of 74.25' to the **Point of Ending** having coordinates of Northing=402897.57 feet, Easting=715683.38 feet, from said point a 1" iron pipe w/ BC1939 found for the west quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears S 35°09'54" W a distance of 2287.82', covering **916.72' or 55.56 rods** and having an area of **0.621 acres**.

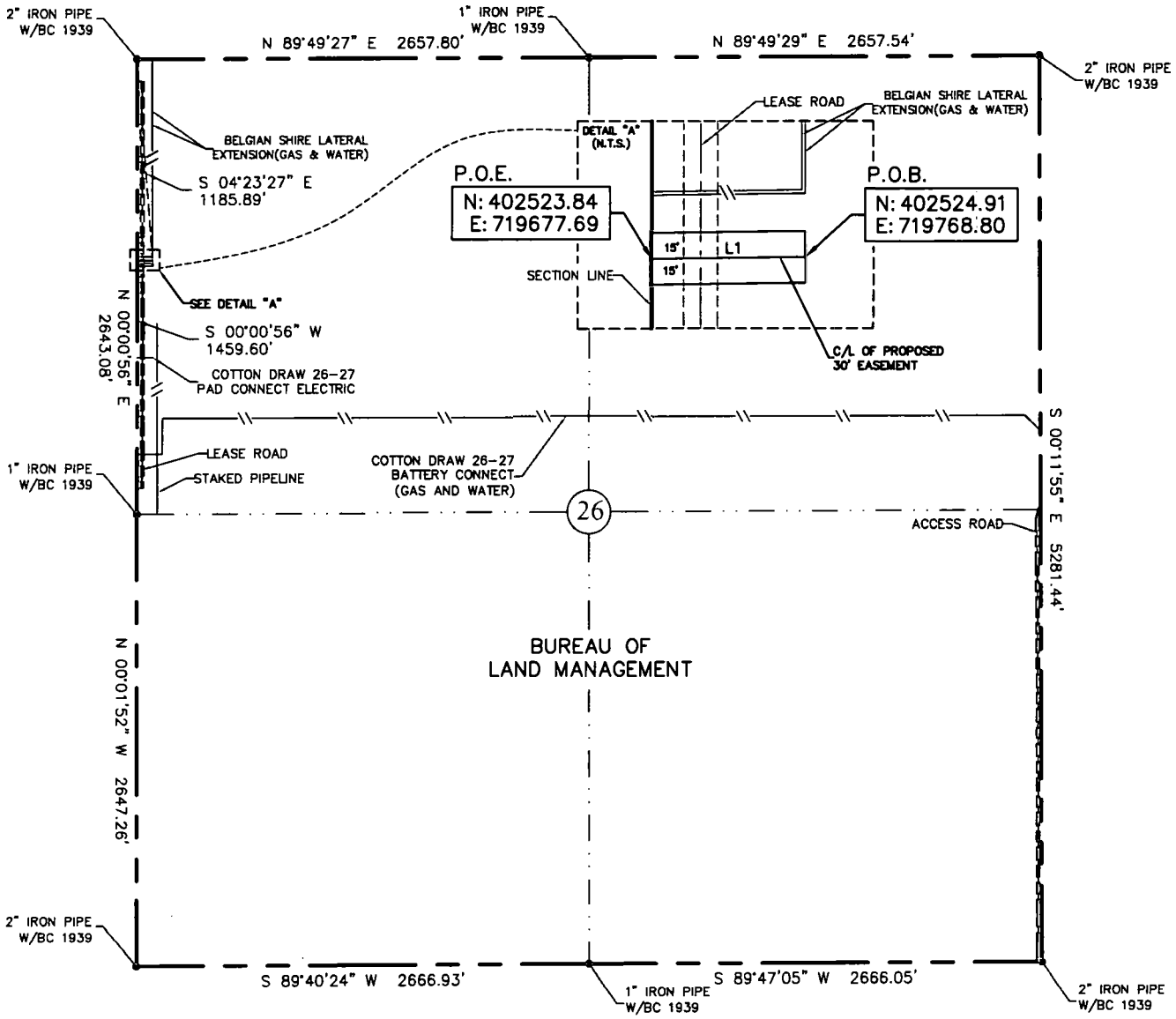
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 4 of 17
ELECTRIC LINE PLAT
SECTION 26, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.063 ACRE(S)
91.12 FEET OR 5.52 RODS

0+00.0 P.O.B.
0+35.0 PROPOSED POWER POLE
0+49.9 EDGE OF LEASE ROAD
0+61.3 C/L LEASE ROAD
0+72.6 EDGE OF LEASE ROAD
0+91.1 P.O.E. SECTION LINE

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

LINE	BEARING	DISTANCE
L1	S 89°19'37" W	91.12'

0 1000 2000

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to represent an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. LAMAN NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-13-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

HORIZON ROW LLC
Drawn for:
devon
Drawn by: WAYNE BEETS
Date: 05/05/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 PAD 4 PAD
CONNECT-ELECTRIC LINE
PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 26, T25S–R31E, N.M.P.M.

LINE NUMBER: EL7801
WBS NUMBER: CC-112971.AL
SCALE: 1" = 1000'
REVISIONS:
SHEET: 4 OF 17

SECTION 26, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northwest quarter (NW ¼) of Section 26, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 2" iron pipe w/ BC 1939 for the northwest corner of Section 26, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence S 04°23'27" E a distance of 1185.89' to the **Point of Beginning** of this easement having coordinates of Northing=402524.91 feet, Easting=719768.80 feet, and continuing the following course;

Thence S 89°19'37" W, a distance of 91.12' to the **Point of Ending** having coordinates of Northing=402523.84 feet, Easting=719677.69 feet, being in the west line of Section 26, T25S-R31E, from said point a 1" iron pipe w/ BC1939 found for the west quarter corner of Section 26, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears S 00°00'56" W a distance of 1459.60', covering **91.12' or 5.52 rods** and having an area of **0.063 acres**.

