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JAN 22 2019

DISTRICT II-ARTESIA O.C.D.

Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMNM125635

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
335H 319562

2. Name of Operator
DEVON ENERGY PRODUCTION COMPANY LP 6137

9. API Well No.
30-015-45654

3a. Address	3b. Phone No. *(include area code)*	10. Field and Pool, or Exploratory
333 West Sheridan Avenue Oklahoma City OK 73102	(800)583-3866	PADUCA / BONE SPRING 97860

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

At surface NENE / 235 FNL / 1264 FEL / LAT 32.1079106 / LONG -103.7614296

At proposed prod. zone SWSE / 20 FSL / 1650 FEL / LAT 32.079507 / 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	13. State
	EDDY	NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
235 feet	720	320

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
540 feet	11173 feet / 21307 feet	FED: CO1104

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3338 feet	01/01/2019	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	08/28/2018

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.

APPROVED WITH CONDITIONS

RWA 1-25-19.

(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 / 1264 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.1079106 / LONG: -103.7614296 (TVD: 0 feet, MD: 0 feet)
   PPP: SWNE / 0 FSL / 1650 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.094097 / LONG: -103.762718 (TVD: 11173 feet, MD: 16047 feet)
   PPP: NWNE / 405 FNL / 1650 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.10745 / LONG: -103.762678 (TVD: 11038 feet, MD: 11111 feet)
   BHL: SWSE / 20 FSL / 1650 FEL / TWSP: 25S / RANGE: 31E / SECTION: 34 / LAT: 32.079507 / LONG: -103.7660268 (TVD: 11173 feet, MD: 21307 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 CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM016348
WELL NAME & NO.:	LUSITANO 27-34 FED COM 335H
SURFACE HOLE FOOTAGE:	235'/N & 1264'/E
BOTTOM HOLE FOOTAGE	20'/S & 1650'/E
LOCATION:	SECTION 27, T25S, R31E, NMPM
COUNTY:	EDDY

COA

H2S	○ Yes	◉ No	
Potash	◉ None	○ Secretary	○ R-111-P
Cave/Karst Potential	○ Low	◉ Medium	○ High
Variance	○ None	◉ Flex Hose	○ Other
Wellhead	○ Conventional	◉ Multibowl	○ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

A. Hydrogen Sulfide

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

Primary Casing Design

1. The **13-3/8** inch surface casing shall be set at approximately **928** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

2. The minimum required fill of cement behind the **9-5/8** inch 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 or potash.**

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 or potash.**

❖ **In Medium 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.**

Operator has proposed to pump down 13 3/8" X 9 5/8" annulus. Operator must run a CBL from TD of the 9 5/8" casing to surface. Submit results to BLM.

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

- Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification.

Alternate Casing Design

4. The **13-3/8** inch surface casing shall be set at approximately **928** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

5. The minimum required fill of cement behind the **8-5/8** inch 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 or potash.**

    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.

    c. 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.

    d. 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 or potash.**

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

Operator has proposed to pump down 13 3/8" X 8 5/8" annulus. <u>Operator must run a CBL from TD of the 8 5/8" casing to surface. Submit results to BLM.</u>

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

    - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification.

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.

<u>Option 1:</u>

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 **5000 (5M)** psi.

<u>Option 2:</u>

i. 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 **5M (5M)** 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.

D. SPECIAL REQUIREMENT

Communitization Agreement

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

GENERAL REQUIREMENTS

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

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

☒ 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

1. 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.

2. 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.

3. 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

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

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

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 335H
SURFACE HOLE FOOTAGE:	235'/N & 1264'/E
BOTTOM HOLE FOOTAGE	20'/S & 1650'/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)

Build as you go no grading all pad just build the subpad.

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:

Chapter 2Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken, to minimize noise associated impacts which could disrupt breeding and nesting activities.
Chapter 3Upon 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.

CONSTRUCTION

Chapter 4NOTIFICATION

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.

Chapter 5TOPSOIL

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.

Chapter 6CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

Chapter 7FEDERAL 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.

Chapter 8WELL 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.

Chapter 9EXCLOSURE 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.)

Chapter 10 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.

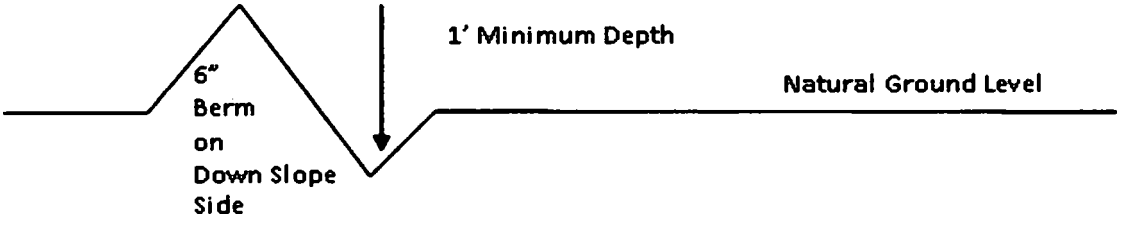
Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

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

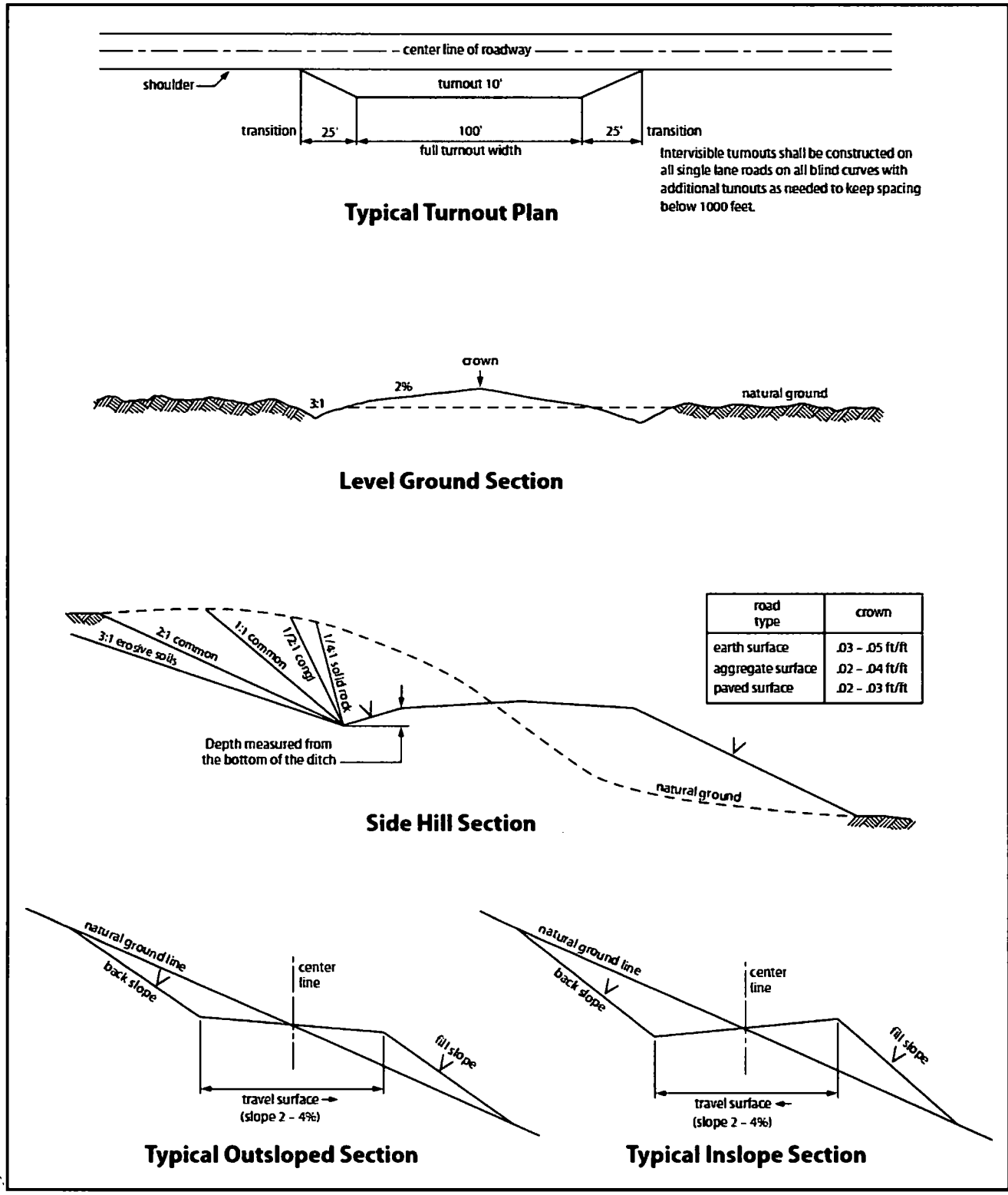


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads

VI. PRODUCTION (POST DRILLING)

- **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:

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.

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.

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.

VII. 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).

VIII. 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

AFMSS

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

Operator Certification Data Report

01/18/2019

Operator Certification

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

NAME: Linda Good **Signed on:** 08/28/2018

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: 10400033357 **Submission Date:** 08/28/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 335H

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

Show Final Text

Section 1 - General

APD ID: 10400033357 **Tie to previous NOS?** **Submission Date:** 08/28/2018

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: NMNM125635 **Lease Acres:** 720

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:** 335H **Well API Number:**

Field/Pool or Exploratory? Field and Pool **Field Name:** PADUCA **Pool Name:** BONE SPRING

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:** 335H

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:** 540 FT **Distance to lease line:** 235 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Lusitano_27_34_Fed_Com_335H_C_102_signed_20180824045128.pdf

Lusitano_27_34_Fed_Com_335H_Additional_points_required_20180824051042.pdf

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

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

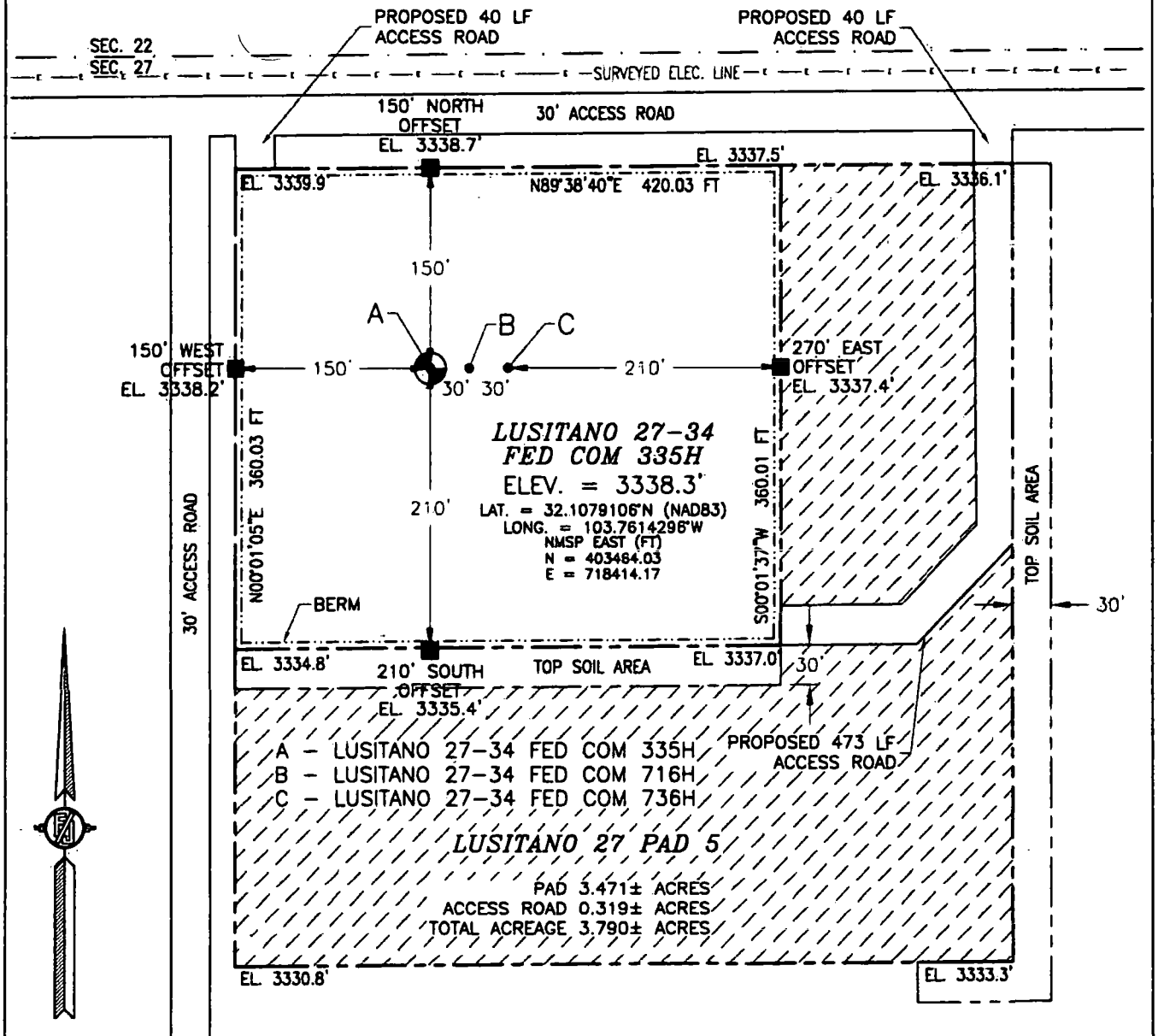
Datum: NAD83 **Vertical Datum:** NAVD88

Survey number: 6438

	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	1264	FEL	25S	31E	27	Aliquot NENE	32.1079106	-103.7614296	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 016348	3338	0	0
KOP Leg #1	200	FNL	1650	FEL	25S	31E	27	Aliquot NWNE	32.108012	-103.762676	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 016348	-7262	10611	10600
PPP Leg #1	405	FNL	1650	FEL	25S	31E	27	Aliquot NWNE	32.10745	-103.762678	EDDY	NEW MEXICO	NEW MEXICO	F	NMNM 016348	-7700	11111	11038

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 335H

LOCATED 235 FT. FROM THE NORTH LINE AND 1264 FT. FROM THE EAST LINE OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO

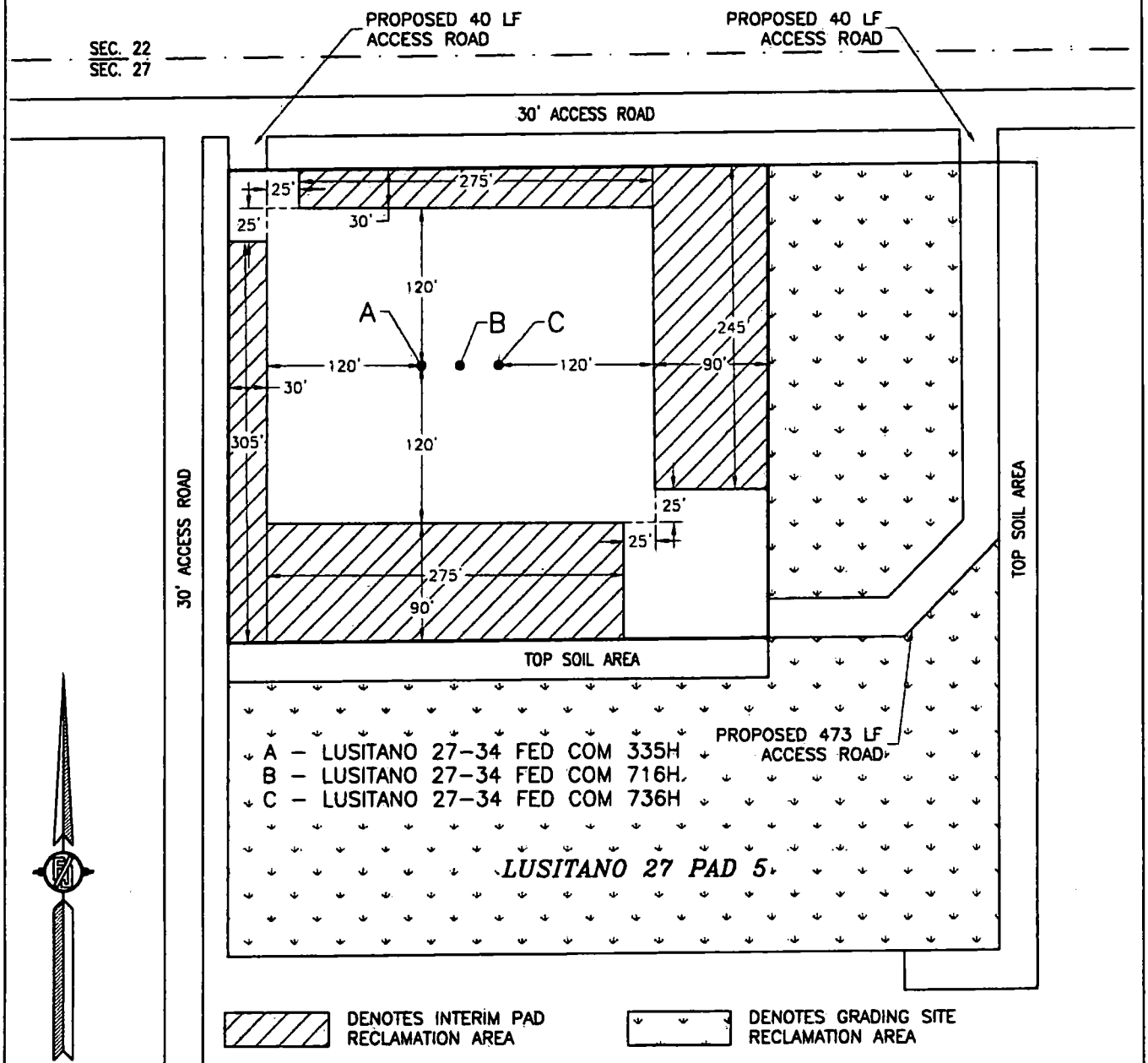
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6438

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



012 60 120 240
SCALE 1" = 120'

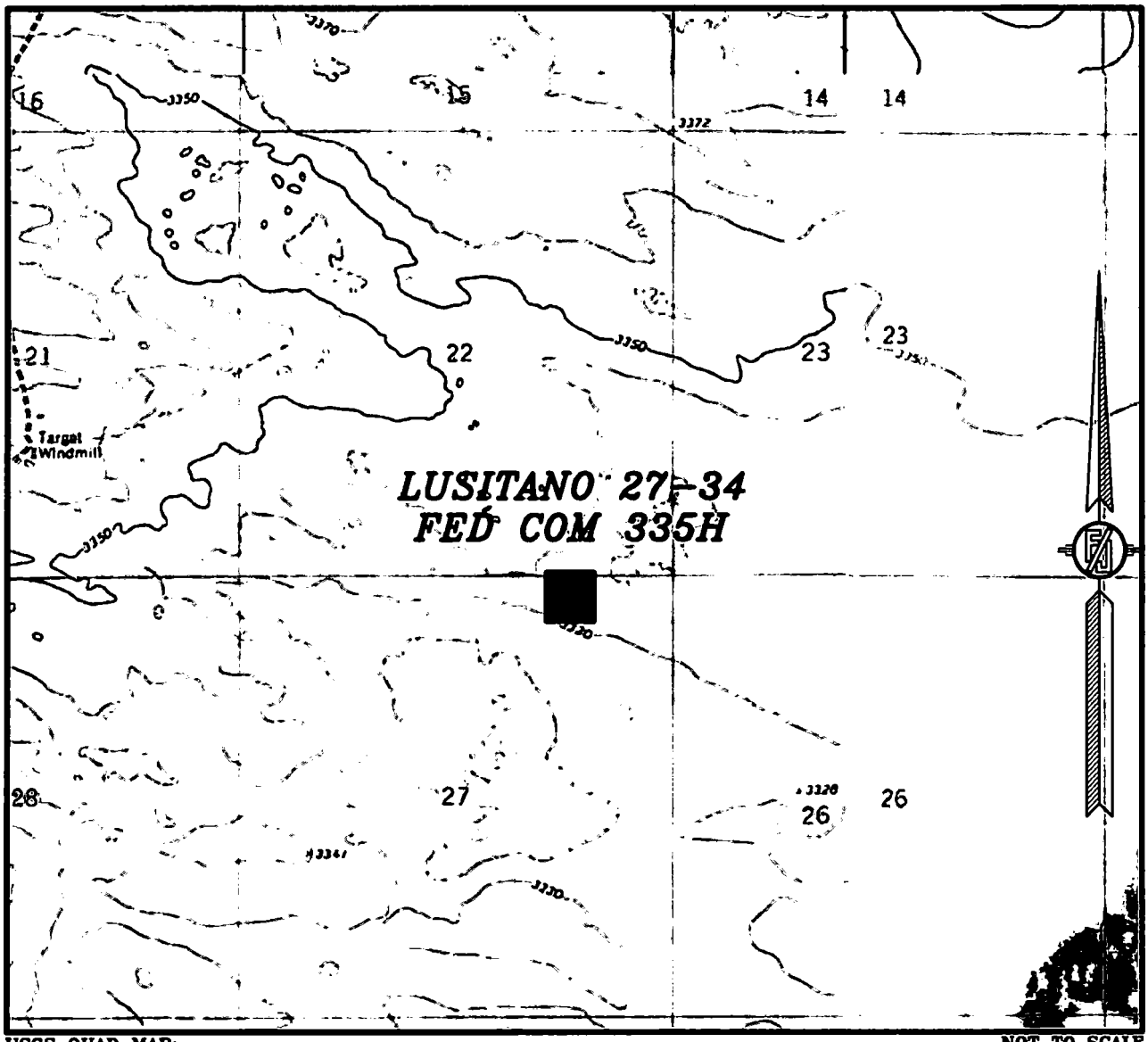
1.479± ACRES INTERIM PAD RECLAMATION AREA
4.473± ACRES GRADING SITE RECLAMATION AREA
2.312± ACRES NON-RECLAIMED AREA
8.264± ACRES LUSITANO 27 PAD 5

DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 335H
LOCATED 235 FT. FROM THE NORTH LINE AND 1264 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

AUGUST 3, 2018
SURVEY NO. 6438

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 335H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1264 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

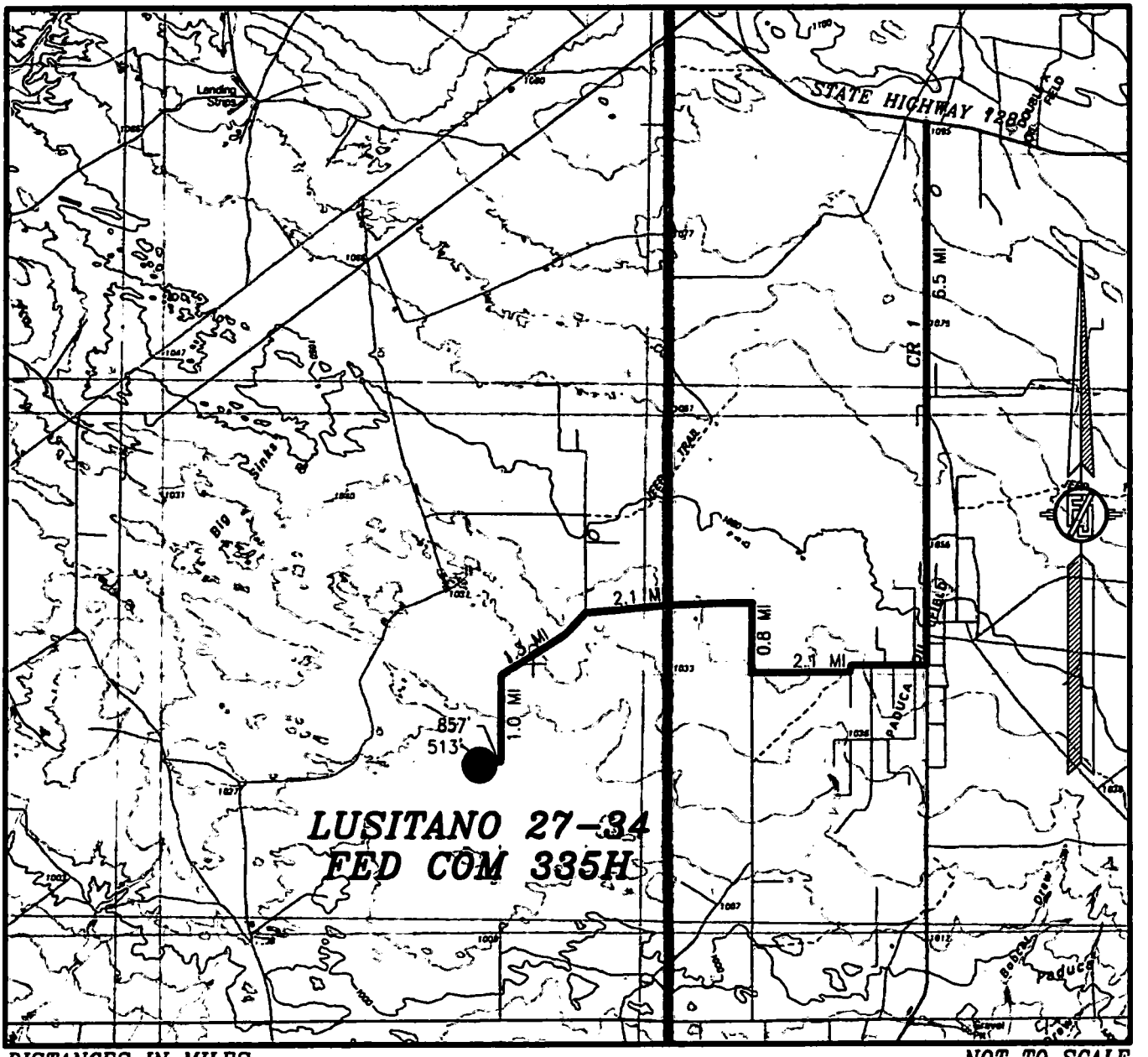
AUGUST 3, 2018

SURVEY NO. 6438

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 335H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1264 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

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.

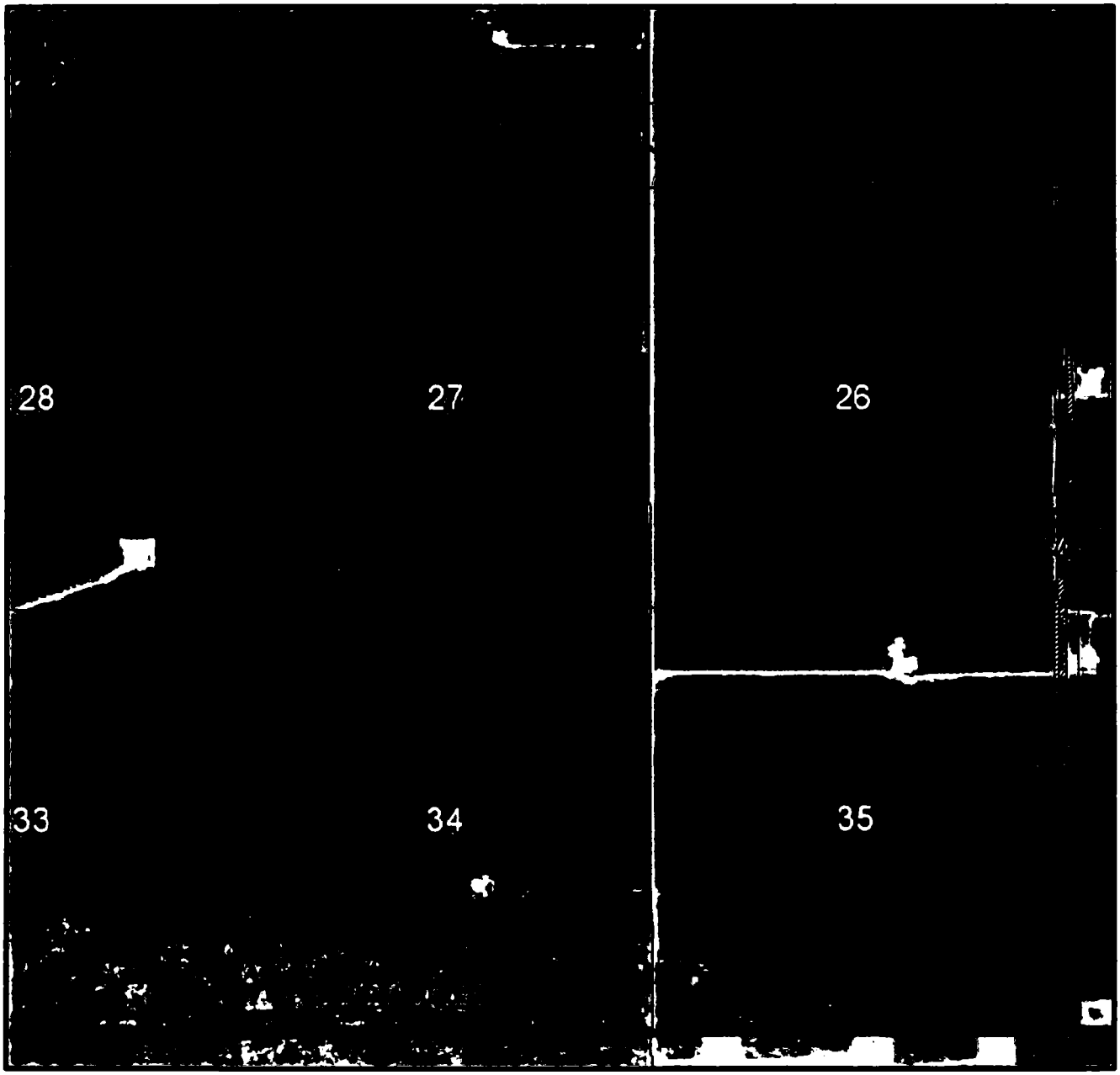
AUGUST 3, 2018

SURVEY NO. 6438

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 335H

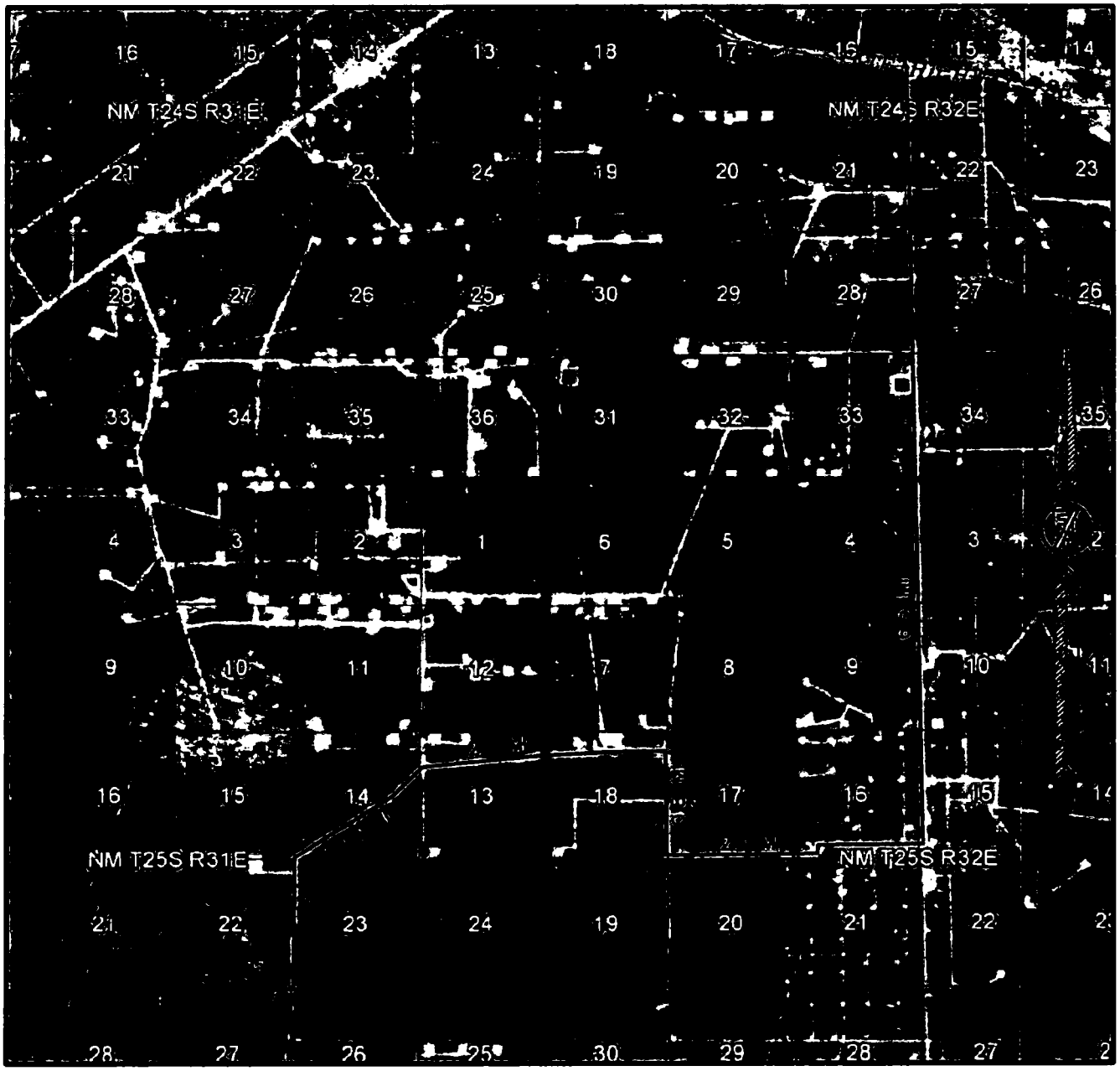
LOCATED 235 FT. FROM THE NORTH LINE
AND 1264 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6438

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 335H

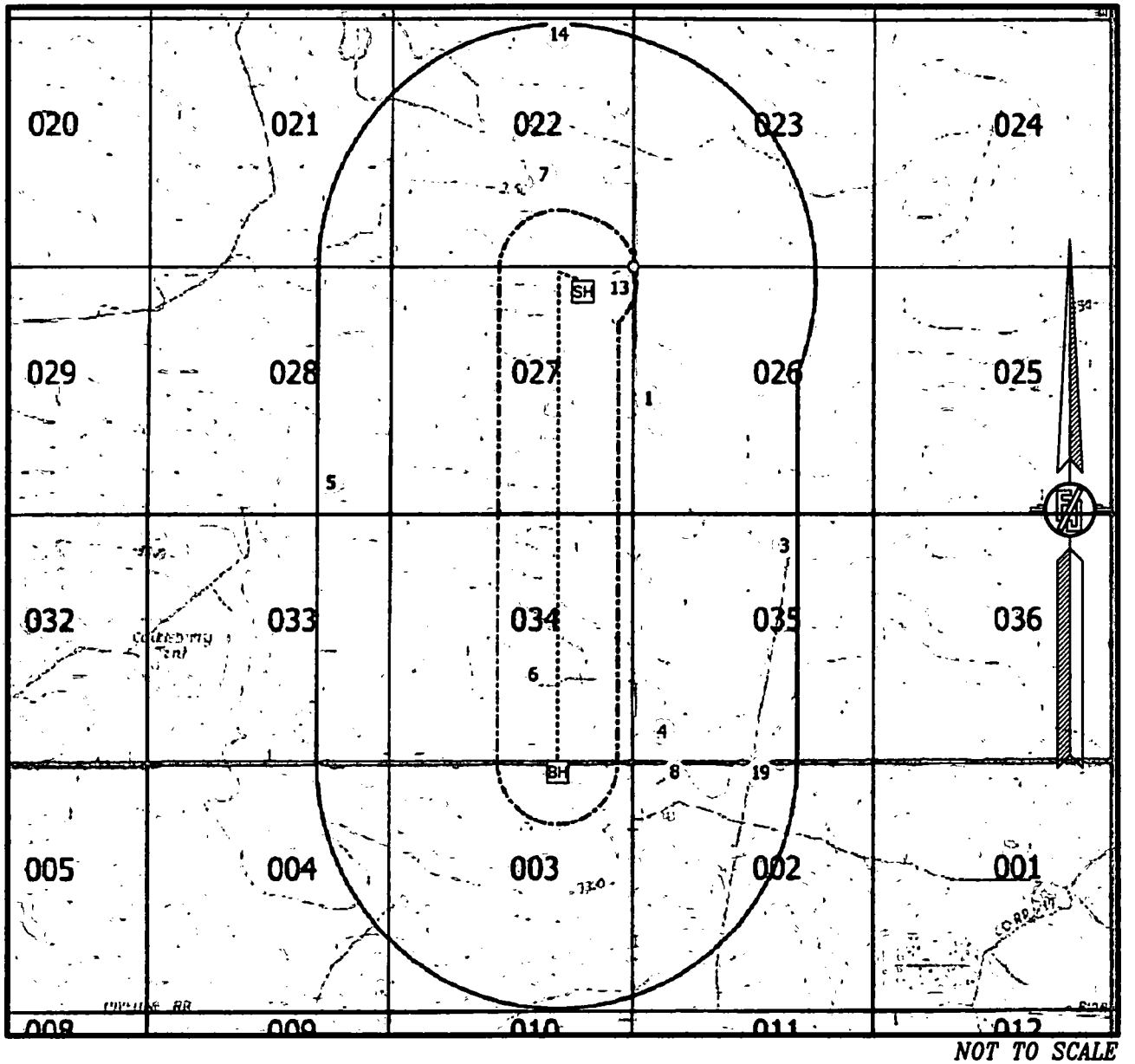
LOCATED 235 FT. FROM THE NORTH LINE
AND 1264 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6438

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

1-MILE MAP



NOT TO SCALE

WELL DATA FROM NMOCD GIS - 8/9/18

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 335H

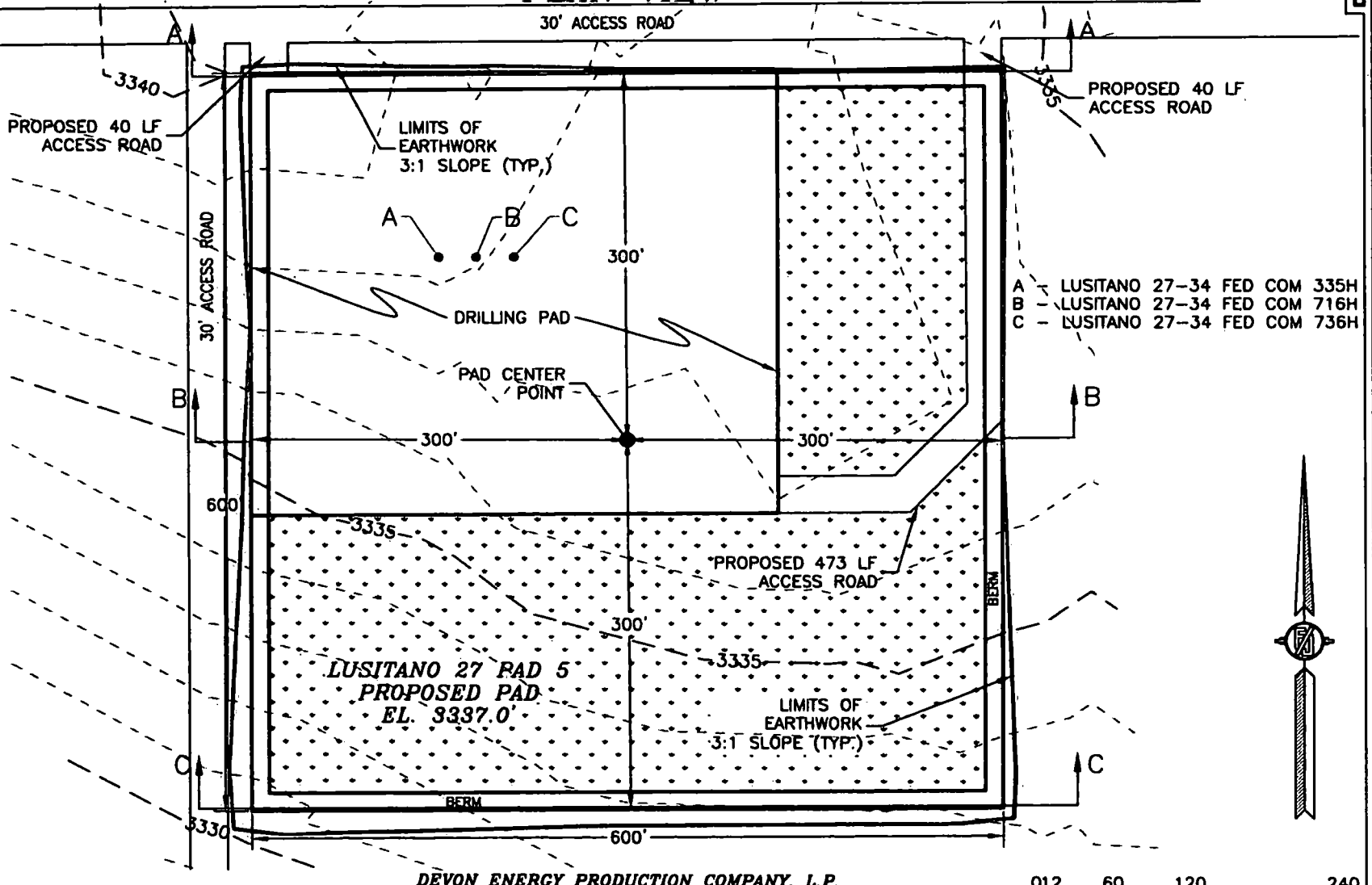
LOCATED 235 FT. FROM THE NORTH LINE
AND 1264 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6438

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

PLAN VIEW



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR LUSITANO 27-34 FED COM 336H
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 3, 2018

012 60 120 240
SCALE 1" = 120'

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

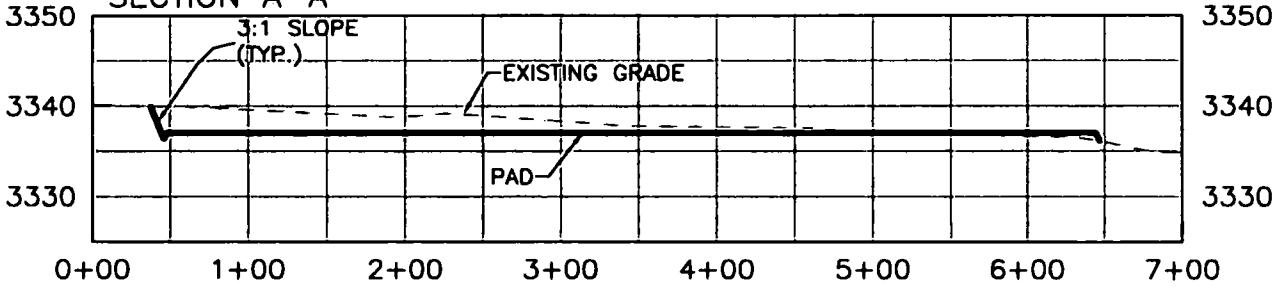
EARTHWORK QUANTITIES ARE ESTIMATED

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

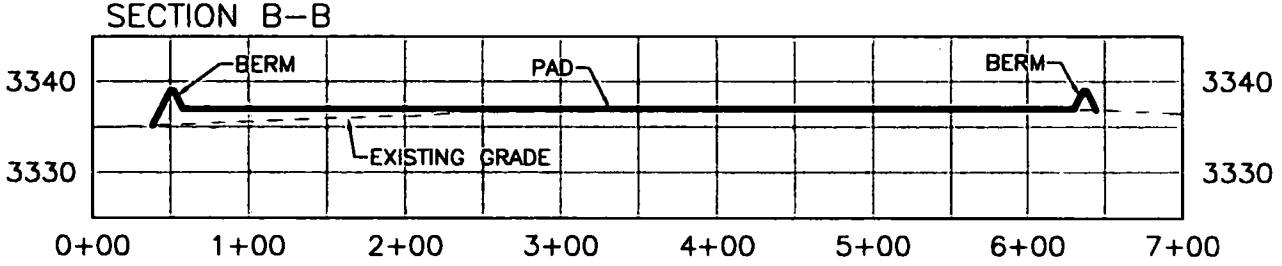
SHEET 1-2
SURVEY NO. 6438

CROSS SECTIONS

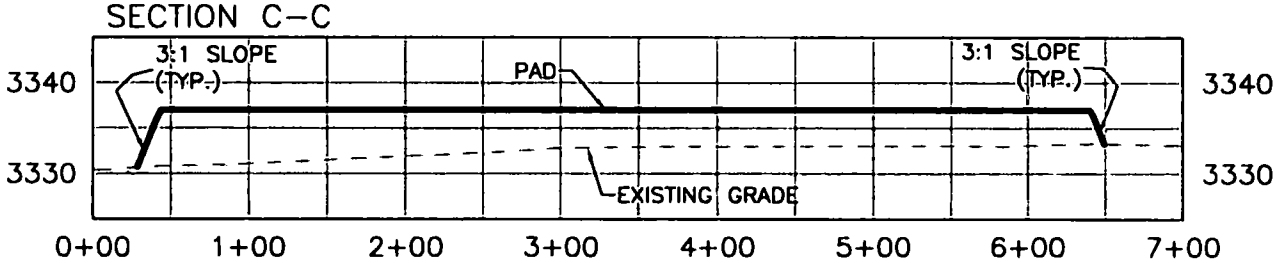
SECTION A–A



SECTION B–B



SECTION C–C



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR LUSITANO 27–34 FED COM 336H
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 3, 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*

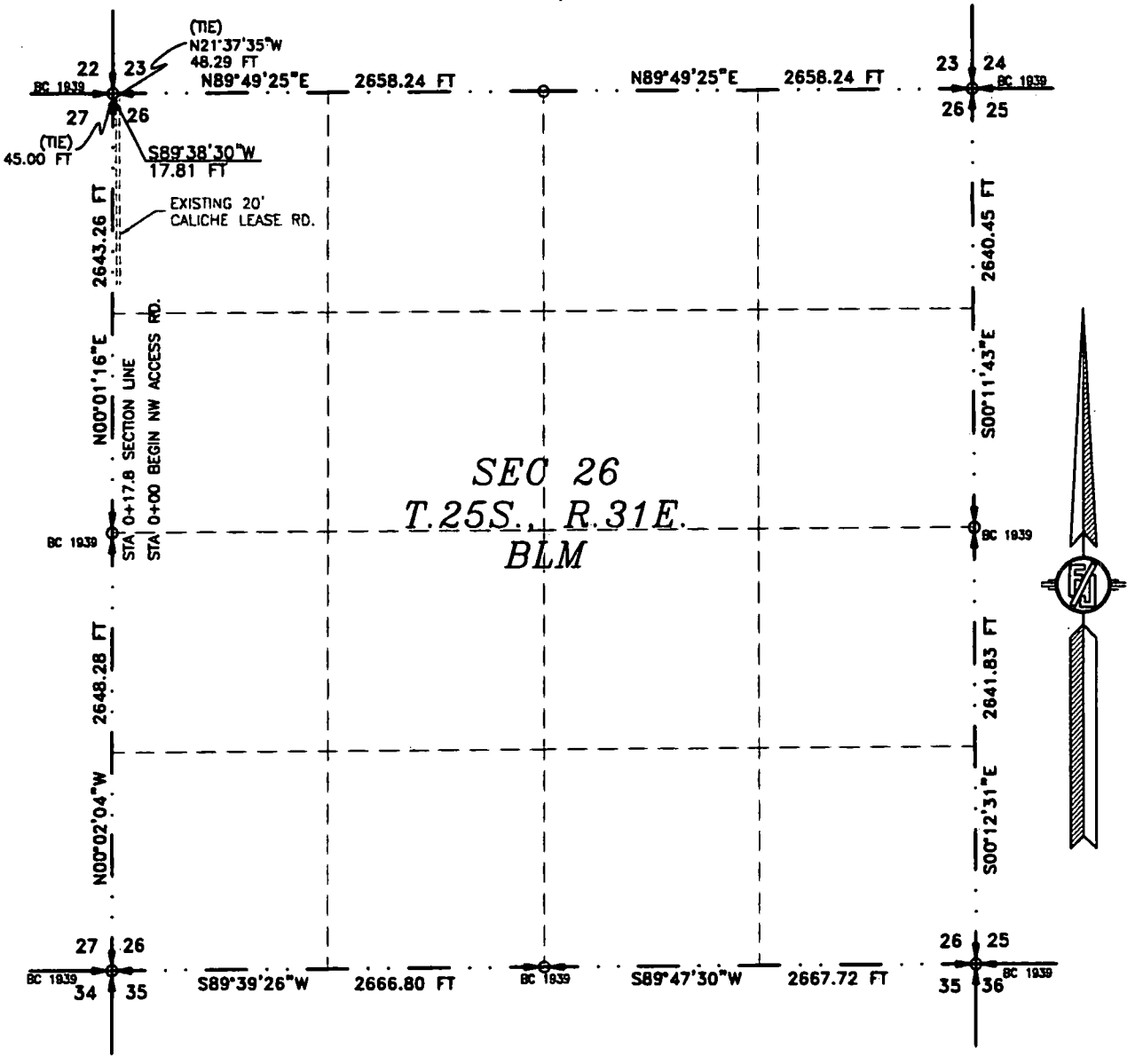
SHEET 2-2
SURVEY NO. 6438

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
AUGUST 3, 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 ___ DAY OF AUGUST 2018

FILIMON F. JARAMILLO PLS. 12797

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

SHEET: 1-4

SURVEY NO. 6438

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 6 (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
AUGUST 3, 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

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 2nd DAY OF AUGUST 2018

FILIMON F. JARAMILLO 12797

FILIMON F. JARAMILLO PLS# 12797

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

GENERAL NOTES

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

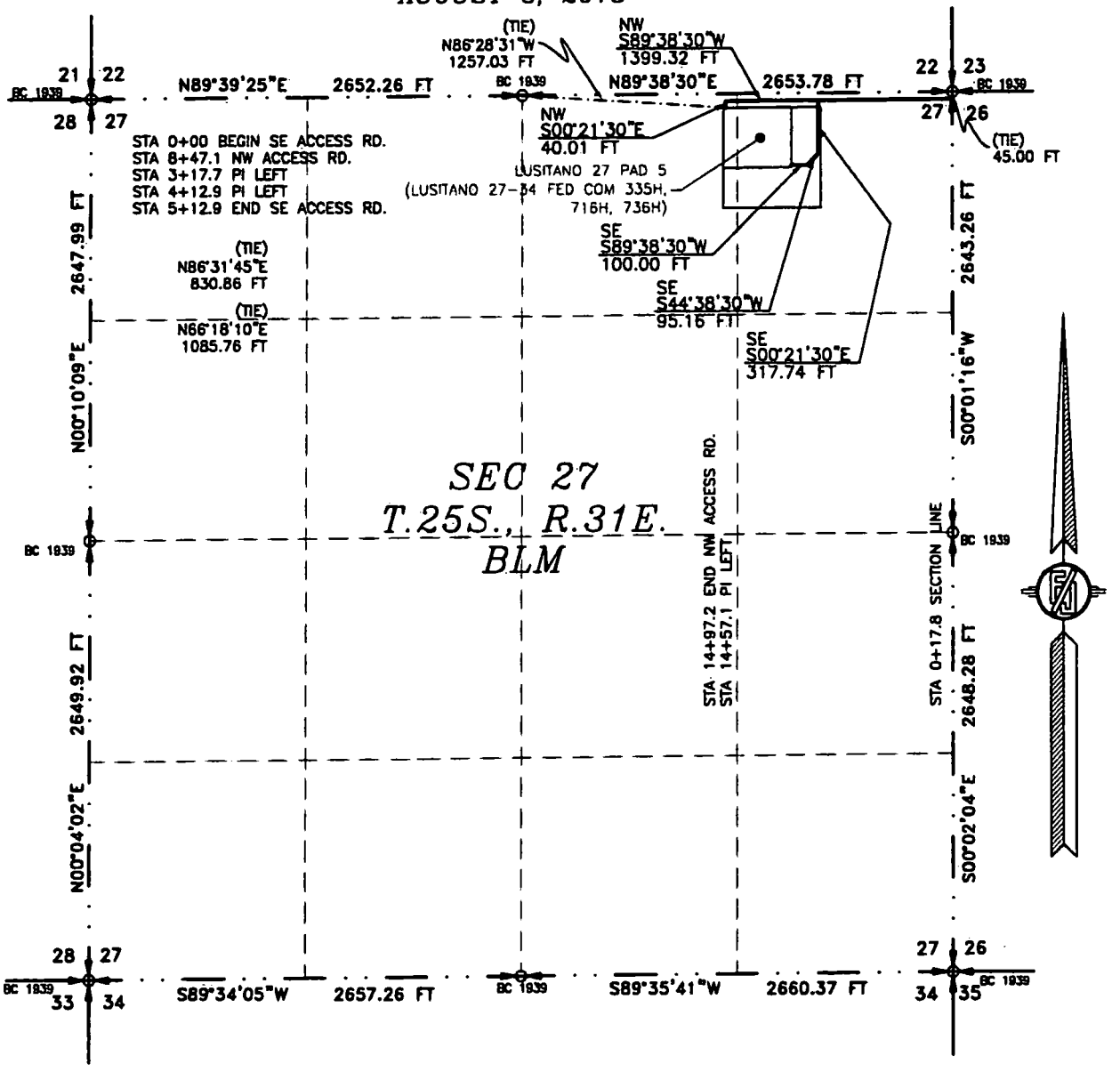
2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

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
AUGUST 3, 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 20 DAY OF AUGUST 2018

FILIMON F. JARAMILLO PLS 12797

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

SHEET: 3-4

SURVEY NO. 6438

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

Drilling Plan Data Report

01/18/2019

APD ID: 10400033357 **Submission Date:** 08/28/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 335H

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	2435	903	903	SALT	NONE	No
3	SALADO	2170	1168	1168	SALT	NONE	No
4	BASE OF SALT	-930	4268	4268	SALT	NONE	No
5	DELAWARE	-950	4288	4288	SANDSTONE	NATURAL GAS,OIL	No
6	BONE SPRING	-4900	8238	8238	LIMESTONE,SANDSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M **Rating Depth:** 9978

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M 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.

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_335H_5M_BOPE_CK_20180827095114.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_335H_5M_BOPE_CK_20180827095123.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 335H

Pressure Rating (PSI): 5M **Rating Depth:** 11173

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M 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.

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Choke Diagram Attachment:

Lusitano_27_34_Fed_Com_335H_5M_BOPE_CK_20180823134322.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_335H_5M_BOPE_CK_20180823134340.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	928	0	928			928	H-40	48	STC	1.125	1	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	9988	0	9988			9988	J-55	40	LTC	1.125	1	BUOY	1.6	BUOY	1.6
3	PRODUCTION	8.75	5.5	NEW	API	N	0	21307	0	11173			21307	P-110	17	OTHER - BTC	1.125	1	BUOY	1.6	BUOY	1.6

Casing Attachments

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 335H

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_335H_SurfCsg_Ass_20180824045453.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_335H_Int_Csg_Ass_20180824045604.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_335H_ProdCasing_Ass_20180824045754.pdf

Section 4 - Cement

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 335H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	928	768	1.33	13.2	1022	50	C	Class C + adds
INTERMEDIATE	Lead		0	7988	1734	1.85	9	3208	30	C	Class C + adds
INTERMEDIATE	Tail		7988	9988	625	1.33	13.2	832	30	C	Class C + adds
PRODUCTION	Lead		9788	21307	2086	1.2	13.2	3047	10	H	(50:50) Clas H Cement: Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite

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
928	9988	OTHER : CUT BRINE	10	10.5							

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	928	WATER-BASED MUD	8.5	9							
9988	21307	WATER-BASED MUD	9.5	10							

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: 5810 **Anticipated Surface Pressure:** 3351.94

Anticipated Bottom Hole Temperature(F): 184

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_335H_H2S_Plans_20180822123332.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 335H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Lusitano_27_34_Fed_Com_335H_AC_Rpt_20180824050702.pdf

Lusitano_27_34_Fed_Com_335H_Dir_Plan_20180824050721.pdf

Lusitano_27_34_Fed_Com_335H_Plot_20180824050736.pdf

Lusitano_27_34_Fed_Com_335H_Permit_Plan_1_20180824050749.pdf

Other proposed operations facets description:

DRILLING PLAN
CLOSED LOOP DESIGN
MB VERB
MB WELLHEAD
GAS CAPTURE PLAN

Other proposed operations facets attachment:

Lusitano_27_34_Fed_Com_335H_Drilling_Plan_20180824050902.pdf

Lusitano_27_34_Fed_Com_335H_Clsd_Loop_20180824050914.pdf

Lusitano_27_34_Fed_Com_335H_MB_Verb_20180824050926.pdf

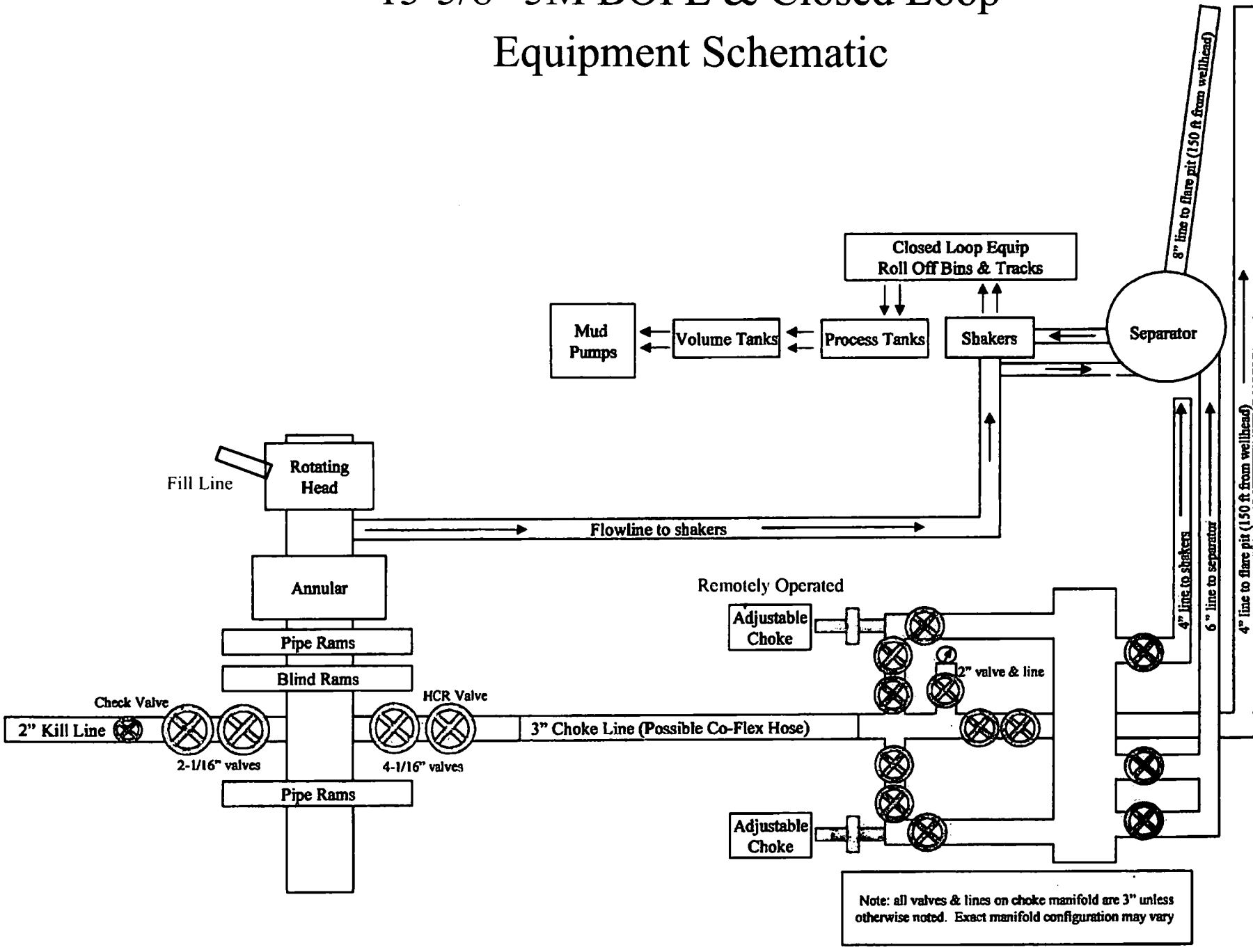
Lusitano_27_34_Fed_Com_335H_MB_Wellhd_20180824050938.pdf

Lusitano_27_34_Fed_Com_335H_Gas_Capture_Plan_20180827100632.pdf

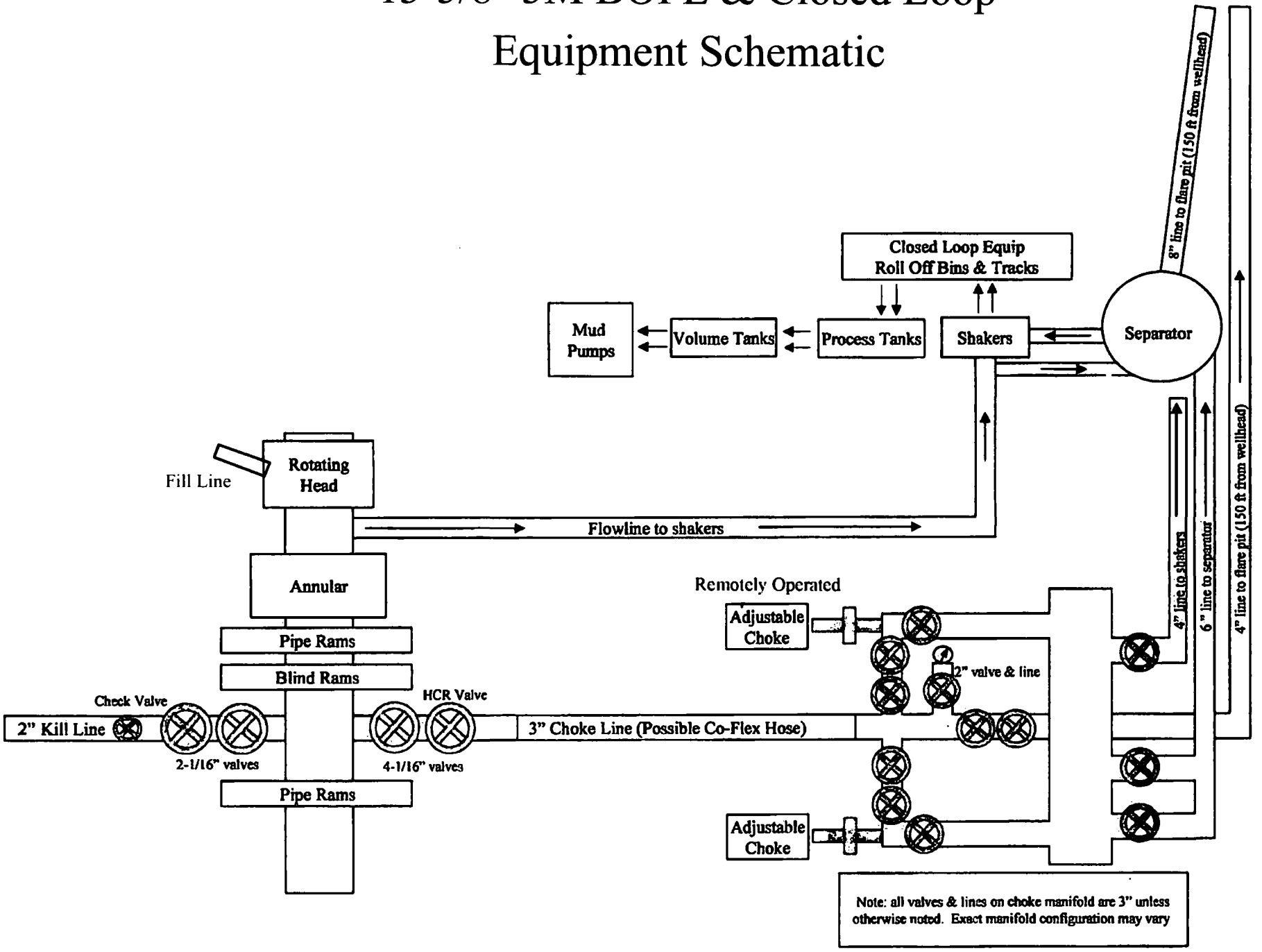
Other Variance attachment:

Lusitano_27_34_Fed_Com_335H_Co_flex_20180824050954.pdf

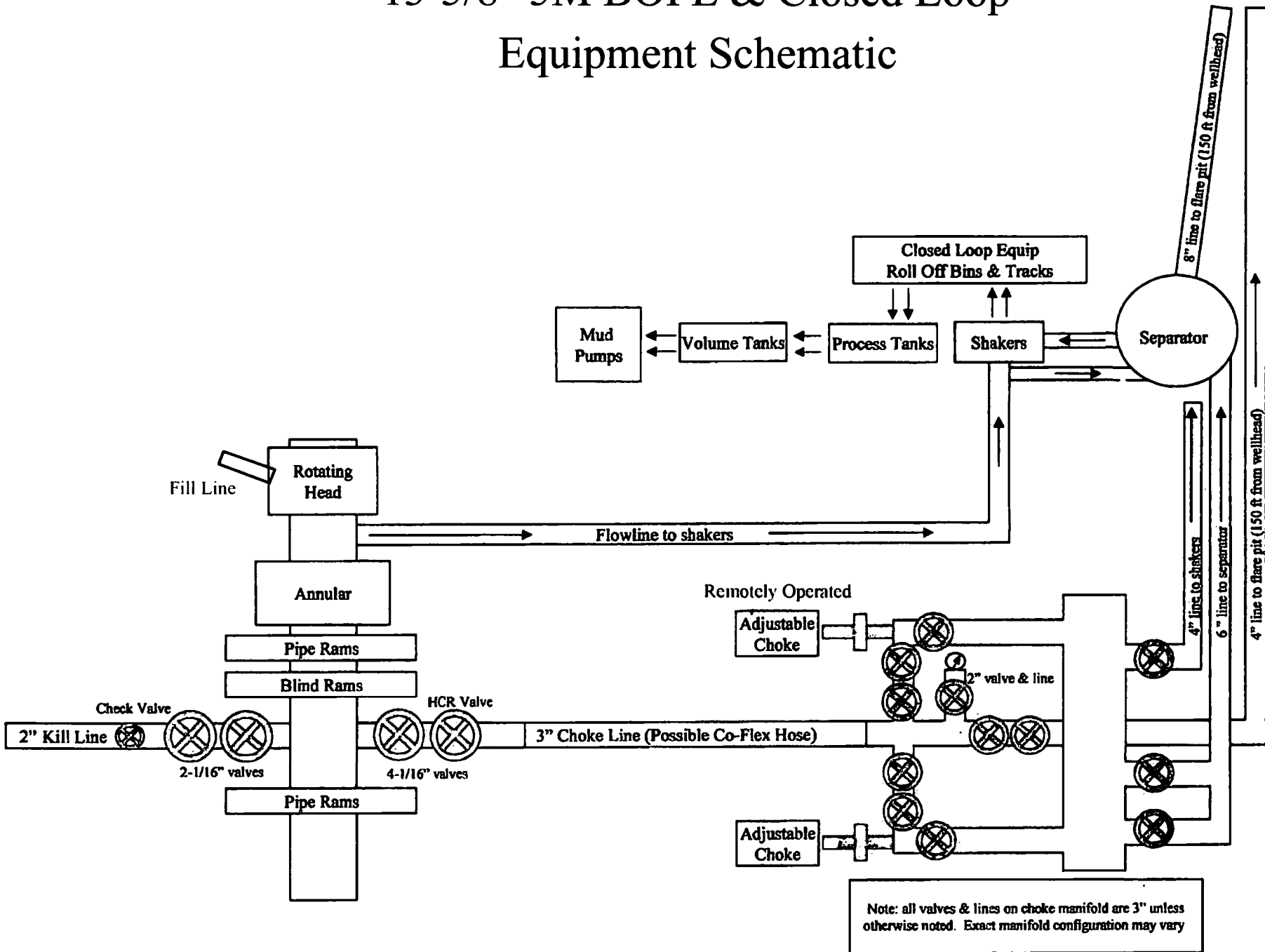
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



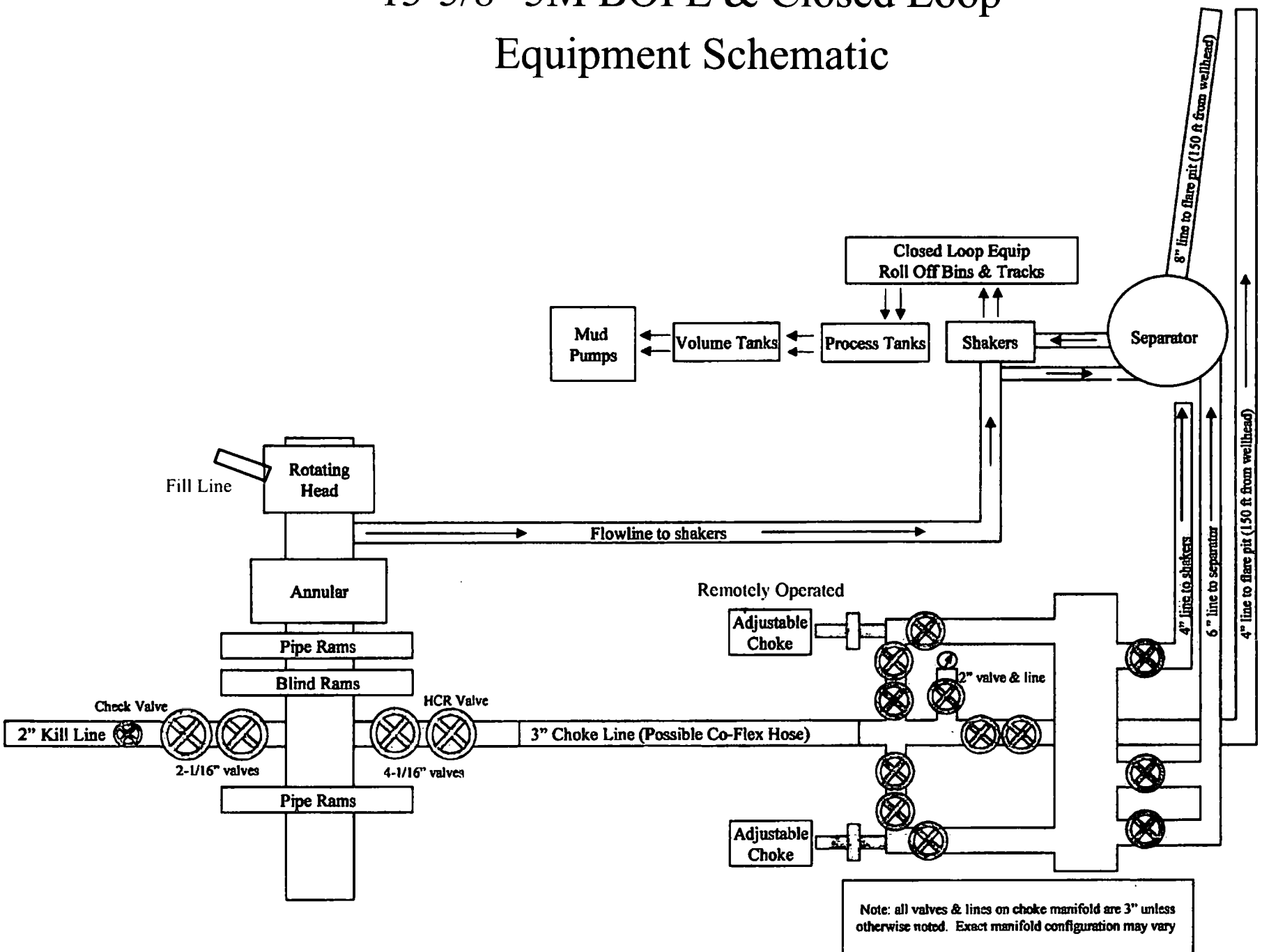
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



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



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



Casing Assumptions and Load Cases

Surface

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

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

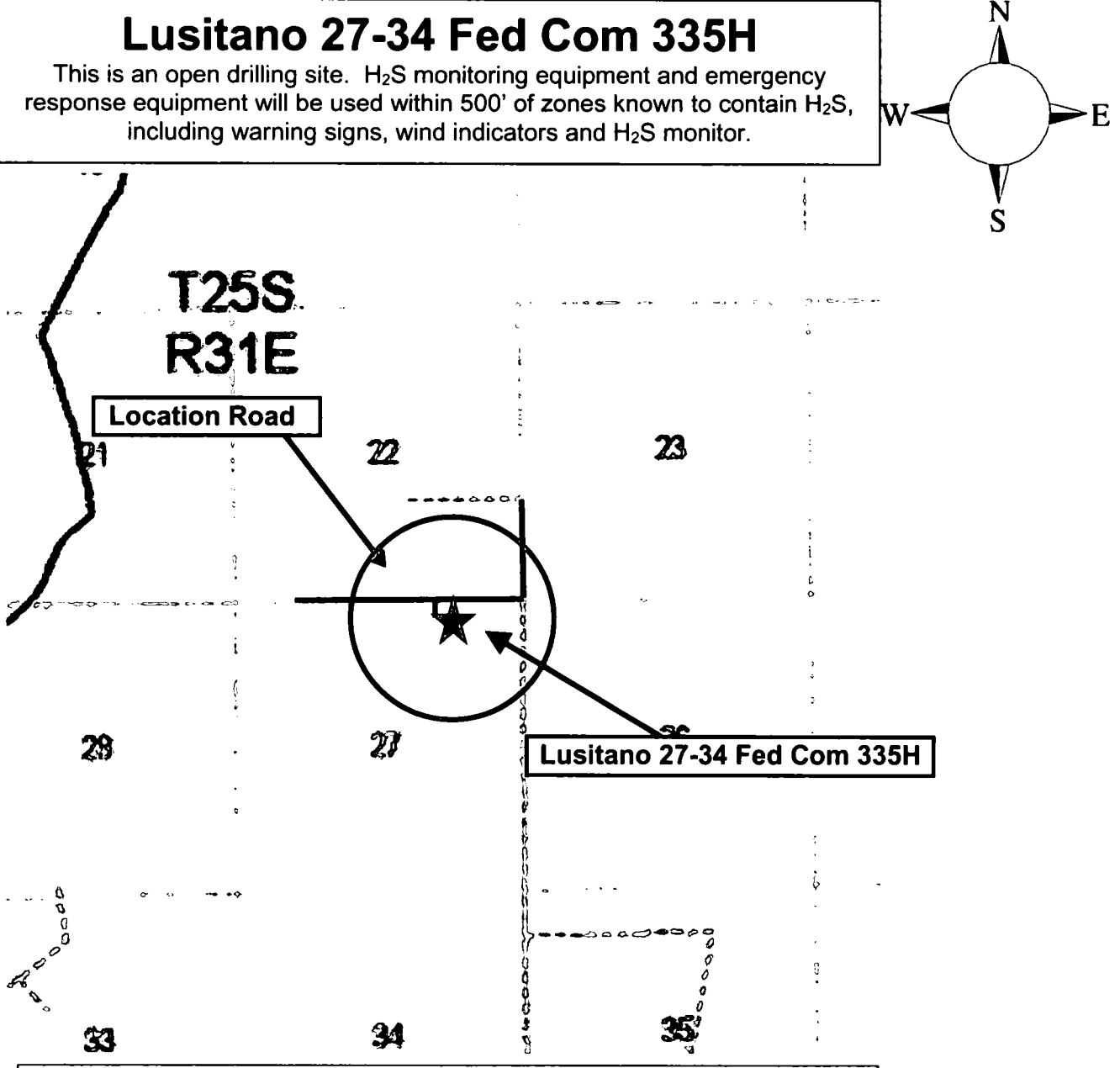
Lusitano 27-34 Fed Com 335H

Sec-27 T-25S R-31E
235' FNL & 1264' FEL
LAT. = 32.1079106' N (NAD83)
LONG = 103.7614296' W

Eddy County NM

Lusitano 27-34 Fed Com 335H

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'

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 335H

Wellbore #1
Permit Plan 1

Anticollision Report

21 August, 2018

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Reference	Permit Plan 1		
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** 8/21/2018

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	21,307.62	Permit Plan 1 (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	8,920.39	8,961.96	1,197.43	1,134.47	19.019	CC, ES
Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Pl	8,950.00	8,978.02	1,197.67	1,134.65	19.005	SF
Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit Pl						Out of range
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Pl	10,737.86	10,777.95	1,356.16	1,279.88	17.779	CC
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Pl	21,307.62	22,070.47	1,492.55	1,200.33	5.108	ES, SF
Lusitano 27_34 Fed Com 736H - Wellbore #1 - Permit Pl	3,000.00	3,000.50	59.99	38.91	2.845	Alert, CC
Lusitano 27_34 Fed Com 736H - Wellbore #1 - Permit Pl	3,050.00	3,049.50	60.21	38.77	2.809	Alert, ES
Lusitano 27_34 Fed Com 736H - Wellbore #1 - Permit Pl	3,100.00	3,100.51	60.86	39.07	2.793	Alert, SF
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore	0.00	0.00	988.00			
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore	1,250.00	1,239.80	988.39	980.05	118.472	ES
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore	15,750.00	15,098.14	1,499.83	1,361.90	10.874	SF
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	10,296.41	10,313.75	1,345.95	1,273.16	18.491	CC
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	21,307.62	21,295.89	1,358.56	1,048.64	4.384	Alert, ES, SF
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	1,102.88	1,101.70	933.64	926.66	133.868	CC
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	1,150.00	1,142.43	933.80	926.63	130.343	ES
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	21,150.00	21,785.00	1,298.32	1,000.06	4.353	Alert, SF
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	3,072.09	3,085.89	873.73	852.25	40.672	CC
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	3,150.00	3,169.25	874.12	852.06	39.638	ES
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	8,600.00	8,582.00	1,081.94	1,021.27	17.832	SF
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	6,048.42	6,109.28	734.77	691.36	16.923	CC
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	6,300.00	6,356.00	736.12	690.86	16.264	ES
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	8,900.00	8,973.37	817.71	754.74	12.985	SF
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore	8,098.64	8,147.18	608.25	553.32	11.074	CC
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore	8,250.00	8,292.90	608.79	552.81	10.874	ES
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore	21,114.51	21,945.00	832.47	578.31	3.275	Alert, SF
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	1,370.43	1,369.64	899.87	891.60	108.791	CC
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	2,700.00	2,696.82	907.07	890.59	55.035	ES
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	20,900.00	21,852.00	1,468.95	1,196.11	5.384	SF

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
6,500.00	6,494.95	6,748.93	6,698.11	22.97	25.51	-1.82	104.26	-1,665.44	1,498.30	1,451.38	46.92	31.933	
6,550.00	6,544.87	6,802.14	6,746.45	23.15	25.73	-1.68	107.31	-1,658.44	1,488.60	1,441.30	47.30	31.471	
6,600.00	6,594.80	6,846.79	6,794.78	23.33	25.91	-1.55	110.37	-1,651.44	1,478.91	1,431.27	47.65	31.038	
6,650.00	6,644.72	6,904.27	6,843.12	23.51	26.15	-1.41	113.42	-1,644.45	1,469.23	1,421.19	48.04	30.581	
6,700.00	6,694.64	6,944.66	6,891.45	23.69	26.31	-1.28	116.47	-1,637.45	1,459.56	1,411.18	48.38	30.171	
6,750.00	6,744.57	7,006.41	6,939.78	23.88	26.57	-1.14	119.52	-1,630.45	1,449.89	1,401.11	48.79	29.718	
6,800.00	6,794.49	7,042.53	6,988.12	24.06	26.72	-0.99	122.57	-1,623.46	1,440.24	1,391.13	49.11	29.330	
6,850.00	6,844.41	7,108.54	7,036.45	24.24	26.99	-0.85	125.62	-1,616.46	1,430.59	1,381.05	49.53	28.881	
6,900.00	6,894.34	7,140.39	7,084.79	24.42	27.12	-0.71	128.68	-1,609.46	1,420.95	1,371.12	49.84	28.513	
6,950.00	6,944.26	7,189.33	7,133.12	24.60	27.32	-0.56	131.73	-1,602.47	1,411.32	1,361.12	50.20	28.114	
7,000.00	6,994.18	7,238.26	7,181.46	24.78	27.52	-0.41	134.78	-1,595.47	1,401.70	1,351.13	50.57	27.720	
7,050.00	7,044.11	7,287.19	7,229.79	24.96	27.72	-0.26	137.83	-1,588.48	1,392.09	1,341.16	50.93	27.332	
7,100.00	7,094.03	7,336.13	7,278.12	25.14	27.92	-0.11	140.88	-1,581.48	1,382.48	1,331.19	51.30	26.950	
7,150.00	7,143.95	7,385.06	7,326.46	25.32	28.12	0.05	143.94	-1,574.48	1,372.89	1,321.23	51.66	26.573	
7,200.00	7,193.87	7,433.99	7,374.79	25.50	28.33	0.21	146.99	-1,567.49	1,363.31	1,311.28	52.03	26.202	
7,250.00	7,243.80	7,482.92	7,423.13	25.69	28.53	0.37	150.04	-1,560.49	1,353.74	1,301.34	52.40	25.836	
7,300.00	7,293.72	7,528.93	7,468.57	25.87	28.72	0.52	152.90	-1,553.92	1,344.19	1,291.43	52.76	25.476	
7,350.00	7,343.64	7,566.43	7,505.66	26.05	28.87	0.64	155.13	-1,548.81	1,334.95	1,281.83	53.12	25.131	
7,400.00	7,393.57	7,604.09	7,542.94	26.23	29.02	0.75	157.22	-1,544.02	1,326.15	1,272.67	53.47	24.799	
7,450.00	7,443.49	7,641.88	7,580.42	26.41	29.17	0.86	159.18	-1,539.54	1,317.78	1,263.95	53.83	24.482	
7,500.00	7,493.41	7,679.80	7,618.07	26.59	29.32	0.96	160.99	-1,535.40	1,309.84	1,255.66	54.17	24.178	
7,550.00	7,543.34	7,717.85	7,655.89	26.77	29.47	1.05	162.65	-1,531.58	1,302.33	1,247.81	54.52	23.888	
7,600.00	7,593.26	7,756.01	7,693.86	26.95	29.61	1.14	164.17	-1,528.10	1,295.25	1,240.39	54.86	23.610	
7,650.00	7,643.18	7,794.28	7,731.98	27.14	29.76	1.22	165.54	-1,524.96	1,288.61	1,233.42	55.20	23.345	
7,700.00	7,693.11	7,832.66	7,770.24	27.32	29.90	1.29	166.76	-1,522.16	1,282.41	1,226.88	55.53	23.094	
7,750.00	7,743.03	7,871.13	7,808.62	27.50	30.04	1.35	167.83	-1,519.71	1,276.64	1,220.78	55.86	22.854	
7,800.00	7,792.95	7,909.69	7,847.11	27.68	30.18	1.41	168.75	-1,517.60	1,271.30	1,215.12	56.19	22.626	
7,850.00	7,842.88	7,948.34	7,885.70	27.86	30.31	1.45	169.51	-1,515.86	1,266.40	1,209.90	56.51	22.411	
7,900.00	7,892.80	7,987.05	7,924.39	28.04	30.45	1.49	170.12	-1,514.46	1,261.94	1,205.12	56.83	22.207	
7,950.00	7,942.72	8,025.83	7,963.15	28.22	30.58	1.52	170.57	-1,513.43	1,257.92	1,200.78	57.14	22.015	
8,000.00	7,992.65	8,064.67	8,001.98	28.41	30.71	1.54	170.86	-1,512.75	1,254.33	1,196.88	57.45	21.834	
8,050.00	8,042.57	8,103.56	8,040.87	28.59	30.84	1.55	171.00	-1,512.44	1,251.18	1,193.43	57.75	21.664	
8,100.00	8,092.49	8,149.48	8,086.79	28.77	30.99	1.55	171.01	-1,512.41	1,248.39	1,190.30	58.08	21.493	
8,150.00	8,142.42	8,200.60	8,136.72	28.95	31.16	1.55	171.01	-1,512.41	1,245.62	1,187.18	58.44	21.316	
8,200.00	8,192.34	8,249.33	8,186.64	29.13	31.32	1.56	171.01	-1,512.41	1,242.85	1,184.07	58.78	21.144	
8,250.00	8,242.26	8,300.75	8,236.56	29.31	31.49	1.56	171.01	-1,512.41	1,240.08	1,180.95	59.13	20.971	
8,300.00	8,292.19	8,349.17	8,286.49	29.50	31.65	1.56	171.01	-1,512.41	1,237.31	1,177.83	59.48	20.803	
8,350.00	8,342.11	8,400.90	8,336.41	29.68	31.82	1.57	171.01	-1,512.41	1,234.54	1,174.71	59.83	20.634	
8,400.00	8,392.03	8,449.02	8,386.33	29.86	31.98	1.57	171.01	-1,512.41	1,231.77	1,171.60	60.17	20.470	
8,450.00	8,441.96	8,509.58	8,446.86	30.04	32.17	1.51	169.48	-1,512.41	1,228.87	1,168.31	60.56	20.293	
8,500.00	8,491.88	8,575.36	8,512.04	30.22	32.35	1.11	160.93	-1,512.40	1,225.35	1,164.42	60.92	20.113	
8,550.00	8,541.80	8,638.33	8,573.13	30.40	32.52	0.41	145.80	-1,512.38	1,221.28	1,160.02	61.26	19.937	
8,600.00	8,591.72	8,697.27	8,628.49	30.59	32.66	-0.54	125.64	-1,512.35	1,216.86	1,155.30	61.56	19.768	
8,650.00	8,641.65	8,751.43	8,677.29	30.77	32.77	-1.65	102.19	-1,512.31	1,212.35	1,150.51	61.84	19.605	
8,700.00	8,691.57	8,800.54	8,719.45	30.95	32.86	-2.85	77.04	-1,512.27	1,208.01	1,145.91	62.10	19.453	
8,750.00	8,741.49	8,844.63	8,755.35	31.13	32.93	-4.07	51.45	-1,512.23	1,204.13	1,141.78	62.34	19.314	
8,800.00	8,791.42	8,884.01	8,785.65	31.31	32.98	-5.28	26.32	-1,512.19	1,200.94	1,138.38	62.56	19.195	
8,850.00	8,841.34	8,919.06	8,811.13	31.50	33.03	-6.44	2.25	-1,512.16	1,198.69	1,135.93	62.76	19.101	
8,900.00	8,891.26	8,950.25	8,832.51	31.68	33.06	-7.53	-20.44	-1,512.12	1,197.54	1,134.63	62.91	19.036	
8,920.39	8,911.62	8,961.96	8,840.22	31.75	33.07	-7.95	-29.26	-1,512.11	1,197.43	1,134.47	62.96	19.019	CC, ES
8,950.00	8,941.19	8,978.02	8,850.49	31.86	33.08	-8.55	-41.60	-1,512.09	1,197.67	1,134.65	63.02	19.005	SF
9,000.00	8,991.11	9,002.79	8,865.65	32.04	33.10	-9.49	-61.19	-1,512.06	1,199.20	1,136.13	63.07	19.013	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
9,050.00	9,041.03	9,024.94	8,878.48	32.22	33.12	-10.35	-79.25	-1,512.03	1,202.23	1,139.16	63.07	19.061	
9,100.00	9,090.96	9,044.82	8,889.39	32.40	33.13	-11.15	-95.86	-1,512.01	1,206.85	1,143.84	63.01	19.153	
9,150.00	9,140.88	9,062.71	8,898.71	32.59	33.14	-11.88	-111.13	-1,511.99	1,213.09	1,150.21	62.88	19.291	
9,200.00	9,190.80	9,078.86	8,906.71	32.77	33.14	-12.55	-125.16	-1,511.96	1,221.00	1,158.31	62.70	19.475	
9,250.00	9,240.73	9,100.00	8,916.58	32.95	33.16	-13.44	-143.86	-1,511.94	1,230.63	1,168.13	62.50	19.691	
9,300.00	9,290.65	9,100.00	8,916.58	33.13	33.16	-13.44	-143.86	-1,511.94	1,241.91	1,179.82	62.09	20.002	
9,350.00	9,340.57	9,118.97	8,924.84	33.31	33.16	-14.24	-160.93	-1,511.91	1,254.83	1,193.04	61.78	20.310	
9,400.00	9,390.50	9,130.09	8,929.42	33.50	33.16	-14.72	-171.06	-1,511.89	1,269.42	1,208.05	61.38	20.683	
9,450.00	9,440.42	9,140.29	8,933.45	33.68	33.17	-15.16	-180.44	-1,511.88	1,285.64	1,224.71	60.92	21.102	
9,500.00	9,490.34	9,150.00	8,937.12	33.86	33.17	-15.58	-189.42	-1,511.87	1,303.42	1,242.98	60.44	21.566	
9,550.00	9,540.27	9,150.00	8,937.12	34.04	33.17	-15.58	-189.42	-1,511.87	1,322.79	1,262.95	59.84	22.105	
9,600.00	9,590.19	9,166.39	8,942.99	34.23	33.18	-16.30	-204.72	-1,511.84	1,343.52	1,284.15	59.37	22.628	
9,650.00	9,640.11	9,173.84	8,945.50	34.41	33.18	-16.63	-211.74	-1,511.83	1,365.73	1,306.92	58.81	23.223	
9,700.00	9,690.04	9,180.77	8,947.76	34.59	33.18	-16.93	-218.29	-1,511.82	1,389.30	1,331.07	58.23	23.858	
9,750.00	9,739.96	9,187.23	8,949.80	34.77	33.18	-17.22	-224.42	-1,511.81	1,414.17	1,356.52	57.64	24.533	
9,800.00	9,789.88	9,200.00	8,953.62	34.95	33.19	-17.78	-236.60	-1,511.80	1,440.32	1,383.20	57.11	25.220	
9,850.00	9,839.81	9,200.00	8,953.62	35.14	33.19	-17.78	-236.60	-1,511.80	1,467.57	1,411.10	56.47	25.988	
9,900.00	9,889.73	9,200.00	8,953.62	35.32	33.19	-17.78	-236.60	-1,511.80	1,495.99	1,440.15	55.84	26.791	