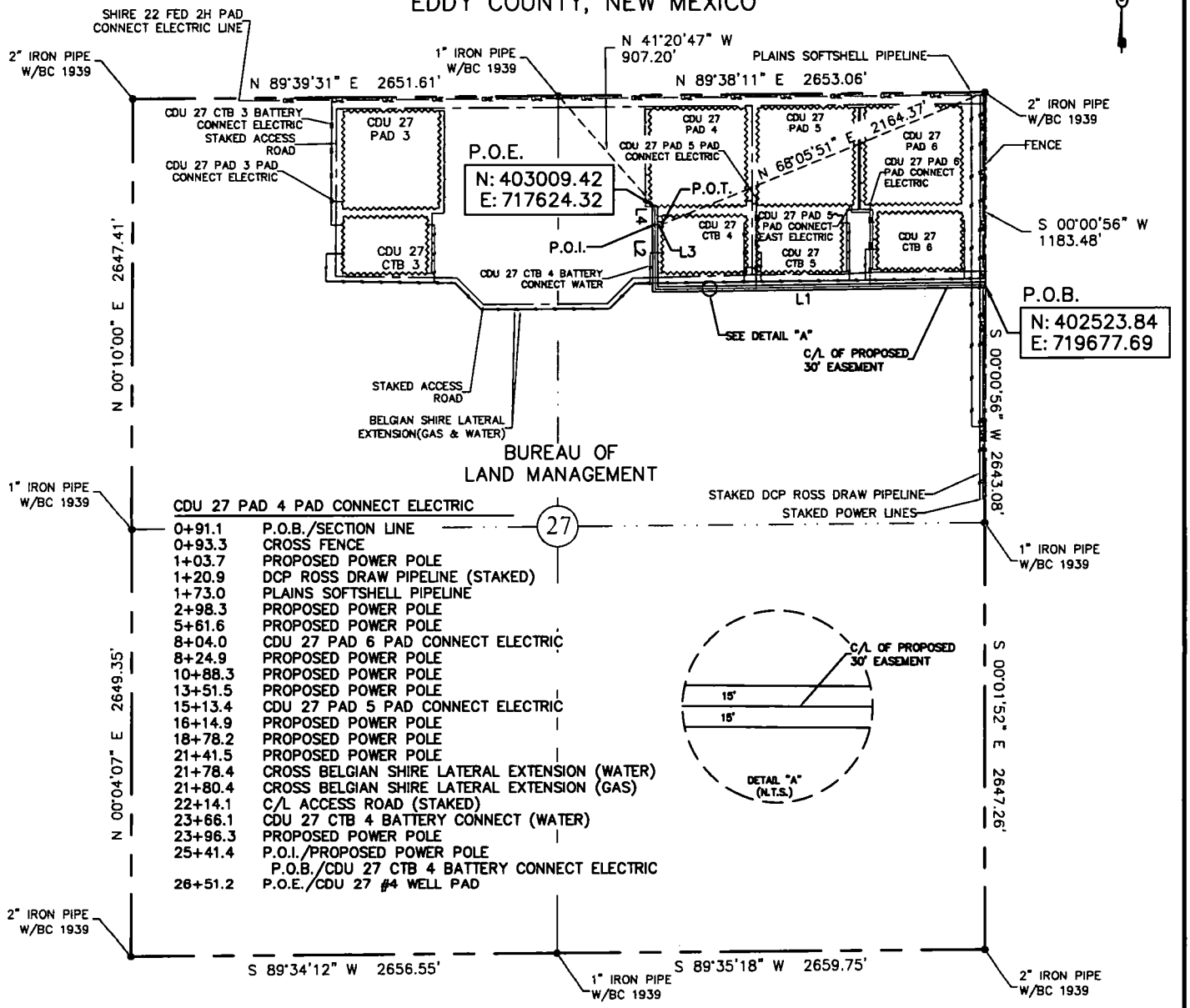
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 6 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



CDU 27 PAD 4 PAD CONNECT ELECTRIC

0+91.1	P.O.B./SECTION LINE
0+93.3	CROSS FENCE
1+03.7	PROPOSED POWER POLE
1+20.9	DCP ROSS DRAW PIPELINE (STAKED)
1+73.0	PLAINS SOFTSHELL PIPELINE
2+98.3	PROPOSED POWER POLE
5+61.6	PROPOSED POWER POLE
8+04.0	CDU 27 PAD 6 PAD CONNECT ELECTRIC
8+24.9	PROPOSED POWER POLE
10+88.3	PROPOSED POWER POLE
13+51.5	PROPOSED POWER POLE
15+13.4	CDU 27 PAD 5 PAD CONNECT ELECTRIC
16+14.9	PROPOSED POWER POLE
18+78.2	PROPOSED POWER POLE
21+41.5	PROPOSED POWER POLE
21+78.4	CROSS BELGIAN SHIRE LATERAL EXTENSION (WATER)
21+80.4	CROSS BELGIAN SHIRE LATERAL EXTENSION (GAS)
22+14.1	C/L ACCESS ROAD (STAKED)
23+66.1	CDU 27 CTB 4 BATTERY CONNECT (WATER)
23+96.3	PROPOSED POWER POLE
25+41.4	P.O.I./PROPOSED POWER POLE P.O.B./CDU 27 CTB 4 BATTERY CONNECT ELECTRIC
26+51.2	P.O.E./CDU 27 #4 WELL PAD

CDU 27 CTB 4 BATTERY CONNECT ELECTRIC

0+00.0	P.O.B./PROPOSED POWER POLE P.O.I./CDU 27 PAD 4 PAD CONNECT ELECTRIC
0+44.9	P.O.T./CDU 27 CTB 4 PAD

LINE	BEARING	DISTANCE
L1	S 89°19'37" W	2050.37'
L2	N 00°21'11" W	399.93'
L3	N 89°39'00" E	44.87'
L4	N 00°21'11" W	109.74'

30' EASEMENT AREA = 1.784 ACRE(S)
2604.91 FEET OR 157.87 RODS

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

0 1000 2000

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS #22404
Date Signed: 05-13-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

	WBS NUMBER:	LINE NUMBER:
CDU 27 PAD 4 PAD CONNECT ELECTRIC LINE	CC-112971.AL	EL7801
CDU 27 CTB 4 BATTERY CONNECT ELECTRIC LINE	CC-112971.AL	EL7795

HORIZON ROW LLC
Drawn for: devon

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 PAD 4 PAD CONNECT AND CDU 27 CTB 4 BATTERY CONNECT ELECTRIC LINES

SCALE: 1" = 1000'
REVISIONS:
SHEET: 6 OF 17

Drawn by: WAYNE BEETS
Date: 05/09/2016

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 2" iron pipe w/ BC 1939 for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence S 00°00'56" W a distance of 1183.48' to the **Point of Beginning** of this easement having coordinates of Northing=402523.84 feet, Easting=719677.69 feet, and continuing the following courses;

Thence S 89°19'37" W, a distance of 2050.37' to an angle point;

Thence N 00°21'11" W, a distance of 399.93' to the Point of Intersection;

Thence N 89°39'00" E, a distance of 44.87' to the point of termination of this portion of said easement, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 68°05'51" E a distance of 2164.37';

Thence continuing from said point of intersection the following courses;

Thence N 00°21'11" W, a distance of 109.74' to the **Point of Ending** having coordinates of Northing=403009.42 feet, Easting=717624.32 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 41°20'47" W a distance of 907.20', covering **2604.91' or 157.87 rods** and having an area of **1.784 acres**.

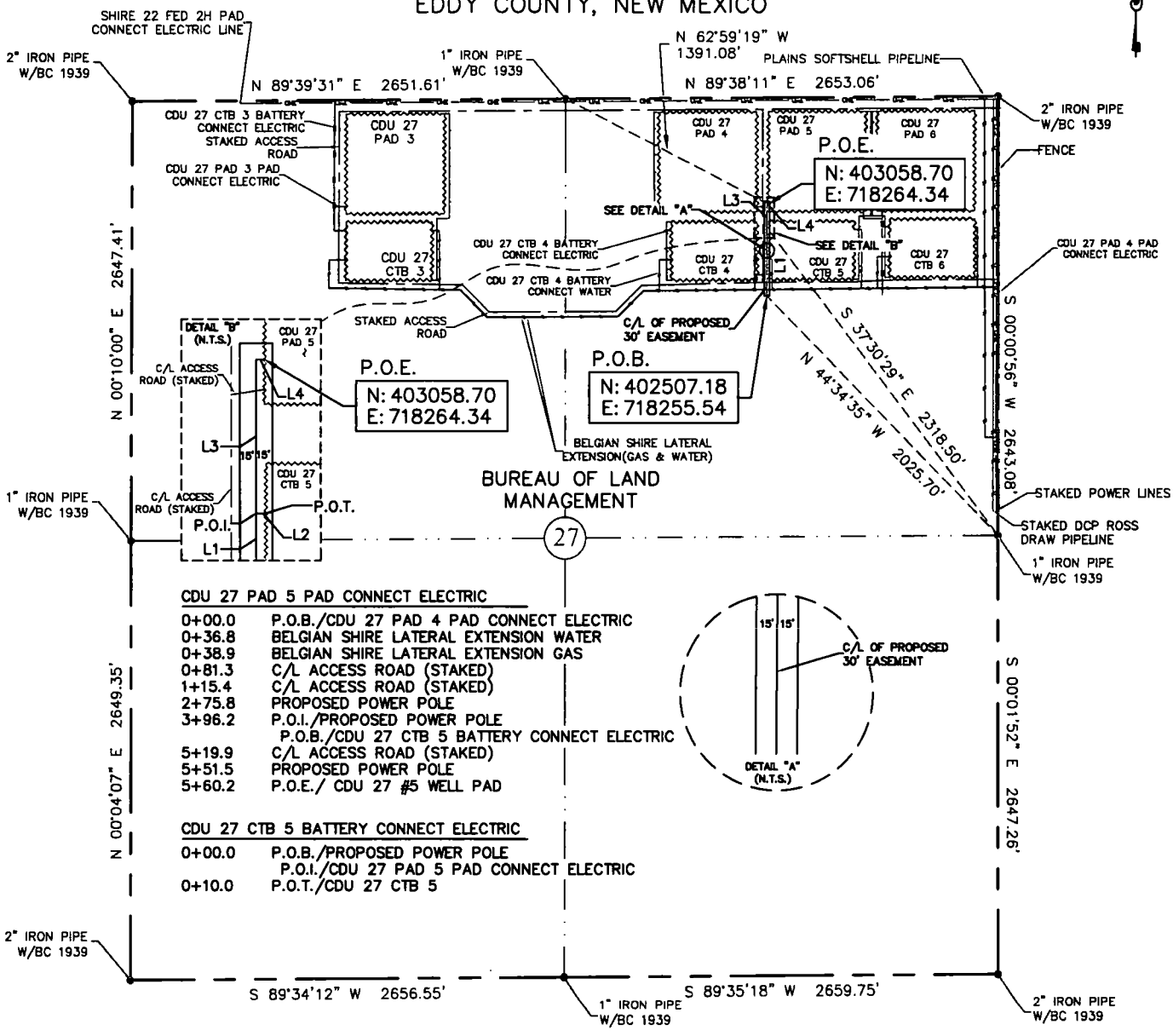
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 9 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



CDU 27 PAD 5 PAD CONNECT ELECTRIC

0+00.0	P.O.B./CDU 27 PAD 4 PAD CONNECT ELECTRIC
0+36.8	BELGIAN SHIRE LATERAL EXTENSION WATER
0+38.9	BELGIAN SHIRE LATERAL EXTENSION GAS
0+81.3	C/L ACCESS ROAD (STAKED)
1+15.4	C/L ACCESS ROAD (STAKED)
2+75.8	PROPOSED POWER POLE
3+96.2	P.O.I./PROPOSED POWER POLE P.O.B./CDU 27 CTB 5 BATTERY CONNECT ELECTRIC
5+19.9	C/L ACCESS ROAD (STAKED)
5+51.5	PROPOSED POWER POLE
5+60.2	P.O.E./ CDU 27 #5 WELL PAD

CDU 27 CTB 5 BATTERY CONNECT ELECTRIC

0+00.0	P.O.B./PROPOSED POWER POLE P.O.I./CDU 27 PAD 5 PAD CONNECT ELECTRIC
0+10.0	P.O.T./CDU 27 CTB 5

LINE	BEARING	DISTANCE
L1	N 00°00'59" E	396.22'
L2	N 89°50'02" E	9.97'
L3	N 00°00'59" E	155.30'
L4	N 89°59'36" E	8.65'

30' EASEMENT AREA = 0.390 ACRE(S)
570.14 FEET OR 34.55 RODS

0 1000 2000

SEE THE ATTACHED LEGAL DESCRIPTION
Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. LAMAN
NEW MEXICO
22404
PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-13-2016
Hortzonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Hortzonrow, LLC

	WBS NUMBER:	LINE NUMBER:
CDU 27 PAD 5 PAD CONNECT ELECTRIC LINE	CC-112971.AL	EL7802
CDU 27 CTB 5 BATTERY CONNECT ELECTRIC LINE	CC-112971.AL	EL7796

HORIZON ROW LLC
Drawn for: devon
Drawn by: WAYNE BEETS
Date: 05/09/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 PAD 5 PAD CONNECT AND CDU 27 CTB 5 BATTERY CONNECT ELECTRIC LINES

SCALE: 1" = 1000'
REVISIONS:
SHEET: 9 OF 17

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC 1939 for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 44°34'35" W a distance of 2025.70' to the **Point of Beginning** of this easement having coordinates of Northing=402507.18 feet, Easting=718255.54 feet, and continuing the following courses;

Thence N 00°00'59" E, a distance of 396.22' to the Point of Intersection;

Thence N 89°50'02" E, a distance of 9.97' to the point of termination of this portion of said easement, from said point a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears S 37°30'29" E a distance of 2318.50';

Thence continuing from said point of intersection the following courses;

Thence N 00°00'59" E, a distance of 155.30' to an angle point;

Thence N 89°59'36" E, a distance of 8.65' to the **Point of Ending** having coordinates of Northing=403058.70 feet, Easting=718264.34 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 62°59'19" W a distance of 1391.08', covering **570.14' or 34.55 rods** and having an area of **0.390 acres**.