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - 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
9,250.00	9,240.73	9,353.22	9,336.22	32.95	33.69	-1.02	139.08	-1,826.56	1,497.69	1,431.91	65.78	22.769	
9,300.00	9,290.65	9,402.84	9,385.71	33.13	33.87	-0.97	140.21	-1,823.19	1,491.64	1,425.50	66.14	22.554	
9,350.00	9,340.57	9,452.45	9,435.20	33.31	34.06	-0.92	141.35	-1,819.83	1,485.58	1,419.09	66.49	22.341	
9,400.00	9,390.50	9,502.06	9,484.68	33.50	34.24	-0.86	142.48	-1,816.47	1,479.53	1,412.67	66.85	22.131	
9,450.00	9,440.42	9,551.68	9,534.17	33.68	34.42	-0.81	143.62	-1,813.11	1,473.47	1,406.26	67.21	21.923	
9,500.00	9,490.34	9,601.29	9,583.66	33.86	34.61	-0.76	144.75	-1,809.74	1,467.42	1,399.85	67.57	21.717	
9,550.00	9,540.27	9,650.91	9,633.14	34.04	34.79	-0.70	145.89	-1,806.38	1,461.37	1,393.44	67.93	21.513	
9,600.00	9,590.19	9,700.52	9,682.63	34.23	34.97	-0.65	147.02	-1,803.02	1,455.32	1,387.04	68.29	21.312	
9,650.00	9,640.11	9,750.13	9,732.12	34.41	35.16	-0.60	148.16	-1,799.65	1,449.28	1,380.63	68.65	21.113	
9,700.00	9,690.04	9,800.25	9,781.60	34.59	35.34	-0.54	149.29	-1,796.29	1,443.23	1,374.22	69.01	20.915	
9,750.00	9,739.96	9,849.36	9,831.09	34.77	35.52	-0.49	150.43	-1,792.93	1,437.19	1,367.82	69.36	20.720	
9,800.00	9,789.88	9,901.02	9,880.58	34.95	35.71	-0.43	151.56	-1,789.57	1,431.14	1,361.41	69.73	20.525	
9,850.00	9,839.81	9,948.59	9,930.07	35.14	35.89	-0.37	152.70	-1,786.20	1,425.10	1,355.02	70.08	20.336	
9,900.00	9,889.73	10,001.80	9,979.55	35.32	36.09	-0.32	153.84	-1,782.84	1,419.06	1,348.61	70.45	20.143	
9,950.00	9,939.65	10,047.82	10,029.04	35.50	36.26	-0.26	154.97	-1,779.48	1,413.02	1,342.22	70.80	19.959	
10,000.00	9,989.57	10,102.57	10,078.53	35.68	36.46	-0.20	156.11	-1,776.11	1,406.98	1,335.81	71.17	19.768	
10,050.00	10,039.50	10,147.05	10,128.01	35.86	36.62	-0.14	157.24	-1,772.75	1,400.94	1,329.43	71.51	19.590	
10,100.00	10,089.44	10,203.30	10,177.54	36.05	36.83	-0.08	158.38	-1,769.38	1,395.25	1,323.35	71.90	19.406	
10,150.00	10,139.41	10,246.42	10,227.14	36.23	36.99	-0.03	159.52	-1,766.01	1,390.21	1,317.97	72.23	19.247	
10,200.00	10,189.39	10,303.79	10,276.79	36.40	37.20	0.03	160.65	-1,762.64	1,385.81	1,313.20	72.62	19.084	
10,250.00	10,239.39	10,346.05	10,326.51	36.58	37.36	0.09	161.79	-1,759.26	1,382.08	1,309.13	72.95	18.946	
10,300.00	10,289.39	10,404.08	10,376.25	36.75	37.57	-84.66	162.94	-1,755.88	1,378.79	1,305.46	73.33	18.802	
10,350.00	10,339.39	10,445.79	10,425.99	36.93	37.73	-84.60	164.08	-1,752.50	1,375.52	1,301.87	73.66	18.675	
10,400.00	10,389.39	10,504.34	10,475.74	37.10	37.94	-84.54	165.22	-1,749.12	1,372.26	1,298.21	74.04	18.533	
10,450.00	10,439.39	10,545.53	10,525.48	37.28	38.09	-84.48	166.36	-1,745.74	1,368.99	1,294.62	74.37	18.408	
10,500.00	10,489.39	10,595.41	10,575.22	37.45	38.28	-84.42	167.50	-1,742.36	1,365.73	1,291.00	74.72	18.277	
10,550.00	10,539.39	10,637.10	10,616.82	37.62	38.43	-84.37	168.43	-1,739.61	1,362.57	1,287.50	75.07	18.151	
10,600.00	10,589.39	10,674.77	10,654.42	37.80	38.57	-84.33	169.15	-1,737.47	1,359.83	1,284.43	75.40	18.035	
10,650.00	10,639.36	10,712.45	10,692.05	37.97	38.71	96.06	169.76	-1,735.68	1,357.68	1,281.95	75.73	17.929	
10,700.00	10,689.03	10,749.90	10,729.47	38.13	38.84	96.39	170.24	-1,734.24	1,356.45	1,280.40	76.04	17.838	
10,737.86	10,726.21	10,777.95	10,757.51	38.25	38.94	96.65	170.53	-1,733.40	1,356.16	1,279.88	76.28	17.779	CC
10,750.00	10,738.02	10,786.86	10,766.42	38.29	38.97	96.74	170.60	-1,733.17	1,356.19	1,279.83	76.35	17.762	
10,800.00	10,785.96	10,823.08	10,802.63	38.45	39.10	97.10	170.85	-1,732.45	1,356.98	1,280.32	76.65	17.703	
10,850.00	10,832.49	10,858.30	10,837.84	38.60	39.23	97.46	170.98	-1,732.06	1,358.90	1,281.96	76.94	17.661	
10,900.00	10,877.25	10,905.59	10,873.95	38.74	39.39	97.82	171.01	-1,731.96	1,362.06	1,284.79	77.27	17.627	
10,950.00	10,919.90	10,937.05	10,916.60	38.87	39.50	98.32	171.01	-1,731.96	1,366.35	1,288.80	77.54	17.620	
11,000.00	10,960.11	10,977.27	10,956.81	39.00	39.64	98.77	171.01	-1,731.96	1,371.81	1,293.96	77.85	17.622	
11,050.00	10,997.58	11,014.74	10,994.28	39.12	39.77	99.12	171.01	-1,731.96	1,378.63	1,300.49	78.14	17.642	
11,100.00	11,032.03	11,049.19	11,028.73	39.23	39.89	99.32	171.01	-1,731.96	1,386.96	1,308.53	78.43	17.684	
11,150.00	11,063.19	11,080.35	11,059.89	39.34	39.99	99.32	171.01	-1,731.96	1,396.95	1,318.24	78.71	17.748	
11,200.00	11,090.83	11,107.99	11,087.53	39.46	40.09	99.08	171.01	-1,731.96	1,408.71	1,329.74	78.97	17.837	
11,250.00	11,114.73	11,131.89	11,111.43	39.58	40.17	98.56	171.01	-1,731.96	1,422.32	1,343.09	79.23	17.952	
11,300.00	11,134.71	11,151.87	11,131.41	39.71	40.24	97.71	171.01	-1,731.96	1,437.82	1,358.35	79.47	18.092	
11,350.00	11,150.62	11,167.78	11,147.32	39.85	40.29	96.50	171.01	-1,731.96	1,455.20	1,375.50	79.70	18.259	
11,400.00	11,162.35	11,179.51	11,159.05	39.99	40.34	94.91	171.01	-1,731.96	1,474.38	1,394.47	79.91	18.451	
11,450.00	11,169.79	12,212.97	11,788.00	40.13	42.69	114.66	-479.42	-1,731.00	1,482.91	1,405.25	77.66	19.094	
11,500.00	11,172.90	12,262.86	11,788.00	40.27	42.83	114.67	-529.30	-1,730.93	1,481.67	1,403.71	77.96	19.006	
11,541.88	11,173.35	12,304.73	11,788.00	40.40	42.95	114.65	-571.18	-1,730.86	1,481.53	1,403.34	78.19	18.948	
11,550.00	11,173.00	12,312.85	11,788.00	40.43	42.98	114.66	-579.30	-1,730.85	1,481.68	1,403.45	78.23	18.940	
11,600.00	11,173.00	12,362.85	11,788.00	40.58	43.14	114.66	-629.30	-1,730.78	1,481.74	1,403.22	78.52	18.872	
11,650.00	11,173.00	12,412.85	11,788.00	40.76	43.30	114.66	-679.30	-1,730.70	1,481.80	1,402.96	78.83	18.797	
11,700.00	11,173.00	12,462.85	11,788.00	40.93	43.49	114.66	-729.30	-1,730.63	1,481.85	1,402.69	79.16	18.719	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - 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
11,750.00	11,173.00	12,512.85	11,788.00	41.13	43.68	114.66	-779.30	-1,730.56	1,481.91	1,402.38	79.52	18.635	
11,800.00	11,173.00	12,562.85	11,788.00	41.33	43.88	114.66	-829.30	-1,730.48	1,481.96	1,402.06	79.90	18.548	
11,850.00	11,173.00	12,612.85	11,788.00	41.56	44.09	114.66	-879.30	-1,730.41	1,482.02	1,401.72	80.30	18.456	
11,900.00	11,173.00	12,662.85	11,788.00	41.78	44.32	114.66	-929.30	-1,730.33	1,482.07	1,401.36	80.72	18.361	
11,950.00	11,173.00	12,712.85	11,788.00	42.02	44.55	114.66	-979.30	-1,730.26	1,482.13	1,400.97	81.16	18.261	
12,000.00	11,173.00	12,762.85	11,788.00	42.27	44.79	114.66	-1,029.30	-1,730.19	1,482.18	1,400.56	81.62	18.159	
12,050.00	11,173.00	12,812.85	11,788.00	42.53	45.05	114.65	-1,079.30	-1,730.11	1,482.24	1,400.14	82.10	18.053	
12,100.00	11,173.00	12,862.85	11,788.00	42.80	45.31	114.65	-1,129.30	-1,730.04	1,482.30	1,399.69	82.60	17.945	
12,150.00	11,173.00	12,912.85	11,788.00	43.09	45.58	114.65	-1,179.30	-1,729.96	1,482.35	1,399.22	83.13	17.832	
12,200.00	11,173.00	12,962.85	11,788.00	43.37	45.87	114.65	-1,229.30	-1,729.89	1,482.41	1,398.74	83.66	17.719	
12,250.00	11,173.00	13,012.85	11,788.00	43.68	46.16	114.65	-1,279.30	-1,729.81	1,482.46	1,398.24	84.22	17.601	
12,300.00	11,173.00	13,062.85	11,788.00	43.99	46.47	114.65	-1,329.30	-1,729.74	1,482.52	1,397.72	84.80	17.483	
12,350.00	11,173.00	13,112.85	11,788.00	44.31	46.77	114.65	-1,379.30	-1,729.67	1,482.57	1,397.18	85.39	17.361	
12,400.00	11,173.00	13,162.85	11,788.00	44.64	47.10	114.65	-1,429.30	-1,729.59	1,482.63	1,396.63	86.00	17.239	
12,450.00	11,173.00	13,212.85	11,788.00	44.98	47.43	114.65	-1,479.30	-1,729.52	1,482.69	1,396.05	86.64	17.114	
12,500.00	11,173.00	13,262.85	11,788.00	45.33	47.77	114.65	-1,529.30	-1,729.44	1,482.74	1,395.46	87.28	16.989	
12,550.00	11,173.00	13,312.85	11,788.00	45.69	48.11	114.64	-1,579.30	-1,729.37	1,482.80	1,394.85	87.94	16.861	
12,600.00	11,173.00	13,362.85	11,788.00	46.05	48.47	114.64	-1,629.30	-1,729.30	1,482.85	1,394.23	88.62	16.733	
12,650.00	11,173.00	13,412.85	11,788.00	46.43	48.83	114.64	-1,679.30	-1,729.22	1,482.91	1,393.59	89.31	16.603	
12,700.00	11,173.00	13,462.85	11,788.00	46.81	49.20	114.64	-1,729.30	-1,729.15	1,482.96	1,392.94	90.02	16.474	
12,750.00	11,173.00	13,512.85	11,788.00	47.20	49.58	114.64	-1,779.30	-1,729.07	1,483.02	1,392.27	90.75	16.342	
12,800.00	11,173.00	13,562.85	11,788.00	47.60	49.97	114.64	-1,829.30	-1,729.00	1,483.07	1,391.59	91.48	16.211	
12,850.00	11,173.00	13,612.85	11,788.00	48.01	50.36	114.64	-1,879.30	-1,728.93	1,483.13	1,390.89	92.24	16.079	
12,900.00	11,173.00	13,662.85	11,788.00	48.42	50.76	114.64	-1,929.30	-1,728.85	1,483.19	1,390.18	93.00	15.948	
12,950.00	11,173.00	13,712.85	11,788.00	48.85	51.17	114.64	-1,979.30	-1,728.78	1,483.24	1,389.46	93.78	15.815	
13,000.00	11,173.00	13,762.85	11,788.00	49.27	51.59	114.64	-2,029.30	-1,728.70	1,483.30	1,388.72	94.58	15.684	
13,050.00	11,173.00	13,812.85	11,788.00	49.71	52.01	114.63	-2,079.30	-1,728.63	1,483.35	1,387.97	95.38	15.551	
13,100.00	11,173.00	13,862.85	11,788.00	50.15	52.44	114.63	-2,129.30	-1,728.55	1,483.41	1,387.21	96.20	15.420	
13,150.00	11,173.00	13,912.85	11,788.00	50.60	52.87	114.63	-2,179.30	-1,728.48	1,483.46	1,386.43	97.03	15.288	
13,200.00	11,173.00	13,962.85	11,788.00	51.05	53.31	114.63	-2,229.30	-1,728.41	1,483.52	1,385.65	97.87	15.157	
13,250.00	11,173.00	14,012.85	11,788.00	51.52	53.76	114.63	-2,279.30	-1,728.33	1,483.58	1,384.84	98.73	15.026	
13,300.00	11,173.00	14,062.85	11,788.00	51.98	54.22	114.63	-2,329.30	-1,728.26	1,483.63	1,384.04	99.60	14.897	
13,350.00	11,173.00	14,112.85	11,788.00	52.46	54.67	114.63	-2,379.30	-1,728.18	1,483.69	1,383.21	100.47	14.767	
13,400.00	11,173.00	14,162.85	11,788.00	52.93	55.14	114.63	-2,429.30	-1,728.11	1,483.74	1,382.38	101.36	14.638	
13,450.00	11,173.00	14,212.85	11,788.00	53.42	55.61	114.63	-2,479.30	-1,728.04	1,483.80	1,381.54	102.26	14.510	
13,500.00	11,173.00	14,262.85	11,788.00	53.91	56.09	114.63	-2,529.30	-1,727.96	1,483.85	1,380.69	103.17	14.383	
13,550.00	11,173.00	14,312.85	11,788.00	54.41	56.57	114.62	-2,579.30	-1,727.89	1,483.91	1,379.82	104.09	14.257	
13,600.00	11,173.00	14,362.85	11,788.00	54.91	57.06	114.62	-2,629.30	-1,727.81	1,483.97	1,378.95	105.01	14.131	
13,650.00	11,173.00	14,412.85	11,788.00	55.41	57.55	114.62	-2,679.30	-1,727.74	1,484.02	1,378.07	105.95	14.007	
13,700.00	11,173.00	14,462.85	11,788.00	55.92	58.05	114.62	-2,729.30	-1,727.67	1,484.08	1,377.18	106.90	13.883	
13,750.00	11,173.00	14,512.85	11,788.00	56.44	58.55	114.62	-2,779.30	-1,727.59	1,484.13	1,376.28	107.85	13.761	
13,800.00	11,173.00	14,562.85	11,788.00	56.96	59.06	114.62	-2,829.30	-1,727.52	1,484.19	1,375.37	108.81	13.640	
13,850.00	11,173.00	14,612.85	11,788.00	57.48	59.56	114.62	-2,879.30	-1,727.44	1,484.24	1,374.46	109.79	13.519	
13,900.00	11,173.00	14,662.85	11,788.00	58.01	60.08	114.62	-2,929.30	-1,727.37	1,484.30	1,373.53	110.77	13.400	
13,950.00	11,173.00	14,712.85	11,788.00	58.54	60.60	114.62	-2,979.30	-1,727.29	1,484.35	1,372.60	111.76	13.282	
14,000.00	11,173.00	14,762.85	11,788.00	59.08	61.12	114.62	-3,029.30	-1,727.22	1,484.41	1,371.66	112.75	13.165	
14,050.00	11,173.00	14,812.85	11,788.00	59.62	61.65	114.61	-3,079.30	-1,727.15	1,484.47	1,370.71	113.76	13.049	
14,100.00	11,173.00	14,862.85	11,788.00	60.17	62.18	114.61	-3,129.30	-1,727.07	1,484.52	1,369.75	114.77	12.935	
14,150.00	11,173.00	14,912.85	11,788.00	60.72	62.72	114.61	-3,179.30	-1,727.00	1,484.58	1,368.79	115.79	12.822	
14,200.00	11,173.00	14,962.85	11,788.00	61.27	63.26	114.61	-3,229.30	-1,726.92	1,484.63	1,367.82	116.81	12.710	
14,250.00	11,173.00	15,012.85	11,788.00	61.82	63.80	114.61	-3,279.30	-1,726.85	1,484.69	1,366.84	117.85	12.599	
14,300.00	11,173.00	15,062.85	11,788.00	62.38	64.35	114.61	-3,329.30	-1,726.78	1,484.74	1,365.86	118.88	12.489	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - 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
14,350.00	11,173.00	15,112.85	11,788.00	62.95	64.90	114.61	-3,379.30	-1,726.70	1,484.80	1,364.87	119.93	12.381	
14,400.00	11,173.00	15,162.85	11,788.00	63.51	65.46	114.61	-3,429.30	-1,726.63	1,484.86	1,363.87	120.98	12.273	
14,450.00	11,173.00	15,212.85	11,788.00	64.08	66.01	114.61	-3,479.30	-1,726.55	1,484.91	1,362.87	122.04	12.167	
14,500.00	11,173.00	15,262.85	11,788.00	64.65	66.57	114.61	-3,529.30	-1,726.48	1,484.97	1,361.86	123.10	12.063	
14,550.00	11,173.00	15,312.85	11,788.00	65.23	67.14	114.60	-3,579.30	-1,726.40	1,485.02	1,360.85	124.17	11.959	
14,600.00	11,173.00	15,362.85	11,788.00	65.81	67.70	114.60	-3,629.30	-1,726.33	1,485.08	1,359.83	125.25	11.857	
14,650.00	11,173.00	15,412.85	11,788.00	66.39	68.27	114.60	-3,679.30	-1,726.26	1,485.13	1,358.80	126.33	11.756	
14,700.00	11,173.00	15,462.85	11,788.00	66.98	68.85	114.60	-3,729.30	-1,726.18	1,485.19	1,357.77	127.42	11.656	
14,750.00	11,173.00	15,512.85	11,788.00	67.56	69.42	114.60	-3,779.30	-1,726.11	1,485.25	1,356.74	128.51	11.558	
14,800.00	11,173.00	15,562.85	11,788.00	68.15	70.00	114.60	-3,829.30	-1,726.03	1,485.30	1,355.70	129.61	11.460	
14,850.00	11,173.00	15,612.85	11,788.00	68.75	70.58	114.60	-3,879.30	-1,725.96	1,485.36	1,354.65	130.71	11.364	
14,900.00	11,173.00	15,662.85	11,788.00	69.34	71.17	114.60	-3,929.30	-1,725.89	1,485.41	1,353.60	131.81	11.269	
14,950.00	11,173.00	15,712.85	11,788.00	69.94	71.75	114.60	-3,979.30	-1,725.81	1,485.47	1,352.54	132.93	11.175	
15,000.00	11,173.00	15,762.85	11,788.00	70.54	72.34	114.60	-4,029.30	-1,725.74	1,485.52	1,351.48	134.04	11.083	
15,050.00	11,173.00	15,812.85	11,788.00	71.14	72.93	114.60	-4,079.30	-1,725.66	1,485.58	1,350.42	135.16	10.991	
15,100.00	11,173.00	15,862.85	11,788.00	71.75	73.53	114.59	-4,129.30	-1,725.59	1,485.63	1,349.35	136.29	10.901	
15,150.00	11,173.00	15,912.85	11,788.00	72.35	74.12	114.59	-4,179.30	-1,725.52	1,485.69	1,348.27	137.42	10.811	
15,200.00	11,173.00	15,962.85	11,788.00	72.96	74.72	114.59	-4,229.30	-1,725.44	1,485.75	1,347.20	138.55	10.723	
15,250.00	11,173.00	16,012.85	11,788.00	73.57	75.32	114.59	-4,279.30	-1,725.37	1,485.80	1,346.11	139.69	10.636	
15,300.00	11,173.00	16,062.85	11,788.00	74.19	75.93	114.59	-4,329.30	-1,725.29	1,485.86	1,345.03	140.83	10.551	
15,350.00	11,173.00	16,112.85	11,788.00	74.80	76.53	114.59	-4,379.30	-1,725.22	1,485.91	1,343.94	141.98	10.466	
15,400.00	11,173.00	16,162.85	11,788.00	75.42	77.14	114.59	-4,429.30	-1,725.14	1,485.97	1,342.84	143.13	10.382	
15,450.00	11,173.00	16,212.85	11,788.00	76.04	77.75	114.59	-4,479.30	-1,725.07	1,486.02	1,341.75	144.28	10.300	
15,500.00	11,173.00	16,262.85	11,788.00	76.66	78.36	114.59	-4,529.29	-1,725.00	1,486.08	1,340.64	145.44	10.218	
15,550.00	11,173.00	16,312.85	11,788.00	77.28	78.97	114.59	-4,579.29	-1,724.92	1,486.14	1,339.54	146.60	10.138	
15,600.00	11,173.00	16,362.85	11,788.00	77.91	79.59	114.58	-4,629.29	-1,724.85	1,486.19	1,338.43	147.76	10.058	
15,650.00	11,173.00	16,412.85	11,788.00	78.54	80.20	114.58	-4,679.29	-1,724.77	1,486.25	1,337.32	148.93	9.980	
15,700.00	11,173.00	16,462.85	11,788.00	79.16	80.82	114.58	-4,729.29	-1,724.70	1,486.30	1,336.21	150.10	9.902	
15,750.00	11,173.00	16,512.85	11,788.00	79.79	81.44	114.58	-4,779.29	-1,724.63	1,486.36	1,335.09	151.27	9.826	
15,800.00	11,173.00	16,562.85	11,788.00	80.42	82.07	114.58	-4,829.29	-1,724.55	1,486.41	1,333.97	152.45	9.750	
15,850.00	11,173.00	16,612.85	11,788.00	81.06	82.69	114.58	-4,879.29	-1,724.48	1,486.47	1,332.84	153.63	9.676	
15,900.00	11,173.00	16,662.85	11,788.00	81.69	83.32	114.58	-4,929.29	-1,724.40	1,486.53	1,331.71	154.81	9.602	
15,950.00	11,173.00	16,712.85	11,788.00	82.33	83.94	114.58	-4,979.29	-1,724.33	1,486.58	1,330.58	156.00	9.530	
16,000.00	11,173.00	16,762.85	11,788.00	82.97	84.57	114.58	-5,029.29	-1,724.26	1,486.64	1,329.45	157.19	9.458	
16,050.00	11,173.00	16,812.85	11,788.00	83.61	85.20	114.58	-5,079.29	-1,724.18	1,486.69	1,328.32	158.38	9.387	
16,100.00	11,173.00	16,862.85	11,788.00	84.25	85.83	114.57	-5,129.29	-1,724.11	1,486.75	1,327.18	159.57	9.317	
16,150.00	11,173.00	16,912.85	11,788.00	84.89	86.47	114.57	-5,179.29	-1,724.03	1,486.80	1,326.04	160.77	9.248	
16,200.00	11,173.00	16,962.85	11,788.00	85.53	87.10	114.57	-5,229.29	-1,723.96	1,486.86	1,324.89	161.97	9.180	
16,250.00	11,173.00	17,012.85	11,788.00	86.18	87.74	114.57	-5,279.29	-1,723.88	1,486.92	1,323.74	163.17	9.113	
16,300.00	11,173.00	17,062.85	11,788.00	86.82	88.38	114.57	-5,329.29	-1,723.81	1,486.97	1,322.60	164.38	9.046	
16,350.00	11,173.00	17,112.85	11,788.00	87.47	89.02	114.57	-5,379.29	-1,723.74	1,487.03	1,321.44	165.58	8.981	
16,400.00	11,173.00	17,162.85	11,788.00	88.12	89.66	114.57	-5,429.29	-1,723.66	1,487.08	1,320.29	166.79	8.916	
16,450.00	11,173.00	17,212.85	11,788.00	88.77	90.30	114.57	-5,479.29	-1,723.59	1,487.14	1,319.13	168.00	8.852	
16,500.00	11,173.00	17,262.85	11,788.00	89.42	90.94	114.57	-5,529.29	-1,723.51	1,487.19	1,317.98	169.22	8.789	
16,550.00	11,173.00	17,312.85	11,788.00	90.07	91.59	114.57	-5,579.29	-1,723.44	1,487.25	1,316.81	170.44	8.726	
16,600.00	11,173.00	17,362.85	11,788.00	90.73	92.23	114.56	-5,629.29	-1,723.37	1,487.31	1,315.65	171.65	8.665	
16,650.00	11,173.00	17,412.85	11,788.00	91.38	92.88	114.56	-5,679.29	-1,723.29	1,487.36	1,314.49	172.87	8.604	
16,700.00	11,173.00	17,462.85	11,788.00	92.04	93.53	114.56	-5,729.29	-1,723.22	1,487.42	1,313.32	174.10	8.544	
16,750.00	11,173.00	17,512.85	11,788.00	92.69	94.18	114.56	-5,779.29	-1,723.14	1,487.47	1,312.15	175.32	8.484	
16,800.00	11,173.00	17,562.85	11,788.00	93.35	94.83	114.56	-5,829.29	-1,723.07	1,487.53	1,310.98	176.55	8.426	
16,850.00	11,173.00	17,612.85	11,788.00	94.01	95.48	114.56	-5,879.29	-1,723.00	1,487.58	1,309.80	177.78	8.368	
16,900.00	11,173.00	17,662.85	11,788.00	94.67	96.13	114.56	-5,929.29	-1,722.92	1,487.64	1,308.63	179.01	8.310	

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - 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
16,950.00	11,173.00	17,712.85	11,788.00	95.33	96.78	114.56	-5,979.29	-1,722.85	1,487.69	1,307.45	180.24	8.254	
17,000.00	11,173.00	17,762.85	11,788.00	95.99	97.44	114.56	-6,029.29	-1,722.77	1,487.75	1,306.27	181.48	8.198	
17,050.00	11,173.00	17,812.85	11,788.00	96.65	98.09	114.56	-6,079.29	-1,722.70	1,487.81	1,305.09	182.71	8.143	
17,100.00	11,173.00	17,862.85	11,788.00	97.32	98.75	114.55	-6,129.29	-1,722.62	1,487.86	1,303.91	183.95	8.088	
17,150.00	11,173.00	17,912.85	11,788.00	97.98	99.41	114.55	-6,179.29	-1,722.55	1,487.92	1,302.72	185.19	8.034	
17,200.00	11,173.00	17,962.85	11,788.00	98.65	100.06	114.55	-6,229.29	-1,722.48	1,487.97	1,301.54	186.44	7.981	
17,250.00	11,173.00	18,012.85	11,788.00	99.31	100.72	114.55	-6,279.29	-1,722.40	1,488.03	1,300.35	187.68	7.929	
17,300.00	11,173.00	18,062.85	11,788.00	99.98	101.38	114.55	-6,329.29	-1,722.33	1,488.08	1,299.16	188.92	7.877	
17,350.00	11,173.00	18,112.85	11,788.00	100.65	102.05	114.55	-6,379.29	-1,722.25	1,488.14	1,297.97	190.17	7.825	
17,400.00	11,173.00	18,162.85	11,788.00	101.31	102.71	114.55	-6,429.29	-1,722.18	1,488.20	1,296.78	191.42	7.775	
17,450.00	11,173.00	18,212.85	11,788.00	101.98	103.37	114.55	-6,479.29	-1,722.11	1,488.25	1,295.58	192.67	7.724	
17,500.00	11,173.00	18,262.85	11,788.00	102.65	104.03	114.55	-6,529.29	-1,722.03	1,488.31	1,294.39	193.92	7.675	
17,550.00	11,173.00	18,312.85	11,788.00	103.33	104.70	114.55	-6,579.29	-1,721.96	1,488.36	1,293.19	195.17	7.626	
17,600.00	11,173.00	18,362.85	11,788.00	104.00	105.36	114.54	-6,629.29	-1,721.88	1,488.42	1,291.99	196.43	7.577	
17,650.00	11,173.00	18,412.85	11,788.00	104.67	106.03	114.54	-6,679.29	-1,721.81	1,488.47	1,290.79	197.69	7.530	
17,700.00	11,173.00	18,462.85	11,788.00	105.34	106.70	114.54	-6,729.29	-1,721.74	1,488.53	1,289.59	198.94	7.482	
17,750.00	11,173.00	18,512.85	11,788.00	106.02	107.37	114.54	-6,779.29	-1,721.66	1,488.59	1,288.38	200.20	7.435	
17,800.00	11,173.00	18,562.85	11,788.00	106.69	108.03	114.54	-6,829.29	-1,721.59	1,488.64	1,287.18	201.46	7.389	
17,850.00	11,173.00	18,612.85	11,788.00	107.37	108.70	114.54	-6,879.29	-1,721.51	1,488.70	1,285.97	202.72	7.343	
17,900.00	11,173.00	18,662.85	11,788.00	108.04	109.37	114.54	-6,929.29	-1,721.44	1,488.75	1,284.77	203.99	7.298	
17,950.00	11,173.00	18,712.85	11,788.00	108.72	110.04	114.54	-6,979.29	-1,721.36	1,488.81	1,283.56	205.25	7.254	
18,000.00	11,173.00	18,762.85	11,788.00	109.40	110.72	114.54	-7,029.29	-1,721.29	1,488.86	1,282.35	206.52	7.209	
18,050.00	11,173.00	18,812.85	11,788.00	110.07	111.39	114.54	-7,079.29	-1,721.22	1,488.92	1,281.14	207.78	7.166	
18,100.00	11,173.00	18,862.85	11,788.00	110.75	112.06	114.54	-7,129.29	-1,721.14	1,488.98	1,279.93	209.05	7.123	
18,150.00	11,173.00	18,912.85	11,788.00	111.43	112.73	114.53	-7,179.29	-1,721.07	1,489.03	1,278.71	210.32	7.080	
18,200.00	11,173.00	18,962.85	11,788.00	112.11	113.41	114.53	-7,229.29	-1,720.99	1,489.09	1,277.50	211.59	7.038	
18,250.00	11,173.00	19,012.85	11,788.00	112.79	114.08	114.53	-7,279.29	-1,720.92	1,489.14	1,276.28	212.86	6.996	
18,300.00	11,173.00	19,062.85	11,788.00	113.47	114.76	114.53	-7,329.29	-1,720.85	1,489.20	1,275.06	214.13	6.955	
18,350.00	11,173.00	19,112.85	11,788.00	114.15	115.43	114.53	-7,379.29	-1,720.77	1,489.25	1,273.85	215.41	6.914	
18,400.00	11,173.00	19,162.85	11,788.00	114.83	116.11	114.53	-7,429.29	-1,720.70	1,489.31	1,272.63	216.68	6.873	
18,450.00	11,173.00	19,212.85	11,788.00	115.52	116.79	114.53	-7,479.29	-1,720.62	1,489.37	1,271.41	217.96	6.833	
18,500.00	11,173.00	19,262.85	11,788.00	116.20	117.47	114.53	-7,529.29	-1,720.55	1,489.42	1,270.19	219.24	6.794	
18,550.00	11,173.00	19,312.85	11,788.00	116.88	118.14	114.53	-7,579.29	-1,720.48	1,489.48	1,268.96	220.51	6.755	
18,600.00	11,173.00	19,362.85	11,788.00	117.57	118.82	114.53	-7,629.29	-1,720.40	1,489.53	1,267.74	221.79	6.716	
18,650.00	11,173.00	19,412.85	11,788.00	118.25	119.50	114.52	-7,679.29	-1,720.33	1,489.59	1,266.52	223.07	6.678	
18,700.00	11,173.00	19,462.85	11,788.00	118.94	120.18	114.52	-7,729.29	-1,720.25	1,489.64	1,265.29	224.35	6.640	
18,750.00	11,173.00	19,512.85	11,788.00	119.62	120.86	114.52	-7,779.29	-1,720.18	1,489.70	1,264.06	225.64	6.602	
18,800.00	11,173.00	19,562.85	11,788.00	120.31	121.54	114.52	-7,829.29	-1,720.10	1,489.76	1,262.84	226.92	6.565	
18,850.00	11,173.00	19,612.85	11,788.00	121.00	122.23	114.52	-7,879.29	-1,720.03	1,489.81	1,261.61	228.20	6.528	
18,900.00	11,173.00	19,662.85	11,788.00	121.68	122.91	114.52	-7,929.29	-1,719.96	1,489.87	1,260.38	229.49	6.492	
18,950.00	11,173.00	19,712.85	11,788.00	122.37	123.59	114.52	-7,979.29	-1,719.88	1,489.92	1,259.15	230.77	6.456	
19,000.00	11,173.00	19,762.85	11,788.00	123.06	124.27	114.52	-8,029.29	-1,719.81	1,489.98	1,257.92	232.06	6.421	
19,050.00	11,173.00	19,812.85	11,788.00	123.75	124.96	114.52	-8,079.29	-1,719.73	1,490.03	1,256.69	233.35	6.385	
19,100.00	11,173.00	19,862.85	11,788.00	124.44	125.64	114.52	-8,129.29	-1,719.66	1,490.09	1,255.45	234.64	6.351	
19,150.00	11,173.00	19,912.85	11,788.00	125.12	126.33	114.51	-8,179.29	-1,719.59	1,490.15	1,254.22	235.93	6.316	
19,200.00	11,173.00	19,962.85	11,788.00	125.81	127.01	114.51	-8,229.29	-1,719.51	1,490.20	1,252.98	237.22	6.282	
19,250.00	11,173.00	20,012.85	11,788.00	126.50	127.70	114.51	-8,279.29	-1,719.44	1,490.26	1,251.75	238.51	6.248	
19,300.00	11,173.00	20,062.85	11,788.00	127.19	128.38	114.51	-8,329.29	-1,719.36	1,490.31	1,250.51	239.80	6.215	
19,350.00	11,173.00	20,112.85	11,788.00	127.89	129.07	114.51	-8,379.29	-1,719.29	1,490.37	1,249.28	241.09	6.182	
19,400.00	11,173.00	20,162.85	11,788.00	128.58	129.76	114.51	-8,429.29	-1,719.22	1,490.42	1,248.04	242.38	6.149	
19,450.00	11,173.00	20,212.85	11,788.00	129.27	130.44	114.51	-8,479.29	-1,719.14	1,490.48	1,246.80	243.68	6.117	
19,500.00	11,173.00	20,262.85	11,788.00	129.96	131.13	114.51	-8,529.29	-1,719.07	1,490.54	1,245.56	244.97	6.084	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - 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
19,550.00	11,173.00	20,312.85	11,788.00	130.65	131.82	114.51	-8,579.29	-1,718.99	1,490.59	1,244.32	246.27	6.053	
19,600.00	11,173.00	20,362.85	11,788.00	131.35	132.51	114.51	-8,629.29	-1,718.92	1,490.65	1,243.08	247.57	6.021	
19,650.00	11,173.00	20,412.85	11,788.00	132.04	133.20	114.50	-8,679.29	-1,718.84	1,490.70	1,241.84	248.86	5.990	
19,700.00	11,173.00	20,462.85	11,788.00	132.73	133.89	114.50	-8,729.29	-1,718.77	1,490.76	1,240.60	250.16	5.959	
19,750.00	11,173.00	20,512.85	11,788.00	133.43	134.58	114.50	-8,779.29	-1,718.70	1,490.81	1,239.35	251.46	5.929	
19,800.00	11,173.00	20,562.85	11,788.00	134.12	135.27	114.50	-8,829.29	-1,718.62	1,490.87	1,238.11	252.76	5.898	
19,850.00	11,173.00	20,612.85	11,788.00	134.82	135.96	114.50	-8,879.29	-1,718.55	1,490.93	1,236.87	254.06	5.868	
19,900.00	11,173.00	20,662.85	11,788.00	135.51	136.65	114.50	-8,929.29	-1,718.47	1,490.98	1,235.62	255.36	5.839	
19,950.00	11,173.00	20,712.85	11,788.00	136.21	137.34	114.50	-8,979.29	-1,718.40	1,491.04	1,234.38	256.66	5.809	
20,000.00	11,173.00	20,762.85	11,788.00	136.90	138.03	114.50	-9,029.29	-1,718.33	1,491.09	1,233.13	257.96	5.780	
20,050.00	11,173.00	20,812.85	11,788.00	137.60	138.72	114.50	-9,079.29	-1,718.25	1,491.15	1,231.88	259.27	5.751	
20,100.00	11,173.00	20,862.85	11,788.00	138.29	139.42	114.50	-9,129.29	-1,718.18	1,491.20	1,230.63	260.57	5.723	
20,150.00	11,173.00	20,912.85	11,788.00	138.99	140.11	114.50	-9,179.29	-1,718.10	1,491.26	1,229.39	261.87	5.695	
20,200.00	11,173.00	20,962.85	11,788.00	139.69	140.80	114.49	-9,229.29	-1,718.03	1,491.31	1,228.14	263.18	5.667	
20,250.00	11,173.00	21,012.85	11,788.00	140.38	141.49	114.49	-9,279.29	-1,717.96	1,491.37	1,226.89	264.48	5.639	
20,300.00	11,173.00	21,062.85	11,788.00	141.08	142.19	114.49	-9,329.29	-1,717.88	1,491.43	1,225.64	265.79	5.611	
20,350.00	11,173.00	21,112.85	11,788.00	141.78	142.88	114.49	-9,379.29	-1,717.81	1,491.48	1,224.39	267.09	5.584	
20,400.00	11,173.00	21,162.85	11,788.00	142.48	143.58	114.49	-9,429.29	-1,717.73	1,491.54	1,223.14	268.40	5.557	
20,450.00	11,173.00	21,212.85	11,788.00	143.18	144.27	114.49	-9,479.29	-1,717.66	1,491.59	1,221.88	269.71	5.530	
20,500.00	11,173.00	21,262.85	11,788.00	143.87	144.97	114.49	-9,529.29	-1,717.58	1,491.65	1,220.63	271.02	5.504	
20,550.00	11,173.00	21,312.85	11,788.00	144.57	145.66	114.49	-9,579.29	-1,717.51	1,491.70	1,219.38	272.33	5.478	
20,600.00	11,173.00	21,362.85	11,788.00	145.27	146.36	114.49	-9,629.29	-1,717.44	1,491.76	1,218.13	273.63	5.452	
20,650.00	11,173.00	21,412.85	11,788.00	145.97	147.05	114.49	-9,679.29	-1,717.36	1,491.82	1,216.87	274.94	5.426	
20,700.00	11,173.00	21,462.85	11,788.00	146.67	147.75	114.48	-9,729.29	-1,717.29	1,491.87	1,215.62	276.25	5.400	
20,750.00	11,173.00	21,512.85	11,788.00	147.37	148.45	114.48	-9,779.29	-1,717.21	1,491.93	1,214.36	277.57	5.375	
20,800.00	11,173.00	21,562.85	11,788.00	148.07	149.14	114.48	-9,829.29	-1,717.14	1,491.98	1,213.11	278.88	5.350	
20,850.00	11,173.00	21,612.85	11,788.00	148.77	149.84	114.48	-9,879.29	-1,717.07	1,492.04	1,211.85	280.19	5.325	
20,900.00	11,173.00	21,662.85	11,788.00	149.47	150.54	114.48	-9,929.29	-1,716.99	1,492.09	1,210.59	281.50	5.300	
20,950.00	11,173.00	21,712.85	11,788.00	150.17	151.23	114.48	-9,979.28	-1,716.92	1,492.15	1,209.34	282.81	5.276	
21,000.00	11,173.00	21,762.85	11,788.00	150.88	151.93	114.48	-10,029.28	-1,716.84	1,492.21	1,208.08	284.13	5.252	
21,050.00	11,173.00	21,812.85	11,788.00	151.58	152.63	114.48	-10,079.28	-1,716.77	1,492.26	1,206.82	285.44	5.228	
21,100.00	11,173.00	21,862.85	11,788.00	152.28	153.33	114.48	-10,129.28	-1,716.69	1,492.32	1,205.56	286.76	5.204	
21,150.00	11,173.00	21,912.85	11,788.00	152.98	154.03	114.48	-10,179.28	-1,716.62	1,492.37	1,204.30	288.07	5.181	
21,200.00	11,173.00	21,962.85	11,788.00	153.68	154.73	114.47	-10,229.28	-1,716.55	1,492.43	1,203.04	289.39	5.157	
21,250.00	11,173.00	22,012.85	11,788.00	154.39	155.43	114.47	-10,279.28	-1,716.47	1,492.48	1,201.78	290.70	5.134	
21,300.00	11,173.00	22,062.85	11,788.00	155.09	156.13	114.47	-10,329.28	-1,716.40	1,492.54	1,200.52	292.02	5.111	
21,307.62	11,173.00	22,070.47	11,788.00	155.19	156.23	114.47	-10,336.90	-1,716.39	1,492.55	1,200.33	292.22	5.108	ES, SF

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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	89.65	0.37	59.99	59.99				
50.00	50.00	49.50	49.50	0.50	0.50	89.65	0.37	59.99	59.99	58.98	1.01	59.609	
100.00	100.00	100.50	99.50	0.52	0.52	89.65	0.37	59.99	59.99	58.96	1.04	57.908	
150.00	150.00	149.50	149.50	0.59	0.59	89.65	0.37	59.99	59.99	58.81	1.18	50.860	
200.00	200.00	200.50	199.50	0.70	0.70	89.65	0.37	59.99	59.99	58.59	1.41	42.684	
250.00	250.00	249.50	249.50	0.84	0.84	89.65	0.37	59.99	59.99	58.32	1.67	35.837	
300.00	300.00	300.50	299.50	0.99	0.99	89.65	0.37	59.99	59.99	58.02	1.98	30.357	
350.00	350.00	349.50	349.50	1.15	1.14	89.65	0.37	59.99	59.99	57.70	2.29	26.204	
400.00	400.00	400.50	399.50	1.31	1.31	89.65	0.37	59.99	59.99	57.37	2.62	22.899	
450.00	450.00	449.50	449.50	1.48	1.47	89.65	0.37	59.99	59.99	57.04	2.95	20.329	
500.00	500.00	500.50	499.50	1.65	1.65	89.65	0.37	59.99	59.99	56.70	3.29	18.213	
550.00	550.00	549.50	549.50	1.82	1.82	89.65	0.37	59.99	59.99	56.36	3.63	16.510	
600.00	600.00	600.50	599.50	1.99	1.99	89.65	0.37	59.99	59.99	56.01	3.98	15.062	
650.00	650.00	649.50	649.50	2.16	2.16	89.65	0.37	59.99	59.99	55.66	4.33	13.863	
700.00	700.00	700.50	699.50	2.34	2.34	89.65	0.37	59.99	59.99	55.31	4.68	12.818	
750.00	750.00	749.50	749.50	2.51	2.51	89.65	0.37	59.99	59.99	54.96	5.03	11.932	
800.00	800.00	800.50	799.50	2.69	2.69	89.65	0.37	59.99	59.99	54.61	5.38	11.145	
850.00	850.00	849.50	849.50	2.87	2.87	89.65	0.37	59.99	59.99	54.26	5.73	10.466	
900.00	900.00	900.50	899.50	3.04	3.05	89.65	0.37	59.99	59.99	53.90	6.09	9.853	
950.00	950.00	949.50	949.50	3.22	3.22	89.65	0.37	59.99	59.99	53.55	6.44	9.317	
1,000.00	1,000.00	1,000.50	999.50	3.40	3.40	89.65	0.37	59.99	59.99	53.19	6.80	8.826	
1,050.00	1,050.00	1,049.50	1,049.50	3.58	3.57	89.65	0.37	59.99	59.99	52.84	7.15	8.392	
1,100.00	1,100.00	1,100.50	1,099.50	3.75	3.75	89.65	0.37	59.99	59.99	52.48	7.51	7.991	
1,150.00	1,150.00	1,149.50	1,149.50	3.93	3.93	89.65	0.37	59.99	59.99	52.13	7.86	7.634	
1,200.00	1,200.00	1,200.50	1,199.50	4.11	4.11	89.65	0.37	59.99	59.99	51.77	8.22	7.300	
1,250.00	1,250.00	1,249.50	1,249.50	4.29	4.28	89.65	0.37	59.99	59.99	51.42	8.57	7.000	
1,300.00	1,300.00	1,300.50	1,299.50	4.46	4.47	89.65	0.37	59.99	59.99	51.06	8.93	6.718	
1,350.00	1,350.00	1,349.50	1,349.50	4.64	4.64	89.65	0.37	59.99	59.99	50.71	9.28	6.463	
1,400.00	1,400.00	1,400.50	1,399.50	4.82	4.82	89.65	0.37	59.99	59.99	50.35	9.64	6.221	
1,450.00	1,450.00	1,449.50	1,449.50	5.00	5.00	89.65	0.37	59.99	59.99	50.00	10.00	6.002	
1,500.00	1,500.00	1,500.50	1,499.50	5.18	5.18	89.65	0.37	59.99	59.99	49.64	10.36	5.793	
1,550.00	1,550.00	1,549.50	1,549.50	5.36	5.35	89.65	0.37	59.99	59.99	49.28	10.71	5.602	
1,600.00	1,600.00	1,600.50	1,599.50	5.53	5.54	89.65	0.37	59.99	59.99	48.92	11.07	5.419	
1,650.00	1,650.00	1,649.50	1,649.50	5.71	5.71	89.65	0.37	59.99	59.99	48.57	11.42	5.252	
1,700.00	1,700.00	1,700.50	1,699.50	5.89	5.89	89.65	0.37	59.99	59.99	48.21	11.78	5.091	
1,750.00	1,750.00	1,749.50	1,749.50	6.07	6.07	89.65	0.37	59.99	59.99	47.85	12.14	4.942	Alert
1,800.00	1,800.00	1,800.50	1,799.50	6.25	6.25	89.65	0.37	59.99	59.99	47.49	12.50	4.800	Alert
1,850.00	1,850.00	1,849.50	1,849.50	6.43	6.43	89.65	0.37	59.99	59.99	47.14	12.85	4.668	Alert
1,900.00	1,900.00	1,900.50	1,899.50	6.61	6.61	89.65	0.37	59.99	59.99	46.78	13.21	4.540	Alert
1,950.00	1,950.00	1,949.50	1,949.50	6.78	6.78	89.65	0.37	59.99	59.99	46.42	13.57	4.422	Alert
2,000.00	2,000.00	2,000.50	1,999.50	6.96	6.97	89.65	0.37	59.99	59.99	46.06	13.93	4.307	Alert
2,050.00	2,050.00	2,049.50	2,049.50	7.14	7.14	89.65	0.37	59.99	59.99	45.71	14.28	4.200	Alert
2,100.00	2,100.00	2,100.50	2,099.50	7.32	7.32	89.65	0.37	59.99	59.99	45.35	14.64	4.097	Alert
2,150.00	2,150.00	2,149.50	2,149.50	7.50	7.50	89.65	0.37	59.99	59.99	44.99	15.00	4.000	Alert
2,200.00	2,200.00	2,200.50	2,199.50	7.68	7.68	89.65	0.37	59.99	59.99	44.63	15.36	3.906	Alert
2,250.00	2,250.00	2,249.50	2,249.50	7.86	7.86	89.65	0.37	59.99	59.99	44.28	15.71	3.818	Alert
2,300.00	2,300.00	2,300.50	2,299.50	8.04	8.04	89.65	0.37	59.99	59.99	43.92	16.07	3.732	Alert
2,350.00	2,350.00	2,349.50	2,349.50	8.22	8.21	89.65	0.37	59.99	59.99	43.56	16.43	3.652	Alert
2,400.00	2,400.00	2,400.50	2,399.50	8.39	8.40	89.65	0.37	59.99	59.99	43.20	16.79	3.573	Alert
2,450.00	2,450.00	2,449.50	2,449.50	8.57	8.57	89.65	0.37	59.99	59.99	42.85	17.14	3.499	Alert
2,500.00	2,500.00	2,500.50	2,499.50	8.75	8.75	89.65	0.37	59.99	59.99	42.49	17.51	3.427	Alert
2,550.00	2,550.00	2,549.50	2,549.50	8.93	8.93	89.65	0.37	59.99	59.99	42.13	17.86	3.359	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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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	2,600.50	2,599.50	9.11	9.11	89.65	0.37	59.99	59.99	41.77	18.22	3.292	Alert
2,650.00	2,650.00	2,649.50	2,649.50	9.29	9.29	89.65	0.37	59.99	59.99	41.42	18.58	3.229	Alert
2,700.00	2,700.00	2,700.50	2,699.50	9.47	9.47	89.65	0.37	59.99	59.99	41.05	18.94	3.168	Alert
2,750.00	2,750.00	2,749.50	2,749.50	9.65	9.65	89.65	0.37	59.99	59.99	40.70	19.29	3.110	Alert
2,800.00	2,800.00	2,800.50	2,799.50	9.83	9.83	89.65	0.37	59.99	59.99	40.34	19.65	3.052	Alert
2,850.00	2,850.00	2,849.50	2,849.50	10.00	10.00	89.65	0.37	59.99	59.99	39.98	20.01	2.998	Alert
2,900.00	2,900.00	2,900.50	2,899.50	10.18	10.19	89.65	0.37	59.99	59.99	39.62	20.37	2.945	Alert
2,950.00	2,950.00	2,949.50	2,949.50	10.36	10.36	89.65	0.37	59.99	59.99	39.27	20.72	2.895	Alert
3,000.00	3,000.00	3,000.50	2,999.50	10.54	10.54	89.65	0.37	59.99	59.99	38.91	21.09	2.845	Alert, CC
3,050.00	3,050.00	3,049.50	3,049.50	10.72	10.72	174.49	0.37	59.99	60.21	38.77	21.44	2.809	Alert, ES
3,100.00	3,099.99	3,100.51	3,099.49	10.89	10.90	174.54	0.37	59.99	60.86	39.07	21.79	2.793	Alert, SF
3,150.00	3,149.98	3,149.48	3,149.48	11.06	11.08	174.64	0.37	59.99	61.95	39.81	22.14	2.798	Alert
3,200.00	3,199.96	3,200.54	3,199.46	11.24	11.26	174.77	0.37	59.99	63.47	40.97	22.49	2.821	Alert
3,250.00	3,249.92	3,249.42	3,249.42	11.41	11.44	174.92	0.37	59.99	65.42	42.58	22.84	2.864	Alert
3,300.00	3,299.86	3,300.64	3,299.36	11.58	11.62	175.10	0.37	59.99	67.81	44.62	23.20	2.923	Alert
3,350.00	3,349.79	3,349.29	3,349.29	11.75	11.79	175.29	0.37	59.99	70.54	47.00	23.54	2.997	Alert
3,400.00	3,399.71	3,400.79	3,399.21	11.93	11.98	175.47	0.37	59.99	73.31	49.41	23.90	3.067	Alert
3,450.00	3,449.63	3,449.13	3,449.13	12.10	12.15	175.63	0.37	59.99	76.07	51.82	24.24	3.138	Alert
3,500.00	3,499.56	3,500.94	3,499.06	12.27	12.34	175.78	0.37	59.99	78.83	54.23	24.60	3.204	Alert
3,550.00	3,549.48	3,548.98	3,548.98	12.45	12.51	175.93	0.37	59.99	81.59	56.65	24.95	3.271	Alert
3,600.00	3,599.40	3,601.10	3,598.90	12.62	12.69	176.06	0.37	59.99	84.36	59.05	25.30	3.334	Alert
3,650.00	3,649.33	3,648.83	3,648.83	12.80	12.87	176.19	0.37	59.99	87.12	61.47	25.65	3.397	Alert
3,700.00	3,699.25	3,701.25	3,698.75	12.97	13.05	176.30	0.37	59.99	89.88	63.87	26.01	3.456	Alert
3,750.00	3,749.17	3,748.67	3,748.67	13.15	13.22	176.41	0.37	59.99	92.65	66.29	26.35	3.516	Alert
3,800.00	3,799.10	3,801.40	3,798.60	13.32	13.41	176.52	0.37	59.99	95.41	68.70	26.72	3.571	Alert
3,850.00	3,849.02	3,848.52	3,848.52	13.50	13.58	176.62	0.37	59.99	98.18	71.12	27.06	3.628	Alert
3,900.00	3,898.94	3,901.56	3,898.44	13.67	13.77	176.71	0.37	59.99	100.94	73.52	27.42	3.681	Alert
3,950.00	3,948.87	3,948.37	3,948.37	13.85	13.94	176.80	0.37	59.99	103.71	75.95	27.76	3.735	Alert
4,000.00	3,998.79	3,998.29	3,998.29	14.02	14.12	176.88	0.37	59.99	106.47	78.36	28.12	3.787	Alert
4,050.00	4,048.71	4,047.38	4,047.38	14.20	14.29	176.87	0.53	60.18	109.42	80.96	28.46	3.844	Alert
4,100.00	4,098.64	4,096.40	4,096.39	14.38	14.47	176.68	1.03	60.76	112.76	83.95	28.81	3.914	Alert
4,150.00	4,148.56	4,145.35	4,145.33	14.55	14.64	176.32	1.88	61.73	116.50	87.35	29.15	3.996	Alert
4,200.00	4,198.48	4,194.24	4,194.18	14.73	14.81	175.83	3.06	63.10	120.63	91.14	29.49	4.091	Alert
4,250.00	4,248.41	4,244.04	4,243.94	14.91	14.99	175.27	4.44	64.70	124.97	95.13	29.84	4.188	Alert
4,300.00	4,298.33	4,306.16	4,293.69	15.08	15.21	174.76	5.81	66.29	129.32	99.09	30.23	4.278	Alert
4,350.00	4,348.25	4,343.63	4,343.44	15.26	15.34	174.27	7.19	67.88	133.68	103.14	30.54	4.378	Alert
4,400.00	4,398.18	4,406.57	4,393.20	15.44	15.56	173.82	8.57	69.47	138.05	107.12	30.93	4.463	Alert
4,450.00	4,448.10	4,443.23	4,442.95	15.62	15.69	173.39	9.94	71.06	142.43	111.19	31.24	4.559	Alert
4,500.00	4,498.02	4,506.97	4,492.70	15.79	15.92	173.00	11.32	72.66	146.81	115.17	31.64	4.640	Alert
4,550.00	4,547.94	4,542.82	4,542.45	15.97	16.04	172.62	12.70	74.25	151.20	119.26	31.94	4.734	Alert
4,600.00	4,597.87	4,607.38	4,592.21	16.15	16.27	172.26	14.07	75.84	155.60	123.25	32.34	4.811	Alert
4,650.00	4,647.79	4,642.42	4,641.96	16.33	16.40	171.93	15.45	77.43	160.00	127.36	32.64	4.902	Alert
4,700.00	4,697.71	4,707.78	4,691.71	16.51	16.63	171.61	16.82	79.02	164.41	131.36	33.05	4.975	Alert
4,750.00	4,747.64	4,742.01	4,741.47	16.68	16.75	171.31	18.20	80.62	168.82	135.48	33.34	5.063	
4,800.00	4,797.56	4,791.81	4,791.22	16.86	16.93	171.02	19.58	82.21	173.24	139.54	33.69	5.141	
4,850.00	4,847.48	4,841.61	4,840.97	17.04	17.10	170.75	20.95	83.80	177.66	143.61	34.05	5.218	
4,900.00	4,897.41	4,908.60	4,890.72	17.22	17.34	170.49	22.33	85.39	182.08	147.62	34.46	5.284	
4,950.00	4,947.33	4,941.20	4,940.48	17.40	17.46	170.25	23.71	86.99	186.51	151.76	34.75	5.367	
5,000.00	4,997.25	5,009.00	4,990.23	17.58	17.70	170.01	25.08	88.58	190.94	155.77	35.17	5.430	
5,050.00	5,047.18	5,040.80	5,039.98	17.76	17.81	169.79	26.46	90.17	195.37	159.92	35.45	5.510	
5,100.00	5,097.10	5,109.41	5,089.73	17.93	18.05	169.58	27.84	91.76	199.81	163.94	35.87	5.570	
5,150.00	5,147.02	5,140.39	5,139.49	18.11	18.16	169.37	29.21	93.35	204.25	168.09	36.16	5.649	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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	5,196.95	5,209.81	5,189.24	18.29	18.41	169.18	30.59	94.95	208.69	172.11	36.58	5.705	
5,250.00	5,246.87	5,239.99	5,238.99	18.47	18.52	168.99	31.97	96.54	213.14	176.27	36.87	5.781	
5,300.00	5,296.79	5,289.78	5,288.75	18.65	18.70	168.81	33.34	98.13	217.58	180.36	37.22	5.846	
5,350.00	5,346.72	5,339.58	5,338.50	18.83	18.87	168.63	34.72	99.72	222.03	184.46	37.57	5.910	
5,400.00	5,396.64	5,389.38	5,388.25	19.01	19.05	168.47	36.09	101.31	226.48	188.56	37.92	5.972	
5,450.00	5,446.56	5,439.18	5,438.00	19.19	19.23	168.31	37.47	102.91	230.93	192.66	38.28	6.033	
5,500.00	5,496.49	5,488.97	5,487.76	19.37	19.41	168.16	38.85	104.50	235.39	196.76	38.63	6.093	
5,550.00	5,546.41	5,538.77	5,537.51	19.55	19.58	168.01	40.22	106.09	239.84	200.86	38.98	6.152	
5,600.00	5,596.33	5,588.57	5,587.26	19.73	19.76	167.86	41.60	107.68	244.30	204.96	39.34	6.210	
5,650.00	5,646.26	5,638.36	5,637.02	19.91	19.94	167.73	42.98	109.27	248.76	209.07	39.69	6.267	
5,700.00	5,696.18	5,688.16	5,686.77	20.09	20.12	167.59	44.35	110.87	253.22	213.18	40.05	6.323	
5,750.00	5,746.10	5,737.96	5,736.52	20.27	20.29	167.47	45.73	112.46	257.68	217.28	40.40	6.378	
5,800.00	5,796.03	5,787.76	5,786.27	20.45	20.47	167.34	47.11	114.05	262.14	221.39	40.75	6.432	
5,850.00	5,845.95	5,837.55	5,836.03	20.63	20.65	167.22	48.48	115.64	266.61	225.50	41.11	6.486	
5,900.00	5,895.87	5,887.35	5,885.78	20.81	20.83	167.11	49.86	117.24	271.07	229.61	41.46	6.538	
5,950.00	5,945.79	5,937.15	5,935.53	20.99	21.00	167.00	51.23	118.83	275.54	233.72	41.82	6.589	
6,000.00	5,995.72	5,986.95	5,985.29	21.17	21.18	166.89	52.61	120.42	280.01	237.84	42.17	6.640	
6,050.00	6,045.64	6,036.74	6,035.04	21.35	21.36	166.78	53.99	122.01	284.47	241.95	42.52	6.690	
6,100.00	6,095.56	6,086.54	6,084.79	21.53	21.54	166.68	55.36	123.60	288.94	246.06	42.88	6.739	
6,150.00	6,145.49	6,136.34	6,134.54	21.71	21.72	166.58	56.74	125.20	293.41	250.18	43.23	6.787	
6,200.00	6,195.41	6,186.13	6,184.30	21.89	21.90	166.49	58.12	126.79	297.88	254.29	43.59	6.834	
6,250.00	6,245.33	6,235.93	6,234.05	22.07	22.07	166.39	59.49	128.38	302.35	258.41	43.94	6.881	
6,300.00	6,295.26	6,285.73	6,283.80	22.25	22.25	166.30	60.87	129.97	306.83	262.53	44.30	6.926	
6,350.00	6,345.18	6,335.53	6,333.56	22.43	22.43	166.22	62.25	131.56	311.30	266.65	44.65	6.972	
6,400.00	6,395.10	6,385.32	6,383.31	22.61	22.61	166.13	63.62	133.16	315.77	270.77	45.01	7.016	
6,450.00	6,445.03	6,435.12	6,433.06	22.79	22.79	166.05	65.00	134.75	320.25	274.88	45.36	7.060	
6,500.00	6,494.95	6,484.92	6,482.81	22.97	22.96	165.97	66.37	136.34	324.72	279.00	45.72	7.103	
6,550.00	6,544.87	6,534.72	6,532.57	23.15	23.14	165.89	67.75	137.93	329.20	283.12	46.07	7.145	
6,600.00	6,594.80	6,584.51	6,582.32	23.33	23.32	165.81	69.13	139.53	333.67	287.25	46.43	7.187	
6,650.00	6,644.72	6,634.31	6,632.07	23.51	23.50	165.74	70.50	141.12	338.15	291.37	46.78	7.228	
6,700.00	6,694.64	6,684.11	6,681.83	23.69	23.68	165.67	71.88	142.71	342.63	295.49	47.14	7.268	
6,750.00	6,744.57	6,733.91	6,731.58	23.88	23.86	165.60	73.26	144.30	347.11	299.61	47.49	7.308	
6,800.00	6,794.49	6,783.70	6,781.33	24.06	24.03	165.53	74.63	145.89	351.58	303.73	47.85	7.348	
6,850.00	6,844.41	6,833.50	6,831.08	24.24	24.21	165.46	76.01	147.49	356.06	307.86	48.21	7.386	
6,900.00	6,894.34	6,883.30	6,880.84	24.42	24.39	165.40	77.39	149.08	360.54	311.98	48.56	7.425	
6,950.00	6,944.26	6,933.09	6,930.59	24.60	24.57	165.33	78.76	150.67	365.02	316.10	48.92	7.462	
7,000.00	6,994.18	6,982.89	6,980.34	24.78	24.75	165.27	80.14	152.26	369.50	320.23	49.27	7.499	
7,050.00	7,044.11	7,032.69	7,030.09	24.96	24.93	165.21	81.51	153.85	373.98	324.35	49.63	7.536	
7,100.00	7,094.03	7,082.49	7,079.85	25.14	25.11	165.15	82.89	155.45	378.46	328.48	49.98	7.572	
7,150.00	7,143.95	7,132.28	7,129.60	25.32	25.29	165.09	84.27	157.04	382.94	332.60	50.34	7.607	
7,200.00	7,193.87	7,182.08	7,179.35	25.50	25.46	165.04	85.64	158.63	387.43	336.73	50.70	7.642	
7,250.00	7,243.80	7,231.88	7,229.11	25.69	25.64	164.98	87.02	160.22	391.91	340.86	51.05	7.677	
7,300.00	7,293.72	7,281.68	7,278.86	25.87	25.82	164.93	88.40	161.82	396.39	344.98	51.41	7.711	
7,350.00	7,343.64	7,331.47	7,328.61	26.05	26.00	164.88	89.77	163.41	400.87	349.11	51.76	7.744	
7,400.00	7,393.57	7,381.27	7,378.36	26.23	26.18	164.83	91.15	165.00	405.36	353.24	52.12	7.777	
7,450.00	7,443.49	7,431.07	7,428.12	26.41	26.36	164.78	92.53	166.59	409.84	357.36	52.48	7.810	
7,500.00	7,493.41	7,480.87	7,477.87	26.59	26.54	164.73	93.90	168.18	414.32	361.49	52.83	7.842	
7,550.00	7,543.34	7,530.66	7,527.62	26.77	26.72	164.68	95.28	169.78	418.81	365.62	53.19	7.874	
7,600.00	7,593.26	7,580.46	7,577.38	26.95	26.89	164.63	96.65	171.37	423.29	369.75	53.54	7.905	
7,650.00	7,643.18	7,630.26	7,627.13	27.14	27.07	164.58	98.03	172.96	427.77	373.87	53.90	7.936	
7,700.00	7,693.11	7,680.05	7,676.88	27.32	27.25	164.54	99.41	174.55	432.26	378.00	54.26	7.967	
7,750.00	7,743.03	7,729.85	7,726.63	27.50	27.43	164.50	100.78	176.14	436.74	382.13	54.61	7.997	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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	7,792.95	7,779.65	7,776.39	27.68	27.61	164.45	102.16	177.74	441.23	386.26	54.97	8.027	
7,850.00	7,842.88	7,829.45	7,826.14	27.86	27.79	164.41	103.54	179.33	445.72	390.39	55.33	8.056	
7,900.00	7,892.80	7,879.24	7,875.89	28.04	27.97	164.37	104.91	180.92	450.20	394.52	55.68	8.085	
7,950.00	7,942.72	7,929.04	7,925.65	28.22	28.15	164.33	106.29	182.51	454.69	398.65	56.04	8.114	
8,000.00	7,992.65	7,978.84	7,975.40	28.41	28.33	164.29	107.67	184.10	459.17	402.78	56.40	8.142	
8,050.00	8,042.57	8,028.64	8,025.15	28.59	28.50	164.25	109.04	185.70	463.66	406.91	56.75	8.170	
8,100.00	8,092.49	8,078.43	8,074.90	28.77	28.68	164.21	110.42	187.29	468.15	411.04	57.11	8.198	
8,150.00	8,142.42	8,128.23	8,124.66	28.95	28.86	164.17	111.79	188.88	472.63	415.17	57.46	8.225	
8,200.00	8,192.34	8,178.03	8,174.41	29.13	29.04	164.13	113.17	190.47	477.12	419.30	57.82	8.252	
8,250.00	8,242.26	8,227.82	8,224.16	29.31	29.22	164.10	114.55	192.07	481.61	423.43	58.18	8.278	
8,300.00	8,292.19	8,277.62	8,273.92	29.50	29.40	164.06	115.92	193.66	486.10	427.56	58.53	8.304	
8,350.00	8,342.11	8,327.42	8,323.67	29.68	29.58	164.03	117.30	195.25	490.58	431.69	58.89	8.330	
8,400.00	8,392.03	8,377.22	8,373.42	29.86	29.76	163.99	118.68	196.84	495.07	435.82	59.25	8.356	
8,450.00	8,441.96	8,427.01	8,423.17	30.04	29.94	163.96	120.05	198.43	499.56	439.95	59.61	8.381	
8,500.00	8,491.88	8,476.81	8,472.93	30.22	30.12	163.93	121.43	200.03	504.05	444.08	59.96	8.406	
8,550.00	8,541.80	8,526.61	8,522.68	30.40	30.30	163.89	122.81	201.62	508.54	448.22	60.32	8.431	
8,600.00	8,591.72	8,576.41	8,572.43	30.59	30.47	163.86	124.18	203.21	513.02	452.35	60.68	8.455	
8,650.00	8,641.65	8,626.20	8,622.19	30.77	30.65	163.83	125.56	204.80	517.51	456.48	61.03	8.479	
8,700.00	8,691.57	8,676.00	8,671.94	30.95	30.83	163.80	126.93	206.39	522.00	460.61	61.39	8.503	
8,750.00	8,741.49	8,725.80	8,721.69	31.13	31.01	163.77	128.31	207.99	526.49	464.74	61.75	8.527	
8,800.00	8,791.42	8,775.60	8,771.44	31.31	31.19	163.74	129.69	209.58	530.98	468.87	62.10	8.550	
8,850.00	8,841.34	8,825.39	8,821.20	31.50	31.37	163.71	131.06	211.17	535.47	473.01	62.46	8.573	
8,900.00	8,891.26	8,875.19	8,870.95	31.68	31.55	163.68	132.44	212.76	539.96	477.14	62.82	8.596	
8,950.00	8,941.19	8,924.99	8,920.70	31.86	31.73	163.65	133.82	214.36	544.45	481.27	63.18	8.618	
9,000.00	8,991.11	8,974.78	8,970.46	32.04	31.91	163.62	135.19	215.95	548.94	485.40	63.53	8.640	
9,050.00	9,041.03	9,024.58	9,020.21	32.22	32.09	163.60	136.57	217.54	553.43	489.54	63.89	8.662	
9,100.00	9,090.96	9,074.38	9,069.96	32.40	32.27	163.57	137.95	219.13	557.92	493.67	64.25	8.684	
9,150.00	9,140.88	9,124.18	9,119.71	32.59	32.45	163.54	139.32	220.72	562.41	497.80	64.60	8.705	
9,200.00	9,190.80	9,173.97	9,169.47	32.77	32.63	163.52	140.70	222.32	566.90	501.93	64.96	8.727	
9,250.00	9,240.73	9,223.77	9,219.22	32.95	32.81	163.49	142.07	223.91	571.39	506.07	65.32	8.748	
9,300.00	9,290.65	9,273.57	9,268.97	33.13	32.98	163.47	143.45	225.50	575.88	510.20	65.68	8.768	
9,350.00	9,340.57	9,323.37	9,318.72	33.31	33.16	163.44	144.83	227.09	580.37	514.33	66.03	8.789	
9,400.00	9,390.50	9,373.16	9,368.48	33.50	33.34	163.42	146.20	228.68	584.86	518.47	66.39	8.809	
9,450.00	9,440.42	9,422.96	9,418.23	33.68	33.52	163.39	147.58	230.28	589.35	522.60	66.75	8.829	
9,500.00	9,490.34	9,472.76	9,467.98	33.86	33.70	163.37	148.96	231.87	593.84	526.73	67.11	8.849	
9,550.00	9,540.27	9,522.56	9,517.74	34.04	33.88	163.34	150.33	233.46	598.33	530.87	67.46	8.869	
9,600.00	9,590.19	9,572.35	9,567.49	34.23	34.06	163.32	151.71	235.05	602.82	535.00	67.82	8.888	
9,650.00	9,640.11	9,622.15	9,617.24	34.41	34.24	163.30	153.09	236.65	607.31	539.13	68.18	8.908	
9,700.00	9,690.04	9,671.95	9,666.99	34.59	34.42	163.28	154.46	238.24	611.80	543.27	68.54	8.927	
9,750.00	9,739.96	9,721.74	9,716.75	34.77	34.60	163.25	155.84	239.83	616.29	547.40	68.89	8.946	
9,800.00	9,789.88	9,771.54	9,766.50	34.95	34.78	163.23	157.21	241.42	620.79	551.54	69.25	8.964	
9,850.00	9,839.81	9,821.34	9,816.25	35.14	34.96	163.21	158.59	243.01	625.28	555.67	69.61	8.983	
9,900.00	9,889.73	9,871.14	9,866.01	35.32	35.14	163.19	159.97	244.61	629.77	559.80	69.97	9.001	
9,950.00	9,939.65	9,920.93	9,915.76	35.50	35.32	163.17	161.34	246.20	634.26	563.94	70.32	9.019	
10,000.00	9,989.57	9,970.73	9,965.51	35.68	35.50	163.15	162.72	247.79	638.75	568.07	70.68	9.037	
10,050.00	10,039.50	10,020.53	10,015.26	35.86	35.68	163.13	164.10	249.38	643.24	572.21	71.04	9.055	
10,100.00	10,089.44	10,070.35	10,065.04	36.05	35.86	163.12	165.47	250.98	647.41	576.01	71.40	9.068	
10,150.00	10,139.41	10,120.22	10,114.87	36.23	36.04	163.09	166.85	252.57	650.95	579.20	71.75	9.072	
10,200.00	10,189.39	10,170.13	10,164.74	36.40	36.22	163.04	168.23	254.17	653.87	581.76	72.11	9.068	
10,250.00	10,239.39	10,220.07	10,214.63	36.58	36.40	162.97	169.61	255.76	656.16	583.70	72.47	9.055	
10,300.00	10,289.39	10,270.03	10,264.54	36.75	36.58	78.06	170.99	257.36	658.03	585.21	72.82	9.036	
10,350.00	10,339.39	10,319.98	10,314.45	36.93	36.76	77.98	172.37	258.96	659.88	586.70	73.17	9.018	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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	10,389.39	10,369.94	10,364.36	37.10	36.94	77.89	173.75	260.55	661.73	588.20	73.53	9.000	
10,450.00	10,439.39	10,419.89	10,414.27	37.28	37.12	77.80	175.13	262.15	663.58	589.70	73.88	8.982	
10,500.00	10,489.39	10,469.85	10,464.18	37.45	37.30	77.71	176.52	263.75	665.44	591.20	74.23	8.964	
10,550.00	10,539.39	10,519.80	10,514.09	37.62	37.48	77.63	177.90	265.35	667.30	592.71	74.59	8.946	
10,600.00	10,589.39	10,569.76	10,564.01	37.80	37.66	77.54	179.28	266.94	669.16	594.21	74.94	8.929	
10,650.00	10,639.36	10,619.65	10,613.85	37.97	37.84	-102.33	180.66	268.54	671.31	596.01	75.29	8.916	
10,700.00	10,689.03	10,669.12	10,663.27	38.13	38.01	-102.57	182.02	270.12	674.40	598.76	75.63	8.917	
10,750.00	10,738.02	10,719.37	10,713.48	38.29	38.20	-103.08	183.40	271.72	678.54	602.56	75.98	8.931	
10,800.00	10,785.96	10,776.06	10,770.15	38.45	38.40	-103.98	184.60	273.10	683.49	607.12	76.36	8.951	
10,850.00	10,832.49	10,831.40	10,825.48	38.60	38.60	-105.09	185.24	273.84	689.24	612.51	76.73	8.983	
10,900.00	10,877.25	10,885.06	10,879.13	38.74	38.79	-106.35	185.35	273.97	696.09	619.02	77.07	9.032	
10,950.00	10,919.90	10,925.32	10,919.40	38.87	38.93	-107.19	185.37	273.99	704.79	627.43	77.35	9.111	
11,000.00	10,960.11	10,965.54	10,959.61	39.00	39.07	-108.00	185.37	273.99	715.70	638.07	77.63	9.220	
11,050.00	10,997.58	11,003.01	10,997.08	39.12	39.21	-108.62	185.37	273.99	729.08	651.20	77.89	9.361	
11,100.00	11,032.03	11,037.46	11,031.53	39.23	39.33	-108.95	185.37	273.99	745.15	667.03	78.12	9.538	
11,150.00	11,063.19	11,068.62	11,062.69	39.34	39.44	-108.91	185.37	273.99	764.04	685.70	78.34	9.753	
11,200.00	11,090.83	11,103.75	11,090.33	39.46	39.56	-108.41	185.37	273.99	785.81	707.26	78.56	10.003	
11,250.00	11,114.73	11,120.15	11,114.23	39.58	39.62	-107.36	185.37	273.99	810.45	731.75	78.70	10.298	
11,300.00	11,134.71	11,140.14	11,134.21	39.71	39.69	-105.68	185.37	273.99	837.84	759.00	78.84	10.628	
11,350.00	11,150.62	11,156.05	11,150.12	39.85	39.75	-103.27	185.37	273.99	867.80	788.85	78.95	10.992	
11,400.00	11,162.35	11,167.78	11,161.85	39.99	39.79	-100.08	185.37	273.99	900.08	821.06	79.03	11.390	
11,450.00	11,169.79	12,209.05	11,788.00	40.13	42.34	-132.97	-475.67	275.75	904.92	836.18	68.74	13.165	
11,500.00	11,172.90	12,258.94	11,788.00	40.27	42.48	-132.99	-525.55	275.88	902.79	833.75	69.04	13.076	
11,546.54	11,173.36	12,305.47	11,788.00	40.42	42.61	-132.97	-572.09	276.00	902.48	833.20	69.27	13.028	
11,550.00	11,173.00	12,308.94	11,788.00	40.43	42.62	-132.99	-575.55	276.01	902.72	833.44	69.28	13.030	
11,600.00	11,173.00	12,358.94	11,788.00	40.58	42.78	-132.99	-625.55	276.14	902.72	833.19	69.54	12.982	
11,650.00	11,173.00	12,408.94	11,788.00	40.76	42.94	-132.99	-675.55	276.28	902.72	832.91	69.81	12.931	
11,700.00	11,173.00	12,458.94	11,788.00	40.93	43.12	-132.99	-725.55	276.41	902.72	832.62	70.10	12.877	
11,750.00	11,173.00	12,508.94	11,788.00	41.13	43.31	-132.99	-775.55	276.54	902.72	832.30	70.42	12.820	
11,800.00	11,173.00	12,558.94	11,788.00	41.33	43.51	-132.99	-825.55	276.67	902.71	831.97	70.74	12.760	
11,850.00	11,173.00	12,608.94	11,788.00	41.56	43.72	-132.99	-875.55	276.81	902.71	831.62	71.09	12.697	
11,900.00	11,173.00	12,658.94	11,788.00	41.78	43.95	-132.99	-925.55	276.94	902.71	831.25	71.46	12.632	
11,950.00	11,173.00	12,708.94	11,788.00	42.02	44.18	-132.99	-975.55	277.07	902.71	830.86	71.85	12.564	
12,000.00	11,173.00	12,758.94	11,788.00	42.27	44.43	-132.99	-1,025.55	277.21	902.71	830.46	72.25	12.495	
12,050.00	11,173.00	12,808.94	11,788.00	42.53	44.68	-132.99	-1,075.55	277.34	902.70	830.04	72.67	12.422	
12,100.00	11,173.00	12,858.94	11,788.00	42.80	44.95	-132.99	-1,125.55	277.47	902.70	829.60	73.10	12.348	
12,150.00	11,173.00	12,908.94	11,788.00	43.09	45.22	-132.99	-1,175.55	277.60	902.70	829.14	73.56	12.272	
12,200.00	11,173.00	12,958.94	11,788.00	43.37	45.51	-132.99	-1,225.55	277.74	902.70	828.67	74.03	12.194	
12,250.00	11,173.00	13,008.94	11,788.00	43.68	45.80	-132.99	-1,275.55	277.87	902.70	828.19	74.51	12.115	
12,300.00	11,173.00	13,058.94	11,788.00	43.99	46.10	-132.99	-1,325.55	278.00	902.70	827.68	75.01	12.034	
12,350.00	11,173.00	13,108.94	11,788.00	44.31	46.41	-132.99	-1,375.55	278.13	902.69	827.16	75.53	11.952	
12,400.00	11,173.00	13,158.94	11,788.00	44.64	46.74	-132.99	-1,425.55	278.27	902.69	826.63	76.06	11.868	
12,450.00	11,173.00	13,208.94	11,788.00	44.98	47.07	-132.99	-1,475.55	278.40	902.69	826.08	76.61	11.783	
12,500.00	11,173.00	13,258.94	11,788.00	45.33	47.41	-132.99	-1,525.55	278.53	902.69	825.52	77.17	11.698	
12,550.00	11,173.00	13,308.94	11,788.00	45.69	47.76	-132.99	-1,575.55	278.67	902.69	824.94	77.74	11.611	
12,600.00	11,173.00	13,358.94	11,788.00	46.05	48.12	-132.99	-1,625.55	278.80	902.68	824.35	78.33	11.524	
12,650.00	11,173.00	13,408.94	11,788.00	46.43	48.48	-132.99	-1,675.55	278.93	902.68	823.75	78.94	11.436	
12,700.00	11,173.00	13,458.94	11,788.00	46.81	48.86	-132.99	-1,725.55	279.06	902.68	823.13	79.55	11.347	
12,750.00	11,173.00	13,508.94	11,788.00	47.20	49.24	-132.99	-1,775.55	279.20	902.68	822.50	80.18	11.258	
12,800.00	11,173.00	13,558.94	11,788.00	47.60	49.63	-132.99	-1,825.55	279.33	902.68	821.86	80.82	11.169	
12,850.00	11,173.00	13,608.94	11,788.00	48.01	50.02	-132.99	-1,875.55	279.46	902.67	821.20	81.47	11.080	
12,900.00	11,173.00	13,658.94	11,788.00	48.42	50.43	-132.99	-1,925.55	279.60	902.67	820.53	82.14	10.990	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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	11,173.00	13,708.94	11,788.00	48.85	50.84	-132.99	-1,975.55	279.73	902.67	819.85	82.82	10.900	
13,000.00	11,173.00	13,758.94	11,788.00	49.27	51.26	-132.99	-2,025.55	279.86	902.67	819.16	83.51	10.810	
13,050.00	11,173.00	13,808.94	11,788.00	49.71	51.68	-132.99	-2,075.55	279.99	902.67	818.46	84.21	10.720	
13,100.00	11,173.00	13,858.94	11,788.00	50.15	52.11	-132.99	-2,125.55	280.13	902.67	817.75	84.92	10.630	
13,150.00	11,173.00	13,908.94	11,788.00	50.60	52.55	-132.99	-2,175.55	280.26	902.66	817.02	85.64	10.540	
13,200.00	11,173.00	13,958.94	11,788.00	51.05	53.00	-132.99	-2,225.55	280.39	902.66	816.29	86.37	10.451	
13,250.00	11,173.00	14,008.94	11,788.00	51.52	53.45	-132.99	-2,275.55	280.52	902.66	815.55	87.11	10.362	
13,300.00	11,173.00	14,058.94	11,788.00	51.98	53.91	-132.99	-2,325.55	280.66	902.66	814.79	87.86	10.273	
13,350.00	11,173.00	14,108.94	11,788.00	52.46	54.37	-132.99	-2,375.55	280.79	902.66	814.03	88.63	10.185	
13,400.00	11,173.00	14,158.94	11,788.00	52.93	54.84	-132.99	-2,425.55	280.92	902.65	813.26	89.40	10.097	
13,450.00	11,173.00	14,208.94	11,788.00	53.42	55.31	-132.99	-2,475.55	281.06	902.65	812.48	90.18	10.010	
13,500.00	11,173.00	14,258.94	11,788.00	53.91	55.79	-132.99	-2,525.55	281.19	902.65	811.69	90.96	9.923	
13,550.00	11,173.00	14,308.94	11,788.00	54.41	56.27	-132.99	-2,575.55	281.32	902.65	810.89	91.76	9.837	
13,600.00	11,173.00	14,358.94	11,788.00	54.91	56.76	-132.99	-2,625.55	281.45	902.65	810.08	92.57	9.751	
13,650.00	11,173.00	14,408.94	11,788.00	55.41	57.26	-132.99	-2,675.55	281.59	902.64	809.26	93.38	9.666	
13,700.00	11,173.00	14,458.94	11,788.00	55.92	57.76	-132.99	-2,725.54	281.72	902.64	808.44	94.20	9.582	
13,750.00	11,173.00	14,508.94	11,788.00	56.44	58.26	-132.99	-2,775.54	281.85	902.64	807.61	95.03	9.498	
13,800.00	11,173.00	14,558.94	11,788.00	56.96	58.77	-132.99	-2,825.54	281.99	902.64	806.77	95.87	9.415	
13,850.00	11,173.00	14,608.94	11,788.00	57.48	59.29	-132.99	-2,875.54	282.12	902.64	805.92	96.72	9.333	
13,900.00	11,173.00	14,658.94	11,788.00	58.01	59.81	-132.99	-2,925.54	282.25	902.64	805.07	97.57	9.251	
13,950.00	11,173.00	14,708.94	11,788.00	58.54	60.33	-132.99	-2,975.54	282.38	902.63	804.21	98.43	9.171	
14,000.00	11,173.00	14,758.94	11,788.00	59.08	60.85	-132.99	-3,025.54	282.52	902.63	803.34	99.29	9.091	
14,050.00	11,173.00	14,808.94	11,788.00	59.62	61.38	-132.99	-3,075.54	282.65	902.63	802.46	100.16	9.011	
14,100.00	11,173.00	14,858.94	11,788.00	60.17	61.92	-132.99	-3,125.54	282.78	902.63	801.58	101.04	8.933	
14,150.00	11,173.00	14,908.94	11,788.00	60.72	62.46	-132.99	-3,175.54	282.91	902.63	800.70	101.93	8.855	
14,200.00	11,173.00	14,958.94	11,788.00	61.27	63.00	-132.99	-3,225.54	283.05	902.62	799.80	102.82	8.779	
14,250.00	11,173.00	15,008.94	11,788.00	61.82	63.55	-132.99	-3,275.54	283.18	902.62	798.90	103.72	8.703	
14,300.00	11,173.00	15,058.94	11,788.00	62.38	64.10	-132.99	-3,325.54	283.31	902.62	798.00	104.62	8.628	
14,350.00	11,173.00	15,108.94	11,788.00	62.95	64.65	-132.99	-3,375.54	283.45	902.62	797.09	105.53	8.553	
14,400.00	11,173.00	15,158.94	11,788.00	63.51	65.21	-132.99	-3,425.54	283.58	902.62	796.17	106.44	8.480	
14,450.00	11,173.00	15,208.94	11,788.00	64.08	65.77	-132.99	-3,475.54	283.71	902.61	795.25	107.36	8.407	
14,500.00	11,173.00	15,258.94	11,788.00	64.65	66.33	-132.99	-3,525.54	283.84	902.61	794.32	108.29	8.335	
14,550.00	11,173.00	15,308.94	11,788.00	65.23	66.90	-132.99	-3,575.54	283.98	902.61	793.39	109.22	8.264	
14,600.00	11,173.00	15,358.94	11,788.00	65.81	67.47	-132.99	-3,625.54	284.11	902.61	792.46	110.15	8.194	
14,650.00	11,173.00	15,408.94	11,788.00	66.39	68.04	-132.99	-3,675.54	284.24	902.61	791.51	111.09	8.125	
14,700.00	11,173.00	15,458.94	11,788.00	66.98	68.61	-132.99	-3,725.54	284.38	902.61	790.57	112.04	8.056	
14,750.00	11,173.00	15,508.94	11,788.00	67.56	69.19	-132.99	-3,775.54	284.51	902.60	789.61	112.99	7.988	
14,800.00	11,173.00	15,558.94	11,788.00	68.15	69.77	-132.99	-3,825.54	284.64	902.60	788.66	113.94	7.922	
14,850.00	11,173.00	15,608.94	11,788.00	68.75	70.36	-132.99	-3,875.54	284.77	902.60	787.70	114.90	7.855	
14,900.00	11,173.00	15,658.94	11,788.00	69.34	70.94	-132.99	-3,925.54	284.91	902.60	786.73	115.86	7.790	
14,950.00	11,173.00	15,708.94	11,788.00	69.94	71.53	-132.99	-3,975.54	285.04	902.60	785.77	116.83	7.726	
15,000.00	11,173.00	15,758.94	11,788.00	70.54	72.12	-132.99	-4,025.54	285.17	902.59	784.79	117.80	7.662	
15,050.00	11,173.00	15,808.94	11,788.00	71.14	72.72	-132.99	-4,075.54	285.30	902.59	783.82	118.78	7.599	
15,100.00	11,173.00	15,858.94	11,788.00	71.75	73.31	-132.99	-4,125.54	285.44	902.59	782.84	119.75	7.537	
15,150.00	11,173.00	15,908.94	11,788.00	72.35	73.91	-132.99	-4,175.54	285.57	902.59	781.85	120.74	7.476	
15,200.00	11,173.00	15,958.94	11,788.00	72.96	74.51	-132.99	-4,225.54	285.70	902.59	780.86	121.72	7.415	
15,250.00	11,173.00	16,008.94	11,788.00	73.57	75.12	-132.99	-4,275.54	285.84	902.58	779.87	122.71	7.355	
15,300.00	11,173.00	16,058.94	11,788.00	74.19	75.72	-132.99	-4,325.54	285.97	902.58	778.88	123.71	7.296	
15,350.00	11,173.00	16,108.94	11,788.00	74.80	76.33	-132.99	-4,375.54	286.10	902.58	777.88	124.70	7.238	
15,400.00	11,173.00	16,158.94	11,788.00	75.42	76.94	-133.00	-4,425.54	286.23	902.58	776.88	125.70	7.180	
15,450.00	11,173.00	16,208.94	11,788.00	76.04	77.55	-133.00	-4,475.54	286.37	902.58	775.87	126.71	7.123	
15,500.00	11,173.00	16,258.94	11,788.00	76.66	78.16	-133.00	-4,525.54	286.50	902.57	774.86	127.71	7.067	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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	11,173.00	16,308.94	11,788.00	77.28	78.78	-133.00	-4,575.54	286.63	902.57	773.85	128.72	7.012	
15,600.00	11,173.00	16,358.94	11,788.00	77.91	79.40	-133.00	-4,625.54	286.76	902.57	772.84	129.74	6.957	
15,650.00	11,173.00	16,408.94	11,788.00	78.54	80.02	-133.00	-4,675.54	286.90	902.57	771.82	130.75	6.903	
15,700.00	11,173.00	16,458.94	11,788.00	79.16	80.64	-133.00	-4,725.54	287.03	902.57	770.80	131.77	6.850	
15,750.00	11,173.00	16,508.94	11,788.00	79.79	81.26	-133.00	-4,775.54	287.16	902.57	769.77	132.79	6.797	
15,800.00	11,173.00	16,558.94	11,788.00	80.42	81.88	-133.00	-4,825.54	287.30	902.56	768.75	133.82	6.745	
15,850.00	11,173.00	16,608.94	11,788.00	81.06	82.51	-133.00	-4,875.54	287.43	902.56	767.72	134.84	6.693	
15,900.00	11,173.00	16,658.94	11,788.00	81.69	83.14	-133.00	-4,925.54	287.56	902.56	766.69	135.87	6.643	
15,950.00	11,173.00	16,708.94	11,788.00	82.33	83.77	-133.00	-4,975.54	287.69	902.56	765.65	136.90	6.593	
16,000.00	11,173.00	16,758.94	11,788.00	82.97	84.40	-133.00	-5,025.54	287.83	902.56	764.62	137.94	6.543	
16,050.00	11,173.00	16,808.94	11,788.00	83.61	85.03	-133.00	-5,075.54	287.96	902.55	763.58	138.98	6.494	
16,100.00	11,173.00	16,858.94	11,788.00	84.25	85.67	-133.00	-5,125.54	288.09	902.55	762.54	140.02	6.446	
16,150.00	11,173.00	16,908.94	11,788.00	84.89	86.30	-133.00	-5,175.54	288.23	902.55	761.49	141.06	6.398	
16,200.00	11,173.00	16,958.94	11,788.00	85.53	86.94	-133.00	-5,225.54	288.36	902.55	760.45	142.10	6.351	
16,250.00	11,173.00	17,008.94	11,788.00	86.18	87.58	-133.00	-5,275.54	288.49	902.55	759.40	143.15	6.305	
16,300.00	11,173.00	17,058.94	11,788.00	86.82	88.22	-133.00	-5,325.54	288.62	902.54	758.35	144.20	6.259	
16,350.00	11,173.00	17,108.94	11,788.00	87.47	88.86	-133.00	-5,375.54	288.76	902.54	757.29	145.25	6.214	
16,400.00	11,173.00	17,158.94	11,788.00	88.12	89.50	-133.00	-5,425.54	288.89	902.54	756.24	146.30	6.169	
16,450.00	11,173.00	17,208.94	11,788.00	88.77	90.14	-133.00	-5,475.54	289.02	902.54	755.18	147.36	6.125	
16,500.00	11,173.00	17,258.94	11,788.00	89.42	90.79	-133.00	-5,525.54	289.15	902.54	754.12	148.41	6.081	
16,550.00	11,173.00	17,308.94	11,788.00	90.07	91.43	-133.00	-5,575.54	289.29	902.54	753.06	149.47	6.038	
16,600.00	11,173.00	17,358.94	11,788.00	90.73	92.08	-133.00	-5,625.53	289.42	902.53	752.00	150.53	5.996	
16,650.00	11,173.00	17,408.94	11,788.00	91.38	92.73	-133.00	-5,675.53	289.55	902.53	750.93	151.60	5.953	
16,700.00	11,173.00	17,458.94	11,788.00	92.04	93.38	-133.00	-5,725.53	289.69	902.53	749.87	152.66	5.912	
16,750.00	11,173.00	17,508.94	11,788.00	92.69	94.03	-133.00	-5,775.53	289.82	902.53	748.80	153.73	5.871	
16,800.00	11,173.00	17,558.94	11,788.00	93.35	94.68	-133.00	-5,825.53	289.95	902.53	747.73	154.80	5.830	
16,850.00	11,173.00	17,608.94	11,788.00	94.01	95.33	-133.00	-5,875.53	290.08	902.52	746.66	155.87	5.790	
16,900.00	11,173.00	17,658.94	11,788.00	94.67	95.99	-133.00	-5,925.53	290.22	902.52	745.58	156.94	5.751	
16,950.00	11,173.00	17,708.94	11,788.00	95.33	96.64	-133.00	-5,975.53	290.35	902.52	744.51	158.01	5.712	
17,000.00	11,173.00	17,758.94	11,788.00	95.99	97.30	-133.00	-6,025.53	290.48	902.52	743.43	159.09	5.673	
17,050.00	11,173.00	17,808.94	11,788.00	96.65	97.96	-133.00	-6,075.53	290.62	902.52	742.35	160.17	5.635	
17,100.00	11,173.00	17,858.94	11,788.00	97.32	98.61	-133.00	-6,125.53	290.75	902.51	741.27	161.25	5.597	
17,150.00	11,173.00	17,908.94	11,788.00	97.98	99.27	-133.00	-6,175.53	290.88	902.51	740.19	162.33	5.560	
17,200.00	11,173.00	17,958.94	11,788.00	98.65	99.93	-133.00	-6,225.53	291.01	902.51	739.10	163.41	5.523	
17,250.00	11,173.00	18,008.94	11,788.00	99.31	100.59	-133.00	-6,275.53	291.15	902.51	738.02	164.49	5.487	
17,300.00	11,173.00	18,058.94	11,788.00	99.98	101.26	-133.00	-6,325.53	291.28	902.51	736.93	165.57	5.451	
17,350.00	11,173.00	18,108.94	11,788.00	100.65	101.92	-133.00	-6,375.53	291.41	902.51	735.84	166.66	5.415	
17,400.00	11,173.00	18,158.94	11,788.00	101.31	102.58	-133.00	-6,425.53	291.54	902.50	734.76	167.75	5.380	
17,450.00	11,173.00	18,208.94	11,788.00	101.98	103.25	-133.00	-6,475.53	291.68	902.50	733.66	168.84	5.345	
17,500.00	11,173.00	18,258.94	11,788.00	102.65	103.91	-133.00	-6,525.53	291.81	902.50	732.57	169.93	5.311	
17,550.00	11,173.00	18,308.94	11,788.00	103.33	104.58	-133.00	-6,575.53	291.94	902.50	731.48	171.02	5.277	
17,600.00	11,173.00	18,358.94	11,788.00	104.00	105.25	-133.00	-6,625.53	292.08	902.50	730.38	172.11	5.244	
17,650.00	11,173.00	18,408.94	11,788.00	104.67	105.91	-133.00	-6,675.53	292.21	902.49	729.29	173.21	5.211	
17,700.00	11,173.00	18,458.94	11,788.00	105.34	106.58	-133.00	-6,725.53	292.34	902.49	728.19	174.30	5.178	
17,750.00	11,173.00	18,508.94	11,788.00	106.02	107.25	-133.00	-6,775.53	292.47	902.49	727.09	175.40	5.145	
17,800.00	11,173.00	18,558.94	11,788.00	106.69	107.92	-133.00	-6,825.53	292.61	902.49	725.99	176.49	5.113	
17,850.00	11,173.00	18,608.94	11,788.00	107.37	108.59	-133.00	-6,875.53	292.74	902.49	724.89	177.59	5.082	
17,900.00	11,173.00	18,658.94	11,788.00	108.04	109.26	-133.00	-6,925.53	292.87	902.48	723.79	178.69	5.050	
17,950.00	11,173.00	18,708.94	11,788.00	108.72	109.93	-133.00	-6,975.53	293.01	902.48	722.69	179.80	5.020	
18,000.00	11,173.00	18,758.94	11,788.00	109.40	110.61	-133.00	-7,025.53	293.14	902.48	721.58	180.90	4.989	Alert
18,050.00	11,173.00	18,808.94	11,788.00	110.07	111.28	-133.00	-7,075.53	293.27	902.48	720.48	182.00	4.959	Alert
18,100.00	11,173.00	18,858.94	11,788.00	110.75	111.95	-133.00	-7,125.53	293.40	902.48	719.37	183.11	4.929	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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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
18,150.00	11,173.00	18,908.94	11,788.00	111.43	112.63	-133.00	-7,175.53	293.54	902.48	718.26	184.21	4.899	Alert
18,200.00	11,173.00	18,958.94	11,788.00	112.11	113.31	-133.00	-7,225.53	293.67	902.47	717.16	185.32	4.870	Alert
18,250.00	11,173.00	19,008.94	11,788.00	112.79	113.98	-133.00	-7,275.53	293.80	902.47	716.05	186.43	4.841	Alert
18,300.00	11,173.00	19,058.94	11,788.00	113.47	114.66	-133.00	-7,325.53	293.93	902.47	714.94	187.53	4.812	Alert
18,350.00	11,173.00	19,108.94	11,788.00	114.15	115.34	-133.00	-7,375.53	294.07	902.47	713.82	188.64	4.784	Alert
18,400.00	11,173.00	19,158.94	11,788.00	114.83	116.01	-133.00	-7,425.53	294.20	902.47	712.71	189.75	4.756	Alert
18,450.00	11,173.00	19,208.94	11,788.00	115.52	116.69	-133.00	-7,475.53	294.33	902.46	711.60	190.87	4.728	Alert
18,500.00	11,173.00	19,258.94	11,788.00	116.20	117.37	-133.00	-7,525.53	294.47	902.46	710.48	191.98	4.701	Alert
18,550.00	11,173.00	19,308.94	11,788.00	116.88	118.05	-133.00	-7,575.53	294.60	902.46	709.37	193.09	4.674	Alert
18,600.00	11,173.00	19,358.94	11,788.00	117.57	118.73	-133.00	-7,625.53	294.73	902.46	708.25	194.21	4.647	Alert
18,650.00	11,173.00	19,408.94	11,788.00	118.25	119.41	-133.00	-7,675.53	294.86	902.46	707.14	195.32	4.620	Alert
18,700.00	11,173.00	19,458.94	11,788.00	118.94	120.09	-133.00	-7,725.53	295.00	902.45	706.02	196.44	4.594	Alert
18,750.00	11,173.00	19,508.94	11,788.00	119.62	120.77	-133.00	-7,775.53	295.13	902.45	704.90	197.55	4.568	Alert
18,800.00	11,173.00	19,558.94	11,788.00	120.31	121.46	-133.00	-7,825.53	295.26	902.45	703.78	198.67	4.542	Alert
18,850.00	11,173.00	19,608.94	11,788.00	121.00	122.14	-133.00	-7,875.53	295.39	902.45	702.66	199.79	4.517	Alert
18,900.00	11,173.00	19,658.94	11,788.00	121.68	122.82	-133.00	-7,925.53	295.53	902.45	701.54	200.91	4.492	Alert
18,950.00	11,173.00	19,708.94	11,788.00	122.37	123.51	-133.00	-7,975.53	295.66	902.45	700.42	202.03	4.467	Alert
19,000.00	11,173.00	19,758.94	11,788.00	123.06	124.19	-133.00	-8,025.53	295.79	902.44	699.29	203.15	4.442	Alert
19,050.00	11,173.00	19,808.94	11,788.00	123.75	124.88	-133.00	-8,075.53	295.93	902.44	698.17	204.27	4.418	Alert
19,100.00	11,173.00	19,858.94	11,788.00	124.44	125.56	-133.00	-8,125.53	296.06	902.44	697.05	205.39	4.394	Alert
19,150.00	11,173.00	19,908.94	11,788.00	125.12	126.25	-133.00	-8,175.53	296.19	902.44	695.92	206.52	4.370	Alert
19,200.00	11,173.00	19,958.94	11,788.00	125.81	126.93	-133.00	-8,225.53	296.32	902.44	694.79	207.64	4.346	Alert
19,250.00	11,173.00	20,008.94	11,788.00	126.50	127.62	-133.00	-8,275.53	296.46	902.43	693.67	208.77	4.323	Alert
19,300.00	11,173.00	20,058.94	11,788.00	127.19	128.31	-133.00	-8,325.53	296.59	902.43	692.54	209.89	4.300	Alert
19,350.00	11,173.00	20,108.94	11,788.00	127.89	128.99	-133.00	-8,375.53	296.72	902.43	691.41	211.02	4.277	Alert
19,400.00	11,173.00	20,158.94	11,788.00	128.58	129.68	-133.00	-8,425.53	296.86	902.43	690.28	212.14	4.254	Alert
19,450.00	11,173.00	20,208.94	11,788.00	129.27	130.37	-133.00	-8,475.52	296.99	902.43	689.15	213.27	4.231	Alert
19,500.00	11,173.00	20,258.94	11,788.00	129.96	131.06	-133.00	-8,525.52	297.12	902.42	688.02	214.40	4.209	Alert
19,550.00	11,173.00	20,308.94	11,788.00	130.65	131.75	-133.00	-8,575.52	297.25	902.42	686.89	215.53	4.187	Alert
19,600.00	11,173.00	20,358.94	11,788.00	131.35	132.44	-133.00	-8,625.52	297.39	902.42	685.76	216.66	4.165	Alert
19,650.00	11,173.00	20,408.94	11,788.00	132.04	133.13	-133.00	-8,675.52	297.52	902.42	684.63	217.79	4.144	Alert
19,700.00	11,173.00	20,458.94	11,788.00	132.73	133.82	-133.00	-8,725.52	297.65	902.42	683.50	218.92	4.122	Alert
19,750.00	11,173.00	20,508.94	11,788.00	133.43	134.51	-133.00	-8,775.52	297.78	902.42	682.36	220.05	4.101	Alert
19,800.00	11,173.00	20,558.94	11,788.00	134.12	135.20	-133.00	-8,825.52	297.92	902.41	681.23	221.18	4.080	Alert
19,850.00	11,173.00	20,608.94	11,788.00	134.82	135.89	-133.00	-8,875.52	298.05	902.41	680.10	222.32	4.059	Alert
19,900.00	11,173.00	20,658.94	11,788.00	135.51	136.58	-133.01	-8,925.52	298.18	902.41	678.96	223.45	4.039	Alert
19,950.00	11,173.00	20,708.94	11,788.00	136.21	137.28	-133.01	-8,975.52	298.32	902.41	677.83	224.58	4.018	Alert
20,000.00	11,173.00	20,758.94	11,788.00	136.90	137.97	-133.01	-9,025.52	298.45	902.41	676.69	225.72	3.998	Alert
20,050.00	11,173.00	20,808.94	11,788.00	137.60	138.66	-133.01	-9,075.52	298.58	902.40	675.55	226.85	3.978	Alert
20,100.00	11,173.00	20,858.94	11,788.00	138.29	139.36	-133.01	-9,125.52	298.71	902.40	674.42	227.99	3.958	Alert
20,150.00	11,173.00	20,908.94	11,788.00	138.99	140.05	-133.01	-9,175.52	298.85	902.40	673.28	229.12	3.939	Alert
20,200.00	11,173.00	20,958.94	11,788.00	139.69	140.74	-133.01	-9,225.52	298.98	902.40	672.14	230.26	3.919	Alert
20,250.00	11,173.00	21,008.94	11,788.00	140.38	141.44	-133.01	-9,275.52	299.11	902.40	671.00	231.40	3.900	Alert
20,300.00	11,173.00	21,058.94	11,788.00	141.08	142.13	-133.01	-9,325.52	299.25	902.39	669.86	232.53	3.881	Alert
20,350.00	11,173.00	21,108.94	11,788.00	141.78	142.83	-133.01	-9,375.52	299.38	902.39	668.72	233.67	3.862	Alert
20,400.00	11,173.00	21,158.94	11,788.00	142.48	143.52	-133.01	-9,425.52	299.51	902.39	667.58	234.81	3.843	Alert
20,450.00	11,173.00	21,208.94	11,788.00	143.18	144.22	-133.01	-9,475.52	299.64	902.39	666.44	235.95	3.825	Alert
20,500.00	11,173.00	21,258.94	11,788.00	143.87	144.91	-133.01	-9,525.52	299.78	902.39	665.30	237.09	3.806	Alert
20,550.00	11,173.00	21,308.94	11,788.00	144.57	145.61	-133.01	-9,575.52	299.91	902.39	664.16	238.23	3.788	Alert
20,600.00	11,173.00	21,358.94	11,788.00	145.27	146.31	-133.01	-9,625.52	300.04	902.38	663.01	239.37	3.770	Alert
20,650.00	11,173.00	21,408.94	11,788.00	145.97	147.00	-133.01	-9,675.52	300.17	902.38	661.87	240.51	3.752	Alert
20,700.00	11,173.00	21,458.94	11,788.00	146.67	147.70	-133.01	-9,725.52	300.31	902.38	660.73	241.65	3.734	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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 736H - 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
20,750.00	11,173.00	21,508.94	11,788.00	147.37	148.40	-133.01	-9,775.52	300.44	902.38	659.58	242.79	3.717	Alert
20,800.00	11,173.00	21,558.94	11,788.00	148.07	149.10	-133.01	-9,825.52	300.57	902.38	658.44	243.94	3.699	Alert
20,850.00	11,173.00	21,608.94	11,788.00	148.77	149.79	-133.01	-9,875.52	300.71	902.37	657.29	245.08	3.682	Alert
20,900.00	11,173.00	21,658.94	11,788.00	149.47	150.49	-133.01	-9,925.52	300.84	902.37	656.15	246.22	3.665	Alert
20,950.00	11,173.00	21,708.94	11,788.00	150.17	151.19	-133.01	-9,975.52	300.97	902.37	655.00	247.37	3.648	Alert
21,000.00	11,173.00	21,758.94	11,788.00	150.88	151.89	-133.01	-10,025.52	301.10	902.37	653.86	248.51	3.631	Alert
21,050.00	11,173.00	21,808.94	11,788.00	151.58	152.59	-133.01	-10,075.52	301.24	902.37	652.71	249.65	3.614	Alert
21,100.00	11,173.00	21,858.94	11,788.00	152.28	153.29	-133.01	-10,125.52	301.37	902.36	651.56	250.80	3.598	Alert
21,150.00	11,173.00	21,908.94	11,788.00	152.98	153.99	-133.01	-10,175.52	301.50	902.36	650.42	251.95	3.582	Alert
21,200.00	11,173.00	21,958.94	11,788.00	153.68	154.69	-133.01	-10,225.52	301.64	902.36	649.27	253.09	3.565	Alert
21,250.00	11,173.00	22,008.94	11,788.00	154.39	155.39	-133.01	-10,275.52	301.77	902.36	648.12	254.24	3.549	Alert
21,300.00	11,173.00	22,058.94	11,788.00	155.09	156.09	-133.01	-10,325.52	301.90	902.36	646.97	255.38	3.533	Alert
21,307.62	11,173.00	22,066.56	11,788.00	155.19	156.19	-133.01	-10,333.14	301.92	902.36	646.80	255.56	3.531	Alert