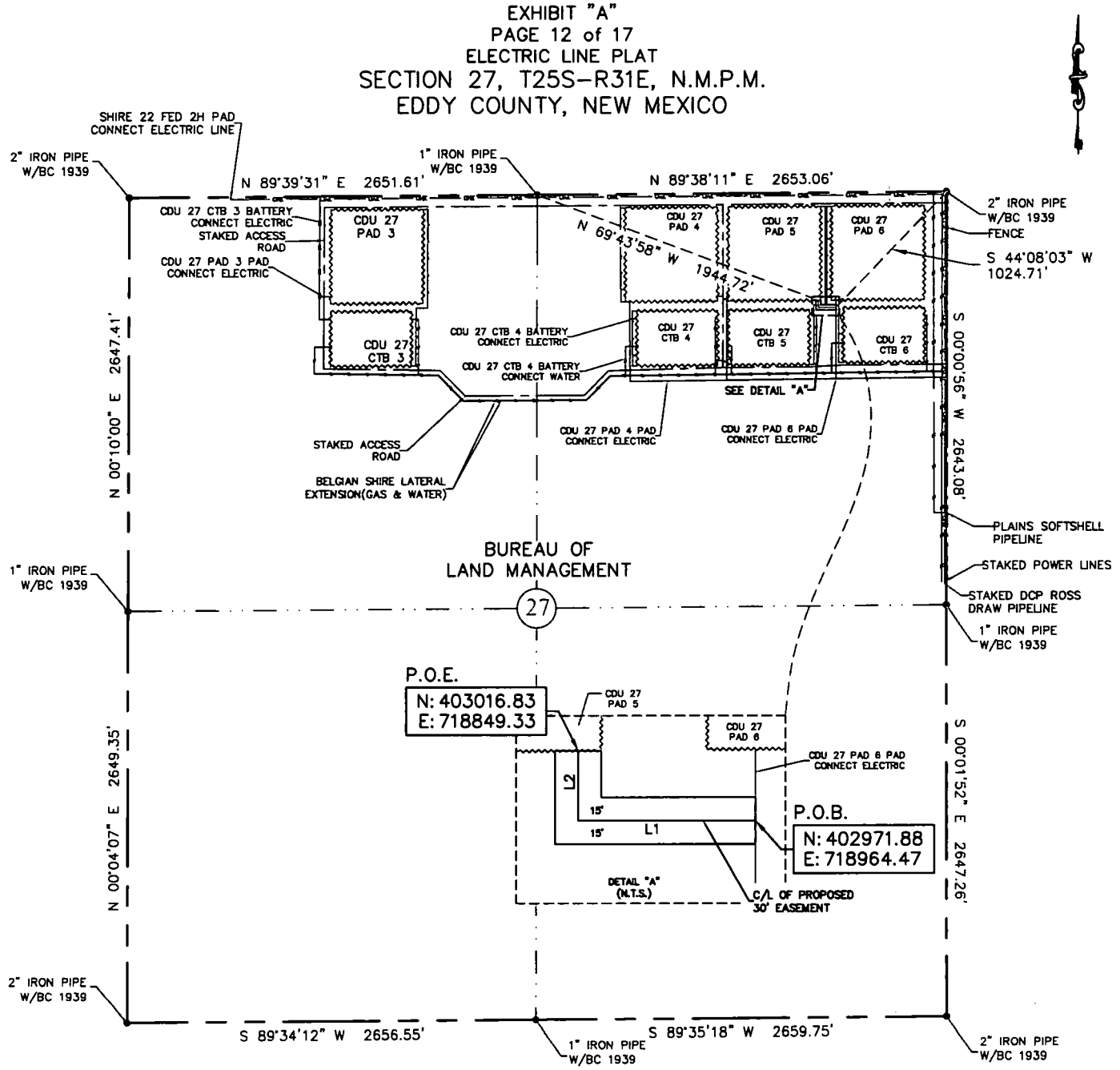
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 12 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.110 ACRE(S)
160.17 FEET OR 9.71 RODS

0+00.0	P.O.B./CDU 27 PAD 6 PAD CONNECT ELECTRIC
1+15.2	PROPOSED POWER POLE
1+60.2	P.O.E./CDU 27 #5 WELL PAD

LINE	BEARING	DISTANCE
L1	S 89°58'05" W	115.15'
L2	N 00°01'04" E	45.02'

0 1000 2000

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

NEW MEXICO 22404 PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-13-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

HORIZON ROW LLC
Drawn for: devon
Drawn by: WAYNE BEETS
Date: 05/10/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 PAD 5 PAD
CONNECT EAST–ELECTRIC LINE
PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

LINE NUMBER: EL7814
WBS NUMBER: CC-112971.AL
SCALE: 1" = 1000'
REVISIONS:
SHEET: 12 OF 17

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 2" iron pipe w/ BC 1939 for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence S 44°08'03" W a distance of 1024.71' to the **Point of Beginning** of this easement having coordinates of Northing=402971.88 feet, Easting=718964.47 feet, and continuing the following courses;

Thence S 89°58'05" W, a distance of 115.15' to an angle point;

Thence N 00°01'04" E, a distance of 45.02' to the **Point of Ending** having coordinates of Northing=403016.83 feet, Easting=718849.33 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 69°43'58" W a distance of 1944.72', covering **160.17' or 9.71 rods** and having an area of **0.110 acres.**

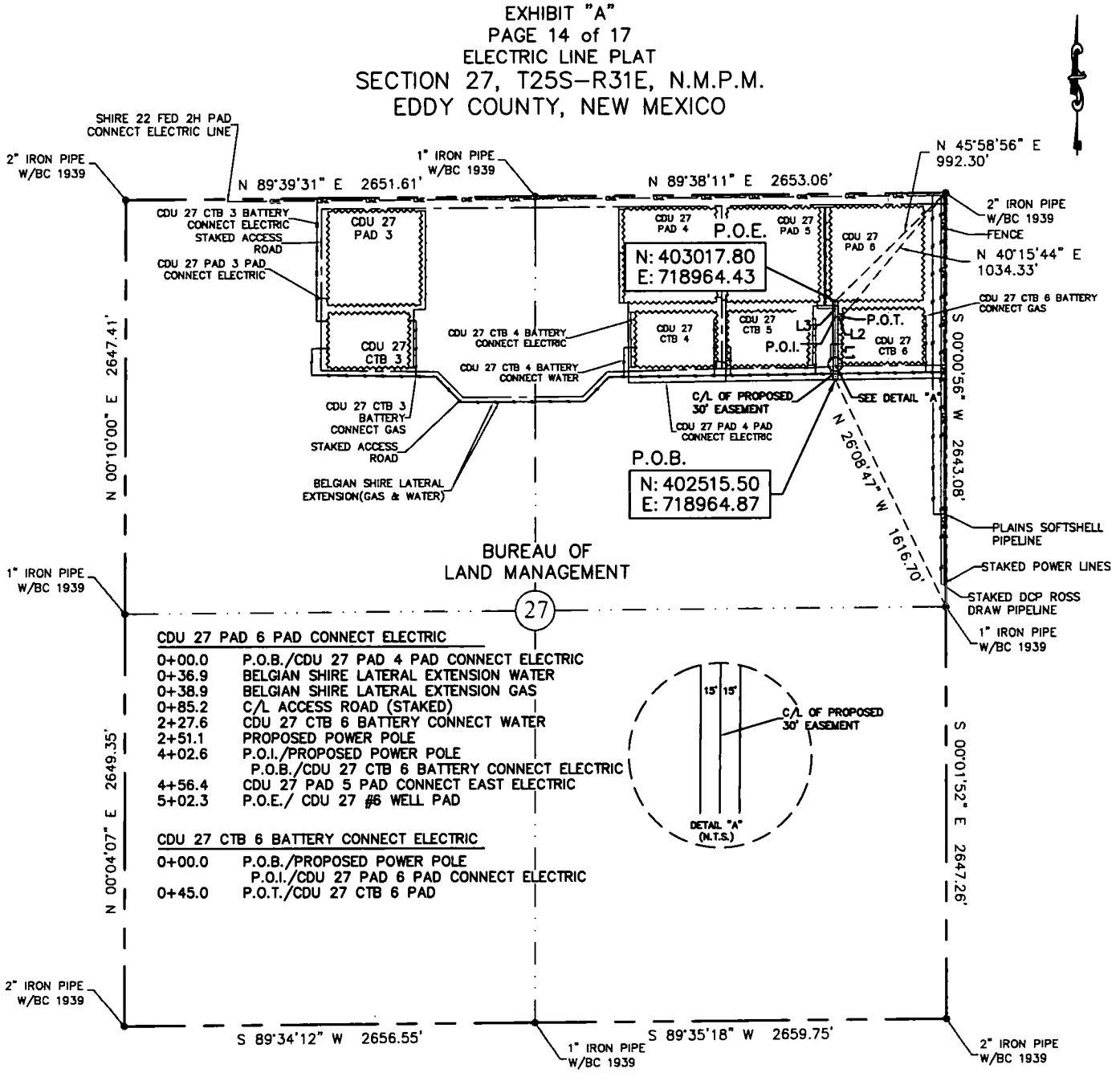
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 14 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S–R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