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	101.32	-193.88	968.79	988.00				
50.00	50.00	44.65	44.65	0.50	0.50	101.32	-193.90	968.86	988.08	987.07	1.01	981.481	
100.00	100.00	91.44	91.44	0.52	0.52	101.32	-193.97	969.07	988.31	987.27	1.04	952.713	
150.00	150.00	138.24	138.24	0.59	0.54	101.32	-194.09	969.42	988.71	987.57	1.13	871.957	
200.00	200.00	186.41	186.40	0.70	0.59	101.33	-194.27	969.93	989.26	987.97	1.29	766.385	
250.00	250.00	239.61	239.60	0.84	0.71	101.33	-194.46	970.43	989.75	988.21	1.55	640.383	
300.00	300.00	291.49	291.48	0.99	0.85	101.34	-194.62	970.76	990.10	988.26	1.84	539.030	
350.00	350.00	342.26	342.25	1.15	1.00	101.34	-194.72	971.05	990.39	988.24	2.15	461.146	
400.00	400.00	394.26	394.25	1.31	1.16	101.34	-194.77	971.28	990.63	988.15	2.47	400.593	
450.00	450.00	446.93	446.92	1.48	1.33	101.34	-194.88	971.38	990.73	987.93	2.81	352.900	
500.00	500.00	499.60	499.59	1.65	1.50	101.35	-195.03	971.32	990.71	987.56	3.15	314.706	
550.00	550.00	552.26	552.25	1.82	1.68	101.37	-195.24	971.10	990.54	987.05	3.49	283.582	
600.00	600.00	600.94	600.92	1.99	1.84	101.39	-195.51	970.86	990.35	986.53	3.83	258.770	
650.00	650.00	650.17	650.16	2.16	2.00	101.41	-195.86	970.65	990.22	986.05	4.17	237.701	
700.00	700.00	701.41	701.40	2.34	2.18	101.44	-196.33	970.39	990.06	985.55	4.52	219.268	
750.00	750.00	751.83	751.81	2.51	2.35	101.47	-196.91	970.06	989.85	984.99	4.86	203.516	
800.00	800.00	800.37	800.35	2.69	2.52	101.51	-197.52	969.77	989.68	984.47	5.21	190.039	
850.00	850.00	849.81	849.78	2.87	2.69	101.55	-198.17	969.53	989.57	984.02	5.56	178.108	
900.00	900.00	900.78	900.74	3.04	2.87	101.59	-198.82	969.26	989.44	983.53	5.91	167.396	
950.00	950.00	951.75	951.70	3.22	3.05	101.63	-199.45	968.94	989.27	983.00	6.27	157.874	
1,000.00	1,000.00	1,002.71	1,002.67	3.40	3.22	101.67	-200.06	968.58	989.04	982.42	6.62	149.354	
1,050.00	1,050.00	1,056.96	1,056.90	3.58	3.42	101.72	-200.79	968.05	988.70	981.71	6.99	141.447	
1,100.00	1,100.00	1,103.88	1,103.81	3.75	3.58	101.76	-201.50	967.51	988.29	980.95	7.33	134.773	
1,150.00	1,150.00	1,149.60	1,149.53	3.93	3.74	101.79	-201.93	967.23	988.09	980.41	7.67	128.789	
1,169.71	1,169.71	1,167.48	1,167.41	4.00	3.80	101.80	-202.04	967.19	988.07	980.26	7.80	126.595	
1,200.00	1,200.00	1,194.76	1,194.70	4.11	3.90	101.81	-202.16	967.21	988.11	980.10	8.01	123.393	
1,250.00	1,250.00	1,239.80	1,239.73	4.29	4.06	101.81	-202.30	967.43	988.39	980.05	8.34	118.472 ES	
1,300.00	1,300.00	1,285.40	1,285.33	4.46	4.21	101.81	-202.34	967.91	988.91	980.23	8.68	113.960	
1,350.00	1,350.00	1,331.21	1,331.14	4.64	4.37	101.79	-202.26	968.61	989.64	980.63	9.01	109.807	
1,400.00	1,400.00	1,380.21	1,380.12	4.82	4.54	101.77	-201.96	969.56	990.53	981.17	9.36	105.851	
1,450.00	1,450.00	1,430.57	1,430.46	5.00	4.71	101.72	-201.28	970.60	991.40	981.70	9.71	102.127	
1,500.00	1,500.00	1,479.83	1,479.71	5.18	4.88	101.64	-200.22	971.71	992.29	982.23	10.05	98.704	
1,550.00	1,550.00	1,528.88	1,528.72	5.36	5.04	101.55	-198.76	972.94	993.22	982.82	10.40	95.520	
1,600.00	1,600.00	1,574.67	1,574.46	5.53	5.20	101.43	-197.06	974.27	994.27	983.54	10.73	92.645	
1,650.00	1,650.00	1,620.20	1,619.92	5.71	5.36	101.31	-195.13	975.85	995.56	984.49	11.07	89.972	
1,700.00	1,700.00	1,667.30	1,666.93	5.89	5.52	101.16	-192.86	977.71	997.03	985.62	11.40	87.420	
1,750.00	1,750.00	1,714.46	1,713.97	6.07	5.68	100.99	-190.30	979.76	998.64	986.90	11.74	85.027	
1,800.00	1,800.00	1,765.99	1,765.35	6.25	5.86	100.79	-187.21	982.09	1,000.30	988.20	12.10	82.654	
1,850.00	1,850.00	1,817.64	1,816.85	6.43	6.04	100.58	-183.86	984.38	1,001.88	989.42	12.46	80.404	
1,900.00	1,900.00	1,868.44	1,867.48	6.61	6.22	100.36	-180.39	986.59	1,003.40	990.59	12.82	78.289	
1,950.00	1,950.00	1,920.53	1,919.39	6.78	6.40	100.13	-176.66	988.83	1,004.88	991.70	13.18	76.255	
2,000.00	2,000.00	1,975.67	1,974.32	6.96	6.59	99.87	-172.43	991.01	1,006.17	992.62	13.55	74.249	
2,050.00	2,050.00	2,031.76	2,030.19	7.14	6.79	99.59	-167.77	992.97	1,007.19	993.26	13.93	72.311	
2,100.00	2,100.00	2,088.60	2,086.77	7.32	6.99	99.29	-162.69	994.62	1,007.90	993.59	14.31	70.439	
2,150.00	2,150.00	2,140.38	2,138.32	7.50	7.17	99.01	-157.91	995.90	1,008.39	993.72	14.67	68.731	
2,200.00	2,200.00	2,191.55	2,189.27	7.68	7.36	98.74	-153.30	997.08	1,008.83	993.80	15.03	67.112	
2,250.00	2,250.00	2,242.59	2,240.10	7.86	7.54	98.48	-148.81	998.17	1,009.23	993.83	15.39	65.565	
2,300.00	2,300.00	2,293.66	2,290.97	8.04	7.72	98.23	-144.44	999.17	1,009.58	993.83	15.75	64.086	
2,350.00	2,350.00	2,337.61	2,334.74	8.22	7.88	98.01	-140.67	1,000.17	1,010.10	994.01	16.09	62.779	
2,400.00	2,400.00	2,382.59	2,379.54	8.39	8.04	97.78	-136.75	1,001.41	1,010.87	994.44	16.43	61.529	
2,450.00	2,450.00	2,431.26	2,427.99	8.57	8.22	97.53	-132.53	1,002.89	1,011.81	995.02	16.78	60.288	
2,500.00	2,500.00	2,480.04	2,476.58	8.75	8.39	97.28	-128.38	1,004.42	1,012.82	995.68	17.14	59.101	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	2,530.01	2,526.35	8.93	8.57	97.04	-124.22	1,006.00	1,013.86	996.37	17.50	57.947	
2,600.00	2,600.00	2,580.00	2,576.15	9.11	8.75	96.80	-120.15	1,007.55	1,014.92	997.07	17.86	56.841	
2,650.00	2,650.00	2,629.05	2,625.02	9.29	8.93	96.57	-116.21	1,009.09	1,016.01	997.80	18.21	55.790	
2,700.00	2,700.00	2,678.98	2,674.77	9.47	9.11	96.34	-112.27	1,010.67	1,017.15	998.58	18.57	54.771	
2,750.00	2,750.00	2,731.36	2,726.95	9.65	9.30	96.10	-108.14	1,012.25	1,018.22	999.28	18.94	53.761	
2,800.00	2,800.00	2,782.32	2,777.73	9.83	9.49	95.86	-104.09	1,013.68	1,019.20	999.90	19.30	52.798	
2,850.00	2,850.00	2,831.30	2,826.55	10.00	9.66	95.64	-100.31	1,015.05	1,020.21	1,000.55	19.66	51.893	
2,900.00	2,900.00	2,881.76	2,876.85	10.18	9.85	95.42	-96.53	1,016.47	1,021.26	1,001.24	20.02	51.007	
2,950.00	2,950.00	2,933.84	2,928.76	10.36	10.04	95.19	-92.53	1,017.86	1,022.23	1,001.84	20.39	50.134	
3,000.00	3,000.00	2,984.64	2,979.38	10.54	10.22	94.96	-88.49	1,019.13	1,023.13	1,002.38	20.75	49.299	
3,050.00	3,050.00	3,034.72	3,029.27	10.72	10.41	179.54	-84.34	1,020.38	1,024.25	1,003.14	21.11	48.517	
3,100.00	3,099.99	3,080.25	3,074.62	10.89	10.57	179.32	-80.48	1,021.59	1,025.89	1,004.43	21.45	47.825	
3,150.00	3,149.98	3,124.28	3,118.48	11.06	10.73	179.11	-76.82	1,022.99	1,028.25	1,006.47	21.78	47.209	
3,200.00	3,199.96	3,172.04	3,166.05	11.24	10.91	178.89	-72.90	1,024.72	1,031.29	1,009.16	22.13	46.611	
3,250.00	3,249.92	3,222.29	3,216.08	11.41	11.09	178.65	-68.64	1,026.55	1,034.77	1,012.29	22.48	46.029	
3,300.00	3,299.86	3,272.43	3,265.99	11.58	11.28	178.40	-64.29	1,028.36	1,038.69	1,015.86	22.84	45.485	
3,350.00	3,349.79	3,322.53	3,315.89	11.75	11.46	178.17	-60.05	1,030.13	1,042.95	1,019.76	23.19	44.971	
3,400.00	3,399.71	3,375.06	3,368.21	11.93	11.66	177.93	-55.71	1,031.91	1,047.18	1,023.62	23.56	44.454	
3,450.00	3,449.63	3,428.20	3,421.15	12.10	11.85	177.70	-51.43	1,033.54	1,051.26	1,027.34	23.92	43.942	
3,500.00	3,499.56	3,479.42	3,472.20	12.27	12.04	177.48	-47.47	1,034.97	1,055.24	1,030.96	24.28	43.456	
3,550.00	3,549.48	3,530.70	3,523.32	12.45	12.23	177.28	-43.74	1,036.32	1,059.17	1,034.52	24.64	42.980	
3,600.00	3,599.40	3,580.20	3,572.68	12.62	12.41	177.10	-40.21	1,037.60	1,063.07	1,038.08	25.00	42.530	
3,650.00	3,649.33	3,629.15	3,621.49	12.80	12.59	176.91	-36.70	1,038.87	1,067.00	1,041.65	25.35	42.096	
3,700.00	3,699.25	3,675.29	3,667.49	12.97	12.76	176.74	-33.41	1,040.17	1,071.04	1,045.36	25.69	41.697	
3,750.00	3,749.17	3,722.40	3,714.46	13.15	12.93	176.57	-30.05	1,041.65	1,075.27	1,049.24	26.03	41.309	
3,800.00	3,799.10	3,774.71	3,766.60	13.32	13.12	176.37	-26.21	1,043.28	1,079.48	1,053.09	26.40	40.897	
3,850.00	3,849.02	3,826.40	3,818.12	13.50	13.31	176.17	-22.22	1,044.77	1,083.59	1,056.83	26.76	40.495	
3,900.00	3,898.94	3,876.91	3,868.43	13.67	13.50	175.95	-18.06	1,046.18	1,087.66	1,060.54	27.12	40.109	
3,950.00	3,948.87	3,926.89	3,918.21	13.85	13.68	175.74	-13.73	1,047.54	1,091.71	1,064.24	27.48	39.734	
4,000.00	3,998.79	3,976.32	3,967.45	14.02	13.87	175.53	-9.63	1,048.90	1,095.78	1,067.95	27.83	39.374	
4,050.00	4,048.71	4,024.73	4,015.70	14.20	14.04	175.34	-5.83	1,050.24	1,099.89	1,071.71	28.18	39.029	
4,100.00	4,098.64	4,072.24	4,063.04	14.38	14.22	175.16	-2.12	1,051.64	1,104.10	1,075.57	28.53	38.702	
4,150.00	4,148.56	4,122.33	4,112.95	14.55	14.40	174.97	1.80	1,053.19	1,108.39	1,079.50	28.89	38.370	
4,200.00	4,198.48	4,174.63	4,165.07	14.73	14.60	174.77	5.86	1,054.71	1,112.59	1,083.34	29.25	38.032	
4,250.00	4,248.41	4,224.53	4,214.80	14.91	14.78	174.58	9.74	1,056.08	1,116.73	1,087.12	29.61	37.712	
4,300.00	4,298.33	4,273.48	4,263.57	15.08	14.96	174.39	13.71	1,057.45	1,120.91	1,090.95	29.97	37.407	
4,350.00	4,348.25	4,323.05	4,312.94	15.26	15.15	174.19	17.85	1,058.85	1,125.13	1,094.80	30.32	37.105	
4,400.00	4,398.18	4,373.59	4,363.29	15.44	15.33	174.00	22.03	1,060.28	1,129.35	1,098.66	30.68	36.806	
4,450.00	4,448.10	4,425.99	4,415.50	15.62	15.53	173.80	26.31	1,061.66	1,133.49	1,102.43	31.05	36.502	
4,500.00	4,498.02	4,478.43	4,467.75	15.79	15.72	173.60	30.55	1,062.92	1,137.52	1,106.10	31.42	36.201	
4,550.00	4,547.94	4,516.77	4,505.94	15.97	15.86	173.45	33.75	1,064.07	1,141.83	1,110.10	31.73	35.984	
4,600.00	4,597.87	4,557.90	4,546.89	16.15	16.02	173.29	37.31	1,065.56	1,146.51	1,114.46	32.05	35.771	
4,650.00	4,647.79	4,607.19	4,595.96	16.33	16.20	173.09	41.55	1,067.55	1,151.40	1,118.99	32.41	35.528	
4,700.00	4,697.71	4,656.89	4,645.45	16.51	16.39	172.91	45.62	1,069.56	1,156.30	1,123.53	32.77	35.289	
4,750.00	4,747.64	4,709.10	4,697.44	16.68	16.58	172.72	49.94	1,071.61	1,161.15	1,128.02	33.14	35.041	
4,800.00	4,797.56	4,762.86	4,750.95	16.86	16.78	172.51	54.66	1,073.58	1,165.90	1,132.39	33.51	34.788	
4,850.00	4,847.48	4,821.78	4,809.62	17.04	17.00	172.28	59.73	1,075.38	1,170.35	1,136.44	33.91	34.509	
4,900.00	4,897.41	4,877.07	4,864.72	17.22	17.21	172.09	64.22	1,076.69	1,174.47	1,140.17	34.30	34.245	
4,950.00	4,947.33	4,930.19	4,917.67	17.40	17.40	171.91	68.22	1,077.80	1,178.44	1,143.77	34.67	33.991	
5,000.00	4,997.25	4,973.55	4,960.91	17.58	17.56	171.78	71.39	1,078.73	1,182.45	1,147.45	35.00	33.784	
5,050.00	5,047.18	5,015.15	5,002.38	17.76	17.72	171.64	74.59	1,079.90	1,186.80	1,151.48	35.32	33.598	
5,100.00	5,097.10	5,061.26	5,048.31	17.93	17.89	171.49	78.27	1,081.46	1,191.45	1,155.78	35.67	33.406	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	5,147.02	5,110.81	5,097.67	18.11	18.07	171.32	82.17	1,083.17	1,196.14	1,160.12	36.02	33.204	
5,200.00	5,196.95	5,164.10	5,150.78	18.29	18.27	171.16	86.20	1,084.96	1,200.80	1,164.40	36.40	32.990	
5,250.00	5,246.87	5,219.28	5,205.81	18.47	18.47	171.00	89.98	1,086.61	1,205.25	1,168.47	36.78	32.768	
5,300.00	5,296.79	5,267.83	5,254.23	18.65	18.65	170.87	93.23	1,087.98	1,209.61	1,172.47	37.13	32.574	
5,350.00	5,346.72	5,316.00	5,302.25	18.83	18.83	170.73	96.71	1,089.37	1,214.04	1,176.55	37.49	32.387	
5,400.00	5,396.64	5,371.39	5,357.48	19.01	19.03	170.57	100.71	1,090.88	1,218.39	1,180.52	37.87	32.174	
5,450.00	5,446.56	5,426.87	5,412.82	19.19	19.24	170.43	104.40	1,092.16	1,222.52	1,184.27	38.25	31.960	
5,500.00	5,496.49	5,477.31	5,463.15	19.37	19.42	170.31	107.56	1,093.23	1,226.55	1,187.94	38.61	31.766	
5,550.00	5,546.41	5,529.33	5,515.07	19.55	19.61	170.19	110.64	1,094.27	1,230.51	1,191.53	38.98	31.569	
5,600.00	5,596.33	5,581.97	5,567.61	19.73	19.80	170.08	113.65	1,095.21	1,234.36	1,195.01	39.35	31.371	
5,650.00	5,646.26	5,639.41	5,624.96	19.91	20.01	169.96	116.76	1,096.04	1,238.04	1,198.31	39.74	31.157	
5,700.00	5,696.18	5,699.63	5,685.12	20.09	20.23	169.86	119.53	1,096.48	1,241.33	1,201.20	40.13	30.932	
5,750.00	5,746.10	5,749.12	5,734.57	20.27	20.40	169.80	121.40	1,096.69	1,244.43	1,203.94	40.48	30.738	
5,800.00	5,796.03	5,799.48	5,784.91	20.45	20.58	169.75	122.92	1,096.93	1,247.52	1,206.68	40.84	30.546	
5,850.00	5,845.95	5,851.11	5,836.53	20.63	20.76	169.73	123.92	1,097.17	1,250.56	1,209.36	41.20	30.353	
5,900.00	5,895.87	5,902.29	5,887.71	20.81	20.94	169.74	124.34	1,097.39	1,253.54	1,211.99	41.56	30.164	
5,950.00	5,945.79	5,952.59	5,938.01	20.99	21.12	169.75	124.65	1,097.59	1,256.49	1,214.58	41.91	29.980	
6,000.00	5,995.72	6,002.92	5,988.33	21.17	21.29	169.76	124.99	1,097.78	1,259.43	1,217.17	42.27	29.798	
6,050.00	6,045.64	6,053.27	6,038.68	21.35	21.47	169.77	125.28	1,097.95	1,262.35	1,219.73	42.62	29.619	
6,100.00	6,095.56	6,104.07	6,089.48	21.53	21.65	169.78	125.52	1,098.10	1,265.25	1,222.27	42.97	29.442	
6,150.00	6,145.49	6,155.21	6,140.61	21.71	21.83	169.79	125.66	1,098.21	1,268.10	1,224.77	43.33	29.265	
6,200.00	6,195.41	6,207.02	6,192.43	21.89	22.00	169.81	125.73	1,098.28	1,270.89	1,227.21	43.69	29.091	
6,250.00	6,245.33	6,259.12	6,244.53	22.07	22.18	169.84	125.75	1,098.26	1,273.60	1,229.56	44.04	28.917	
6,300.00	6,295.26	6,310.47	6,295.88	22.25	22.35	169.86	125.76	1,098.17	1,276.24	1,231.85	44.39	28.749	
6,350.00	6,345.18	6,361.73	6,347.14	22.43	22.52	169.88	125.77	1,098.02	1,278.83	1,234.09	44.74	28.583	
6,400.00	6,395.10	6,412.21	6,397.62	22.61	22.69	169.90	125.76	1,097.85	1,281.38	1,236.29	45.09	28.420	
6,450.00	6,445.03	6,462.72	6,448.13	22.79	22.86	169.92	125.71	1,097.65	1,283.91	1,238.47	45.43	28.259	
6,500.00	6,494.95	6,511.12	6,496.53	22.97	23.02	169.95	125.60	1,097.49	1,286.46	1,240.69	45.77	28.106	
6,550.00	6,544.87	6,560.31	6,545.72	23.15	23.18	169.98	125.41	1,097.38	1,289.06	1,242.95	46.11	27.955	
6,600.00	6,594.80	6,611.22	6,596.62	23.33	23.35	170.01	125.20	1,097.25	1,291.65	1,245.19	46.46	27.803	
6,650.00	6,644.72	6,662.52	6,647.93	23.51	23.52	170.04	125.02	1,097.08	1,294.20	1,247.39	46.81	27.651	
6,700.00	6,694.64	6,714.55	6,699.96	23.69	23.69	170.07	124.91	1,096.83	1,296.67	1,249.52	47.16	27.497	
6,750.00	6,744.57	6,765.81	6,751.21	23.88	23.86	170.09	124.86	1,096.49	1,299.07	1,251.57	47.51	27.346	
6,800.00	6,794.49	6,816.38	6,801.78	24.06	24.03	170.11	124.70	1,096.15	1,301.45	1,253.60	47.85	27.197	
6,850.00	6,844.41	6,866.79	6,852.19	24.24	24.20	170.15	124.42	1,095.79	1,303.80	1,255.60	48.20	27.051	
6,900.00	6,894.34	6,917.11	6,902.51	24.42	24.36	170.18	124.05	1,095.42	1,306.13	1,257.59	48.54	26.907	
6,950.00	6,944.26	6,964.18	6,949.57	24.60	24.52	170.22	123.70	1,095.10	1,308.50	1,259.63	48.88	26.771	
7,000.00	6,994.18	7,010.22	6,995.61	24.78	24.67	170.24	123.52	1,094.92	1,311.02	1,261.81	49.21	26.641	
7,050.00	7,044.11	7,058.23	7,043.62	24.96	24.83	170.26	123.46	1,094.83	1,313.65	1,264.11	49.55	26.512	
7,100.00	7,094.03	7,107.07	7,092.46	25.14	25.00	170.29	123.37	1,094.79	1,316.34	1,266.45	49.89	26.385	
7,150.00	7,143.95	7,155.72	7,141.12	25.32	25.16	170.31	123.24	1,094.80	1,319.06	1,268.83	50.23	26.260	
7,200.00	7,193.87	7,204.32	7,189.71	25.50	25.32	170.34	123.07	1,094.86	1,321.84	1,271.27	50.57	26.138	
7,250.00	7,243.80	7,254.65	7,240.05	25.69	25.49	170.37	122.85	1,094.94	1,324.64	1,273.72	50.92	26.014	
7,300.00	7,293.72	7,305.42	7,290.82	25.87	25.66	170.40	122.56	1,095.01	1,327.41	1,276.14	51.27	25.891	
7,350.00	7,343.64	7,354.62	7,340.01	26.05	25.82	170.44	122.21	1,095.07	1,330.17	1,278.56	51.61	25.772	
7,400.00	7,393.57	7,403.77	7,389.16	26.23	25.99	170.48	121.80	1,095.16	1,332.97	1,281.02	51.96	25.656	
7,450.00	7,443.49	7,456.69	7,442.08	26.41	26.17	170.51	121.45	1,095.21	1,335.73	1,283.41	52.31	25.533	
7,500.00	7,493.41	7,509.63	7,495.02	26.59	26.35	170.54	121.38	1,095.12	1,338.37	1,285.70	52.67	25.410	
7,550.00	7,543.34	7,559.21	7,544.59	26.77	26.51	170.56	121.33	1,095.00	1,340.98	1,287.96	53.02	25.293	
7,600.00	7,593.26	7,608.95	7,594.33	26.95	26.68	170.58	121.22	1,094.88	1,343.58	1,290.21	53.36	25.178	
7,650.00	7,643.18	7,657.84	7,643.23	27.14	26.85	170.61	121.07	1,094.78	1,346.20	1,292.50	53.71	25.066	
7,700.00	7,693.11	7,706.58	7,691.97	27.32	27.01	170.63	120.91	1,094.73	1,348.87	1,294.82	54.05	24.956	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	7,743.03	7,755.09	7,740.47	27.50	27.17	170.66	120.71	1,094.73	1,351.59	1,297.19	54.39	24.849	
7,800.00	7,792.95	7,803.18	7,788.56	27.68	27.34	170.69	120.50	1,094.78	1,354.36	1,299.62	54.73	24.745	
7,850.00	7,842.88	7,850.75	7,836.13	27.86	27.50	170.71	120.46	1,094.90	1,357.21	1,302.14	55.07	24.643	
7,900.00	7,892.80	7,899.27	7,884.65	28.04	27.67	170.72	120.60	1,095.08	1,360.14	1,304.72	55.42	24.542	
7,950.00	7,942.72	7,948.96	7,934.34	28.22	27.84	170.73	120.70	1,095.29	1,363.10	1,307.32	55.77	24.440	
8,000.00	7,992.65	7,999.42	7,984.80	28.41	28.01	170.75	120.78	1,095.51	1,366.05	1,309.92	56.13	24.338	
8,050.00	8,042.57	8,050.50	8,035.88	28.59	28.19	170.75	121.15	1,095.67	1,368.97	1,312.48	56.49	24.236	
8,100.00	8,092.49	8,101.14	8,086.52	28.77	28.37	170.75	121.73	1,095.78	1,371.84	1,315.00	56.84	24.134	
8,150.00	8,142.42	8,151.60	8,136.98	28.95	28.55	170.75	122.25	1,095.86	1,374.70	1,317.50	57.20	24.034	
8,200.00	8,192.34	8,205.41	8,190.78	29.13	28.74	170.75	122.70	1,095.89	1,377.49	1,319.93	57.57	23.929	
8,250.00	8,242.26	8,260.00	8,245.38	29.31	28.93	170.75	123.06	1,095.74	1,380.11	1,322.18	57.94	23.821	
8,300.00	8,292.19	8,311.35	8,296.72	29.50	29.10	170.76	123.33	1,095.50	1,382.63	1,324.34	58.29	23.719	
8,350.00	8,342.11	8,362.47	8,347.84	29.68	29.28	170.77	123.56	1,095.20	1,385.09	1,326.44	58.65	23.617	
8,400.00	8,392.03	8,412.09	8,397.46	29.86	29.45	170.78	123.73	1,094.91	1,387.54	1,328.54	59.00	23.518	
8,450.00	8,441.96	8,461.18	8,446.55	30.04	29.62	170.79	123.85	1,094.63	1,390.01	1,330.66	59.35	23.422	
8,500.00	8,491.88	8,509.22	8,494.59	30.22	29.79	170.80	124.09	1,094.41	1,392.53	1,332.84	59.69	23.328	
8,550.00	8,541.80	8,558.74	8,544.10	30.40	29.96	170.80	124.51	1,094.23	1,395.11	1,335.06	60.04	23.235	
8,600.00	8,591.72	8,610.87	8,596.23	30.59	30.14	170.79	125.16	1,093.97	1,397.64	1,337.23	60.41	23.138	
8,650.00	8,641.65	8,668.74	8,654.09	30.77	30.34	170.78	125.97	1,093.51	1,400.03	1,339.25	60.79	23.032	
8,700.00	8,691.57	8,731.56	8,716.90	30.95	30.56	170.78	126.30	1,092.54	1,402.01	1,340.83	61.18	22.916	
8,750.00	8,741.49	8,786.15	8,771.48	31.13	30.75	170.80	126.24	1,091.38	1,403.68	1,342.14	61.54	22.808	
8,800.00	8,791.42	8,836.30	8,821.61	31.31	30.92	170.82	126.07	1,090.17	1,405.21	1,343.32	61.89	22.704	
8,850.00	8,841.34	8,876.05	8,861.36	31.50	31.05	170.84	126.00	1,089.40	1,406.97	1,344.76	62.21	22.616	
8,900.00	8,891.26	8,915.79	8,901.09	31.68	31.19	170.85	126.05	1,088.91	1,409.09	1,346.57	62.53	22.535	
8,950.00	8,941.19	8,960.76	8,946.06	31.86	31.34	170.86	126.12	1,088.60	1,411.50	1,348.63	62.86	22.454	
9,000.00	8,991.11	9,006.18	8,991.48	32.04	31.50	170.88	126.07	1,088.45	1,414.06	1,350.86	63.19	22.376	
9,050.00	9,041.03	9,053.19	9,038.50	32.22	31.66	170.90	125.98	1,088.42	1,416.75	1,353.22	63.53	22.299	
9,100.00	9,090.96	9,100.54	9,085.84	32.40	31.82	170.92	126.00	1,088.47	1,419.54	1,355.67	63.88	22.224	
9,150.00	9,140.88	9,150.80	9,136.10	32.59	32.00	170.93	126.09	1,088.56	1,422.38	1,358.15	64.23	22.145	
9,200.00	9,190.80	9,201.61	9,186.91	32.77	32.17	170.94	126.16	1,088.63	1,425.19	1,360.60	64.59	22.066	
9,250.00	9,240.73	9,262.75	9,248.06	32.95	32.38	170.97	126.05	1,088.47	1,427.78	1,362.80	64.98	21.973	
9,300.00	9,290.65	9,320.38	9,305.68	33.13	32.58	171.00	125.67	1,087.91	1,430.01	1,364.66	65.36	21.880	
9,350.00	9,340.57	9,373.43	9,358.72	33.31	32.76	171.03	125.55	1,087.22	1,432.09	1,366.37	65.72	21.792	
9,400.00	9,390.50	9,425.86	9,411.15	33.50	32.94	171.04	125.69	1,086.41	1,434.07	1,367.99	66.08	21.704	
9,450.00	9,440.42	9,477.96	9,463.24	33.68	33.12	171.04	125.90	1,085.52	1,435.96	1,369.53	66.43	21.615	
9,500.00	9,490.34	9,527.57	9,512.84	33.86	33.29	171.04	126.24	1,084.63	1,437.83	1,371.04	66.79	21.529	
9,550.00	9,540.27	9,576.73	9,561.99	34.04	33.46	171.03	126.86	1,083.75	1,439.72	1,372.58	67.14	21.445	
9,600.00	9,590.19	9,620.09	9,605.34	34.23	33.62	171.02	127.64	1,083.07	1,441.73	1,374.26	67.47	21.369	
9,650.00	9,640.11	9,663.02	9,648.26	34.41	33.77	170.99	128.60	1,082.59	1,443.98	1,376.18	67.80	21.298	
9,700.00	9,690.04	10,406.92	10,300.48	34.59	35.92	179.10	-64.54	945.64	1,446.37	1,380.55	65.81	21.977	
9,750.00	9,739.96	10,429.08	10,311.77	34.77	35.97	179.88	-82.43	939.04	1,428.27	1,361.77	66.50	21.478	
9,800.00	9,789.88	10,462.46	10,327.49	34.95	36.03	-178.89	-110.31	929.56	1,411.27	1,344.13	67.14	21.021	
9,850.00	9,839.81	10,497.36	10,342.65	35.14	36.11	-177.56	-140.16	919.75	1,395.23	1,327.45	67.78	20.585	
9,900.00	9,889.73	10,526.99	10,354.50	35.32	36.17	-176.40	-166.05	911.51	1,380.33	1,311.89	68.44	20.168	
9,950.00	9,939.65	9,950.00	10,358.55	35.50	35.24	-176.02	-174.48	908.78	1,366.82	1,298.80	68.02	20.095	
10,000.00	9,989.57	10,549.41	10,362.82	35.68	36.21	-175.51	-185.96	905.48	1,354.79	1,285.01	69.78	19.416	
10,050.00	10,039.50	10,558.83	10,366.17	35.86	36.23	-175.13	-194.44	903.08	1,344.42	1,274.03	70.39	19.100	
10,100.00	10,089.44	10,567.70	10,369.22	36.05	36.25	-174.75	-202.48	900.89	1,335.39	1,264.44	70.95	18.822	
10,150.00	10,139.41	10,576.04	10,372.02	36.23	36.27	-174.40	-210.08	898.90	1,327.42	1,255.96	71.46	18.577	
10,200.00	10,189.39	10,583.90	10,374.59	36.40	36.29	-174.07	-217.28	897.08	1,320.54	1,248.64	71.91	18.365	
10,250.00	10,239.39	10,591.32	10,376.95	36.58	36.30	-173.75	-224.11	895.41	1,314.79	1,242.50	72.29	18.187	
10,300.00	10,289.39	10,598.34	10,379.13	36.75	36.32	101.72	-230.61	893.88	1,310.39	1,237.78	72.61	18.046	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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		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
10,350.00	10,339.39	10,626.00	10,387.17	36.93	36.38	102.88	-256.48	888.31	1,308.18	1,235.26	72.92	17.941	
10,400.00	10,389.39	10,626.00	10,387.17	37.10	36.38	102.88	-256.48	888.31	1,307.22	1,234.13	73.09	17.885	
10,400.08	10,389.47	10,626.00	10,387.17	37.10	36.38	102.88	-256.48	888.31	1,307.22	1,234.13	73.09	17.884	
10,450.00	10,439.39	10,626.00	10,387.17	37.28	36.38	102.88	-256.48	888.31	1,308.17	1,234.98	73.19	17.873	
10,500.00	10,489.39	10,626.00	10,387.17	37.45	36.38	102.88	-256.48	888.31	1,311.03	1,237.81	73.22	17.905	
10,550.00	10,539.39	10,626.00	10,387.17	37.62	36.38	102.88	-256.48	888.31	1,315.79	1,242.61	73.18	17.980	
10,600.00	10,589.39	10,626.00	10,387.17	37.80	36.38	102.88	-256.48	888.31	1,322.42	1,249.35	73.07	18.098	
10,650.00	10,639.36	10,626.00	10,387.17	37.97	36.38	-76.32	-256.48	888.31	1,330.59	1,257.70	72.89	18.255	
10,700.00	10,689.03	10,626.00	10,387.17	38.13	36.38	-75.43	-256.48	888.31	1,339.59	1,266.95	72.64	18.442	
10,750.00	10,738.02	10,626.00	10,387.17	38.29	36.38	-74.47	-256.48	888.31	1,349.31	1,276.98	72.34	18.654	
10,800.00	10,785.96	10,626.00	10,387.17	38.45	36.38	-73.46	-256.48	888.31	1,359.67	1,287.68	71.98	18.889	
10,850.00	10,832.49	10,662.67	10,396.61	38.60	36.45	-71.17	-291.42	882.49	1,368.77	1,296.98	71.79	19.066	
10,900.00	10,877.25	10,671.37	10,398.66	38.74	36.46	-69.88	-299.81	881.44	1,379.16	1,307.73	71.43	19.308	
10,950.00	10,919.90	10,680.77	10,400.78	38.87	36.48	-68.61	-308.91	880.44	1,389.59	1,318.53	71.06	19.555	
11,000.00	10,960.11	10,720.00	10,408.68	39.00	36.56	-66.61	-347.24	877.86	1,401.08	1,330.23	70.85	19.775	
11,050.00	10,997.58	10,720.00	10,408.68	39.12	36.56	-65.73	-347.24	877.86	1,410.53	1,340.09	70.44	20.026	
11,100.00	11,032.03	10,720.00	10,408.68	39.23	36.56	-64.87	-347.24	877.86	1,419.92	1,349.88	70.04	20.274	
11,150.00	11,063.19	10,720.00	10,408.68	39.34	36.56	-64.01	-347.24	877.86	1,429.19	1,359.52	69.67	20.514	
11,200.00	11,090.83	10,720.00	10,408.68	39.46	36.56	-63.19	-347.24	877.86	1,438.28	1,368.93	69.35	20.741	
11,250.00	11,114.73	10,755.96	10,414.13	39.58	36.63	-61.99	-382.77	877.11	1,445.75	1,376.51	69.24	20.879	
11,300.00	11,134.71	10,771.62	10,415.84	39.71	36.66	-61.20	-398.34	877.07	1,452.83	1,383.74	69.09	21.029	
11,350.00	11,150.62	10,815.00	10,418.44	39.85	36.74	-60.32	-441.62	877.80	1,459.78	1,390.70	69.08	21.131	
11,400.00	11,162.35	10,815.00	10,418.44	39.99	36.74	-59.93	-441.62	877.80	1,464.31	1,395.33	68.98	21.228	
11,450.00	11,169.79	10,815.00	10,418.44	40.13	36.74	-59.58	-441.62	877.80	1,468.35	1,399.40	68.95	21.296	
11,500.00	11,172.90	10,834.77	10,418.53	40.27	36.77	-59.27	-461.38	878.55	1,471.46	1,402.41	69.04	21.312	
11,550.00	11,173.00	10,852.00	10,417.99	40.43	36.80	-59.23	-478.58	879.38	1,474.22	1,405.04	69.18	21.310	
11,600.00	11,173.00	10,886.63	10,416.19	40.58	36.87	-59.20	-513.11	881.29	1,477.77	1,408.42	69.35	21.308	
11,650.00	11,173.00	10,937.38	10,413.43	40.76	36.99	-59.17	-563.69	884.26	1,481.56	1,411.97	69.59	21.290	
11,700.00	11,173.00	11,053.22	10,410.00	40.93	37.30	-59.16	-679.31	890.16	1,484.68	1,414.63	70.06	21.193	
11,750.00	11,173.00	11,102.49	10,410.09	41.13	37.45	-59.20	-728.54	892.08	1,486.20	1,415.81	70.38	21.115	
11,800.00	11,173.00	11,159.03	10,410.37	41.33	37.64	-59.25	-785.03	894.34	1,487.68	1,416.92	70.76	21.024	
11,850.00	11,173.00	11,224.36	10,410.37	41.56	37.88	-59.28	-850.34	896.11	1,488.73	1,417.53	71.20	20.909	
11,900.00	11,173.00	11,298.00	10,409.73	41.78	38.18	-59.27	-923.97	896.60	1,489.12	1,417.43	71.69	20.773	
11,950.00	11,173.00	11,366.38	10,409.35	42.02	38.50	-59.24	-992.35	896.04	1,488.79	1,416.59	72.19	20.623	
12,000.00	11,173.00	11,424.84	10,410.88	42.27	38.78	-59.29	-1,050.78	895.97	1,487.93	1,415.24	72.69	20.469	
12,050.00	11,173.00	11,468.63	10,411.80	42.53	39.01	-59.31	-1,094.57	895.81	1,487.13	1,414.00	73.14	20.333	
12,100.00	11,173.00	11,511.92	10,411.99	42.80	39.23	-59.31	-1,137.85	895.45	1,486.54	1,412.97	73.57	20.206	
12,150.00	11,173.00	11,553.53	10,411.82	43.09	39.46	-59.30	-1,179.47	895.14	1,486.21	1,412.20	74.02	20.080	
12,183.54	11,173.00	11,581.45	10,411.60	43.28	39.62	-59.28	-1,207.38	895.03	1,486.15	1,411.83	74.31	19.998	
12,200.00	11,173.00	11,595.22	10,411.46	43.37	39.70	-59.28	-1,221.15	894.99	1,486.16	1,411.70	74.46	19.959	
12,250.00	11,173.00	11,639.21	10,410.89	43.68	39.96	-59.26	-1,265.14	894.97	1,486.36	1,411.40	74.95	19.830	
12,300.00	11,173.00	11,683.20	10,410.12	43.99	40.23	-59.23	-1,309.12	895.03	1,486.75	1,411.31	75.44	19.707	
12,350.00	11,173.00	11,741.60	10,409.12	44.31	40.60	-59.20	-1,367.51	895.11	1,487.13	1,411.07	76.06	19.552	
12,400.00	11,173.00	11,804.35	10,408.52	44.64	41.01	-59.17	-1,430.26	894.95	1,487.16	1,410.43	76.72	19.384	
12,450.00	11,173.00	11,871.66	10,408.41	44.98	41.46	-59.15	-1,497.57	894.27	1,486.65	1,409.20	77.45	19.195	
12,500.00	11,173.00	11,901.16	10,408.38	45.33	41.68	-59.14	-1,527.07	894.02	1,486.19	1,408.28	77.92	19.074	
12,507.78	11,173.00	11,905.72	10,408.36	45.38	41.71	-59.14	-1,531.63	894.01	1,486.19	1,408.19	77.99	19.055	
12,550.00	11,173.00	11,930.48	10,408.15	45.69	41.88	-59.13	-1,556.38	894.12	1,486.43	1,408.03	78.40	18.960	
12,600.00	11,173.00	11,967.00	10,407.57	46.05	42.15	-59.12	-1,592.89	894.75	1,487.40	1,408.46	78.93	18.843	
12,650.00	11,173.00	12,091.87	10,408.14	46.43	43.10	-59.13	-1,717.73	894.17	1,486.65	1,406.43	80.22	18.531	
12,700.00	11,173.00	12,135.76	10,409.25	46.81	43.44	-59.15	-1,761.61	893.55	1,485.28	1,404.40	80.88	18.364	
12,750.00	11,173.00	12,178.44	10,410.44	47.20	43.79	-59.18	-1,804.27	893.22	1,484.12	1,402.57	81.55	18.199	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
12,800.00	11,173.00	12,220.00	10,411.06	47.60	44.13	-59.19	-1,845.82	892.85	1,483.24	1,401.03	82.21	18.043	
12,850.00	11,173.00	12,262.35	10,411.06	48.01	44.47	-59.18	-1,888.17	892.37	1,482.63	1,399.76	82.87	17.891	
12,900.00	11,173.00	12,307.33	10,410.90	48.42	44.85	-59.16	-1,933.15	891.98	1,482.24	1,398.67	83.57	17.737	
12,950.00	11,173.00	12,355.36	10,410.78	48.85	45.26	-59.15	-1,981.18	891.78	1,482.00	1,397.69	84.31	17.579	
13,000.00	11,173.00	12,426.00	10,409.88	49.27	45.88	-59.09	-2,051.80	890.45	1,481.41	1,396.17	85.24	17.380	
13,050.00	11,173.00	12,469.84	10,408.80	49.71	46.27	-59.02	-2,095.60	888.96	1,480.47	1,394.54	85.94	17.228	
13,100.00	11,173.00	12,506.49	10,407.91	50.15	46.60	-58.97	-2,132.22	888.09	1,479.96	1,393.38	86.58	17.094	
13,131.28	11,173.00	12,529.43	10,407.36	50.43	46.81	-58.95	-2,155.15	887.74	1,479.87	1,392.88	86.99	17.012	
13,150.00	11,173.00	12,545.43	10,406.98	50.60	46.96	-58.93	-2,171.14	887.58	1,479.90	1,392.64	87.26	16.959	
13,200.00	11,173.00	12,593.74	10,405.82	51.05	47.41	-58.88	-2,219.44	887.15	1,480.02	1,391.98	88.04	16.811	
13,250.00	11,173.00	12,642.85	10,404.64	51.52	47.87	-58.83	-2,268.53	886.77	1,480.19	1,391.36	88.84	16.662	
13,300.00	11,173.00	12,694.65	10,404.30	51.98	48.36	-58.82	-2,320.34	886.89	1,480.34	1,390.65	89.69	16.504	
13,350.00	11,173.00	12,747.09	10,405.13	52.46	48.87	-58.86	-2,372.76	887.63	1,480.43	1,389.83	90.60	16.339	
13,400.00	11,173.00	12,800.53	10,405.59	52.93	49.39	-58.88	-2,426.20	888.03	1,480.41	1,388.89	91.52	16.176	
13,450.00	11,173.00	12,848.45	10,405.43	53.42	49.86	-58.87	-2,474.12	887.97	1,480.33	1,387.96	92.37	16.025	
13,452.41	11,173.00	12,850.61	10,405.41	53.45	49.88	-58.87	-2,476.28	887.97	1,480.33	1,387.92	92.41	16.019	
13,500.00	11,173.00	12,893.21	10,405.10	53.91	50.31	-58.86	-2,518.87	887.98	1,480.41	1,387.22	93.20	15.885	
13,550.00	11,173.00	12,937.03	10,404.55	54.41	50.75	-58.84	-2,562.70	888.04	1,480.68	1,386.66	94.02	15.749	
13,600.00	11,173.00	12,979.95	10,403.25	54.91	51.19	-58.79	-2,605.59	887.86	1,481.17	1,386.36	94.81	15.622	
13,650.00	11,173.00	13,022.04	10,401.15	55.41	51.62	-58.71	-2,647.62	887.43	1,481.92	1,386.33	95.59	15.503	
13,700.00	11,173.00	13,062.28	10,398.62	55.92	52.04	-58.61	-2,687.79	886.99	1,482.97	1,386.63	96.34	15.393	
13,750.00	11,173.00	13,104.00	10,395.53	56.44	52.48	-58.50	-2,729.39	886.57	1,484.35	1,387.25	97.10	15.287	
13,800.00	11,173.00	13,150.50	10,392.08	56.96	52.97	-58.38	-2,775.76	886.31	1,485.94	1,388.02	97.92	15.175	
13,850.00	11,173.00	13,199.07	10,389.03	57.48	53.49	-58.28	-2,824.23	886.44	1,487.59	1,388.81	98.78	15.060	
13,900.00	11,173.00	13,255.18	10,386.29	58.01	54.09	-58.20	-2,880.27	886.96	1,489.15	1,389.40	99.75	14.929	
13,950.00	11,173.00	13,314.23	10,384.40	58.54	54.73	-58.15	-2,939.28	887.80	1,490.50	1,389.71	100.79	14.789	
14,000.00	11,173.00	13,379.23	10,383.55	59.08	55.44	-58.14	-3,004.27	888.85	1,491.41	1,389.48	101.93	14.632	
14,050.00	11,173.00	13,428.97	10,383.51	59.62	55.99	-58.15	-3,054.00	889.69	1,492.03	1,389.12	102.91	14.498	
14,100.00	11,173.00	13,476.33	10,383.38	60.17	56.51	-58.16	-3,101.35	890.53	1,492.74	1,388.88	103.87	14.372	
14,150.00	11,173.00	13,530.78	10,383.39	60.72	57.13	-58.18	-3,155.80	891.57	1,493.44	1,388.51	104.93	14.233	
14,200.00	11,173.00	13,588.08	10,383.97	61.27	57.77	-58.22	-3,213.08	892.77	1,493.95	1,387.90	106.04	14.088	
14,250.00	11,173.00	13,654.80	10,384.72	61.82	58.53	-58.26	-3,279.79	893.53	1,494.03	1,386.75	107.27	13.927	
14,300.00	11,173.00	13,709.92	10,385.24	62.38	59.16	-58.27	-3,334.90	893.58	1,493.69	1,385.34	108.36	13.785	
14,350.00	11,173.00	13,761.00	10,385.90	62.95	59.74	-58.29	-3,385.98	893.66	1,493.31	1,383.90	109.40	13.649	
14,400.00	11,173.00	13,821.33	10,386.55	63.51	60.44	-58.31	-3,446.30	893.42	1,492.74	1,382.19	110.56	13.502	
14,450.00	11,173.00	13,876.05	10,386.57	64.08	61.07	-58.28	-3,501.02	892.43	1,491.84	1,380.21	111.62	13.365	
14,500.00	11,173.00	13,917.49	10,386.13	64.65	61.56	-58.25	-3,542.45	891.52	1,491.07	1,378.54	112.53	13.250	
14,550.00	11,173.00	13,959.08	10,385.27	65.23	62.04	-58.20	-3,584.01	890.63	1,490.59	1,377.15	113.44	13.140	
14,600.00	11,173.00	14,003.92	10,384.09	65.81	62.57	-58.14	-3,628.83	889.76	1,490.34	1,375.96	114.37	13.030	
14,647.86	11,173.00	14,046.83	10,382.92	66.37	63.07	-58.09	-3,671.73	889.06	1,490.26	1,374.98	115.28	12.928	
14,650.00	11,173.00	14,048.76	10,382.87	66.39	63.10	-58.09	-3,673.65	889.03	1,490.26	1,374.94	115.32	12.923	
14,700.00	11,173.00	14,090.75	10,381.61	66.98	63.60	-58.03	-3,715.62	888.50	1,490.40	1,374.17	116.23	12.823	
14,750.00	11,173.00	14,132.58	10,380.15	67.56	64.10	-57.97	-3,757.42	888.11	1,490.81	1,373.68	117.14	12.727	
14,800.00	11,173.00	14,177.49	10,378.41	68.15	64.63	-57.91	-3,802.30	887.83	1,491.47	1,373.39	118.08	12.631	
14,850.00	11,173.00	14,223.86	10,376.54	68.75	65.19	-57.84	-3,848.62	887.64	1,492.25	1,373.21	119.05	12.535	
14,900.00	11,173.00	14,287.62	10,374.36	69.34	65.96	-57.76	-3,912.35	887.49	1,492.97	1,372.74	120.23	12.418	
14,950.00	11,173.00	14,352.95	10,373.75	69.94	66.76	-57.74	-3,977.67	887.39	1,493.01	1,371.54	121.48	12.290	
15,000.00	11,173.00	14,403.92	10,373.87	70.54	67.38	-57.74	-4,028.65	887.42	1,492.87	1,370.30	122.57	12.180	
15,050.00	11,173.00	14,456.98	10,374.28	71.14	68.03	-57.75	-4,081.70	887.58	1,492.68	1,368.97	123.71	12.066	
15,100.00	11,173.00	14,512.22	10,374.95	71.75	68.71	-57.77	-4,136.94	887.70	1,492.33	1,367.45	124.88	11.950	
15,150.00	11,173.00	14,557.42	10,375.51	72.35	69.26	-57.79	-4,182.13	887.75	1,491.93	1,366.01	125.93	11.847	
15,200.00	11,173.00	14,599.90	10,375.65	72.96	69.79	-57.79	-4,224.61	887.80	1,491.78	1,364.85	126.93	11.752	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
15,204.88	11,173.00	14,604.04	10,375.64	73.02	69.84	-57.79	-4,228.76	887.81	1,491.78	1,364.75	127.03	11.743	
15,250.00	11,173.00	14,645.81	10,375.40	73.57	70.36	-57.79	-4,270.53	887.85	1,491.85	1,363.88	127.98	11.657	
15,300.00	11,173.00	14,694.53	10,374.88	74.19	70.96	-57.76	-4,319.24	887.81	1,491.99	1,362.94	129.04	11.562	
15,350.00	11,173.00	14,744.94	10,374.13	74.80	71.59	-57.73	-4,369.65	887.66	1,492.15	1,362.02	130.13	11.467	
15,400.00	11,173.00	14,796.48	10,373.30	75.42	72.24	-57.70	-4,421.18	887.42	1,492.26	1,361.04	131.23	11.372	
15,450.00	11,173.00	14,838.22	10,372.46	76.04	72.76	-57.67	-4,462.91	887.17	1,492.45	1,360.25	132.20	11.289	
15,500.00	11,173.00	14,876.80	10,371.15	76.66	73.25	-57.62	-4,501.46	886.96	1,493.01	1,359.90	133.12	11.216	
15,550.00	11,173.00	14,916.66	10,369.25	77.28	73.75	-57.55	-4,541.27	886.75	1,493.95	1,359.92	134.03	11.146	
15,600.00	11,173.00	14,960.11	10,366.85	77.91	74.30	-57.46	-4,584.66	886.57	1,495.15	1,360.17	134.98	11.077	
15,650.00	11,173.00	15,003.89	10,364.19	78.54	74.86	-57.37	-4,628.36	886.47	1,496.57	1,360.65	135.92	11.010	
15,700.00	11,173.00	15,050.73	10,361.38	79.16	75.46	-57.28	-4,675.11	886.54	1,498.15	1,361.23	136.91	10.942	
15,750.00	11,173.00	15,098.14	10,358.78	79.79	76.06	-57.20	-4,722.45	886.89	1,499.83	1,361.90	137.93	10.874 SF	

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 333H - 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
9,100.00	9,090.96	9,280.24	9,253.47	32.40	33.37	-5.77	15.66	-1,816.90	1,498.35	1,433.79	64.56	23.208	
9,150.00	9,140.88	9,329.55	9,302.48	32.59	33.56	-5.77	15.99	-1,811.46	1,490.09	1,425.17	64.92	22.954	
9,200.00	9,190.80	9,378.86	9,351.49	32.77	33.74	-5.77	16.32	-1,806.01	1,481.83	1,416.56	65.27	22.702	
9,250.00	9,240.73	9,428.18	9,400.50	32.95	33.93	-5.77	16.65	-1,800.56	1,473.57	1,407.95	65.63	22.453	
9,300.00	9,290.65	9,477.49	9,449.51	33.13	34.12	-5.77	16.98	-1,795.11	1,465.32	1,399.33	65.98	22.207	
9,350.00	9,340.57	9,526.80	9,498.53	33.31	34.30	-5.77	17.31	-1,789.66	1,457.06	1,390.72	66.34	21.964	
9,400.00	9,390.50	9,576.12	9,547.54	33.50	34.49	-5.77	17.64	-1,784.22	1,448.80	1,382.11	66.70	21.723	
9,450.00	9,440.42	9,625.43	9,596.55	33.68	34.68	-5.77	17.97	-1,778.77	1,440.54	1,373.49	67.05	21.484	
9,500.00	9,490.34	9,674.74	9,645.56	33.86	34.86	-5.77	18.30	-1,773.32	1,432.29	1,364.88	67.41	21.248	
9,550.00	9,540.27	9,724.06	9,694.57	34.04	35.05	-5.77	18.63	-1,767.87	1,424.03	1,356.27	67.76	21.015	
9,600.00	9,590.19	9,773.37	9,743.58	34.23	35.24	-5.77	18.96	-1,762.43	1,415.77	1,347.65	68.12	20.784	
9,650.00	9,640.11	9,822.69	9,792.59	34.41	35.42	-5.77	19.29	-1,756.98	1,407.51	1,339.04	68.48	20.555	
9,700.00	9,690.04	9,862.74	9,832.41	34.59	35.57	-5.77	19.56	-1,752.64	1,399.37	1,330.54	68.83	20.331	
9,750.00	9,739.96	9,900.00	9,869.48	34.77	35.72	-5.77	19.78	-1,748.94	1,391.67	1,322.49	69.18	20.116	
9,800.00	9,789.88	9,935.24	9,904.58	34.95	35.85	-5.77	19.97	-1,745.79	1,384.45	1,314.92	69.53	19.912	
9,850.00	9,839.81	9,971.64	9,940.86	35.14	35.98	-5.77	20.15	-1,742.86	1,377.69	1,307.81	69.87	19.717	
9,900.00	9,889.73	10,008.13	9,977.26	35.32	36.12	-5.77	20.30	-1,740.28	1,371.40	1,301.19	70.21	19.532	
9,950.00	9,939.65	10,044.70	10,013.76	35.50	36.25	-5.78	20.44	-1,738.04	1,365.59	1,295.04	70.55	19.357	
10,000.00	9,989.57	10,081.35	10,050.36	35.68	36.38	-5.78	20.55	-1,736.14	1,360.25	1,289.38	70.88	19.192	
10,050.00	10,039.50	10,118.08	10,087.06	35.86	36.51	-5.79	20.65	-1,734.60	1,355.39	1,284.19	71.20	19.035	
10,100.00	10,089.44	10,154.89	10,123.85	36.05	36.64	-5.79	20.72	-1,733.40	1,351.35	1,279.83	71.52	18.893	
10,150.00	10,139.41	10,191.78	10,160.73	36.23	36.77	-5.79	20.77	-1,732.55	1,348.44	1,276.60	71.84	18.770	
10,200.00	10,189.39	10,228.73	10,197.68	36.40	36.90	-5.78	20.80	-1,732.06	1,346.66	1,274.51	72.15	18.664	
10,250.00	10,239.39	10,267.35	10,236.29	36.58	37.04	-5.79	20.81	-1,731.92	1,346.01	1,273.55	72.46	18.575	
10,296.41	10,285.80	10,313.75	10,282.70	36.74	37.20	-5.79	20.81	-1,731.92	1,345.95	1,273.16	72.79	18.491	CC
10,300.00	10,289.39	10,317.35	10,286.29	36.75	37.21	-90.60	20.81	-1,731.92	1,346.00	1,273.19	72.81	18.486	
10,350.00	10,339.39	10,367.35	10,336.29	36.93	37.38	-90.60	20.81	-1,731.92	1,346.00	1,272.84	73.16	18.397	
10,400.00	10,389.39	10,417.35	10,386.29	37.10	37.55	-90.60	20.81	-1,731.92	1,346.00	1,272.49	73.51	18.310	
10,450.00	10,439.39	10,467.35	10,436.29	37.28	37.73	-90.60	20.81	-1,731.92	1,346.00	1,272.14	73.86	18.223	
10,500.00	10,489.39	10,517.35	10,486.29	37.45	37.90	-90.60	20.81	-1,731.92	1,346.00	1,271.79	74.21	18.137	
10,550.00	10,539.39	10,567.35	10,536.29	37.62	38.07	-90.60	20.81	-1,731.92	1,346.00	1,271.44	74.56	18.052	
10,555.96	10,545.35	10,573.30	10,542.25	37.64	38.09	-90.60	20.81	-1,731.92	1,346.00	1,271.40	74.60	18.042	
10,600.00	10,589.39	10,617.22	10,586.16	37.80	38.25	-90.61	20.78	-1,731.92	1,346.00	1,271.09	74.91	17.968	
10,650.00	10,639.36	10,666.10	10,634.96	37.97	38.41	89.49	18.17	-1,731.92	1,346.01	1,270.77	75.24	17.888	
10,700.00	10,689.03	10,714.88	10,683.26	38.13	38.56	89.44	11.44	-1,731.91	1,346.03	1,270.47	75.57	17.812	
10,750.00	10,738.02	10,763.55	10,730.70	38.29	38.72	89.38	0.65	-1,731.89	1,346.06	1,270.18	75.89	17.738	
10,800.00	10,785.96	10,812.13	10,776.98	38.45	38.86	89.34	-14.10	-1,731.87	1,346.09	1,269.90	76.20	17.666	
10,850.00	10,832.49	10,860.63	10,821.76	38.60	39.00	89.29	-32.68	-1,731.84	1,346.13	1,269.63	76.50	17.597	
10,900.00	10,877.25	10,909.06	10,864.76	38.74	39.14	89.26	-54.94	-1,731.81	1,346.16	1,269.37	76.79	17.530	
10,950.00	10,919.90	10,957.44	10,905.67	38.87	39.26	89.22	-80.72	-1,731.77	1,346.20	1,269.12	77.08	17.465	
11,000.00	10,960.11	11,005.76	10,944.23	39.00	39.38	89.20	-109.82	-1,731.73	1,346.25	1,268.88	77.37	17.401	
11,050.00	10,997.58	11,054.04	10,980.17	39.12	39.49	89.18	-142.05	-1,731.68	1,346.29	1,268.65	77.64	17.339	
11,100.00	11,032.03	11,102.30	11,013.25	39.23	39.59	89.16	-177.17	-1,731.63	1,346.34	1,268.42	77.92	17.279	
11,150.00	11,063.19	11,150.55	11,043.25	39.34	39.68	89.15	-214.93	-1,731.57	1,346.39	1,268.20	78.19	17.219	
11,200.00	11,090.83	11,198.80	11,069.98	39.46	39.78	89.15	-255.09	-1,731.51	1,346.44	1,267.98	78.46	17.160	
11,250.00	11,114.73	11,247.06	11,093.23	39.58	39.88	89.16	-297.36	-1,731.45	1,346.49	1,267.76	78.73	17.102	
11,300.00	11,134.71	11,295.34	11,112.85	39.71	39.98	89.17	-341.46	-1,731.38	1,346.54	1,267.53	79.01	17.044	
11,350.00	11,150.62	11,343.66	11,128.71	39.85	40.08	89.18	-387.08	-1,731.31	1,346.59	1,267.31	79.28	16.985	
11,400.00	11,162.35	11,392.02	11,140.67	39.99	40.20	89.21	-433.93	-1,731.24	1,346.64	1,267.08	79.55	16.927	
11,450.00	11,169.79	11,440.45	11,148.65	40.13	40.33	89.23	-481.68	-1,731.17	1,346.69	1,266.86	79.83	16.870	
11,500.00	11,172.90	11,488.94	11,152.57	40.27	40.46	89.27	-529.99	-1,731.10	1,346.73	1,266.63	80.10	16.813	
11,550.00	11,173.00	11,538.28	11,153.00	40.43	40.60	89.28	-579.33	-1,731.02	1,346.79	1,266.40	80.39	16.754	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 333H - 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
11,600.00	11,173.00	11,588.28	11,153.00	40.58	40.75	89.28	-629.33	-1,730.95	1,346.85	1,266.16	80.69	16.693	
11,650.00	11,173.00	11,638.28	11,153.00	40.76	40.91	89.28	-679.33	-1,730.87	1,346.91	1,265.89	81.02	16.624	
11,700.00	11,173.00	11,688.28	11,153.00	40.93	41.09	89.28	-729.33	-1,730.80	1,346.97	1,265.60	81.37	16.554	
11,750.00	11,173.00	11,738.28	11,153.00	41.13	41.28	89.28	-779.33	-1,730.72	1,347.03	1,265.28	81.75	16.476	
11,800.00	11,173.00	11,788.28	11,153.00	41.33	41.48	89.28	-829.33	-1,730.65	1,347.09	1,264.94	82.15	16.399	
11,850.00	11,173.00	11,838.28	11,153.00	41.56	41.69	89.28	-879.33	-1,730.57	1,347.15	1,264.57	82.58	16.313	
11,900.00	11,173.00	11,888.28	11,153.00	41.78	41.91	89.28	-929.33	-1,730.50	1,347.21	1,264.19	83.02	16.227	
11,950.00	11,173.00	11,938.28	11,153.00	42.02	42.15	89.28	-979.33	-1,730.42	1,347.27	1,263.77	83.50	16.135	
12,000.00	11,173.00	11,988.28	11,153.00	42.27	42.39	89.28	-1,029.33	-1,730.35	1,347.33	1,263.35	83.99	16.042	
12,050.00	11,173.00	12,038.28	11,153.00	42.53	42.65	89.28	-1,079.33	-1,730.27	1,347.39	1,262.88	84.51	15.943	
12,100.00	11,173.00	12,088.28	11,153.00	42.80	42.91	89.28	-1,129.33	-1,730.20	1,347.45	1,262.41	85.04	15.845	
12,150.00	11,173.00	12,138.28	11,153.00	43.09	43.19	89.28	-1,179.33	-1,730.12	1,347.51	1,261.91	85.61	15.741	
12,200.00	11,173.00	12,188.28	11,153.00	43.37	43.47	89.28	-1,229.32	-1,730.05	1,347.57	1,261.39	86.18	15.637	
12,250.00	11,173.00	12,238.27	11,153.00	43.68	43.77	89.28	-1,279.32	-1,729.97	1,347.63	1,260.85	86.79	15.528	
12,300.00	11,173.00	12,288.27	11,153.00	43.99	44.08	89.28	-1,329.32	-1,729.90	1,347.69	1,260.29	87.40	15.420	
12,350.00	11,173.00	12,338.27	11,153.00	44.31	44.40	89.28	-1,379.32	-1,729.82	1,347.75	1,259.71	88.05	15.307	
12,400.00	11,173.00	12,388.27	11,153.00	44.64	44.72	89.28	-1,429.32	-1,729.75	1,347.81	1,259.12	88.70	15.195	
12,450.00	11,173.00	12,438.27	11,153.00	44.98	45.06	89.28	-1,479.32	-1,729.67	1,347.88	1,258.49	89.38	15.079	
12,500.00	11,173.00	12,488.27	11,153.00	45.33	45.40	89.28	-1,529.32	-1,729.60	1,347.94	1,257.86	90.07	14.965	
12,550.00	11,173.00	12,538.27	11,153.00	45.69	45.75	89.28	-1,579.32	-1,729.52	1,348.00	1,257.20	90.80	14.847	
12,600.00	11,173.00	12,588.27	11,153.00	46.05	46.11	89.28	-1,629.32	-1,729.45	1,348.06	1,256.54	91.52	14.730	
12,650.00	11,173.00	12,638.27	11,153.00	46.43	46.49	89.28	-1,679.32	-1,729.37	1,348.12	1,255.84	92.28	14.610	
12,700.00	11,173.00	12,688.27	11,153.00	46.81	46.86	89.28	-1,729.32	-1,729.30	1,348.18	1,255.14	93.04	14.491	
12,750.00	11,173.00	12,738.27	11,153.00	47.20	47.25	89.28	-1,779.32	-1,729.22	1,348.24	1,254.41	93.82	14.370	
12,800.00	11,173.00	12,788.27	11,153.00	47.60	47.65	89.28	-1,829.32	-1,729.15	1,348.30	1,253.68	94.62	14.250	
12,850.00	11,173.00	12,838.27	11,153.00	48.01	48.05	89.28	-1,879.32	-1,729.07	1,348.36	1,252.92	95.43	14.129	
12,900.00	11,173.00	12,888.27	11,153.00	48.42	48.46	89.28	-1,929.32	-1,729.00	1,348.42	1,252.16	96.26	14.009	
12,950.00	11,173.00	12,938.27	11,153.00	48.85	48.88	89.28	-1,979.32	-1,728.92	1,348.48	1,251.37	97.11	13.887	
13,000.00	11,173.00	12,988.27	11,153.00	49.27	49.30	89.28	-2,029.32	-1,728.85	1,348.54	1,250.58	97.96	13.767	
13,050.00	11,173.00	13,038.27	11,153.00	49.71	49.73	89.28	-2,079.32	-1,728.77	1,348.60	1,249.77	98.83	13.645	
13,100.00	11,173.00	13,088.27	11,153.00	50.15	50.17	89.28	-2,129.32	-1,728.70	1,348.66	1,248.95	99.71	13.525	
13,150.00	11,173.00	13,138.27	11,153.00	50.60	50.62	89.28	-2,179.32	-1,728.62	1,348.72	1,248.10	100.62	13.405	
13,200.00	11,173.00	13,188.27	11,153.00	51.05	51.06	89.28	-2,229.32	-1,728.55	1,348.78	1,247.26	101.52	13.286	
13,250.00	11,173.00	13,238.27	11,153.00	51.52	51.52	89.28	-2,279.32	-1,728.47	1,348.84	1,246.39	102.45	13.166	
13,300.00	11,173.00	13,288.27	11,153.00	51.98	51.99	89.28	-2,329.32	-1,728.40	1,348.90	1,245.52	103.38	13.048	
13,350.00	11,173.00	13,338.27	11,153.00	52.46	52.46	89.28	-2,379.32	-1,728.32	1,348.96	1,244.63	104.33	12.929	
13,400.00	11,173.00	13,388.27	11,153.00	52.93	52.93	89.28	-2,429.32	-1,728.25	1,349.02	1,243.73	105.29	12.813	
13,450.00	11,173.00	13,438.27	11,153.00	53.42	53.41	89.28	-2,479.32	-1,728.17	1,349.08	1,242.82	106.26	12.696	
13,500.00	11,173.00	13,488.27	11,153.00	53.91	53.90	89.28	-2,529.32	-1,728.10	1,349.14	1,241.90	107.24	12.581	
13,550.00	11,173.00	13,538.27	11,153.00	54.41	54.39	89.28	-2,579.32	-1,728.02	1,349.20	1,240.97	108.24	12.465	
13,600.00	11,173.00	13,588.27	11,153.00	54.91	54.89	89.28	-2,629.32	-1,727.95	1,349.26	1,240.03	109.23	12.352	
13,650.00	11,173.00	13,638.27	11,153.00	55.41	55.39	89.28	-2,679.32	-1,727.87	1,349.32	1,239.07	110.25	12.239	
13,700.00	11,173.00	13,688.27	11,153.00	55.92	55.90	89.28	-2,729.32	-1,727.80	1,349.38	1,238.12	111.27	12.127	
13,750.00	11,173.00	13,738.27	11,153.00	56.44	56.41	89.28	-2,779.32	-1,727.72	1,349.44	1,237.14	112.30	12.016	
13,800.00	11,173.00	13,788.27	11,153.00	56.96	56.93	89.28	-2,829.32	-1,727.65	1,349.50	1,236.16	113.34	11.907	
13,850.00	11,173.00	13,838.27	11,153.00	57.48	57.45	89.28	-2,879.32	-1,727.57	1,349.56	1,235.17	114.39	11.798	
13,900.00	11,173.00	13,888.27	11,153.00	58.01	57.97	89.28	-2,929.32	-1,727.50	1,349.62	1,234.18	115.45	11.690	
13,950.00	11,173.00	13,938.27	11,153.00	58.54	58.50	89.28	-2,979.32	-1,727.42	1,349.69	1,233.17	116.52	11.583	
14,000.00	11,173.00	13,988.27	11,153.00	59.08	59.04	89.28	-3,029.32	-1,727.35	1,349.75	1,232.16	117.59	11.478	
14,050.00	11,173.00	14,038.27	11,153.00	59.62	59.57	89.28	-3,079.32	-1,727.27	1,349.81	1,231.13	118.68	11.374	
14,100.00	11,173.00	14,088.27	11,153.00	60.17	60.12	89.28	-3,129.32	-1,727.20	1,349.87	1,230.10	119.76	11.271	
14,150.00	11,173.00	14,138.27	11,153.00	60.72	60.66	89.28	-3,179.32	-1,727.12	1,349.93	1,229.06	120.87	11.169	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 333H - 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
14,200.00	11,173.00	14,188.27	11,153.00	61.27	61.21	89.28	-3,229.32	-1,727.05	1,349.99	1,228.02	121.97	11.068	
14,250.00	11,173.00	14,238.27	11,153.00	61.82	61.76	89.28	-3,279.32	-1,726.97	1,350.05	1,226.96	123.09	10.968	
14,300.00	11,173.00	14,288.27	11,153.00	62.38	62.32	89.28	-3,329.32	-1,726.90	1,350.11	1,225.90	124.20	10.870	
14,350.00	11,173.00	14,338.27	11,153.00	62.95	62.88	89.28	-3,379.32	-1,726.82	1,350.17	1,224.83	125.33	10.773	
14,400.00	11,173.00	14,388.27	11,153.00	63.51	63.44	89.28	-3,429.32	-1,726.75	1,350.23	1,223.76	126.47	10.677	
14,450.00	11,173.00	14,438.27	11,153.00	64.08	64.01	89.28	-3,479.32	-1,726.67	1,350.29	1,222.68	127.61	10.582	
14,500.00	11,173.00	14,488.27	11,153.00	64.65	64.58	89.28	-3,529.32	-1,726.60	1,350.35	1,221.60	128.75	10.488	
14,550.00	11,173.00	14,538.27	11,153.00	65.23	65.16	89.28	-3,579.32	-1,726.52	1,350.41	1,220.50	129.91	10.395	
14,600.00	11,173.00	14,588.27	11,153.00	65.81	65.73	89.28	-3,629.32	-1,726.45	1,350.47	1,219.41	131.06	10.304	
14,650.00	11,173.00	14,638.27	11,153.00	66.39	66.31	89.28	-3,679.32	-1,726.37	1,350.53	1,218.30	132.23	10.213	
14,700.00	11,173.00	14,688.27	11,153.00	66.98	66.89	89.28	-3,729.32	-1,726.30	1,350.59	1,217.19	133.40	10.124	
14,750.00	11,173.00	14,738.27	11,153.00	67.56	67.48	89.28	-3,779.32	-1,726.22	1,350.65	1,216.07	134.58	10.036	
14,800.00	11,173.00	14,788.27	11,153.00	68.15	68.06	89.28	-3,829.32	-1,726.15	1,350.71	1,214.95	135.76	9.950	
14,850.00	11,173.00	14,838.27	11,153.00	68.75	68.66	89.28	-3,879.32	-1,726.07	1,350.77	1,213.83	136.94	9.864	
14,900.00	11,173.00	14,888.27	11,153.00	69.34	69.25	89.28	-3,929.32	-1,726.00	1,350.83	1,212.70	138.13	9.779	
14,950.00	11,173.00	14,938.27	11,153.00	69.94	69.84	89.28	-3,979.32	-1,725.92	1,350.89	1,211.56	139.33	9.695	
15,000.00	11,173.00	14,988.27	11,153.00	70.54	70.44	89.28	-4,029.32	-1,725.85	1,350.95	1,210.42	140.53	9.613	
15,050.00	11,173.00	15,038.27	11,153.00	71.14	71.04	89.28	-4,079.32	-1,725.77	1,351.01	1,209.27	141.74	9.532	
15,100.00	11,173.00	15,088.27	11,153.00	71.75	71.64	89.28	-4,129.32	-1,725.70	1,351.07	1,208.12	142.95	9.451	
15,150.00	11,173.00	15,138.27	11,153.00	72.35	72.25	89.28	-4,179.32	-1,725.62	1,351.13	1,206.97	144.17	9.372	
15,200.00	11,173.00	15,188.27	11,153.00	72.96	72.86	89.28	-4,229.32	-1,725.55	1,351.19	1,205.81	145.38	9.294	
15,250.00	11,173.00	15,238.27	11,153.00	73.57	73.47	89.28	-4,279.32	-1,725.47	1,351.25	1,204.64	146.61	9.217	
15,300.00	11,173.00	15,288.27	11,153.00	74.19	74.08	89.28	-4,329.32	-1,725.40	1,351.31	1,203.48	147.84	9.141	
15,350.00	11,173.00	15,338.27	11,153.00	74.80	74.69	89.28	-4,379.32	-1,725.32	1,351.37	1,202.30	149.07	9.065	
15,400.00	11,173.00	15,388.27	11,153.00	75.42	75.31	89.28	-4,429.32	-1,725.25	1,351.43	1,201.13	150.30	8.991	
15,450.00	11,173.00	15,438.27	11,153.00	76.04	75.92	89.28	-4,479.32	-1,725.17	1,351.50	1,199.95	151.55	8.918	
15,500.00	11,173.00	15,488.27	11,153.00	76.66	76.54	89.28	-4,529.32	-1,725.10	1,351.56	1,198.77	152.79	8.846	
15,550.00	11,173.00	15,538.27	11,153.00	77.28	77.16	89.28	-4,579.32	-1,725.02	1,351.62	1,197.58	154.04	8.775	
15,600.00	11,173.00	15,588.27	11,153.00	77.91	77.79	89.28	-4,629.32	-1,724.95	1,351.68	1,196.39	155.29	8.704	
15,650.00	11,173.00	15,638.27	11,153.00	78.54	78.41	89.28	-4,679.32	-1,724.87	1,351.74	1,195.19	156.54	8.635	
15,700.00	11,173.00	15,688.27	11,153.00	79.16	79.04	89.28	-4,729.32	-1,724.80	1,351.80	1,194.00	157.80	8.567	
15,750.00	11,173.00	15,738.27	11,153.00	79.79	79.67	89.28	-4,779.32	-1,724.72	1,351.86	1,192.80	159.06	8.499	
15,800.00	11,173.00	15,788.27	11,153.00	80.42	80.30	89.28	-4,829.32	-1,724.65	1,351.92	1,191.59	160.32	8.432	
15,850.00	11,173.00	15,838.27	11,153.00	81.06	80.93	89.28	-4,879.32	-1,724.57	1,351.98	1,190.39	161.59	8.367	
15,900.00	11,173.00	15,888.27	11,153.00	81.69	81.56	89.28	-4,929.32	-1,724.50	1,352.04	1,189.18	162.86	8.302	
15,950.00	11,173.00	15,938.27	11,153.00	82.33	82.20	89.28	-4,979.32	-1,724.42	1,352.10	1,187.96	164.14	8.238	
16,000.00	11,173.00	15,988.27	11,153.00	82.97	82.83	89.28	-5,029.32	-1,724.35	1,352.16	1,186.75	165.41	8.174	
16,050.00	11,173.00	16,038.27	11,153.00	83.61	83.47	89.28	-5,079.32	-1,724.27	1,352.22	1,185.53	166.69	8.112	
16,100.00	11,173.00	16,088.27	11,153.00	84.25	84.11	89.28	-5,129.32	-1,724.20	1,352.28	1,184.30	167.97	8.050	
16,150.00	11,173.00	16,138.27	11,153.00	84.89	84.75	89.28	-5,179.32	-1,724.12	1,352.34	1,183.08	169.26	7.990	
16,200.00	11,173.00	16,188.27	11,153.00	85.53	85.39	89.28	-5,229.32	-1,724.05	1,352.40	1,181.85	170.55	7.930	
16,250.00	11,173.00	16,238.27	11,153.00	86.18	86.03	89.28	-5,279.32	-1,723.97	1,352.46	1,180.62	171.84	7.870	
16,300.00	11,173.00	16,288.27	11,153.00	86.82	86.68	89.28	-5,329.32	-1,723.90	1,352.52	1,179.39	173.13	7.812	
16,350.00	11,173.00	16,338.27	11,153.00	87.47	87.32	89.28	-5,379.32	-1,723.82	1,352.58	1,178.15	174.43	7.754	
16,400.00	11,173.00	16,388.27	11,153.00	88.12	87.97	89.28	-5,429.32	-1,723.75	1,352.64	1,176.92	175.73	7.697	
16,450.00	11,173.00	16,438.27	11,153.00	88.77	88.62	89.28	-5,479.32	-1,723.67	1,352.70	1,175.68	177.03	7.641	
16,500.00	11,173.00	16,488.27	11,153.00	89.42	89.27	89.28	-5,529.32	-1,723.60	1,352.76	1,174.43	178.33	7.586	
16,550.00	11,173.00	16,538.27	11,153.00	90.07	89.92	89.28	-5,579.32	-1,723.52	1,352.82	1,173.19	179.63	7.531	
16,600.00	11,173.00	16,588.27	11,153.00	90.73	90.57	89.28	-5,629.32	-1,723.45	1,352.88	1,171.94	180.94	7.477	
16,650.00	11,173.00	16,638.27	11,153.00	91.38	91.22	89.28	-5,679.32	-1,723.37	1,352.94	1,170.69	182.25	7.423	
16,700.00	11,173.00	16,688.27	11,153.00	92.04	91.88	89.28	-5,729.32	-1,723.30	1,353.00	1,169.44	183.56	7.371	
16,750.00	11,173.00	16,738.27	11,153.00	92.69	92.53	89.28	-5,779.32	-1,723.22	1,353.06	1,168.19	184.88	7.319	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 333H - 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
16,800.00	11,173.00	16,788.27	11,153.00	93.35	93.19	89.28	-5,829.32	-1,723.15	1,353.12	1,166.93	186.19	7.267	
16,850.00	11,173.00	16,838.27	11,153.00	94.01	93.85	89.28	-5,879.32	-1,723.07	1,353.18	1,165.67	187.51	7.217	
16,900.00	11,173.00	16,888.27	11,153.00	94.67	94.51	89.28	-5,929.32	-1,723.00	1,353.24	1,164.41	188.83	7.166	
16,950.00	11,173.00	16,938.27	11,153.00	95.33	95.16	89.28	-5,979.32	-1,722.92	1,353.31	1,163.15	190.15	7.117	
17,000.00	11,173.00	16,988.27	11,153.00	95.99	95.82	89.28	-6,029.32	-1,722.85	1,353.37	1,161.89	191.48	7.068	
17,050.00	11,173.00	17,038.27	11,153.00	96.65	96.49	89.28	-6,079.32	-1,722.77	1,353.43	1,160.62	192.80	7.020	
17,100.00	11,173.00	17,088.27	11,153.00	97.32	97.15	89.28	-6,129.32	-1,722.70	1,353.49	1,159.36	194.13	6.972	
17,150.00	11,173.00	17,138.27	11,153.00	97.98	97.81	89.28	-6,179.32	-1,722.62	1,353.55	1,158.09	195.46	6.925	
17,200.00	11,173.00	17,188.27	11,153.00	98.65	98.48	89.28	-6,229.32	-1,722.55	1,353.61	1,156.82	196.79	6.878	
17,250.00	11,173.00	17,238.27	11,153.00	99.31	99.14	89.28	-6,279.32	-1,722.47	1,353.67	1,155.54	198.12	6.832	
17,300.00	11,173.00	17,288.27	11,153.00	99.98	99.81	89.28	-6,329.32	-1,722.40	1,353.73	1,154.27	199.46	6.787	
17,350.00	11,173.00	17,338.27	11,153.00	100.65	100.47	89.28	-6,379.32	-1,722.32	1,353.79	1,152.99	200.79	6.742	
17,400.00	11,173.00	17,388.27	11,153.00	101.31	101.14	89.28	-6,429.32	-1,722.25	1,353.85	1,151.72	202.13	6.698	
17,450.00	11,173.00	17,438.27	11,153.00	101.98	101.81	89.28	-6,479.32	-1,722.17	1,353.91	1,150.44	203.47	6.654	
17,500.00	11,173.00	17,488.27	11,153.00	102.65	102.48	89.28	-6,529.32	-1,722.10	1,353.97	1,149.16	204.81	6.611	
17,550.00	11,173.00	17,538.27	11,153.00	103.33	103.15	89.28	-6,579.32	-1,722.02	1,354.03	1,147.87	206.16	6.568	
17,600.00	11,173.00	17,588.27	11,153.00	104.00	103.82	89.28	-6,629.32	-1,721.95	1,354.09	1,146.59	207.50	6.526	
17,650.00	11,173.00	17,638.27	11,153.00	104.67	104.49	89.28	-6,679.31	-1,721.87	1,354.15	1,145.31	208.84	6.484	
17,700.00	11,173.00	17,688.27	11,153.00	105.34	105.16	89.28	-6,729.31	-1,721.80	1,354.21	1,144.02	210.19	6.443	
17,750.00	11,173.00	17,738.27	11,153.00	106.02	105.83	89.28	-6,779.31	-1,721.72	1,354.27	1,142.73	211.54	6.402	
17,800.00	11,173.00	17,788.27	11,153.00	106.69	106.51	89.29	-6,829.31	-1,721.65	1,354.33	1,141.44	212.89	6.362	
17,850.00	11,173.00	17,838.27	11,153.00	107.37	107.18	89.29	-6,879.31	-1,721.57	1,354.39	1,140.15	214.24	6.322	
17,900.00	11,173.00	17,888.27	11,153.00	108.04	107.86	89.29	-6,929.31	-1,721.50	1,354.45	1,138.86	215.59	6.282	
17,950.00	11,173.00	17,938.27	11,153.00	108.72	108.53	89.29	-6,979.31	-1,721.42	1,354.51	1,137.57	216.95	6.244	
18,000.00	11,173.00	17,988.27	11,153.00	109.40	109.21	89.29	-7,029.31	-1,721.35	1,354.57	1,136.27	218.30	6.205	
18,050.00	11,173.00	18,038.27	11,153.00	110.07	109.88	89.29	-7,079.31	-1,721.27	1,354.63	1,134.97	219.66	6.167	
18,100.00	11,173.00	18,088.27	11,153.00	110.75	110.56	89.29	-7,129.31	-1,721.20	1,354.69	1,133.68	221.01	6.129	
18,150.00	11,173.00	18,138.27	11,153.00	111.43	111.24	89.29	-7,179.31	-1,721.12	1,354.75	1,132.38	222.37	6.092	
18,200.00	11,173.00	18,188.27	11,153.00	112.11	111.92	89.29	-7,229.31	-1,721.05	1,354.81	1,131.08	223.73	6.055	
18,250.00	11,173.00	18,238.27	11,153.00	112.79	112.60	89.29	-7,279.31	-1,720.97	1,354.87	1,129.78	225.09	6.019	
18,300.00	11,173.00	18,288.27	11,153.00	113.47	113.28	89.29	-7,329.31	-1,720.90	1,354.93	1,128.48	226.46	5.983	
18,350.00	11,173.00	18,338.27	11,153.00	114.15	113.96	89.29	-7,379.31	-1,720.82	1,354.99	1,127.17	227.82	5.948	
18,400.00	11,173.00	18,388.27	11,153.00	114.83	114.64	89.29	-7,429.31	-1,720.75	1,355.05	1,125.87	229.18	5.913	
18,450.00	11,173.00	18,438.27	11,153.00	115.52	115.32	89.29	-7,479.31	-1,720.67	1,355.12	1,124.57	230.55	5.878	
18,500.00	11,173.00	18,488.27	11,153.00	116.20	116.00	89.29	-7,529.31	-1,720.60	1,355.18	1,123.26	231.92	5.843	
18,550.00	11,173.00	18,538.27	11,153.00	116.88	116.68	89.29	-7,579.31	-1,720.52	1,355.24	1,121.95	233.28	5.809	
18,600.00	11,173.00	18,588.27	11,153.00	117.57	117.37	89.29	-7,629.31	-1,720.45	1,355.30	1,120.64	234.65	5.776	
18,650.00	11,173.00	18,638.27	11,153.00	118.25	118.05	89.29	-7,679.31	-1,720.37	1,355.36	1,119.33	236.02	5.742	
18,700.00	11,173.00	18,688.27	11,153.00	118.94	118.74	89.29	-7,729.31	-1,720.30	1,355.42	1,118.02	237.39	5.710	
18,750.00	11,173.00	18,738.27	11,153.00	119.62	119.42	89.29	-7,779.31	-1,720.22	1,355.48	1,116.71	238.76	5.677	
18,800.00	11,173.00	18,788.27	11,153.00	120.31	120.11	89.29	-7,829.31	-1,720.15	1,355.54	1,115.40	240.14	5.645	
18,850.00	11,173.00	18,838.27	11,153.00	121.00	120.79	89.29	-7,879.31	-1,720.07	1,355.60	1,114.09	241.51	5.613	
18,900.00	11,173.00	18,888.27	11,153.00	121.68	121.48	89.29	-7,929.31	-1,720.00	1,355.66	1,112.77	242.89	5.581	
18,950.00	11,173.00	18,938.27	11,153.00	122.37	122.16	89.29	-7,979.31	-1,719.92	1,355.72	1,111.46	244.26	5.550	
19,000.00	11,173.00	18,988.27	11,153.00	123.06	122.85	89.29	-8,029.31	-1,719.85	1,355.78	1,110.14	245.64	5.519	
19,050.00	11,173.00	19,038.27	11,153.00	123.75	123.54	89.29	-8,079.31	-1,719.77	1,355.84	1,108.82	247.01	5.489	
19,100.00	11,173.00	19,088.27	11,153.00	124.44	124.23	89.29	-8,129.31	-1,719.70	1,355.90	1,107.51	248.39	5.459	
19,150.00	11,173.00	19,138.27	11,153.00	125.12	124.91	89.29	-8,179.31	-1,719.62	1,355.96	1,106.19	249.77	5.429	
19,200.00	11,173.00	19,188.27	11,153.00	125.81	125.60	89.29	-8,229.31	-1,719.55	1,356.02	1,104.87	251.15	5.399	
19,250.00	11,173.00	19,238.27	11,153.00	126.50	126.29	89.29	-8,279.31	-1,719.47	1,356.08	1,103.55	252.53	5.370	
19,300.00	11,173.00	19,288.27	11,153.00	127.19	126.98	89.29	-8,329.31	-1,719.40	1,356.14	1,102.23	253.91	5.341	
19,350.00	11,173.00	19,338.27	11,153.00	127.89	127.67	89.29	-8,379.31	-1,719.32	1,356.20	1,100.91	255.30	5.312	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 333H - 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
19,400.00	11,173.00	19,388.27	11,153.00	128.58	128.36	89.29	-8,429.31	-1,719.25	1,356.26	1,099.58	256.68	5.284	
19,450.00	11,173.00	19,438.27	11,153.00	129.27	129.05	89.29	-8,479.31	-1,719.17	1,356.32	1,098.26	258.06	5.256	
19,500.00	11,173.00	19,488.27	11,153.00	129.96	129.74	89.29	-8,529.31	-1,719.10	1,356.38	1,096.94	259.45	5.228	
19,550.00	11,173.00	19,538.27	11,153.00	130.65	130.44	89.29	-8,579.31	-1,719.02	1,356.44	1,095.61	260.83	5.200	
19,600.00	11,173.00	19,588.27	11,153.00	131.35	131.13	89.29	-8,629.31	-1,718.95	1,356.50	1,094.29	262.22	5.173	
19,650.00	11,173.00	19,638.27	11,153.00	132.04	131.82	89.29	-8,679.31	-1,718.87	1,356.56	1,092.96	263.60	5.146	
19,700.00	11,173.00	19,688.27	11,153.00	132.73	132.51	89.29	-8,729.31	-1,718.80	1,356.62	1,091.63	264.99	5.120	
19,750.00	11,173.00	19,738.27	11,153.00	133.43	133.21	89.29	-8,779.31	-1,718.72	1,356.68	1,090.30	266.38	5.093	
19,800.00	11,173.00	19,788.27	11,153.00	134.12	133.90	89.29	-8,829.31	-1,718.65	1,356.74	1,088.98	267.77	5.067	
19,850.00	11,173.00	19,838.27	11,153.00	134.82	134.59	89.29	-8,879.31	-1,718.57	1,356.80	1,087.65	269.16	5.041	
19,900.00	11,173.00	19,888.27	11,153.00	135.51	135.29	89.29	-8,929.31	-1,718.50	1,356.86	1,086.32	270.55	5.015	
19,950.00	11,173.00	19,938.27	11,153.00	136.21	135.98	89.29	-8,979.31	-1,718.42	1,356.93	1,084.99	271.94	4.990	Alert
20,000.00	11,173.00	19,988.27	11,153.00	136.90	136.68	89.29	-9,029.31	-1,718.35	1,356.99	1,083.66	273.33	4.965	Alert
20,050.00	11,173.00	20,038.27	11,153.00	137.60	137.37	89.29	-9,079.31	-1,718.27	1,357.05	1,082.32	274.72	4.940	Alert
20,100.00	11,173.00	20,088.27	11,153.00	138.29	138.07	89.29	-9,129.31	-1,718.20	1,357.11	1,080.99	276.12	4.915	Alert
20,150.00	11,173.00	20,138.27	11,153.00	138.99	138.76	89.29	-9,179.31	-1,718.12	1,357.17	1,079.66	277.51	4.891	Alert
20,200.00	11,173.00	20,188.27	11,153.00	139.69	139.46	89.29	-9,229.31	-1,718.05	1,357.23	1,078.32	278.90	4.866	Alert
20,250.00	11,173.00	20,238.27	11,153.00	140.38	140.16	89.29	-9,279.31	-1,717.97	1,357.29	1,076.99	280.30	4.842	Alert
20,300.00	11,173.00	20,288.27	11,153.00	141.08	140.85	89.29	-9,329.31	-1,717.90	1,357.35	1,075.65	281.69	4.819	Alert
20,350.00	11,173.00	20,338.27	11,153.00	141.78	141.55	89.29	-9,379.31	-1,717.82	1,357.41	1,074.32	283.09	4.795	Alert
20,400.00	11,173.00	20,388.27	11,153.00	142.48	142.25	89.29	-9,429.31	-1,717.75	1,357.47	1,072.98	284.48	4.772	Alert
20,450.00	11,173.00	20,438.27	11,153.00	143.18	142.95	89.29	-9,479.31	-1,717.67	1,357.53	1,071.65	285.88	4.749	Alert
20,500.00	11,173.00	20,488.27	11,153.00	143.87	143.64	89.29	-9,529.31	-1,717.60	1,357.59	1,070.31	287.28	4.726	Alert
20,550.00	11,173.00	20,538.27	11,153.00	144.57	144.34	89.29	-9,579.31	-1,717.52	1,357.65	1,068.97	288.68	4.703	Alert
20,600.00	11,173.00	20,588.27	11,153.00	145.27	145.04	89.29	-9,629.31	-1,717.45	1,357.71	1,067.63	290.08	4.681	Alert
20,650.00	11,173.00	20,638.27	11,153.00	145.97	145.74	89.29	-9,679.31	-1,717.37	1,357.77	1,066.29	291.48	4.658	Alert
20,700.00	11,173.00	20,688.27	11,153.00	146.67	146.44	89.29	-9,729.31	-1,717.30	1,357.83	1,064.96	292.87	4.636	Alert
20,750.00	11,173.00	20,738.27	11,153.00	147.37	147.14	89.29	-9,779.31	-1,717.22	1,357.89	1,063.62	294.27	4.614	Alert
20,800.00	11,173.00	20,788.27	11,153.00	148.07	147.84	89.29	-9,829.31	-1,717.15	1,357.95	1,062.28	295.68	4.593	Alert
20,850.00	11,173.00	20,838.27	11,153.00	148.77	148.54	89.29	-9,879.31	-1,717.07	1,358.01	1,060.93	297.08	4.571	Alert
20,900.00	11,173.00	20,888.27	11,153.00	149.47	149.24	89.29	-9,929.31	-1,717.00	1,358.07	1,059.59	298.48	4.550	Alert
20,950.00	11,173.00	20,938.27	11,153.00	150.17	149.94	89.29	-9,979.31	-1,716.92	1,358.13	1,058.25	299.88	4.529	Alert
21,000.00	11,173.00	20,988.27	11,153.00	150.88	150.64	89.29	-10,029.31	-1,716.85	1,358.19	1,056.91	301.28	4.508	Alert
21,050.00	11,173.00	21,038.27	11,153.00	151.58	151.34	89.29	-10,079.31	-1,716.77	1,358.25	1,055.57	302.69	4.487	Alert
21,100.00	11,173.00	21,088.27	11,153.00	152.28	152.04	89.29	-10,129.31	-1,716.70	1,358.31	1,054.22	304.09	4.467	Alert
21,150.00	11,173.00	21,138.27	11,153.00	152.98	152.74	89.29	-10,179.31	-1,716.62	1,358.37	1,052.88	305.49	4.446	Alert
21,200.00	11,173.00	21,188.27	11,153.00	153.68	153.44	89.29	-10,229.31	-1,716.55	1,358.43	1,051.53	306.90	4.426	Alert
21,250.00	11,173.00	21,238.27	11,153.00	154.39	154.14	89.29	-10,279.31	-1,716.47	1,358.49	1,050.19	308.30	4.406	Alert
21,300.00	11,173.00	21,288.27	11,153.00	155.09	154.85	89.29	-10,329.31	-1,716.40	1,358.55	1,048.84	309.71	4.387	Alert
21,307.62	11,173.00	21,295.89	11,153.00	155.19	154.95	89.29	-10,336.93	-1,716.39	1,358.56	1,048.64	309.92	4.384	Alert, ES, SF

Anticollision Report

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	5.93	938.85	938.87				
50.00	50.00	48.03	48.03	0.50	0.51	89.63	6.07	938.87	938.89	937.88	1.01	932.159	
100.00	100.00	97.33	97.33	0.52	0.52	89.60	6.50	938.92	938.94	937.90	1.04	903.832	
150.00	150.00	146.78	146.77	0.59	0.55	89.56	7.23	939.00	939.03	937.89	1.14	824.230	
200.00	200.00	198.95	198.94	0.70	0.65	89.51	8.04	939.04	939.08	937.73	1.35	696.532	
230.10	230.10	228.82	228.80	0.78	0.72	89.48	8.48	939.03	939.07	937.57	1.50	626.383	
250.00	250.00	248.41	248.39	0.84	0.77	89.46	8.79	939.03	939.08	937.47	1.61	584.559	
300.00	300.00	297.64	297.61	0.99	0.91	89.41	9.68	939.06	939.11	937.22	1.90	495.489	
350.00	350.00	346.93	346.90	1.15	1.06	89.36	10.49	939.13	939.19	936.99	2.20	426.475	
400.00	400.00	396.68	396.64	1.31	1.21	89.32	11.09	939.24	939.30	936.78	2.52	372.396	
450.00	450.00	451.21	451.17	1.48	1.39	89.29	11.62	939.22	939.29	936.43	2.86	327.909	
500.00	500.00	504.65	504.60	1.65	1.56	89.26	12.08	938.95	939.05	935.84	3.21	292.640	
550.00	550.00	556.01	555.96	1.82	1.73	89.24	12.37	938.59	938.70	935.15	3.55	264.407	
600.00	600.00	605.26	605.21	1.99	1.90	89.22	12.71	938.23	938.34	934.45	3.89	241.344	
650.00	650.00	654.98	654.93	2.16	2.07	89.20	13.10	937.89	938.00	933.77	4.23	221.748	
700.00	700.00	704.69	704.64	2.34	2.23	89.17	13.50	937.56	937.68	933.10	4.57	205.014	
750.00	750.00	754.41	754.35	2.51	2.40	89.15	13.92	937.25	937.37	932.45	4.92	190.571	
800.00	800.00	806.66	806.60	2.69	2.58	89.12	14.40	936.89	937.03	931.76	5.27	177.681	
850.00	850.00	860.42	860.35	2.87	2.77	89.08	15.04	936.32	936.51	930.88	5.63	166.201	
900.00	900.00	912.16	912.08	3.04	2.95	89.03	15.81	935.61	935.84	929.85	5.99	156.220	
950.00	950.00	963.60	963.51	3.22	3.13	88.98	16.70	934.82	935.08	928.74	6.35	147.352	
1,000.00	1,000.00	1,010.91	1,010.81	3.40	3.18	88.92	17.66	934.09	934.34	927.76	6.58	142.020	
1,050.00	1,050.00	1,055.49	1,055.37	3.58	3.19	88.87	18.47	933.63	933.84	927.07	6.77	138.011	
1,100.00	1,100.00	1,099.21	1,099.09	3.75	3.21	88.82	19.16	933.44	933.64	926.68	6.96	134.091	
1,102.88	1,102.88	1,101.70	1,101.58	3.76	3.21	88.82	19.20	933.44	933.64	926.66	6.97	133.868 CC	
1,150.00	1,150.00	1,142.43	1,142.30	3.93	3.23	88.78	19.94	933.56	933.80	926.63	7.16	130.343 ES	
1,200.00	1,200.00	1,186.77	1,186.63	4.11	3.27	88.72	20.88	934.00	934.31	926.93	7.37	126.698	
1,250.00	1,250.00	1,232.10	1,231.94	4.29	3.31	88.65	22.04	934.67	935.08	927.49	7.59	123.159	
1,300.00	1,300.00	1,278.31	1,278.12	4.46	3.36	88.56	23.45	935.57	936.09	928.27	7.82	119.727	
1,350.00	1,350.00	1,325.59	1,325.36	4.64	3.42	88.47	25.08	936.63	937.26	929.21	8.05	116.387	
1,400.00	1,400.00	1,372.61	1,372.33	4.82	3.48	88.36	26.90	937.83	938.58	930.29	8.30	113.131	
1,450.00	1,450.00	1,419.31	1,418.97	5.00	3.55	88.24	28.92	939.16	940.08	931.53	8.55	110.007	
1,500.00	1,500.00	1,465.05	1,464.62	5.18	3.63	88.11	31.11	940.63	941.76	932.96	8.80	107.029	
1,550.00	1,550.00	1,509.77	1,509.26	5.36	3.71	87.97	33.47	942.29	943.71	934.65	9.06	104.200	
1,600.00	1,600.00	1,556.90	1,556.26	5.53	3.80	87.81	36.19	944.26	945.91	936.59	9.32	101.443	
1,650.00	1,650.00	1,607.16	1,606.38	5.71	3.90	87.62	39.40	946.38	948.15	938.54	9.61	98.703	
1,700.00	1,700.00	1,655.35	1,654.41	5.89	4.01	87.42	42.76	948.41	950.41	940.52	9.89	96.111	
1,750.00	1,750.00	1,702.06	1,700.94	6.07	4.11	87.22	46.23	950.50	952.82	942.65	10.17	93.673	
1,800.00	1,800.00	1,751.80	1,750.48	6.25	4.23	86.99	50.05	952.84	955.37	944.90	10.47	91.258	
1,850.00	1,850.00	1,803.49	1,801.97	6.43	4.36	86.77	53.87	955.19	957.85	947.08	10.77	88.898	
1,900.00	1,900.00	1,852.42	1,850.73	6.61	4.49	86.57	57.43	957.39	960.31	949.23	11.08	86.679	
1,950.00	1,950.00	1,900.62	1,898.73	6.78	4.62	86.35	61.14	959.61	962.85	951.47	11.38	84.590	
2,000.00	2,000.00	1,952.00	1,949.89	6.96	4.76	86.12	65.23	961.98	965.43	953.73	11.70	82.504	
2,050.00	2,050.00	2,004.06	2,001.74	7.14	4.90	85.89	69.33	964.28	967.90	955.88	12.02	80.495	
2,100.00	2,100.00	2,057.04	2,054.52	7.32	5.06	85.66	73.39	966.47	970.26	957.90	12.36	78.528	
2,150.00	2,150.00	2,110.06	2,107.35	7.50	5.21	85.44	77.32	968.50	972.46	959.77	12.69	76.651	
2,200.00	2,200.00	2,154.73	2,151.87	7.68	5.35	85.25	80.58	970.30	974.77	961.77	13.00	75.004	
2,250.00	2,250.00	2,200.52	2,197.49	7.86	5.48	85.07	83.89	972.31	977.27	963.96	13.31	73.431	
2,300.00	2,300.00	2,244.48	2,241.27	8.04	5.62	84.89	87.22	974.47	980.04	966.43	13.62	71.966	
2,350.00	2,350.00	2,288.38	2,284.96	8.22	5.75	84.69	90.78	976.85	983.13	969.20	13.93	70.593	
2,400.00	2,400.00	2,338.99	2,335.31	8.39	5.92	84.46	95.03	979.72	986.36	972.10	14.26	69.152	
2,450.00	2,450.00	2,389.70	2,385.77	8.57	6.08	84.23	99.29	982.55	989.56	974.96	14.60	67.772	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	2,439.99	2,435.81	8.75	6.24	84.01	103.44	985.32	992.73	977.79	14.94	66.447	
2,550.00	2,550.00	2,490.54	2,486.12	8.93	6.41	83.79	107.51	988.09	995.89	980.61	15.28	65.174	
2,600.00	2,600.00	2,541.78	2,537.12	9.11	6.57	83.58	111.52	990.85	999.00	983.38	15.63	63.936	
2,650.00	2,650.00	2,594.37	2,589.49	9.29	6.75	83.37	115.49	993.60	1,002.04	986.07	15.98	62.723	
2,700.00	2,700.00	2,649.24	2,644.14	9.47	6.93	83.16	119.55	996.25	1,004.88	988.54	16.34	61.513	
2,750.00	2,750.00	2,702.89	2,697.60	9.65	7.11	82.95	123.49	998.59	1,007.49	990.80	16.69	60.355	
2,800.00	2,800.00	2,755.83	2,750.35	9.83	7.29	82.74	127.49	1,000.71	1,009.96	992.91	17.05	59.243	
2,850.00	2,850.00	2,807.97	2,802.30	10.00	7.46	82.53	131.49	1,002.65	1,012.29	994.89	17.40	58.175	
2,900.00	2,900.00	2,859.97	2,854.12	10.18	7.64	82.32	135.41	1,004.47	1,014.54	996.79	17.75	57.145	
2,950.00	2,950.00	2,905.59	2,899.58	10.36	7.79	82.14	138.87	1,006.12	1,016.85	998.76	18.08	56.228	
3,000.00	3,000.00	2,951.19	2,945.00	10.54	7.95	81.96	142.41	1,007.94	1,019.37	1,000.96	18.41	55.358	
3,050.00	3,050.00	2,996.45	2,990.07	10.72	8.11	166.59	146.03	1,009.93	1,022.33	1,003.59	18.74	54.553	
3,100.00	3,099.99	3,041.62	3,035.04	10.89	8.26	166.40	149.78	1,012.10	1,025.95	1,006.89	19.07	53.812	
3,150.00	3,149.98	3,092.42	3,085.60	11.06	8.44	166.19	154.00	1,014.65	1,030.11	1,010.70	19.41	53.069	
3,200.00	3,199.96	3,144.34	3,137.29	11.24	8.62	166.00	158.06	1,017.19	1,034.61	1,014.85	19.76	52.356	
3,250.00	3,249.92	3,192.16	3,184.92	11.41	8.79	165.83	161.69	1,019.54	1,039.52	1,019.43	20.09	51.730	
3,300.00	3,299.86	3,239.95	3,232.51	11.58	8.96	165.67	165.32	1,021.97	1,044.95	1,024.52	20.43	51.151	
3,350.00	3,349.79	3,284.85	3,277.20	11.75	9.12	165.53	168.88	1,024.37	1,050.87	1,030.12	20.75	50.638	
3,400.00	3,399.71	3,329.73	3,321.84	11.93	9.28	165.38	172.69	1,026.92	1,057.05	1,035.98	21.07	50.157	
3,450.00	3,449.63	3,382.95	3,374.78	12.10	9.47	165.20	177.28	1,029.99	1,063.28	1,041.84	21.43	49.605	
3,500.00	3,499.56	3,437.15	3,428.72	12.27	9.66	165.03	181.67	1,032.92	1,069.30	1,047.50	21.80	49.052	
3,550.00	3,549.48	3,489.21	3,480.56	12.45	9.85	164.89	185.67	1,035.61	1,075.17	1,053.02	22.15	48.531	
3,600.00	3,599.40	3,540.68	3,531.83	12.62	10.03	164.75	189.47	1,038.17	1,080.93	1,058.42	22.51	48.026	
3,650.00	3,649.33	3,590.39	3,581.34	12.80	10.21	164.62	193.14	1,040.61	1,086.66	1,063.80	22.85	47.550	
3,700.00	3,699.25	3,642.26	3,633.01	12.97	10.39	164.48	197.00	1,043.12	1,092.37	1,069.16	23.21	47.068	
3,750.00	3,749.17	3,697.14	3,687.69	13.15	10.59	164.34	200.95	1,045.58	1,097.88	1,074.31	23.58	46.567	
3,800.00	3,799.10	3,752.32	3,742.70	13.32	10.78	164.22	204.70	1,047.83	1,103.16	1,079.22	23.95	46.070	
3,850.00	3,849.02	3,807.69	3,797.93	13.50	10.98	164.11	208.04	1,049.87	1,108.20	1,083.88	24.31	45.577	
3,900.00	3,898.94	3,865.56	3,855.68	13.67	11.18	164.00	211.31	1,051.68	1,112.92	1,088.23	24.69	45.071	
3,950.00	3,948.87	3,923.56	3,913.56	13.85	11.39	163.89	214.63	1,053.06	1,117.28	1,092.21	25.07	44.565	
4,000.00	3,998.79	3,978.61	3,968.54	14.02	11.58	163.81	217.35	1,054.13	1,121.37	1,095.93	25.44	44.085	
4,050.00	4,048.71	4,030.36	4,020.23	14.20	11.76	163.75	219.50	1,054.99	1,125.24	1,099.45	25.79	43.632	
4,100.00	4,098.64	4,079.57	4,069.40	14.38	11.93	163.72	221.18	1,055.89	1,129.12	1,102.99	26.13	43.207	
4,150.00	4,148.56	4,128.00	4,117.81	14.55	12.09	163.70	222.57	1,056.87	1,133.04	1,106.57	26.47	42.799	
4,200.00	4,198.48	4,176.04	4,165.82	14.73	12.26	163.68	223.89	1,057.92	1,137.04	1,110.22	26.81	42.408	
4,250.00	4,248.41	4,232.07	4,221.81	14.91	12.45	163.66	225.40	1,059.10	1,140.99	1,113.81	27.18	41.978	
4,300.00	4,298.33	4,291.78	4,281.49	15.08	12.65	163.64	226.92	1,059.89	1,144.54	1,116.98	27.56	41.528	
4,350.00	4,348.25	4,347.79	4,337.49	15.26	12.84	163.63	228.14	1,060.28	1,147.75	1,119.82	27.93	41.098	
4,400.00	4,398.18	4,401.58	4,391.27	15.44	13.03	163.63	229.04	1,060.42	1,150.70	1,122.42	28.29	40.682	
4,450.00	4,448.10	4,451.65	4,441.34	15.62	13.20	163.63	229.79	1,060.52	1,153.60	1,124.97	28.63	40.291	
4,500.00	4,498.02	4,502.57	4,492.26	15.79	13.37	163.63	230.50	1,060.61	1,156.48	1,127.50	28.98	39.906	
4,550.00	4,547.94	4,554.32	4,544.00	15.97	13.54	163.64	231.18	1,060.64	1,159.30	1,129.96	29.33	39.523	
4,600.00	4,597.87	4,604.42	4,594.10	16.15	13.71	163.65	231.78	1,060.62	1,162.05	1,132.37	29.68	39.155	
4,650.00	4,647.79	4,653.73	4,643.41	16.33	13.88	163.66	232.31	1,060.64	1,164.83	1,134.81	30.02	38.799	
4,700.00	4,697.71	4,703.04	4,692.71	16.51	14.05	163.68	232.79	1,060.69	1,167.63	1,137.27	30.37	38.451	
4,750.00	4,747.64	4,752.34	4,742.01	16.68	14.22	163.69	233.28	1,060.77	1,170.46	1,139.75	30.71	38.111	
4,800.00	4,797.56	4,801.91	4,791.58	16.86	14.38	163.71	233.77	1,060.87	1,173.32	1,142.26	31.06	37.778	
4,850.00	4,847.48	4,851.54	4,841.20	17.04	14.55	163.72	234.30	1,060.97	1,176.18	1,144.78	31.40	37.453	
4,900.00	4,897.41	4,903.06	4,892.72	17.22	14.73	163.74	234.84	1,061.05	1,179.02	1,147.26	31.76	37.126	
4,950.00	4,947.33	4,954.77	4,944.43	17.40	14.91	163.75	235.31	1,061.07	1,181.79	1,149.67	32.11	36.803	
5,000.00	4,997.25	5,005.05	4,994.71	17.58	15.08	163.77	235.75	1,061.05	1,184.51	1,152.05	32.46	36.492	
5,050.00	5,047.18	5,055.47	5,045.13	17.76	15.25	163.78	236.21	1,061.01	1,187.21	1,154.40	32.81	36.186	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	5,097.10	5,106.05	5,095.70	17.93	15.42	163.80	236.68	1,060.93	1,189.89	1,156.73	33.16	35.885	
5,150.00	5,147.02	5,155.65	5,145.30	18.11	15.59	163.81	237.13	1,060.84	1,192.55	1,159.04	33.50	35.593	
5,200.00	5,196.95	5,203.07	5,192.72	18.29	15.75	163.84	237.42	1,060.86	1,195.28	1,161.43	33.84	35.317	
5,250.00	5,246.87	5,251.33	5,240.98	18.47	15.91	163.87	237.54	1,061.00	1,198.11	1,163.92	34.19	35.047	
5,300.00	5,296.79	5,301.52	5,291.17	18.65	16.08	163.90	237.61	1,061.17	1,200.95	1,166.42	34.53	34.777	
5,350.00	5,346.72	5,351.70	5,341.35	18.83	16.25	163.94	237.67	1,061.34	1,203.79	1,168.91	34.88	34.511	
5,400.00	5,396.64	5,401.85	5,391.49	19.01	16.42	163.97	237.73	1,061.50	1,206.62	1,171.39	35.23	34.250	
5,450.00	5,446.56	5,452.26	5,441.91	19.19	16.60	164.01	237.79	1,061.64	1,209.43	1,173.85	35.58	33.993	
5,500.00	5,496.49	5,502.93	5,492.58	19.37	16.77	164.04	237.86	1,061.76	1,212.22	1,176.29	35.93	33.738	
5,550.00	5,546.41	5,553.35	5,543.00	19.55	16.94	164.07	237.95	1,061.84	1,214.98	1,178.69	36.28	33.487	
5,600.00	5,596.33	5,603.63	5,593.28	19.73	17.11	164.11	238.04	1,061.90	1,217.72	1,181.09	36.63	33.241	
5,650.00	5,646.26	5,654.24	5,643.88	19.91	17.29	164.14	238.13	1,061.95	1,220.44	1,183.46	36.98	32.998	
5,700.00	5,696.18	5,704.96	5,694.61	20.09	17.46	164.17	238.26	1,061.95	1,223.14	1,185.80	37.34	32.759	
5,750.00	5,746.10	5,755.27	5,744.92	20.27	17.63	164.20	238.42	1,061.92	1,225.80	1,188.12	37.69	32.525	
5,800.00	5,796.03	5,805.52	5,795.16	20.45	17.81	164.22	238.59	1,061.88	1,228.46	1,190.42	38.04	32.295	
5,850.00	5,845.95	5,855.45	5,845.10	20.63	17.98	164.25	238.74	1,061.83	1,231.11	1,192.72	38.39	32.071	
5,900.00	5,895.87	5,905.40	5,895.05	20.81	18.15	164.28	238.85	1,061.79	1,233.75	1,195.02	38.74	31.850	
5,950.00	5,945.79	5,955.98	5,945.63	20.99	18.32	164.31	238.96	1,061.74	1,236.39	1,197.30	39.09	31.632	
6,000.00	5,995.72	6,006.57	5,996.22	21.17	18.49	164.34	239.12	1,061.65	1,239.00	1,199.56	39.44	31.417	
6,050.00	6,045.64	6,056.62	6,046.27	21.35	18.66	164.36	239.31	1,061.54	1,241.59	1,201.81	39.79	31.207	
6,100.00	6,095.56	6,106.85	6,096.49	21.53	18.84	164.39	239.53	1,061.41	1,244.18	1,204.04	40.14	30.999	
6,150.00	6,145.49	6,157.31	6,146.95	21.71	19.01	164.41	239.78	1,061.27	1,246.75	1,206.26	40.49	30.794	
6,200.00	6,195.41	6,207.91	6,197.55	21.89	19.18	164.43	240.04	1,061.09	1,249.29	1,208.46	40.84	30.593	
6,250.00	6,245.33	6,258.72	6,248.36	22.07	19.35	164.46	240.21	1,060.90	1,251.81	1,210.62	41.19	30.394	
6,300.00	6,295.26	6,309.29	6,298.93	22.25	19.52	164.49	240.28	1,060.69	1,254.29	1,212.75	41.53	30.200	
6,350.00	6,345.18	6,359.64	6,349.28	22.43	19.69	164.51	240.37	1,060.47	1,256.75	1,214.87	41.88	30.009	
6,400.00	6,395.10	6,408.52	6,398.16	22.61	19.85	164.54	240.49	1,060.24	1,259.22	1,216.99	42.22	29.824	
6,450.00	6,445.03	6,456.54	6,446.18	22.79	20.02	164.56	240.67	1,060.08	1,261.75	1,219.19	42.56	29.644	
6,500.00	6,494.95	6,505.43	6,495.07	22.97	20.18	164.59	240.88	1,059.97	1,264.35	1,221.44	42.91	29.465	
6,550.00	6,544.87	6,554.76	6,544.40	23.15	20.35	164.61	241.02	1,059.90	1,266.98	1,223.72	43.26	29.289	
6,600.00	6,594.80	6,604.72	6,594.36	23.33	20.52	164.64	241.09	1,059.86	1,269.62	1,226.01	43.61	29.115	
6,650.00	6,644.72	6,654.94	6,644.58	23.51	20.69	164.67	241.13	1,059.81	1,272.25	1,228.30	43.96	28.944	
6,700.00	6,694.64	6,705.97	6,695.60	23.69	20.87	164.70	241.16	1,059.74	1,274.86	1,230.55	44.31	28.774	
6,750.00	6,744.57	6,757.17	6,746.81	23.88	21.04	164.73	241.25	1,059.60	1,277.42	1,232.76	44.66	28.605	
6,800.00	6,794.49	6,805.39	6,795.03	24.06	21.20	164.76	241.33	1,059.48	1,279.98	1,234.98	45.00	28.443	
6,850.00	6,844.41	6,853.49	6,843.13	24.24	21.37	164.79	241.36	1,059.44	1,282.62	1,237.27	45.35	28.285	
6,900.00	6,894.34	6,903.45	6,893.09	24.42	21.54	164.82	241.36	1,059.44	1,285.29	1,239.60	45.69	28.130	
6,950.00	6,944.26	6,953.45	6,943.08	24.60	21.70	164.85	241.34	1,059.44	1,287.96	1,241.93	46.04	27.976	
7,000.00	6,994.18	7,003.63	6,993.27	24.78	21.87	164.89	241.31	1,059.44	1,290.63	1,244.25	46.38	27.829	
7,050.00	7,044.11	7,053.77	7,043.41	24.96	22.03	164.92	241.28	1,059.42	1,293.28	1,246.56	46.72	27.683	
7,100.00	7,094.03	7,103.73	7,093.36	25.14	22.19	164.96	241.23	1,059.41	1,295.93	1,248.88	47.06	27.539	
7,150.00	7,143.95	7,153.58	7,143.22	25.32	22.35	164.99	241.16	1,059.39	1,298.58	1,251.19	47.40	27.398	
7,200.00	7,193.87	7,203.16	7,192.80	25.50	22.51	165.03	241.01	1,059.40	1,301.25	1,253.51	47.74	27.259	
7,250.00	7,243.80	7,252.60	7,242.24	25.69	22.67	165.07	240.79	1,059.44	1,303.92	1,255.84	48.08	27.122	
7,300.00	7,293.72	7,301.80	7,291.44	25.87	22.83	165.11	240.56	1,059.50	1,306.62	1,258.21	48.42	26.988	
7,350.00	7,343.64	7,351.08	7,340.72	26.05	22.99	165.15	240.34	1,059.59	1,309.35	1,260.60	48.75	26.856	
7,400.00	7,393.57	7,400.47	7,390.10	26.23	23.15	165.19	240.11	1,059.70	1,312.10	1,263.00	49.10	26.725	
7,450.00	7,443.49	7,449.58	7,439.21	26.41	23.31	165.23	239.88	1,059.84	1,314.87	1,265.44	49.44	26.597	
7,500.00	7,493.41	7,498.43	7,488.06	26.59	23.47	165.27	239.66	1,060.01	1,317.69	1,267.91	49.78	26.472	
7,550.00	7,543.34	7,548.30	7,537.93	26.77	23.64	165.32	239.45	1,060.21	1,320.53	1,270.41	50.12	26.347	
7,600.00	7,593.26	7,598.98	7,588.61	26.95	23.81	165.36	239.21	1,060.39	1,323.35	1,272.88	50.47	26.222	
7,650.00	7,643.18	7,649.75	7,639.38	27.14	23.97	165.40	238.96	1,060.55	1,326.14	1,275.33	50.82	26.097	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	7,693.11	7,700.55	7,690.18	27.32	24.14	165.44	238.73	1,060.67	1,328.90	1,277.74	51.16	25.974	
7,750.00	7,743.03	7,750.75	7,740.38	27.50	24.31	165.48	238.50	1,060.76	1,331.64	1,280.13	51.51	25.853	
7,800.00	7,792.95	7,800.79	7,790.42	27.68	24.47	165.52	238.26	1,060.85	1,334.37	1,282.51	51.85	25.734	
7,850.00	7,842.88	7,852.35	7,841.98	27.86	24.64	165.57	237.98	1,060.91	1,337.07	1,284.87	52.20	25.614	
7,900.00	7,892.80	7,904.10	7,893.73	28.04	24.81	165.61	237.59	1,060.92	1,339.70	1,287.15	52.55	25.493	
7,950.00	7,942.72	7,953.48	7,943.11	28.22	24.97	165.66	237.15	1,060.92	1,342.31	1,289.42	52.89	25.378	
8,000.00	7,992.65	8,003.00	7,992.62	28.41	25.14	165.71	236.66	1,060.95	1,344.94	1,291.71	53.23	25.264	
8,050.00	8,042.57	8,052.28	8,041.90	28.59	25.30	165.76	236.10	1,061.00	1,347.59	1,294.02	53.58	25.153	
8,100.00	8,092.49	8,101.82	8,091.43	28.77	25.46	165.82	235.44	1,061.09	1,350.27	1,296.35	53.92	25.042	
8,150.00	8,142.42	8,152.18	8,141.79	28.95	25.63	165.88	234.67	1,061.20	1,352.94	1,298.67	54.27	24.932	
8,200.00	8,192.34	8,202.60	8,192.20	29.13	25.80	165.95	233.82	1,061.30	1,355.59	1,300.98	54.61	24.823	
8,250.00	8,242.26	8,253.15	8,242.75	29.31	25.96	166.01	233.00	1,061.37	1,358.22	1,303.27	54.96	24.714	
8,300.00	8,292.19	8,304.19	8,293.78	29.50	26.13	166.07	232.22	1,061.40	1,360.83	1,305.52	55.31	24.605	
8,350.00	8,342.11	8,355.87	8,345.46	29.68	26.30	166.13	231.50	1,061.37	1,363.38	1,307.73	55.66	24.496	
8,400.00	8,392.03	8,404.70	8,394.28	29.86	26.46	166.18	230.88	1,061.30	1,365.90	1,309.90	56.00	24.392	
8,450.00	8,441.96	8,451.69	8,441.27	30.04	26.62	166.23	230.44	1,061.29	1,368.52	1,312.18	56.33	24.293	
8,500.00	8,491.88	8,500.75	8,490.32	30.22	26.78	166.27	230.13	1,061.35	1,371.22	1,314.54	56.68	24.194	
8,550.00	8,541.80	8,551.39	8,540.97	30.40	26.95	166.30	229.97	1,061.37	1,373.90	1,316.88	57.02	24.093	
8,600.00	8,591.72	8,600.71	8,590.28	30.59	27.12	166.33	229.98	1,061.35	1,376.58	1,319.21	57.37	23.994	
8,650.00	8,641.65	8,649.43	8,639.01	30.77	27.29	166.35	230.14	1,061.35	1,379.30	1,321.58	57.72	23.898	
8,700.00	8,691.57	8,703.32	8,692.89	30.95	27.47	166.36	230.49	1,061.30	1,381.99	1,323.91	58.08	23.793	
8,750.00	8,741.49	8,759.05	8,748.62	31.13	27.67	166.37	230.96	1,061.01	1,384.49	1,326.03	58.46	23.683	
8,800.00	8,791.42	8,815.48	8,805.04	31.31	27.86	166.38	231.55	1,060.44	1,386.76	1,327.93	58.83	23.571	
8,850.00	8,841.34	8,870.40	8,859.96	31.50	28.05	166.37	232.23	1,059.62	1,388.81	1,329.60	59.20	23.459	
8,900.00	8,891.26	8,922.31	8,911.86	31.68	28.23	166.37	232.89	1,058.74	1,390.75	1,331.19	59.56	23.350	
8,950.00	8,941.19	8,973.11	8,962.64	31.86	28.41	166.36	233.52	1,057.81	1,392.63	1,332.71	59.91	23.244	
9,000.00	8,991.11	9,022.81	9,012.33	32.04	28.58	166.35	234.26	1,056.88	1,394.51	1,334.24	60.27	23.139	
9,050.00	9,041.03	9,069.91	9,059.41	32.22	28.74	166.34	235.09	1,056.02	1,396.43	1,335.82	60.61	23.040	
9,100.00	9,090.96	9,115.23	9,104.72	32.40	28.90	166.33	235.90	1,055.33	1,398.50	1,337.55	60.95	22.946	
9,150.00	9,140.88	9,160.84	9,150.32	32.59	29.06	166.32	236.72	1,054.79	1,400.73	1,339.45	61.29	22.856	
9,200.00	9,190.80	9,206.75	9,196.22	32.77	29.22	166.31	237.48	1,054.38	1,403.11	1,341.49	61.63	22.768	
9,250.00	9,240.73	9,253.86	9,243.32	32.95	29.39	166.30	238.18	1,054.11	1,405.63	1,343.66	61.97	22.682	
9,300.00	9,290.65	9,309.94	9,299.40	33.13	29.58	166.30	238.88	1,053.75	1,408.09	1,345.75	62.34	22.586	
9,350.00	9,340.57	9,367.51	9,356.97	33.31	29.78	166.31	239.31	1,053.11	1,410.29	1,347.57	62.72	22.484	
9,400.00	9,390.50	9,421.67	9,411.12	33.50	29.97	166.33	239.48	1,052.31	1,412.28	1,349.19	63.09	22.386	
9,450.00	9,440.42	9,464.22	9,453.66	33.68	30.11	166.34	239.74	1,051.73	1,414.34	1,350.92	63.42	22.302	
9,500.00	9,490.34	9,507.45	9,496.89	33.86	30.26	166.33	240.33	1,051.29	1,416.63	1,352.89	63.75	22.223	
9,550.00	9,540.27	9,552.27	9,541.70	34.04	30.42	166.32	241.18	1,051.00	1,419.14	1,355.06	64.08	22.146	
9,600.00	9,590.19	9,597.36	9,586.78	34.23	30.58	166.31	242.13	1,050.85	1,421.82	1,357.41	64.42	22.072	
9,650.00	9,640.11	9,649.63	9,639.04	34.41	30.76	166.29	243.29	1,050.75	1,424.58	1,359.80	64.78	21.990	
9,700.00	9,690.04	9,704.48	9,693.87	34.59	30.96	166.27	244.45	1,050.47	1,427.18	1,362.02	65.16	21.904	
9,750.00	9,739.96	9,765.26	9,754.65	34.77	31.17	166.26	245.30	1,049.89	1,429.50	1,363.95	65.55	21.809	
9,800.00	9,789.88	9,821.79	9,811.17	34.95	31.36	166.28	245.44	1,049.05	1,431.48	1,365.56	65.92	21.715	
9,850.00	9,839.81	9,872.98	9,862.34	35.14	31.54	166.29	245.71	1,048.17	1,433.36	1,367.08	66.28	21.627	
9,900.00	9,889.73	9,929.62	9,918.97	35.32	31.74	166.29	246.41	1,047.02	1,435.14	1,368.49	66.65	21.532	
9,950.00	9,939.65	9,990.08	9,979.39	35.50	31.95	166.26	247.73	1,045.30	1,436.59	1,369.55	67.04	21.430	
10,000.00	9,989.57	10,032.81	10,022.09	35.68	32.10	166.23	248.88	1,044.00	1,437.98	1,370.61	67.37	21.345	
10,050.00	10,039.50	10,075.56	10,064.81	35.86	32.24	166.20	250.03	1,042.92	1,439.62	1,371.92	67.70	21.264	
10,100.00	10,089.44	10,112.25	10,101.47	36.05	32.37	166.18	251.05	1,042.23	1,441.26	1,373.25	68.01	21.192	
10,150.00	10,139.41	10,147.20	10,136.41	36.23	32.50	166.15	252.09	1,041.93	1,442.78	1,374.47	68.31	21.121	
10,200.00	10,189.39	10,182.55	10,171.74	36.40	32.62	166.12	253.23	1,041.99	1,444.19	1,375.58	68.61	21.050	
10,250.00	10,239.39	10,223.93	10,213.10	36.58	32.77	166.08	254.60	1,042.37	1,445.36	1,376.43	68.92	20.971	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
10,300.00	10,289.39	10,265.31	10,254.45	36.75	32.92	81.21	255.99	1,043.01	1,446.39	1,377.15	69.24	20.890	
10,350.00	10,339.39	10,306.56	10,295.66	36.93	33.06	81.16	257.39	1,043.89	1,447.70	1,378.15	69.55	20.816	
10,400.00	10,389.39	10,347.76	10,336.83	37.10	33.21	81.11	258.79	1,045.02	1,449.32	1,379.46	69.86	20.747	
10,450.00	10,439.39	10,389.95	10,378.96	37.28	33.36	81.07	260.20	1,046.43	1,451.23	1,381.06	70.17	20.682	
10,500.00	10,489.39	10,433.71	10,422.68	37.45	33.52	81.03	261.43	1,048.14	1,453.37	1,382.89	70.49	20.619	
10,550.00	10,539.39	10,478.61	10,467.52	37.62	33.67	81.00	262.36	1,050.13	1,455.73	1,384.92	70.81	20.558	
10,600.00	10,589.39	10,527.65	10,516.50	37.80	33.85	81.00	262.87	1,052.47	1,458.17	1,387.01	71.15	20.493	
10,650.00	10,639.36	10,626.83	10,615.60	37.97	34.19	-98.77	262.26	1,056.43	1,460.60	1,388.87	71.73	20.363	
10,700.00	10,689.03	10,703.92	10,692.67	38.13	34.45	-98.94	260.94	1,056.75	1,461.42	1,389.25	72.17	20.251	
10,750.00	10,738.02	10,756.41	10,745.15	38.29	34.62	-99.17	260.12	1,056.65	1,462.78	1,390.28	72.50	20.176	
10,800.00	10,785.96	10,799.48	10,788.23	38.45	34.77	-99.42	259.71	1,056.54	1,464.96	1,392.15	72.81	20.122	
10,850.00	10,832.49	10,841.55	10,830.29	38.60	34.91	-99.69	259.69	1,056.51	1,468.16	1,395.06	73.10	20.085	
10,900.00	10,877.25	11,406.48	11,365.87	38.74	36.66	-106.13	151.06	989.91	1,472.35	1,399.88	72.47	20.316	
10,950.00	10,919.90	10,950.00	11,528.27	38.87	36.27	-104.50	-56.69	937.48	1,456.93	1,386.73	70.20	20.753	
11,000.00	10,960.11	11,741.93	11,554.70	39.00	37.41	-105.16	-113.81	924.80	1,439.74	1,367.64	72.10	19.970	
11,050.00	10,997.58	11,772.19	11,565.00	39.12	37.48	-106.24	-141.80	919.81	1,423.98	1,351.39	72.59	19.616	
11,100.00	11,032.03	11,802.00	11,574.25	39.23	37.55	-107.17	-169.83	915.58	1,410.03	1,336.97	73.06	19.300	
11,150.00	11,063.19	11,839.99	11,585.24	39.34	37.64	-107.87	-205.89	910.86	1,397.89	1,324.39	73.50	19.020	
11,200.00	11,090.83	11,877.83	11,595.76	39.46	37.74	-108.49	-241.98	906.60	1,387.50	1,313.60	73.89	18.777	
11,250.00	11,114.73	11,936.38	11,610.23	39.58	37.89	-108.86	-298.42	900.89	1,378.70	1,304.43	74.27	18.563	
11,300.00	11,134.71	12,016.67	11,621.61	39.71	38.10	-108.89	-377.60	894.77	1,370.49	1,295.77	74.72	18.343	
11,350.00	11,150.62	12,094.39	11,623.71	39.85	38.31	-108.80	-455.12	890.16	1,362.54	1,287.31	75.23	18.112	
11,400.00	11,162.35	12,143.78	11,622.86	39.99	38.46	-109.00	-504.43	887.48	1,355.61	1,279.96	75.65	17.921	
11,450.00	11,169.79	12,190.49	11,622.29	40.13	38.61	-109.24	-551.07	884.93	1,350.22	1,274.21	76.01	17.764	
11,500.00	11,172.90	12,239.76	11,621.87	40.27	38.78	-109.51	-600.26	882.24	1,346.35	1,270.00	76.35	17.635	
11,550.00	11,173.00	12,289.89	11,621.29	40.43	38.96	-109.58	-650.32	879.57	1,343.47	1,266.80	76.67	17.523	
11,600.00	11,173.00	12,328.11	11,620.81	40.58	39.11	-109.59	-688.49	877.67	1,340.81	1,263.86	76.95	17.424	
11,650.00	11,173.00	12,364.06	11,620.52	40.76	39.26	-109.60	-724.41	876.23	1,338.66	1,261.42	77.25	17.329	
11,700.00	11,173.00	12,400.36	11,620.40	40.93	39.41	-109.62	-760.69	875.12	1,337.04	1,259.49	77.54	17.242	
11,750.00	11,173.00	12,437.97	11,620.44	41.13	39.58	-109.63	-798.29	874.29	1,335.89	1,258.01	77.88	17.153	
11,800.00	11,173.00	12,475.59	11,620.66	41.33	39.75	-109.65	-835.90	873.77	1,335.21	1,257.00	78.21	17.071	
11,838.21	11,173.00	12,501.80	11,620.90	41.50	39.87	-109.66	-862.11	873.62	1,335.03	1,256.55	78.48	17.012	
11,850.00	11,173.00	12,509.37	11,620.98	41.56	39.91	-109.67	-869.68	873.62	1,335.04	1,256.49	78.55	16.995	
11,900.00	11,173.00	12,541.47	11,621.36	41.78	40.07	-109.68	-901.79	873.91	1,335.54	1,256.65	78.89	16.930	
11,950.00	11,173.00	12,582.00	11,621.94	42.02	40.27	-109.69	-942.29	874.89	1,336.74	1,257.45	79.29	16.858	
12,000.00	11,173.00	12,622.45	11,622.54	42.27	40.49	-109.70	-982.72	876.16	1,338.30	1,258.58	79.72	16.788	
12,050.00	11,173.00	12,677.34	11,623.24	42.53	40.78	-109.70	-1,037.59	877.75	1,339.75	1,259.48	80.27	16.691	
12,100.00	11,173.00	12,721.85	11,623.87	42.80	41.04	-109.71	-1,082.07	879.02	1,341.21	1,260.45	80.76	16.607	
12,150.00	11,173.00	12,766.59	11,624.69	43.09	41.30	-109.73	-1,126.78	880.42	1,342.87	1,261.60	81.27	16.524	
12,200.00	11,173.00	12,817.96	11,625.52	43.37	41.61	-109.74	-1,178.12	882.17	1,344.60	1,262.75	81.85	16.427	
12,250.00	11,173.00	12,870.29	11,625.73	43.68	41.94	-109.72	-1,230.41	884.08	1,346.27	1,263.79	82.47	16.324	
12,300.00	11,173.00	12,925.42	11,625.49	43.99	42.30	-109.68	-1,285.50	886.09	1,347.79	1,264.64	83.14	16.210	
12,350.00	11,173.00	12,987.56	11,624.84	44.31	42.72	-109.63	-1,347.60	888.16	1,349.07	1,265.16	83.91	16.077	
12,400.00	11,173.00	13,062.51	11,623.88	44.64	43.25	-109.58	-1,422.53	889.52	1,349.58	1,264.76	84.82	15.912	
12,450.00	11,173.00	13,114.31	11,623.00	44.98	43.63	-109.54	-1,474.32	890.03	1,349.63	1,264.10	85.54	15.779	
12,500.00	11,173.00	13,175.02	11,621.66	45.33	44.08	-109.48	-1,535.02	890.49	1,349.51	1,263.15	86.35	15.628	
12,550.00	11,173.00	13,251.01	11,619.63	45.69	44.67	-109.41	-1,610.97	889.97	1,348.61	1,261.26	87.36	15.438	
12,600.00	11,173.00	13,295.14	11,618.83	46.05	45.02	-109.39	-1,655.10	889.23	1,347.39	1,259.35	88.04	15.304	
12,650.00	11,173.00	13,341.91	11,618.75	46.43	45.40	-109.40	-1,701.86	888.30	1,346.30	1,257.54	88.76	15.168	
12,700.00	11,173.00	13,396.75	11,618.98	46.81	45.85	-109.43	-1,756.67	887.06	1,345.17	1,255.61	89.56	15.019	
12,750.00	11,173.00	13,453.20	11,619.05	47.20	46.32	-109.45	-1,813.11	885.61	1,343.85	1,253.44	90.41	14.865	
12,800.00	11,173.00	13,513.39	11,618.99	47.60	46.83	-109.48	-1,873.27	883.68	1,342.20	1,250.90	91.30	14.701	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
12,850.00	11,173.00	13,570.37	11,618.82	48.01	47.33	-109.51	-1,930.21	881.50	1,340.21	1,248.03	92.18	14.539	
12,900.00	11,173.00	13,626.11	11,618.53	48.42	47.82	-109.53	-1,985.89	879.14	1,338.00	1,244.95	93.05	14.379	
12,950.00	11,173.00	13,662.54	11,618.44	48.85	48.15	-109.55	-2,022.30	877.68	1,335.95	1,242.20	93.74	14.251	
13,000.00	11,173.00	13,699.37	11,618.63	49.27	48.48	-109.58	-2,059.11	876.49	1,334.38	1,239.95	94.43	14.131	
13,050.00	11,173.00	13,736.71	11,619.06	49.71	48.82	-109.61	-2,096.44	875.58	1,333.30	1,238.17	95.14	14.015	
13,100.00	11,173.00	13,774.64	11,619.53	50.15	49.18	-109.64	-2,134.36	875.02	1,332.69	1,236.84	95.85	13.904	
13,143.31	11,173.00	13,807.51	11,619.93	50.54	49.48	-109.66	-2,167.22	874.83	1,332.52	1,236.04	96.48	13.812	
13,150.00	11,173.00	13,814.00	11,620.00	50.60	49.54	-109.66	-2,173.71	874.83	1,332.52	1,235.93	96.59	13.795	
13,200.00	11,173.00	13,862.23	11,620.57	51.05	50.00	-109.68	-2,221.94	874.83	1,332.59	1,235.14	97.46	13.674	
13,250.00	11,173.00	13,912.60	11,621.15	51.52	50.49	-109.71	-2,272.30	874.84	1,332.67	1,234.31	98.36	13.549	
13,300.00	11,173.00	13,966.47	11,621.36	51.98	51.02	-109.72	-2,326.17	874.89	1,332.65	1,233.33	99.32	13.417	
13,350.00	11,173.00	14,022.16	11,620.82	52.46	51.56	-109.70	-2,381.86	875.04	1,332.49	1,232.15	100.34	13.280	
13,400.00	11,173.00	14,082.04	11,619.79	52.93	52.16	-109.66	-2,441.73	874.95	1,332.00	1,230.58	101.42	13.133	
13,450.00	11,173.00	14,134.57	11,618.60	53.42	52.70	-109.62	-2,494.25	874.68	1,331.25	1,228.82	102.43	12.997	
13,500.00	11,173.00	14,184.43	11,617.22	53.91	53.21	-109.57	-2,544.09	874.50	1,330.49	1,227.08	103.40	12.867	
13,550.00	11,173.00	14,222.72	11,616.12	54.41	53.60	-109.52	-2,582.36	874.52	1,329.91	1,225.67	104.24	12.758	
13,579.94	11,173.00	14,244.20	11,615.64	54.71	53.83	-109.50	-2,603.84	874.67	1,329.82	1,225.10	104.72	12.699	
13,600.00	11,173.00	14,258.61	11,615.38	54.91	53.98	-109.49	-2,618.24	874.84	1,329.86	1,224.82	105.04	12.661	
13,650.00	11,173.00	14,297.19	11,614.88	55.41	54.38	-109.46	-2,656.81	875.51	1,330.33	1,224.45	105.87	12.565	
13,700.00	11,173.00	14,347.87	11,614.26	55.92	54.92	-109.42	-2,707.48	876.54	1,330.96	1,224.06	106.90	12.451	
13,750.00	11,173.00	14,399.18	11,613.50	56.44	55.46	-109.38	-2,758.77	877.60	1,331.56	1,223.61	107.94	12.336	
13,800.00	11,173.00	14,451.90	11,612.85	56.96	56.03	-109.34	-2,811.48	878.55	1,332.08	1,223.06	109.01	12.219	
13,850.00	11,173.00	14,503.95	11,612.39	57.48	56.60	-109.31	-2,863.52	879.32	1,332.50	1,222.41	110.08	12.104	
13,900.00	11,173.00	14,555.36	11,611.97	58.01	57.16	-109.29	-2,914.93	880.00	1,332.86	1,221.71	111.15	11.992	
13,950.00	11,173.00	14,600.90	11,611.77	58.54	57.66	-109.27	-2,960.46	880.56	1,333.24	1,221.12	112.13	11.890	
14,000.00	11,173.00	14,643.62	11,612.23	59.08	58.13	-109.29	-3,003.17	881.10	1,333.88	1,220.83	113.06	11.798	
14,050.00	11,173.00	14,688.24	11,613.35	59.62	58.63	-109.33	-3,047.78	881.68	1,334.78	1,220.77	114.01	11.707	
14,100.00	11,173.00	14,735.19	11,614.61	60.17	59.16	-109.37	-3,094.70	882.39	1,335.82	1,220.81	115.01	11.615	
14,150.00	11,173.00	14,782.93	11,615.87	60.72	59.70	-109.41	-3,142.42	883.23	1,336.96	1,220.93	116.03	11.523	
14,200.00	11,173.00	14,831.75	11,617.12	61.27	60.25	-109.45	-3,191.21	884.16	1,338.16	1,221.09	117.07	11.431	
14,250.00	11,173.00	14,882.30	11,618.39	61.82	60.83	-109.49	-3,241.74	885.17	1,339.38	1,221.24	118.14	11.337	
14,300.00	11,173.00	14,934.57	11,619.71	62.38	61.44	-109.53	-3,293.99	886.12	1,340.54	1,221.29	119.25	11.241	
14,350.00	11,173.00	14,982.55	11,620.91	62.95	61.99	-109.57	-3,341.94	886.97	1,341.67	1,221.37	120.30	11.153	
14,400.00	11,173.00	15,028.55	11,621.98	63.51	62.53	-109.60	-3,387.92	887.95	1,342.93	1,221.61	121.32	11.069	
14,450.00	11,173.00	15,093.41	11,623.24	64.08	63.29	-109.63	-3,452.76	889.28	1,344.12	1,221.46	122.66	10.958	
14,500.00	11,173.00	15,165.20	11,624.06	64.65	64.13	-109.66	-3,524.54	889.71	1,344.46	1,220.35	124.11	10.833	
14,550.00	11,173.00	15,231.17	11,624.23	65.23	64.91	-109.68	-3,590.51	889.38	1,344.14	1,218.67	125.46	10.713	
14,600.00	11,173.00	15,275.11	11,624.23	65.81	65.43	-109.68	-3,634.45	889.00	1,343.61	1,217.12	126.49	10.622	
14,650.00	11,173.00	15,317.70	11,624.50	66.39	65.93	-109.70	-3,677.03	888.79	1,343.35	1,215.86	127.50	10.536	
14,678.56	11,173.00	15,343.10	11,624.78	66.73	66.24	-109.71	-3,702.43	888.73	1,343.32	1,215.24	128.09	10.488	
14,700.00	11,173.00	15,363.00	11,625.00	66.98	66.48	-109.72	-3,722.33	888.72	1,343.34	1,214.79	128.54	10.450	
14,750.00	11,173.00	15,409.42	11,625.49	67.56	67.03	-109.74	-3,768.75	888.79	1,343.46	1,213.84	129.62	10.365	
14,800.00	11,173.00	15,469.10	11,625.84	68.15	67.75	-109.76	-3,828.42	888.93	1,343.55	1,212.65	130.91	10.263	
14,850.00	11,173.00	15,538.42	11,625.06	68.75	68.59	-109.73	-3,897.74	888.66	1,343.07	1,210.70	132.37	10.147	
14,900.00	11,173.00	15,617.36	11,623.19	69.34	69.55	-109.68	-3,976.64	887.15	1,341.64	1,207.68	133.96	10.015	
14,950.00	11,173.00	15,680.56	11,621.25	69.94	70.32	-109.64	-4,039.77	885.06	1,339.44	1,204.12	135.32	9.899	
15,000.00	11,173.00	15,731.17	11,619.59	70.54	70.94	-109.60	-4,090.32	883.01	1,336.86	1,200.36	136.50	9.794	
15,050.00	11,173.00	15,771.22	11,618.70	71.14	71.43	-109.59	-4,130.32	881.48	1,334.56	1,197.02	137.54	9.703	
15,100.00	11,173.00	15,804.00	11,618.34	71.75	71.83	-109.59	-4,163.09	880.34	1,332.65	1,194.19	138.47	9.624	
15,150.00	11,173.00	15,843.45	11,618.24	72.35	72.31	-109.60	-4,202.52	879.27	1,331.25	1,191.77	139.48	9.544	
15,200.00	11,173.00	15,876.84	11,618.40	72.96	72.73	-109.62	-4,235.91	878.76	1,330.48	1,190.09	140.39	9.477	
15,238.47	11,173.00	15,903.30	11,618.67	73.43	73.05	-109.63	-4,262.37	878.62	1,330.32	1,189.23	141.09	9.429	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
15,250.00	11,173.00	15,912.68	11,618.80	73.57	73.17	-109.64	-4,271.74	878.61	1,330.33	1,189.00	141.33	9.413	
15,300.00	11,173.00	15,953.30	11,619.53	74.19	73.68	-109.67	-4,312.35	878.68	1,330.59	1,188.25	142.34	9.348	
15,350.00	11,173.00	15,994.00	11,620.55	74.80	74.19	-109.71	-4,353.04	878.95	1,331.20	1,187.85	143.34	9.287	
15,400.00	11,173.00	16,071.18	11,621.75	75.42	75.16	-109.76	-4,430.21	879.18	1,331.47	1,186.50	144.98	9.184	
15,450.00	11,173.00	16,117.33	11,621.66	76.04	75.74	-109.76	-4,476.36	879.03	1,331.17	1,185.06	146.11	9.111	
15,459.31	11,173.00	16,124.18	11,621.65	76.16	75.83	-109.76	-4,483.21	879.05	1,331.17	1,184.87	146.29	9.099	
15,500.00	11,173.00	16,154.13	11,621.63	76.66	76.20	-109.75	-4,513.16	879.27	1,331.33	1,184.24	147.09	9.051	
15,550.00	11,173.00	16,191.89	11,621.68	77.28	76.68	-109.75	-4,550.91	879.87	1,331.98	1,183.90	148.07	8.995	
15,600.00	11,173.00	16,233.11	11,621.91	77.91	77.21	-109.75	-4,592.12	880.80	1,333.00	1,183.88	149.12	8.939	
15,650.00	11,173.00	16,274.31	11,622.34	78.54	77.73	-109.75	-4,633.31	881.95	1,334.36	1,184.20	150.16	8.886	
15,700.00	11,173.00	16,363.78	11,622.55	79.16	78.88	-109.73	-4,722.75	883.68	1,335.22	1,183.11	152.11	8.778	
15,750.00	11,173.00	16,407.20	11,622.25	79.79	79.43	-109.72	-4,766.17	883.97	1,335.30	1,182.07	153.23	8.715	
15,800.00	11,173.00	16,445.11	11,622.46	80.42	79.92	-109.72	-4,804.07	884.41	1,335.81	1,181.59	154.23	8.661	
15,850.00	11,173.00	16,503.56	11,623.44	81.06	80.67	-109.75	-4,862.52	885.19	1,336.63	1,181.04	155.58	8.591	
15,900.00	11,173.00	16,579.23	11,624.46	81.69	81.65	-109.80	-4,938.17	884.75	1,336.40	1,179.18	157.22	8.500	
15,950.00	11,173.00	16,628.51	11,624.33	82.33	82.28	-109.81	-4,987.45	884.39	1,335.88	1,177.45	158.43	8.432	
16,000.00	11,173.00	16,676.01	11,623.38	82.97	82.90	-109.77	-5,034.95	884.37	1,335.40	1,175.75	159.64	8.365	
16,050.00	11,173.00	16,721.07	11,622.13	83.61	83.48	-109.72	-5,079.98	884.63	1,335.08	1,174.25	160.83	8.301	
16,100.00	11,173.00	16,769.08	11,620.53	84.25	84.11	-109.65	-5,127.97	885.18	1,334.93	1,172.85	162.08	8.236	
16,150.00	11,173.00	16,824.34	11,618.61	84.89	84.83	-109.56	-5,183.19	885.72	1,334.68	1,171.21	163.47	8.165	
16,200.00	11,173.00	16,875.69	11,616.88	85.53	85.50	-109.49	-5,234.50	886.04	1,334.27	1,169.49	164.78	8.097	
16,250.00	11,173.00	16,924.33	11,615.56	86.18	86.14	-109.44	-5,283.13	886.25	1,333.90	1,167.86	166.04	8.034	
16,300.00	11,173.00	16,995.47	11,613.57	86.82	87.07	-109.36	-5,354.24	886.19	1,333.31	1,165.64	167.68	7.952	
16,350.00	11,173.00	17,055.85	11,610.88	87.47	87.86	-109.26	-5,414.55	885.37	1,331.77	1,162.62	169.14	7.874	
16,400.00	11,173.00	17,094.31	11,609.48	88.12	88.36	-109.22	-5,452.98	884.89	1,330.46	1,160.20	170.25	7.815	
16,450.00	11,173.00	17,133.64	11,608.57	88.77	88.88	-109.18	-5,492.30	884.59	1,329.58	1,158.22	171.36	7.759	
16,500.00	11,173.00	17,190.30	11,607.60	89.42	89.62	-109.15	-5,548.95	884.09	1,328.76	1,156.02	172.74	7.692	
16,550.00	11,173.00	17,277.76	11,605.69	90.07	90.77	-109.10	-5,636.37	882.33	1,327.48	1,152.91	174.57	7.604	
16,600.00	11,173.00	17,348.72	11,602.67	90.73	91.70	-109.03	-5,707.19	879.03	1,324.34	1,148.21	176.12	7.519	
16,650.00	11,173.00	17,389.92	11,600.72	91.38	92.24	-108.98	-5,748.30	877.21	1,321.36	1,144.04	177.32	7.452	
16,700.00	11,173.00	17,415.00	11,599.52	92.04	92.57	-108.94	-5,773.33	876.25	1,318.83	1,140.55	178.28	7.397	
16,750.00	11,173.00	17,454.92	11,597.78	92.69	93.09	-108.89	-5,813.20	875.23	1,316.85	1,137.40	179.45	7.338	
16,800.00	11,173.00	17,483.64	11,596.75	93.35	93.47	-108.85	-5,841.90	875.00	1,315.76	1,135.35	180.41	7.293	
16,844.34	11,173.00	17,510.00	11,595.97	93.93	93.82	-108.82	-5,868.25	875.16	1,315.47	1,134.22	181.25	7.258	
16,850.00	11,173.00	17,513.64	11,595.87	94.01	93.87	-108.81	-5,871.88	875.21	1,315.48	1,134.12	181.36	7.253	
16,900.00	11,173.00	17,557.50	11,594.78	94.67	94.46	-108.76	-5,915.73	875.88	1,315.67	1,133.11	182.56	7.207	
16,950.00	11,173.00	17,601.37	11,593.86	95.33	95.05	-108.71	-5,959.58	876.71	1,316.10	1,132.34	183.76	7.162	
17,000.00	11,173.00	17,667.35	11,592.51	95.99	95.93	-108.64	-6,025.54	877.70	1,316.37	1,130.98	185.39	7.101	
17,050.00	11,173.00	17,724.04	11,591.32	96.65	96.69	-108.59	-6,082.22	877.93	1,316.08	1,129.26	186.82	7.045	
17,100.00	11,173.00	17,771.26	11,591.13	97.32	97.32	-108.59	-6,129.44	877.86	1,315.82	1,127.76	188.06	6.997	
17,150.00	11,173.00	17,823.24	11,591.82	97.98	98.02	-108.62	-6,181.41	877.55	1,315.62	1,126.26	189.36	6.948	
17,200.00	11,173.00	17,879.62	11,592.83	98.65	98.77	-108.68	-6,237.77	876.87	1,315.21	1,124.50	190.71	6.896	
17,250.00	11,173.00	17,935.24	11,593.59	99.31	99.52	-108.72	-6,293.38	876.02	1,314.58	1,122.52	192.06	6.845	
17,300.00	11,173.00	17,990.71	11,593.34	99.98	100.26	-108.72	-6,348.85	875.26	1,313.73	1,120.30	193.43	6.792	
17,350.00	11,173.00	18,032.20	11,592.58	100.65	100.82	-108.70	-6,390.33	874.97	1,312.97	1,118.37	194.60	6.747	
17,400.00	11,173.00	18,074.98	11,591.34	101.31	101.39	-108.65	-6,433.09	875.07	1,312.48	1,116.68	195.81	6.703	
17,429.92	11,173.00	18,095.74	11,590.61	101.72	101.68	-108.61	-6,453.83	875.28	1,312.37	1,115.92	196.44	6.681	
17,450.00	11,173.00	18,108.88	11,590.13	101.98	101.85	-108.59	-6,466.96	875.52	1,312.42	1,115.57	196.85	6.667	
17,500.00	11,173.00	18,141.58	11,588.95	102.65	102.30	-108.53	-6,499.63	876.41	1,313.02	1,115.16	197.85	6.636	
17,550.00	11,173.00	18,175.00	11,587.71	103.33	102.75	-108.46	-6,533.00	877.81	1,314.27	1,115.42	198.85	6.609	
17,600.00	11,173.00	18,210.40	11,586.69	104.00	103.24	-108.40	-6,568.34	879.63	1,316.12	1,116.25	199.87	6.585	
17,650.00	11,173.00	18,246.64	11,586.25	104.67	103.74	-108.35	-6,604.52	881.68	1,318.49	1,117.62	200.88	6.564	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	11,173.00	18,291.28	11,586.45	105.34	104.35	-108.32	-6,649.08	884.41	1,321.32	1,119.25	202.07	6.539	
17,750.00	11,173.00	18,349.51	11,587.02	106.02	105.15	-108.31	-6,707.21	887.66	1,324.00	1,120.39	203.61	6.503	
17,800.00	11,173.00	18,424.57	11,587.12	106.69	106.18	-108.27	-6,782.19	891.14	1,326.12	1,120.57	205.55	6.452	
17,850.00	11,173.00	18,490.78	11,585.50	107.37	107.09	-108.17	-6,848.33	893.50	1,327.27	1,119.99	207.29	6.403	
17,900.00	11,173.00	18,546.28	11,584.47	108.04	107.85	-108.11	-6,903.80	894.99	1,328.13	1,119.37	208.76	6.362	
17,950.00	11,173.00	18,628.17	11,583.00	108.72	108.97	-108.04	-6,985.67	896.03	1,328.36	1,117.63	210.72	6.304	
18,000.00	11,173.00	18,695.78	11,581.05	109.40	109.89	-107.97	-7,053.25	895.65	1,327.50	1,115.12	212.38	6.251	
18,050.00	11,173.00	18,757.48	11,579.22	110.07	110.73	-107.90	-7,114.91	894.69	1,326.17	1,112.26	213.91	6.200	
18,100.00	11,173.00	18,805.69	11,577.23	110.75	111.38	-107.83	-7,163.07	893.99	1,324.71	1,109.46	215.25	6.154	
18,150.00	11,173.00	18,856.61	11,574.50	111.43	112.08	-107.73	-7,213.92	893.41	1,323.22	1,106.56	216.66	6.107	
18,200.00	11,173.00	18,908.25	11,571.80	112.11	112.78	-107.63	-7,265.49	892.74	1,321.67	1,103.60	218.07	6.061	
18,250.00	11,173.00	18,951.13	11,569.75	112.79	113.37	-107.56	-7,308.31	892.12	1,320.16	1,100.81	219.35	6.018	
18,300.00	11,173.00	18,985.93	11,568.00	113.47	113.85	-107.48	-7,343.07	892.03	1,319.14	1,098.65	220.49	5.983	
18,350.00	11,173.00	19,020.72	11,566.11	114.15	114.32	-107.40	-7,377.80	892.40	1,318.70	1,097.08	221.62	5.950	
18,400.00	11,173.00	19,071.79	11,563.21	114.83	115.03	-107.27	-7,428.78	893.34	1,318.61	1,095.54	223.07	5.911	
18,450.00	11,173.00	19,127.97	11,560.09	115.52	115.80	-107.13	-7,484.88	894.11	1,318.30	1,093.69	224.61	5.869	
18,461.28	11,173.00	19,140.65	11,559.39	115.67	115.98	-107.10	-7,497.53	894.24	1,318.20	1,093.24	224.96	5.860	
18,500.00	11,173.00	19,155.11	11,558.83	116.20	116.18	-107.08	-7,511.98	894.62	1,318.36	1,092.80	225.56	5.845	
18,550.00	11,173.00	19,184.19	11,557.89	116.88	116.58	-107.03	-7,541.03	895.50	1,319.21	1,092.71	226.50	5.824	
18,600.00	11,173.00	19,219.00	11,557.31	117.57	117.06	-106.99	-7,575.80	897.02	1,320.87	1,093.36	227.51	5.806	
18,650.00	11,173.00	19,250.28	11,557.12	118.25	117.50	-106.96	-7,607.03	898.71	1,323.16	1,094.76	228.40	5.793	
18,700.00	11,173.00	19,289.22	11,557.01	118.94	118.04	-106.92	-7,645.90	901.07	1,325.89	1,096.42	229.48	5.778	
18,750.00	11,173.00	19,351.88	11,556.94	119.62	118.92	-106.87	-7,708.43	905.09	1,328.88	1,097.68	231.20	5.748	
18,800.00	11,173.00	19,428.93	11,555.85	120.31	119.99	-106.79	-7,785.40	908.48	1,330.55	1,097.28	233.27	5.704	
18,850.00	11,173.00	19,472.92	11,555.40	121.00	120.61	-106.75	-7,829.35	910.16	1,332.11	1,097.60	234.51	5.680	
18,900.00	11,173.00	19,527.99	11,555.33	121.68	121.37	-106.72	-7,884.38	912.30	1,333.83	1,097.84	235.99	5.652	
18,950.00	11,173.00	19,609.79	11,554.23	122.37	122.51	-106.68	-7,966.15	914.36	1,334.71	1,096.65	238.06	5.607	
19,000.00	11,173.00	19,665.57	11,553.08	123.06	123.29	-106.60	-8,021.91	915.13	1,334.95	1,095.40	239.55	5.573	
19,038.47	11,173.00	19,710.83	11,552.13	123.59	123.91	-106.56	-8,067.16	915.48	1,334.91	1,094.17	240.75	5.545	
19,050.00	11,173.00	19,714.00	11,552.12	123.75	123.96	-106.56	-8,070.33	915.55	1,334.96	1,094.06	240.90	5.541	
19,100.00	11,173.00	19,752.72	11,551.69	124.44	124.50	-106.53	-8,109.04	916.06	1,335.30	1,093.26	242.04	5.517	
19,150.00	11,173.00	19,795.44	11,551.67	125.12	125.09	-106.53	-8,151.75	916.87	1,336.06	1,092.82	243.25	5.493	
19,200.00	11,173.00	19,897.84	11,551.28	125.81	126.51	-106.51	-8,254.15	916.93	1,335.91	1,090.37	245.53	5.441	
19,250.00	11,173.00	19,960.74	11,550.05	126.50	127.37	-106.48	-8,317.02	915.77	1,334.64	1,087.56	247.08	5.402	
19,300.00	11,173.00	20,020.68	11,548.25	127.19	128.20	-106.42	-8,376.92	914.17	1,332.79	1,084.21	248.58	5.362	
19,350.00	11,173.00	20,077.91	11,546.52	127.89	128.99	-106.38	-8,434.09	912.29	1,330.67	1,080.62	250.04	5.322	
19,400.00	11,173.00	20,110.09	11,545.70	128.58	129.43	-106.36	-8,466.24	911.37	1,328.78	1,077.59	251.19	5.290	
19,450.00	11,173.00	20,144.27	11,545.04	129.27	129.90	-106.34	-8,500.41	910.73	1,327.48	1,075.15	252.33	5.261	
19,500.00	11,173.00	20,181.88	11,544.58	129.96	130.42	-106.32	-8,538.02	910.41	1,326.75	1,073.27	253.49	5.234	
19,550.00	11,173.00	20,227.22	11,544.36	130.65	131.05	-106.32	-8,583.35	910.17	1,326.31	1,071.55	254.76	5.206	
19,600.00	11,173.00	20,279.91	11,544.50	131.35	131.78	-106.33	-8,636.04	909.94	1,326.01	1,069.87	256.14	5.177	
19,650.00	11,173.00	20,360.08	11,544.63	132.04	132.89	-106.36	-8,716.19	908.40	1,324.98	1,067.06	257.91	5.137	
19,700.00	11,173.00	20,426.67	11,544.70	132.73	133.81	-106.39	-8,782.74	905.91	1,323.07	1,063.65	259.42	5.100	
19,750.00	11,173.00	20,481.41	11,544.77	133.43	134.56	-106.43	-8,837.42	903.30	1,320.67	1,059.89	260.78	5.064	
19,800.00	11,173.00	20,528.29	11,544.16	134.12	135.20	-106.43	-8,884.25	901.31	1,318.32	1,056.23	262.08	5.030	
19,850.00	11,173.00	20,571.00	11,543.05	134.82	135.79	-106.40	-8,926.92	899.80	1,316.13	1,052.76	263.37	4.997	Alert
19,900.00	11,173.00	20,610.70	11,541.81	135.51	136.34	-106.36	-8,966.58	898.77	1,314.31	1,049.68	264.63	4.967	Alert
19,950.00	11,173.00	20,652.88	11,540.32	136.21	136.93	-106.31	-9,008.73	898.06	1,312.87	1,046.95	265.92	4.937	Alert
20,000.00	11,173.00	20,705.89	11,538.42	136.90	137.66	-106.24	-9,061.71	897.23	1,311.49	1,044.11	267.37	4.905	Alert
20,050.00	11,173.00	20,738.00	11,537.31	137.60	138.11	-106.21	-9,093.79	896.65	1,310.14	1,041.65	268.49	4.880	Alert
20,100.00	11,173.00	20,775.57	11,536.30	138.29	138.64	-106.17	-9,131.35	896.34	1,309.34	1,039.66	269.67	4.855	Alert
20,116.22	11,173.00	20,784.32	11,536.15	138.52	138.76	-106.16	-9,140.09	896.39	1,309.29	1,039.31	269.98	4.850	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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
20,150.00	11,173.00	20,802.54	11,535.92	138.99	139.01	-106.15	-9,158.31	896.61	1,309.49	1,038.89	270.60	4.839	Alert
20,200.00	11,173.00	20,833.00	11,535.83	139.69	139.44	-106.14	-9,188.76	897.42	1,310.54	1,039.00	271.53	4.826	Alert
20,250.00	11,173.00	20,882.31	11,535.98	140.38	140.13	-106.13	-9,238.04	899.02	1,312.01	1,039.12	272.89	4.808	Alert
20,300.00	11,173.00	20,941.41	11,536.16	141.08	140.97	-106.12	-9,297.12	900.63	1,313.24	1,038.76	274.47	4.785	Alert
20,350.00	11,173.00	21,010.48	11,535.51	141.78	141.94	-106.08	-9,366.17	901.95	1,313.89	1,037.61	276.28	4.756	Alert
20,400.00	11,173.00	21,062.57	11,534.66	142.48	142.67	-106.03	-9,418.25	902.55	1,314.09	1,036.36	277.72	4.732	Alert
20,450.00	11,173.00	21,110.91	11,534.69	143.18	143.35	-106.03	-9,466.59	902.92	1,314.33	1,035.28	279.05	4.710	Alert
20,500.00	11,173.00	21,173.53	11,535.13	143.87	144.23	-106.05	-9,529.20	903.04	1,314.40	1,033.77	280.64	4.684	Alert
20,550.00	11,173.00	21,238.60	11,534.97	144.57	145.14	-106.05	-9,594.27	902.60	1,313.92	1,031.67	282.25	4.655	Alert
20,600.00	11,173.00	21,304.26	11,534.50	145.27	146.05	-106.05	-9,659.92	901.45	1,312.84	1,029.00	283.84	4.625	Alert
20,650.00	11,173.00	21,352.88	11,533.88	145.97	146.73	-106.04	-9,708.52	900.38	1,311.48	1,026.29	285.19	4.599	Alert
20,700.00	11,173.00	21,400.75	11,532.90	146.67	147.40	-106.01	-9,756.38	899.52	1,310.20	1,023.65	286.55	4.572	Alert
20,750.00	11,173.00	21,453.72	11,531.20	147.37	148.14	-105.95	-9,809.31	898.72	1,308.91	1,020.90	288.01	4.545	Alert
20,800.00	11,173.00	21,506.76	11,528.64	148.07	148.88	-105.85	-9,862.29	898.04	1,307.49	1,017.99	289.50	4.516	Alert
20,850.00	11,173.00	21,552.42	11,526.30	148.77	149.52	-105.76	-9,907.89	897.54	1,306.13	1,015.24	290.89	4.490	Alert
20,900.00	11,173.00	21,600.64	11,523.92	149.47	150.20	-105.66	-9,956.05	897.09	1,304.89	1,012.57	292.32	4.464	Alert
20,950.00	11,173.00	21,657.98	11,520.99	150.17	151.00	-105.55	-10,013.30	896.43	1,303.52	1,009.63	293.89	4.435	Alert
21,000.00	11,173.00	21,725.24	11,517.16	150.88	151.94	-105.40	-10,080.44	895.21	1,301.77	1,006.19	295.59	4.404	Alert
21,050.00	11,173.00	21,776.84	11,513.94	151.58	152.66	-105.28	-10,131.93	893.85	1,299.54	1,002.46	297.08	4.374	Alert
21,100.00	11,173.00	21,785.00	11,513.43	152.28	152.77	-105.27	-10,140.07	893.63	1,297.98	1,000.06	297.92	4.357	Alert
21,116.19	11,173.00	21,785.00	11,513.43	152.51	152.77	-105.27	-10,140.07	893.63	1,297.88	999.81	298.07	4.354	Alert
21,150.00	11,173.00	21,785.00	11,513.43	152.98	152.77	-105.27	-10,140.07	893.63	1,298.32	1,000.06	298.26	4.353	Alert, SF
21,200.00	11,173.00	21,785.00	11,513.43	153.68	152.77	-105.27	-10,140.07	893.63	1,300.58	1,002.38	298.20	4.361	Alert
21,250.00	11,173.00	21,785.00	11,513.43	154.39	152.77	-105.27	-10,140.07	893.63	1,304.76	1,007.01	297.75	4.382	Alert
21,300.00	11,173.00	21,785.00	11,513.43	155.09	152.77	-105.27	-10,140.07	893.63	1,310.83	1,013.93	296.90	4.415	Alert
21,307.62	11,173.00	21,785.00	11,513.43	155.19	152.77	-105.27	-10,140.07	893.63	1,311.92	1,015.19	296.73	4.421	Alert