CDU 27 PAD 6 PAD CONNECT ELECTRIC

0+00.0	P.O.B./CDU 27 PAD 4 PAD CONNECT ELECTRIC
0+36.9	BELGIAN SHIRE LATERAL EXTENSION WATER
0+38.9	BELGIAN SHIRE LATERAL EXTENSION GAS
0+85.2	C/L ACCESS ROAD (STAKED)
2+27.6	CDU 27 CTB 6 BATTERY CONNECT WATER
2+51.1	PROPOSED POWER POLE
4+02.6	P.O.I./PROPOSED POWER POLE P.O.B./CDU 27 CTB 6 BATTERY CONNECT ELECTRIC
4+56.4	CDU 27 PAD 5 PAD CONNECT EAST ELECTRIC
5+02.3	P.O.E./ CDU 27 #6 WELL PAD

CDU 27 CTB 6 BATTERY CONNECT ELECTRIC

0+00.0	P.O.B./PROPOSED POWER POLE P.O.I./CDU 27 PAD 6 PAD CONNECT ELECTRIC
0+45.0	P.O.T./CDU 27 CTB 6 PAD

LINE	BEARING	DISTANCE
L1	N 00°03'00" W	402.56'
L2	S 89°58'05" E	45.02'
L3	N 00°03'00" W	99.74'

30' EASEMENT AREA = 0.367 ACRE(S)
547.32 FEET OR 33.17 RODS

0 1000 2000

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

NEW MEXICO 22404 B.L. LAMAN PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-13-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC

	WBS NUMBER:	LINE NUMBER:
CDU 27 PAD 6 PAD CONNECT ELECTRIC LINE	CC-112971.AL	EL7803
CDU 27 CTB 6 BATTERY CONNECT ELECTRIC LINE	CC-112971.AL	EL7797

HORIZON ROW LLC
Drawn for: devon

DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 PAD 6 PAD CONNECT AND CDU 27 CTB 6 BATTERY CONNECT ELECTRIC LINES

SCALE: 1" = 1000'
REVISIONS:
SHEET: 14 OF 17

Drawn by: WAYNE BEETS
Date: 05/09/2016

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT
SECTION 27, T25S–R31E, N.M.P.M.

SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC 1939 for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 26°08'47" W a distance of 1616.70' to the **Point of Beginning** of this easement having coordinates of Northing=402515.50 feet, Easting=718964.87 feet, and continuing the following courses;

Thence N 00°03'00" W, a distance of 402.56' to the Point of Intersection;

Thence S 89°58'05" E, a distance of 45.02' to the point of termination of this portion of said easement, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 40°15'44" E a distance of 1034.33';

Thence continuing from said point of intersection the following course;

Thence N 00°03'00" W, a distance of 99.74' to the **Point of Ending** having coordinates of Northing=403017.80 feet, Easting=718964.43 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 45°58'56" E a distance of 992.30', covering **547.32' or 33.17 rods** and having an area of **0.367 acres**.

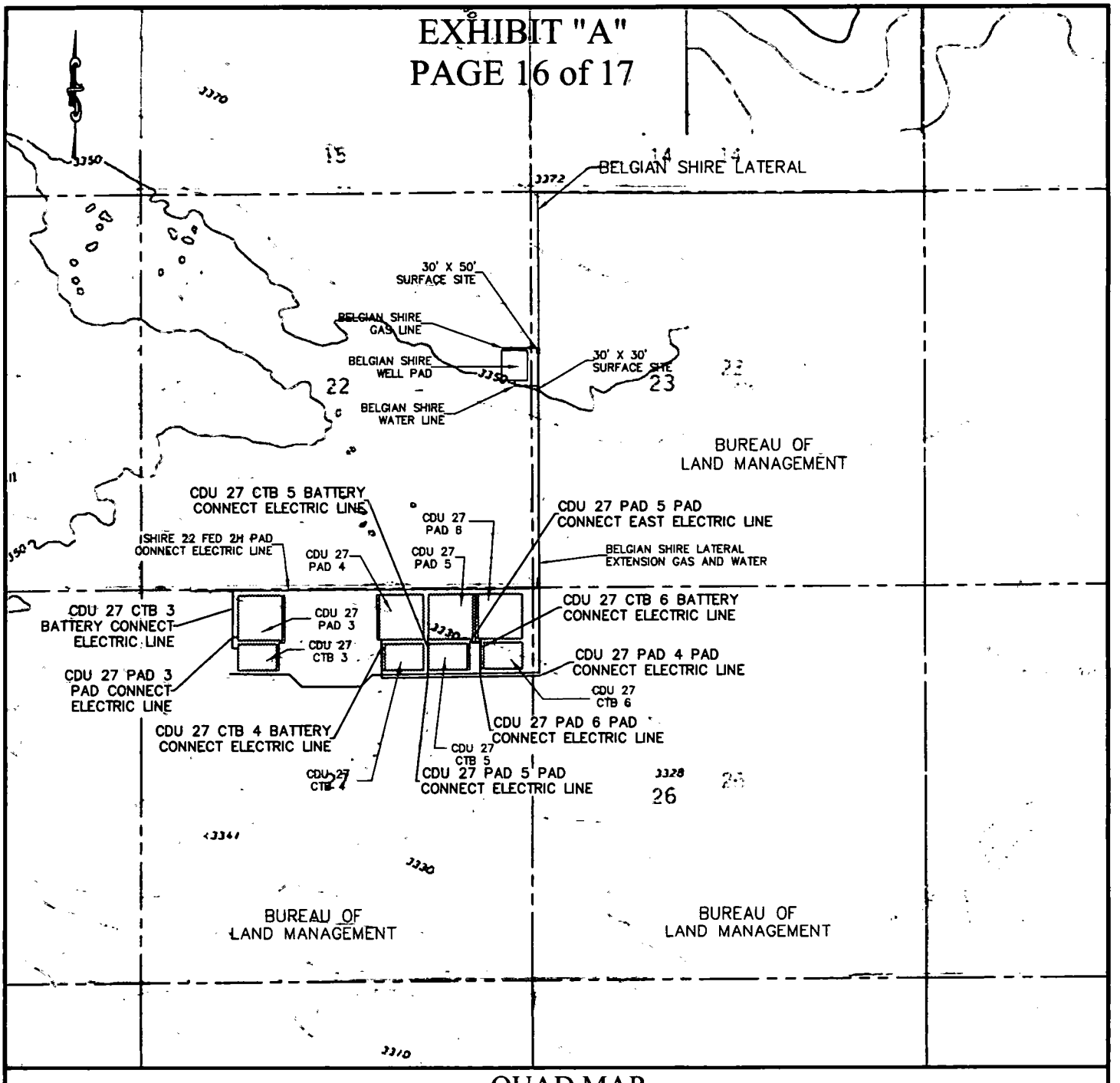
NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC

EXHIBIT "A"
PAGE 16 of 17



QUAD MAP

SECTION 27, T25S-R31E, N.M.P.M.
SECTION 26, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

	WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT–ELECTRIC LINE	CC–112971.AL	EL7794
CDU 27 PAD 3 PAD CONNECT–ELECTRIC LINE	CC–112971.AL	EL7800
CDU 27 PAD 4 PAD CONNECT–ELECTRIC LINE	CC–112971.AL	EL7801
CDU 27 CTB 4 BATTERY CONNECT–ELECTRIC LINE	CC–112971.AL	EL7795
CDU 27 PAD 5 PAD CONNECT EAST–ELECTRIC LINE	CC–112971.AL	EL7814
CDU 27 PAD 5 PAD CONNECT–ELECTRIC LINE	CC–112971.AL	EL7802
CDU 27 CTB 5 BATTERY CONNECT–ELECTRIC LINE	CC–112971.AL	EL7796
CDU 27 PAD 6 PAD CONNECT–ELECTRIC LINE	CC–112971.AL	EL7803
CDU 27 CTB 6 BATTERY CONNECT–ELECTRIC LINE	CC–112971.AL	EL7797

Drawn for: devon

DEVON ENERGY PRODUCTION COMPANY, L.P.

Drawn by: WAYNE BEETS

Date: 05/10/2016

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT

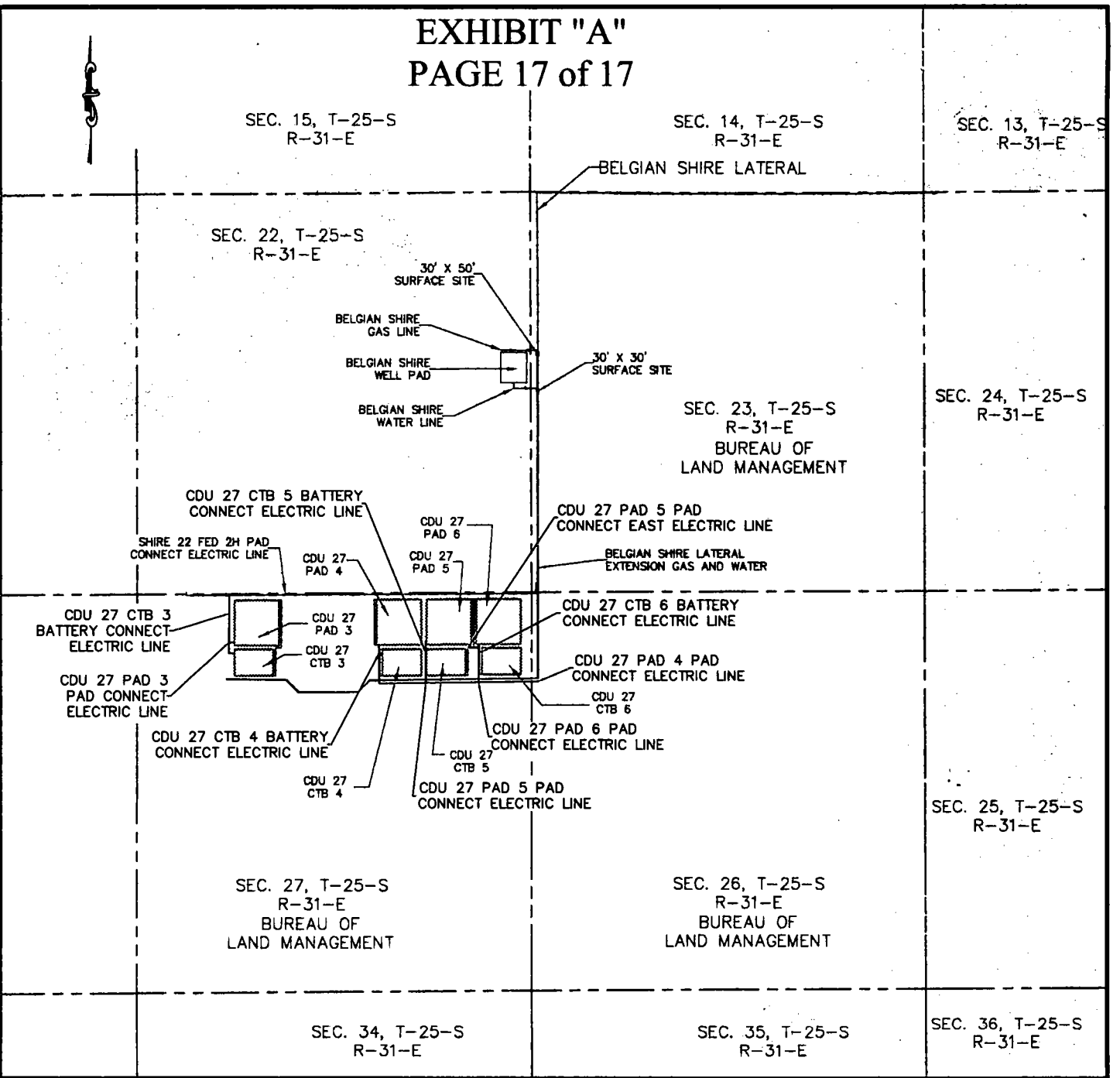
SCALE: 1" = 2000'

REVISIONS:

SHEET: 16 OF 17

HORIZON ROW LLC

EXHIBIT "A"
PAGE 17 of 17



AERIAL MAP

SECTION 27, T25S-R31E, N.M.P.M.
SECTION 26, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

	WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL	EL7794
CDU 27 PAD 3 PAD CONNECT-ELECTRIC LINE	CC-112971.AL	EL7800
CDU 27 PAD 4 PAD CONNECT-ELECTRIC LINE	CC-112971.AL	EL7801
CDU 27 CTB 4 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL	EL7795
CDU 27 PAD 5 PAD CONNECT EAST-ELECTRIC LINE	CC-112971.AL	EL7814
CDU 27 PAD 5 PAD CONNECT-ELECTRIC LINE	CC-112971.AL	EL7802
CDU 27 CTB 5 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL	EL7796
CDU 27 PAD 6 PAD CONNECT-ELECTRIC LINE	CC-112971.AL	EL7803
CDU 27 CTB 6 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL	EL7797

Drawn for: devon

DEVON ENERGY PRODUCTION COMPANY, L.P.