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	102.07	-194.27	908.72	929.26				
50.00	50.00	51.41	51.41	0.50	0.51	102.07	-194.27	908.64	929.18	928.18	1.01	922.019	
100.00	100.00	104.18	104.18	0.52	0.52	102.07	-194.29	908.40	928.96	927.92	1.04	892.257	
150.00	150.00	156.96	156.96	0.59	0.55	102.08	-194.31	908.00	928.59	927.45	1.14	813.253	
200.00	200.00	202.74	202.73	0.70	0.65	102.08	-194.32	907.72	928.29	926.94	1.35	686.932	
250.00	250.00	251.44	251.44	0.84	0.77	102.08	-194.30	907.58	928.15	926.54	1.61	576.548	
300.00	300.00	305.83	305.82	0.99	0.93	102.09	-194.31	907.28	927.89	925.97	1.92	484.136	
350.00	350.00	358.03	358.03	1.15	1.09	102.10	-194.35	906.77	927.41	925.18	2.24	414.556	
400.00	400.00	408.15	408.14	1.31	1.25	102.11	-194.37	906.25	926.91	924.34	2.56	361.637	
450.00	450.00	457.85	457.83	1.48	1.42	102.11	-194.39	905.73	926.40	923.51	2.90	319.959	
500.00	500.00	507.30	507.29	1.65	1.59	102.13	-194.49	905.23	925.92	922.69	3.23	286.475	
550.00	550.00	557.16	557.14	1.82	1.76	102.14	-194.64	904.73	925.47	921.89	3.57	258.943	
600.00	600.00	607.16	607.14	1.99	1.93	102.16	-194.79	904.23	925.01	921.09	3.92	236.019	
650.00	650.00	656.36	656.33	2.16	2.10	102.17	-194.93	903.76	924.57	920.31	4.26	216.845	
700.00	700.00	705.42	705.40	2.34	2.27	102.18	-195.00	903.35	924.19	919.58	4.61	200.499	
750.00	750.00	754.49	754.46	2.51	2.44	102.19	-195.02	903.01	923.85	918.89	4.96	186.396	
800.00	800.00	803.56	803.53	2.69	2.61	102.19	-194.98	902.73	923.56	918.26	5.30	174.113	
850.00	850.00	854.34	854.31	2.87	2.79	102.19	-195.02	902.43	923.28	917.62	5.66	163.162	
900.00	900.00	905.12	905.09	3.04	2.97	102.21	-195.27	902.04	922.95	916.94	6.01	153.476	
950.00	950.00	954.54	954.51	3.22	3.15	102.24	-195.55	901.65	922.63	916.26	6.36	144.970	
1,000.00	1,000.00	1,006.57	1,006.54	3.40	3.33	102.26	-195.79	901.23	922.29	915.56	6.73	137.142	
1,050.00	1,050.00	1,060.38	1,060.34	3.58	3.52	102.27	-195.93	900.62	921.76	914.67	7.09	129.957	
1,100.00	1,100.00	1,110.30	1,110.25	3.75	3.70	102.29	-196.12	899.94	921.13	913.69	7.45	123.685	
1,150.00	1,150.00	1,160.85	1,160.81	3.93	3.88	102.33	-196.50	899.20	920.50	912.70	7.80	117.943	
1,200.00	1,200.00	1,213.48	1,213.42	4.11	4.06	102.37	-197.02	898.30	919.77	911.60	8.17	112.590	
1,250.00	1,250.00	1,264.78	1,264.70	4.29	4.25	102.42	-197.61	897.28	918.92	910.39	8.53	107.733	
1,300.00	1,300.00	1,314.24	1,314.15	4.46	4.42	102.46	-198.10	896.30	918.06	909.18	8.88	103.341	
1,350.00	1,350.00	1,362.74	1,362.65	4.64	4.60	102.50	-198.43	895.42	917.25	908.01	9.23	99.328	
1,400.00	1,400.00	1,410.49	1,410.39	4.82	4.76	102.51	-198.48	894.72	916.55	906.97	9.58	95.650	
1,450.00	1,450.00	1,460.74	1,460.63	5.00	4.94	102.50	-198.20	894.15	915.93	905.99	9.94	92.169	
1,500.00	1,500.00	1,512.56	1,512.45	5.18	5.12	102.47	-197.60	893.54	915.23	904.93	10.30	88.880	
1,550.00	1,550.00	1,563.89	1,563.77	5.36	5.30	102.42	-196.70	892.91	914.44	903.79	10.65	85.832	
1,600.00	1,600.00	1,615.08	1,614.94	5.53	5.48	102.35	-195.44	892.29	913.58	902.57	11.01	82.982	
1,650.00	1,650.00	1,663.57	1,663.40	5.71	5.65	102.26	-193.86	891.79	912.74	901.38	11.35	80.384	
1,700.00	1,700.00	1,712.23	1,712.02	5.89	5.81	102.15	-191.86	891.46	911.97	900.27	11.70	77.943	
1,750.00	1,750.00	1,763.11	1,762.83	6.07	5.99	101.99	-189.28	891.23	911.22	899.17	12.05	75.599	
1,800.00	1,800.00	1,814.10	1,813.72	6.25	6.16	101.80	-186.22	891.05	910.42	898.02	12.41	73.380	
1,850.00	1,850.00	1,865.54	1,865.05	6.43	6.34	101.59	-182.74	890.86	909.56	896.80	12.76	71.267	
1,900.00	1,900.00	1,919.19	1,918.55	6.61	6.53	101.35	-178.78	890.62	908.60	895.47	13.13	69.218	
1,950.00	1,950.00	1,976.07	1,975.27	6.78	6.72	101.09	-174.46	890.00	907.32	893.82	13.50	67.200	
2,000.00	2,000.00	2,031.22	2,030.24	6.96	6.91	100.84	-170.19	889.01	905.71	891.84	13.87	65.289	
2,050.00	2,050.00	2,085.73	2,084.57	7.14	7.11	100.59	-165.92	887.76	903.84	889.60	14.24	63.467	
2,100.00	2,100.00	2,139.15	2,137.80	7.32	7.29	100.34	-161.69	886.29	901.77	887.16	14.61	61.733	
2,150.00	2,150.00	2,191.19	2,189.65	7.50	7.48	100.10	-157.58	884.66	899.52	884.55	14.97	60.088	
2,200.00	2,200.00	2,239.53	2,237.82	7.68	7.65	99.88	-153.86	883.14	897.29	881.97	15.32	58.563	
2,250.00	2,250.00	2,288.07	2,286.21	7.86	7.83	99.67	-150.28	881.66	895.16	879.48	15.67	57.110	
2,300.00	2,300.00	2,337.01	2,335.00	8.04	8.00	99.47	-146.78	880.20	893.09	877.07	16.03	55.720	
2,350.00	2,350.00	2,385.36	2,383.22	8.22	8.17	99.27	-143.45	878.80	891.10	874.72	16.38	54.400	
2,400.00	2,400.00	2,432.79	2,430.53	8.39	8.34	99.09	-140.33	877.52	889.24	872.51	16.73	53.152	
2,450.00	2,450.00	2,481.29	2,478.92	8.57	8.52	98.90	-137.29	876.30	887.51	870.42	17.08	51.953	
2,500.00	2,500.00	2,531.47	2,528.98	8.75	8.70	98.71	-134.12	875.07	885.80	868.36	17.44	50.787	
2,550.00	2,550.00	2,580.26	2,577.65	8.93	8.87	98.52	-130.93	873.88	884.11	866.31	17.80	49.682	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	2,627.72	2,624.98	9.11	9.04	98.32	-127.62	872.87	882.55	864.40	18.15	48.637	
2,650.00	2,650.00	2,674.29	2,671.43	9.29	9.21	98.10	-124.19	872.05	881.14	862.65	18.49	47.648	
2,700.00	2,700.00	2,720.05	2,717.05	9.47	9.38	97.89	-120.82	871.45	879.98	861.14	18.84	46.716	
2,750.00	2,750.00	2,768.57	2,765.44	9.65	9.55	97.67	-117.27	871.01	879.03	859.84	19.19	45.806	
2,800.00	2,800.00	2,820.65	2,817.37	9.83	9.74	97.41	-113.25	870.48	878.02	858.46	19.56	44.897	
2,850.00	2,850.00	2,871.03	2,867.57	10.00	9.92	97.15	-109.18	869.90	876.93	857.01	19.92	44.030	
2,900.00	2,900.00	2,920.32	2,916.70	10.18	10.10	96.90	-105.19	869.35	875.88	855.60	20.27	43.203	
2,950.00	2,950.00	2,967.62	2,963.84	10.36	10.27	96.66	-101.42	868.88	874.91	854.29	20.62	42.423	
3,000.00	3,000.00	3,014.09	3,010.19	10.54	10.44	96.43	-97.89	868.58	874.15	853.18	20.97	41.684	
3,050.00	3,050.00	3,063.40	3,059.36	10.72	10.61	-178.99	-94.23	868.39	873.77	852.44	21.32	40.976	
3,072.09	3,072.08	3,085.89	3,081.78	10.79	10.70	-179.10	-92.48	868.29	873.73	852.25	21.48	40.672 CC	
3,100.00	3,099.99	3,114.29	3,110.09	10.89	10.80	-179.25	-90.20	868.17	873.79	852.11	21.68	40.299	
3,150.00	3,149.98	3,169.25	3,164.85	11.06	11.00	-179.55	-85.51	867.80	874.12	852.06	22.05	39.638 ES	
3,200.00	3,199.96	3,225.51	3,220.86	11.24	11.20	-179.89	-80.28	867.07	874.55	852.13	22.43	38.995	
3,250.00	3,249.92	3,284.31	3,279.37	11.41	11.42	179.75	-74.66	865.80	875.00	852.19	22.81	38.360	
3,300.00	3,299.86	3,339.71	3,334.50	11.58	11.62	179.42	-69.45	864.07	875.45	852.27	23.18	37.764	
3,350.00	3,349.79	3,391.42	3,385.98	11.75	11.81	179.13	-64.90	862.26	876.10	852.55	23.54	37.213	
3,400.00	3,399.71	3,440.90	3,435.26	11.93	12.00	178.88	-60.89	860.43	876.72	852.83	23.90	36.689	
3,450.00	3,449.63	3,489.13	3,483.33	12.10	12.17	178.66	-57.30	858.71	877.44	853.20	24.25	36.189	
3,500.00	3,499.56	3,536.89	3,530.94	12.27	12.35	178.46	-53.99	857.08	878.28	853.69	24.59	35.710	
3,550.00	3,549.48	3,584.38	3,578.30	12.45	12.52	178.25	-50.70	855.58	879.27	854.32	24.94	35.251	
3,600.00	3,599.40	3,631.44	3,625.22	12.62	12.69	178.05	-47.40	854.24	880.41	855.12	25.29	34.814	
3,650.00	3,649.33	3,678.26	3,671.90	12.80	12.87	177.84	-44.00	853.08	881.73	856.09	25.63	34.396	
3,700.00	3,699.25	3,726.78	3,720.27	12.97	13.04	177.61	-40.32	852.01	883.21	857.22	25.99	33.988	
3,750.00	3,749.17	3,776.24	3,769.56	13.15	13.23	177.37	-36.36	850.97	884.73	858.39	26.34	33.587	
3,800.00	3,799.10	3,826.73	3,819.86	13.32	13.41	177.11	-32.16	849.91	886.27	859.57	26.70	33.193	
3,850.00	3,849.02	3,877.60	3,870.55	13.50	13.60	176.85	-28.00	848.78	887.77	860.71	27.06	32.806	
3,900.00	3,898.94	3,930.21	3,922.98	13.67	13.79	176.59	-23.80	847.50	889.19	861.76	27.43	32.420	
3,950.00	3,948.87	3,983.26	3,975.84	13.85	13.99	176.34	-19.66	846.03	890.45	862.66	27.80	32.036	
4,000.00	3,998.79	4,038.32	4,030.71	14.02	14.19	176.09	-15.46	844.24	891.49	863.32	28.17	31.648	
4,050.00	4,048.71	4,090.74	4,082.95	14.20	14.38	175.85	-11.53	842.26	892.28	863.75	28.54	31.270	
4,100.00	4,098.64	4,138.68	4,130.73	14.38	14.56	175.65	-8.15	840.47	893.11	864.23	28.89	30.917	
4,150.00	4,148.56	4,188.32	4,180.23	14.55	14.74	175.45	-4.87	838.70	894.05	864.81	29.24	30.572	
4,200.00	4,198.48	4,240.61	4,232.37	14.73	14.94	175.25	-1.43	836.74	894.91	865.30	29.61	30.224	
4,250.00	4,248.41	4,291.03	4,282.65	14.91	15.12	175.05	1.89	834.75	895.67	865.70	29.97	29.887	
4,300.00	4,298.33	4,340.18	4,331.67	15.08	15.30	174.87	5.00	832.84	896.47	866.15	30.32	29.562	
4,350.00	4,348.25	4,389.97	4,381.32	15.26	15.48	174.69	8.01	830.93	897.31	866.63	30.68	29.245	
4,400.00	4,398.18	4,440.08	4,431.31	15.44	15.67	174.52	10.96	829.00	898.16	867.12	31.04	28.935	
4,450.00	4,448.10	4,492.14	4,483.24	15.62	15.86	174.34	14.07	826.94	898.96	867.55	31.41	28.624	
4,500.00	4,498.02	4,544.90	4,535.83	15.79	16.05	174.13	17.64	824.70	899.61	867.84	31.77	28.314	
4,550.00	4,547.94	4,595.65	4,586.38	15.97	16.24	173.90	21.46	822.42	900.18	868.04	32.14	28.011	
4,600.00	4,597.87	4,646.33	4,636.84	16.15	16.43	173.65	25.63	820.10	900.71	868.21	32.50	27.715	
4,650.00	4,647.79	4,698.58	4,688.84	16.33	16.63	173.39	30.05	817.61	901.17	868.30	32.87	27.418	
4,700.00	4,697.71	4,749.05	4,739.07	16.51	16.81	173.14	34.28	815.09	901.53	868.30	33.23	27.129	
4,750.00	4,747.64	4,794.00	4,783.80	16.68	16.98	172.90	38.24	812.97	902.06	868.48	33.58	26.864	
4,800.00	4,797.56	4,839.34	4,828.89	16.86	17.15	172.64	42.52	811.08	902.87	868.95	33.93	26.612	
4,850.00	4,847.48	4,887.54	4,876.83	17.04	17.33	172.37	47.18	809.21	903.87	869.58	34.29	26.363	
4,900.00	4,897.41	4,936.08	4,925.11	17.22	17.52	172.09	51.85	807.41	904.98	870.33	34.64	26.121	
4,950.00	4,947.33	4,986.40	4,975.17	17.40	17.70	171.80	56.62	805.56	906.11	871.10	35.01	25.882	
5,000.00	4,997.25	5,036.73	5,025.25	17.58	17.89	171.53	61.31	803.68	907.24	871.87	35.37	25.647	
5,050.00	5,047.18	5,087.09	5,075.36	17.76	18.08	171.25	65.97	801.78	908.37	872.63	35.74	25.416	
5,100.00	5,097.10	5,136.98	5,124.99	17.93	18.27	170.98	70.56	799.87	909.48	873.38	36.10	25.191	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
5,150.00	5,147.02	5,186.17	5,173.94	18.11	18.45	170.72	75.06	798.01	910.64	874.18	36.47	24.973	
5,200.00	5,196.95	5,234.01	5,221.55	18.29	18.63	170.47	79.41	796.25	911.87	875.05	36.82	24.764	
5,250.00	5,246.87	5,280.32	5,267.63	18.47	18.81	170.21	83.76	794.69	913.29	876.11	37.17	24.568	
5,300.00	5,296.79	5,327.13	5,314.20	18.65	18.98	169.95	88.31	793.28	914.91	877.38	37.53	24.380	
5,350.00	5,346.72	5,374.68	5,361.52	18.83	19.16	169.69	92.80	791.99	916.69	878.81	37.88	24.199	
5,400.00	5,396.64	5,424.87	5,411.49	19.01	19.35	169.43	97.35	790.73	918.58	880.33	38.25	24.017	
5,450.00	5,446.56	5,478.63	5,465.02	19.19	19.55	169.17	102.02	789.23	920.32	881.70	38.62	23.827	
5,500.00	5,496.49	5,527.00	5,513.19	19.37	19.73	168.93	106.16	787.76	921.97	882.99	38.98	23.650	
5,550.00	5,546.41	5,572.51	5,558.49	19.55	19.90	168.70	110.36	786.55	923.84	884.51	39.33	23.489	
5,600.00	5,596.33	5,621.27	5,607.00	19.73	20.08	168.42	115.21	785.39	925.90	886.21	39.69	23.328	
5,650.00	5,646.26	5,672.50	5,657.94	19.91	20.28	168.12	120.50	784.09	927.94	887.88	40.06	23.163	
5,700.00	5,696.18	5,727.75	5,712.85	20.09	20.48	167.79	126.36	782.49	929.85	889.40	40.45	22.988	
5,750.00	5,746.10	5,784.60	5,769.34	20.27	20.70	167.45	132.44	780.43	931.42	890.57	40.84	22.805	
5,800.00	5,796.03	5,830.64	5,815.08	20.45	20.87	167.17	137.34	778.68	932.93	891.73	41.20	22.646	
5,850.00	5,845.95	5,877.16	5,861.31	20.63	21.05	166.89	142.24	777.09	934.64	893.09	41.55	22.494	
5,900.00	5,895.87	5,924.37	5,908.26	20.81	21.23	166.62	147.10	775.63	936.53	894.62	41.91	22.348	
5,950.00	5,945.79	5,971.62	5,955.25	20.99	21.41	166.36	151.80	774.32	938.57	896.31	42.26	22.208	
6,000.00	5,995.72	6,016.99	6,000.42	21.17	21.58	166.14	155.94	773.30	940.81	898.21	42.61	22.081	
6,050.00	6,045.64	6,062.41	6,045.70	21.35	21.75	165.96	159.49	772.57	943.31	900.36	42.95	21.962	
6,100.00	6,095.56	6,113.40	6,096.56	21.53	21.93	165.78	162.99	771.94	945.91	902.60	43.32	21.837	
6,150.00	6,145.49	6,165.04	6,148.09	21.71	22.12	165.62	166.36	771.23	948.43	904.75	43.69	21.710	
6,200.00	6,195.41	6,216.95	6,199.89	21.89	22.31	165.46	169.58	770.43	950.86	906.81	44.05	21.584	
6,250.00	6,245.33	6,267.62	6,250.46	22.07	22.50	165.31	172.59	769.58	953.20	908.78	44.42	21.459	
6,300.00	6,295.26	6,314.01	6,296.74	22.25	22.67	165.17	175.59	768.85	955.64	910.87	44.77	21.348	
6,350.00	6,345.18	6,360.54	6,343.15	22.43	22.84	165.00	178.02	768.21	958.26	913.15	45.11	21.242	
6,400.00	6,395.10	6,407.99	6,390.44	22.61	23.01	164.81	182.80	767.66	961.04	915.58	45.46	21.138	
6,450.00	6,445.03	6,455.91	6,438.19	22.79	23.19	164.61	186.83	767.18	963.96	918.14	45.82	21.039	
6,500.00	6,494.95	6,505.92	6,488.02	22.97	23.38	164.41	191.00	766.71	966.92	920.73	46.18	20.937	
6,550.00	6,544.87	6,555.66	6,537.61	23.15	23.56	164.21	194.98	766.27	969.88	923.33	46.54	20.838	
6,600.00	6,594.80	6,604.77	6,586.57	23.33	23.74	164.04	198.72	765.90	972.87	925.97	46.90	20.742	
6,650.00	6,644.72	6,654.70	6,636.37	23.51	23.92	163.87	202.27	765.60	975.91	928.64	47.26	20.648	
6,700.00	6,694.64	6,705.96	6,687.54	23.69	24.11	163.75	205.23	765.36	978.90	931.27	47.63	20.552	
6,750.00	6,744.57	6,758.12	6,739.65	23.88	24.30	163.66	207.53	765.18	981.80	933.81	48.00	20.455	
6,800.00	6,794.49	6,810.99	6,792.49	24.06	24.48	163.59	209.54	764.90	984.57	936.20	48.37	20.356	
6,850.00	6,844.41	6,860.80	6,842.27	24.24	24.66	163.54	211.21	764.59	987.25	938.53	48.72	20.262	
6,900.00	6,894.34	6,909.61	6,891.05	24.42	24.84	163.49	212.70	764.36	989.98	940.90	49.07	20.173	
6,950.00	6,944.26	6,963.90	6,945.32	24.60	25.03	163.46	214.17	764.09	992.65	943.20	49.45	20.074	
7,000.00	6,994.18	7,019.54	7,000.94	24.78	25.23	163.43	215.49	763.52	995.04	945.22	49.83	19.970	
7,050.00	7,044.11	7,068.21	7,049.60	24.96	25.40	163.41	216.49	762.97	997.34	947.17	50.18	19.876	
7,100.00	7,094.03	7,117.50	7,098.88	25.14	25.57	163.40	217.35	762.47	999.68	949.15	50.53	19.784	
7,150.00	7,143.95	7,166.45	7,147.82	25.32	25.75	163.40	218.01	762.06	1,002.05	951.17	50.88	19.694	
7,200.00	7,193.87	7,215.26	7,196.63	25.50	25.92	163.42	218.47	761.73	1,004.47	953.24	51.23	19.607	
7,250.00	7,243.80	7,263.50	7,244.87	25.69	26.09	163.43	218.86	761.50	1,006.97	955.39	51.58	19.524	
7,300.00	7,293.72	7,312.58	7,293.95	25.87	26.26	163.46	219.23	761.34	1,009.54	957.62	51.92	19.443	
7,350.00	7,343.64	7,364.04	7,345.41	26.05	26.43	163.49	219.41	761.18	1,012.08	959.80	52.28	19.359	
7,400.00	7,393.57	7,413.67	7,395.04	26.23	26.60	163.53	219.37	761.02	1,014.57	961.95	52.63	19.279	
7,450.00	7,443.49	7,460.94	7,442.31	26.41	26.76	163.58	219.33	760.96	1,017.16	964.20	52.96	19.206	
7,500.00	7,493.41	7,507.70	7,489.06	26.59	26.91	163.62	219.31	761.03	1,019.88	966.59	53.29	19.138	
7,550.00	7,543.34	7,553.76	7,535.13	26.77	27.06	163.67	219.16	761.29	1,022.78	969.17	53.61	19.077	
7,600.00	7,593.26	7,601.83	7,583.19	26.95	27.22	163.74	218.83	761.76	1,025.85	971.91	53.95	19.016	
7,650.00	7,643.18	7,653.12	7,634.48	27.14	27.38	163.81	218.33	762.26	1,028.91	974.62	54.29	18.952	
7,700.00	7,693.11	7,701.95	7,683.30	27.32	27.54	163.89	217.81	762.72	1,031.93	977.30	54.63	18.891	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
7,750.00	7,743.03	7,748.64	7,729.99	27.50	27.69	163.94	217.68	763.21	1,035.08	980.12	54.95	18.835	
7,800.00	7,792.95	7,798.52	7,779.86	27.68	27.86	163.97	218.02	763.76	1,038.34	983.04	55.30	18.776	
7,850.00	7,842.88	7,851.60	7,832.93	27.86	28.05	163.97	218.89	764.13	1,041.50	985.83	55.67	18.710	
7,900.00	7,892.80	7,904.82	7,886.14	28.04	28.23	163.96	220.08	764.26	1,044.50	988.46	56.04	18.640	
7,950.00	7,942.72	7,958.12	7,939.43	28.22	28.42	163.94	221.14	764.25	1,047.33	990.93	56.41	18.568	
8,000.00	7,992.65	8,006.97	7,988.27	28.41	28.59	163.94	221.98	764.20	1,050.11	993.36	56.76	18.502	
8,050.00	8,042.57	8,055.56	8,036.86	28.59	28.76	163.94	222.66	764.25	1,052.95	995.85	57.10	18.439	
8,100.00	8,092.49	8,104.19	8,085.49	28.77	28.93	163.96	223.11	764.40	1,055.85	998.41	57.45	18.380	
8,150.00	8,142.42	8,153.07	8,134.37	28.95	29.09	164.00	223.27	764.67	1,058.81	1,001.02	57.79	18.322	
8,200.00	8,192.34	8,208.59	8,189.88	29.13	29.28	164.05	223.23	764.89	1,061.66	1,003.51	58.16	18.255	
8,250.00	8,242.26	8,262.17	8,243.46	29.31	29.46	164.10	223.10	764.85	1,064.27	1,005.75	58.52	18.187	
8,300.00	8,292.19	8,312.13	8,293.42	29.50	29.62	164.14	222.98	764.75	1,066.82	1,007.95	58.86	18.124	
8,350.00	8,342.11	8,370.58	8,351.87	29.68	29.82	164.21	222.65	764.55	1,069.27	1,010.03	59.24	18.050	
8,400.00	8,392.03	8,425.86	8,407.05	29.86	29.99	164.41	219.51	764.41	1,071.29	1,011.70	59.59	17.977	
8,450.00	8,441.96	8,472.85	8,453.57	30.04	30.13	164.79	213.06	764.86	1,073.23	1,013.32	59.91	17.915	
8,500.00	8,491.88	8,515.43	8,495.13	30.22	30.25	165.32	203.91	766.08	1,075.49	1,015.29	60.20	17.866	
8,550.00	8,541.80	8,551.54	8,529.73	30.40	30.34	165.89	193.75	767.77	1,078.25	1,017.80	60.46	17.835	
8,600.00	8,591.72	8,582.00	8,558.47	30.59	30.42	166.45	183.86	769.85	1,081.94	1,021.27	60.67	17.832 SF	
8,650.00	8,641.65	8,608.84	8,583.31	30.77	30.48	167.00	174.02	772.28	1,086.69	1,025.84	60.85	17.859	
8,700.00	8,691.57	8,625.00	8,597.99	30.95	30.52	167.37	167.49	774.03	1,092.67	1,031.74	60.93	17.933	
8,750.00	8,741.49	8,646.00	8,616.67	31.13	30.57	167.88	158.32	776.86	1,100.11	1,039.11	61.00	18.036	
8,800.00	8,791.42	8,657.00	8,626.24	31.31	30.59	168.16	153.21	778.67	1,109.24	1,048.29	60.94	18.201	
8,850.00	8,841.34	8,677.88	8,643.98	31.50	30.63	168.73	142.93	782.61	1,119.88	1,058.95	60.92	18.382	
8,900.00	8,891.26	8,696.81	8,659.52	31.68	30.67	169.29	132.92	786.66	1,132.04	1,071.19	60.85	18.604	
8,950.00	8,941.19	8,721.28	8,678.76	31.86	30.72	170.05	118.84	792.15	1,145.47	1,084.68	60.79	18.843	
9,000.00	8,991.11	8,750.63	8,700.55	32.04	30.77	171.05	100.36	798.84	1,160.03	1,099.28	60.74	19.098	
9,050.00	9,041.03	8,800.13	8,734.95	32.22	30.85	172.84	66.38	809.39	1,175.25	1,114.39	60.85	19.313	
9,100.00	9,090.96	8,827.78	8,752.94	32.40	30.90	173.89	46.13	814.91	1,191.40	1,130.67	60.74	19.616	
9,150.00	9,140.88	8,846.00	8,764.27	32.59	30.93	174.60	32.31	818.49	1,208.79	1,148.29	60.50	19.980	
9,200.00	9,190.80	8,866.05	8,776.09	32.77	30.97	175.40	16.59	822.39	1,227.50	1,167.25	60.25	20.373	
9,250.00	9,240.73	8,878.00	8,782.74	32.95	30.99	175.88	6.94	824.70	1,247.61	1,187.71	59.90	20.830	
9,300.00	9,290.65	8,891.81	8,790.02	33.13	31.01	176.46	-4.49	827.37	1,269.10	1,209.57	59.53	21.318	
9,350.00	9,340.57	8,910.00	8,798.90	33.31	31.04	177.23	-19.97	830.88	1,292.02	1,232.83	59.19	21.830	
9,400.00	9,390.50	8,910.00	8,798.90	33.50	31.04	177.23	-19.97	830.88	1,316.15	1,257.50	58.65	22.440	
9,450.00	9,440.42	8,919.93	8,803.38	33.68	31.05	177.66	-28.62	832.79	1,341.62	1,283.42	58.20	23.053	
9,500.00	9,490.34	8,927.38	8,806.55	33.86	31.07	177.99	-35.19	834.20	1,368.32	1,310.61	57.71	23.711	
9,550.00	9,540.27	8,941.00	8,811.93	34.04	31.09	178.59	-47.46	836.75	1,396.25	1,338.98	57.27	24.379	
9,600.00	9,590.19	8,941.00	8,811.93	34.23	31.09	178.59	-47.46	836.75	1,425.21	1,368.49	56.71	25.130	
9,650.00	9,640.11	8,941.00	8,811.93	34.41	31.09	178.59	-47.46	836.75	1,455.30	1,399.15	56.16	25.915	
9,700.00	9,690.04	8,952.55	8,816.07	34.59	31.10	179.11	-58.03	838.86	1,486.35	1,430.64	55.71	26.680	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	101.68	-194.10	938.77	958.63				
50.00	50.00	52.74	52.74	0.50	0.51	101.69	-194.13	938.65	958.53	957.52	1.01	950.441	
100.00	100.00	106.89	106.89	0.52	0.53	101.70	-194.24	938.28	958.21	957.16	1.04	917.686	
150.00	150.00	161.04	161.03	0.59	0.56	101.71	-194.41	937.65	957.67	956.52	1.15	834.073	
200.00	200.00	212.94	212.92	0.70	0.64	101.74	-194.61	936.86	956.96	955.62	1.35	711.217	
250.00	250.00	264.05	264.04	0.84	0.77	101.76	-194.80	936.01	956.19	954.58	1.61	594.069	
300.00	300.00	312.66	312.63	0.99	0.91	101.77	-194.95	935.22	955.42	953.52	1.90	503.167	
350.00	350.00	361.22	361.18	1.15	1.06	101.79	-195.06	934.51	954.73	952.52	2.21	432.641	
400.00	400.00	409.73	409.70	1.31	1.22	101.81	-195.20	933.87	954.12	951.59	2.53	377.638	
450.00	450.00	458.58	458.54	1.48	1.38	101.82	-195.40	933.29	953.58	950.72	2.86	333.969	
500.00	500.00	510.79	510.74	1.65	1.56	101.85	-195.62	932.63	953.00	949.80	3.20	297.709	
550.00	550.00	563.49	563.44	1.82	1.74	101.87	-195.80	931.85	952.31	948.76	3.55	268.040	
600.00	600.00	617.57	617.51	1.99	1.92	101.89	-195.94	930.84	951.43	947.52	3.91	243.179	
650.00	650.00	667.14	667.06	2.16	2.10	101.91	-196.04	929.78	950.40	946.14	4.26	223.170	
700.00	700.00	712.71	712.63	2.34	2.26	101.92	-196.17	928.96	949.55	944.95	4.59	206.762	
750.00	750.00	762.85	762.77	2.51	2.43	101.94	-196.36	928.23	948.87	943.93	4.94	191.939	
800.00	800.00	818.20	818.11	2.69	2.63	101.97	-196.52	927.20	947.99	942.68	5.31	178.392	
850.00	850.00	870.95	870.84	2.87	2.81	101.99	-196.58	925.98	946.88	941.20	5.68	166.823	
900.00	900.00	922.90	922.78	3.04	3.00	102.00	-196.53	924.70	945.66	939.62	6.04	156.677	
950.00	950.00	974.86	974.71	3.22	3.18	102.01	-196.39	923.32	944.33	937.94	6.40	147.643	
1,000.00	1,000.00	1,026.80	1,026.64	3.40	3.37	102.01	-196.14	921.85	942.90	936.15	6.76	139.548	
1,050.00	1,050.00	1,078.74	1,078.55	3.58	3.55	102.01	-195.79	920.30	941.37	934.25	7.12	132.251	
1,100.00	1,100.00	1,127.10	1,126.89	3.75	3.72	101.99	-195.09	918.96	939.86	932.40	7.47	125.902	
1,150.00	1,150.00	1,176.72	1,176.48	3.93	3.89	101.94	-194.01	917.68	938.38	930.56	7.82	120.056	
1,200.00	1,200.00	1,226.55	1,226.27	4.11	4.07	101.86	-192.46	916.51	936.90	928.73	8.17	114.714	
1,250.00	1,250.00	1,277.27	1,276.94	4.29	4.24	101.75	-190.40	915.40	935.42	926.90	8.52	109.780	
1,300.00	1,300.00	1,328.46	1,328.05	4.46	4.42	101.61	-187.89	914.31	933.88	925.00	8.88	105.217	
1,350.00	1,350.00	1,384.09	1,383.58	4.64	4.62	101.44	-184.70	913.03	932.18	922.93	9.25	100.817	
1,400.00	1,400.00	1,440.56	1,439.90	4.82	4.81	101.24	-181.07	911.41	930.14	920.52	9.62	96.693	
1,450.00	1,450.00	1,489.66	1,488.86	5.00	4.99	101.04	-177.62	909.94	927.98	918.01	9.97	93.076	
1,500.00	1,500.00	1,542.25	1,541.28	5.18	5.17	100.82	-173.63	908.37	925.79	915.46	10.33	89.598	
1,550.00	1,550.00	1,599.49	1,598.29	5.36	5.37	100.56	-168.98	906.35	923.30	912.59	10.71	86.203	
1,600.00	1,600.00	1,652.61	1,651.17	5.53	5.56	100.30	-164.36	904.19	920.50	909.43	11.08	83.103	
1,650.00	1,650.00	1,704.18	1,702.47	5.71	5.75	100.03	-159.55	902.03	917.61	906.17	11.44	80.224	
1,700.00	1,700.00	1,763.95	1,761.87	5.89	5.96	99.69	-153.60	899.23	914.44	902.61	11.83	77.322	
1,750.00	1,750.00	1,820.71	1,818.22	6.07	6.17	99.35	-147.61	896.01	910.74	898.54	12.21	74.618	
1,800.00	1,800.00	1,871.15	1,868.30	6.25	6.36	99.06	-142.41	892.95	906.91	894.35	12.57	72.170	
1,850.00	1,850.00	1,922.02	1,918.82	6.43	6.54	98.78	-137.38	889.79	903.06	890.13	12.93	69.846	
1,900.00	1,900.00	1,973.30	1,969.74	6.61	6.73	98.49	-132.28	886.52	899.14	885.85	13.29	67.637	
1,950.00	1,950.00	2,026.18	2,022.24	6.78	6.93	98.19	-127.03	883.01	895.13	881.47	13.66	65.514	
2,000.00	2,000.00	2,079.93	2,075.62	6.96	7.13	97.90	-122.01	879.17	890.92	876.88	14.04	63.477	
2,050.00	2,050.00	2,130.63	2,125.98	7.14	7.32	97.65	-117.58	875.34	886.57	872.17	14.40	61.572	
2,100.00	2,100.00	2,181.05	2,176.09	7.32	7.51	97.42	-113.47	871.44	882.20	867.44	14.76	59.763	
2,150.00	2,150.00	2,227.88	2,222.63	7.50	7.69	97.21	-109.81	867.87	877.91	862.79	15.11	58.084	
2,200.00	2,200.00	2,275.16	2,269.65	7.68	7.87	97.00	-106.21	864.39	873.78	858.31	15.47	56.487	
2,250.00	2,250.00	2,325.71	2,319.92	7.86	8.06	96.79	-102.43	860.71	869.70	853.87	15.83	54.933	
2,300.00	2,300.00	2,377.05	2,370.98	8.04	8.25	96.57	-98.65	856.90	865.58	849.39	16.20	53.439	
2,350.00	2,350.00	2,431.90	2,425.51	8.22	8.46	96.34	-94.69	852.59	861.27	844.70	16.57	51.970	
2,400.00	2,400.00	2,484.53	2,477.83	8.39	8.65	96.12	-90.98	848.17	856.69	839.75	16.94	50.569	
2,450.00	2,450.00	2,534.50	2,527.50	8.57	8.84	95.92	-87.53	843.89	852.07	834.77	17.30	49.244	
2,500.00	2,500.00	2,583.20	2,575.90	8.75	9.03	95.73	-84.23	839.73	847.47	829.81	17.66	47.982	
2,550.00	2,550.00	2,630.94	2,623.38	8.93	9.21	95.54	-81.04	835.74	842.98	824.96	18.02	46.784	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	2,677.01	2,669.19	9.11	9.38	95.36	-77.99	832.02	838.64	820.27	18.37	45.650	
2,650.00	2,650.00	2,721.89	2,713.84	9.29	9.55	95.17	-75.02	828.65	834.59	815.87	18.72	44.583	
2,700.00	2,700.00	2,768.59	2,760.33	9.47	9.73	94.98	-71.92	825.39	830.81	811.73	19.07	43.558	
2,750.00	2,750.00	2,817.37	2,808.89	9.65	9.91	94.78	-68.70	822.08	827.13	807.70	19.43	42.564	
2,800.00	2,800.00	2,869.11	2,860.40	9.83	10.10	94.56	-65.30	818.57	823.49	803.69	19.80	41.590	
2,850.00	2,850.00	2,923.59	2,914.62	10.00	10.31	94.34	-61.79	814.61	819.60	799.43	20.17	40.626	
2,900.00	2,900.00	2,976.75	2,967.51	10.18	10.51	94.12	-58.43	810.46	815.47	794.93	20.54	39.692	
2,950.00	2,950.00	3,029.51	3,019.99	10.36	10.71	93.91	-55.16	806.14	811.17	790.25	20.91	38.786	
3,000.00	3,000.00	3,076.89	3,067.11	10.54	10.89	93.72	-52.15	802.24	806.84	785.57	21.27	37.932	
3,050.00	3,050.00	3,124.12	3,114.09	10.72	11.07	178.32	-48.90	798.52	802.90	781.28	21.62	37.131	
3,100.00	3,099.99	3,172.84	3,162.53	10.89	11.25	178.09	-45.36	794.81	799.53	777.55	21.98	36.374	
3,150.00	3,149.98	3,221.68	3,211.10	11.06	11.44	177.84	-41.69	791.15	796.66	774.33	22.33	35.670	
3,200.00	3,199.96	3,274.65	3,263.77	11.24	11.64	177.59	-37.85	787.10	794.18	771.48	22.70	34.989	
3,250.00	3,249.92	3,327.67	3,316.51	11.41	11.84	177.36	-34.41	782.82	791.94	768.88	23.06	34.340	
3,300.00	3,299.86	3,380.26	3,368.82	11.58	12.04	177.16	-31.31	778.37	789.97	766.55	23.42	33.726	
3,350.00	3,349.79	3,432.51	3,420.79	11.75	12.24	176.98	-28.51	773.75	788.18	764.40	23.78	33.140	
3,400.00	3,399.71	3,484.13	3,472.13	11.93	12.44	176.82	-25.91	769.06	786.30	762.16	24.14	32.569	
3,450.00	3,449.63	3,532.37	3,520.12	12.10	12.62	176.67	-23.60	764.63	784.39	759.89	24.49	32.023	
3,500.00	3,499.56	3,578.35	3,565.87	12.27	12.79	176.54	-21.60	760.60	782.70	757.86	24.84	31.507	
3,550.00	3,549.48	3,624.19	3,611.52	12.45	12.96	176.43	-19.76	756.81	781.28	756.09	25.19	31.016	
3,600.00	3,599.40	3,669.88	3,657.03	12.62	13.14	176.30	-17.83	753.29	780.12	754.59	25.53	30.551	
3,650.00	3,649.33	3,715.82	3,702.80	12.80	13.31	176.17	-15.75	750.00	779.24	753.36	25.88	30.108	
3,700.00	3,699.25	3,762.05	3,748.88	12.97	13.48	176.03	-13.59	746.91	778.61	752.38	26.23	29.686	
3,750.00	3,749.17	3,809.47	3,796.15	13.15	13.66	175.88	-11.31	743.96	778.21	751.63	26.58	29.281	
3,800.00	3,799.10	3,858.68	3,845.22	13.32	13.84	175.73	-8.98	740.98	777.90	750.97	26.93	28.883	
3,850.00	3,849.02	3,908.63	3,895.03	13.50	14.03	175.57	-6.65	737.98	777.63	750.34	27.29	28.496	
3,900.00	3,898.94	3,959.33	3,945.57	13.67	14.21	175.41	-4.12	734.91	777.33	749.68	27.65	28.114	
3,950.00	3,948.87	4,011.15	3,997.21	13.85	14.41	175.22	-1.33	731.70	776.96	748.95	28.01	27.736	
4,000.00	3,998.79	4,063.66	4,049.52	14.02	14.60	175.02	1.68	728.28	776.45	748.07	28.38	27.361	
4,050.00	4,048.71	4,114.55	4,100.20	14.20	14.80	174.81	4.78	724.85	775.82	747.08	28.74	26.994	
4,100.00	4,098.64	4,165.02	4,150.45	14.38	14.99	174.58	8.05	721.40	775.16	746.06	29.10	26.636	
4,150.00	4,148.56	4,216.42	4,201.60	14.55	15.18	174.34	11.66	717.82	774.45	744.98	29.47	26.282	
4,200.00	4,198.48	4,267.83	4,252.72	14.73	15.38	174.06	15.64	714.14	773.66	743.82	29.83	25.933	
4,250.00	4,248.41	4,319.06	4,303.63	14.91	15.57	173.76	19.90	710.37	772.78	742.58	30.20	25.589	
4,300.00	4,298.33	4,370.81	4,355.03	15.08	15.77	173.44	24.42	706.46	771.84	741.27	30.57	25.249	
4,350.00	4,348.25	4,424.11	4,407.96	15.26	15.98	173.11	29.19	702.24	770.73	739.79	30.94	24.908	
4,400.00	4,398.18	4,474.75	4,458.22	15.44	16.17	172.78	33.76	698.04	769.46	738.16	31.31	24.576	
4,450.00	4,448.10	4,522.91	4,506.03	15.62	16.36	172.48	37.99	694.11	768.29	736.62	31.67	24.258	
4,500.00	4,498.02	4,576.61	4,559.36	15.79	16.57	172.15	42.57	689.74	767.14	735.10	32.05	23.939	
4,550.00	4,547.94	4,634.59	4,616.88	15.97	16.79	171.80	47.48	684.48	765.55	733.12	32.43	23.607	
4,600.00	4,597.87	4,685.65	4,667.51	16.15	16.99	171.49	51.82	679.52	763.65	730.85	32.80	23.284	
4,650.00	4,647.79	4,736.13	4,717.57	16.33	17.19	171.17	56.16	674.56	761.73	728.56	33.17	22.967	
4,700.00	4,697.71	4,781.98	4,763.03	16.51	17.37	170.88	60.09	670.16	759.94	726.41	33.53	22.667	
4,750.00	4,747.64	4,828.04	4,808.73	16.68	17.55	170.60	63.98	665.98	758.42	724.54	33.89	22.381	
4,800.00	4,797.56	4,877.10	4,857.44	16.86	17.74	170.30	68.07	661.67	757.08	722.82	34.25	22.103	
4,850.00	4,847.48	4,926.34	4,906.33	17.04	17.93	170.00	72.08	657.40	755.80	721.18	34.62	21.832	
4,900.00	4,897.41	4,977.62	4,957.24	17.22	18.13	169.70	76.20	652.92	754.51	719.52	34.99	21.565	
4,950.00	4,947.33	5,028.90	5,008.15	17.40	18.33	169.40	80.28	648.34	753.14	717.78	35.36	21.300	
5,000.00	4,997.25	5,079.73	5,058.62	17.58	18.53	169.10	84.27	643.74	751.71	715.98	35.73	21.040	
5,050.00	5,047.18	5,130.51	5,109.03	17.76	18.73	168.81	88.20	639.07	750.24	714.14	36.10	20.783	
5,100.00	5,097.10	5,181.03	5,159.18	17.93	18.92	168.52	92.08	634.37	748.73	712.26	36.47	20.532	
5,150.00	5,147.02	5,231.22	5,209.01	18.11	19.12	168.23	95.92	629.67	747.20	710.36	36.84	20.285	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
5,200.00	5,196.95	5,281.07	5,258.50	18.29	19.31	167.95	99.62	625.00	745.68	708.48	37.20	20.043	
5,250.00	5,246.87	5,330.31	5,307.39	18.47	19.50	167.68	103.14	620.42	744.19	706.62	37.57	19.808	
5,300.00	5,296.79	5,379.08	5,355.86	18.65	19.69	167.43	106.38	615.98	742.79	704.85	37.94	19.580	
5,350.00	5,346.72	5,427.49	5,403.97	18.83	19.88	167.20	109.47	611.66	741.47	703.17	38.30	19.360	
5,400.00	5,396.64	5,475.59	5,451.77	19.01	20.06	166.93	112.93	607.43	740.29	701.63	38.66	19.147	
5,450.00	5,446.56	5,525.80	5,501.62	19.19	20.26	166.63	116.93	603.04	739.20	700.16	39.03	18.937	
5,500.00	5,496.49	5,577.21	5,552.66	19.37	20.46	166.31	121.08	598.45	738.04	698.63	39.41	18.728	
5,550.00	5,546.41	5,621.35	5,596.48	19.55	20.63	166.03	124.67	594.56	736.98	697.22	39.76	18.534	
5,600.00	5,596.33	5,663.58	5,638.44	19.73	20.79	165.77	128.15	591.28	736.45	696.34	40.11	18.359	
5,650.00	5,646.26	5,710.54	5,685.12	19.91	20.97	165.48	132.04	588.04	736.37	695.90	40.48	18.193	
5,700.00	5,696.18	5,761.53	5,735.82	20.09	21.17	165.17	136.19	584.50	736.30	695.45	40.85	18.025	
5,750.00	5,746.10	5,812.00	5,786.00	20.27	21.36	164.87	140.20	580.96	736.18	694.96	41.22	17.860	
5,800.00	5,796.03	5,862.22	5,835.96	20.45	21.55	164.59	144.04	577.43	736.05	694.46	41.59	17.698	
5,850.00	5,845.95	5,913.95	5,887.41	20.63	21.75	164.30	147.88	573.75	735.88	693.91	41.96	17.536	
5,900.00	5,895.87	5,966.09	5,939.26	20.81	21.95	164.02	151.69	569.88	735.57	693.23	42.34	17.373	
5,950.00	5,945.79	6,015.54	5,988.46	20.99	22.14	163.76	155.16	566.18	735.21	692.51	42.71	17.216	
6,000.00	5,995.72	6,064.94	6,037.61	21.17	22.33	163.52	158.37	562.57	734.91	691.83	43.07	17.062	
6,048.42	6,044.06	6,109.28	6,081.75	21.34	22.50	163.30	161.32	559.46	734.77	691.36	43.42	16.923 CC	
6,050.00	6,045.64	6,110.73	6,083.20	21.35	22.50	163.29	161.42	559.36	734.77	691.35	43.43	16.919	
6,100.00	6,095.56	6,156.63	6,128.87	21.53	22.68	163.04	164.80	556.33	734.93	691.14	43.78	16.785	
6,150.00	6,145.49	6,207.00	6,178.99	21.71	22.87	162.76	168.67	553.09	735.22	691.06	44.16	16.651	
6,200.00	6,195.41	6,257.52	6,229.25	21.89	23.06	162.48	172.49	549.81	735.48	690.96	44.53	16.518	
6,250.00	6,245.33	6,306.68	6,278.17	22.07	23.25	162.21	176.17	546.64	735.77	690.88	44.89	16.389	
6,300.00	6,295.26	6,356.00	6,327.26	22.25	23.44	161.94	179.83	543.50	736.12	690.86	45.26	16.264 ES	
6,350.00	6,345.18	6,405.59	6,376.62	22.43	23.62	161.68	183.39	540.41	736.51	690.88	45.63	16.141	
6,400.00	6,395.10	6,455.08	6,425.90	22.61	23.81	161.44	186.77	537.38	736.94	690.94	46.00	16.022	
6,450.00	6,445.03	6,504.26	6,474.89	22.79	23.99	161.21	189.99	534.44	737.42	691.06	46.36	15.906	
6,500.00	6,494.95	6,553.89	6,524.33	22.97	24.18	160.99	193.10	531.55	737.95	691.23	46.73	15.793	
6,550.00	6,544.87	6,604.38	6,574.64	23.15	24.37	160.77	196.28	528.60	738.48	691.38	47.10	15.680	
6,600.00	6,594.80	6,652.16	6,622.24	23.33	24.55	160.56	199.26	525.80	739.02	691.57	47.45	15.574	
6,650.00	6,644.72	6,696.94	6,666.91	23.51	24.71	160.41	201.59	523.58	739.87	692.07	47.80	15.479	
6,700.00	6,694.64	6,743.52	6,713.42	23.69	24.88	160.30	203.47	521.72	741.04	692.90	48.15	15.391	
6,750.00	6,744.57	6,793.08	6,762.91	23.88	25.06	160.21	205.19	519.90	742.31	693.81	48.50	15.304	
6,800.00	6,794.49	6,842.38	6,812.15	24.06	25.24	160.13	206.71	518.18	743.62	694.76	48.86	15.219	
6,850.00	6,844.41	6,891.35	6,861.08	24.24	25.41	160.07	208.01	516.58	744.98	695.77	49.21	15.138	
6,900.00	6,894.34	6,940.82	6,910.52	24.42	25.59	160.03	209.10	515.08	746.41	696.84	49.57	15.059	
6,950.00	6,944.26	6,990.77	6,960.44	24.60	25.77	160.01	210.00	513.64	747.84	697.92	49.92	14.980	
7,000.00	6,994.18	7,036.15	7,005.79	24.78	25.93	160.00	210.73	512.43	749.37	699.11	50.26	14.911	
7,050.00	7,044.11	7,078.64	7,048.27	24.96	26.07	159.98	211.63	511.66	751.36	700.79	50.57	14.857	
7,100.00	7,094.03	7,124.72	7,094.33	25.14	26.24	159.95	212.85	511.19	753.80	702.90	50.91	14.807	
7,150.00	7,143.95	7,176.72	7,146.31	25.32	26.42	159.92	214.16	510.65	756.23	704.96	51.27	14.749	
7,200.00	7,193.87	7,227.96	7,197.53	25.50	26.60	159.90	215.27	510.04	758.54	706.91	51.63	14.691	
7,250.00	7,243.80	7,278.57	7,248.13	25.69	26.77	159.89	216.18	509.44	760.79	708.80	51.99	14.633	
7,300.00	7,293.72	7,329.35	7,298.90	25.87	26.95	159.90	216.90	508.83	763.00	710.65	52.35	14.576	
7,350.00	7,343.64	7,380.21	7,349.76	26.05	27.13	159.92	217.50	508.19	765.15	712.44	52.70	14.518	
7,400.00	7,393.57	7,431.02	7,400.56	26.23	27.30	159.94	217.96	507.53	767.24	714.18	53.06	14.460	
7,450.00	7,443.49	7,481.82	7,451.35	26.41	27.48	159.98	218.25	506.86	769.27	715.86	53.42	14.401	
7,500.00	7,493.41	7,530.41	7,499.94	26.59	27.64	160.03	218.38	506.26	771.32	717.56	53.76	14.348	
7,550.00	7,543.34	7,578.89	7,548.42	26.77	27.81	160.09	218.40	505.80	773.47	719.37	54.10	14.297	
7,600.00	7,593.26	7,626.48	7,596.01	26.95	27.97	160.15	218.35	505.48	775.74	721.30	54.44	14.250	
7,650.00	7,643.18	7,674.13	7,643.65	27.14	28.13	160.22	218.29	505.31	778.16	723.39	54.77	14.208	
7,700.00	7,693.11	7,723.76	7,693.29	27.32	28.29	160.29	218.18	505.23	780.66	725.55	55.11	14.166	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	7,743.03	7,773.39	7,742.92	27.50	28.45	160.37	218.00	505.19	783.18	727.74	55.45	14.124	
7,800.00	7,792.95	7,823.03	7,792.56	27.68	28.60	160.46	217.73	505.19	785.73	729.94	55.78	14.085	
7,850.00	7,842.88	7,872.44	7,841.96	27.86	28.76	160.55	217.35	505.24	788.29	732.17	56.12	14.047	
7,900.00	7,892.80	7,921.03	7,890.56	28.04	28.91	160.64	217.09	505.33	790.92	734.47	56.45	14.011	
7,950.00	7,942.72	7,970.10	7,939.63	28.22	29.07	160.71	217.05	505.44	793.64	736.85	56.78	13.977	
8,000.00	7,992.65	8,020.53	7,990.05	28.41	29.23	160.78	217.00	505.55	796.35	739.23	57.12	13.941	
8,050.00	8,042.57	8,071.11	8,040.64	28.59	29.39	160.86	216.86	505.65	799.03	741.57	57.46	13.905	
8,100.00	8,092.49	8,121.95	8,091.47	28.77	29.55	160.94	216.59	505.73	801.66	743.85	57.80	13.868	
8,150.00	8,142.42	8,172.64	8,142.17	28.95	29.71	161.04	216.17	505.79	804.23	746.09	58.15	13.831	
8,200.00	8,192.34	8,223.20	8,192.72	29.13	29.87	161.14	215.66	505.82	806.77	748.28	58.49	13.794	
8,250.00	8,242.26	8,273.42	8,242.94	29.31	30.04	161.23	215.22	505.81	809.28	750.44	58.83	13.756	
8,300.00	8,292.19	8,323.48	8,293.00	29.50	30.20	161.29	215.35	505.65	811.77	752.60	59.18	13.718	
8,350.00	8,342.11	8,374.51	8,344.02	29.68	30.38	161.31	215.91	505.35	814.24	754.71	59.53	13.677	
8,400.00	8,392.03	8,425.86	8,395.36	29.86	30.56	161.33	216.38	504.98	816.63	756.73	59.89	13.634	
8,450.00	8,441.96	8,476.86	8,446.37	30.04	30.73	161.37	216.70	504.57	818.93	758.68	60.25	13.592	
8,500.00	8,491.88	8,529.19	8,498.69	30.22	30.91	161.41	216.88	504.09	821.15	760.53	60.62	13.547	
8,550.00	8,541.80	8,619.34	8,588.58	30.40	31.20	161.85	211.64	502.30	822.21	761.13	61.08	13.461	
8,600.00	8,591.72	8,713.14	8,679.50	30.59	31.46	163.42	189.44	499.26	820.61	759.22	61.39	13.367	
8,650.00	8,641.65	8,755.49	8,718.80	30.77	31.56	164.53	173.73	498.02	818.01	756.32	61.69	13.259	
8,700.00	8,691.57	8,790.51	8,750.27	30.95	31.63	165.62	158.39	497.94	816.43	754.44	61.99	13.171	
8,750.00	8,741.49	8,830.56	8,784.94	31.13	31.71	167.05	138.36	498.82	816.05	753.80	62.26	13.108	
8,800.00	8,791.42	8,894.84	8,837.44	31.31	31.81	169.69	101.35	499.97	815.88	753.35	62.53	13.048	
8,823.22	8,814.60	8,921.44	8,857.93	31.40	31.86	170.89	84.40	500.15	815.84	753.18	62.65	13.021	
8,850.00	8,841.34	8,938.57	8,870.78	31.50	31.87	171.69	73.07	500.30	816.11	753.34	62.78	13.000	
8,900.00	8,891.26	8,973.37	8,896.00	31.68	31.91	173.38	49.10	500.67	817.71	754.74	62.97	12.985 SF	
8,950.00	8,941.19	9,005.00	8,917.88	31.86	31.95	174.99	26.25	501.11	820.94	757.83	63.11	13.009	
9,000.00	8,991.11	9,105.31	8,980.85	32.04	32.05	-179.55	-51.64	498.29	824.60	761.12	63.49	12.988	
9,050.00	9,041.03	9,147.59	9,004.49	32.22	32.07	-177.12	-86.51	494.75	828.71	765.08	63.63	13.024	
9,100.00	9,090.96	9,185.74	9,024.36	32.40	32.10	-174.86	-118.82	490.73	834.46	770.77	63.70	13.101	
9,150.00	9,140.88	9,150.00	9,032.65	32.59	32.07	-173.90	-132.72	488.91	842.28	778.84	63.44	13.277	
9,200.00	9,190.80	9,197.00	9,029.95	32.77	32.11	-174.19	-128.51	489.40	852.95	789.83	63.12	13.513	
9,250.00	9,240.73	9,222.49	9,041.81	32.95	32.12	-172.64	-150.90	486.68	865.38	802.55	62.83	13.773	
9,300.00	9,290.65	9,230.63	9,045.32	33.13	32.12	-172.14	-158.21	485.97	880.66	818.36	62.30	14.135	
9,350.00	9,340.57	9,238.13	9,048.42	33.31	32.12	-171.68	-165.02	485.39	898.29	836.60	61.69	14.562	
9,400.00	9,390.50	9,245.07	9,051.19	33.50	32.13	-171.25	-171.36	484.91	918.14	857.14	61.00	15.052	
9,450.00	9,440.42	9,251.50	9,053.66	33.68	32.13	-170.85	-177.29	484.52	940.10	879.84	60.25	15.603	
9,500.00	9,490.34	9,257.47	9,055.87	33.86	32.14	-170.48	-182.82	484.20	964.03	904.56	59.47	16.211	
9,550.00	9,540.27	9,291.00	9,066.84	34.04	32.17	-168.39	-214.48	483.20	991.09	932.11	58.98	16.804	
9,600.00	9,590.19	9,291.00	9,066.84	34.23	32.17	-168.39	-214.48	483.20	1,018.15	960.04	58.11	17.522	
9,650.00	9,640.11	9,291.00	9,066.84	34.41	32.17	-168.39	-214.48	483.20	1,046.90	989.67	57.24	18.291	
9,700.00	9,690.04	9,291.00	9,066.84	34.59	32.17	-168.39	-214.48	483.20	1,077.21	1,020.83	56.38	19.107	
9,750.00	9,739.96	9,291.00	9,066.84	34.77	32.17	-168.39	-214.48	483.20	1,108.94	1,053.40	55.54	19.967	
9,800.00	9,789.88	9,291.00	9,066.84	34.95	32.17	-168.39	-214.48	483.20	1,141.98	1,087.26	54.73	20.867	
9,850.00	9,839.81	9,291.00	9,066.84	35.14	32.17	-168.39	-214.48	483.20	1,176.22	1,122.28	53.95	21.804	
9,900.00	9,889.73	9,291.00	9,066.84	35.32	32.17	-168.39	-214.48	483.20	1,211.56	1,158.36	53.20	22.774	
9,950.00	9,939.65	9,291.00	9,066.84	35.50	32.17	-168.39	-214.48	483.20	1,247.90	1,195.41	52.49	23.773	
10,000.00	9,989.57	9,291.00	9,066.84	35.68	32.17	-168.39	-214.48	483.20	1,285.16	1,233.33	51.82	24.799	
10,050.00	10,039.50	9,291.00	9,066.84	35.86	32.17	-168.39	-214.48	483.20	1,323.25	1,272.06	51.19	25.848	
10,100.00	10,089.44	9,291.00	9,066.84	36.05	32.17	-168.58	-214.48	483.20	1,361.91	1,311.32	50.60	26.918	
10,150.00	10,139.41	9,291.00	9,066.84	36.23	32.17	-168.76	-214.48	483.20	1,400.90	1,350.87	50.03	28.003	
10,200.00	10,189.39	9,321.24	9,074.90	36.40	32.22	-167.15	-243.62	483.06	1,439.18	1,389.39	49.79	28.907	
10,250.00	10,239.39	9,325.02	9,075.81	36.58	32.23	-167.14	-247.29	483.07	1,478.46	1,429.16	49.30	29.990	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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	5.50	878.91	878.93				
50.00	50.00	49.05	49.05	0.50	0.51	89.64	5.57	878.90	878.92	877.91	1.01	872.732	
100.00	100.00	99.41	99.41	0.52	0.52	89.62	5.79	878.87	878.89	877.85	1.04	846.446	
150.00	150.00	149.96	149.96	0.59	0.55	89.60	6.16	878.82	878.84	877.70	1.14	772.299	
200.00	200.00	204.48	204.48	0.70	0.65	89.57	6.54	878.59	878.64	877.29	1.35	650.210	
250.00	250.00	252.80	252.79	0.84	0.77	89.54	7.00	878.31	878.35	876.74	1.61	546.929	
300.00	300.00	301.11	301.10	0.99	0.90	89.50	7.61	878.12	878.16	876.27	1.89	464.199	
350.00	350.00	350.64	350.62	1.15	1.05	89.46	8.22	878.02	878.06	875.86	2.20	399.164	
400.00	400.00	402.65	402.63	1.31	1.22	89.42	8.86	877.84	877.89	875.37	2.53	347.355	
450.00	450.00	453.61	453.59	1.48	1.38	89.38	9.48	877.56	877.63	874.77	2.86	306.919	
500.00	500.00	503.55	503.52	1.65	1.55	89.35	9.89	877.28	877.35	874.16	3.19	274.746	
550.00	550.00	553.34	553.31	1.82	1.71	89.34	10.11	877.01	877.08	873.55	3.53	248.446	
600.00	600.00	603.03	603.00	1.99	1.88	89.33	10.26	876.76	876.83	872.96	3.87	226.593	
650.00	650.00	654.97	654.95	2.16	2.05	89.32	10.35	876.46	876.54	872.33	4.22	207.766	
700.00	700.00	707.76	707.73	2.34	2.23	89.32	10.38	876.00	876.11	871.54	4.57	191.591	
750.00	750.00	757.10	757.07	2.51	2.40	89.32	10.39	875.50	875.61	870.69	4.92	178.094	
800.00	800.00	806.44	806.41	2.69	2.57	89.32	10.43	875.06	875.15	869.89	5.26	166.337	
850.00	850.00	860.67	860.63	2.87	2.76	89.32	10.41	874.45	874.59	868.97	5.62	155.517	
900.00	900.00	915.39	915.34	3.04	2.95	89.33	10.25	873.57	873.78	867.80	5.99	145.908	
950.00	950.00	971.37	971.31	3.22	3.14	89.33	10.14	872.31	872.66	866.30	6.36	137.249	
1,000.00	1,000.00	1,016.38	1,016.31	3.40	3.22	89.33	10.20	871.26	871.50	864.88	6.62	131.682	
1,050.00	1,050.00	1,073.46	1,073.37	3.58	3.25	89.30	10.61	869.90	870.31	863.50	6.82	127.688	
1,100.00	1,100.00	1,130.02	1,129.89	3.75	3.27	89.25	11.40	868.04	868.67	861.66	7.01	123.844	
1,150.00	1,150.00	1,183.15	1,182.97	3.93	3.30	89.17	12.54	866.02	866.79	859.56	7.23	119.966	
1,200.00	1,200.00	1,237.52	1,237.27	4.11	3.35	89.06	14.13	863.72	864.70	857.25	7.45	116.104	
1,250.00	1,250.00	1,292.81	1,292.46	4.29	3.40	88.93	16.05	861.06	862.32	854.64	7.68	112.304	
1,300.00	1,300.00	1,348.58	1,348.10	4.46	3.48	88.78	18.34	857.99	859.61	851.69	7.93	108.458	
1,350.00	1,350.00	1,404.33	1,403.68	4.64	3.55	88.59	21.00	854.55	856.57	848.40	8.17	104.786	
1,400.00	1,400.00	1,457.31	1,456.46	4.82	3.64	88.40	23.79	851.00	853.29	844.85	8.44	101.092	
1,450.00	1,450.00	1,508.62	1,507.57	5.00	3.73	88.20	26.70	847.38	849.84	841.13	8.71	97.597	
1,500.00	1,500.00	1,557.93	1,556.66	5.18	3.83	87.99	29.65	843.89	846.39	837.42	8.98	94.266	
1,550.00	1,550.00	1,609.46	1,607.96	5.36	3.94	87.76	32.84	840.22	842.95	833.69	9.26	91.022	
1,600.00	1,600.00	1,662.39	1,660.64	5.53	4.05	87.53	36.09	836.28	839.35	829.80	9.55	87.890	
1,650.00	1,650.00	1,712.46	1,710.47	5.71	4.17	87.31	39.15	832.43	835.64	825.80	9.84	84.898	
1,700.00	1,700.00	1,761.90	1,759.68	5.89	4.29	87.09	42.16	828.65	831.96	821.82	10.14	82.074	
1,750.00	1,750.00	1,815.65	1,813.17	6.07	4.43	86.86	45.19	824.44	828.19	817.75	10.45	79.284	
1,800.00	1,800.00	1,869.90	1,867.18	6.25	4.57	86.67	47.66	819.94	824.17	813.41	10.76	76.617	
1,850.00	1,850.00	1,922.53	1,919.58	6.43	4.71	86.52	49.60	815.36	819.94	808.87	11.07	74.056	
1,900.00	1,900.00	1,974.12	1,970.93	6.61	4.86	86.39	51.14	810.72	815.54	804.15	11.39	71.626	
1,950.00	1,950.00	2,023.55	2,020.15	6.78	5.00	86.28	52.48	806.27	811.12	799.42	11.70	69.328	
2,000.00	2,000.00	2,072.71	2,069.09	6.96	5.14	86.17	53.74	801.86	806.74	794.72	12.02	67.143	
2,050.00	2,050.00	2,121.49	2,117.67	7.14	5.29	86.06	54.92	797.55	802.41	790.07	12.33	65.064	
2,100.00	2,100.00	2,170.33	2,166.30	7.32	5.43	85.96	56.04	793.29	798.14	785.49	12.65	63.083	
2,150.00	2,150.00	2,219.20	2,214.99	7.50	5.58	85.86	57.17	789.09	793.93	780.96	12.97	61.193	
2,200.00	2,200.00	2,267.90	2,263.49	7.68	5.73	85.75	58.32	784.97	789.79	776.50	13.30	59.392	
2,250.00	2,250.00	2,316.43	2,311.84	7.86	5.88	85.64	59.53	780.93	785.73	772.11	13.62	57.676	
2,300.00	2,300.00	2,370.09	2,365.29	8.04	6.05	85.52	60.89	776.44	781.66	767.70	13.96	55.986	
2,350.00	2,350.00	2,427.15	2,422.10	8.22	6.24	85.39	62.15	771.20	777.17	762.86	14.31	54.317	
2,400.00	2,400.00	2,475.52	2,470.24	8.39	6.40	85.30	63.08	766.56	772.47	757.83	14.64	52.769	
2,450.00	2,450.00	2,523.11	2,517.62	8.57	6.55	85.21	63.92	762.14	767.91	752.94	14.97	51.303	
2,500.00	2,500.00	2,570.26	2,564.57	8.75	6.71	85.12	64.66	757.91	763.51	748.21	15.30	49.908	
2,550.00	2,550.00	2,617.41	2,611.54	8.93	6.86	85.05	65.28	753.86	759.28	743.65	15.63	48.583	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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	2,664.05	2,658.03	9.11	7.02	84.99	65.80	750.03	755.25	739.29	15.96	47.325	
2,650.00	2,650.00	2,710.68	2,704.51	9.29	7.17	84.93	66.27	746.42	751.43	735.14	16.29	46.131	
2,700.00	2,700.00	2,758.37	2,752.07	9.47	7.33	84.86	66.84	742.88	747.79	731.17	16.62	44.984	
2,750.00	2,750.00	2,806.23	2,799.79	9.65	7.49	84.76	67.79	739.44	744.29	727.33	16.96	43.888	
2,800.00	2,800.00	2,862.77	2,856.15	9.83	7.68	84.63	69.14	735.20	740.67	723.35	17.32	42.771	
2,850.00	2,850.00	2,920.41	2,913.57	10.00	7.88	84.49	70.43	730.28	736.53	718.85	17.68	41.667	
2,900.00	2,900.00	2,969.37	2,962.33	10.18	8.05	84.38	71.41	725.95	732.22	714.21	18.02	40.636	
2,950.00	2,950.00	3,019.58	3,012.33	10.36	8.22	84.28	72.30	721.46	727.86	709.49	18.36	39.635	
3,000.00	3,000.00	3,069.13	3,061.68	10.54	8.39	84.19	73.01	717.04	723.50	704.79	18.71	38.672	
3,050.00	3,050.00	3,117.51	3,109.87	10.72	8.56	168.93	73.60	712.78	719.38	700.34	19.05	37.770	
3,100.00	3,099.99	3,164.41	3,156.59	10.89	8.73	168.85	74.41	708.78	715.88	696.50	19.38	36.934	
3,150.00	3,149.98	3,211.29	3,203.30	11.06	8.89	168.75	75.51	704.95	713.01	693.29	19.71	36.166	
3,200.00	3,199.96	3,258.14	3,249.99	11.24	9.05	168.66	76.63	701.33	710.78	690.73	20.05	35.454	
3,250.00	3,249.92	3,308.69	3,300.39	11.41	9.23	168.57	77.77	697.60	709.15	688.76	20.39	34.779	
3,300.00	3,299.86	3,365.12	3,356.64	11.58	9.43	168.50	78.78	693.08	707.62	686.88	20.75	34.109	
3,350.00	3,349.79	3,417.22	3,408.53	11.75	9.61	168.45	79.45	688.58	706.09	684.99	21.09	33.477	
3,400.00	3,399.71	3,467.46	3,458.58	11.93	9.79	168.42	79.91	684.22	704.53	683.10	21.43	32.869	
3,450.00	3,449.63	3,520.62	3,511.53	12.10	9.98	168.39	80.34	679.51	702.88	681.10	21.78	32.265	
3,500.00	3,499.56	3,574.44	3,565.10	12.27	10.18	168.34	81.01	674.41	700.96	678.82	22.14	31.667	
3,550.00	3,549.48	3,617.92	3,608.39	12.45	10.33	168.29	81.59	670.39	699.15	676.68	22.47	31.117	
3,600.00	3,599.40	3,661.87	3,652.19	12.62	10.49	168.26	82.07	666.72	697.76	674.96	22.80	30.603	
3,650.00	3,649.33	3,708.98	3,699.15	12.80	10.66	168.22	82.64	663.09	696.72	673.58	23.14	30.110	
3,700.00	3,699.25	3,756.59	3,746.62	12.97	10.83	168.16	83.57	659.55	695.84	672.36	23.48	29.636	
3,750.00	3,749.17	3,803.08	3,792.98	13.15	10.99	168.08	84.69	656.26	695.18	671.36	23.82	29.187	
3,800.00	3,799.10	3,849.39	3,839.18	13.32	11.15	168.00	85.77	653.23	694.77	670.62	24.15	28.763	
3,850.00	3,849.02	3,897.45	3,887.14	13.50	11.32	167.93	86.83	650.30	694.59	670.09	24.50	28.354	
3,900.00	3,898.94	3,945.97	3,935.56	13.67	11.50	167.88	87.74	647.47	694.51	669.67	24.84	27.960	
3,950.00	3,948.87	4,000.17	3,989.67	13.85	11.69	167.81	88.75	644.23	694.37	669.17	25.20	27.555	
4,000.00	3,998.79	4,055.62	4,044.97	14.02	11.88	167.73	90.03	640.48	693.86	668.30	25.56	27.144	
4,050.00	4,048.71	4,111.93	4,101.08	14.20	12.09	167.60	91.73	636.12	692.91	666.99	25.93	26.725	
4,100.00	4,098.64	4,164.18	4,153.11	14.38	12.28	167.44	93.72	631.62	691.58	665.29	26.28	26.312	
4,150.00	4,148.56	4,210.31	4,199.04	14.55	12.45	167.30	95.49	627.77	690.39	663.76	26.63	25.928	
4,200.00	4,198.48	4,260.09	4,248.63	14.73	12.63	167.15	97.32	623.86	689.43	662.45	26.98	25.554	
4,250.00	4,248.41	4,315.81	4,304.11	14.91	12.83	166.99	99.35	619.15	688.19	660.84	27.34	25.167	
4,300.00	4,298.33	4,367.28	4,355.34	15.08	13.02	166.83	101.25	614.49	686.64	658.94	27.70	24.787	
4,350.00	4,348.25	4,416.70	4,404.52	15.26	13.21	166.68	103.11	610.01	685.11	657.05	28.05	24.421	
4,400.00	4,398.18	4,466.90	4,454.47	15.44	13.39	166.52	105.01	605.48	683.60	655.19	28.41	24.063	
4,450.00	4,448.10	4,517.36	4,504.69	15.62	13.58	166.37	106.84	600.90	682.06	653.29	28.76	23.712	
4,500.00	4,498.02	4,566.45	4,553.55	15.79	13.76	166.22	108.60	596.45	680.53	651.41	29.12	23.372	
4,550.00	4,547.94	4,615.32	4,602.19	15.97	13.94	166.06	110.46	592.09	679.08	649.61	29.47	23.043	
4,600.00	4,597.87	4,664.93	4,651.57	16.15	14.13	165.90	112.37	587.70	677.70	647.87	29.82	22.723	
4,650.00	4,647.79	4,714.60	4,701.01	16.33	14.31	165.75	114.23	583.35	676.33	646.15	30.18	22.410	
4,700.00	4,697.71	4,763.59	4,749.79	16.51	14.49	165.59	116.07	579.09	675.02	644.49	30.53	22.108	
4,750.00	4,747.64	4,812.65	4,798.62	16.68	14.67	165.43	118.01	574.88	673.79	642.90	30.89	21.814	
4,800.00	4,797.56	4,862.41	4,848.17	16.86	14.86	165.27	119.93	570.66	672.60	641.35	31.24	21.528	
4,850.00	4,847.48	4,912.19	4,897.73	17.04	15.04	165.12	121.71	566.48	671.42	639.82	31.60	21.248	
4,900.00	4,897.41	4,960.90	4,946.25	17.22	15.22	164.99	123.29	562.47	670.31	638.36	31.95	20.979	
4,950.00	4,947.33	5,010.48	4,995.66	17.40	15.40	164.87	124.70	558.50	669.28	636.98	32.31	20.716	
5,000.00	4,997.25	5,062.58	5,047.58	17.58	15.60	164.78	125.79	554.30	668.17	635.50	32.67	20.454	
5,050.00	5,047.18	5,116.10	5,100.90	17.76	15.79	164.73	126.47	549.87	666.87	633.85	33.03	20.191	
5,100.00	5,097.10	5,171.71	5,156.29	17.93	16.00	164.64	127.34	544.82	665.21	631.81	33.39	19.920	
5,150.00	5,147.02	5,223.95	5,208.26	18.11	16.19	164.54	128.39	539.67	663.20	629.45	33.75	19.648	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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	5,196.95	5,274.67	5,258.71	18.29	16.38	164.44	129.40	534.60	661.12	627.01	34.11	19.381	
5,250.00	5,246.87	5,322.70	5,306.50	18.47	16.57	164.35	130.35	529.82	659.07	624.60	34.47	19.123	
5,300.00	5,296.79	5,370.06	5,353.63	18.65	16.74	164.26	131.25	525.30	657.21	622.39	34.82	18.875	
5,350.00	5,346.72	5,419.28	5,402.63	18.83	16.93	164.18	132.14	520.75	655.49	620.32	35.17	18.636	
5,400.00	5,396.64	5,469.00	5,452.13	19.01	17.11	164.10	132.94	516.19	653.80	618.27	35.53	18.401	
5,450.00	5,446.56	5,517.75	5,500.68	19.19	17.29	164.03	133.69	511.78	652.16	616.27	35.88	18.174	
5,500.00	5,496.49	5,566.37	5,549.10	19.37	17.47	163.95	134.49	507.48	650.62	614.38	36.24	17.954	
5,550.00	5,546.41	5,615.33	5,597.87	19.55	17.66	163.87	135.34	503.22	649.18	612.58	36.59	17.740	
5,600.00	5,596.33	5,664.34	5,646.69	19.73	17.84	163.79	136.24	499.03	647.81	610.86	36.95	17.533	
5,650.00	5,646.26	5,713.34	5,695.51	19.91	18.02	163.71	137.21	494.90	646.52	609.21	37.30	17.331	
5,700.00	5,696.18	5,762.49	5,744.48	20.09	18.20	163.61	138.26	490.81	645.30	607.64	37.66	17.135	
5,750.00	5,746.10	5,814.50	5,796.29	20.27	18.40	163.50	139.45	486.42	644.03	606.01	38.02	16.938	
5,800.00	5,796.03	5,866.50	5,848.07	20.45	18.59	163.38	140.73	481.84	642.61	604.23	38.38	16.741	
5,850.00	5,845.95	5,915.22	5,896.58	20.63	18.77	163.27	142.00	477.53	641.19	602.45	38.74	16.551	
5,900.00	5,895.87	5,964.07	5,945.22	20.81	18.95	163.14	143.34	473.26	639.82	600.72	39.10	16.365	
5,950.00	5,945.79	6,011.81	5,992.78	20.99	19.13	163.02	144.62	469.22	638.60	599.15	39.45	16.187	
6,000.00	5,995.72	6,060.34	6,041.13	21.17	19.31	162.91	145.86	465.29	637.55	597.74	39.81	16.015	
6,050.00	6,045.64	6,110.78	6,091.38	21.35	19.50	162.78	147.37	461.18	636.51	596.34	40.17	15.846	
6,100.00	6,095.56	6,161.02	6,141.41	21.53	19.69	162.62	149.15	456.99	635.45	594.92	40.53	15.679	
6,150.00	6,145.49	6,211.00	6,191.20	21.71	19.87	162.47	150.78	452.84	634.38	593.49	40.89	15.514	
6,200.00	6,195.41	6,261.09	6,241.09	21.89	20.06	162.34	152.20	448.73	633.31	592.06	41.25	15.353	
6,250.00	6,245.33	6,311.26	6,291.08	22.07	20.25	162.21	153.56	444.61	632.23	590.62	41.61	15.194	
6,300.00	6,295.26	6,360.37	6,340.01	22.25	20.43	162.09	154.86	440.60	631.17	589.20	41.97	15.039	
6,350.00	6,345.18	6,408.79	6,388.26	22.43	20.61	161.98	156.15	436.75	630.22	587.89	42.32	14.890	
6,400.00	6,395.10	6,459.87	6,439.16	22.61	20.80	161.85	157.58	432.72	629.32	586.63	42.69	14.743	
6,450.00	6,445.03	6,512.39	6,491.46	22.79	21.00	161.68	159.42	428.31	628.25	585.19	43.05	14.592	
6,500.00	6,494.95	6,562.53	6,541.36	22.97	21.19	161.48	161.45	423.90	627.06	583.64	43.42	14.443	
6,550.00	6,544.87	6,612.13	6,590.73	23.15	21.37	161.29	163.54	419.55	625.89	582.11	43.78	14.297	
6,600.00	6,594.80	6,659.58	6,637.96	23.33	21.55	161.10	165.53	415.49	624.84	580.71	44.14	14.157	
6,650.00	6,644.72	6,706.82	6,685.01	23.51	21.73	160.93	167.36	411.69	624.01	579.52	44.49	14.026	
6,700.00	6,694.64	6,754.28	6,732.31	23.69	21.90	160.78	169.09	408.10	623.40	578.56	44.85	13.901	
6,750.00	6,744.57	6,801.78	6,779.65	23.88	22.08	160.63	170.75	404.73	622.99	577.79	45.20	13.783	
6,800.00	6,794.49	6,852.36	6,830.09	24.06	22.26	160.48	172.47	401.23	622.68	577.11	45.56	13.666	
6,850.00	6,844.41	6,903.32	6,880.89	24.24	22.45	160.34	174.18	397.64	622.29	576.36	45.93	13.550	
6,900.00	6,894.34	6,953.23	6,930.65	24.42	22.64	160.19	175.86	394.08	621.86	575.58	46.29	13.435	
6,950.00	6,944.26	7,003.62	6,980.87	24.60	22.82	160.04	177.64	390.47	621.45	574.80	46.65	13.321	
7,000.00	6,994.18	7,057.22	7,034.28	24.78	23.02	159.85	179.64	386.40	620.85	573.83	47.02	13.203	
7,050.00	7,044.11	7,109.62	7,086.47	24.96	23.22	159.66	181.72	382.10	619.99	572.60	47.39	13.082	
7,100.00	7,094.03	7,159.87	7,136.49	25.14	23.41	159.46	183.74	377.87	619.06	571.30	47.76	12.963	
7,150.00	7,143.95	7,208.86	7,185.28	25.32	23.59	159.28	185.72	373.75	618.13	570.01	48.12	12.846	
7,200.00	7,193.87	7,256.40	7,232.62	25.50	23.77	159.10	187.59	369.93	617.37	568.90	48.47	12.736	
7,250.00	7,243.80	7,306.74	7,282.77	25.69	23.96	158.92	189.50	366.05	616.77	567.93	48.84	12.629	
7,300.00	7,293.72	7,360.63	7,336.46	25.87	24.16	158.76	191.25	361.72	615.93	566.72	49.21	12.516	
7,350.00	7,343.64	7,411.87	7,387.50	26.05	24.35	158.62	192.62	357.43	614.85	565.27	49.58	12.402	
7,400.00	7,393.57	7,461.85	7,437.30	26.23	24.54	158.50	193.78	353.27	613.76	563.82	49.94	12.290	
7,450.00	7,443.49	7,510.57	7,485.84	26.41	24.72	158.40	194.79	349.29	612.70	562.41	50.30	12.182	
7,500.00	7,493.41	7,558.89	7,534.00	26.59	24.90	158.30	195.76	345.48	611.78	561.13	50.65	12.078	
7,550.00	7,543.34	7,607.06	7,582.02	26.77	25.08	158.21	196.68	341.84	611.00	559.99	51.01	11.978	
7,600.00	7,593.26	7,655.20	7,630.03	26.95	25.25	158.14	197.53	338.38	610.38	559.01	51.37	11.883	
7,650.00	7,643.18	7,704.04	7,678.75	27.14	25.43	158.07	198.31	335.02	609.88	558.16	51.72	11.792	
7,700.00	7,693.11	7,753.05	7,727.65	27.32	25.61	158.01	199.06	331.74	609.47	557.39	52.08	11.703	
7,750.00	7,743.03	7,801.74	7,776.23	27.50	25.79	157.96	199.76	328.59	609.15	556.72	52.43	11.618	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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
7,800.00	7,792.95	7,850.40	7,824.79	27.68	25.97	157.91	200.42	325.57	608.94	556.15	52.79	11.535	
7,850.00	7,842.88	7,899.97	7,874.27	27.86	26.15	157.87	201.08	322.57	608.81	555.66	53.15	11.455	
7,900.00	7,892.80	7,949.62	7,923.82	28.04	26.33	157.82	201.80	319.58	608.70	555.20	53.50	11.377	
7,950.00	7,942.72	8,000.25	7,974.35	28.22	26.51	157.76	202.61	316.49	608.59	554.72	53.86	11.298	
8,000.00	7,992.65	8,050.88	8,024.87	28.41	26.70	157.69	203.46	313.34	608.42	554.19	54.23	11.220	
8,050.00	8,042.57	8,099.59	8,073.49	28.59	26.88	157.64	204.23	310.36	608.29	553.71	54.58	11.145	
8,098.64	8,091.13	8,147.18	8,120.99	28.76	27.05	157.60	204.86	307.57	608.25	553.32	54.93	11.074 CC	
8,100.00	8,092.49	8,148.50	8,122.30	28.77	27.05	157.60	204.88	307.49	608.25	553.31	54.94	11.072	
8,150.00	8,142.42	8,197.35	8,171.08	28.95	27.23	157.57	205.40	304.76	608.30	553.01	55.29	11.002	
8,200.00	8,192.34	8,245.80	8,219.46	29.13	27.40	157.56	205.77	302.20	608.45	552.81	55.64	10.935	
8,250.00	8,242.26	8,292.90	8,266.50	29.31	27.57	157.57	205.99	299.95	608.79	552.81	55.99	10.874 ES	
8,300.00	8,292.19	8,340.38	8,313.94	29.50	27.74	157.61	206.05	297.96	609.37	553.04	56.33	10.818	
8,350.00	8,342.11	8,389.26	8,362.79	29.68	27.91	157.66	206.00	296.08	610.09	553.41	56.68	10.764	
8,400.00	8,392.03	8,437.99	8,411.49	29.86	28.08	157.72	205.86	294.34	610.90	553.87	57.03	10.712	
8,450.00	8,441.96	8,486.32	8,459.79	30.04	28.25	157.79	205.64	292.75	611.83	554.46	57.37	10.664	
8,500.00	8,491.88	8,534.64	8,508.09	30.22	28.42	157.87	205.37	291.33	612.90	555.18	57.72	10.619	
8,550.00	8,541.80	8,582.98	8,556.41	30.40	28.59	157.95	205.11	290.03	614.11	556.05	58.06	10.577	
8,600.00	8,591.72	8,632.92	8,606.33	30.59	28.76	158.03	204.89	288.79	615.43	557.01	58.41	10.536	
8,650.00	8,641.65	8,686.34	8,659.73	30.77	28.95	158.13	204.54	287.30	616.57	557.79	58.78	10.489	
8,700.00	8,691.57	8,736.07	8,709.44	30.95	29.12	158.21	204.18	285.71	617.51	558.38	59.13	10.443	
8,750.00	8,741.49	8,782.63	8,755.97	31.13	29.28	158.25	204.33	284.29	618.67	559.20	59.47	10.403	
8,800.00	8,791.42	8,831.95	8,805.26	31.31	29.46	158.24	205.04	282.86	620.05	560.23	59.82	10.365	
8,850.00	8,841.34	8,884.06	8,857.34	31.50	29.64	158.21	206.02	281.15	621.32	561.13	60.19	10.323	
8,900.00	8,891.26	8,929.96	8,903.20	31.68	29.80	158.17	206.96	279.63	622.60	562.08	60.52	10.287	
8,950.00	8,941.19	8,973.98	8,947.20	31.86	29.96	158.16	207.76	278.63	624.35	563.51	60.85	10.261	
9,000.00	8,991.11	9,022.31	8,995.52	32.04	30.12	158.17	208.48	277.96	626.47	565.28	61.19	10.238	
9,050.00	9,041.03	9,073.38	9,046.59	32.22	30.30	158.21	208.94	277.29	628.54	566.99	61.55	10.212	
9,100.00	9,090.96	9,123.03	9,096.23	32.40	30.47	158.24	209.41	276.59	630.57	568.67	61.90	10.186	
9,150.00	9,140.88	9,172.20	9,145.38	32.59	30.64	158.20	210.66	275.71	632.65	570.40	62.25	10.163	
9,200.00	9,190.80	9,224.53	9,197.66	32.77	30.83	158.12	212.40	274.61	634.70	572.07	62.62	10.135	
9,250.00	9,240.73	9,277.57	9,250.67	32.95	31.01	158.07	213.73	273.37	636.50	573.51	63.00	10.103	
9,300.00	9,290.65	9,326.28	9,299.37	33.13	31.18	158.07	214.52	272.29	638.24	574.90	63.35	10.075	
9,350.00	9,340.57	9,375.04	9,348.12	33.31	31.35	158.10	214.90	271.42	640.08	576.38	63.69	10.049	
9,400.00	9,390.50	9,423.82	9,396.89	33.50	31.52	158.15	215.17	270.68	642.00	577.96	64.04	10.025	
9,450.00	9,440.42	9,472.58	9,445.65	33.68	31.69	158.19	215.54	270.01	644.02	579.63	64.39	10.002	
9,500.00	9,490.34	9,521.35	9,494.41	33.86	31.86	158.23	216.02	269.40	646.13	581.40	64.74	9.981	
9,550.00	9,540.27	9,563.86	9,536.91	34.04	32.00	158.24	216.64	269.13	648.61	583.57	65.04	9.973	
9,600.00	9,590.19	9,606.93	9,579.97	34.23	32.15	158.25	217.54	269.24	651.60	586.26	65.34	9.973	
9,650.00	9,640.11	9,655.71	9,628.73	34.41	32.31	158.25	218.68	269.66	654.92	589.25	65.67	9.972	
9,700.00	9,690.04	9,705.07	9,678.09	34.59	32.47	158.27	219.67	270.18	658.28	592.27	66.01	9.972	
9,750.00	9,739.96	9,758.26	9,731.27	34.77	32.64	158.32	220.37	270.73	661.54	595.16	66.38	9.966	
9,800.00	9,789.88	9,811.92	9,784.92	34.95	32.81	158.41	220.50	271.17	664.54	597.80	66.74	9.957	
9,850.00	9,839.81	9,867.15	9,840.15	35.14	32.98	158.55	220.08	271.38	667.20	600.08	67.12	9.941	
9,900.00	9,889.73	9,917.89	9,890.88	35.32	33.14	158.70	219.29	271.36	669.54	602.08	67.46	9.925	
9,950.00	9,939.65	9,963.69	9,936.68	35.50	33.28	158.83	218.70	271.50	672.09	604.32	67.77	9.917	
10,000.00	9,989.57	10,011.10	9,984.09	35.68	33.43	158.96	218.29	271.87	674.93	606.84	68.09	9.912	
10,050.00	10,039.50	10,060.92	10,033.91	35.86	33.59	159.08	217.92	272.30	677.83	609.40	68.43	9.906	
10,100.00	10,089.44	10,113.06	10,086.04	36.05	33.75	159.21	217.51	272.71	680.37	611.60	68.78	9.893	
10,150.00	10,139.41	10,167.57	10,140.55	36.23	33.92	159.35	216.68	272.93	682.02	612.88	69.14	9.864	
10,200.00	10,189.39	10,222.55	10,195.51	36.40	34.10	159.48	215.60	272.82	682.71	613.20	69.51	9.821	
10,250.00	10,239.39	10,277.82	10,250.78	36.58	34.28	159.54	214.76	272.21	682.42	612.53	69.89	9.765	
10,300.00	10,289.39	10,335.95	10,308.88	36.75	34.48	74.76	214.01	270.94	681.20	610.93	70.27	9.694	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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
10,350.00	10,339.39	10,388.98	10,361.88	36.93	34.67	74.77	213.33	269.20	679.45	608.82	70.63	9.619	
10,400.00	10,389.39	10,434.32	10,407.20	37.10	34.82	74.77	212.99	267.81	677.87	606.91	70.96	9.552	
10,450.00	10,439.39	10,482.54	10,455.41	37.28	34.99	74.75	212.91	266.56	676.60	605.30	71.31	9.489	
10,500.00	10,489.39	10,537.40	10,510.24	37.45	35.19	74.72	212.83	264.93	675.14	603.46	71.68	9.419	
10,550.00	10,539.39	10,586.55	10,559.36	37.62	35.36	74.69	212.71	263.22	673.44	601.42	72.03	9.350	
10,600.00	10,589.39	10,631.42	10,604.21	37.80	35.52	74.66	212.79	261.91	672.05	599.70	72.35	9.288	
10,645.21	10,634.57	10,670.81	10,643.59	37.95	35.66	-105.37	213.03	261.02	671.51	598.87	72.64	9.245	
10,650.00	10,639.36	10,674.80	10,647.58	37.97	35.67	-105.36	213.04	260.95	671.43	598.76	72.67	9.240	
10,700.00	10,689.03	10,716.20	10,688.97	38.13	35.81	-105.65	213.13	260.58	672.53	599.58	72.95	9.219	
10,750.00	10,738.02	10,757.75	10,730.53	38.29	35.95	-106.03	213.00	260.80	675.50	602.26	73.24	9.223	
10,800.00	10,785.96	10,803.08	10,775.85	38.45	36.09	-106.56	212.53	261.48	680.21	606.66	73.54	9.249	
10,850.00	10,832.49	10,847.56	10,820.31	38.60	36.22	-107.17	211.69	262.44	686.65	612.80	73.85	9.298	
10,900.00	10,877.25	10,895.92	10,868.65	38.74	36.37	-108.02	210.83	263.43	694.80	620.61	74.18	9.366	
10,950.00	10,919.90	10,941.64	10,914.37	38.87	36.52	-108.90	210.42	263.99	704.77	630.27	74.51	9.459	
11,000.00	10,960.11	10,984.71	10,957.43	39.00	36.66	-109.71	210.26	264.25	716.88	642.05	74.82	9.581	
11,050.00	10,997.58	11,024.79	10,997.51	39.12	36.79	-110.34	210.15	264.31	731.37	656.25	75.12	9.736	
11,100.00	11,032.03	11,060.17	11,032.89	39.23	36.91	-110.60	210.10	264.23	748.50	673.11	75.39	9.928	
11,150.00	11,063.19	11,091.43	11,064.15	39.34	37.01	-110.45	210.11	264.12	768.48	692.84	75.64	10.160	
11,200.00	11,090.83	11,119.02	11,091.75	39.46	37.11	-109.82	210.16	263.99	791.35	715.50	75.86	10.432	
11,250.00	11,114.73	11,142.58	11,115.31	39.58	37.19	-108.62	210.24	263.85	817.09	741.04	76.05	10.744	
11,300.00	11,134.71	11,161.96	11,134.68	39.71	37.26	-106.73	210.33	263.74	845.58	769.37	76.22	11.095	
11,350.00	11,150.62	11,177.27	11,149.99	39.85	37.31	-104.11	210.41	263.64	876.62	800.27	76.35	11.482	
11,400.00	11,162.35	11,754.99	11,662.48	39.99	38.86	-132.36	-2.84	242.92	908.93	837.83	71.10	12.784	
11,450.00	11,169.79	12,291.97	11,836.29	40.13	40.02	-136.62	-496.68	240.93	915.22	848.37	66.85	13.691	
11,500.00	11,172.90	12,359.63	11,834.80	40.27	40.25	-136.71	-564.29	239.56	911.39	844.09	67.29	13.543	
11,550.00	11,173.00	12,402.84	11,832.73	40.43	40.42	-136.66	-607.46	239.43	909.38	841.79	67.59	13.455	
11,600.00	11,173.00	12,445.96	11,831.16	40.58	40.58	-136.61	-650.55	239.25	907.81	839.95	67.87	13.376	
11,650.00	11,173.00	12,487.60	11,830.11	40.76	40.75	-136.58	-692.17	239.08	906.66	838.51	68.15	13.303	
11,700.00	11,173.00	12,528.86	11,829.51	40.93	40.93	-136.56	-733.43	239.01	905.99	837.56	68.43	13.240	
11,728.95	11,173.00	12,550.00	11,829.37	41.05	41.02	-136.56	-754.57	239.02	905.83	837.25	68.58	13.209	
11,750.00	11,173.00	12,565.19	11,829.34	41.13	41.08	-136.55	-769.75	239.13	905.87	837.18	68.69	13.188	
11,800.00	11,173.00	12,596.31	11,829.43	41.33	41.23	-136.52	-800.86	239.89	906.71	837.78	68.93	13.154	
11,850.00	11,173.00	12,627.38	11,829.72	41.56	41.37	-136.47	-831.90	241.37	908.60	839.40	69.20	13.130	
11,900.00	11,173.00	12,683.77	11,830.58	41.78	41.64	-136.36	-888.17	244.83	911.22	841.53	69.69	13.076	
11,950.00	11,173.00	12,767.52	11,831.78	42.02	42.07	-136.35	-971.90	246.39	912.24	841.87	70.37	12.963	
12,000.00	11,173.00	12,840.79	11,832.63	42.27	42.46	-136.47	-1,045.13	244.77	911.81	840.87	70.94	12.853	
12,050.00	11,173.00	12,874.93	11,832.96	42.53	42.66	-136.52	-1,079.27	244.01	911.26	840.04	71.22	12.795	
12,064.10	11,173.00	12,885.38	11,833.05	42.61	42.72	-136.53	-1,089.71	243.91	911.23	839.92	71.31	12.779	
12,100.00	11,173.00	12,911.97	11,833.27	42.80	42.88	-136.54	-1,116.30	243.95	911.41	839.88	71.54	12.740	
12,150.00	11,173.00	12,955.81	11,833.56	43.09	43.14	-136.53	-1,160.13	244.75	912.18	840.22	71.97	12.675	
12,200.00	11,173.00	13,006.10	11,833.72	43.37	43.45	-136.48	-1,210.41	245.95	913.02	840.55	72.48	12.598	
12,250.00	11,173.00	13,060.61	11,833.73	43.68	43.80	-136.43	-1,264.90	247.27	913.77	840.71	73.06	12.507	
12,300.00	11,173.00	13,117.46	11,833.72	43.99	44.17	-136.40	-1,321.74	248.09	914.17	840.50	73.67	12.409	
12,350.00	11,173.00	13,211.27	11,833.83	44.31	44.81	-136.53	-1,415.50	245.56	913.19	838.55	74.64	12.234	
12,400.00	11,173.00	13,242.94	11,833.76	44.64	45.04	-136.59	-1,447.14	244.25	911.57	836.63	74.94	12.164	
12,450.00	11,173.00	13,276.77	11,833.41	44.98	45.28	-136.59	-1,480.97	243.98	910.83	835.52	75.31	12.095	
12,466.56	11,173.00	13,287.98	11,833.24	45.10	45.36	-136.58	-1,492.17	244.15	910.78	835.35	75.44	12.073	
12,500.00	11,173.00	13,311.23	11,832.79	45.33	45.53	-136.53	-1,515.40	244.88	910.98	835.25	75.72	12.030	
12,550.00	11,173.00	13,347.87	11,832.18	45.69	45.81	-136.43	-1,552.01	246.61	911.90	835.69	76.21	11.966	
12,600.00	11,173.00	13,384.47	11,831.78	46.05	46.08	-136.31	-1,588.53	248.89	913.57	836.86	76.70	11.910	
12,650.00	11,173.00	13,446.55	11,831.44	46.43	46.57	-136.13	-1,650.48	252.80	915.50	837.91	77.59	11.799	
12,700.00	11,173.00	13,505.53	11,831.29	46.81	47.03	-136.05	-1,709.43	254.68	916.39	838.00	78.39	11.690	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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
12,750.00	11,173.00	13,545.38	11,831.28	47.20	47.36	-135.98	-1,749.26	256.13	917.55	838.61	78.93	11.625	
12,800.00	11,173.00	13,587.01	11,831.32	47.60	47.70	-135.90	-1,790.83	258.25	919.25	839.74	79.51	11.561	
12,850.00	11,173.00	13,644.06	11,831.05	48.01	48.18	-135.75	-1,847.79	261.47	920.95	840.57	80.38	11.457	
12,900.00	11,173.00	13,691.46	11,830.43	48.42	48.58	-135.61	-1,895.10	264.16	922.39	841.28	81.11	11.373	
12,950.00	11,173.00	13,727.40	11,830.34	48.85	48.90	-135.51	-1,930.98	266.44	924.42	842.77	81.65	11.321	
13,000.00	11,173.00	13,763.31	11,830.75	49.27	49.21	-135.42	-1,966.79	268.97	927.21	845.02	82.19	11.281	
13,050.00	11,173.00	13,825.22	11,831.37	49.71	49.77	-135.24	-2,028.52	273.71	930.19	846.98	83.20	11.180	
13,100.00	11,173.00	13,923.37	11,829.07	50.15	50.67	-134.86	-2,126.40	280.39	931.90	846.96	84.94	10.971	
13,150.00	11,173.00	13,998.79	11,825.59	50.60	51.38	-134.66	-2,201.72	281.85	930.72	844.50	86.22	10.795	
13,200.00	11,173.00	14,051.20	11,823.87	51.05	51.87	-134.60	-2,254.10	281.53	929.24	842.20	87.05	10.675	
13,250.00	11,173.00	14,102.79	11,822.40	51.52	52.37	-134.57	-2,305.66	280.82	927.66	839.80	87.86	10.559	
13,300.00	11,173.00	14,154.26	11,820.38	51.98	52.87	-134.50	-2,357.10	280.54	925.99	837.30	88.70	10.440	
13,350.00	11,173.00	14,197.30	11,818.86	52.46	53.29	-134.45	-2,400.11	280.34	924.49	835.09	89.41	10.340	
13,400.00	11,173.00	14,240.88	11,817.97	52.93	53.72	-134.43	-2,443.67	279.92	923.33	833.24	90.10	10.248	
13,450.00	11,173.00	14,301.58	11,817.36	53.42	54.33	-134.47	-2,504.35	278.59	922.12	831.07	91.04	10.129	
13,500.00	11,173.00	14,359.15	11,816.95	53.91	54.90	-134.56	-2,561.87	276.16	920.26	828.36	91.89	10.015	
13,550.00	11,173.00	14,407.73	11,816.96	54.41	55.39	-134.68	-2,610.39	273.64	918.32	825.73	92.59	9.918	
13,600.00	11,173.00	14,454.85	11,817.34	54.91	55.87	-134.82	-2,657.43	270.95	916.48	823.23	93.24	9.829	
13,650.00	11,173.00	14,500.14	11,818.00	55.41	56.33	-134.97	-2,702.64	268.37	914.87	821.00	93.87	9.746	
13,700.00	11,173.00	14,543.64	11,818.88	55.92	56.78	-135.12	-2,746.07	265.96	913.54	819.07	94.46	9.671	
13,750.00	11,173.00	14,584.06	11,819.76	56.44	57.21	-135.24	-2,786.44	264.19	912.68	817.65	95.03	9.604	
13,800.00	11,173.00	14,624.81	11,820.67	56.96	57.63	-135.34	-2,827.16	263.00	912.34	816.73	95.62	9.542	
13,840.49	11,173.00	14,663.73	11,821.54	57.38	58.05	-135.42	-2,866.06	262.18	912.31	816.10	96.21	9.483	
13,850.00	11,173.00	14,672.87	11,821.74	57.48	58.15	-135.44	-2,875.19	262.00	912.31	815.96	96.35	9.469	
13,900.00	11,173.00	14,721.37	11,822.82	58.01	58.67	-135.53	-2,923.67	261.14	912.38	815.29	97.09	9.397	
13,950.00	11,173.00	14,776.66	11,824.02	58.54	59.27	-135.64	-2,978.94	260.00	912.34	814.39	97.95	9.314	
14,000.00	11,173.00	14,829.23	11,825.05	59.08	59.84	-135.76	-3,031.48	258.63	912.04	813.27	98.77	9.234	
14,050.00	11,173.00	14,877.06	11,825.05	59.62	60.37	-135.77	-3,079.31	258.40	911.78	812.19	99.58	9.156	
14,087.50	11,173.00	14,912.92	11,824.27	60.03	60.76	-135.71	-3,115.15	259.13	911.66	811.40	100.25	9.093	
14,100.00	11,173.00	14,919.70	11,824.17	60.17	60.84	-135.70	-3,121.93	259.29	911.69	811.32	100.37	9.083	
14,150.00	11,173.00	14,954.42	11,824.09	60.72	61.23	-135.66	-3,156.64	260.08	912.31	811.33	100.98	9.035	
14,200.00	11,173.00	14,989.13	11,824.99	61.27	61.62	-135.68	-3,191.33	260.70	913.76	812.23	101.53	9.000	
14,250.00	11,173.00	15,042.14	11,827.06	61.82	62.22	-135.73	-3,244.28	261.68	915.72	813.29	102.44	8.939	
14,300.00	11,173.00	15,104.73	11,827.56	62.38	62.93	-135.67	-3,306.84	263.78	917.09	813.43	103.65	8.848	
14,350.00	11,173.00	15,148.22	11,827.32	62.95	63.43	-135.57	-3,350.28	265.76	918.37	813.86	104.51	8.788	
14,400.00	11,173.00	15,194.45	11,826.91	63.51	63.96	-135.45	-3,396.44	268.25	919.85	814.41	105.44	8.724	
14,450.00	11,173.00	15,242.04	11,826.48	64.08	64.52	-135.31	-3,443.94	271.05	921.50	815.07	106.43	8.658	
14,500.00	11,173.00	15,293.33	11,826.05	64.65	65.12	-135.16	-3,495.14	274.19	923.27	815.75	107.52	8.587	
14,550.00	11,173.00	15,367.72	11,824.89	65.23	65.99	-134.97	-3,569.44	277.63	924.26	815.10	109.15	8.468	
14,600.00	11,173.00	15,430.31	11,823.60	65.81	66.73	-134.86	-3,632.00	279.02	924.21	813.76	110.45	8.368	
14,650.00	11,173.00	15,491.25	11,822.69	66.39	67.44	-134.83	-3,692.93	278.98	923.56	811.93	111.63	8.273	
14,700.00	11,173.00	15,531.47	11,822.46	66.98	67.92	-134.83	-3,733.15	278.79	923.06	810.68	112.37	8.214	
14,750.00	11,173.00	15,577.45	11,822.55	67.56	68.46	-134.86	-3,779.13	278.46	922.77	809.56	113.21	8.151	
14,800.00	11,173.00	15,625.98	11,822.83	68.15	69.04	-134.89	-3,827.66	278.09	922.61	808.52	114.10	8.086	
14,850.00	11,173.00	15,675.42	11,823.22	68.75	69.63	-134.93	-3,877.09	277.73	922.53	807.53	115.00	8.022	
14,900.00	11,173.00	15,726.98	11,823.62	69.34	70.25	-134.97	-3,928.64	277.28	922.40	806.46	115.95	7.956	
14,950.00	11,173.00	15,780.88	11,823.89	69.94	70.90	-135.01	-3,982.55	276.79	922.16	805.22	116.95	7.885	
15,000.00	11,173.00	15,837.38	11,823.42	70.54	71.58	-135.01	-4,039.04	276.52	921.61	803.56	118.04	7.807	
15,050.00	11,173.00	15,891.59	11,822.32	71.14	72.24	-134.97	-4,093.24	276.45	920.75	801.61	119.14	7.728	
15,100.00	11,173.00	15,945.27	11,820.99	71.75	72.90	-134.92	-4,146.91	276.31	919.69	799.46	120.23	7.649	
15,150.00	11,173.00	15,983.77	11,820.33	72.35	73.37	-134.91	-4,185.39	276.18	918.86	797.87	120.99	7.594	
15,196.41	11,173.00	16,020.32	11,820.31	72.92	73.82	-134.92	-4,221.95	276.03	918.61	796.93	121.68	7.550	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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
15,200.00	11,173.00	16,023.14	11,820.33	72.96	73.85	-134.92	-4,224.77	276.02	918.61	796.88	121.73	7.546	
15,250.00	11,173.00	16,075.42	11,820.92	73.57	74.50	-134.96	-4,277.04	275.70	918.71	796.00	122.71	7.487	
15,300.00	11,173.00	16,137.29	11,821.18	74.19	75.26	-135.01	-4,338.91	275.01	918.39	794.50	123.89	7.413	
15,350.00	11,173.00	15,350.00	11,819.58	74.80	65.57	-135.05	-4,410.12	272.75	916.07	799.22	116.84	7.840	
15,400.00	11,173.00	16,263.06	11,817.89	75.42	76.81	-135.07	-4,464.55	270.79	913.56	787.25	126.31	7.233	
15,450.00	11,173.00	16,295.81	11,817.14	76.04	77.22	-135.07	-4,497.28	270.08	911.90	784.93	126.96	7.182	
15,500.00	11,173.00	16,333.22	11,816.70	76.66	77.68	-135.07	-4,534.69	269.84	911.14	783.44	127.70	7.135	
15,550.00	11,173.00	16,380.35	11,816.18	77.28	78.27	-135.05	-4,581.82	269.93	910.71	782.05	128.66	7.078	
15,600.00	11,173.00	16,426.37	11,815.59	77.91	78.85	-135.01	-4,627.83	270.31	910.46	780.84	129.62	7.024	
15,618.33	11,173.00	16,442.42	11,815.44	78.14	79.06	-135.00	-4,643.88	270.47	910.43	780.49	129.95	7.006	
15,650.00	11,173.00	16,470.14	11,815.31	78.54	79.41	-134.98	-4,671.60	270.76	910.50	779.99	130.51	6.976	
15,700.00	11,173.00	16,517.02	11,815.43	79.16	80.00	-134.97	-4,718.47	271.28	910.88	779.41	131.46	6.929	
15,750.00	11,173.00	16,577.95	11,815.43	79.79	80.77	-134.96	-4,779.40	271.59	910.96	778.23	132.73	6.863	
15,800.00	11,173.00	16,626.56	11,815.16	80.42	81.39	-134.96	-4,828.01	271.58	910.67	776.95	133.72	6.810	
15,814.74	11,173.00	16,638.83	11,815.12	80.61	81.55	-134.95	-4,840.28	271.63	910.65	776.68	133.97	6.798	
15,850.00	11,173.00	16,668.19	11,815.07	81.06	81.92	-134.94	-4,869.64	271.89	910.76	776.20	134.56	6.769	
15,900.00	11,173.00	16,718.16	11,815.12	81.69	82.56	-134.92	-4,919.61	272.64	911.24	775.63	135.60	6.720	
15,950.00	11,173.00	16,783.28	11,814.81	82.33	83.39	-134.90	-4,984.73	272.97	911.15	774.15	137.00	6.651	
16,000.00	11,173.00	16,826.51	11,814.32	82.97	83.95	-134.88	-5,027.95	273.11	910.78	772.88	137.90	6.605	
16,013.54	11,173.00	16,837.64	11,814.16	83.14	84.09	-134.86	-5,039.08	273.27	910.76	772.62	138.14	6.593	
16,050.00	11,173.00	16,867.61	11,813.68	83.61	84.48	-134.81	-5,069.04	273.98	910.89	772.09	138.79	6.563	
16,100.00	11,173.00	16,922.35	11,812.52	84.25	85.19	-134.69	-5,123.73	275.84	911.26	771.16	140.09	6.505	
16,150.00	11,173.00	16,985.25	11,810.54	84.89	86.01	-134.53	-5,186.58	277.51	911.00	769.39	141.62	6.433	
16,200.00	11,173.00	17,024.61	11,809.36	85.53	86.52	-134.44	-5,225.91	278.53	910.76	768.23	142.53	6.390	
16,202.30	11,173.00	17,026.53	11,809.31	85.56	86.54	-134.43	-5,227.83	278.59	910.76	768.19	142.57	6.388	
16,250.00	11,173.00	17,066.41	11,808.45	86.18	87.07	-134.35	-5,267.68	279.78	910.97	767.48	143.49	6.349	
16,300.00	11,173.00	17,121.70	11,807.40	86.82	87.79	-134.23	-5,322.93	281.47	911.30	766.49	144.81	6.293	
16,350.00	11,173.00	17,180.23	11,805.87	87.47	88.56	-134.10	-5,381.42	283.00	911.24	765.02	146.22	6.232	
16,400.00	11,173.00	17,242.76	11,803.67	88.12	89.37	-133.96	-5,443.91	284.13	910.57	762.84	147.73	6.164	
16,450.00	11,173.00	17,288.61	11,801.85	88.77	89.98	-133.86	-5,489.71	284.68	909.54	760.72	148.82	6.112	
16,500.00	11,173.00	17,327.62	11,800.81	89.42	90.49	-133.79	-5,528.70	285.27	909.06	759.34	149.72	6.072	
16,514.52	11,173.00	17,338.95	11,800.61	89.61	90.64	-133.78	-5,540.03	285.46	909.04	759.06	149.98	6.061	
16,550.00	11,173.00	17,373.82	11,800.18	90.07	91.10	-133.73	-5,574.89	286.10	909.14	758.37	150.77	6.030	
16,600.00	11,173.00	17,439.15	11,798.79	90.73	91.96	-133.64	-5,640.21	286.91	908.75	756.45	152.30	5.967	
16,650.00	11,173.00	17,485.21	11,797.55	91.38	92.56	-133.58	-5,686.25	287.20	907.98	754.60	153.36	5.920	
16,700.00	11,173.00	17,527.46	11,796.93	92.04	93.12	-133.54	-5,728.48	287.46	907.58	753.29	154.30	5.882	
16,750.00	11,173.00	17,584.90	11,796.53	92.69	93.88	-133.52	-5,785.92	287.65	907.38	751.82	155.56	5.833	
16,800.00	11,173.00	17,652.09	11,795.31	93.35	94.76	-133.50	-5,853.10	287.04	906.33	749.31	157.02	5.772	
16,850.00	11,173.00	17,709.90	11,793.83	94.01	95.52	-133.49	-5,910.88	285.91	904.65	746.39	158.26	5.716	
16,900.00	11,173.00	17,763.53	11,792.19	94.67	96.23	-133.48	-5,964.47	284.49	902.53	743.12	159.41	5.662	
16,950.00	11,173.00	17,813.75	11,790.49	95.33	96.89	-133.47	-6,014.64	283.24	900.36	739.86	160.51	5.610	
17,000.00	11,173.00	17,852.63	11,789.26	95.99	97.40	-133.45	-6,053.49	282.40	898.42	737.04	161.39	5.567	
17,050.00	11,173.00	17,887.88	11,788.74	96.65	97.87	-133.45	-6,088.73	281.88	897.28	735.13	162.15	5.534	
17,100.00	11,173.00	17,924.20	11,788.83	97.32	98.35	-133.47	-6,125.05	281.57	896.95	734.08	162.87	5.507	
17,123.07	11,173.00	17,948.50	11,789.03	97.62	98.67	-133.49	-6,149.36	281.45	896.95	733.57	163.38	5.490	
17,150.00	11,173.00	17,976.88	11,789.18	97.98	99.05	-133.51	-6,177.73	281.31	896.90	732.93	163.97	5.470	
17,200.00	11,173.00	18,029.29	11,789.27	98.65	99.75	-133.53	-6,230.14	281.09	896.71	731.63	165.08	5.432	
17,250.00	11,173.00	18,080.97	11,789.37	99.31	100.44	-133.56	-6,281.82	280.70	896.40	730.24	166.16	5.395	
17,300.00	11,173.00	18,131.18	11,789.53	99.98	101.11	-133.59	-6,332.03	280.16	896.02	728.83	167.19	5.359	
17,350.00	11,173.00	18,179.50	11,789.10	100.65	101.75	-133.57	-6,380.34	280.28	895.71	727.44	168.26	5.323	
17,400.00	11,173.00	18,228.01	11,788.05	101.31	102.41	-133.50	-6,428.83	281.10	895.48	726.05	169.43	5.285	
17,450.00	11,173.00	18,276.73	11,786.96	101.98	103.06	-133.41	-6,477.53	282.07	895.33	724.71	170.62	5.247	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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
17,480.01	11,173.00	18,305.98	11,786.33	102.39	103.46	-133.36	-6,506.76	282.68	895.28	723.94	171.34	5.225	
17,500.00	11,173.00	18,320.89	11,786.12	102.65	103.66	-133.33	-6,521.67	282.97	895.33	723.65	171.68	5.215	
17,550.00	11,173.00	18,361.51	11,786.01	103.33	104.21	-133.30	-6,562.29	283.71	895.81	723.23	172.58	5.191	
17,600.00	11,173.00	18,407.74	11,786.69	104.00	104.83	-133.31	-6,608.50	284.43	896.77	723.20	173.56	5.167	
17,650.00	11,173.00	18,470.82	11,787.37	104.67	105.69	-133.32	-6,671.58	284.98	897.35	722.37	174.98	5.128	
17,700.00	11,173.00	18,515.71	11,787.60	105.34	106.29	-133.33	-6,716.47	285.16	897.59	721.65	175.94	5.102	
17,750.00	11,173.00	18,554.82	11,788.22	106.02	106.82	-133.35	-6,755.58	285.55	898.40	721.68	176.71	5.084	
17,800.00	11,173.00	18,611.99	11,789.44	106.69	107.60	-133.37	-6,812.72	286.43	899.63	721.66	177.97	5.055	
17,850.00	11,173.00	18,687.19	11,788.41	107.37	108.62	-133.30	-6,887.91	287.24	899.36	719.54	179.82	5.002	
17,900.00	11,173.00	18,729.76	11,787.49	108.04	109.20	-133.24	-6,930.46	287.66	898.88	718.05	180.83	4.971	Alert
17,933.32	11,173.00	18,758.13	11,787.12	108.49	109.58	-133.21	-6,958.83	287.98	898.79	717.29	181.49	4.952	Alert
17,950.00	11,173.00	18,772.07	11,787.00	108.72	109.77	-133.20	-6,972.76	288.14	898.81	717.00	181.81	4.944	Alert
18,000.00	11,173.00	18,811.99	11,787.05	109.40	110.32	-133.19	-7,012.68	288.68	899.24	716.57	182.68	4.923	Alert
18,050.00	11,173.00	18,851.90	11,787.66	110.07	110.86	-133.19	-7,052.58	289.31	900.24	716.75	183.49	4.906	Alert
18,100.00	11,173.00	18,909.54	11,788.79	110.75	111.65	-133.21	-7,110.21	290.25	901.42	716.64	184.79	4.878	Alert
18,150.00	11,173.00	18,988.04	11,788.60	111.43	112.72	-133.17	-7,188.70	291.17	901.78	715.11	186.67	4.831	Alert
18,200.00	11,173.00	19,068.04	11,785.02	112.11	113.81	-133.04	-7,268.61	290.56	899.66	711.08	188.59	4.771	Alert
18,250.00	11,173.00	19,106.00	11,783.41	112.79	114.32	-132.99	-7,306.52	290.02	897.60	708.05	189.55	4.735	Alert
18,300.00	11,173.00	19,145.00	11,782.52	113.47	114.85	-132.98	-7,345.51	289.48	896.21	705.74	190.46	4.705	Alert
18,350.00	11,173.00	19,185.26	11,782.08	114.15	115.40	-132.98	-7,385.77	289.12	895.39	704.03	191.36	4.679	Alert
18,400.00	11,173.00	19,226.62	11,781.82	114.83	115.97	-132.97	-7,427.13	289.09	895.06	702.78	192.28	4.655	Alert
18,409.37	11,173.00	19,234.38	11,781.79	114.96	116.07	-132.97	-7,434.88	289.13	895.05	702.60	192.45	4.651	Alert
18,450.00	11,173.00	19,275.87	11,781.71	115.52	116.64	-132.96	-7,476.38	289.33	895.06	701.67	193.39	4.628	Alert
18,500.00	11,173.00	19,328.50	11,781.66	116.20	117.36	-132.97	-7,529.00	289.33	894.93	700.37	194.56	4.600	Alert
18,550.00	11,173.00	19,384.02	11,781.26	116.88	118.12	-132.95	-7,584.52	289.34	894.59	698.76	195.83	4.568	Alert
18,600.00	11,173.00	19,440.50	11,779.88	117.57	118.89	-132.88	-7,640.98	289.74	893.92	696.69	197.23	4.532	Alert
18,650.00	11,173.00	19,499.34	11,777.89	118.25	119.70	-132.78	-7,699.78	289.96	892.81	694.11	198.70	4.493	Alert
18,700.00	11,173.00	19,552.21	11,775.92	118.94	120.43	-132.70	-7,752.62	289.77	891.31	691.29	200.02	4.456	Alert
18,750.00	11,173.00	19,601.63	11,774.38	119.62	121.10	-132.66	-7,802.02	289.30	889.80	688.59	201.21	4.422	Alert
18,800.00	11,173.00	19,643.41	11,773.44	120.31	121.67	-132.64	-7,843.78	288.76	888.49	686.30	202.19	4.394	Alert
18,850.00	11,173.00	19,682.36	11,773.16	121.00	122.21	-132.65	-7,882.73	288.37	887.77	684.72	203.05	4.372	Alert
18,900.00	11,173.00	19,726.04	11,773.48	121.68	122.81	-132.68	-7,926.41	288.05	887.63	683.68	203.95	4.352	Alert
18,950.00	11,173.00	19,781.29	11,773.66	122.37	123.57	-132.71	-7,981.65	287.74	887.44	682.28	205.16	4.326	Alert
19,000.00	11,173.00	19,825.48	11,773.53	123.06	124.17	-132.72	-8,025.84	287.58	887.13	681.00	206.13	4.304	Alert
19,001.21	11,173.00	19,826.36	11,773.54	123.07	124.19	-132.72	-8,026.73	287.58	887.13	680.98	206.15	4.303	Alert
19,050.00	11,173.00	19,861.95	11,773.90	123.75	124.68	-132.74	-8,062.31	287.70	887.49	680.63	206.86	4.290	Alert
19,100.00	11,173.00	19,898.00	11,774.78	124.44	125.18	-132.77	-8,098.35	288.08	888.61	681.10	207.52	4.282	Alert
19,150.00	11,173.00	19,936.30	11,776.24	125.12	125.71	-132.81	-8,136.61	288.76	890.46	682.27	208.18	4.277	Alert
19,200.00	11,173.00	19,974.13	11,778.14	125.81	126.24	-132.86	-8,174.39	289.70	892.98	684.19	208.79	4.277	Alert
19,250.00	11,173.00	20,036.93	11,781.43	126.50	127.11	-132.94	-8,237.07	291.55	895.82	685.59	210.22	4.261	Alert
19,300.00	11,173.00	20,110.17	11,782.80	127.19	128.13	-132.94	-8,310.27	293.21	897.12	685.03	212.09	4.230	Alert
19,350.00	11,173.00	20,166.97	11,782.50	127.89	128.92	-132.87	-8,367.05	294.66	897.78	684.23	213.55	4.204	Alert
19,400.00	11,173.00	20,218.27	11,781.67	128.58	129.64	-132.78	-8,418.33	296.12	898.17	683.28	214.90	4.180	Alert
19,450.00	11,173.00	20,267.80	11,781.11	129.27	130.33	-132.70	-8,467.84	297.33	898.59	682.43	216.16	4.157	Alert
19,500.00	11,173.00	20,313.16	11,780.71	129.96	130.96	-132.64	-8,513.18	298.49	899.12	681.84	217.29	4.138	Alert
19,550.00	11,173.00	20,357.78	11,780.21	130.65	131.59	-132.55	-8,557.77	300.08	899.96	681.52	218.44	4.120	Alert
19,600.00	11,173.00	20,396.76	11,779.78	131.35	132.13	-132.46	-8,596.71	301.89	901.21	681.79	219.42	4.107	Alert
19,650.00	11,173.00	20,433.83	11,779.67	132.04	132.66	-132.37	-8,633.71	304.05	903.16	682.86	220.31	4.100	Alert
19,700.00	11,173.00	20,475.13	11,779.88	132.73	133.24	-132.26	-8,674.90	306.95	905.81	684.46	221.35	4.092	Alert
19,750.00	11,173.00	20,535.36	11,779.92	133.43	134.09	-132.09	-8,735.00	311.15	908.32	685.12	223.20	4.069	Alert
19,800.00	11,173.00	20,634.30	11,777.53	134.12	135.48	-131.77	-8,833.75	316.42	909.59	683.18	226.41	4.018	Alert
19,850.00	11,173.00	20,692.66	11,774.28	134.82	136.30	-131.55	-8,891.99	318.09	908.67	680.50	228.17	3.982	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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

Survey Program: 148-GYRO-NS-CT, 1020-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
19,900.00	11,173.00	20,741.05	11,771.79	135.51	136.98	-131.39	-8,940.31	319.31	907.80	678.20	229.60	3.954	Alert
19,950.00	11,173.00	20,792.64	11,769.41	136.21	137.70	-131.23	-8,991.82	320.37	906.95	675.86	231.09	3.925	Alert
20,000.00	11,173.00	20,844.62	11,767.28	136.90	138.43	-131.11	-9,043.75	321.05	905.99	673.46	232.53	3.896	Alert
20,050.00	11,173.00	20,879.41	11,766.35	137.60	138.92	-131.05	-9,078.53	321.47	905.44	671.98	233.46	3.878	Alert
20,061.25	11,173.00	20,887.55	11,766.22	137.75	139.03	-131.04	-9,086.67	321.58	905.42	671.76	233.66	3.875	Alert
20,100.00	11,173.00	20,915.63	11,766.06	138.29	139.43	-131.02	-9,114.74	322.02	905.65	671.33	234.32	3.865	Alert
20,150.00	11,173.00	20,988.00	11,766.19	138.99	140.44	-131.00	-9,187.11	322.76	906.16	670.08	236.08	3.838	Alert
20,200.00	11,173.00	21,140.68	11,756.64	139.69	142.53	-130.83	-9,339.23	316.30	901.84	663.30	238.54	3.781	Alert
20,250.00	11,173.00	21,176.14	11,753.21	140.38	143.01	-130.77	-9,374.43	313.81	895.92	656.10	239.82	3.736	Alert
20,300.00	11,173.00	21,217.00	11,749.90	141.08	143.57	-130.72	-9,415.08	311.30	890.82	649.75	241.06	3.695	Alert
20,350.00	11,173.00	21,257.74	11,747.25	141.78	144.12	-130.70	-9,455.65	308.77	886.21	643.99	242.22	3.659	Alert
20,400.00	11,173.00	21,305.56	11,744.92	142.48	144.77	-130.74	-9,503.28	305.28	881.74	638.46	243.28	3.624	Alert
20,450.00	11,173.00	21,358.78	11,742.50	143.18	145.50	-130.80	-9,556.29	301.19	877.25	632.93	244.32	3.591	Alert
20,500.00	11,173.00	21,412.66	11,739.10	143.87	146.23	-130.80	-9,609.95	297.54	872.52	627.04	245.49	3.554	Alert
20,550.00	11,173.00	21,449.19	11,737.12	144.57	146.73	-130.81	-9,646.34	295.14	868.14	621.57	246.56	3.521	Alert
20,600.00	11,173.00	21,487.94	11,735.82	145.27	147.26	-130.86	-9,684.98	292.52	864.37	616.86	247.52	3.492	Alert
20,650.00	11,173.00	21,526.39	11,735.37	145.97	147.78	-130.96	-9,723.34	289.85	861.26	612.93	248.34	3.468	Alert
20,700.00	11,173.00	21,564.70	11,735.79	146.67	148.31	-131.10	-9,761.55	287.12	858.83	609.81	249.02	3.449	Alert
20,750.00	11,173.00	21,606.57	11,737.19	147.37	148.88	-131.31	-9,803.28	284.04	857.04	607.46	249.58	3.434	Alert
20,800.00	11,173.00	21,658.63	11,739.18	148.07	149.59	-131.59	-9,855.15	280.11	855.37	605.20	250.17	3.419	Alert
20,850.00	11,173.00	21,734.94	11,741.25	148.77	150.63	-131.98	-9,931.17	273.91	853.27	602.44	250.84	3.402	Alert
20,900.00	11,173.00	21,809.69	11,739.89	149.47	151.64	-132.25	-10,005.56	266.76	848.87	597.31	251.56	3.374	Alert
20,950.00	11,173.00	21,858.91	11,738.62	150.17	152.30	-132.42	-10,054.51	261.80	844.18	591.86	252.32	3.346	Alert
21,000.00	11,173.00	21,908.43	11,737.47	150.88	152.97	-132.60	-10,103.77	256.74	839.52	586.47	253.05	3.318	Alert
21,050.00	11,173.00	21,945.00	11,736.63	151.58	153.46	-132.74	-10,140.13	252.99	834.97	581.16	253.81	3.290	Alert
21,100.00	11,173.00	21,945.00	11,736.63	152.28	153.46	-132.74	-10,140.13	252.99	832.60	578.40	254.20	3.275	Alert
21,114.51	11,173.00	21,945.00	11,736.63	152.48	153.46	-132.74	-10,140.13	252.99	832.47	578.31	254.16	3.275	Alert, SF
21,150.00	11,173.00	21,945.00	11,736.63	152.98	153.46	-132.74	-10,140.13	252.99	833.23	579.44	253.78	3.283	Alert
21,200.00	11,173.00	21,945.00	11,736.63	153.68	153.46	-132.74	-10,140.13	252.99	836.85	584.28	252.58	3.313	Alert
21,250.00	11,173.00	21,945.00	11,736.63	154.39	153.46	-132.74	-10,140.13	252.99	843.43	592.82	250.61	3.366	Alert
21,300.00	11,173.00	21,945.00	11,736.63	155.09	153.46	-132.74	-10,140.13	252.99	852.89	604.95	247.94	3.440	Alert
21,307.62	11,173.00	21,945.00	11,736.63	155.19	153.46	-132.74	-10,140.13	252.99	854.58	607.10	247.47	3.453	Alert

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	5.70	908.82	908.84				
50.00	50.00	48.21	48.21	0.50	0.50	89.64	5.78	908.83	908.85	907.85	1.01	902.551	
100.00	100.00	97.71	97.71	0.52	0.52	89.62	6.03	908.87	908.89	907.86	1.04	875.704	
150.00	150.00	147.20	147.20	0.59	0.54	89.59	6.46	908.94	908.96	907.83	1.13	800.925	
200.00	200.00	195.84	195.84	0.70	0.63	89.56	6.93	909.05	909.08	907.75	1.33	682.000	
250.00	250.00	244.77	244.76	0.84	0.75	89.54	7.32	909.24	909.28	907.69	1.59	573.505	
300.00	300.00	296.65	296.64	0.99	0.89	89.51	7.76	909.41	909.44	907.56	1.88	484.170	
350.00	350.00	347.90	347.89	1.15	1.04	89.48	8.27	909.47	909.51	907.32	2.19	415.336	
400.00	400.00	397.53	397.52	1.31	1.20	89.45	8.76	909.52	909.56	907.05	2.51	362.550	
450.00	450.00	447.84	447.82	1.48	1.36	89.42	9.22	909.58	909.63	906.79	2.84	320.490	
500.00	500.00	499.31	499.29	1.65	1.53	89.38	9.90	909.58	909.64	906.46	3.18	286.269	
550.00	550.00	551.42	551.39	1.82	1.71	89.32	10.74	909.49	909.55	906.03	3.52	258.161	
600.00	600.00	603.78	603.75	1.99	1.88	89.28	11.43	909.25	909.34	905.47	3.87	234.803	
650.00	650.00	655.13	655.10	2.16	2.06	89.25	11.96	908.92	909.02	904.80	4.22	215.381	
700.00	700.00	706.14	706.10	2.34	2.23	89.22	12.42	908.52	908.64	904.07	4.57	198.888	
750.00	750.00	757.15	757.11	2.51	2.40	89.19	12.83	908.07	908.20	903.29	4.92	184.669	
800.00	800.00	808.16	808.11	2.69	2.58	89.17	13.18	907.57	907.71	902.44	5.27	172.291	
850.00	850.00	858.50	858.45	2.87	2.75	89.14	13.55	907.03	907.19	901.57	5.62	161.480	
900.00	900.00	908.87	908.82	3.04	2.93	89.11	14.02	906.47	906.64	900.67	5.97	151.912	
950.00	950.00	959.25	959.18	3.22	3.10	89.08	14.57	905.89	906.07	899.75	6.32	143.387	
1,000.00	1,000.00	1,011.73	1,011.66	3.40	3.23	89.03	15.28	905.23	905.45	898.82	6.63	136.622	
1,050.00	1,050.00	1,065.95	1,065.85	3.58	3.33	88.97	16.33	904.31	904.62	897.72	6.90	131.094	
1,100.00	1,100.00	1,115.68	1,115.56	3.75	3.35	88.88	17.67	903.34	903.67	896.57	7.10	127.282	
1,150.00	1,150.00	1,165.20	1,165.04	3.93	3.37	88.77	19.42	902.40	902.75	895.46	7.30	123.735	
1,200.00	1,200.00	1,215.72	1,215.50	4.11	3.41	88.62	21.67	901.42	901.83	894.33	7.51	120.101	
1,250.00	1,250.00	1,264.42	1,264.13	4.29	3.44	88.46	24.25	900.44	900.90	893.18	7.72	116.622	
1,300.00	1,300.00	1,308.10	1,307.72	4.46	3.49	88.29	26.83	899.78	900.22	892.28	7.95	113.252	
1,350.00	1,350.00	1,351.77	1,351.30	4.64	3.54	88.11	29.62	899.41	899.90	891.73	8.17	110.087	
1,370.43	1,370.43	1,369.64	1,369.13	4.72	3.56	88.04	30.83	899.34	899.87	891.60	8.27	108.791	CC
1,400.00	1,400.00	1,395.50	1,394.92	4.82	3.60	87.92	32.69	899.33	899.93	891.52	8.41	106.982	
1,450.00	1,450.00	1,439.20	1,438.49	5.00	3.66	87.70	36.07	899.54	900.32	891.67	8.65	104.091	
1,500.00	1,500.00	1,487.81	1,486.94	5.18	3.74	87.45	40.08	899.96	900.93	892.03	8.91	101.135	
1,550.00	1,550.00	1,536.55	1,535.49	5.36	3.82	87.19	44.22	900.45	901.63	892.46	9.17	98.343	
1,600.00	1,600.00	1,587.19	1,585.95	5.53	3.91	86.91	48.56	900.95	902.35	892.90	9.44	95.545	
1,650.00	1,650.00	1,637.84	1,636.41	5.71	4.01	86.64	52.88	901.41	903.04	893.32	9.72	92.902	
1,700.00	1,700.00	1,688.10	1,686.50	5.89	4.12	86.38	57.03	901.84	903.72	893.71	10.01	90.288	
1,750.00	1,750.00	1,738.23	1,736.47	6.07	4.23	86.13	60.99	902.25	904.39	894.10	10.30	87.815	
1,800.00	1,800.00	1,787.93	1,786.03	6.25	4.35	85.90	64.72	902.68	905.08	894.49	10.59	85.438	
1,850.00	1,850.00	1,840.28	1,838.24	6.43	4.47	85.66	68.47	903.11	905.76	894.87	10.90	83.108	
1,900.00	1,900.00	1,896.28	1,894.08	6.61	4.61	85.40	72.70	903.25	906.18	894.96	11.22	80.777	
1,950.00	1,950.00	1,949.10	1,946.74	6.78	4.75	85.13	76.87	903.07	906.34	894.80	11.54	78.571	
2,000.00	2,000.00	2,000.70	1,998.17	6.96	4.89	84.88	80.95	902.78	906.41	894.55	11.85	76.481	
2,050.00	2,050.00	2,051.29	2,048.61	7.14	5.03	84.63	84.88	902.44	906.42	894.25	12.17	74.479	
2,100.00	2,100.00	2,101.77	2,098.94	7.32	5.17	84.39	88.67	902.07	906.42	893.93	12.49	72.575	
2,150.00	2,150.00	2,153.45	2,150.49	7.50	5.32	84.14	92.48	901.63	906.36	893.54	12.82	70.716	
2,200.00	2,200.00	2,205.15	2,202.03	7.68	5.47	83.90	96.31	901.08	906.22	893.07	13.14	68.942	
2,250.00	2,250.00	2,252.79	2,249.53	7.86	5.61	83.67	99.97	900.59	906.12	892.65	13.47	67.288	
2,271.02	2,271.02	2,273.04	2,269.72	7.93	5.67	83.56	101.57	900.40	906.11	892.51	13.60	66.617	
2,300.00	2,300.00	2,301.25	2,297.83	8.04	5.75	83.42	103.86	900.16	906.13	892.34	13.79	65.707	
2,350.00	2,350.00	2,350.97	2,347.39	8.22	5.91	83.16	107.89	899.74	906.19	892.07	14.12	64.170	
2,400.00	2,400.00	2,400.69	2,396.95	8.39	6.06	82.91	111.88	899.34	906.27	891.82	14.45	62.701	
2,450.00	2,450.00	2,450.37	2,446.47	8.57	6.22	82.66	115.82	898.95	906.38	891.59	14.79	61.291	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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	2,500.71	2,496.65	8.75	6.37	82.41	119.80	898.56	906.51	891.39	15.13	59.930	
2,550.00	2,550.00	2,552.25	2,547.98	8.93	6.54	82.12	124.32	898.02	906.59	891.12	15.47	58.601	
2,600.00	2,600.00	2,601.81	2,597.31	9.11	6.70	81.81	129.13	897.37	906.62	890.81	15.81	57.342	
2,650.00	2,650.00	2,649.35	2,644.61	9.29	6.86	81.52	133.78	896.84	906.77	890.62	16.15	56.161	
2,700.00	2,700.00	2,696.82	2,691.87	9.47	7.01	81.23	138.34	896.43	907.07	890.59	16.48	55.035 ES	
2,750.00	2,750.00	2,744.25	2,739.09	9.65	7.17	80.95	142.72	896.18	907.52	890.71	16.82	53.962	
2,800.00	2,800.00	2,792.98	2,787.64	9.83	7.33	80.68	147.02	896.06	908.11	890.95	17.16	52.924	
2,850.00	2,850.00	2,843.00	2,837.47	10.00	7.50	80.41	151.31	895.97	908.72	891.22	17.50	51.913	
2,900.00	2,900.00	2,893.88	2,888.17	10.18	7.67	80.15	155.57	895.86	909.33	891.48	17.85	50.931	
2,950.00	2,950.00	2,945.34	2,939.46	10.36	7.84	79.89	159.72	895.70	909.88	891.67	18.21	49.976	
3,000.00	3,000.00	2,995.19	2,989.16	10.54	8.01	79.65	163.60	895.51	910.38	891.83	18.55	49.069	
3,050.00	3,050.00	3,044.52	3,038.35	10.72	8.18	164.24	167.29	895.37	911.14	892.24	18.89	48.223	
3,100.00	3,099.99	3,100.58	3,094.27	10.89	8.37	163.99	171.35	895.10	912.20	892.94	19.26	47.365	
3,150.00	3,149.98	3,158.05	3,151.58	11.06	8.56	163.75	175.49	894.35	913.29	893.67	19.62	46.538	
3,200.00	3,199.96	3,208.61	3,202.01	11.24	8.74	163.54	179.11	893.49	914.62	894.65	19.97	45.803	
3,250.00	3,249.92	3,257.47	3,250.73	11.41	8.90	163.34	182.59	892.59	916.30	896.00	20.31	45.122	
3,300.00	3,299.86	3,300.80	3,293.93	11.58	9.05	163.17	185.86	891.98	918.67	898.04	20.63	44.534	
3,350.00	3,349.79	3,345.61	3,338.59	11.75	9.21	162.98	189.50	891.63	921.72	900.77	20.95	43.986	
3,400.00	3,399.71	3,399.85	3,392.64	11.93	9.40	162.76	193.99	891.15	924.79	903.48	21.32	43.385	
3,450.00	3,449.63	3,451.85	3,444.47	12.10	9.58	162.54	198.30	890.46	927.66	905.99	21.67	42.809	
3,500.00	3,499.56	3,500.30	3,492.73	12.27	9.75	162.33	202.47	889.79	930.55	908.54	22.01	42.274	
3,550.00	3,549.48	3,549.93	3,542.16	12.45	9.92	162.10	206.90	889.14	933.52	911.16	22.36	41.750	
3,600.00	3,599.40	3,601.23	3,593.26	12.62	10.11	161.89	211.25	888.46	936.45	913.73	22.71	41.229	
3,650.00	3,649.33	3,650.59	3,642.47	12.80	10.28	161.70	215.09	887.83	939.33	916.27	23.06	40.736	
3,700.00	3,699.25	3,698.55	3,690.32	12.97	10.45	161.56	218.29	887.42	942.31	918.91	23.40	40.272	
3,750.00	3,749.17	3,748.52	3,740.21	13.15	10.62	161.44	221.16	887.19	945.37	921.62	23.75	39.812	
3,800.00	3,799.10	3,799.96	3,791.56	13.32	10.80	161.31	224.19	886.85	948.36	924.26	24.10	39.355	
3,850.00	3,849.02	3,850.51	3,842.02	13.50	10.97	161.18	227.17	886.45	951.29	926.84	24.45	38.914	
3,900.00	3,898.94	3,900.76	3,892.20	13.67	11.15	161.08	229.77	886.12	954.20	929.41	24.79	38.486	
3,950.00	3,948.87	3,951.86	3,943.26	13.85	11.32	161.01	231.89	885.88	957.08	931.94	25.14	38.067	
4,000.00	3,998.79	4,003.16	3,994.53	14.02	11.49	160.98	233.30	885.73	959.89	934.40	25.49	37.656	
4,050.00	4,048.71	4,052.75	4,044.12	14.20	11.66	160.99	234.08	885.71	962.67	936.84	25.83	37.270	
4,100.00	4,098.64	4,102.31	4,093.68	14.38	11.82	161.03	234.39	885.81	965.47	939.30	26.17	36.896	
4,150.00	4,148.56	4,152.03	4,143.40	14.55	11.98	161.08	234.45	886.00	968.29	941.78	26.50	36.538	
4,200.00	4,198.48	4,201.75	4,193.12	14.73	12.14	161.13	234.44	886.21	971.11	944.28	26.83	36.189	
4,250.00	4,248.41	4,251.18	4,242.55	14.91	12.30	161.19	234.45	886.43	973.96	946.79	27.17	35.850	
4,300.00	4,298.33	4,300.59	4,291.95	15.08	12.46	161.24	234.51	886.67	976.82	949.32	27.50	35.520	
4,350.00	4,348.25	4,349.75	4,341.12	15.26	12.61	161.29	234.56	886.94	979.73	951.89	27.83	35.199	
4,400.00	4,398.18	4,398.92	4,390.28	15.44	12.77	161.35	234.55	887.26	982.67	954.50	28.17	34.886	
4,450.00	4,448.10	4,448.12	4,439.49	15.62	12.93	161.40	234.54	887.62	985.64	957.14	28.50	34.582	
4,500.00	4,498.02	4,497.19	4,488.55	15.79	13.09	161.46	234.55	888.01	988.66	959.82	28.84	34.287	
4,550.00	4,547.94	4,546.01	4,537.37	15.97	13.25	161.51	234.58	888.45	991.73	962.56	29.17	33.999	
4,600.00	4,597.87	4,595.64	4,586.99	16.15	13.41	161.57	234.62	888.93	994.84	965.33	29.51	33.717	
4,650.00	4,647.79	4,646.46	4,637.82	16.33	13.58	161.62	234.65	889.40	997.93	968.08	29.85	33.434	
4,700.00	4,697.71	4,697.31	4,688.66	16.51	13.74	161.68	234.67	889.83	1,000.97	970.78	30.19	33.155	
4,750.00	4,747.64	4,748.16	4,739.51	16.68	13.91	161.73	234.69	890.20	1,003.96	973.43	30.53	32.881	
4,800.00	4,797.56	4,798.95	4,790.30	16.86	14.08	161.79	234.71	890.53	1,006.91	976.03	30.88	32.610	
4,850.00	4,847.48	4,849.72	4,841.07	17.04	14.25	161.83	234.82	890.79	1,009.81	978.59	31.22	32.342	
4,900.00	4,897.41	4,900.56	4,891.91	17.22	14.42	161.88	234.97	891.00	1,012.68	981.11	31.57	32.078	
4,950.00	4,947.33	4,951.42	4,942.77	17.40	14.59	161.93	235.04	891.17	1,015.49	983.58	31.92	31.817	
5,000.00	4,997.25	5,000.43	4,991.78	17.58	14.75	161.97	235.09	891.34	1,018.31	986.05	32.26	31.569	
5,050.00	5,047.18	5,049.28	5,040.63	17.76	14.91	162.02	235.17	891.55	1,021.17	988.58	32.60	31.328	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
5,100.00	5,097.10	5,101.17	5,092.52	17.93	15.09	162.07	235.25	891.76	1,024.02	991.07	32.95	31.081	
5,150.00	5,147.02	5,153.11	5,144.46	18.11	15.26	162.12	235.27	891.87	1,026.76	993.47	33.30	30.836	
5,200.00	5,196.95	5,200.87	5,192.22	18.29	15.42	162.16	235.32	891.99	1,029.53	995.90	33.63	30.609	
5,250.00	5,246.87	5,249.60	5,240.94	18.47	15.59	162.20	235.43	892.17	1,032.37	998.40	33.98	30.386	
5,300.00	5,296.79	5,300.04	5,291.38	18.65	15.76	162.24	235.60	892.35	1,035.22	1,000.90	34.33	30.159	
5,350.00	5,346.72	5,350.38	5,341.73	18.83	15.93	162.28	235.82	892.49	1,038.05	1,003.37	34.67	29.937	
5,400.00	5,396.64	5,400.50	5,391.85	19.01	16.10	162.32	236.00	892.63	1,040.86	1,005.83	35.02	29.719	
5,450.00	5,446.56	5,451.48	5,442.82	19.19	16.28	162.36	236.11	892.77	1,043.65	1,008.28	35.37	29.503	
5,500.00	5,496.49	5,503.79	5,495.14	19.37	16.45	162.41	236.18	892.81	1,046.35	1,010.62	35.73	29.286	
5,550.00	5,546.41	5,554.02	5,545.37	19.55	16.62	162.45	236.23	892.78	1,048.97	1,012.89	36.08	29.077	
5,600.00	5,596.33	5,602.70	5,594.04	19.73	16.79	162.49	236.27	892.78	1,051.63	1,015.21	36.42	28.877	
5,650.00	5,646.26	5,651.55	5,642.89	19.91	16.95	162.53	236.32	892.85	1,054.34	1,017.58	36.76	28.681	
5,700.00	5,696.18	5,700.50	5,691.85	20.09	17.12	162.58	236.39	892.95	1,057.11	1,020.00	37.11	28.489	
5,750.00	5,746.10	5,750.06	5,741.41	20.27	17.29	162.62	236.48	893.09	1,059.91	1,022.45	37.45	28.299	
5,800.00	5,796.03	5,799.91	5,791.26	20.45	17.46	162.66	236.59	893.23	1,062.71	1,024.91	37.80	28.113	
5,850.00	5,845.95	5,851.80	5,843.14	20.63	17.64	162.70	236.71	893.34	1,065.48	1,027.33	38.16	27.924	
5,900.00	5,895.87	5,904.28	5,895.62	20.81	17.82	162.74	236.79	893.34	1,068.14	1,029.63	38.51	27.734	
5,950.00	5,945.79	5,955.56	5,946.90	20.99	17.99	162.78	236.83	893.24	1,070.70	1,031.84	38.86	27.551	
6,000.00	5,995.72	6,006.78	5,998.13	21.17	18.16	162.82	236.87	893.09	1,073.21	1,034.00	39.21	27.369	
6,050.00	6,045.64	6,055.90	6,047.24	21.35	18.33	162.86	236.94	892.92	1,075.71	1,036.15	39.55	27.195	
6,100.00	6,095.56	6,105.64	6,096.98	21.53	18.49	162.90	237.07	892.77	1,078.23	1,038.33	39.90	27.023	
6,150.00	6,145.49	6,157.58	6,148.93	21.71	18.67	162.93	237.19	892.56	1,080.71	1,040.45	40.25	26.848	
6,200.00	6,195.41	6,209.25	6,200.60	21.89	18.84	162.97	237.23	892.27	1,083.09	1,042.49	40.60	26.675	
6,250.00	6,245.33	6,260.37	6,251.71	22.07	19.01	163.01	237.20	891.94	1,085.42	1,044.46	40.95	26.505	
6,300.00	6,295.26	6,310.84	6,302.18	22.25	19.18	163.06	237.10	891.58	1,087.69	1,046.40	41.30	26.339	
6,350.00	6,345.18	6,360.60	6,351.94	22.43	19.34	163.10	236.99	891.22	1,089.97	1,048.33	41.64	26.178	
6,400.00	6,395.10	6,409.74	6,401.07	22.61	19.50	163.14	236.88	890.88	1,092.26	1,050.29	41.98	26.021	
6,450.00	6,445.03	6,458.39	6,449.72	22.79	19.66	163.20	236.65	890.63	1,094.61	1,052.30	42.31	25.870	
6,500.00	6,494.95	6,507.39	6,498.72	22.97	19.82	163.25	236.29	890.45	1,097.02	1,054.37	42.65	25.721	
6,550.00	6,544.87	6,556.62	6,547.95	23.15	19.98	163.31	235.91	890.31	1,099.45	1,056.47	42.99	25.576	
6,600.00	6,594.80	6,606.18	6,597.51	23.33	20.14	163.37	235.51	890.20	1,101.92	1,058.59	43.33	25.433	
6,650.00	6,644.72	6,655.90	6,647.23	23.51	20.30	163.43	235.15	890.10	1,104.40	1,060.73	43.67	25.292	
6,700.00	6,694.64	6,705.05	6,696.38	23.69	20.46	163.49	234.76	890.02	1,106.90	1,062.89	44.00	25.154	
6,750.00	6,744.57	6,754.02	6,745.35	23.88	20.62	163.56	234.24	890.01	1,109.44	1,065.09	44.34	25.020	
6,800.00	6,794.49	6,809.19	6,800.51	24.06	20.80	163.63	233.57	889.93	1,111.91	1,067.21	44.70	24.874	
6,850.00	6,844.41	6,865.79	6,857.11	24.24	20.99	163.71	232.95	889.50	1,114.09	1,069.02	45.07	24.721	
6,900.00	6,894.34	6,910.16	6,901.47	24.42	21.14	163.75	232.79	889.11	1,116.28	1,070.89	45.40	24.590	
6,950.00	6,944.26	6,956.27	6,947.58	24.60	21.30	163.76	233.09	888.78	1,118.66	1,072.93	45.73	24.463	
7,000.00	6,994.18	7,006.06	6,997.36	24.78	21.47	163.77	233.67	888.46	1,121.11	1,075.03	46.08	24.329	
7,050.00	7,044.11	7,056.12	7,047.43	24.96	21.65	163.78	234.29	888.14	1,123.58	1,077.14	46.43	24.198	
7,100.00	7,094.03	7,107.69	7,098.99	25.14	21.82	163.79	234.80	887.79	1,126.00	1,079.20	46.79	24.064	
7,150.00	7,143.95	7,158.72	7,150.01	25.32	22.00	163.81	235.10	887.41	1,128.35	1,081.20	47.15	23.933	
7,200.00	7,193.87	7,208.57	7,199.86	25.50	22.17	163.83	235.33	887.03	1,130.68	1,083.19	47.50	23.806	
7,250.00	7,243.80	7,258.12	7,249.41	25.69	22.34	163.86	235.54	886.67	1,133.03	1,085.18	47.84	23.682	
7,300.00	7,293.72	7,307.23	7,298.52	25.87	22.51	163.89	235.65	886.37	1,135.40	1,087.21	48.19	23.561	
7,350.00	7,343.64	7,357.24	7,348.53	26.05	22.68	163.92	235.66	886.10	1,137.80	1,089.27	48.54	23.441	
7,400.00	7,393.57	7,408.36	7,399.65	26.23	22.85	163.96	235.60	885.80	1,140.17	1,091.28	48.89	23.321	
7,450.00	7,443.49	7,458.78	7,450.07	26.41	23.02	164.01	235.47	885.48	1,142.49	1,093.25	49.24	23.204	
7,500.00	7,493.41	7,508.73	7,500.01	26.59	23.19	164.05	235.25	885.17	1,144.81	1,095.23	49.58	23.089	
7,550.00	7,543.34	7,556.93	7,548.21	26.77	23.35	164.10	235.00	884.90	1,147.16	1,097.23	49.92	22.979	
7,600.00	7,593.26	7,604.43	7,595.71	26.95	23.51	164.14	234.87	884.72	1,149.61	1,099.35	50.26	22.873	
7,650.00	7,643.18	7,653.47	7,644.75	27.14	23.67	164.18	234.81	884.60	1,152.14	1,101.54	50.60	22.768	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
7,700.00	7,693.11	7,703.19	7,694.47	27.32	23.84	164.22	234.67	884.50	1,154.68	1,103.74	50.95	22.664	
7,750.00	7,743.03	7,750.13	7,741.41	27.50	24.00	164.26	234.59	884.45	1,157.29	1,106.00	51.28	22.566	
7,800.00	7,792.95	7,796.20	7,787.48	27.68	24.16	164.28	234.86	884.49	1,160.05	1,108.43	51.62	22.473	
7,850.00	7,842.88	7,844.37	7,835.65	27.86	24.33	164.29	235.43	884.62	1,162.95	1,110.98	51.96	22.380	
7,900.00	7,892.80	7,893.45	7,884.72	28.04	24.50	164.30	235.97	884.79	1,165.89	1,113.57	52.31	22.286	
7,950.00	7,942.72	7,943.73	7,935.00	28.22	24.67	164.32	236.49	884.99	1,168.84	1,116.17	52.67	22.192	
8,000.00	7,992.65	7,994.38	7,985.65	28.41	24.85	164.33	236.99	885.16	1,171.77	1,118.74	53.03	22.098	
8,050.00	8,042.57	8,046.70	8,037.97	28.59	25.04	164.35	237.42	885.29	1,174.63	1,121.24	53.39	22.001	
8,100.00	8,092.49	8,099.23	8,090.50	28.77	25.22	164.38	237.65	885.34	1,177.38	1,123.63	53.75	21.903	
8,150.00	8,142.42	8,149.97	8,141.23	28.95	25.40	164.40	237.83	885.32	1,180.07	1,125.95	54.11	21.808	
8,200.00	8,192.34	8,200.37	8,191.63	29.13	25.57	164.43	238.03	885.26	1,182.71	1,128.25	54.47	21.715	
8,250.00	8,242.26	8,249.73	8,241.00	29.31	25.75	164.46	238.21	885.22	1,185.37	1,130.55	54.82	21.624	
8,300.00	8,292.19	8,299.68	8,290.94	29.50	25.92	164.49	238.32	885.20	1,188.04	1,132.87	55.17	21.534	
8,350.00	8,342.11	8,350.56	8,341.82	29.68	26.09	164.53	238.29	885.18	1,190.69	1,135.17	55.52	21.445	
8,400.00	8,392.03	8,399.82	8,391.08	29.86	26.26	164.57	238.17	885.16	1,193.31	1,137.44	55.87	21.359	
8,450.00	8,441.96	8,447.45	8,438.72	30.04	26.43	164.59	238.36	885.16	1,196.02	1,139.81	56.21	21.277	
8,500.00	8,491.88	8,499.68	8,490.94	30.22	26.61	164.60	238.87	885.15	1,198.77	1,142.20	56.57	21.191	
8,550.00	8,541.80	8,556.41	8,547.67	30.40	26.80	164.63	239.07	884.93	1,201.28	1,144.34	56.95	21.094	
8,600.00	8,591.72	8,615.41	8,606.67	30.59	27.00	164.68	238.81	884.40	1,203.48	1,146.15	57.33	20.992	
8,650.00	8,641.65	8,674.89	8,666.14	30.77	27.20	164.75	238.15	883.47	1,205.28	1,147.57	57.71	20.885	
8,700.00	8,691.57	8,715.90	8,707.14	30.95	27.34	164.77	238.05	882.84	1,207.16	1,149.13	58.03	20.802	
8,750.00	8,741.49	8,761.22	8,752.46	31.13	27.50	164.78	238.46	882.23	1,209.24	1,150.88	58.36	20.719	
8,800.00	8,791.42	8,813.99	8,805.21	31.31	27.68	164.78	239.18	881.49	1,211.35	1,152.62	58.73	20.626	
8,850.00	8,841.34	8,863.90	8,855.11	31.50	27.86	164.78	239.81	880.71	1,213.36	1,154.28	59.08	20.537	
8,900.00	8,891.26	8,906.43	8,897.64	31.68	28.01	164.78	240.18	880.24	1,215.57	1,156.16	59.41	20.461	
8,950.00	8,941.19	8,949.11	8,940.32	31.86	28.16	164.80	240.36	880.07	1,218.08	1,158.34	59.73	20.392	
9,000.00	8,991.11	8,995.33	8,986.54	32.04	28.32	164.83	240.50	880.10	1,220.81	1,160.73	60.07	20.322	
9,050.00	9,041.03	9,041.53	9,032.74	32.22	28.48	164.85	240.75	880.25	1,223.69	1,163.28	60.41	20.256	
9,100.00	9,090.96	9,096.31	9,087.52	32.40	28.67	164.88	240.90	880.43	1,226.55	1,165.77	60.78	20.180	
9,150.00	9,140.88	9,151.19	9,142.40	32.59	28.86	164.93	240.64	880.46	1,229.21	1,168.06	61.15	20.102	
9,200.00	9,190.80	9,205.54	9,196.74	32.77	29.04	164.99	240.20	880.31	1,231.69	1,170.18	61.51	20.024	
9,250.00	9,240.73	9,257.17	9,248.37	32.95	29.21	165.04	239.66	880.04	1,234.01	1,172.14	61.86	19.947	
9,300.00	9,290.65	9,306.11	9,297.31	33.13	29.37	165.11	238.92	879.82	1,236.34	1,174.14	62.21	19.875	
9,350.00	9,340.57	9,354.01	9,345.20	33.31	29.53	165.18	238.06	879.69	1,238.73	1,176.19	62.54	19.806	
9,400.00	9,390.50	9,401.15	9,392.33	33.50	29.69	165.24	237.40	879.62	1,241.23	1,178.35	62.88	19.740	
9,450.00	9,440.42	9,448.04	9,439.22	33.68	29.85	165.28	237.06	879.62	1,243.84	1,180.62	63.22	19.676	
9,500.00	9,490.34	9,494.74	9,485.92	33.86	30.01	165.30	237.32	879.63	1,246.58	1,183.03	63.55	19.614	
9,550.00	9,540.27	9,543.76	9,534.93	34.04	30.18	165.29	238.22	879.65	1,249.43	1,185.52	63.90	19.551	
9,600.00	9,590.19	9,594.88	9,586.04	34.23	30.36	165.27	239.48	879.58	1,252.24	1,187.98	64.27	19.485	
9,650.00	9,640.11	9,653.30	9,644.44	34.41	30.57	165.24	240.92	879.32	1,254.91	1,190.26	64.66	19.409	
9,700.00	9,690.04	9,715.45	9,706.58	34.59	30.79	165.25	241.47	878.64	1,257.13	1,192.07	65.06	19.324	
9,750.00	9,739.96	9,771.14	9,762.27	34.77	30.98	165.29	241.13	877.78	1,259.00	1,193.57	65.42	19.244	
9,800.00	9,789.88	9,823.50	9,814.61	34.95	31.15	165.36	240.15	876.85	1,260.65	1,194.87	65.78	19.164	
9,850.00	9,839.81	9,870.98	9,862.07	35.14	31.31	165.44	238.93	876.11	1,262.35	1,196.23	66.12	19.092	
9,900.00	9,889.73	9,917.35	9,908.41	35.32	31.47	165.53	237.51	875.52	1,264.16	1,197.70	66.45	19.023	
9,950.00	9,939.65	9,962.38	9,953.42	35.50	31.62	165.62	236.20	875.10	1,266.15	1,199.37	66.78	18.959	
10,000.00	9,989.57	10,007.38	9,998.40	35.68	31.77	165.69	235.04	874.84	1,268.34	1,201.22	67.11	18.899	
10,050.00	10,039.50	10,052.35	10,043.36	35.86	31.92	165.75	234.30	874.68	1,270.72	1,203.28	67.44	18.842	
10,100.00	10,089.44	10,098.17	10,089.18	36.05	32.08	165.80	234.05	874.62	1,272.97	1,205.19	67.77	18.783	
10,150.00	10,139.41	10,146.82	10,137.83	36.23	32.24	165.82	234.00	874.61	1,274.67	1,206.55	68.12	18.713	
10,200.00	10,189.39	10,201.46	10,192.47	36.40	32.43	165.84	234.05	874.60	1,275.76	1,207.27	68.49	18.628	
10,250.00	10,239.39	10,271.68	10,262.69	36.58	32.68	165.85	233.82	873.83	1,275.65	1,206.73	68.91	18.511	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
10,300.00	10,289.39	10,336.01	10,327.00	36.75	32.90	81.05	233.23	872.30	1,274.41	1,205.10	69.30	18.389	
10,350.00	10,339.39	10,393.22	10,384.17	36.93	33.09	81.07	232.47	870.41	1,272.67	1,202.99	69.67	18.267	
10,400.00	10,389.39	10,441.79	10,432.70	37.10	33.26	81.07	232.16	868.70	1,270.88	1,200.87	70.01	18.152	
10,450.00	10,439.39	10,485.00	10,475.89	37.28	33.41	81.05	232.28	867.21	1,269.21	1,198.86	70.34	18.044	
10,500.00	10,489.39	10,522.44	10,513.32	37.45	33.54	81.03	232.75	866.19	1,267.96	1,197.31	70.65	17.947	
10,550.00	10,539.39	10,562.00	10,552.86	37.62	33.68	80.98	233.64	865.47	1,267.22	1,196.26	70.96	17.858	
10,600.00	10,589.39	10,607.06	10,597.88	37.80	33.84	80.90	235.33	864.81	1,266.78	1,195.49	71.30	17.768	
10,635.77	10,625.14	10,641.10	10,631.87	37.92	33.96	-99.08	237.20	864.26	1,266.67	1,195.13	71.54	17.706	
10,650.00	10,639.36	10,654.60	10,645.34	37.97	34.01	-99.13	238.08	864.04	1,266.66	1,195.02	71.64	17.682	
10,700.00	10,689.03	10,702.11	10,692.74	38.13	34.18	-99.44	241.09	863.30	1,267.33	1,195.36	71.97	17.609	
10,750.00	10,738.02	10,749.06	10,739.63	38.29	34.35	-99.81	243.40	862.75	1,268.86	1,196.57	72.30	17.551	
10,800.00	10,785.96	10,799.36	10,789.90	38.45	34.53	-100.29	245.25	862.25	1,271.28	1,198.64	72.63	17.502	
10,850.00	10,832.49	10,848.78	10,839.30	38.60	34.70	-100.82	246.58	861.72	1,274.59	1,201.63	72.96	17.469	
10,900.00	10,877.25	10,894.85	10,885.35	38.74	34.87	-101.34	247.61	861.17	1,278.97	1,205.70	73.27	17.455	
10,950.00	10,919.90	10,938.67	10,929.15	38.87	35.02	-101.83	248.56	860.59	1,284.63	1,211.06	73.57	17.461	
11,000.00	10,960.11	10,978.09	10,968.56	39.00	35.16	-102.19	249.39	860.05	1,291.75	1,217.91	73.84	17.493	
11,050.00	10,997.58	11,014.62	11,005.08	39.12	35.29	-102.40	250.10	859.58	1,300.55	1,226.45	74.10	17.551	
11,100.00	11,032.03	11,049.24	11,039.69	39.23	35.41	-102.47	250.72	859.14	1,311.15	1,236.81	74.35	17.636	
11,150.00	11,063.19	11,082.73	11,073.18	39.34	35.53	-102.37	251.27	858.68	1,323.63	1,249.06	74.58	17.748	
11,200.00	11,090.83	11,112.45	11,102.89	39.46	35.63	-102.00	251.71	858.22	1,338.07	1,263.29	74.79	17.891	
11,250.00	11,114.73	11,138.14	11,128.57	39.58	35.73	-101.30	252.05	857.78	1,354.54	1,279.56	74.98	18.066	
11,300.00	11,134.71	11,156.44	11,146.87	39.71	35.79	-100.09	252.29	857.47	1,373.08	1,297.95	75.13	18.276	
11,350.00	11,150.62	11,171.30	11,161.73	39.85	35.84	-98.50	252.47	857.23	1,393.64	1,318.39	75.26	18.518	
11,400.00	11,162.35	11,182.10	11,172.53	39.99	35.88	-96.48	252.61	857.05	1,416.12	1,340.76	75.36	18.791	
11,450.00	11,169.79	11,188.74	11,179.17	40.13	35.90	-94.02	252.69	856.94	1,440.36	1,364.92	75.44	19.093	
11,500.00	11,172.90	11,191.17	11,181.59	40.27	35.91	-91.13	252.72	856.91	1,466.14	1,390.65	75.49	19.422	
11,550.00	11,173.00	12,562.40	11,962.28	40.43	39.91	-122.37	-614.43	863.15	1,477.38	1,404.03	73.35	20.142	
11,600.00	11,173.00	12,608.25	11,961.52	40.58	40.09	-122.36	-660.26	862.35	1,476.08	1,402.43	73.65	20.042	
11,650.00	11,173.00	12,636.00	11,961.00	40.76	40.20	-122.35	-688.01	861.97	1,475.04	1,401.15	73.89	19.963	
11,700.00	11,173.00	12,672.72	11,960.81	40.93	40.36	-122.35	-724.72	861.68	1,474.54	1,400.36	74.18	19.877	
11,701.67	11,173.00	12,673.60	11,960.81	40.94	40.36	-122.35	-725.60	861.68	1,474.54	1,400.35	74.19	19.875	
11,750.00	11,173.00	12,699.04	11,961.32	41.13	40.48	-122.37	-751.04	861.66	1,474.91	1,400.48	74.44	19.815	
11,800.00	11,173.00	12,731.00	11,962.67	41.33	40.62	-122.42	-782.97	861.85	1,476.11	1,401.41	74.70	19.760	
11,850.00	11,173.00	12,773.82	11,965.01	41.56	40.83	-122.49	-825.73	862.19	1,477.78	1,402.72	75.05	19.690	
11,900.00	11,173.00	12,874.89	11,969.14	41.78	41.35	-122.62	-926.70	862.54	1,479.28	1,403.56	75.73	19.535	
11,950.00	11,173.00	13,013.48	11,961.49	42.02	42.14	-122.39	-1,065.02	861.85	1,477.08	1,400.20	76.88	19.213	
12,000.00	11,173.00	13,014.00	11,961.44	42.27	42.14	-122.39	-1,065.54	861.84	1,474.82	1,397.79	77.03	19.146	
12,050.00	11,173.00	13,057.16	11,958.43	42.53	42.41	-122.30	-1,108.60	861.69	1,472.80	1,395.26	77.54	18.994	
12,100.00	11,173.00	13,078.89	11,957.73	42.80	42.54	-122.27	-1,130.31	861.83	1,472.11	1,394.24	77.86	18.906	
12,111.28	11,173.00	13,083.80	11,957.64	42.86	42.57	-122.27	-1,135.21	861.89	1,472.08	1,394.14	77.94	18.888	
12,150.00	11,173.00	13,108.00	11,957.63	43.09	42.72	-122.26	-1,159.41	862.26	1,472.41	1,394.16	78.25	18.817	
12,200.00	11,173.00	13,137.82	11,958.04	43.37	42.91	-122.26	-1,189.23	862.88	1,473.42	1,394.78	78.64	18.736	
12,250.00	11,173.00	13,182.91	11,958.67	43.68	43.21	-122.27	-1,234.30	863.95	1,474.68	1,395.51	79.17	18.627	
12,300.00	11,173.00	13,295.07	11,958.27	43.99	43.97	-122.22	-1,346.43	865.84	1,475.45	1,395.19	80.26	18.382	
12,350.00	11,173.00	13,331.65	11,957.31	44.31	44.23	-122.19	-1,382.99	866.05	1,474.89	1,394.11	80.78	18.258	
12,380.35	11,173.00	13,352.93	11,956.87	44.51	44.38	-122.17	-1,404.27	866.31	1,474.80	1,393.71	81.09	18.188	
12,400.00	11,173.00	13,366.72	11,956.63	44.64	44.48	-122.16	-1,418.05	866.53	1,474.84	1,393.55	81.28	18.144	
12,450.00	11,173.00	13,406.65	11,956.08	44.98	44.78	-122.12	-1,457.97	867.40	1,475.26	1,393.41	81.85	18.024	
12,500.00	11,173.00	13,456.14	11,955.00	45.33	45.15	-122.06	-1,507.43	868.85	1,475.81	1,393.29	82.52	17.884	
12,550.00	11,173.00	13,509.64	11,953.24	45.69	45.57	-121.96	-1,560.87	870.77	1,476.35	1,393.08	83.27	17.730	
12,600.00	11,173.00	13,568.40	11,951.27	46.05	46.03	-121.87	-1,619.56	872.57	1,476.64	1,392.57	84.08	17.563	
12,650.00	11,173.00	13,616.13	11,949.96	46.43	46.42	-121.80	-1,667.26	873.68	1,476.80	1,392.01	84.79	17.417	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
12,700.00	11,173.00	13,661.47	11,949.51	46.81	46.79	-121.78	-1,712.59	874.40	1,477.10	1,391.64	85.46	17.284	
12,750.00	11,173.00	13,750.48	11,949.78	47.20	47.53	-121.80	-1,801.60	874.12	1,477.01	1,390.45	86.56	17.063	
12,800.00	11,173.00	13,869.61	11,948.80	47.60	48.54	-121.87	-1,920.61	869.19	1,474.95	1,387.02	87.93	16.775	
12,850.00	11,173.00	13,901.07	11,948.15	48.01	48.82	-121.88	-1,952.03	867.58	1,472.06	1,383.56	88.50	16.633	
12,900.00	11,173.00	13,937.23	11,947.50	48.42	49.13	-121.90	-1,988.14	866.02	1,469.64	1,380.52	89.12	16.491	
12,950.00	11,173.00	13,975.40	11,946.96	48.85	49.47	-121.91	-2,026.28	864.70	1,467.68	1,377.91	89.77	16.349	
13,000.00	11,173.00	14,016.24	11,946.92	49.27	49.84	-121.94	-2,067.09	863.27	1,466.05	1,375.60	90.45	16.209	
13,050.00	11,173.00	14,055.00	11,947.47	49.71	50.19	-121.99	-2,105.83	861.82	1,464.74	1,373.64	91.10	16.078	
13,100.00	11,173.00	14,092.38	11,948.39	50.15	50.54	-122.05	-2,143.17	860.54	1,463.83	1,372.09	91.74	15.957	
13,150.00	11,173.00	14,127.97	11,949.50	50.60	50.88	-122.11	-2,178.74	859.59	1,463.42	1,371.06	92.36	15.844	
13,166.76	11,173.00	14,139.90	11,949.93	50.75	50.99	-122.13	-2,190.66	859.34	1,463.40	1,370.82	92.57	15.808	
13,200.00	11,173.00	14,170.65	11,950.94	51.05	51.28	-122.17	-2,221.39	858.86	1,463.46	1,370.39	93.07	15.724	
13,250.00	11,173.00	14,224.92	11,951.16	51.52	51.81	-122.18	-2,275.64	858.89	1,463.47	1,369.51	93.96	15.576	
13,279.60	11,173.00	14,257.01	11,950.29	51.79	52.12	-122.14	-2,307.72	859.44	1,463.41	1,368.90	94.51	15.484	
13,300.00	11,173.00	14,270.03	11,949.99	51.98	52.25	-122.13	-2,320.73	859.70	1,463.44	1,368.66	94.78	15.440	
13,350.00	11,173.00	14,309.77	11,949.00	52.46	52.65	-122.08	-2,360.45	860.70	1,463.73	1,368.17	95.55	15.318	
13,400.00	11,173.00	14,340.00	11,948.35	52.93	52.95	-122.04	-2,390.66	861.61	1,464.40	1,368.21	96.20	15.223	
13,450.00	11,173.00	14,374.15	11,947.95	53.42	53.30	-122.00	-2,424.78	862.92	1,465.67	1,368.77	96.90	15.125	
13,500.00	11,173.00	14,401.68	11,948.00	53.91	53.58	-121.97	-2,452.28	864.30	1,467.73	1,370.22	97.50	15.053	
13,550.00	11,173.00	14,434.00	11,948.49	54.41	53.91	-121.95	-2,484.53	866.28	1,470.57	1,372.39	98.17	14.980	
13,600.00	11,173.00	14,462.88	11,949.19	54.91	54.21	-121.93	-2,513.32	868.34	1,474.05	1,375.26	98.79	14.921	
13,650.00	11,173.00	14,497.85	11,950.17	55.41	54.58	-121.91	-2,548.18	871.12	1,478.05	1,378.55	99.50	14.855	
13,700.00	11,173.00	13,700.00	11,948.53	55.92	46.05	-121.64	-2,736.04	882.23	1,480.89	1,387.72	93.17	15.895	
13,750.00	11,173.00	14,756.36	11,945.33	56.44	57.34	-121.53	-2,806.07	882.43	1,479.53	1,375.75	103.78	14.257	
13,800.00	11,173.00	14,780.59	11,944.66	56.96	57.60	-121.51	-2,830.29	882.54	1,478.87	1,374.46	104.41	14.164	
13,850.00	11,173.00	13,850.00	11,943.12	57.48	47.47	-121.46	-2,905.28	882.81	1,478.45	1,382.45	96.00	15.401	
13,900.00	11,173.00	14,946.72	11,939.76	58.01	59.41	-121.39	-2,996.29	881.21	1,476.57	1,369.35	107.22	13.771	
13,950.00	11,173.00	14,982.73	11,938.23	58.54	59.81	-121.35	-3,032.25	880.38	1,474.35	1,366.30	108.05	13.645	
14,000.00	11,173.00	15,015.13	11,937.10	59.08	60.16	-121.33	-3,064.63	879.84	1,472.64	1,363.82	108.82	13.532	
14,050.00	11,173.00	15,044.21	11,936.80	59.62	60.49	-121.33	-3,093.70	879.40	1,471.61	1,362.07	109.54	13.434	
14,097.31	11,173.00	15,071.72	11,937.23	60.14	60.80	-121.35	-3,121.21	879.00	1,471.30	1,361.10	110.19	13.352	
14,100.00	11,173.00	15,073.28	11,937.27	60.17	60.81	-121.35	-3,122.77	878.98	1,471.30	1,361.07	110.23	13.347	
14,150.00	11,173.00	15,148.10	11,939.52	60.72	61.65	-121.46	-3,197.53	877.79	1,471.47	1,359.98	111.49	13.198	
14,200.00	11,173.00	15,243.06	11,937.31	61.27	62.73	-121.44	-3,292.44	875.51	1,469.56	1,356.49	113.07	12.997	
14,250.00	11,173.00	15,303.19	11,934.47	61.82	63.41	-121.38	-3,352.47	873.77	1,466.97	1,352.72	114.24	12.841	
14,300.00	11,173.00	15,350.46	11,932.26	62.38	63.95	-121.34	-3,399.67	872.33	1,464.33	1,349.08	115.25	12.706	
14,350.00	11,173.00	15,377.00	11,931.12	62.95	64.26	-121.32	-3,426.17	871.51	1,461.95	1,345.95	116.00	12.603	
14,400.00	11,173.00	15,418.20	11,929.91	63.51	64.73	-121.30	-3,467.34	870.42	1,460.00	1,343.08	116.92	12.487	
14,450.00	11,173.00	15,446.87	11,929.65	64.08	65.07	-121.31	-3,496.00	869.90	1,458.88	1,341.21	117.67	12.399	
14,500.00	11,173.00	15,480.13	11,929.93	64.65	65.45	-121.32	-3,529.26	869.53	1,458.48	1,340.03	118.45	12.313	
14,550.00	11,173.00	15,537.65	11,930.88	65.23	66.13	-121.38	-3,586.76	868.69	1,458.16	1,338.60	119.56	12.196	
14,600.00	11,173.00	15,582.99	11,931.84	65.81	66.66	-121.43	-3,632.08	867.72	1,457.71	1,337.21	120.50	12.097	
14,625.93	11,173.00	15,600.78	11,932.38	66.11	66.87	-121.46	-3,649.86	867.38	1,457.63	1,336.73	120.91	12.056	
14,650.00	11,173.00	15,617.29	11,932.98	66.39	67.06	-121.48	-3,666.36	867.11	1,457.70	1,336.42	121.28	12.019	
14,700.00	11,173.00	15,651.56	11,934.55	66.98	67.47	-121.55	-3,700.59	866.67	1,458.23	1,336.18	122.04	11.948	
14,750.00	11,173.00	15,706.84	11,937.14	67.56	68.13	-121.65	-3,755.81	866.25	1,459.03	1,335.92	123.11	11.851	
14,800.00	11,173.00	15,788.75	11,938.82	68.15	69.11	-121.71	-3,837.69	865.88	1,459.35	1,334.76	124.59	11.713	
14,850.00	11,173.00	15,863.68	11,937.89	68.75	70.01	-121.72	-3,912.60	864.53	1,457.99	1,331.98	126.01	11.570	
14,900.00	11,173.00	15,892.52	11,937.79	69.34	70.36	-121.72	-3,941.44	864.02	1,457.03	1,330.25	126.78	11.493	
14,941.33	11,173.00	15,916.36	11,938.11	69.84	70.65	-121.74	-3,965.27	863.71	1,456.78	1,329.39	127.40	11.435	
14,950.00	11,173.00	15,921.36	11,938.23	69.94	70.71	-121.75	-3,970.27	863.66	1,456.79	1,329.27	127.52	11.424	
15,000.00	11,173.00	15,957.07	11,939.37	70.54	71.15	-121.79	-4,005.96	863.46	1,457.25	1,328.91	128.34	11.354	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
15,050.00	11,173.00	16,010.21	11,939.79	71.14	71.80	-121.80	-4,059.09	864.05	1,457.81	1,328.34	129.48	11.259	
15,100.00	11,173.00	16,036.00	11,939.25	71.75	72.12	-121.77	-4,084.87	864.75	1,458.51	1,328.31	130.20	11.202	
15,150.00	11,173.00	16,074.91	11,938.64	72.35	72.60	-121.72	-4,123.75	866.23	1,459.70	1,328.55	131.15	11.130	
15,200.00	11,173.00	16,100.60	11,938.87	72.96	72.92	-121.70	-4,149.40	867.44	1,461.83	1,330.00	131.83	11.089	
15,250.00	11,173.00	16,130.00	11,939.75	73.57	73.29	-121.70	-4,178.75	869.07	1,464.80	1,332.26	132.55	11.051	
15,300.00	11,173.00	16,169.98	11,941.28	74.19	73.80	-121.70	-4,218.62	871.56	1,468.32	1,334.86	133.46	11.002	
15,350.00	11,173.00	15,350.00	11,941.65	74.80	63.41	-121.58	-4,328.01	878.29	1,470.93	1,345.68	125.25	11.744	
15,400.00	11,173.00	16,364.29	11,937.43	75.42	76.27	-121.36	-4,412.39	882.35	1,471.32	1,333.64	137.68	10.686	
15,450.00	11,173.00	16,395.42	11,935.71	76.04	76.66	-121.27	-4,443.43	884.00	1,472.04	1,333.46	138.57	10.623	
15,500.00	11,173.00	16,426.93	11,934.35	76.66	77.07	-121.19	-4,474.86	885.91	1,473.39	1,333.94	139.45	10.565	
15,550.00	11,173.00	16,458.88	11,933.46	77.28	77.48	-121.12	-4,506.72	888.00	1,475.36	1,335.04	140.32	10.514	
15,600.00	11,173.00	16,490.83	11,933.10	77.91	77.89	-121.07	-4,538.60	890.23	1,477.94	1,336.78	141.16	10.470	
15,650.00	11,173.00	15,650.00	11,930.76	78.54	67.21	-120.88	-4,702.58	896.34	1,479.41	1,346.45	132.95	11.127	
15,700.00	11,173.00	16,746.53	11,926.31	79.16	81.15	-120.76	-4,793.93	895.19	1,477.32	1,331.12	146.20	10.105	
15,750.00	11,173.00	16,786.60	11,924.24	79.79	81.66	-120.70	-4,833.94	894.48	1,475.11	1,327.85	147.26	10.017	
15,800.00	11,173.00	17,075.21	11,925.64	80.42	85.17	-121.49	-5,119.55	858.89	1,473.44	1,324.20	149.23	9.873	
15,850.00	11,173.00	17,072.00	11,925.63	81.06	85.13	-121.47	-5,116.43	859.64	1,464.33	1,314.09	150.24	9.747	
15,900.00	11,173.00	17,072.00	11,925.63	81.69	85.13	-121.47	-5,116.43	859.64	1,456.89	1,305.76	151.12	9.640	
15,950.00	11,173.00	17,114.74	11,926.32	82.33	85.64	-121.67	-5,158.31	851.21	1,448.97	1,296.96	152.00	9.532	
16,000.00	11,173.00	17,129.16	11,926.76	82.97	85.82	-121.73	-5,172.56	849.03	1,443.21	1,290.40	152.81	9.444	
16,050.00	11,173.00	17,166.00	11,928.35	83.61	86.26	-121.87	-5,209.14	845.04	1,439.27	1,285.58	153.69	9.365	
16,100.00	11,173.00	17,166.00	11,928.35	84.25	86.26	-121.87	-5,209.14	845.04	1,435.44	1,281.12	154.31	9.302	
16,150.00	11,173.00	17,166.00	11,928.35	84.89	86.26	-121.87	-5,209.14	845.04	1,433.34	1,278.53	154.81	9.259	
16,200.00	11,173.00	17,203.51	11,930.08	85.53	86.74	-121.98	-5,246.54	842.81	1,432.03	1,276.36	155.67	9.199	
16,246.14	11,173.00	17,227.13	11,930.95	86.13	87.05	-122.03	-5,270.14	842.12	1,431.66	1,275.34	156.33	9.158	
16,250.00	11,173.00	17,229.11	11,931.01	86.18	87.07	-122.03	-5,272.12	842.09	1,431.67	1,275.28	156.38	9.155	
16,300.00	11,173.00	17,260.00	11,931.84	86.82	87.47	-122.06	-5,302.99	842.07	1,432.18	1,275.00	157.18	9.112	
16,350.00	11,173.00	17,284.94	11,932.44	87.47	87.80	-122.07	-5,327.92	842.56	1,433.44	1,275.57	157.86	9.080	
16,400.00	11,173.00	17,316.26	11,933.32	88.12	88.21	-122.08	-5,359.21	843.52	1,435.37	1,276.72	158.65	9.047	
16,450.00	11,173.00	17,355.00	11,934.63	88.77	88.72	-122.09	-5,397.89	845.24	1,437.98	1,278.41	159.57	9.011	
16,500.00	11,173.00	17,486.62	11,932.11	89.42	90.47	-121.92	-5,529.34	849.92	1,438.31	1,275.85	162.46	8.853	
16,545.88	11,173.00	17,527.21	11,930.02	90.02	91.01	-121.82	-5,569.86	851.24	1,438.22	1,274.67	163.56	8.794	
16,550.00	11,173.00	17,530.85	11,929.84	90.07	91.06	-121.81	-5,573.50	851.36	1,438.22	1,274.57	163.65	8.788	
16,600.00	11,173.00	17,544.00	11,929.15	90.73	91.23	-121.78	-5,586.62	851.84	1,438.72	1,274.52	164.21	8.762	
16,650.00	11,173.00	17,583.78	11,927.41	91.38	91.77	-121.68	-5,626.31	853.83	1,439.71	1,274.42	165.30	8.710	
16,700.00	11,173.00	17,607.12	11,926.72	92.04	92.08	-121.62	-5,649.58	855.48	1,441.83	1,275.83	166.00	8.686	
16,750.00	11,173.00	17,638.00	11,926.16	92.69	92.49	-121.55	-5,680.33	858.21	1,444.92	1,278.07	166.85	8.660	
16,800.00	11,173.00	16,800.00	11,924.10	93.35	81.19	-121.37	-5,747.49	863.81	1,447.45	1,289.85	157.60	9.184	
16,850.00	11,173.00	17,796.58	11,920.57	94.01	94.64	-121.13	-5,838.36	869.88	1,449.00	1,278.09	170.92	8.478	
16,900.00	11,173.00	17,853.59	11,918.85	94.67	95.41	-121.02	-5,895.28	872.55	1,450.12	1,277.75	172.37	8.413	
16,950.00	11,173.00	17,911.21	11,916.80	95.33	96.18	-120.90	-5,952.80	875.08	1,450.97	1,277.14	173.84	8.347	
17,000.00	11,173.00	17,920.00	11,916.44	95.99	96.30	-120.88	-5,961.58	875.47	1,452.28	1,278.03	174.26	8.334	
17,050.00	11,173.00	17,956.38	11,915.59	96.65	96.80	-120.82	-5,997.90	877.47	1,454.13	1,278.88	175.25	8.297	
17,100.00	11,173.00	17,976.05	11,915.66	97.32	97.06	-120.79	-6,017.51	878.92	1,457.27	1,281.47	175.80	8.290	
17,150.00	11,173.00	18,015.00	11,916.89	97.98	97.60	-120.76	-6,056.27	882.53	1,461.76	1,284.99	176.77	8.269	
17,200.00	11,173.00	18,117.36	11,919.02	98.65	99.00	-120.67	-6,158.25	890.75	1,466.40	1,287.12	179.29	8.179	
17,250.00	11,173.00	18,170.97	11,918.99	99.31	99.72	-120.62	-6,211.79	893.62	1,468.58	1,287.94	180.64	8.130	
17,300.00	11,173.00	18,232.31	11,919.49	99.98	100.56	-120.58	-6,273.06	896.33	1,470.58	1,288.46	182.12	8.075	
17,350.00	11,173.00	18,393.00	11,921.22	100.65	102.72	-120.64	-6,433.70	896.63	1,471.69	1,286.63	185.06	7.953	
17,400.00	11,173.00	18,422.16	11,920.82	101.31	103.11	-120.65	-6,462.84	895.79	1,470.00	1,284.01	185.98	7.904	
17,450.00	11,173.00	18,450.57	11,920.52	101.98	103.49	-120.65	-6,491.24	895.41	1,469.04	1,282.16	186.88	7.861	
17,500.00	11,173.00	17,500.00	11,917.97	102.65	90.68	-120.57	-6,570.25	895.51	1,468.27	1,292.14	176.13	8.336	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**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
17,550.00	11,173.00	18,620.16	11,911.82	103.33	105.76	-120.38	-6,660.50	894.55	1,465.95	1,275.44	190.51	7.695	
17,600.00	11,173.00	18,655.14	11,910.04	104.00	106.23	-120.34	-6,695.42	893.51	1,463.25	1,271.65	191.60	7.637	
17,650.00	11,173.00	18,769.00	11,907.72	104.67	107.72	-120.43	-6,808.91	885.30	1,459.24	1,265.98	193.26	7.551	
17,700.00	11,173.00	18,769.00	11,907.72	105.34	107.72	-120.43	-6,808.91	885.30	1,455.47	1,261.43	194.04	7.501	
17,750.00	11,173.00	18,806.44	11,907.33	106.02	108.22	-120.49	-6,846.19	881.98	1,451.63	1,256.58	195.05	7.442	
17,800.00	11,173.00	18,820.04	11,907.41	106.69	108.40	-120.51	-6,859.78	881.38	1,449.77	1,253.99	195.78	7.405	
17,832.18	11,173.00	18,828.81	11,907.52	107.13	108.52	-120.51	-6,868.55	881.16	1,449.23	1,253.03	196.20	7.386	
17,850.00	11,173.00	18,864.00	11,908.48	107.37	108.99	-120.54	-6,903.71	881.66	1,450.32	1,253.46	196.87	7.367	
17,879.81	11,173.00	18,864.00	11,908.48	107.77	108.99	-120.54	-6,903.71	881.66	1,450.02	1,252.90	197.12	7.356	
17,900.00	11,173.00	18,864.00	11,908.48	108.04	108.99	-120.54	-6,903.71	881.66	1,450.16	1,252.90	197.26	7.352	
17,950.00	11,173.00	18,864.00	11,908.48	108.72	108.99	-120.54	-6,903.71	881.66	1,451.72	1,254.26	197.46	7.352	
18,000.00	11,173.00	19,003.61	11,907.58	109.40	110.90	-120.45	-7,043.23	885.15	1,452.36	1,251.85	200.51	7.243	
18,050.00	11,173.00	19,065.99	11,904.87	110.07	111.76	-120.35	-7,105.55	885.43	1,451.31	1,249.26	202.04	7.183	
18,100.00	11,173.00	19,101.83	11,903.33	110.75	112.25	-120.29	-7,141.36	885.73	1,450.46	1,247.33	203.13	7.140	
18,150.00	11,173.00	19,137.68	11,901.98	111.43	112.74	-120.24	-7,177.18	886.32	1,450.10	1,245.90	204.21	7.101	
18,161.60	11,173.00	19,146.00	11,901.69	111.59	112.85	-120.23	-7,185.49	886.49	1,450.09	1,245.64	204.45	7.093	
18,200.00	11,173.00	19,170.02	11,901.09	112.11	113.18	-120.20	-7,209.50	887.05	1,450.28	1,245.09	205.19	7.068	
18,250.00	11,173.00	19,201.32	11,900.91	112.79	113.61	-120.18	-7,240.78	887.83	1,451.10	1,245.01	206.09	7.041	
18,300.00	11,173.00	19,240.00	11,901.65	113.47	114.15	-120.18	-7,279.44	888.88	1,452.59	1,245.50	207.09	7.014	
18,350.00	11,173.00	18,350.00	11,902.08	114.15	101.91	-120.18	-7,354.07	890.01	1,453.07	1,256.22	196.84	7.382	
18,400.00	11,173.00	19,362.11	11,901.98	114.83	115.83	-120.17	-7,401.52	890.57	1,453.42	1,243.39	210.03	6.920	
18,450.00	11,173.00	19,383.04	11,902.33	115.52	116.12	-120.17	-7,422.44	891.03	1,454.69	1,244.01	210.68	6.905	
18,500.00	11,173.00	19,403.93	11,903.12	116.20	116.40	-120.18	-7,443.30	891.72	1,456.96	1,245.72	211.24	6.897	
18,550.00	11,173.00	19,429.00	11,904.65	116.88	116.75	-120.22	-7,468.30	892.86	1,460.23	1,248.42	211.82	6.894	
18,600.00	11,173.00	19,539.06	11,906.01	117.57	118.29	-120.16	-7,578.15	898.44	1,462.38	1,247.82	214.57	6.816	
18,650.00	11,173.00	19,568.08	11,905.52	118.25	118.69	-120.11	-7,607.12	900.09	1,464.31	1,248.88	215.42	6.797	
18,700.00	11,173.00	19,597.07	11,905.52	118.94	119.10	-120.08	-7,636.05	901.94	1,466.94	1,250.72	216.22	6.785	
18,750.00	11,173.00	19,651.32	11,906.53	119.62	119.86	-120.04	-7,690.17	905.49	1,470.16	1,252.53	217.62	6.756	
18,800.00	11,173.00	19,798.92	11,911.16	120.31	121.90	-120.16	-7,837.64	907.67	1,471.69	1,251.03	220.66	6.670	
18,850.00	11,173.00	19,868.03	11,913.09	121.00	122.84	-120.28	-7,906.68	905.38	1,470.83	1,248.81	222.02	6.625	
18,900.00	11,173.00	19,918.20	11,913.53	121.68	123.53	-120.33	-7,956.82	903.82	1,469.59	1,246.40	223.19	6.584	
18,950.00	11,173.00	19,954.78	11,914.14	122.37	124.03	-120.37	-7,993.39	902.80	1,468.70	1,244.52	224.18	6.552	
19,000.00	11,173.00	19,994.00	11,915.31	123.06	124.56	-120.43	-8,032.57	901.84	1,468.26	1,243.11	225.16	6.521	
19,050.00	11,173.00	20,116.68	11,914.41	123.75	126.23	-120.49	-8,155.15	897.71	1,466.19	1,238.94	227.25	6.452	
19,100.00	11,173.00	20,168.99	11,912.39	124.44	126.95	-120.46	-8,207.37	895.63	1,463.38	1,234.83	228.54	6.403	
19,150.00	11,173.00	20,210.44	11,910.73	125.12	127.51	-120.44	-8,248.76	894.06	1,460.62	1,230.89	229.73	6.358	
19,200.00	11,173.00	20,248.34	11,909.48	125.81	128.03	-120.42	-8,286.62	892.82	1,458.26	1,227.40	230.86	6.317	
19,250.00	11,173.00	20,288.78	11,908.44	126.50	128.58	-120.41	-8,327.03	891.71	1,456.31	1,224.30	232.01	6.277	
19,300.00	11,173.00	20,336.00	11,907.41	127.19	129.23	-120.41	-8,374.23	890.50	1,454.53	1,221.30	233.23	6.236	
19,350.00	11,173.00	20,389.23	11,906.30	127.89	129.96	-120.40	-8,427.43	889.18	1,452.82	1,218.29	234.53	6.195	
19,400.00	11,173.00	20,459.48	11,902.78	128.58	130.93	-120.31	-8,497.57	887.86	1,450.63	1,214.50	236.13	6.143	
19,450.00	11,173.00	20,519.39	11,898.15	129.27	131.75	-120.17	-8,557.29	886.96	1,447.90	1,210.22	237.68	6.092	
19,500.00	11,173.00	20,578.34	11,893.07	129.96	132.56	-120.02	-8,616.02	885.94	1,444.87	1,205.64	239.23	6.040	
19,550.00	11,173.00	20,587.10	11,892.63	130.65	132.69	-120.00	-8,624.77	886.04	1,442.68	1,202.59	240.09	6.009	
19,600.00	11,173.00	20,608.30	11,891.40	131.35	132.98	-119.96	-8,645.94	886.19	1,441.41	1,200.40	241.02	5.981	
19,638.28	11,173.00	20,624.56	11,890.70	131.88	133.21	-119.93	-8,662.18	886.50	1,441.12	1,199.46	241.66	5.963	
19,650.00	11,173.00	20,629.54	11,890.52	132.04	133.28	-119.92	-8,667.15	886.62	1,441.15	1,199.30	241.85	5.959	
19,700.00	11,173.00	20,653.00	11,889.95	132.73	133.61	-119.89	-8,690.59	887.44	1,441.89	1,199.24	242.64	5.942	
19,750.00	11,173.00	20,693.39	11,889.23	133.43	134.18	-119.83	-8,730.93	889.27	1,443.28	1,199.49	243.79	5.920	
19,800.00	11,173.00	20,738.44	11,888.19	134.12	134.81	-119.75	-8,775.91	891.63	1,444.85	1,199.78	245.08	5.896	
19,850.00	11,173.00	20,776.05	11,887.46	134.82	135.35	-119.68	-8,813.45	893.74	1,446.70	1,200.54	246.16	5.877	
19,900.00	11,173.00	21,010.74	11,889.35	135.51	138.55	-119.96	-9,047.20	883.60	1,442.31	1,192.77	249.55	5.780	

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 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

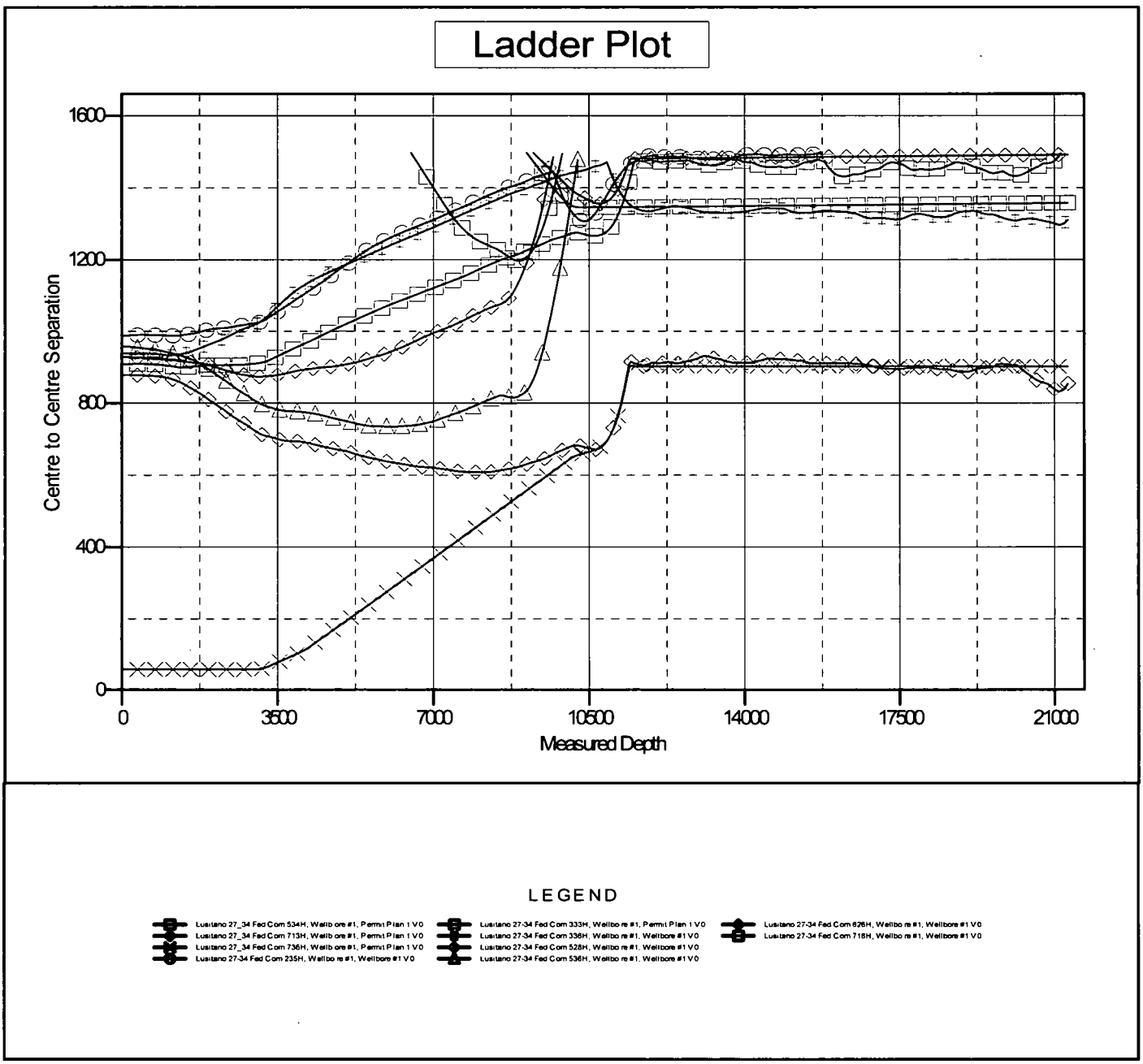
Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1 — **Offset Site Error:** 0.00 ft

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
19,950.00	11,173.00	21,030.00	11,889.59	136.21	138.80	-120.01	-9,066.37	881.75	1,438.49	1,187.95	250.54	5.742	
20,000.00	11,173.00	21,056.12	11,890.15	136.90	139.16	-120.07	-9,092.40	879.69	1,435.58	1,184.10	251.48	5.709	
20,050.00	11,173.00	21,077.14	11,890.80	137.60	139.45	-120.12	-9,113.38	878.45	1,433.70	1,181.38	252.32	5.682	
20,100.00	11,173.00	21,098.19	11,891.63	138.29	139.73	-120.16	-9,134.39	877.60	1,432.82	1,179.76	253.06	5.662	
20,106.02	11,173.00	21,100.73	11,891.75	138.38	139.77	-120.17	-9,136.93	877.53	1,432.79	1,179.64	253.15	5.660	
20,150.00	11,173.00	21,124.00	11,892.90	138.99	140.09	-120.22	-9,160.17	877.09	1,432.98	1,179.18	253.80	5.646	
20,200.00	11,173.00	21,146.24	11,894.14	139.69	140.40	-120.26	-9,182.37	877.02	1,434.04	1,179.62	254.41	5.637	
20,250.00	11,173.00	21,174.95	11,895.84	140.38	140.80	-120.32	-9,211.03	877.31	1,435.85	1,180.76	255.09	5.629	
20,300.00	11,173.00	21,218.00	11,898.60	141.08	141.41	-120.39	-9,253.97	878.55	1,438.54	1,182.48	256.06	5.618	
20,350.00	11,173.00	21,244.99	11,900.36	141.78	141.79	-120.43	-9,280.88	879.63	1,441.60	1,184.95	256.65	5.617	
20,400.00	11,173.00	21,299.18	11,903.66	142.48	142.56	-120.50	-9,334.93	881.80	1,444.76	1,186.84	257.92	5.602	
20,450.00	11,173.00	21,348.45	11,906.37	143.18	143.26	-120.56	-9,384.08	883.84	1,447.83	1,188.75	259.08	5.588	
20,500.00	11,173.00	21,396.19	11,908.79	143.87	143.94	-120.60	-9,431.71	886.03	1,450.97	1,190.75	260.22	5.576	
20,550.00	11,173.00	21,451.66	11,911.27	144.57	144.73	-120.63	-9,487.06	888.71	1,454.08	1,192.49	261.58	5.559	
20,600.00	11,173.00	21,509.16	11,913.37	145.27	145.55	-120.65	-9,544.46	891.44	1,456.93	1,193.91	263.03	5.539	
20,650.00	11,173.00	21,536.23	11,914.45	145.97	145.93	-120.66	-9,571.46	892.93	1,460.13	1,196.48	263.65	5.538	
20,700.00	11,173.00	21,567.41	11,915.88	146.67	146.38	-120.67	-9,602.55	894.94	1,463.96	1,199.61	264.34	5.538	
20,750.00	11,173.00	21,704.51	11,917.61	147.37	148.34	-120.55	-9,739.24	904.18	1,467.84	1,199.73	268.12	5.475	
20,800.00	11,173.00	21,792.04	11,911.43	148.07	149.59	-120.25	-9,826.40	909.14	1,468.39	1,197.75	270.64	5.426	
20,806.04	11,173.00	21,802.57	11,910.39	148.16	149.74	-120.20	-9,836.86	909.74	1,468.37	1,197.42	270.95	5.419	
20,850.00	11,173.00	21,837.87	11,907.29	148.77	150.24	-120.06	-9,871.97	911.74	1,468.45	1,196.28	272.17	5.395	
20,900.00	11,173.00	21,852.00	11,906.00	149.47	150.44	-120.00	-9,886.02	912.55	1,468.95	1,196.11	272.84	5.384 SF	
20,950.00	11,173.00	21,852.00	11,906.00	150.17	150.44	-120.00	-9,886.02	912.55	1,471.09	1,198.20	272.89	5.391	
21,000.00	11,173.00	21,852.00	11,906.00	150.88	150.44	-120.00	-9,886.02	912.55	1,474.92	1,202.26	272.65	5.409	
21,050.00	11,173.00	21,852.00	11,906.00	151.58	150.44	-120.00	-9,886.02	912.55	1,480.43	1,208.28	272.15	5.440	
21,100.00	11,173.00	21,852.00	11,906.00	152.28	150.44	-120.00	-9,886.02	912.55	1,487.60	1,216.23	271.37	5.482	
21,150.00	11,173.00	21,852.00	11,906.00	152.98	150.44	-120.00	-9,886.02	912.55	1,496.40	1,226.07	270.34	5.535	

Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

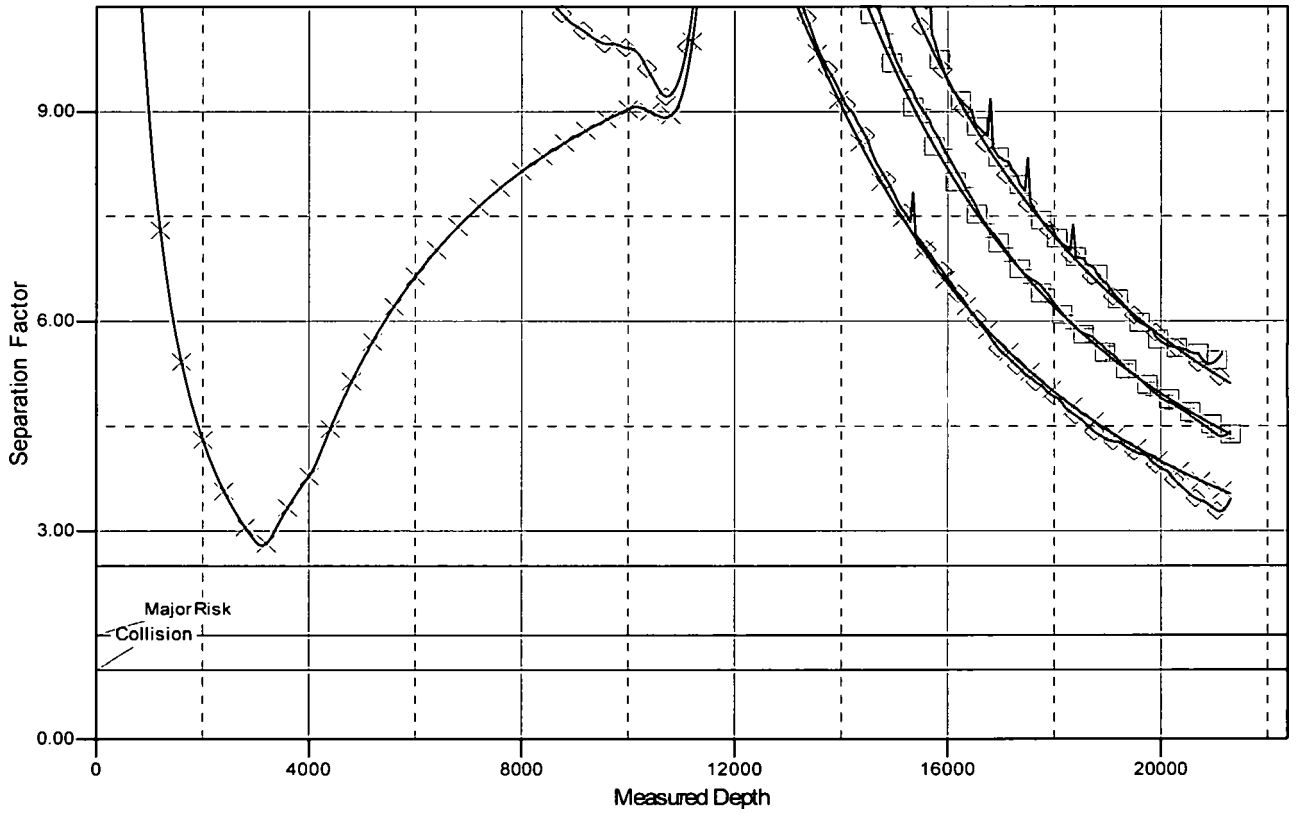
Reference Depths are relative to RKB @ 3363.30ft	Coordinates are relative to: Lusitano 27-34 Fed Com 335H
Offset Depths are relative to Offset Datum	Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Central Meridian is -104.333334	Grid Convergence at Surface is: 0.30°



Company:	WCDSC Permian NM	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Project:	Eddy County (NAD 83 NM Eastern)	**TVD Reference:**	RKB @ 3363.30ft
Reference Site:	Sec 27-T25S-R31E	**MD Reference:**	RKB @ 3363.30ft
Site Error:	0.00 ft	**North Reference:**	Grid
Reference Well:	Lusitano 27-34 Fed Com 335H	**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 1	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to RKB @ 3363.30ft	Coordinates are relative to: Lusitano 27-34 Fed Com 335H
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°

Separation Factor Plot



LEGEND

Lusitano 27_34 Fed Com 534H, Wellb ore #1, Permit Plan 1 V0
Lusitano 27_34 Fed Com 713H, Wellb ore #1, Permit Plan 1 V0
Lusitano 27_34 Fed Com 736H, Wellb ore #1, Permit Plan 1 V0
Lusitano 27-34 Fed Com 235H, Wellbo re #1, Wellbore #1 V0
Lusitano 27-34 Fed Com 333H, Wellbo re #1, Permit Plan 1 V0
Lusitano 27-34 Fed Com 336H, Wellbo re #1, Wellbore #1 V0
Lusitano 27-34 Fed Com 528H, Wellbo re #1, Wellbore #1 V0
Lusitano 27-34 Fed Com 536H, Wellbo re #1, Wellbore #1 V0
Lusitano 27-34 Fed Com 626H, Wellbo re #1, Wellbore #1 V0
Lusitano 27-34 Fed Com 716H, Wellbo re #1, Wellbore #1 V0

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)
Sec 27-T25S-R31E
Lusitano 27-34 Fed Com 335H

Wellbore #1

Plan: Permit Plan 1

Standard Planning Report - Geographic

21 August, 2018

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3363.30ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3363.30ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27-34 Fed Com 335H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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 335H					
Well Position	**+N/-S**	0.00 ft	**Northing:**	403,464.03 usft	**Latitude:**	32.107911
	+E/-W	0.00 ft	**Easting:**	718,414.17 usft	**Longitude:**	-103.761430
Position Uncertainty		0.50 ft	**Wellhead Elevation:**		**Ground Level:**	3,338.30 ft

Wellbore	Wellbore #1				
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	8/20/2018	6.91	59.91	47,729.07659073

Design	Permit Plan 1				
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	181.98	

Plan Survey Tool Program **Date** 8/21/2018

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,307.62	Permit Plan 1 (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	
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
3,317.59	3.18	275.18	3,317.42	0.79	-8.76	1.00	1.00	0.00	275.18	
10,048.89	3.18	275.18	10,038.39	34.47	-380.16	0.00	0.00	0.00	0.00	
10,260.61	0.00	0.00	10,250.00	35.00	-386.00	1.50	-1.50	0.00	180.00	
10,610.65	0.00	0.00	10,600.04	35.00	-386.00	0.00	0.00	0.00	0.00	
11,510.65	90.00	179.84	11,173.00	-537.96	-384.45	10.00	10.00	0.00	179.84	PBHL - Lusitano 27-3
21,307.62	90.00	179.84	11,173.00	-10,334.89	-357.93	0.00	0.00	0.00	0.00	PBHL - Lusitano 27-3

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3363.30ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3363.30ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27-34 Fed Com 335H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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	403,464.03	718,414.17	32.107911	-103.761430
100.00	0.00	0.00	100.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
200.00	0.00	0.00	200.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
300.00	0.00	0.00	300.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
400.00	0.00	0.00	400.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
500.00	0.00	0.00	500.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
600.00	0.00	0.00	600.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
700.00	0.00	0.00	700.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
800.00	0.00	0.00	800.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
900.00	0.00	0.00	900.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,000.00	0.00	0.00	1,000.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,100.00	0.00	0.00	1,100.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,200.00	0.00	0.00	1,200.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,300.00	0.00	0.00	1,300.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,400.00	0.00	0.00	1,400.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,500.00	0.00	0.00	1,500.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,600.00	0.00	0.00	1,600.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,700.00	0.00	0.00	1,700.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,800.00	0.00	0.00	1,800.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
1,900.00	0.00	0.00	1,900.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,000.00	0.00	0.00	2,000.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,100.00	0.00	0.00	2,100.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,200.00	0.00	0.00	2,200.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,300.00	0.00	0.00	2,300.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,400.00	0.00	0.00	2,400.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,500.00	0.00	0.00	2,500.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,600.00	0.00	0.00	2,600.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,700.00	0.00	0.00	2,700.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,800.00	0.00	0.00	2,800.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
2,900.00	0.00	0.00	2,900.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
3,000.00	0.00	0.00	3,000.00	0.00	0.00	403,464.03	718,414.17	32.107911	-103.761430
3,100.00	1.00	275.18	3,099.99	0.08	-0.87	403,464.11	718,413.30	32.107911	-103.761433
3,200.00	2.00	275.18	3,199.96	0.32	-3.48	403,464.34	718,410.69	32.107912	-103.761441
3,300.00	3.00	275.18	3,299.86	0.71	-7.82	403,464.74	718,406.35	32.107913	-103.761455
3,317.59	3.18	275.18	3,317.42	0.79	-8.76	403,464.82	718,405.40	32.107913	-103.761458
3,400.00	3.18	275.18	3,399.71	1.21	-13.31	403,465.24	718,400.86	32.107914	-103.761473
3,500.00	3.18	275.18	3,499.56	1.71	-18.83	403,465.74	718,395.34	32.107916	-103.761491
3,600.00	3.18	275.18	3,599.40	2.21	-24.35	403,466.24	718,389.82	32.107917	-103.761508
3,700.00	3.18	275.18	3,699.25	2.71	-29.86	403,466.74	718,384.30	32.107919	-103.761526
3,800.00	3.18	275.18	3,799.10	3.21	-35.38	403,467.24	718,378.79	32.107920	-103.761544
3,900.00	3.18	275.18	3,898.94	3.71	-40.90	403,467.74	718,373.27	32.107921	-103.761562
4,000.00	3.18	275.18	3,998.79	4.21	-46.42	403,468.24	718,367.75	32.107923	-103.761580
4,100.00	3.18	275.18	4,098.64	4.71	-51.93	403,468.74	718,362.23	32.107924	-103.761598
4,200.00	3.18	275.18	4,198.48	5.21	-57.45	403,469.24	718,356.72	32.107926	-103.761615
4,300.00	3.18	275.18	4,298.33	5.71	-62.97	403,469.74	718,351.20	32.107927	-103.761633
4,400.00	3.18	275.18	4,398.18	6.21	-68.48	403,470.24	718,345.68	32.107929	-103.761651
4,500.00	3.18	275.18	4,498.02	6.71	-74.00	403,470.74	718,340.16	32.107930	-103.761669
4,600.00	3.18	275.18	4,597.87	7.21	-79.52	403,471.24	718,334.65	32.107932	-103.761687
4,700.00	3.18	275.18	4,697.71	7.71	-85.04	403,471.74	718,329.13	32.107933	-103.761704
4,800.00	3.18	275.18	4,797.56	8.21	-90.55	403,472.24	718,323.61	32.107935	-103.761722
4,900.00	3.18	275.18	4,897.41	8.71	-96.07	403,472.74	718,318.09	32.107936	-103.761740
5,000.00	3.18	275.18	4,997.25	9.21	-101.59	403,473.24	718,312.58	32.107937	-103.761758
5,100.00	3.18	275.18	5,097.10	9.71	-107.11	403,473.74	718,307.06	32.107939	-103.761776
5,200.00	3.18	275.18	5,196.95	10.21	-112.62	403,474.24	718,301.54	32.107940	-103.761793
5,300.00	3.18	275.18	5,296.79	10.71	-118.14	403,474.74	718,296.02	32.107942	-103.761811

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3363.30ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3363.30ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27-34 Fed Com 335H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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	3.18	275.18	5,396.64	11.21	-123.66	403,475.24	718,290.51	32.107943	-103.761829
5,500.00	3.18	275.18	5,496.49	11.71	-129.18	403,475.74	718,284.99	32.107945	-103.761847
5,600.00	3.18	275.18	5,596.33	12.21	-134.69	403,476.24	718,279.47	32.107946	-103.761865
5,700.00	3.18	275.18	5,696.18	12.71	-140.21	403,476.74	718,273.95	32.107948	-103.761882
5,800.00	3.18	275.18	5,796.03	13.21	-145.73	403,477.24	718,268.44	32.107949	-103.761900
5,900.00	3.18	275.18	5,895.87	13.71	-151.25	403,477.74	718,262.92	32.107951	-103.761918
6,000.00	3.18	275.18	5,995.72	14.21	-156.76	403,478.24	718,257.40	32.107952	-103.761936
6,100.00	3.18	275.18	6,095.56	14.71	-162.28	403,478.74	718,251.89	32.107953	-103.761954
6,200.00	3.18	275.18	6,195.41	15.21	-167.80	403,479.24	718,246.37	32.107955	-103.761972
6,300.00	3.18	275.18	6,295.26	15.72	-173.32	403,479.74	718,240.85	32.107956	-103.761989
6,400.00	3.18	275.18	6,395.10	16.22	-178.83	403,480.24	718,235.33	32.107958	-103.762007
6,500.00	3.18	275.18	6,494.95	16.72	-184.35	403,480.74	718,229.82	32.107959	-103.762025
6,600.00	3.18	275.18	6,594.80	17.22	-189.87	403,481.25	718,224.30	32.107961	-103.762043
6,700.00	3.18	275.18	6,694.64	17.72	-195.39	403,481.75	718,218.78	32.107962	-103.762061
6,800.00	3.18	275.18	6,794.49	18.22	-200.90	403,482.25	718,213.26	32.107964	-103.762078
6,900.00	3.18	275.18	6,894.34	18.72	-206.42	403,482.75	718,207.75	32.107965	-103.762096
7,000.00	3.18	275.18	6,994.18	19.22	-211.94	403,483.25	718,202.23	32.107967	-103.762114
7,100.00	3.18	275.18	7,094.03	19.72	-217.46	403,483.75	718,196.71	32.107968	-103.762132
7,200.00	3.18	275.18	7,193.87	20.22	-222.97	403,484.25	718,191.19	32.107969	-103.762150
7,300.00	3.18	275.18	7,293.72	20.72	-228.49	403,484.75	718,185.68	32.107971	-103.762167
7,400.00	3.18	275.18	7,393.57	21.22	-234.01	403,485.25	718,180.16	32.107972	-103.762185
7,500.00	3.18	275.18	7,493.41	21.72	-239.52	403,485.75	718,174.64	32.107974	-103.762203
7,600.00	3.18	275.18	7,593.26	22.22	-245.04	403,486.25	718,169.12	32.107975	-103.762221
7,700.00	3.18	275.18	7,693.11	22.72	-250.56	403,486.75	718,163.61	32.107977	-103.762239
7,800.00	3.18	275.18	7,792.95	23.22	-256.08	403,487.25	718,158.09	32.107978	-103.762256
7,900.00	3.18	275.18	7,892.80	23.72	-261.59	403,487.75	718,152.57	32.107980	-103.762274
8,000.00	3.18	275.18	7,992.65	24.22	-267.11	403,488.25	718,147.05	32.107981	-103.762292
8,100.00	3.18	275.18	8,092.49	24.72	-272.63	403,488.75	718,141.54	32.107983	-103.762310
8,200.00	3.18	275.18	8,192.34	25.22	-278.15	403,489.25	718,136.02	32.107984	-103.762328
8,300.00	3.18	275.18	8,292.19	25.72	-283.66	403,489.75	718,130.50	32.107986	-103.762346
8,400.00	3.18	275.18	8,392.03	26.22	-289.18	403,490.25	718,124.98	32.107987	-103.762363
8,500.00	3.18	275.18	8,491.88	26.72	-294.70	403,490.75	718,119.47	32.107988	-103.762381
8,600.00	3.18	275.18	8,591.72	27.22	-300.22	403,491.25	718,113.95	32.107990	-103.762399
8,700.00	3.18	275.18	8,691.57	27.72	-305.73	403,491.75	718,108.43	32.107991	-103.762417
8,800.00	3.18	275.18	8,791.42	28.22	-311.25	403,492.25	718,102.92	32.107993	-103.762435
8,900.00	3.18	275.18	8,891.26	28.72	-316.77	403,492.75	718,097.40	32.107994	-103.762452
9,000.00	3.18	275.18	8,991.11	29.22	-322.29	403,493.25	718,091.88	32.107996	-103.762470
9,100.00	3.18	275.18	9,090.96	29.72	-327.80	403,493.75	718,086.36	32.107997	-103.762488
9,200.00	3.18	275.18	9,190.80	30.22	-333.32	403,494.25	718,080.85	32.107999	-103.762506
9,300.00	3.18	275.18	9,290.65	30.72	-338.84	403,494.75	718,075.33	32.108000	-103.762524
9,400.00	3.18	275.18	9,390.50	31.22	-344.36	403,495.25	718,069.81	32.108002	-103.762541
9,500.00	3.18	275.18	9,490.34	31.72	-349.87	403,495.75	718,064.29	32.108003	-103.762559
9,600.00	3.18	275.18	9,590.19	32.22	-355.39	403,496.25	718,058.78	32.108004	-103.762577
9,700.00	3.18	275.18	9,690.04	32.72	-360.91	403,496.75	718,053.26	32.108006	-103.762595
9,800.00	3.18	275.18	9,789.88	33.23	-366.43	403,497.25	718,047.74	32.108007	-103.762613
9,900.00	3.18	275.18	9,889.73	33.73	-371.94	403,497.75	718,042.22	32.108009	-103.762631
10,000.00	3.18	275.18	9,989.57	34.23	-377.46	403,498.25	718,036.71	32.108010	-103.762648
10,048.89	3.18	275.18	10,038.39	34.47	-380.16	403,498.50	718,034.01	32.108011	-103.762657
10,100.00	2.41	275.18	10,089.44	34.70	-382.64	403,498.72	718,031.53	32.108012	-103.762665
10,200.00	0.91	275.18	10,189.39	34.96	-385.52	403,498.99	718,028.65	32.108012	-103.762674
10,260.61	0.00	0.00	10,250.00	35.00	-386.00	403,499.03	718,028.17	32.108012	-103.762676
10,300.00	0.00	0.00	10,289.39	35.00	-386.00	403,499.03	718,028.17	32.108012	-103.762676
10,400.00	0.00	0.00	10,389.39	35.00	-386.00	403,499.03	718,028.17	32.108012	-103.762676
10,500.00	0.00	0.00	10,489.39	35.00	-386.00	403,499.03	718,028.17	32.108012	-103.762676
10,600.00	0.00	0.00	10,589.39	35.00	-386.00	403,499.03	718,028.17	32.108012	-103.762676

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3363.30ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3363.30ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27-34 Fed Com 335H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,610.65	0.00	0.00	10,600.04	35.00	-386.00	403,499.03	718,028.17	32.108012	-103.762676
KOP @10611' MD, 200' FNL, 1650' FEL									
10,700.00	8.94	179.84	10,689.03	28.05	-385.98	403,492.08	718,028.19	32.107993	-103.762676
10,800.00	18.94	179.84	10,785.96	4.00	-385.92	403,468.02	718,028.25	32.107927	-103.762676
10,900.00	28.94	179.84	10,877.25	-36.52	-385.81	403,427.51	718,028.36	32.107816	-103.762676
11,000.00	38.94	179.84	10,960.11	-92.28	-385.66	403,371.75	718,028.51	32.107663	-103.762677
11,100.00	48.94	179.84	11,032.03	-161.57	-385.47	403,302.46	718,028.70	32.107472	-103.762678
11,110.65	50.00	179.84	11,038.95	-169.67	-385.45	403,294.36	718,028.72	32.107450	-103.762678
FTP @ 11111' MD, 405' FNL, 1650' FEL									
11,200.00	58.93	179.84	11,090.83	-242.31	-385.25	403,221.72	718,028.92	32.107250	-103.762678
11,300.00	68.93	179.84	11,134.71	-332.02	-385.01	403,132.01	718,029.16	32.107004	-103.762679
11,400.00	78.93	179.84	11,162.35	-427.99	-384.75	403,036.04	718,029.42	32.106740	-103.762680
11,500.00	88.93	179.84	11,172.90	-527.31	-384.48	402,936.72	718,029.69	32.106467	-103.762681
11,510.65	90.00	179.84	11,173.00	-537.96	-384.45	402,926.07	718,029.72	32.106438	-103.762681
11,600.00	90.00	179.84	11,173.00	-627.31	-384.21	402,836.72	718,029.96	32.106192	-103.762681
11,700.00	90.00	179.84	11,173.00	-727.31	-383.94	402,736.72	718,030.23	32.105917	-103.762682
11,800.00	90.00	179.84	11,173.00	-827.31	-383.67	402,636.73	718,030.50	32.105642	-103.762683
11,900.00	90.00	179.84	11,173.00	-927.30	-383.40	402,536.73	718,030.77	32.105367	-103.762684
12,000.00	90.00	179.84	11,173.00	-1,027.30	-383.12	402,436.73	718,031.04	32.105092	-103.762685
12,100.00	90.00	179.84	11,173.00	-1,127.30	-382.85	402,336.73	718,031.31	32.104817	-103.762686
12,200.00	90.00	179.84	11,173.00	-1,227.30	-382.58	402,236.73	718,031.58	32.104543	-103.762686
12,300.00	90.00	179.84	11,173.00	-1,327.30	-382.31	402,136.73	718,031.85	32.104268	-103.762687
12,400.00	90.00	179.84	11,173.00	-1,427.30	-382.04	402,036.73	718,032.12	32.103993	-103.762688
12,500.00	90.00	179.84	11,173.00	-1,527.30	-381.77	401,936.73	718,032.40	32.103718	-103.762689
12,600.00	90.00	179.84	11,173.00	-1,627.30	-381.50	401,836.73	718,032.67	32.103443	-103.762690
12,700.00	90.00	179.84	11,173.00	-1,727.30	-381.23	401,736.73	718,032.94	32.103168	-103.762691
12,800.00	90.00	179.84	11,173.00	-1,827.30	-380.96	401,636.73	718,033.21	32.102893	-103.762691
12,900.00	90.00	179.84	11,173.00	-1,927.30	-380.69	401,536.73	718,033.48	32.102618	-103.762692
13,000.00	90.00	179.84	11,173.00	-2,027.30	-380.42	401,436.73	718,033.75	32.102344	-103.762693
13,100.00	90.00	179.84	11,173.00	-2,127.30	-380.15	401,336.73	718,034.02	32.102069	-103.762694
13,200.00	90.00	179.84	11,173.00	-2,227.30	-379.88	401,236.73	718,034.29	32.101794	-103.762695
13,300.00	90.00	179.84	11,173.00	-2,327.30	-379.61	401,136.73	718,034.56	32.101519	-103.762696
13,400.00	90.00	179.84	11,173.00	-2,427.30	-379.34	401,036.73	718,034.83	32.101244	-103.762696
13,500.00	90.00	179.84	11,173.00	-2,527.30	-379.06	400,936.74	718,035.10	32.100969	-103.762697
13,600.00	90.00	179.84	11,173.00	-2,627.30	-378.79	400,836.74	718,035.37	32.100694	-103.762698
13,700.00	90.00	179.84	11,173.00	-2,727.30	-378.52	400,736.74	718,035.64	32.100419	-103.762699
13,800.00	90.00	179.84	11,173.00	-2,827.30	-378.25	400,636.74	718,035.91	32.100144	-103.762700
13,900.00	90.00	179.84	11,173.00	-2,927.30	-377.98	400,536.74	718,036.19	32.099870	-103.762701
14,000.00	90.00	179.84	11,173.00	-3,027.30	-377.71	400,436.74	718,036.46	32.099595	-103.762701
14,100.00	90.00	179.84	11,173.00	-3,127.30	-377.44	400,336.74	718,036.73	32.099320	-103.762702
14,200.00	90.00	179.84	11,173.00	-3,227.30	-377.17	400,236.74	718,037.00	32.099045	-103.762703
14,300.00	90.00	179.84	11,173.00	-3,327.30	-376.90	400,136.74	718,037.27	32.098770	-103.762704
14,400.00	90.00	179.84	11,173.00	-3,427.30	-376.63	400,036.74	718,037.54	32.098495	-103.762705
14,500.00	90.00	179.84	11,173.00	-3,527.30	-376.36	399,936.74	718,037.81	32.098220	-103.762706
14,600.00	90.00	179.84	11,173.00	-3,627.29	-376.09	399,836.74	718,038.08	32.097945	-103.762706
14,700.00	90.00	179.84	11,173.00	-3,727.29	-375.82	399,736.74	718,038.35	32.097670	-103.762707
14,800.00	90.00	179.84	11,173.00	-3,827.29	-375.55	399,636.74	718,038.62	32.097396	-103.762708
14,900.00	90.00	179.84	11,173.00	-3,927.29	-375.27	399,536.74	718,038.89	32.097121	-103.762709
15,000.00	90.00	179.84	11,173.00	-4,027.29	-375.00	399,436.74	718,039.16	32.096846	-103.762710
15,100.00	90.00	179.84	11,173.00	-4,127.29	-374.73	399,336.74	718,039.43	32.096571	-103.762711
15,200.00	90.00	179.84	11,173.00	-4,227.29	-374.46	399,236.74	718,039.70	32.096296	-103.762711
15,300.00	90.00	179.84	11,173.00	-4,327.29	-374.19	399,136.75	718,039.97	32.096021	-103.762712
15,400.00	90.00	179.84	11,173.00	-4,427.29	-373.92	399,036.75	718,040.25	32.095746	-103.762713
15,500.00	90.00	179.84	11,173.00	-4,527.29	-373.65	398,936.75	718,040.52	32.095471	-103.762714

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3363.30ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3363.30ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27-34 Fed Com 335H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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	179.84	11,173.00	-4,627.29	-373.38	398,836.75	718,040.79	32.095197	-103.762715
15,700.00	90.00	179.84	11,173.00	-4,727.29	-373.11	398,736.75	718,041.06	32.094922	-103.762716
15,800.00	90.00	179.84	11,173.00	-4,827.29	-372.84	398,636.75	718,041.33	32.094647	-103.762716
15,900.00	90.00	179.84	11,173.00	-4,927.29	-372.57	398,536.75	718,041.60	32.094372	-103.762717
16,000.00	90.00	179.84	11,173.00	-5,027.29	-372.30	398,436.75	718,041.87	32.094097	-103.762718
16,100.00	90.00	179.84	11,173.00	-5,127.29	-372.03	398,336.75	718,042.14	32.093822	-103.762719
16,200.00	90.00	179.84	11,173.00	-5,227.29	-371.76	398,236.75	718,042.41	32.093547	-103.762720
16,300.00	90.00	179.84	11,173.00	-5,327.29	-371.49	398,136.75	718,042.68	32.093272	-103.762721
16,400.00	90.00	179.84	11,173.00	-5,427.29	-371.21	398,036.75	718,042.95	32.092997	-103.762721
16,500.00	90.00	179.84	11,173.00	-5,527.29	-370.94	397,936.75	718,043.22	32.092723	-103.762722
16,600.00	90.00	179.84	11,173.00	-5,627.29	-370.67	397,836.75	718,043.49	32.092448	-103.762723
16,700.00	90.00	179.84	11,173.00	-5,727.29	-370.40	397,736.75	718,043.76	32.092173	-103.762724
16,800.00	90.00	179.84	11,173.00	-5,827.29	-370.13	397,636.75	718,044.03	32.091898	-103.762725
16,900.00	90.00	179.84	11,173.00	-5,927.29	-369.86	397,536.75	718,044.31	32.091623	-103.762726
17,000.00	90.00	179.84	11,173.00	-6,027.29	-369.59	397,436.75	718,044.58	32.091348	-103.762727
17,100.00	90.00	179.84	11,173.00	-6,127.29	-369.32	397,336.76	718,044.85	32.091073	-103.762727
17,200.00	90.00	179.84	11,173.00	-6,227.29	-369.05	397,236.76	718,045.12	32.090798	-103.762728
17,300.00	90.00	179.84	11,173.00	-6,327.29	-368.78	397,136.76	718,045.39	32.090523	-103.762729
17,400.00	90.00	179.84	11,173.00	-6,427.28	-368.51	397,036.76	718,045.66	32.090249	-103.762730
17,500.00	90.00	179.84	11,173.00	-6,527.28	-368.24	396,936.76	718,045.93	32.089974	-103.762731
17,600.00	90.00	179.84	11,173.00	-6,627.28	-367.97	396,836.76	718,046.20	32.089699	-103.762732
17,700.00	90.00	179.84	11,173.00	-6,727.28	-367.70	396,736.76	718,046.47	32.089424	-103.762732
17,800.00	90.00	179.84	11,173.00	-6,827.28	-367.43	396,636.76	718,046.74	32.089149	-103.762733
17,900.00	90.00	179.84	11,173.00	-6,927.28	-367.15	396,536.76	718,047.01	32.088874	-103.762734
18,000.00	90.00	179.84	11,173.00	-7,027.28	-366.88	396,436.76	718,047.28	32.088599	-103.762735
18,100.00	90.00	179.84	11,173.00	-7,127.28	-366.61	396,336.76	718,047.55	32.088324	-103.762736
18,200.00	90.00	179.84	11,173.00	-7,227.28	-366.34	396,236.76	718,047.82	32.088050	-103.762737
18,300.00	90.00	179.84	11,173.00	-7,327.28	-366.07	396,136.76	718,048.10	32.087775	-103.762737
18,400.00	90.00	179.84	11,173.00	-7,427.28	-365.80	396,036.76	718,048.37	32.087500	-103.762738
18,500.00	90.00	179.84	11,173.00	-7,527.28	-365.53	395,936.76	718,048.64	32.087225	-103.762739
18,600.00	90.00	179.84	11,173.00	-7,627.28	-365.26	395,836.76	718,048.91	32.086950	-103.762740
18,700.00	90.00	179.84	11,173.00	-7,727.28	-364.99	395,736.76	718,049.18	32.086675	-103.762741
18,800.00	90.00	179.84	11,173.00	-7,827.28	-364.72	395,636.77	718,049.45	32.086400	-103.762742
18,900.00	90.00	179.84	11,173.00	-7,927.28	-364.45	395,536.77	718,049.72	32.086125	-103.762742
19,000.00	90.00	179.84	11,173.00	-8,027.28	-364.18	395,436.77	718,049.99	32.085850	-103.762743
19,100.00	90.00	179.84	11,173.00	-8,127.28	-363.91	395,336.77	718,050.26	32.085576	-103.762744
19,200.00	90.00	179.84	11,173.00	-8,227.28	-363.64	395,236.77	718,050.53	32.085301	-103.762745
19,300.00	90.00	179.84	11,173.00	-8,327.28	-363.36	395,136.77	718,050.80	32.085026	-103.762746
19,400.00	90.00	179.84	11,173.00	-8,427.28	-363.09	395,036.77	718,051.07	32.084751	-103.762747
19,500.00	90.00	179.84	11,173.00	-8,527.28	-362.82	394,936.77	718,051.34	32.084476	-103.762747
19,600.00	90.00	179.84	11,173.00	-8,627.28	-362.55	394,836.77	718,051.61	32.084201	-103.762748
19,700.00	90.00	179.84	11,173.00	-8,727.28	-362.28	394,736.77	718,051.88	32.083926	-103.762749
19,800.00	90.00	179.84	11,173.00	-8,827.28	-362.01	394,636.77	718,052.16	32.083651	-103.762750
19,900.00	90.00	179.84	11,173.00	-8,927.28	-361.74	394,536.77	718,052.43	32.083376	-103.762751
20,000.00	90.00	179.84	11,173.00	-9,027.28	-361.47	394,436.77	718,052.70	32.083102	-103.762752
20,100.00	90.00	179.84	11,173.00	-9,127.27	-361.20	394,336.77	718,052.97	32.082827	-103.762752
20,200.00	90.00	179.84	11,173.00	-9,227.27	-360.93	394,236.77	718,053.24	32.082552	-103.762753
20,300.00	90.00	179.84	11,173.00	-9,327.27	-360.66	394,136.77	718,053.51	32.082277	-103.762754
20,400.00	90.00	179.84	11,173.00	-9,427.27	-360.39	394,036.77	718,053.78	32.082002	-103.762755
20,500.00	90.00	179.84	11,173.00	-9,527.27	-360.12	393,936.77	718,054.05	32.081727	-103.762756
20,600.00	90.00	179.84	11,173.00	-9,627.27	-359.85	393,836.78	718,054.32	32.081452	-103.762757
20,700.00	90.00	179.84	11,173.00	-9,727.27	-359.58	393,736.78	718,054.59	32.081177	-103.762757
20,800.00	90.00	179.84	11,173.00	-9,827.27	-359.30	393,636.78	718,054.86	32.080902	-103.762758
20,900.00	90.00	179.84	11,173.00	-9,927.27	-359.03	393,536.78	718,055.13	32.080628	-103.762759
21,000.00	90.00	179.84	11,173.00	-10,027.27	-358.76	393,436.78	718,055.40	32.080353	-103.762760

Database:	EDM r5000.141_Prod US	**Local Co-ordinate Reference:**	Well Lusitano 27-34 Fed Com 335H
Company:	WCDSC Permian NM	**TVD Reference:**	RKB @ 3363.30ft
Project:	Eddy County (NAD 83 NM Eastern)	**MD Reference:**	RKB @ 3363.30ft
Site:	Sec 27-T25S-R31E	**North Reference:**	Grid
Well:	Lusitano 27-34 Fed Com 335H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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	179.84	11,173.00	-10,127.27	-358.49	393,336.78	718,055.67	32.080078	-103.762761
21,200.00	90.00	179.84	11,173.00	-10,227.27	-358.22	393,236.78	718,055.94	32.079803	-103.762762
21,227.62	90.00	179.84	11,173.00	-10,254.89	-358.15	393,209.16	718,056.02	32.079727	-103.762762
LTP @21228' MD, 100' FSL, 1650' FEL									
21,300.00	90.00	179.84	11,173.00	-10,327.27	-357.95	393,136.78	718,056.22	32.079528	-103.762762
21,307.62	90.00	179.84	11,173.00	-10,334.89	-357.93	393,129.16	718,056.24	32.079507	-103.762762
PBHL; 20' FSL, 1650' 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	-10,334.89	-357.93	393,129.16	718,056.24	32.079507	-103.762762
- plan misses target center by 10341.09ft 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
10,610.65	10,600.04	35.00	-386.00	KOP @10611' MD, 200' FNL, 1650' FEL
11,110.65	11,038.95	-169.67	-385.45	FTP @ 11111' MD, 405' FNL, 1650' FEL
21,227.62	11,173.00	-10,254.89	-358.15	LTP @21228' MD, 100' FSL, 1650' FEL
21,307.62	11,173.00	-10,334.89	-357.93	PBHL; 20' FSL, 1650' FEL

Devon Energy

WELL DETAILS: Lusitano 27-34 Fed Com 335H

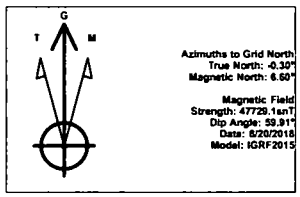
RKB @ 3363.30ft
3338.30

Northing	Easting	Latitude	Longitude
403464.03	718414.17	32.107911	-103.761430

SECTION DETAILS Permit Plan 1

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	
3000.00	0.00	0.00	3000.00	0.00	0.00	0.00	0.00	
3317.59	3.18	275.18	3317.42	0.79	-8.76	1.00	-0.49	
10048.89	3.18	275.18	10038.39	34.47	-380.16	0.00	-21.29	
10260.61	0.00	0.00	10250.00	35.00	-386.00	1.50	-21.62	
10610.65	0.00	0.00	10600.04	35.00	-386.00	0.00	-21.62	KOP @10611' MD, 200' FNL, 1650' FEL
11510.65	90.00	179.84	11173.00	-537.96	-384.45	10.00	550.94	
21307.62	90.00	179.84	11173.00	-10334.89	-357.93	0.00	10341.09	PBHL; 20' FSL, 1650' FEL

devon



WCDSC Permian NM
Lusitano 27-34 Fed Com 335H - Permit Plan 1

Eddy County (NAD 83 NM Eastern)
Sec 27-T25S-R31E
Your Ref:

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0	0	0	0	0	0	0	0
100	0	0	100	0	0	0	0
200	0	0	200	0	0	0	0
300	0	0	300	0	0	0	0
400	0	0	400	0	0	0	0
500	0	0	500	0	0	0	0
600	0	0	600	0	0	0	0
700	0	0	700	0	0	0	0
800	0	0	800	0	0	0	0
900	0	0	900	0	0	0	0
1000	0	0	1000	0	0	0	0
1100	0	0	1100	0	0	0	0
1200	0	0	1200	0	0	0	0
1300	0	0	1300	0	0	0	0
1400	0	0	1400	0	0	0	0
1500	0	0	1500	0	0	0	0
1600	0	0	1600	0	0	0	0
1700	0	0	1700	0	0	0	0
1800	0	0	1800	0	0	0	0
1900	0	0	1900	0	0	0	0
2000	0	0	2000	0	0	0	0
2100	0	0	2100	0	0	0	0
2200	0	0	2200	0	0	0	0
2300	0	0	2300	0	0	0	0
2400	0	0	2400	0	0	0	0
2500	0	0	2500	0	0	0	0
2600	0	0	2600	0	0	0	0
2700	0	0	2700	0	0	0	0
2800	0	0	2800	0	0	0	0
2900	0	0	2900	0	0	0	0
3000	0	0	3000	0	0	0	0
3100	1	275.181	3099.99	0.08	-0.87	-0.05	1

3200	2	275.181	3199.96	0.32	-3.48	-0.19	1
3300	3	275.181	3299.86	0.71	-7.82	-0.44	1
3400	3.176	275.181	3399.71	1.21	-13.31	-0.75	0.18
3500	3.176	275.181	3499.56	1.71	-18.83	-1.05	0
3600	3.176	275.181	3599.4	2.21	-24.35	-1.36	0
3700	3.176	275.181	3699.25	2.71	-29.86	-1.67	0
3800	3.176	275.181	3799.1	3.21	-35.38	-1.98	0
3900	3.176	275.181	3898.94	3.71	-40.9	-2.29	0
4000	3.176	275.181	3998.79	4.21	-46.42	-2.6	0
4100	3.176	275.181	4098.64	4.71	-51.93	-2.91	0
4200	3.176	275.181	4198.48	5.21	-57.45	-3.22	0
4300	3.176	275.181	4298.33	5.71	-62.97	-3.53	0
4400	3.176	275.181	4398.18	6.21	-68.48	-3.84	0
4500	3.176	275.181	4498.02	6.71	-74	-4.14	0
4600	3.176	275.181	4597.87	7.21	-79.52	-4.45	0
4700	3.176	275.181	4697.71	7.71	-85.04	-4.76	0
4800	3.176	275.181	4797.56	8.21	-90.55	-5.07	0
4900	3.176	275.181	4897.41	8.71	-96.07	-5.38	0
5000	3.176	275.181	4997.25	9.21	-101.59	-5.69	0
5100	3.176	275.181	5097.1	9.71	-107.11	-6	0
5200	3.176	275.181	5196.95	10.21	-112.62	-6.31	0
5300	3.176	275.181	5296.79	10.71	-118.14	-6.62	0
5400	3.176	275.181	5396.64	11.21	-123.66	-6.93	0
5500	3.176	275.181	5496.49	11.71	-129.18	-7.23	0
5600	3.176	275.181	5596.33	12.21	-134.69	-7.54	0
5700	3.176	275.181	5696.18	12.71	-140.21	-7.85	0
5800	3.176	275.181	5796.02	13.21	-145.73	-8.16	0
5900	3.176	275.181	5895.87	13.71	-151.25	-8.47	0
6000	3.176	275.181	5995.72	14.21	-156.76	-8.78	0
6100	3.176	275.181	6095.56	14.71	-162.28	-9.09	0
6200	3.176	275.181	6195.41	15.21	-167.8	-9.4	0
6300	3.176	275.181	6295.26	15.72	-173.32	-9.71	0
6400	3.176	275.181	6395.1	16.22	-178.83	-10.02	0
6500	3.176	275.181	6494.95	16.72	-184.35	-10.32	0
6600	3.176	275.181	6594.8	17.22	-189.87	-10.63	0
6700	3.176	275.181	6694.64	17.72	-195.39	-10.94	0
6800	3.176	275.181	6794.49	18.22	-200.9	-11.25	0
6900	3.176	275.181	6894.34	18.72	-206.42	-11.56	0
7000	3.176	275.181	6994.18	19.22	-211.94	-11.87	0
7100	3.176	275.181	7094.03	19.72	-217.46	-12.18	0
7200	3.176	275.181	7193.87	20.22	-222.97	-12.49	0
7300	3.176	275.181	7293.72	20.72	-228.49	-12.8	0
7400	3.176	275.181	7393.57	21.22	-234.01	-13.11	0
7500	3.176	275.181	7493.41	21.72	-239.52	-13.42	0
7600	3.176	275.181	7593.26	22.22	-245.04	-13.72	0
7700	3.176	275.181	7693.11	22.72	-250.56	-14.03	0
7800	3.176	275.181	7792.95	23.22	-256.08	-14.34	0

7900	3.176	275.181	7892.8	23.72	-261.59	-14.65	0
8000	3.176	275.181	7992.65	24.22	-267.11	-14.96	0
8100	3.176	275.181	8092.49	24.72	-272.63	-15.27	0
8200	3.176	275.181	8192.34	25.22	-278.15	-15.58	0
8300	3.176	275.181	8292.19	25.72	-283.66	-15.89	0
8400	3.176	275.181	8392.03	26.22	-289.18	-16.2	0
8500	3.176	275.181	8491.88	26.72	-294.7	-16.51	0
8600	3.176	275.181	8591.72	27.22	-300.22	-16.81	0
8700	3.176	275.181	8691.57	27.72	-305.73	-17.12	0
8800	3.176	275.181	8791.42	28.22	-311.25	-17.43	0
8900	3.176	275.181	8891.26	28.72	-316.77	-17.74	0
9000	3.176	275.181	8991.11	29.22	-322.29	-18.05	0
9100	3.176	275.181	9090.96	29.72	-327.8	-18.36	0
9200	3.176	275.181	9190.8	30.22	-333.32	-18.67	0
9300	3.176	275.181	9290.65	30.72	-338.84	-18.98	0
9400	3.176	275.181	9390.5	31.22	-344.36	-19.29	0
9500	3.176	275.181	9490.34	31.72	-349.87	-19.6	0
9600	3.176	275.181	9590.19	32.22	-355.39	-19.9	0
9700	3.176	275.181	9690.04	32.72	-360.91	-20.21	0
9800	3.176	275.181	9789.88	33.23	-366.43	-20.52	0
9900	3.176	275.181	9889.73	33.73	-371.94	-20.83	0
10000	3.176	275.181	9989.57	34.23	-377.46	-21.14	0
10100	2.409	275.181	10089.44	34.7	-382.64	-21.43	0.77
10200	0.909	275.181	10189.39	34.96	-385.52	-21.59	1.5
10300	0	0	10289.39	35	-386	-21.62	0.91
10400	0	0	10389.39	35	-386	-21.62	0
10500	0	0	10489.39	35	-386	-21.62	0
10600	0	0	10589.39	35	-386	-21.62	0
10700	8.935	179.845	10689.03	28.05	-385.98	-14.67	8.94
10800	18.935	179.845	10785.96	4	-385.92	9.36	10
10900	28.935	179.845	10877.25	-36.52	-385.81	49.85	10
11000	38.935	179.845	10960.11	-92.28	-385.66	105.57	10
11100	48.935	179.845	11032.03	-161.57	-385.47	174.82	10
11200	58.935	179.845	11090.83	-242.31	-385.25	255.49	10
11300	68.935	179.845	11134.71	-332.02	-385.01	345.15	10
11400	78.935	179.845	11162.35	-427.99	-384.75	441.05	10
11500	88.935	179.845	11172.9	-527.31	-384.48	540.3	10
11600	90	179.845	11173	-627.31	-384.21	640.23	1.07
11700	90	179.845	11173	-727.31	-383.94	740.16	0
11800	90	179.845	11173	-827.31	-383.67	840.09	0
11900	90	179.845	11173	-927.3	-383.4	940.02	0
12000	90	179.845	11173	-1027.3	-383.12	1039.95	0
12100	90	179.845	11173	-1127.3	-382.85	1139.88	0
12200	90	179.845	11173	-1227.3	-382.58	1239.81	0
12300	90	179.845	11173	-1327.3	-382.31	1339.74	0
12400	90	179.845	11173	-1427.3	-382.04	1439.67	0
12500	90	179.845	11173	-1527.3	-381.77	1539.6	0

12600	90	179.845	11173	-1627.3	-381.5	1639.53	0
12700	90	179.845	11173	-1727.3	-381.23	1739.46	0
12800	90	179.845	11173	-1827.3	-380.96	1839.39	0
12900	90	179.845	11173	-1927.3	-380.69	1939.32	0
13000	90	179.845	11173	-2027.3	-380.42	2039.25	0
13100	90	179.845	11173	-2127.3	-380.15	2139.18	0
13200	90	179.845	11173	-2227.3	-379.88	2239.11	0
13300	90	179.845	11173	-2327.3	-379.61	2339.04	0
13400	90	179.845	11173	-2427.3	-379.34	2438.97	0
13500	90	179.845	11173	-2527.3	-379.06	2538.9	0
13600	90	179.845	11173	-2627.3	-378.79	2638.84	0
13700	90	179.845	11173	-2727.3	-378.52	2738.77	0
13800	90	179.845	11173	-2827.3	-378.25	2838.7	0
13900	90	179.845	11173	-2927.3	-377.98	2938.63	0
14000	90	179.845	11173	-3027.3	-377.71	3038.56	0
14100	90	179.845	11173	-3127.3	-377.44	3138.49	0
14200	90	179.845	11173	-3227.3	-377.17	3238.42	0
14300	90	179.845	11173	-3327.3	-376.9	3338.35	0
14400	90	179.845	11173	-3427.3	-376.63	3438.28	0
14500	90	179.845	11173	-3527.3	-376.36	3538.21	0
14600	90	179.845	11173	-3627.29	-376.09	3638.14	0
14700	90	179.845	11173	-3727.29	-375.82	3738.07	0
14800	90	179.845	11173	-3827.29	-375.55	3838	0
14900	90	179.845	11173	-3927.29	-375.27	3937.93	0
15000	90	179.845	11173	-4027.29	-375	4037.86	0
15100	90	179.845	11173	-4127.29	-374.73	4137.79	0
15200	90	179.845	11173	-4227.29	-374.46	4237.72	0
15300	90	179.845	11173	-4327.29	-374.19	4337.65	0
15400	90	179.845	11173	-4427.29	-373.92	4437.58	0
15500	90	179.845	11173	-4527.29	-373.65	4537.51	0
15600	90	179.845	11173	-4627.29	-373.38	4637.44	0
15700	90	179.845	11173	-4727.29	-373.11	4737.37	0
15800	90	179.845	11173	-4827.29	-372.84	4837.3	0
15900	90	179.845	11173	-4927.29	-372.57	4937.23	0
16000	90	179.845	11173	-5027.29	-372.3	5037.16	0
16100	90	179.845	11173	-5127.29	-372.03	5137.09	0
16200	90	179.845	11173	-5227.29	-371.76	5237.02	0
16300	90	179.845	11173	-5327.29	-371.49	5336.95	0
16400	90	179.845	11173	-5427.29	-371.21	5436.88	0
16500	90	179.845	11173	-5527.29	-370.94	5536.82	0
16600	90	179.845	11173	-5627.29	-370.67	5636.75	0
16700	90	179.845	11173	-5727.29	-370.4	5736.68	0
16800	90	179.845	11173	-5827.29	-370.13	5836.61	0
16900	90	179.845	11173	-5927.29	-369.86	5936.54	0
17000	90	179.845	11173	-6027.29	-369.59	6036.47	0
17100	90	179.845	11173	-6127.29	-369.32	6136.4	0
17200	90	179.845	11173	-6227.29	-369.05	6236.33	0

17300	90	179.845	11173	-6327.28	-368.78	6336.26	0
17400	90	179.845	11173	-6427.28	-368.51	6436.19	0
17500	90	179.845	11173	-6527.28	-368.24	6536.12	0
17600	90	179.845	11173	-6627.28	-367.97	6636.05	0
17700	90	179.845	11173	-6727.28	-367.7	6735.98	0
17800	90	179.845	11173	-6827.28	-367.43	6835.91	0
17900	90	179.845	11173	-6927.28	-367.15	6935.84	0
18000	90	179.845	11173	-7027.28	-366.88	7035.77	0
18100	90	179.845	11173	-7127.28	-366.61	7135.7	0
18200	90	179.845	11173	-7227.28	-366.34	7235.63	0
18300	90	179.845	11173	-7327.28	-366.07	7335.56	0
18400	90	179.845	11173	-7427.28	-365.8	7435.49	0
18500	90	179.845	11173	-7527.28	-365.53	7535.42	0
18600	90	179.845	11173	-7627.28	-365.26	7635.35	0
18700	90	179.845	11173	-7727.28	-364.99	7735.28	0
18800	90	179.845	11173	-7827.28	-364.72	7835.21	0
18900	90	179.845	11173	-7927.28	-364.45	7935.14	0
19000	90	179.845	11173	-8027.28	-364.18	8035.07	0
19100	90	179.845	11173	-8127.28	-363.91	8135	0
19200	90	179.845	11173	-8227.28	-363.64	8234.93	0
19300	90	179.845	11173	-8327.28	-363.36	8334.86	0
19400	90	179.845	11173	-8427.28	-363.09	8434.8	0
19500	90	179.845	11173	-8527.28	-362.82	8534.73	0
19600	90	179.845	11173	-8627.28	-362.55	8634.66	0
19700	90	179.845	11173	-8727.28	-362.28	8734.59	0
19800	90	179.845	11173	-8827.28	-362.01	8834.52	0
19900	90	179.845	11173	-8927.28	-361.74	8934.45	0
20000	90	179.845	11173	-9027.28	-361.47	9034.38	0
20100	90	179.845	11173	-9127.27	-361.2	9134.31	0
20200	90	179.845	11173	-9227.27	-360.93	9234.24	0
20300	90	179.845	11173	-9327.27	-360.66	9334.17	0
20400	90	179.845	11173	-9427.27	-360.39	9434.1	0
20500	90	179.845	11173	-9527.27	-360.12	9534.03	0
20600	90	179.845	11173	-9627.27	-359.85	9633.96	0
20700	90	179.845	11173	-9727.27	-359.58	9733.89	0
20800	90	179.845	11173	-9827.27	-359.3	9833.82	0
20900	90	179.845	11173	-9927.27	-359.03	9933.75	0
21000	90	179.845	11173	-10027.3	-358.76	10033.68	0
21100	90	179.845	11173	-10127.3	-358.49	10133.61	0
21200	90	179.845	11173	-10227.3	-358.22	10233.54	0
21300	90	179.845	11173	-10327.3	-357.95	10333.47	0
21307.62	90	179.845	11173	-10334.9	-357.93	10341.09	0

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to RKB. Northings and Eastings are relative to Well.

The Dogleg Severity is in Degrees per 100 feet.
Vertical Section is from Slot and calculated along an Azimuth of 181.984° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.
Central meridian is -104.333°.
Grid Convergence at Surface is 0.304°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 21307.62ft.,
the Bottom Hole Displacement is 10341.09ft., in the Direction of 181.984° (Grid).

Devon Energy, Lusitano 27-33 Fed Com 335H

1. Geologic Formations

TVD of target	11173	Pilot hole depth	N/A
MD at TD:	21307	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	903		
Salado	1168		
Base of Salt	4268		
Delaware	4288		
Bone Spring	8238		

*H2S, water flows, loss of circulation, abnormal pressures, etc.

2. Casing Program (3-String Primary Design)

Hole Size	Casing Interval		Csg. Size	Weight (PPF)	Grade	Conn.
	From	To				
17.5"	0	928'	13.375"	48	H-40	STC
12.25"	0	4,500'	9.625"	40	J-55	BTC
	4,500'	9,988'	9.625"	40	P-110EC	BTC
8.75"	0	TD	5.5"	17	P-110	BTC
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 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.
- 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.

Casing Program (3-String Alternate Design)

Hole Size	Casing Interval		Csg. Size	Wt (PPF)	Grade	Conn
	From	To				
17.5"	0	928'	13.375"	48	H-40	BTC
10.625"	0	9,988	8.625"	32	L80HC	BTC
7.875"	0	TD	5.5"	17	P-110	BTC
BLM Minimum Safety Factor				Collapse: 1.125	Burst: 1.00	Tension: 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.

- Variance is requested for collapse rating on 8-5/8" casing. Operator will keep pipe full while running casing. No losses are expected in subsequent hole section.
- 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 10-5/8" casing and 5-1/2" casing.

	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 (3-String Primary 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	1734	Surf	9	1.85	Lead: Class C Cement + additives
	625	2000' above shoe	13.2	1.33	Tail: Class H / C + additives
Int Two Stage	745	Surf	9	1.85	1st stage Lead: Class C Cement + additives

(DV @ ~4500' MD)	131	500' above shoe	13.2	1.33	1st stage Tail: Class H / C + additives
	553	Surf	9	1.85	2st stage Lead: Class C Cement + additives
	187	500' above DV	13.2	1.33	2st stage Tail: Class H / C + additives
Int Squeeze	As Needed	Surf	13.2	1.33	Squeeze Lead: Class C Cement + additives
	1734	Surf	9	3.31	Lead: Class C Cement + additives
	625	2000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	2086	500' tieback	13.2	1.46	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 Braden head squeeze will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate	30%
Intermediate (Two Stage)	25%
Production	10%

Cementing Program (3-String 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	1270	Surf	9	1.85	Lead: Class C Cement + additives
	423	2000' above shoe	13.2	1.33	Tail: Class H / C + additives
Int Two Stage (DV @ ~4500' MD)	635	Surf	9	1.85	1st stage Lead: Class C Cement + additives
	131	500' above shoe	13.2	1.33	1st stage Tail: Class H / C + additives
	635	Surf	9	1.85	2st stage Lead: Class C Cement + additives
	187	500' above DV	13.2	1.33	2st stage Tail: Class H / C + additives

Int Squeeze	As Needed	Surf	13.2	1.33	Squeeze Lead: Class C Cement + additives
	1270	Surf	9	3.31	Lead: Class C Cement + additives
	423	2000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	1395	500' tieback	13.2	1.46	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 Braden head squeeze will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate	30%
Intermediate (Two Stage)	25%
Production	10%

4. Pressure Control Equipment

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"	5M	Annular (5M)	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		
			Double Ram		
			Other *		

5. Mud Program

6. Depth	Type		Vis	Water Loss

From	To		Weight (ppg)		
0	928'	FW Gel	8.4-8.6	28-34	N/C
928'	9988'	DBE / Cut Brine	8.6 – 10	28-34	N/C
9988'	TD	OBM / WBM	9.5 – 10.0	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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	5810 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 10 ¾" 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

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.

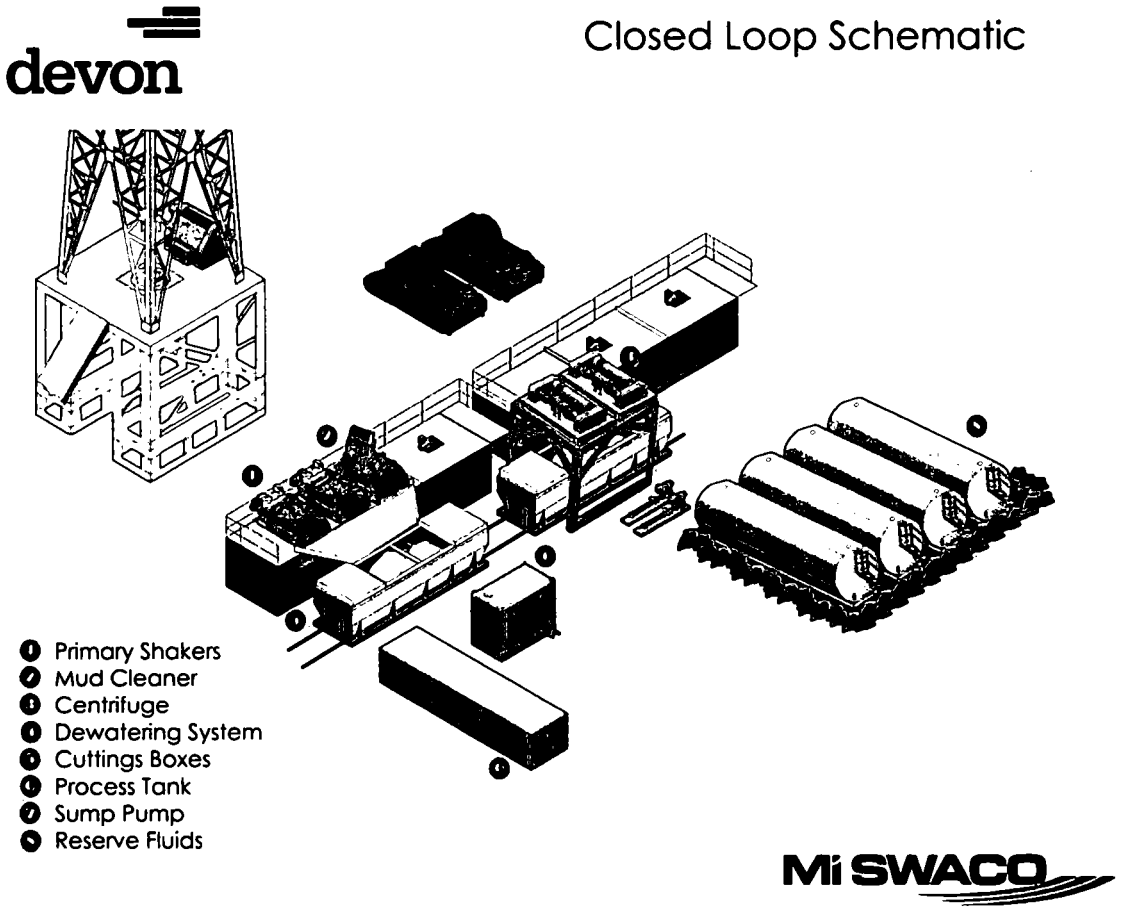
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

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.

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 13-3/8" 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 9-5/8' intermediate casing with a mandrel hanger, the 13-5/8" BOP/BOPE system with a minimum rating of 5M will already be installed on the wellhead.

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.

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) 556-737 • Fax: (3662) 568-738

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

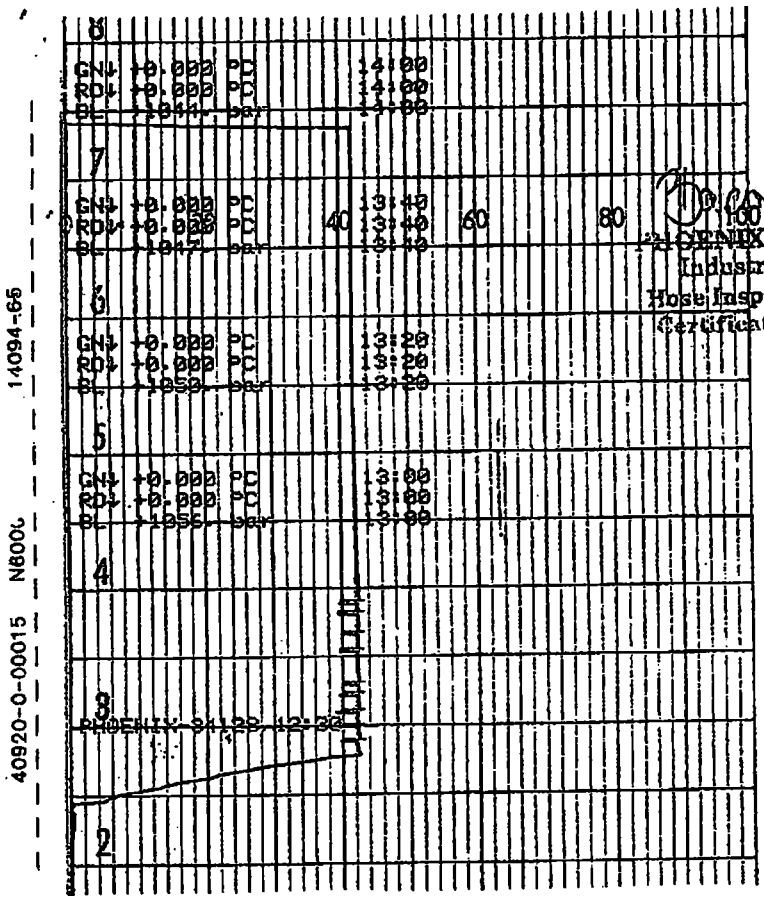
Type	Serial N°	Quality	Heat N°
3" coupling with	720 719	AISI 4130	C7626
4 1/16" Flange end		AISI 4130	47357

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. TRUE COPY PHOENIX RUBBER Q.C.



PHOENIX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

VERIFIED TRUE COPY
PHOENIX RUBBER G.C.

APD ID: 10400033357 **Submission Date:** 08/28/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM **Well Number:** 335H

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_335H_Ex_Access_Rd_20180824051143.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_335H_Access_Rds_20180828120155.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_335H_1mile_Map_20180822111516.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 Cotton Draw Unit 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:** 335H

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_335H_Wtr_Xfr_Map_20180822102523.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_335H_Caliche_Pit_20180822101956.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: DRILL CUTTINGS

Amount of waste: 2440 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_335H_Rig_Layout_20180822123153.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_335H_Reclamation_20180828120436.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	**Well pad interim reclamation (acres):** 1.479	**Well pad long term disturbance (acres):** 1.992
Road proposed disturbance (acres): 1.344	**Road interim reclamation (acres):**	**Road long term disturbance (acres):** 1.344
Powerline proposed disturbance (acres): 0.11	**Powerline interim reclamation (acres):** 0	**Powerline long term disturbance (acres):** 0.11
Pipeline proposed disturbance (acres): 0.978	**Pipeline interim reclamation (acres):** 0	**Pipeline long term disturbance (acres):** 0.978
Other proposed disturbance (acres): 0	**Other interim reclamation (acres):** 0	**Other long term disturbance (acres):** 0
Total proposed disturbance: 5.903	**Total interim reclamation:** 1.479	**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

Seed Type	Pounds/Acre

Total 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:**

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:**

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: CTB BATTERY CONNECT CTB ELECTRIC FLOWLINE

Use a previously conducted onsite? YES

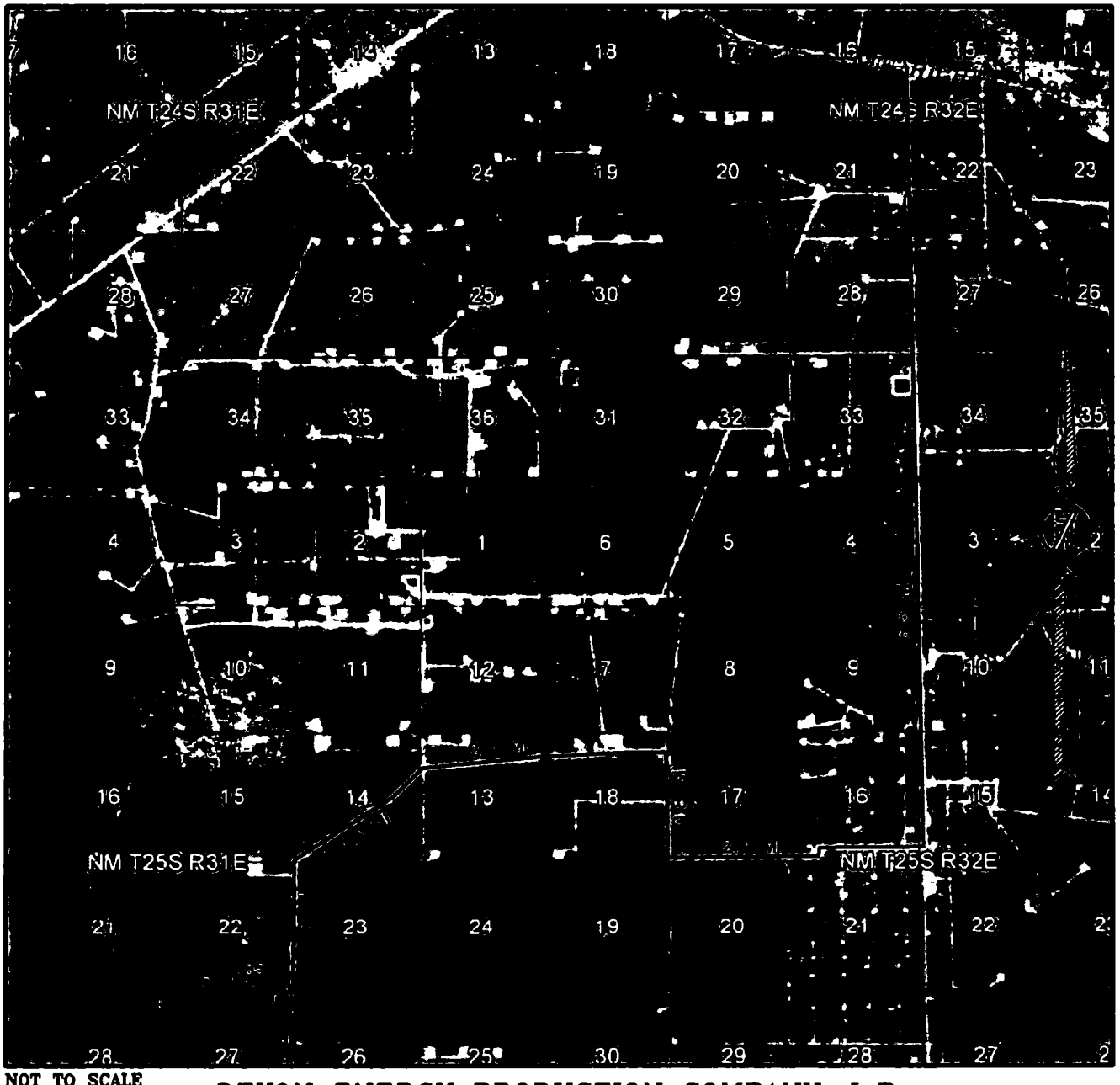
Previous Onsite information: 6/1/2016 - Cotton Draw Unit MDP 1

Other SUPO Attachment

Lusitano_27_34_Fed_Com_335H_CTB_Battery_Connect_20180828121121.pdf
Lusitano_27_34_Fed_Com_335H_CTB_20180828121134.pdf
Lusitano_27_34_Fed_Com_335H_Electric_20180828121152.pdf
Lusitano_27_34_Fed_Com_335H_Flowline_20180828121208.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 335H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1264 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

AUGUST 3, 2018

SURVEY NO. 6438

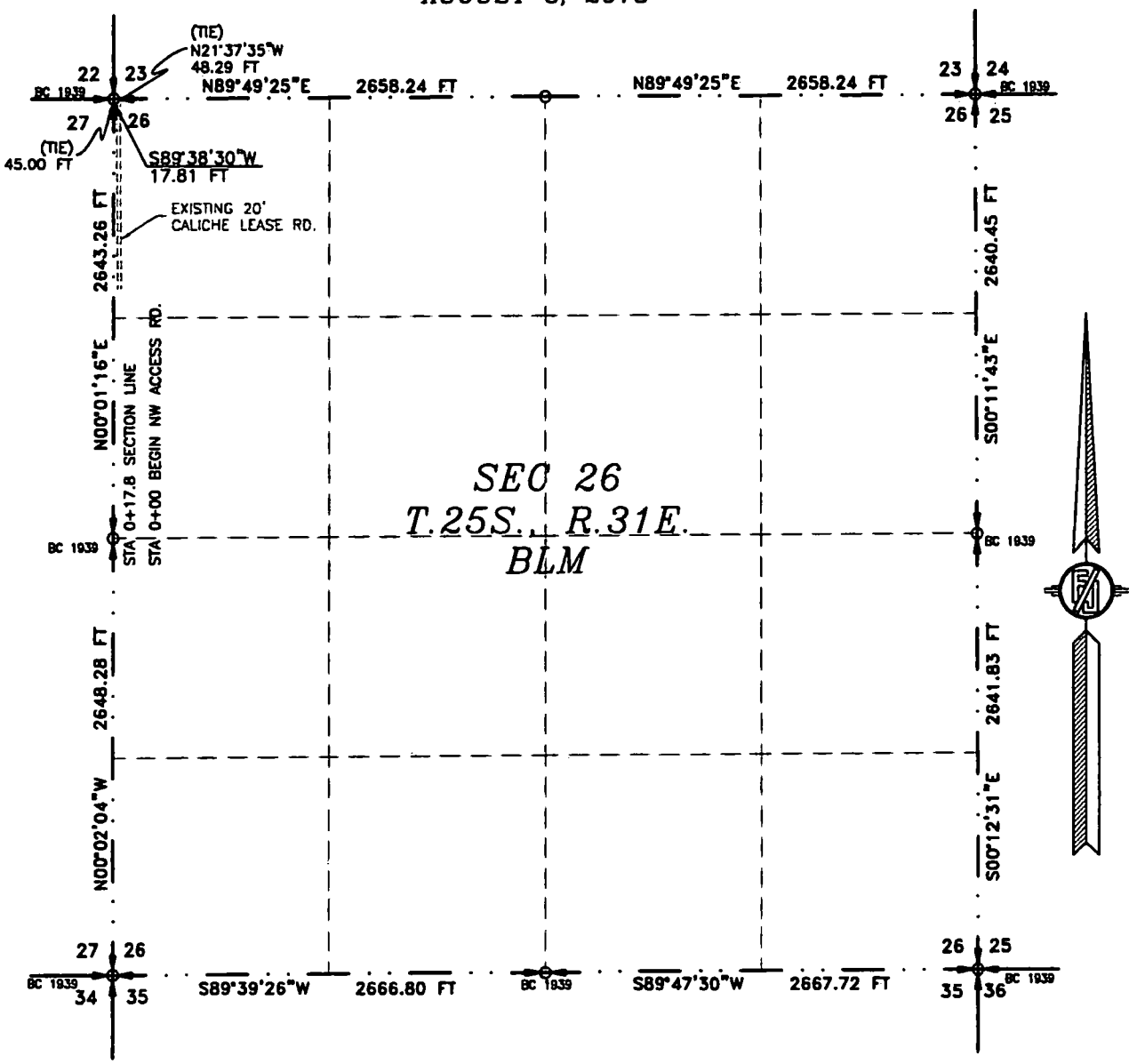
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 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
AUGUST 3, 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 7 DAY OF AUGUST 2018

FILIMON F. JARAMILLO, PLS 12797

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

SHEET: 1-4

SURVEY NO. 6438

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
AUGUST 3, 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

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 AUGUST 2018

FILIMON F. JARAMILLO PLS: 12797

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

GENERAL NOTES

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

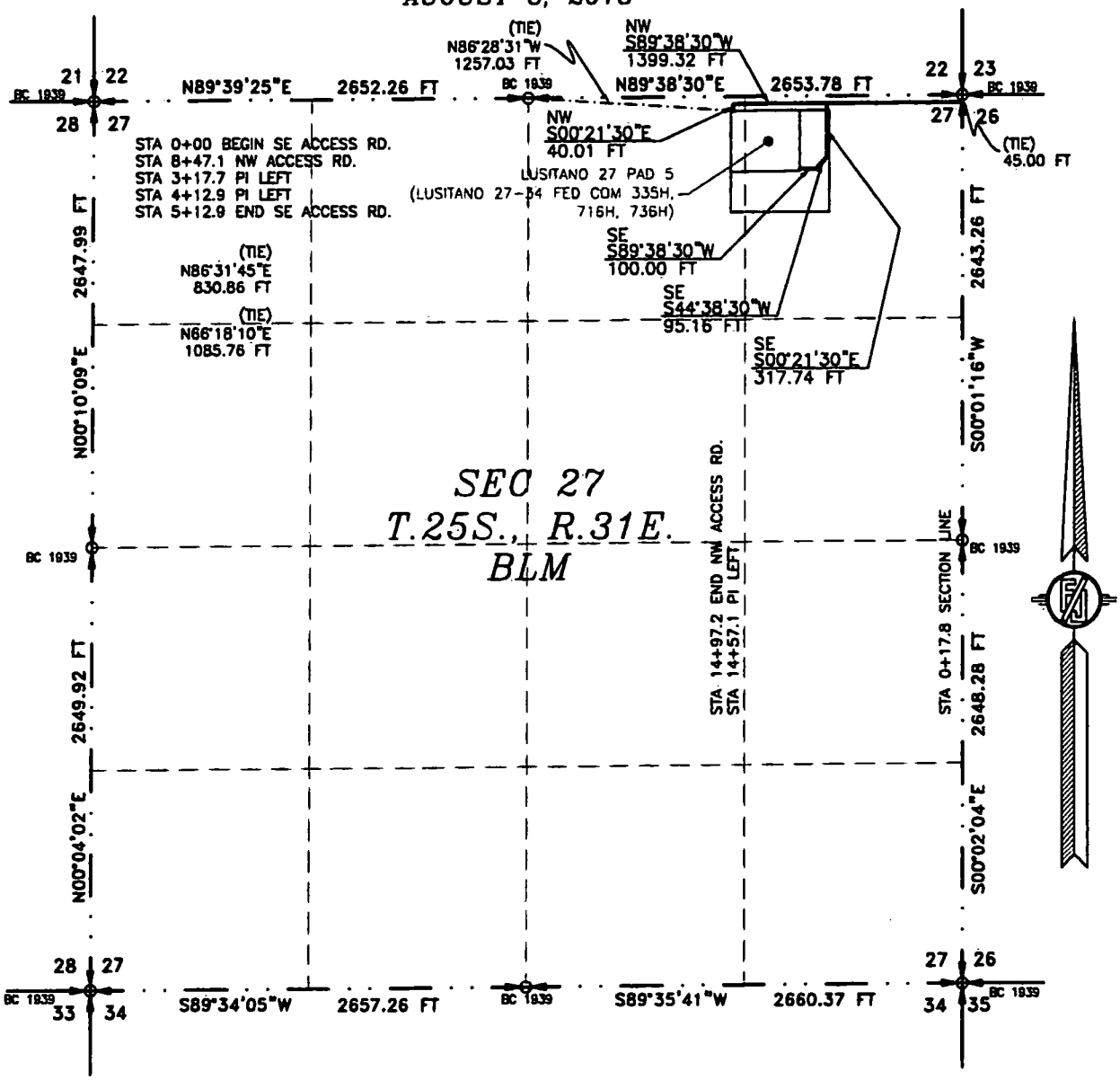
2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

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
AUGUST 3, 2018



SEE NEXT SHEET (4-4) 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 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 30 DAY OF AUGUST 2018

FILIMON F. JARAMILLO, PLS 12797

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

SHEET: 3-4

SURVEY NO. 6438

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
AUGUST 3, 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

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 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

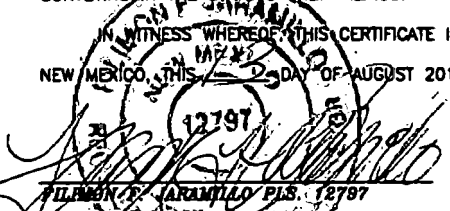
1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.

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 7 DAY OF AUGUST 2018



FILIMON F. JARAMILLO PLS. 12797

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

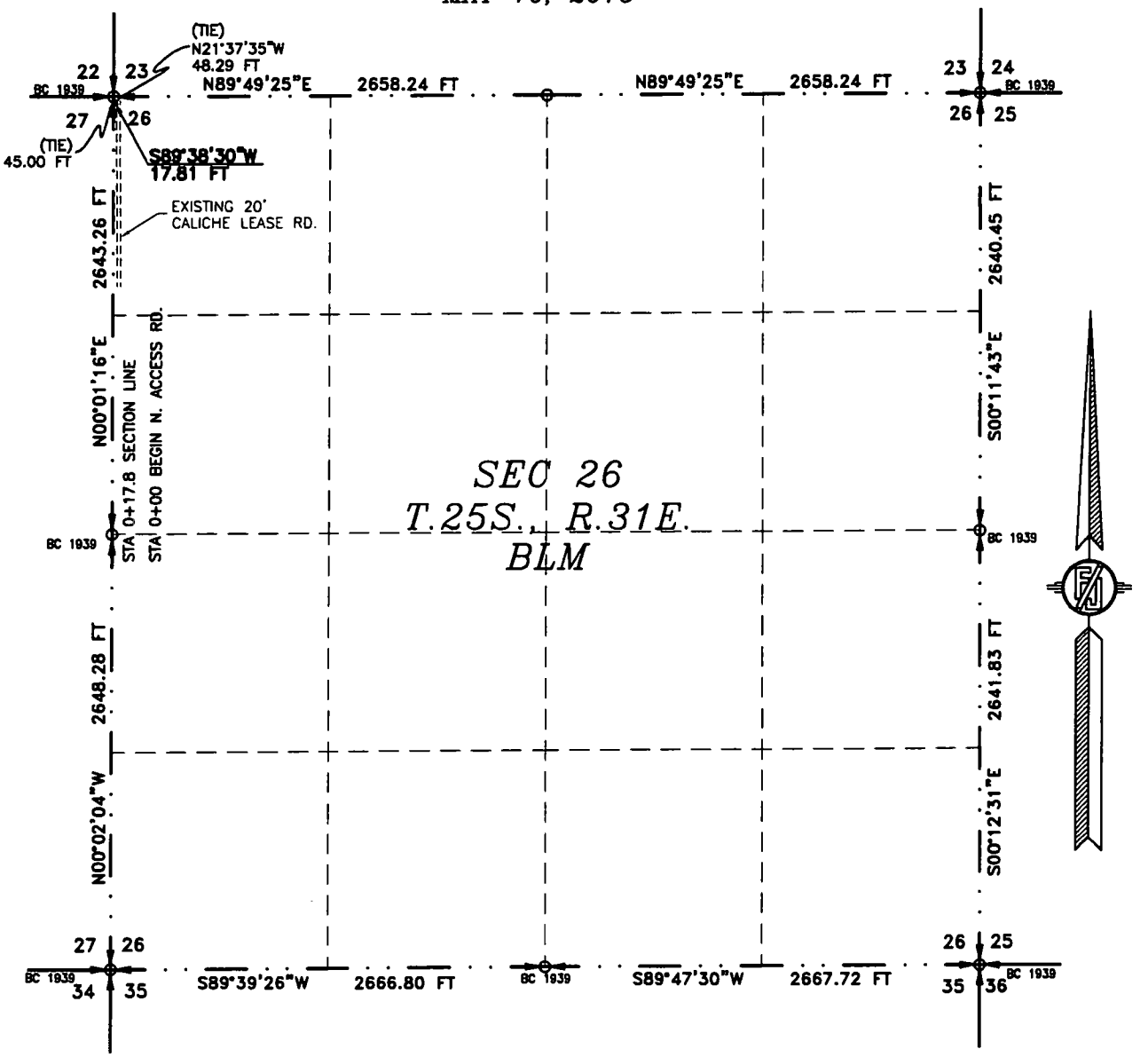
SURVEY NO. 6438

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

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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 ____ DAY OF MAY 2016

FILIMON F. JARAMILLO, NEW MEXICO, 12797, REGISTERED PROFESSIONAL SURVEYOR

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. 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, PLS 12797

301 SOUTH CANAL
(575) 234-3341

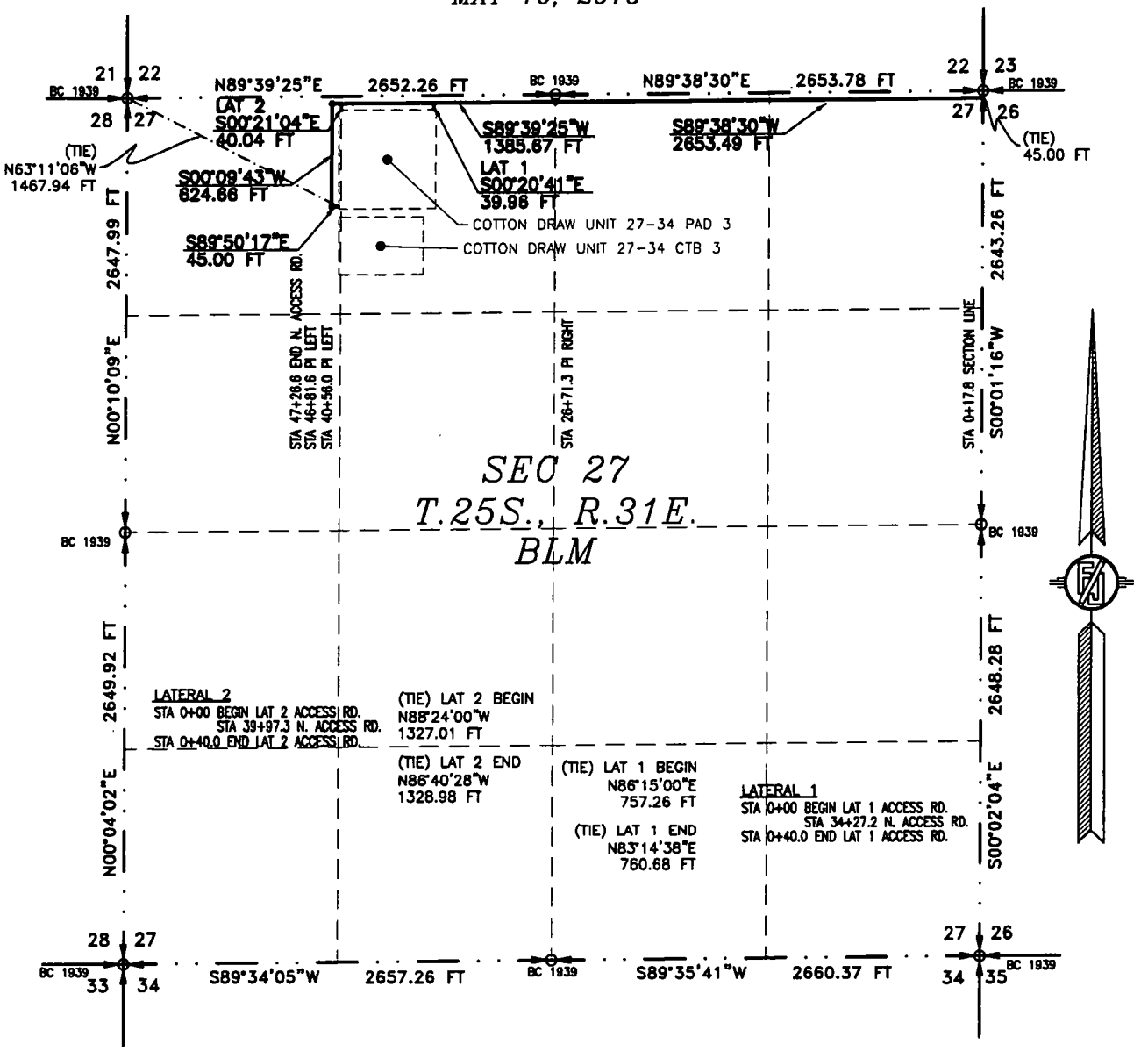
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

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
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

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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 11TH DAY OF MAY 2016

FILIMON F. JARAMILLO
NEW MEXICO
12797
REGISTERED PROFESSIONAL SURVEYOR

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: 3-6

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 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

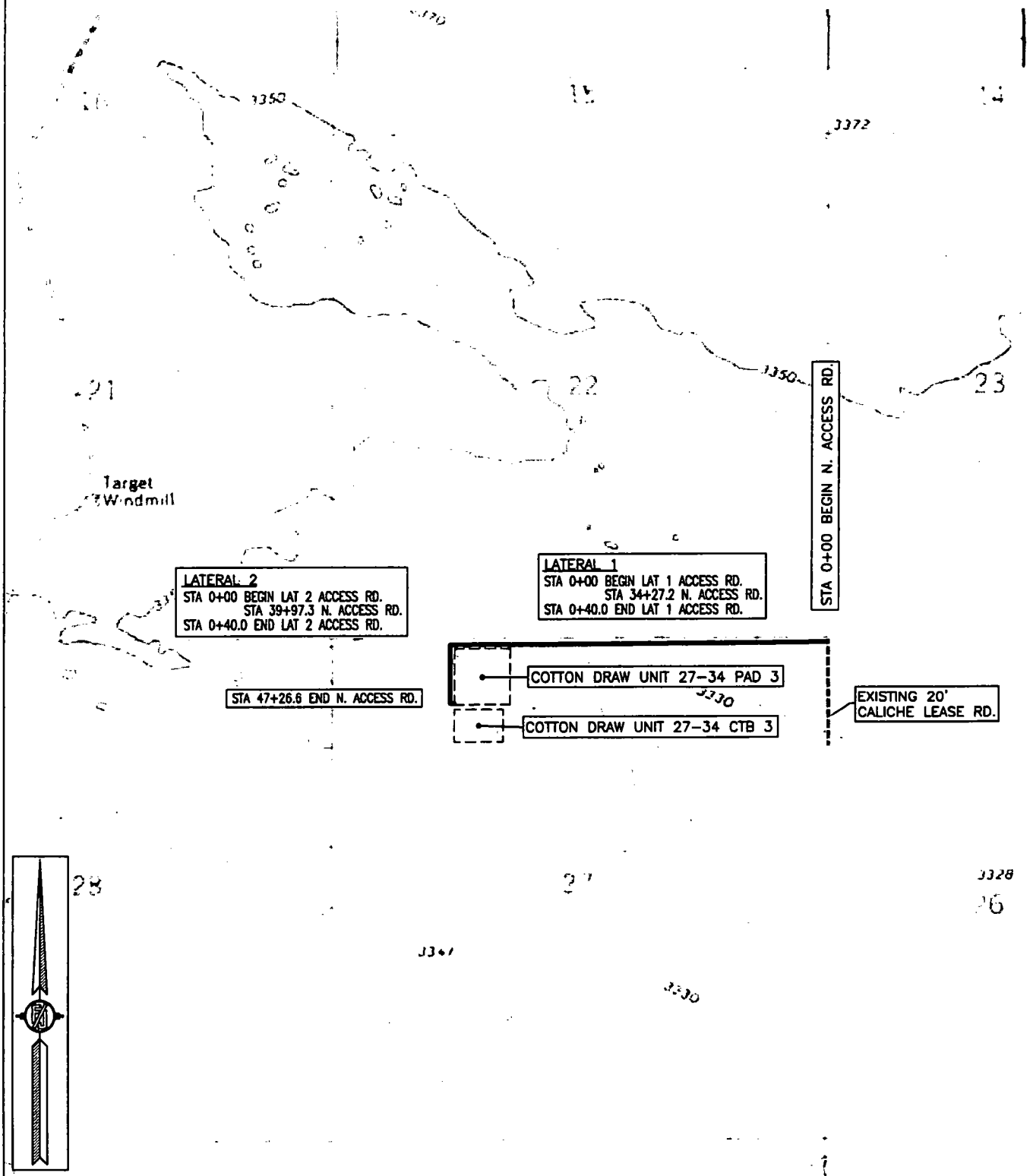
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

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

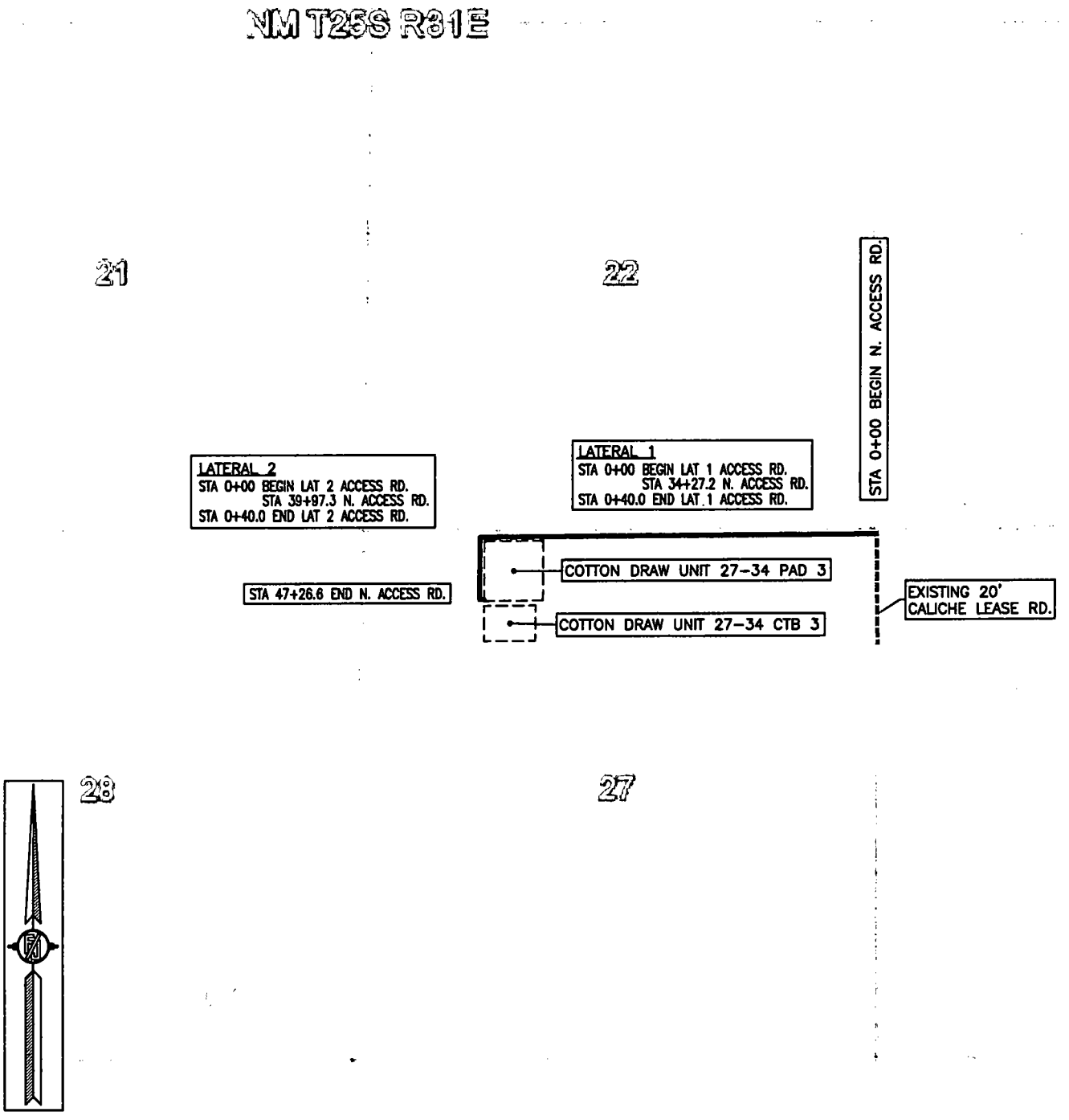
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

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

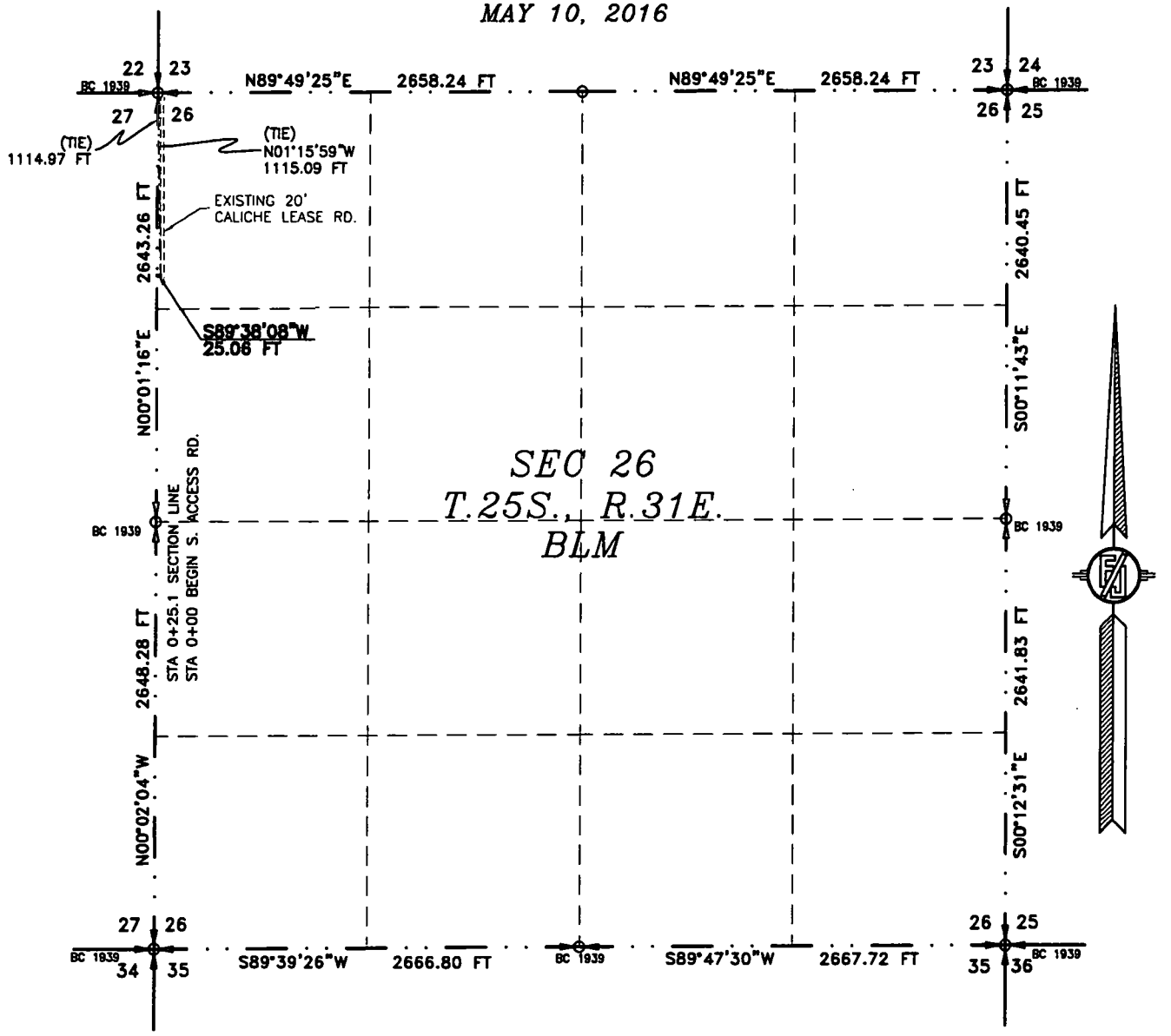
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

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

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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 11 DAY OF MAY 2016

FILIMON F. JARAMILLO PLS 12797

MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (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 P.S. 12797

301 SOUTH CANAL
(575) 234-3341

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

SHEET: 2-6

SURVEY NO. 4666

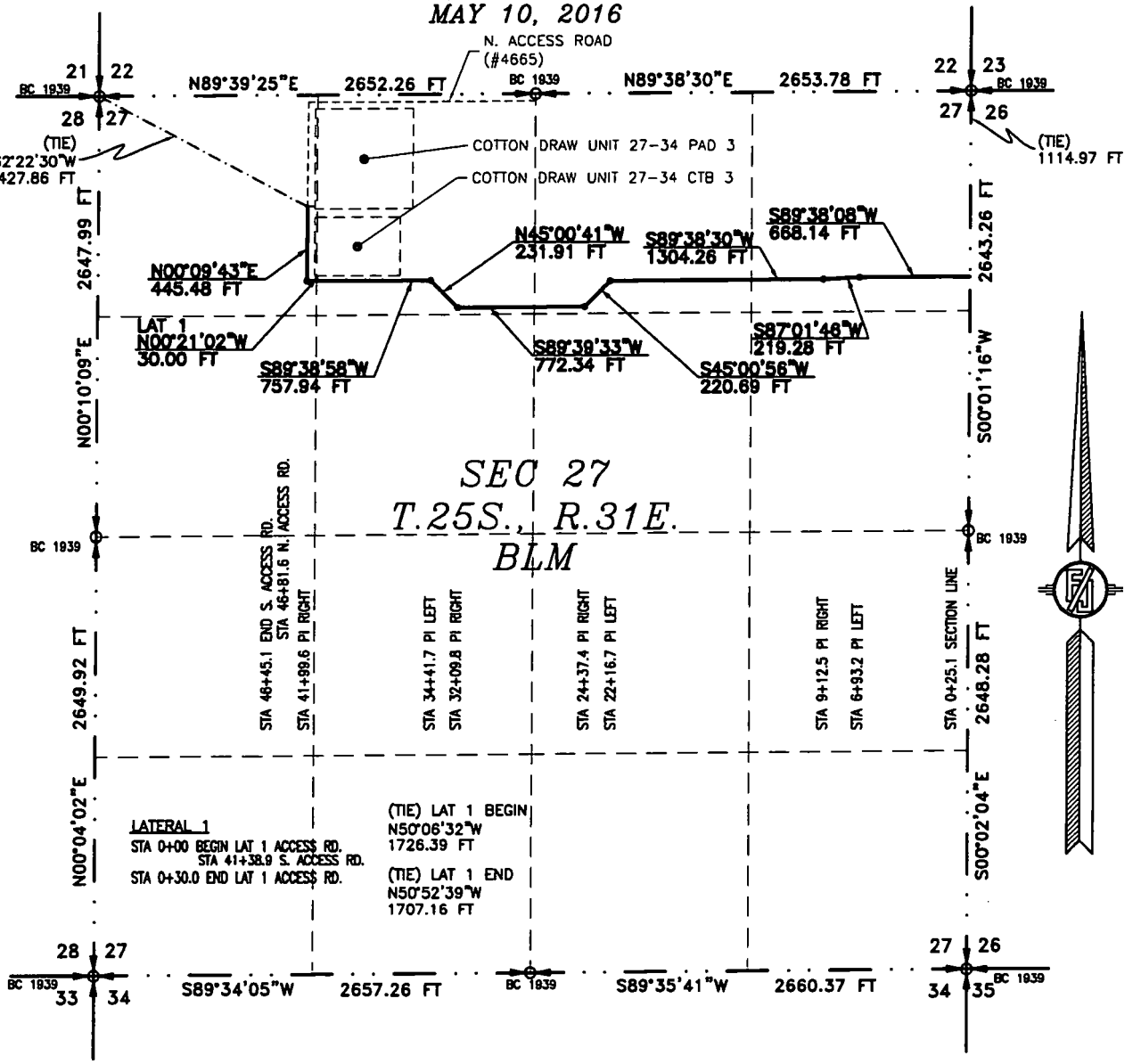
MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

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 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 5 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

SHEET: 3-6

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 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

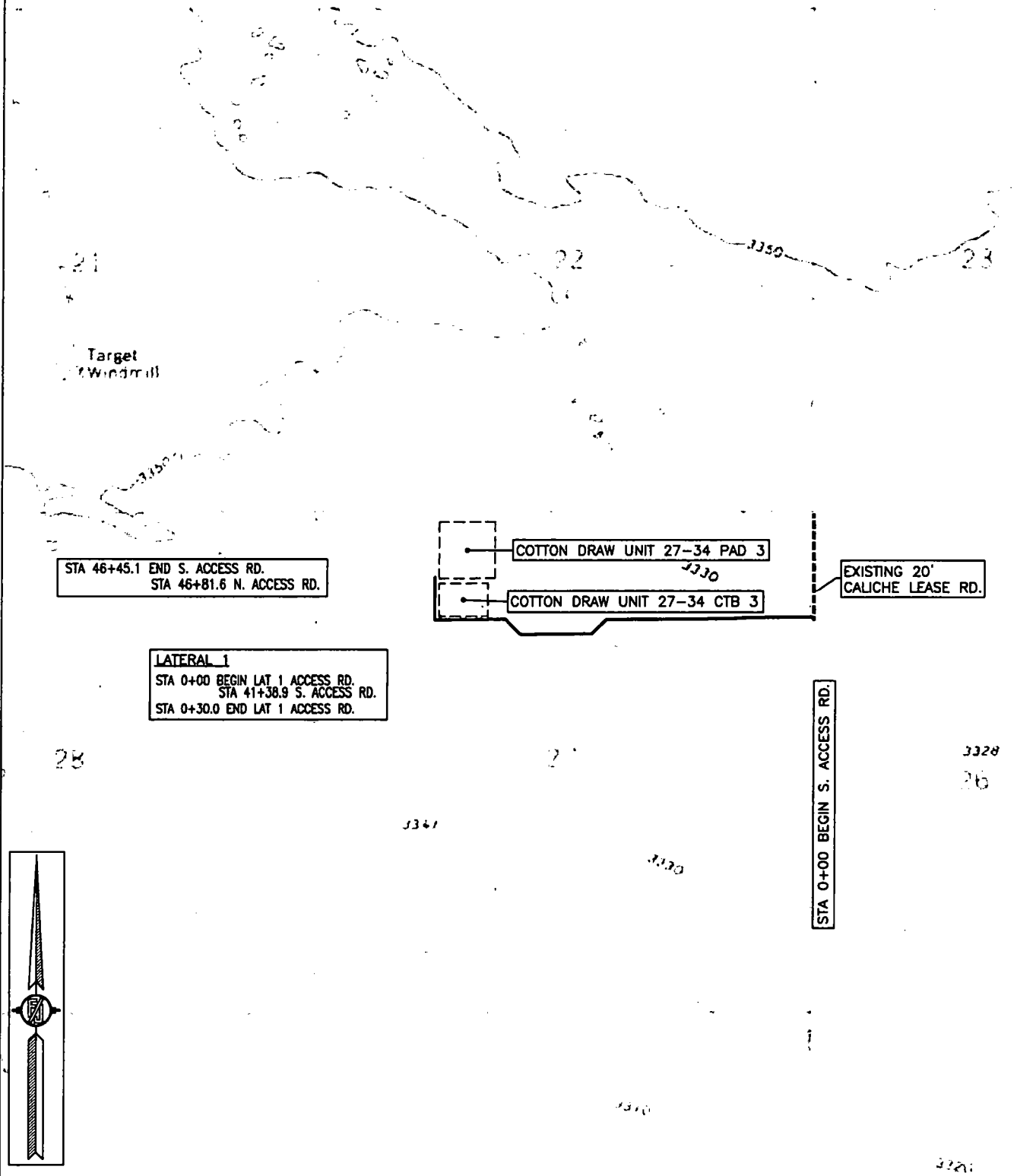
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

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

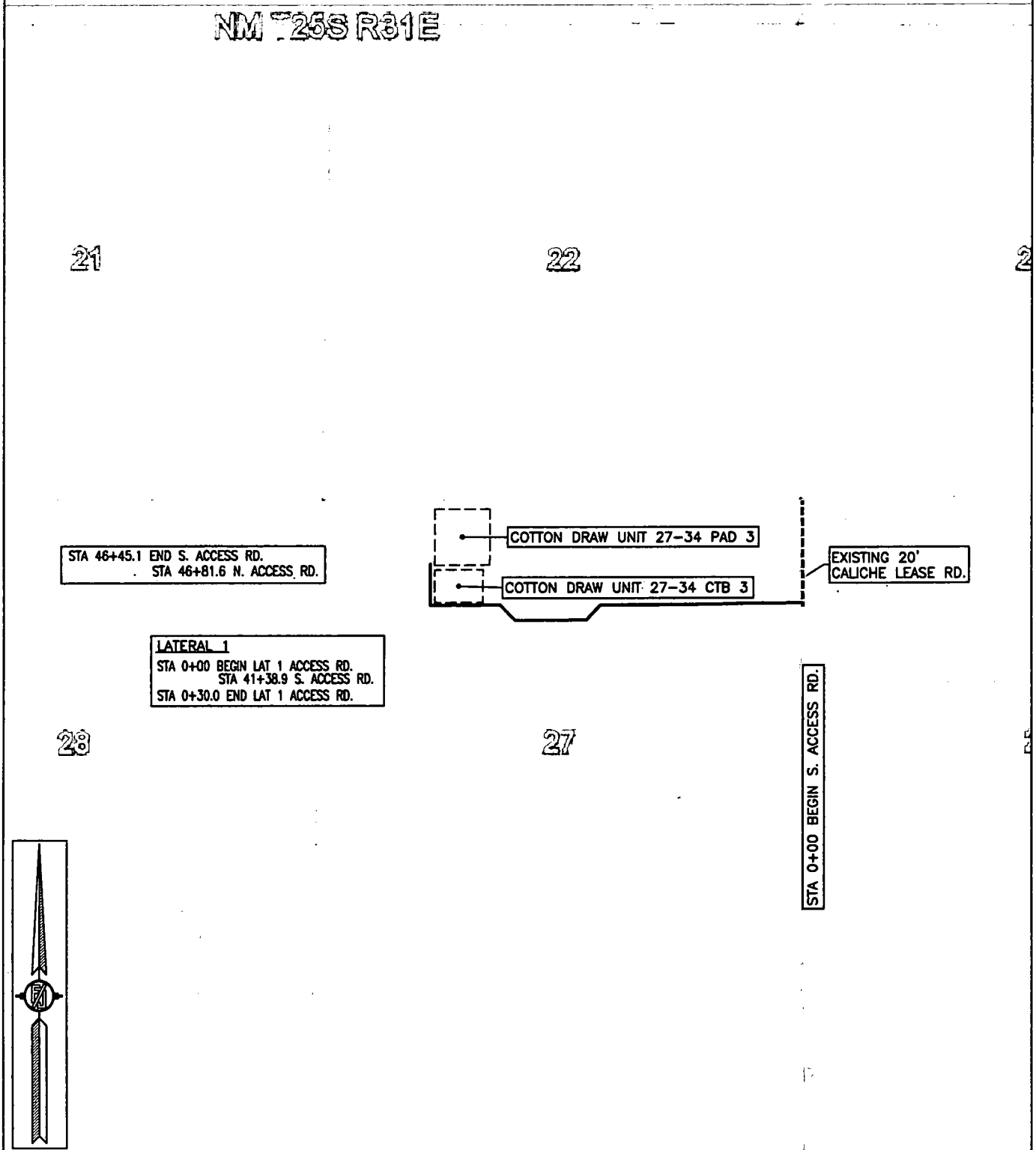
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

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

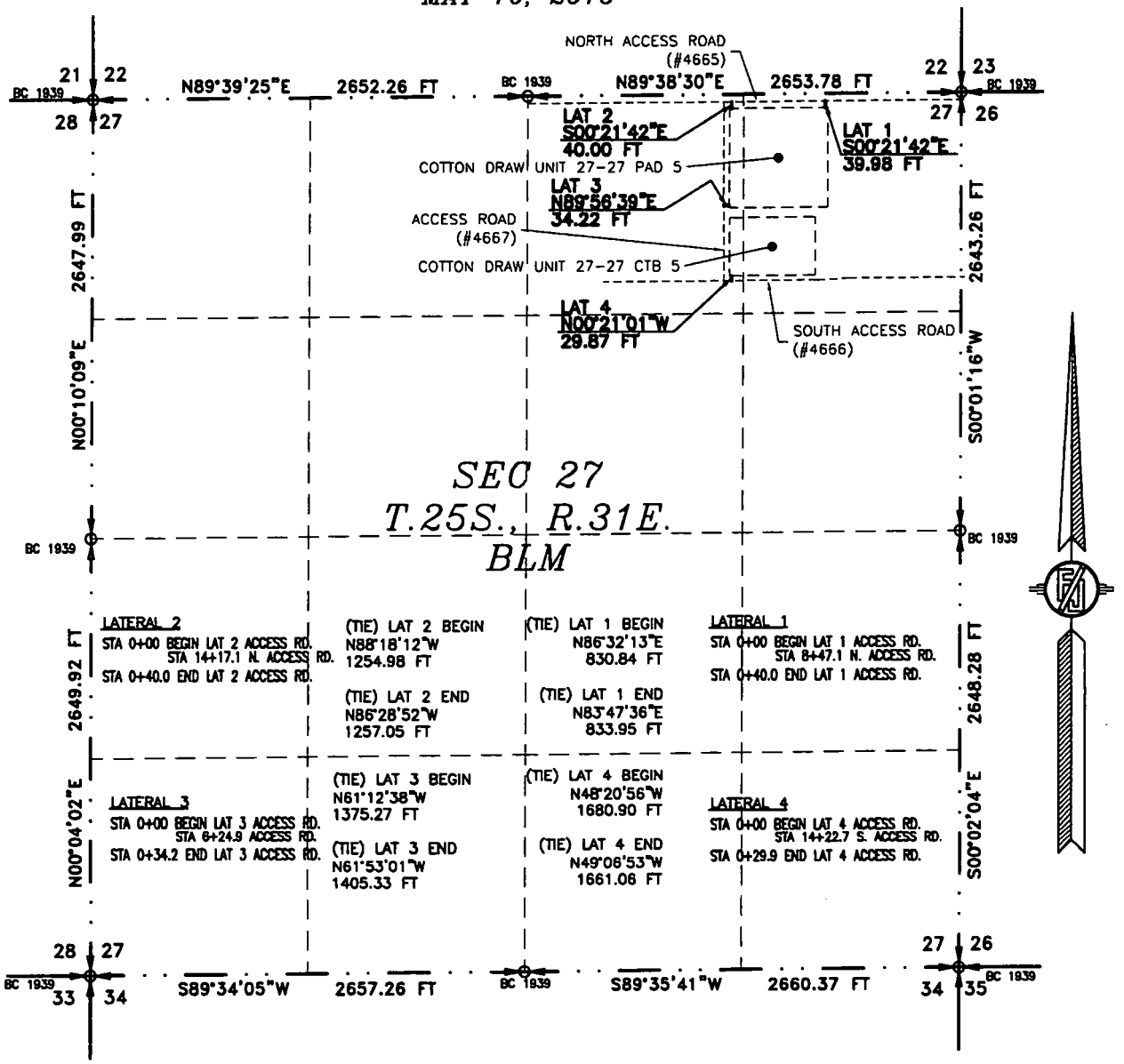
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (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

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 12TH DAY OF MAY 2016

FILIMON F. JARAMILLO NEW MEXICO 12797

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. 4668

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 6 & 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

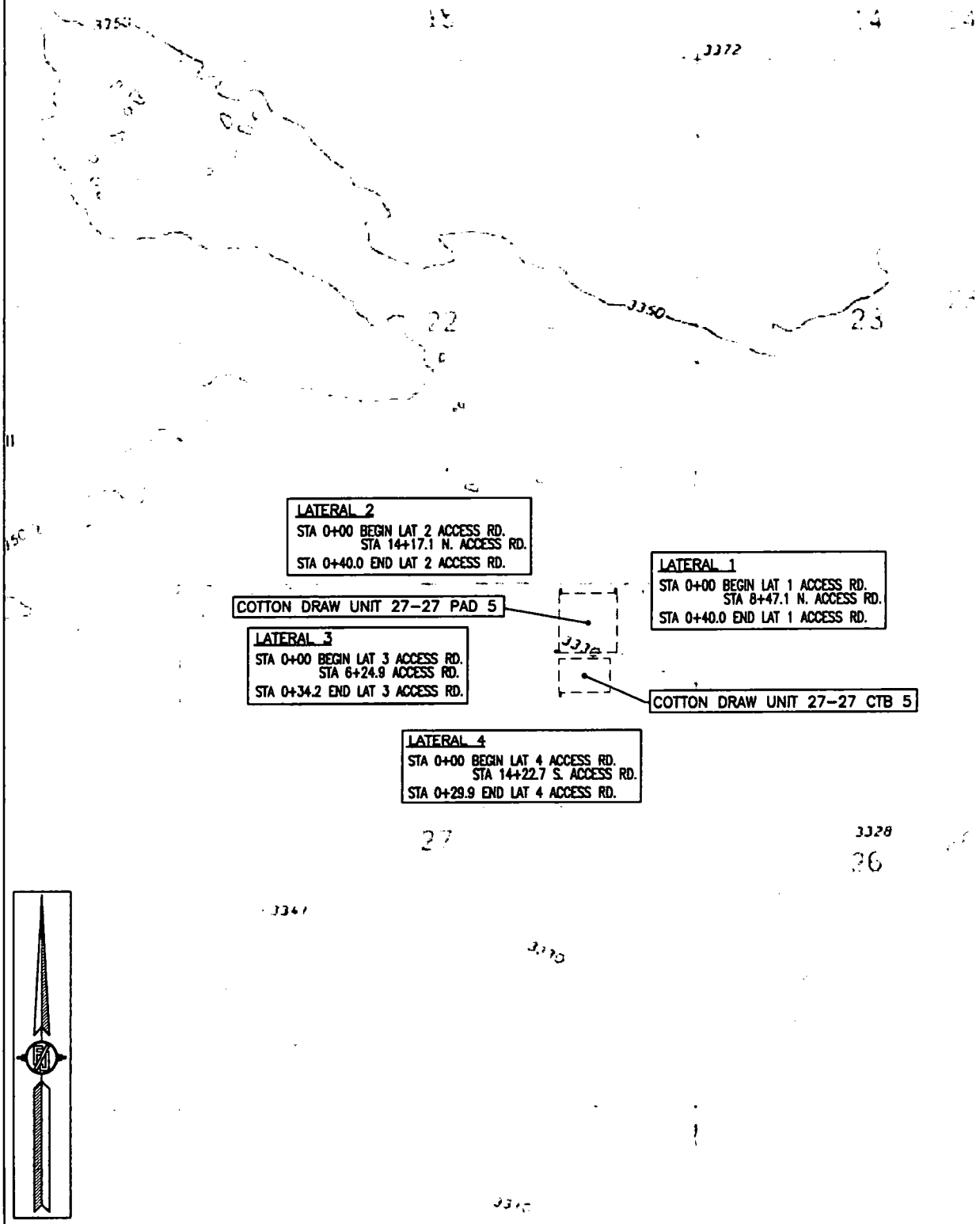
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

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

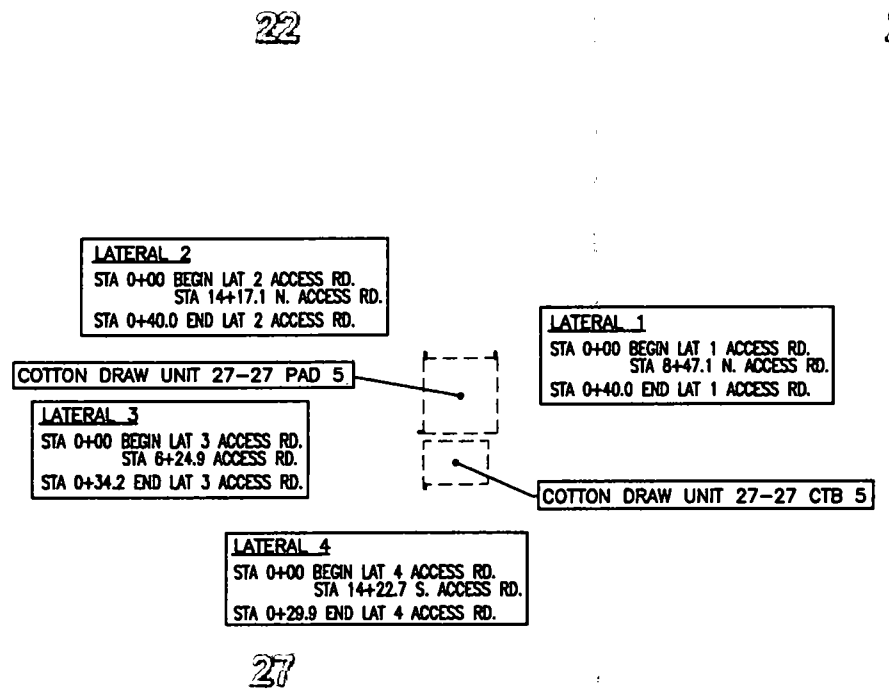
ACCESS ROAD PLAT (AA000055128)

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

NM T25S R31E



SHEET: 4-4 SURVEY NO. 4668

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 8/15/2018

N

Miles
0 0.3

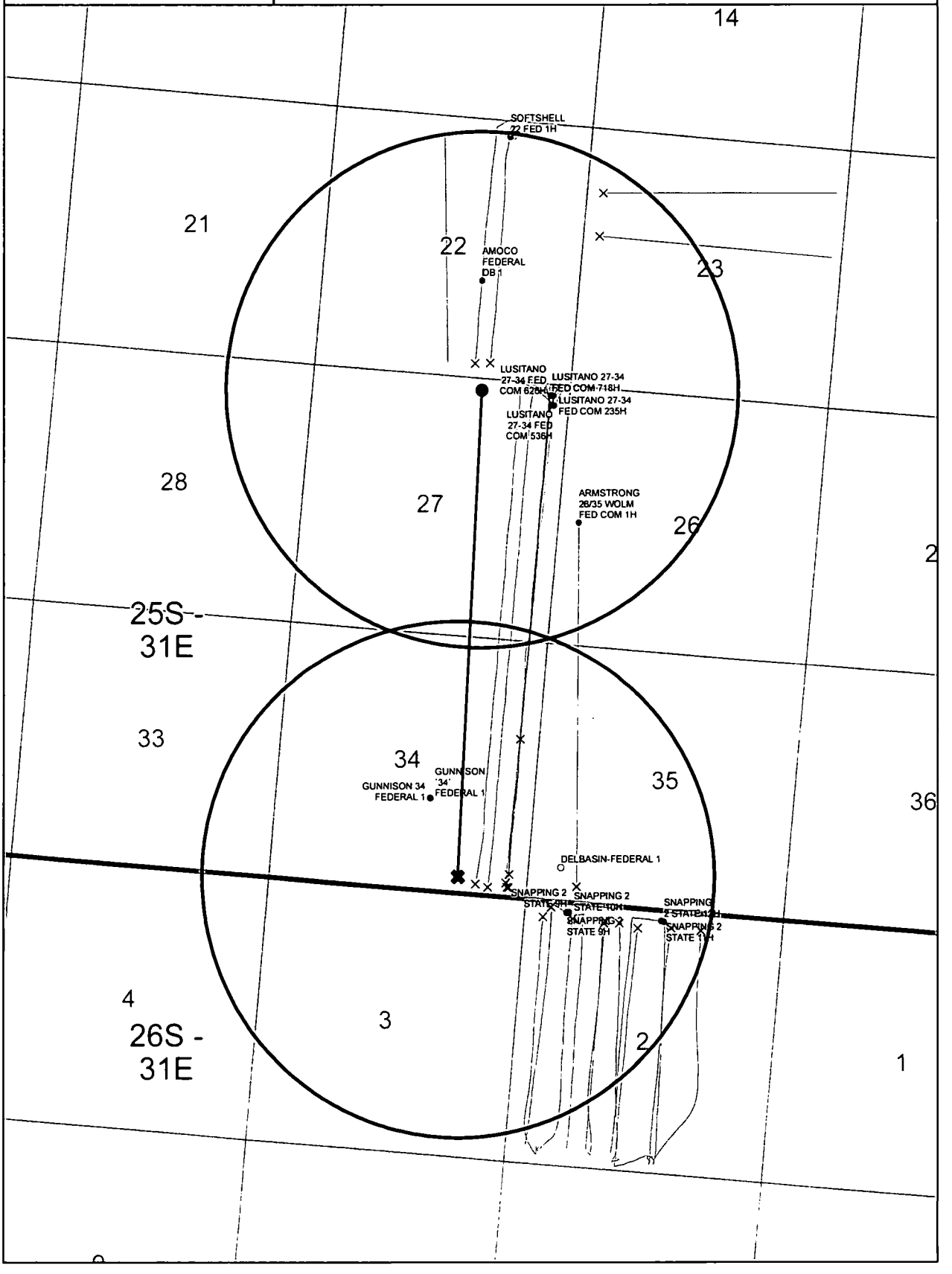
1 inch = 0.44 miles

LUSITANO 27-34 FED COM 335H
WA017161465

SHIRE 22 FED 1H
Nearest wellbore to SHL: 567 ft.

LUSITANO 27-34 FED COM 626H
Nearest wellbore to BHL: 382 ft.

- ○ Unknown SHL
- • Active SHL
- ○ Inactive SHL
- × BHL



LUSITANO 27-34 FED COM 335H

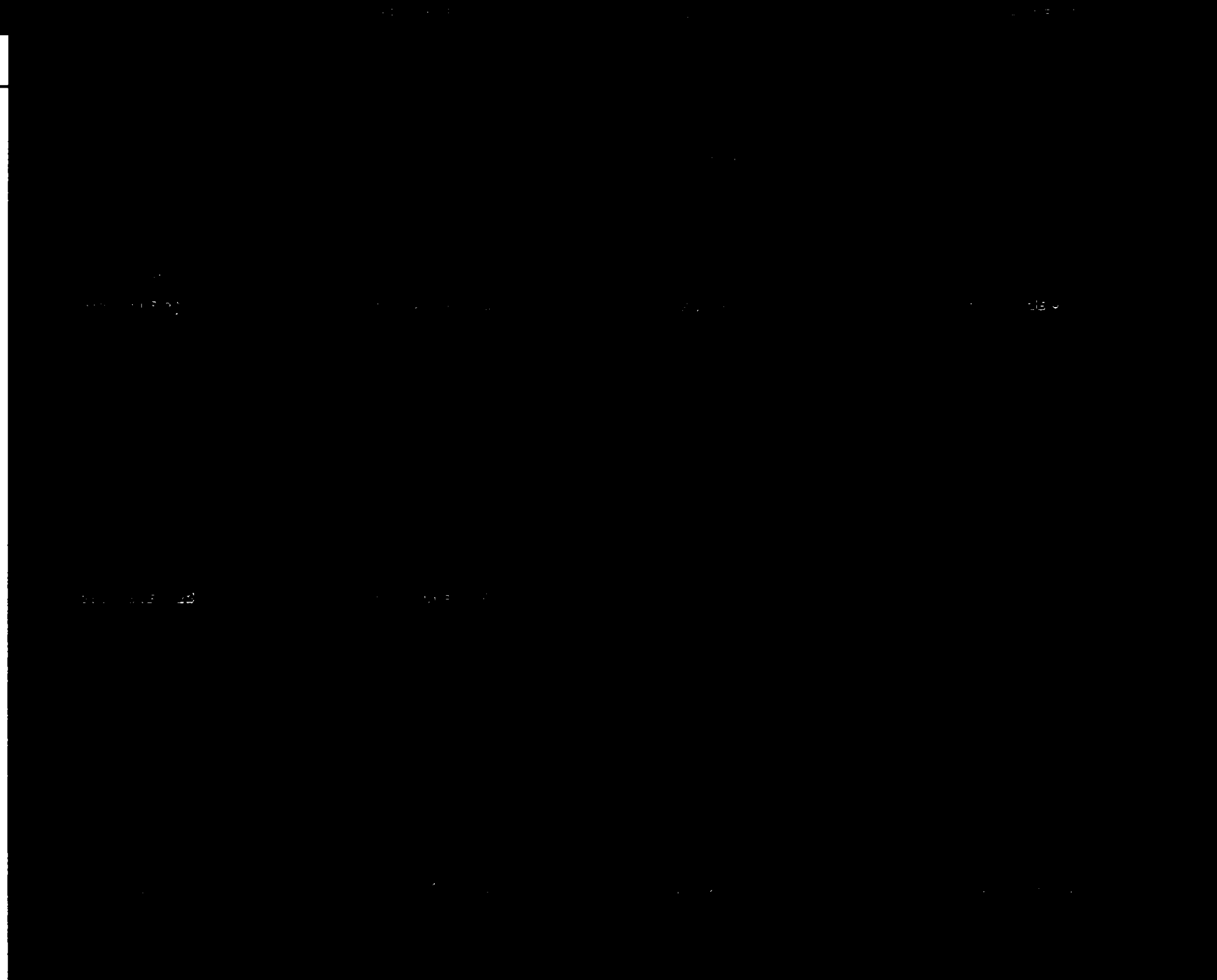
devon

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.

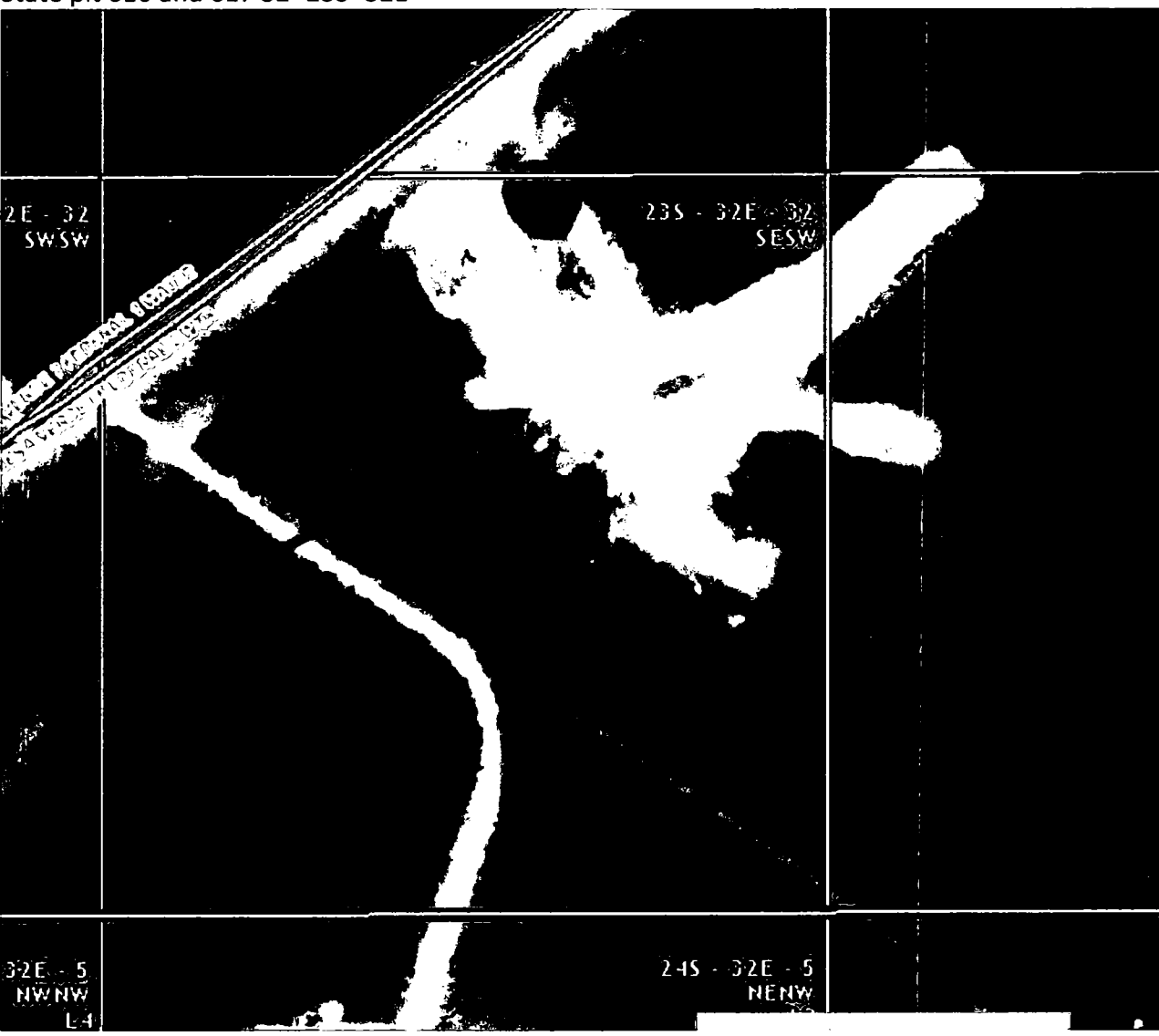
WGS_1984_Web_Mercator_Auxiliary_Sphere
Prepared by: _User
Map is current as of: 17-Aug-2018

N

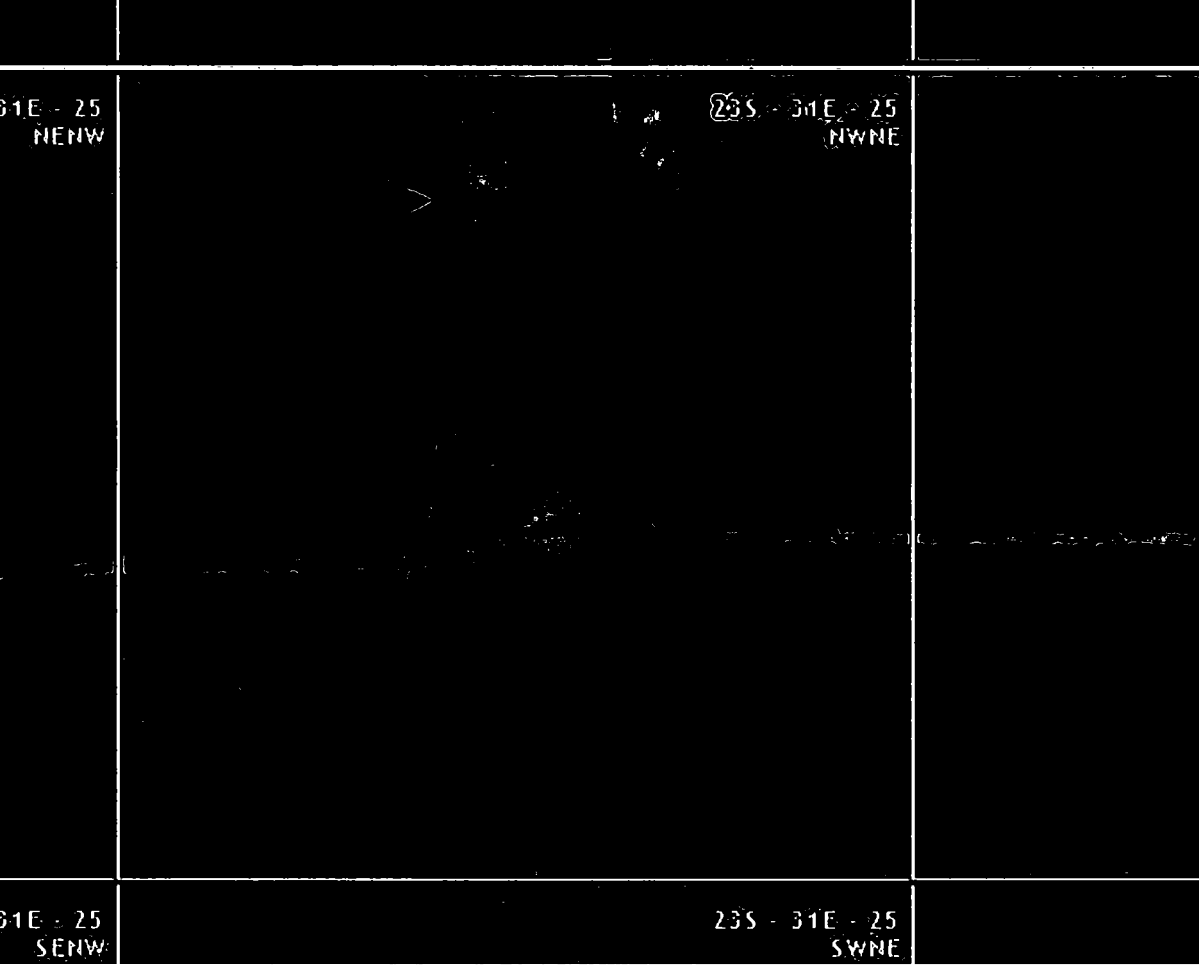
Miles
0 0.14 0.28 0.56 1:28,457



State pit 616 and 617 32- 23S- 32E



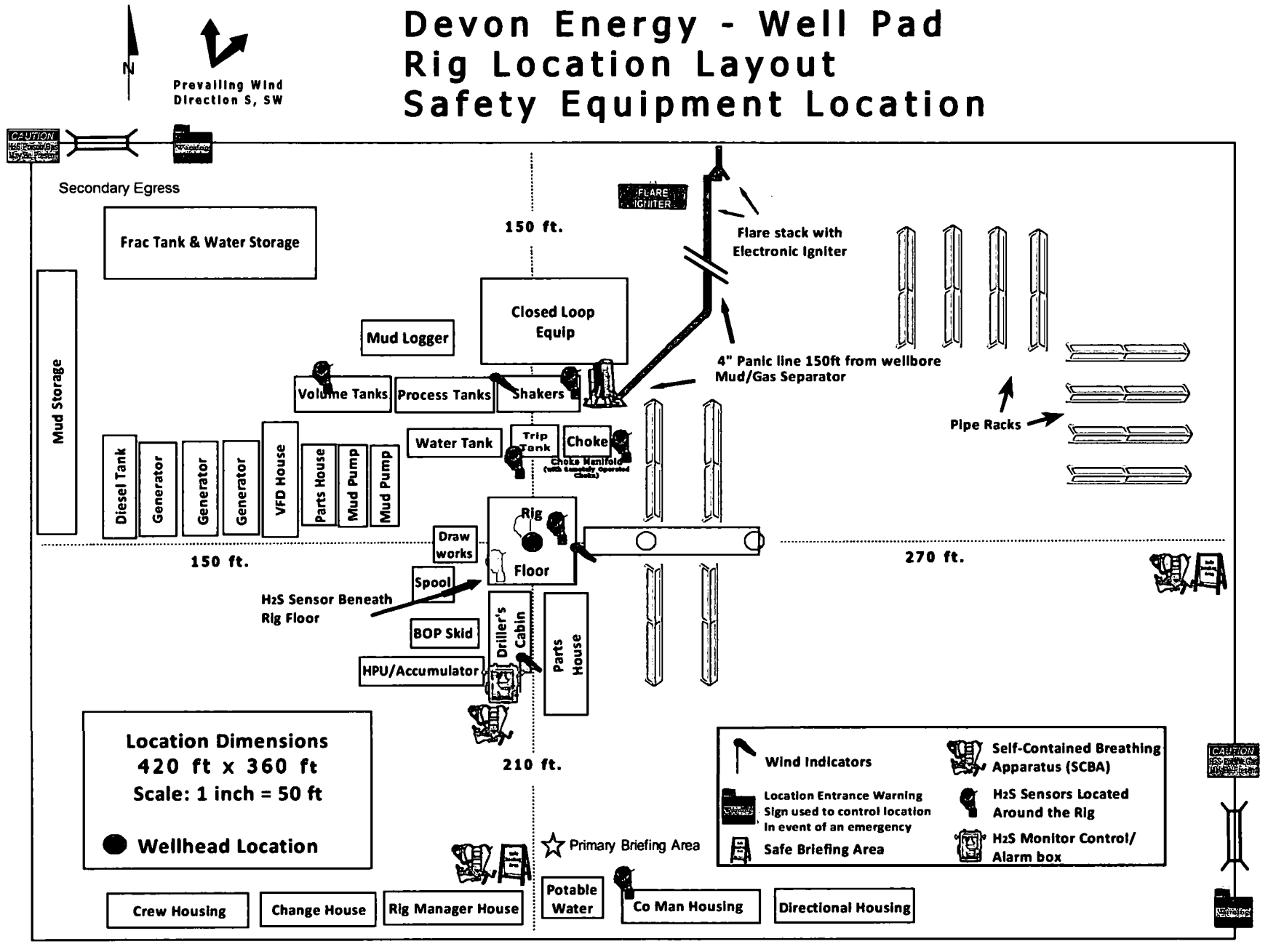
Fed pit 25- 23S- 31E



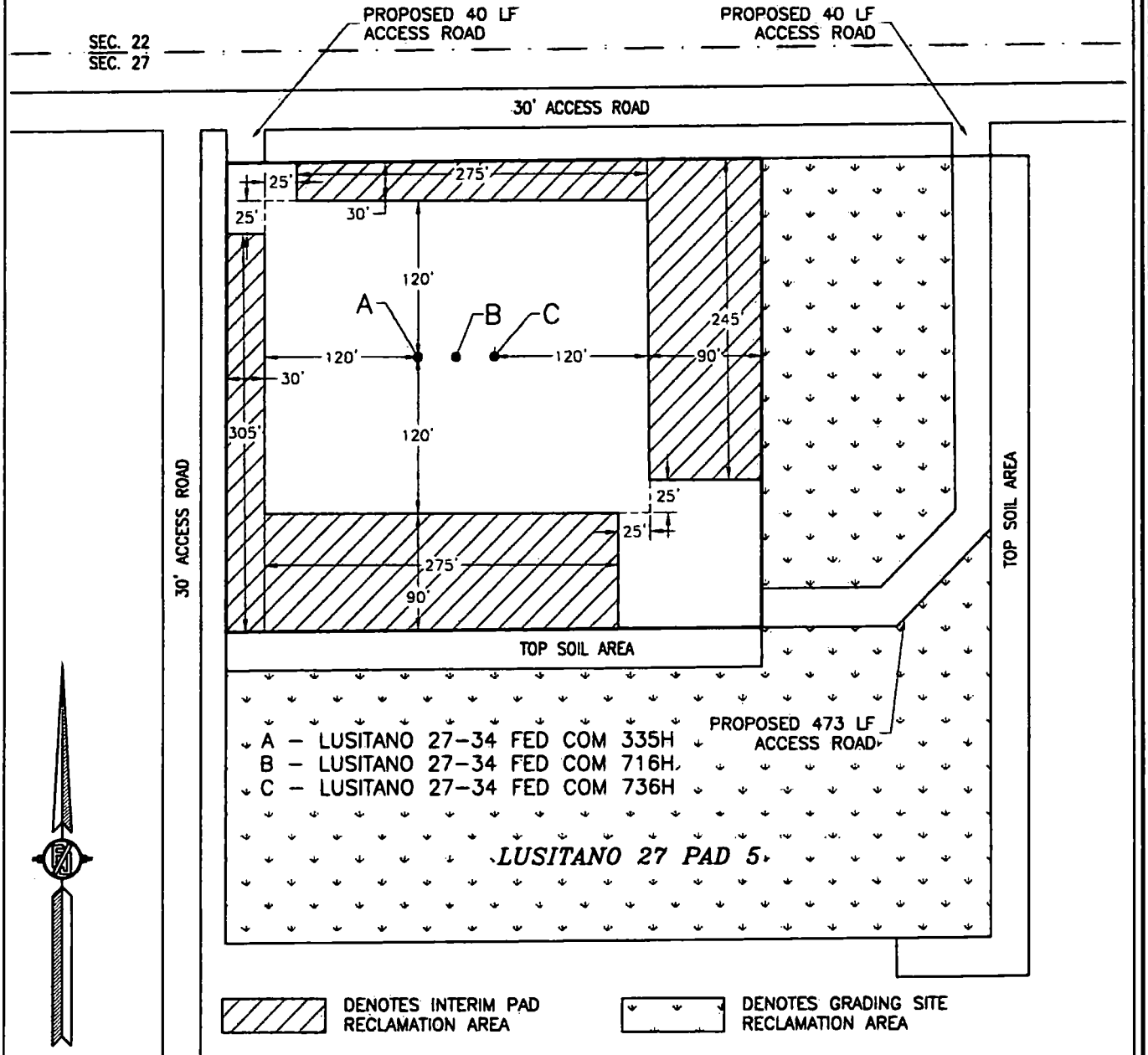
- Private pit 26- 23S- 31E


PUMP TODD

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



012 60 120 240
SCALE 1" = 120'

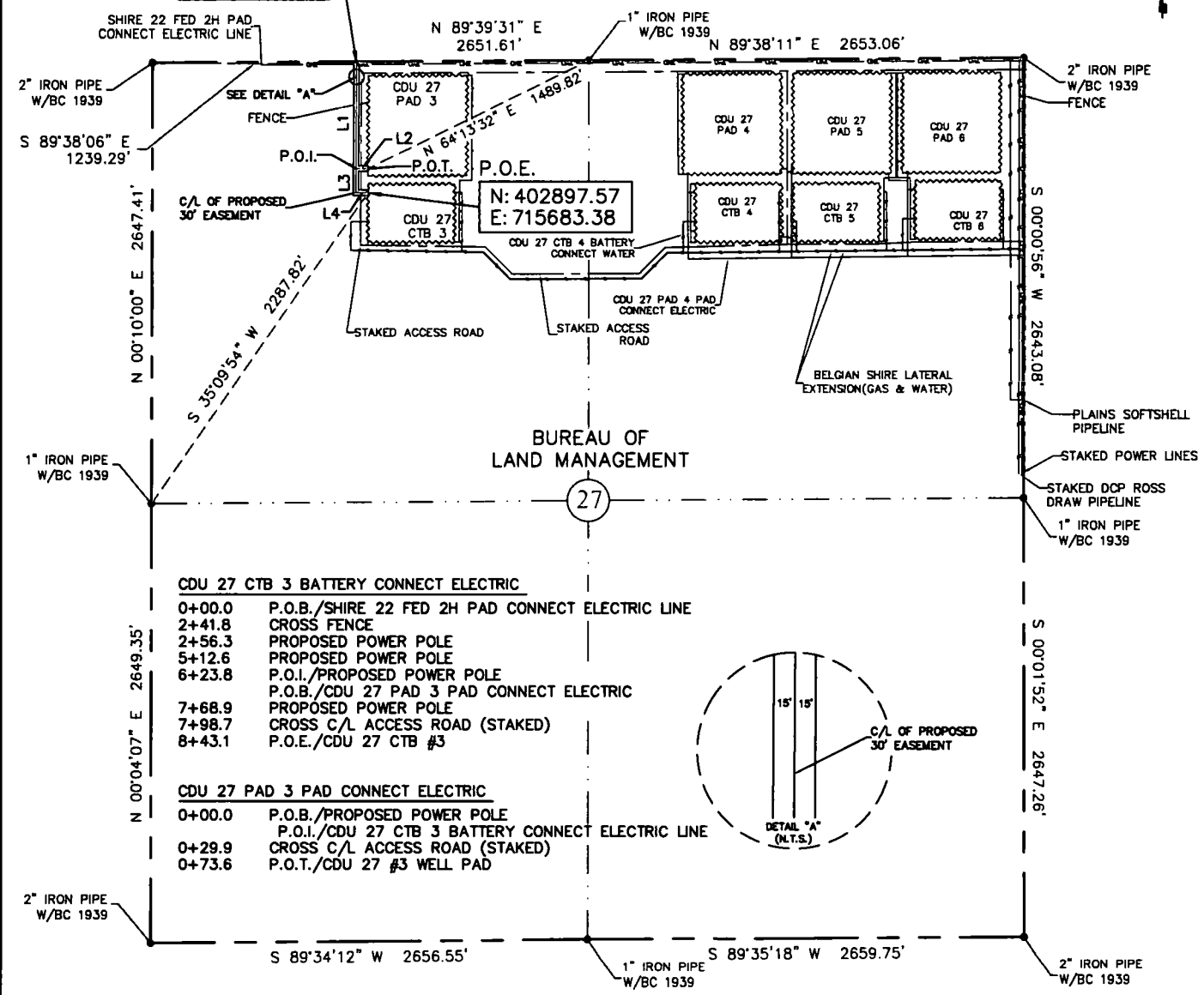
1.479± ACRES INTERIM PAD RECLAMATION AREA
4.473± ACRES GRADING SITE RECLAMATION AREA
2.312± ACRES NON-RECLAIMED AREA
8.264± ACRES LUSITANO 27 PAD 5

DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 335H
LOCATED 235 FT. FROM THE NORTH LINE AND 1264 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

AUGUST 3, 2018
SURVEY NO. 6438

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.

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 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**.

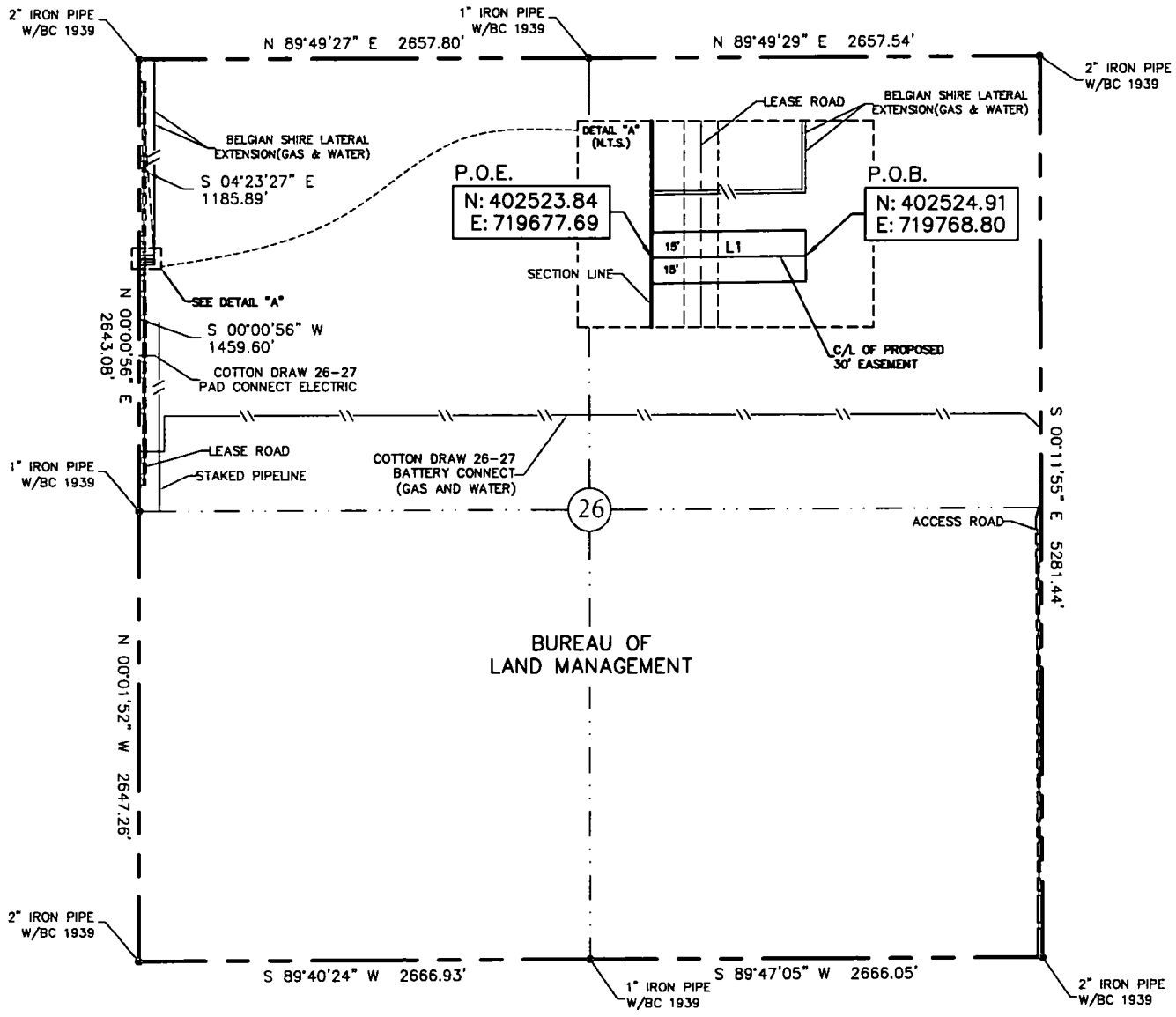
NOTES:

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 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
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**.

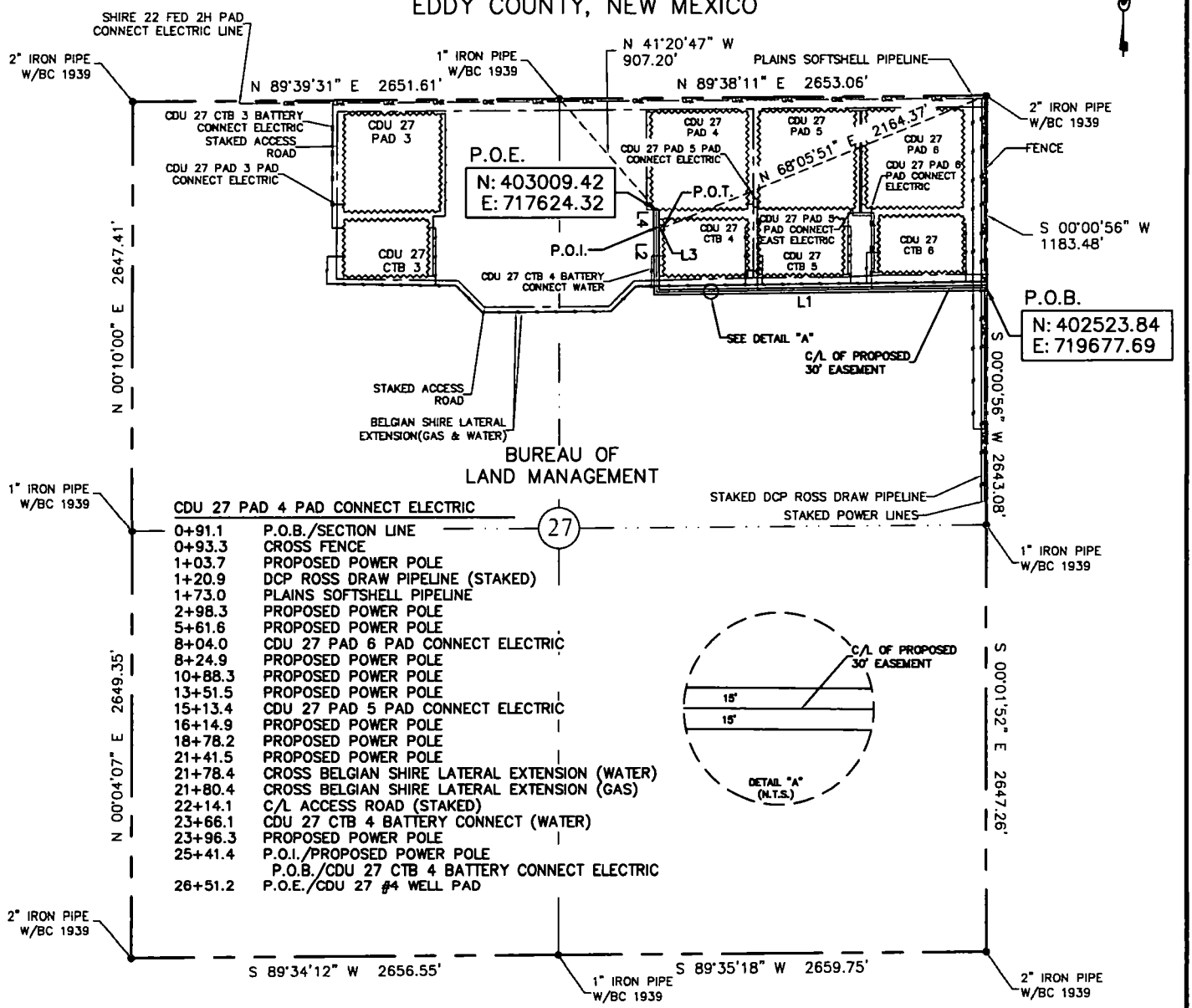
NOTES:

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
Drawn by: WAYNE BEETS
Date: 05/09/2016

DEVON ENERGY PRODUCTION COMPANY, LP.
CDU 27 PAD 4 PAD CONNECT AND CDU 27 CTB 4 BATTERY CONNECT ELECTRIC LINES

SCALE: 1" = 1000'
REVISIONS:
SHEET: 6 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 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**.

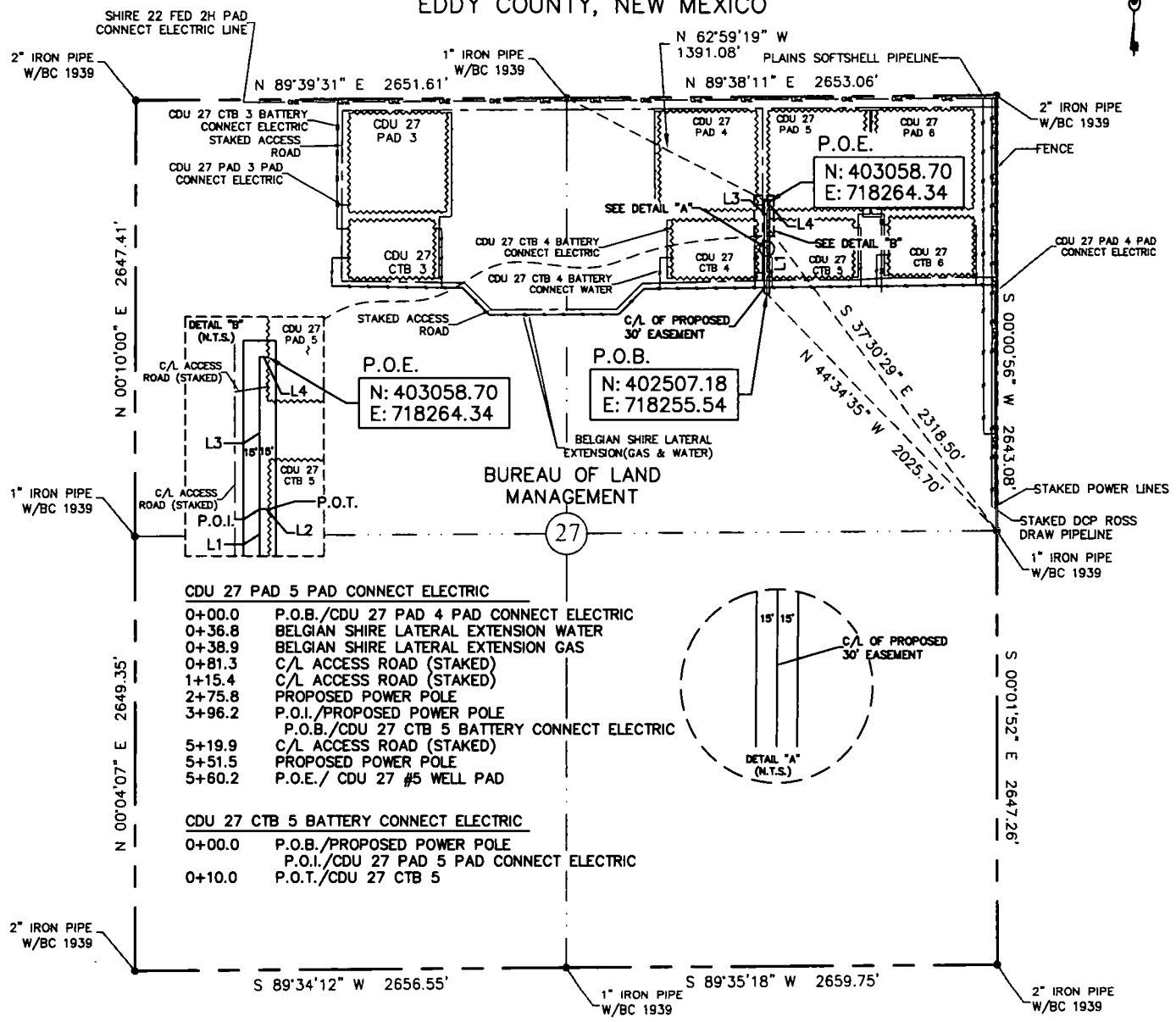
NOTES:

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.

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 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

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

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 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**.

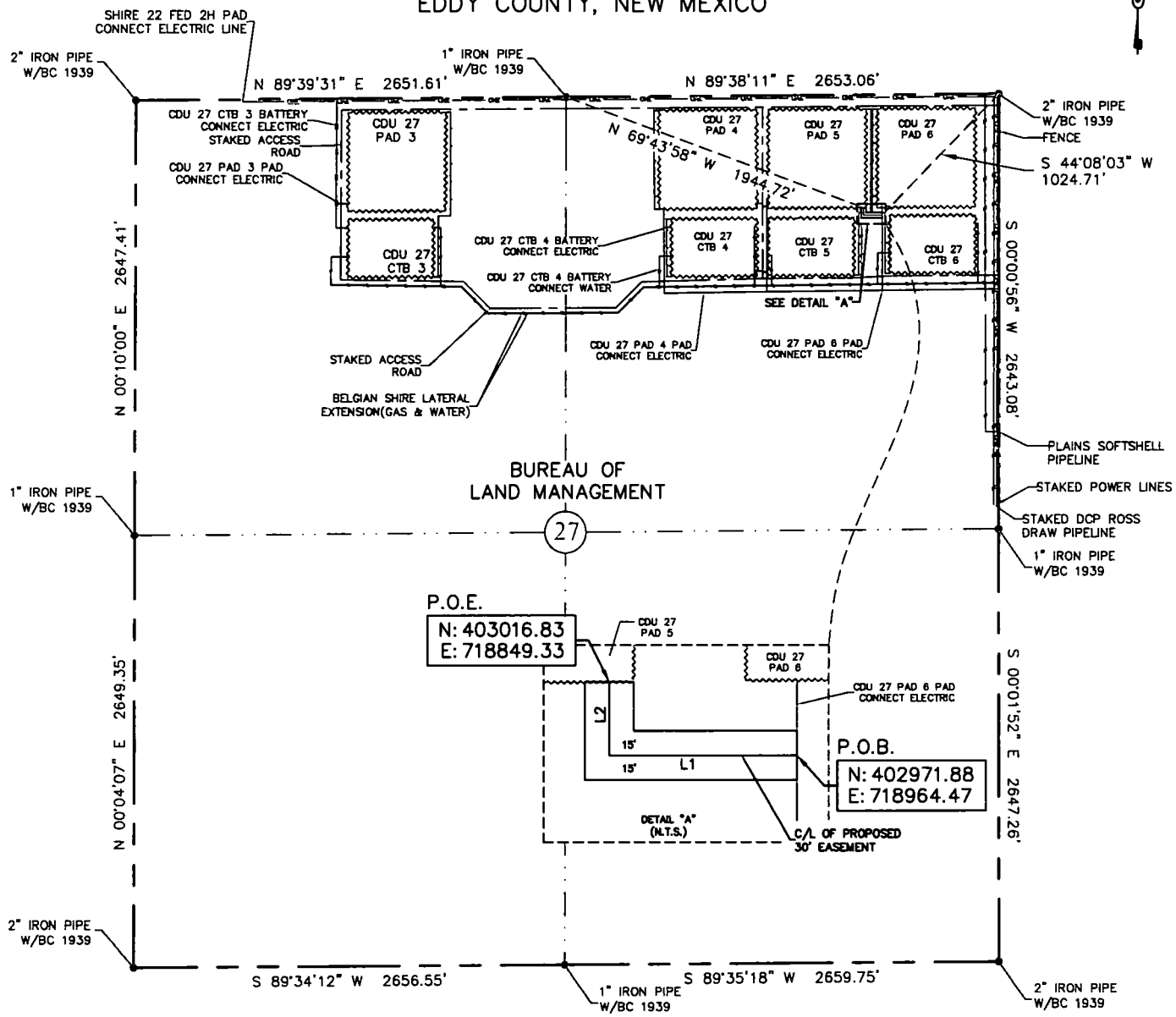
NOTES:

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'

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

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**.

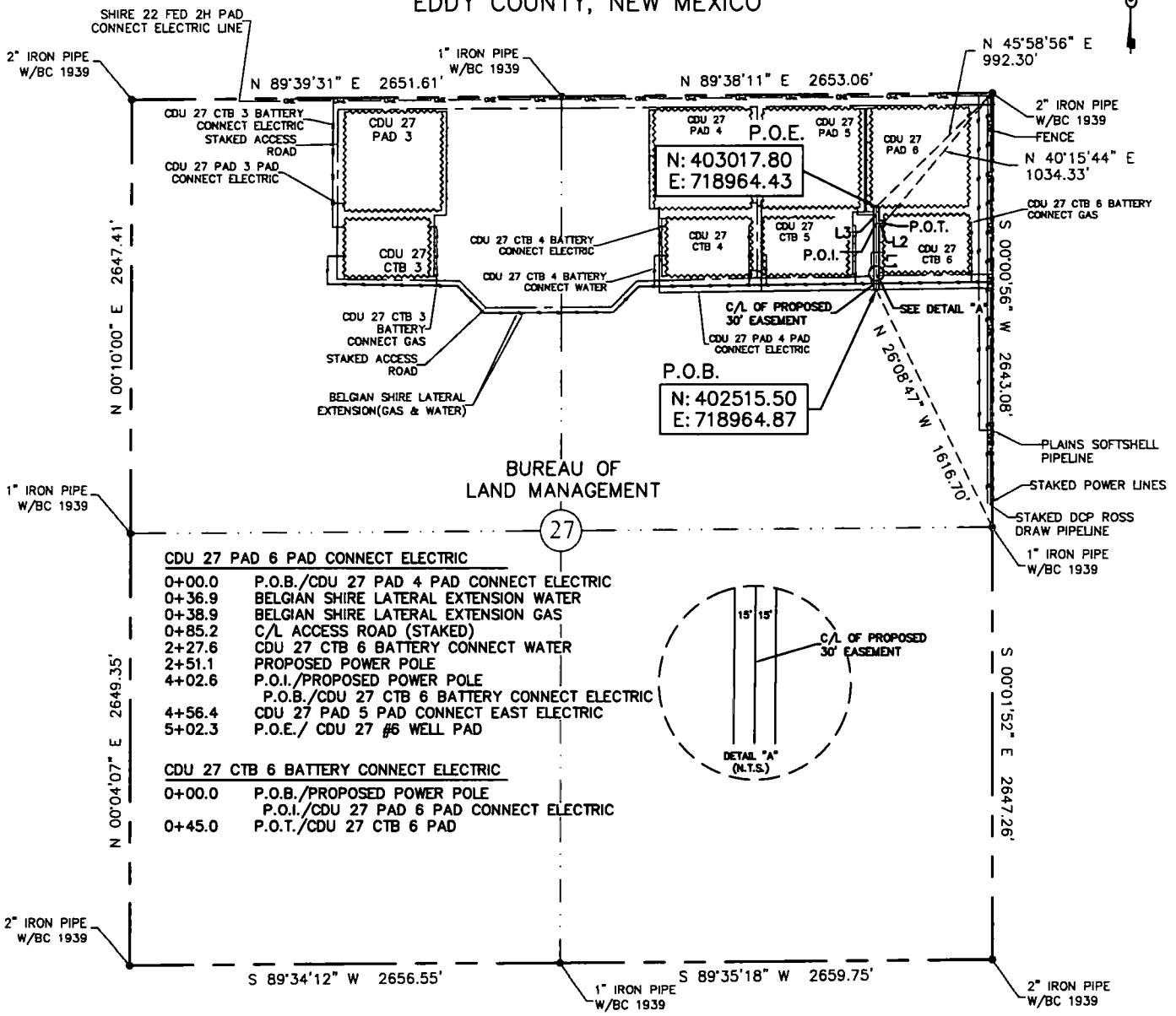
NOTES:

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.

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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, LP.
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;

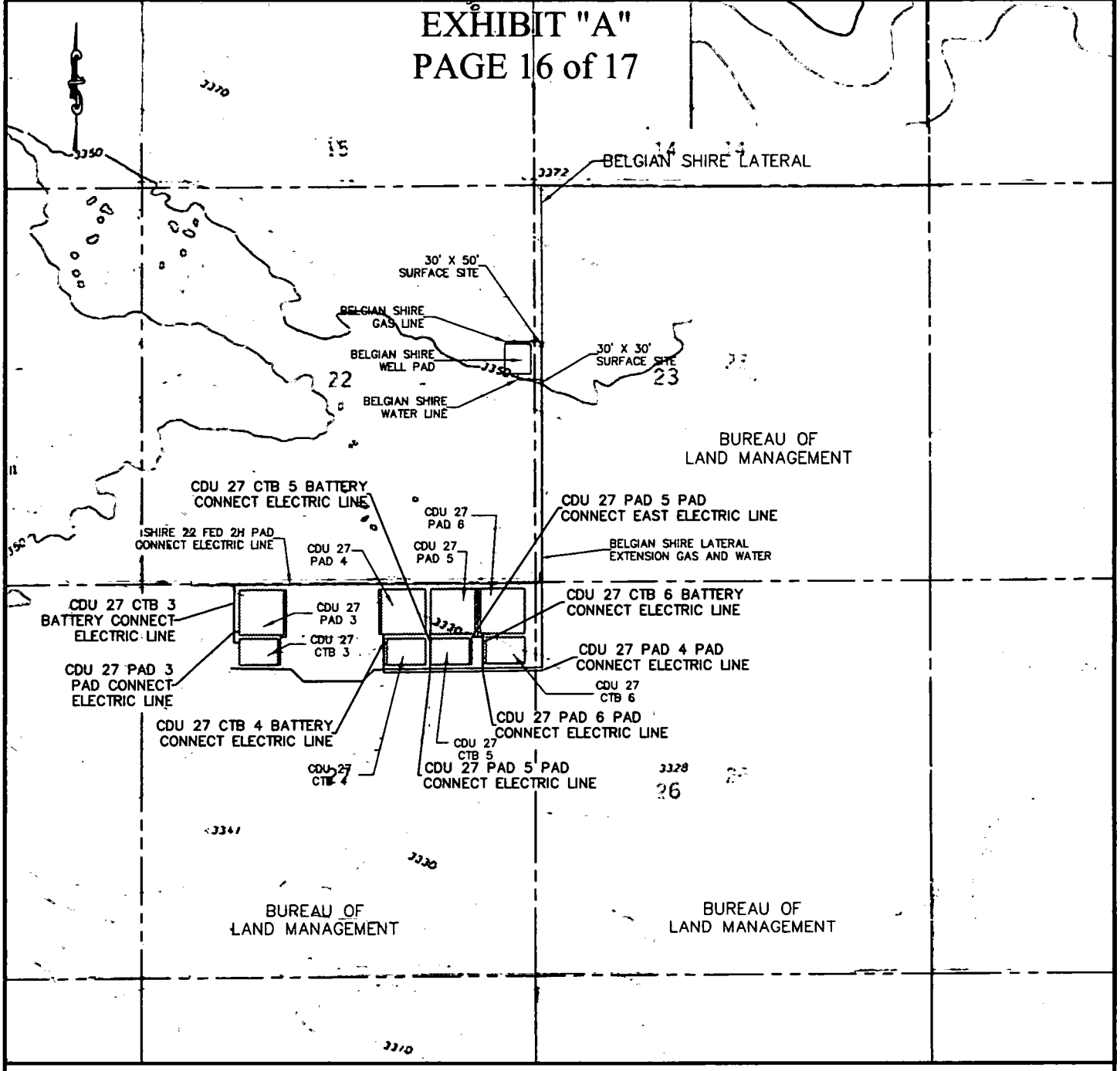
Thence N 00°03'00" W, a distance of 99.74' to the **Point of Ending** having coordinates of Northing=403017.80 feet, Easting=718964.43 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 45°58'56" E a distance 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



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.

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT

Drawn by: WAYNE BEETS

Date: 06/10/2016

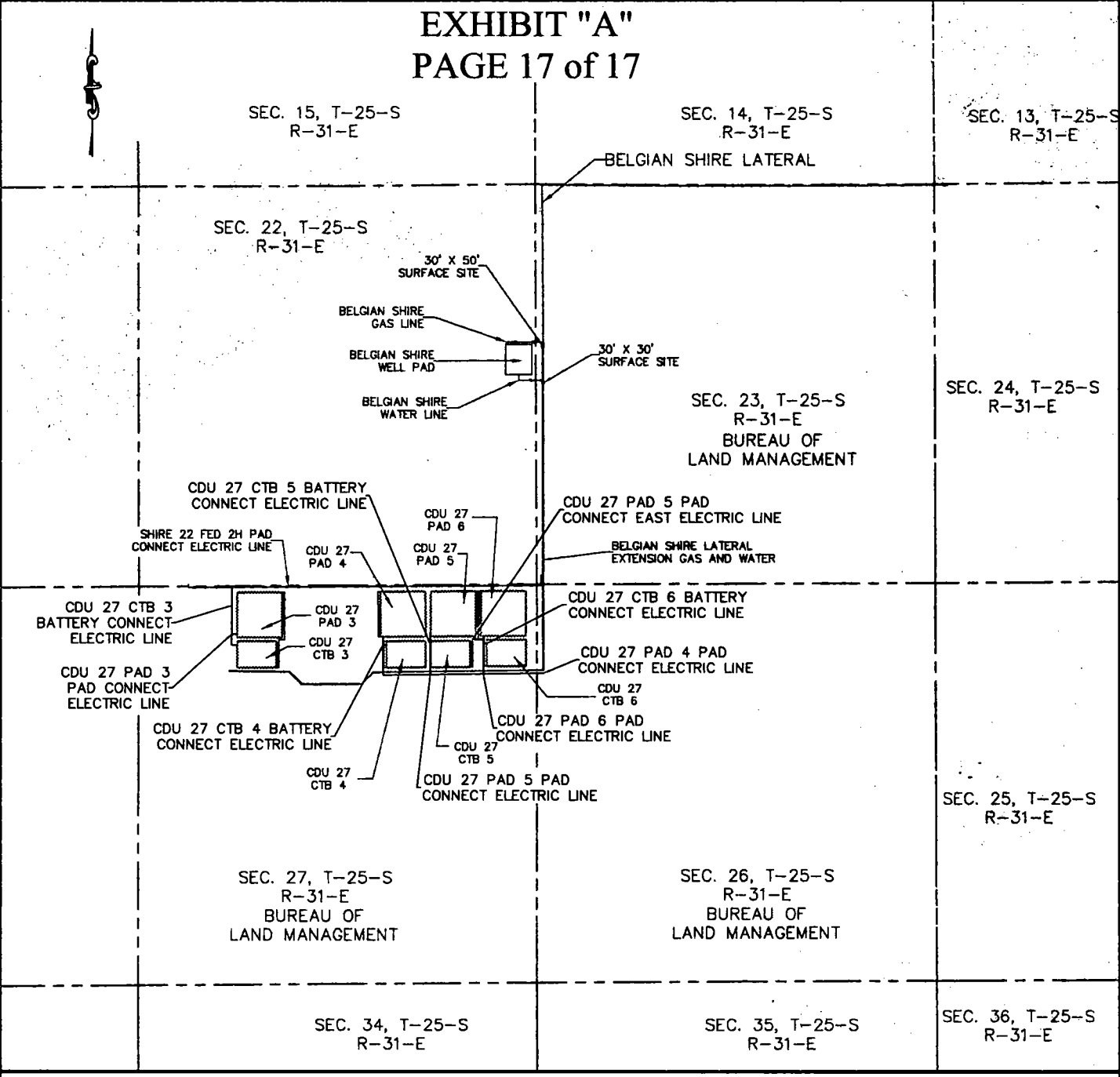
SCALE: 1" = 2000'

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 BEETS

Date: 05/10/2018

SCALE: 1" = 2000'

REVISIONS:

SHEET: 17 OF 17

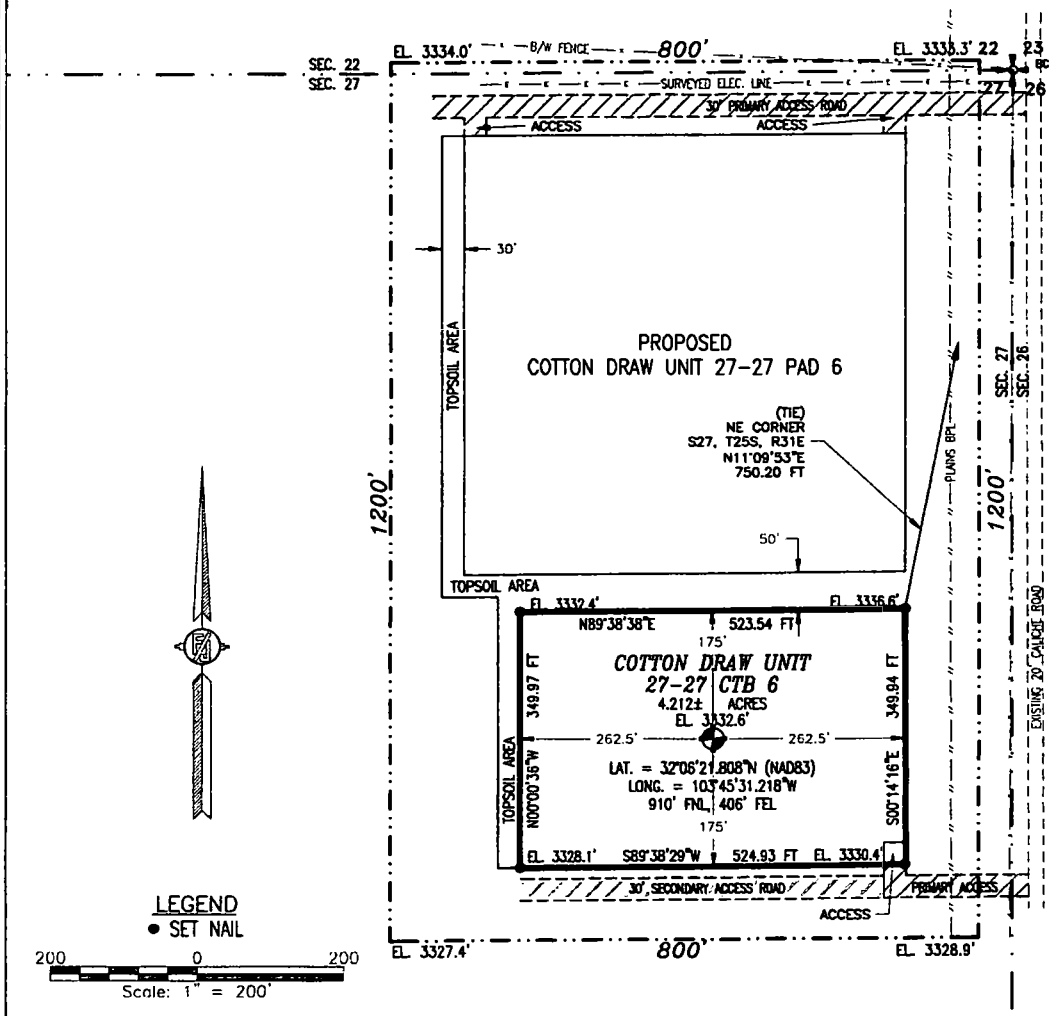
HORIZON ROW LLC

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 17TH DAY OF JUNE 2016.

FILIMON F. JARAMILLO, N.M.P. 12797

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

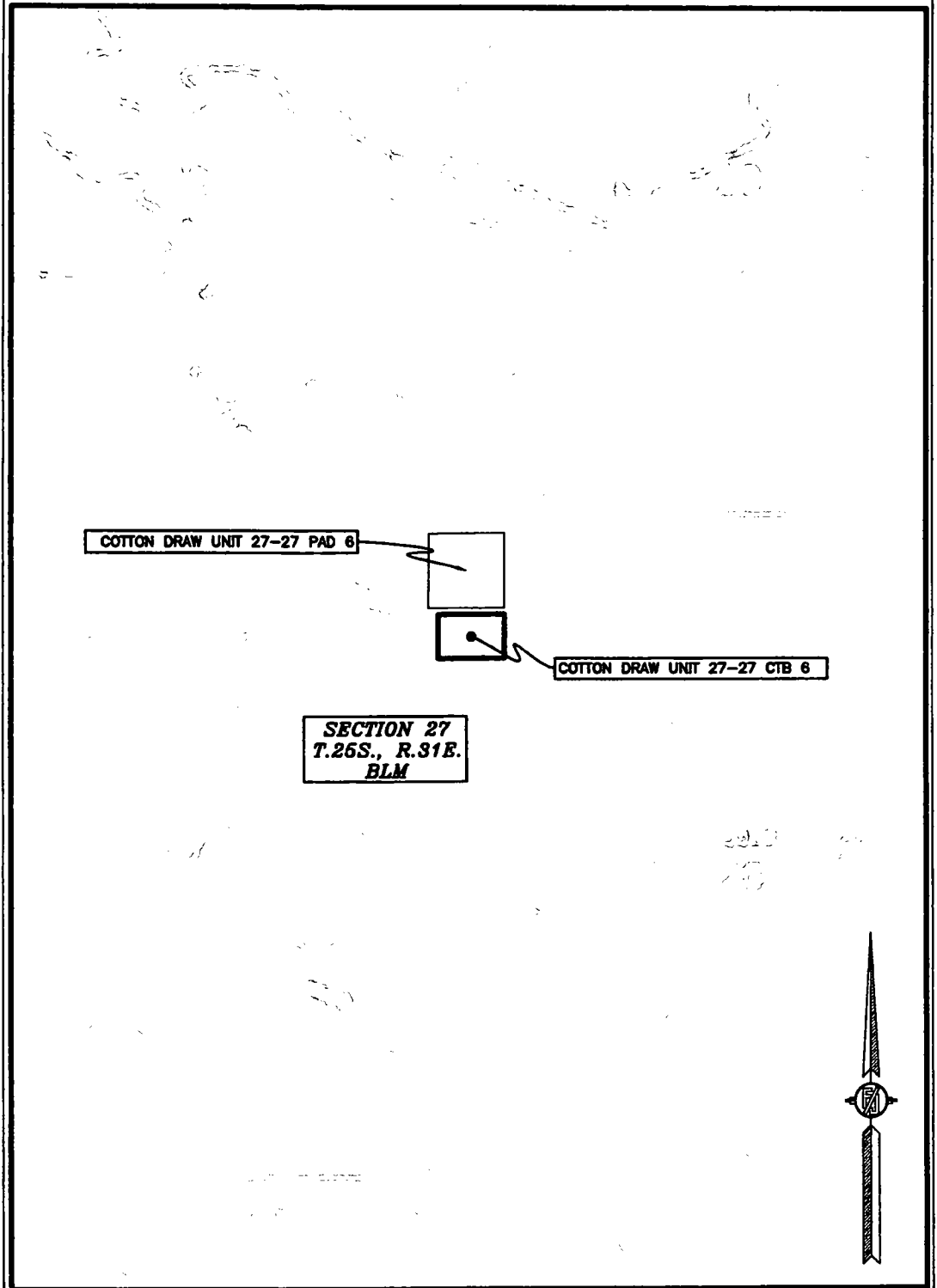
COTTON DRAW UNIT 27-27 CTB 6 (AA000056018)

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



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

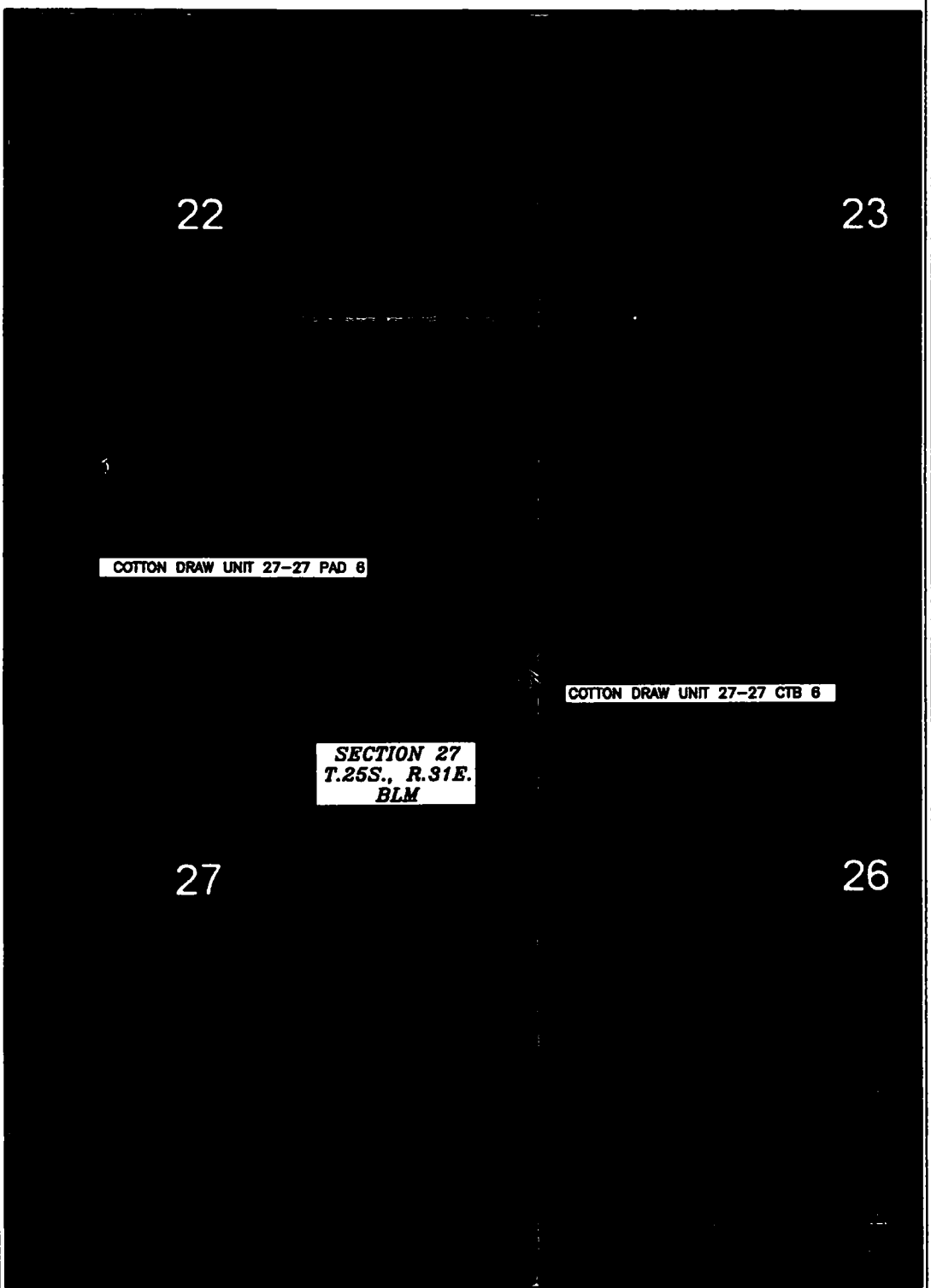
COTTON DRAW UNIT 27-27 CTB 6 (AA000056018)

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