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT

Drawn by: WAYNE SEETS

Date: 05/10/2018

SCALE: 1" = 2000'

REVISIONS:

SHEET: 17 OF 17

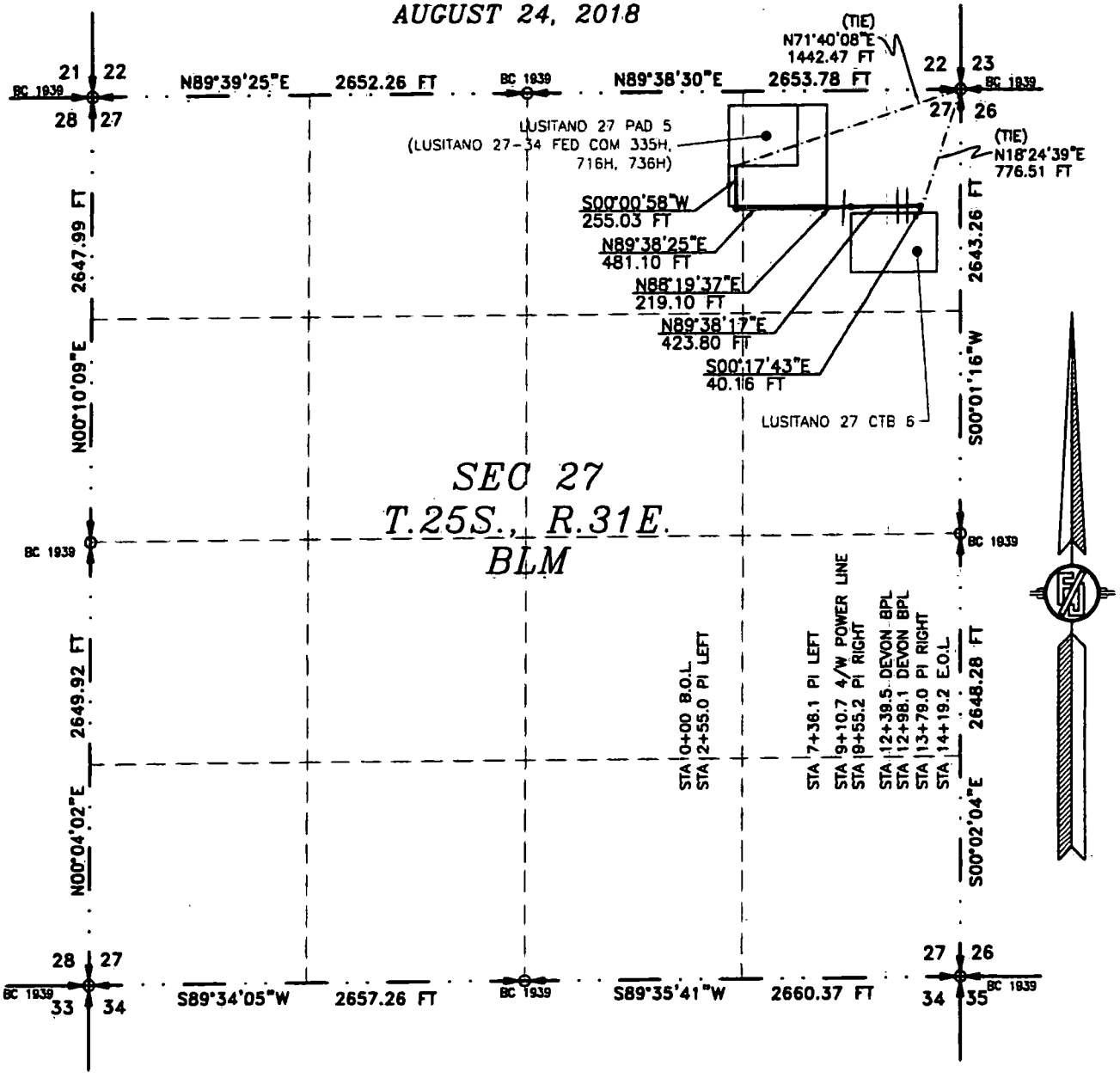
HORIZON ROW LLC

FLOWLINE PLAT

THREE 8" BURIED COMPOSITE FLOWLINES & ONE 8" GAS LIFT LINE FROM THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H) TO THE LUSITANO 27 CTB 6

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 24, 2018



SEE NEXT SHEET (2-4) FOR DESCRIPTION

1000 0 1000

Scale: 1" = 1000'

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 24TH DAY OF AUGUST 2018

FILIMON F. JARAMILLO PLS 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FLOWLINE PLAT

THREE 8" BURIED COMPOSITE FLOWLINES & ONE 8" GAS LIFT LINE FROM THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H) TO THE LUSITANO 27 CTB 6

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 24, 2018

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N71°40'08"E, A DISTANCE OF 1442.47 FEET;
THENCE S00°00'58"W A DISTANCE OF 255.03 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N89°38'25"E A DISTANCE OF 481.10 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N88°19'37"E A DISTANCE OF 219.10 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE N89°38'17"E A DISTANCE OF 423.80 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;
THENCE S00°17'43"E A DISTANCE OF 40.16 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N18°24'39"E, A DISTANCE OF 776.51 FEET;

SAID STRIP OF LAND BEING 1419.19 FEET OR 86.01 RODS IN LENGTH, CONTAINING 0.978 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4	297.14 L.F.	18.01 RODS	0.205 ACRES
NE/4 NE/4	1122.05 L.F.	68.00 RODS	0.773 ACRES

GENERAL NOTES

1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 24 DAY OF AUGUST 2018

FILIMON F. JARAMILLO, PLS 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FLOWLINE PLAT

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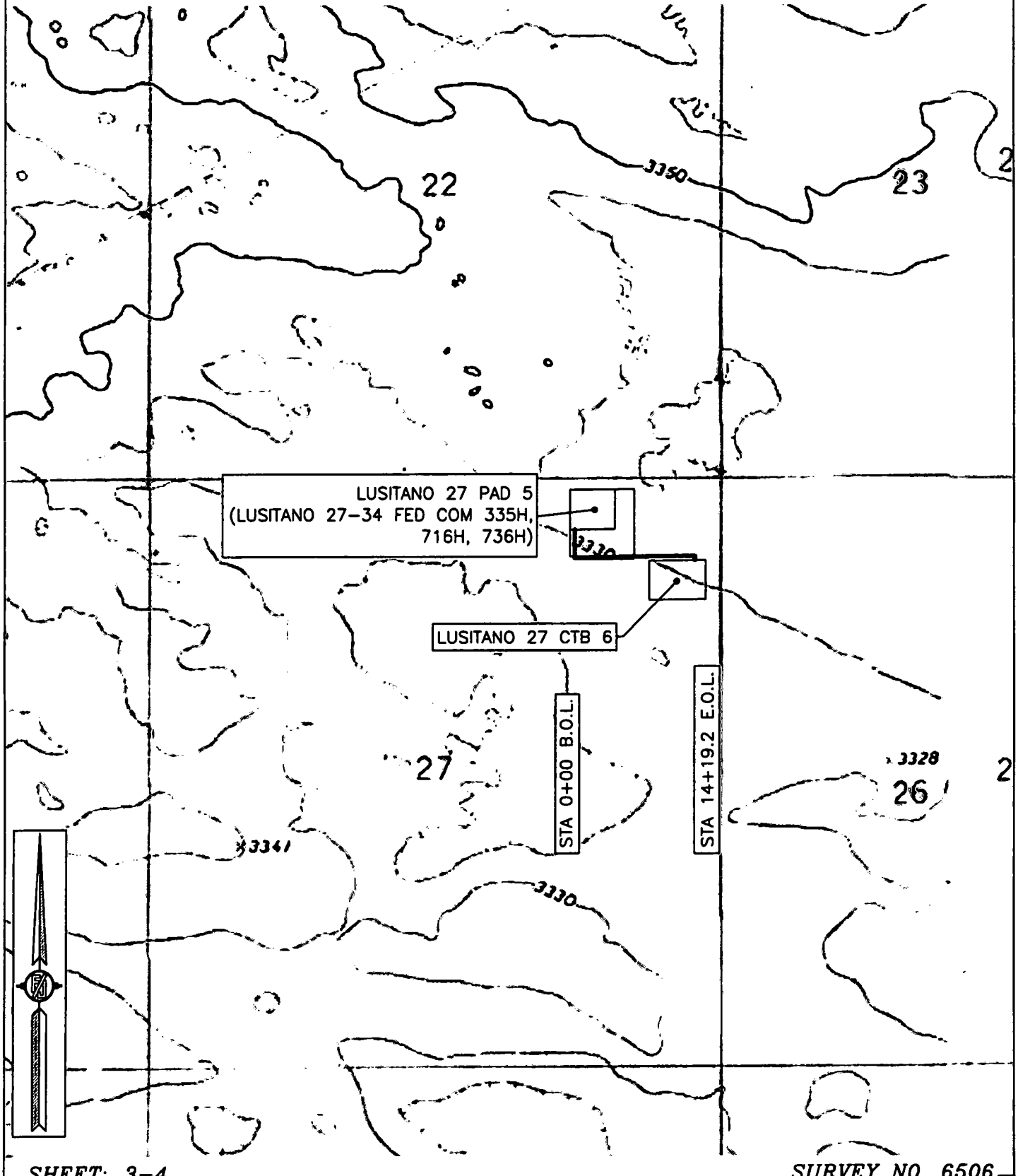
(LUSITANO 27-34 FED COM 335H, 716H, 736H) TO THE LUSITANO 27 CTB 6

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 24, 2018



SHEET: 3-4

SURVEY NO. 6506

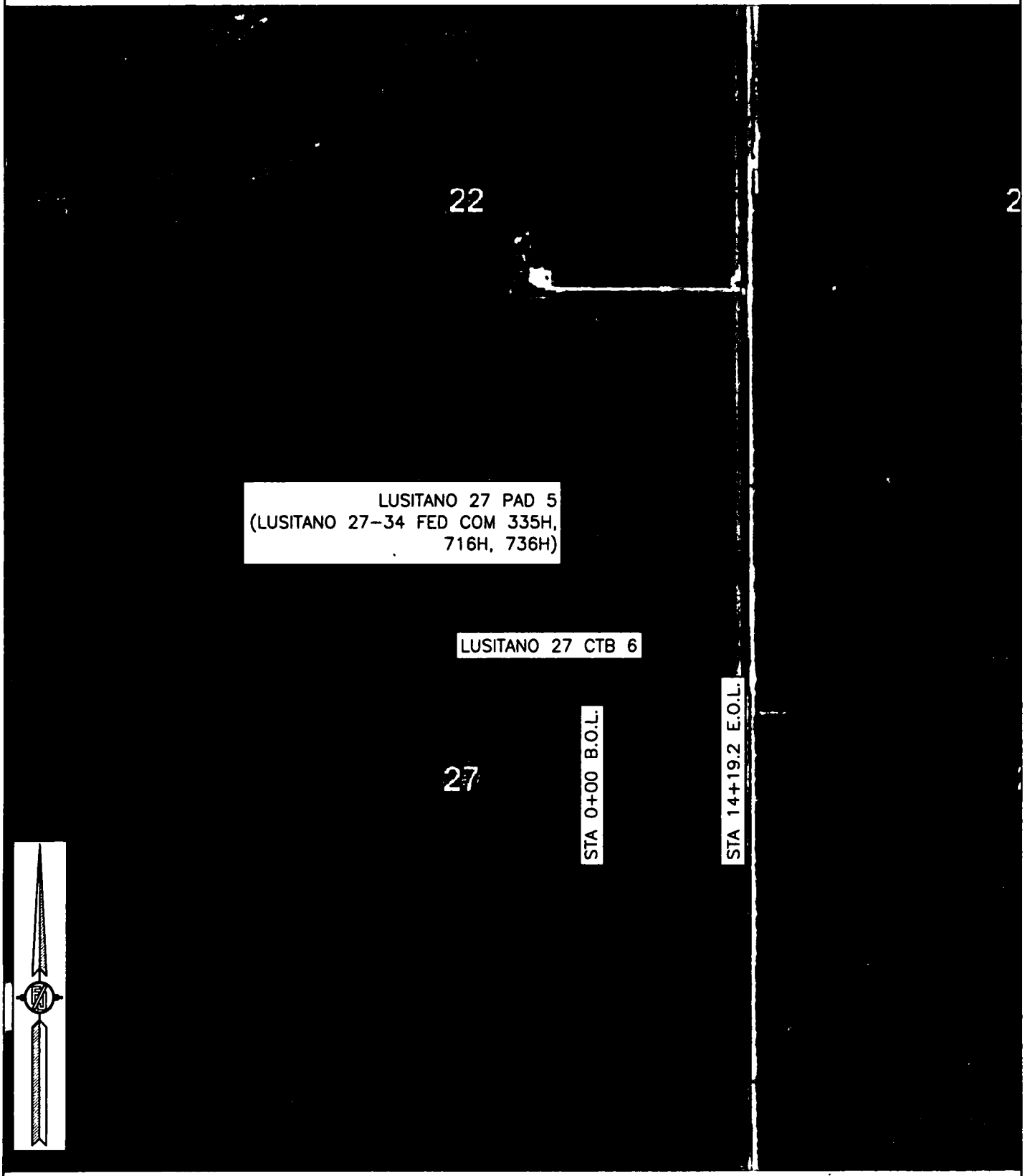
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

FLOWLINE PLAT

THREE 8" BURIED COMPOSITE FLOWLINES & ONE 8" GAS LIFT LINE FROM THE LUSITANO 27 PAD 5
(LUSITANO 27-34 FED COM 335H, 716H, 736H) TO THE LUSITANO 27 CTB 6

DEVON ENERGY PRODUCTION COMPANY, L.P.

CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 24, 2018



SHEET: 4-4 SURVEY NO. 6506

MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number: **Injection well name:**

Assigned injection well API number? **Injection well API number:**

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner: **PWD disturbance (acres):**

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:

AFMSS

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

Bond Info Data Report

01/18/2019

Bond Information

Federal/Indian APD: FED

BLM Bond number: CO1104

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: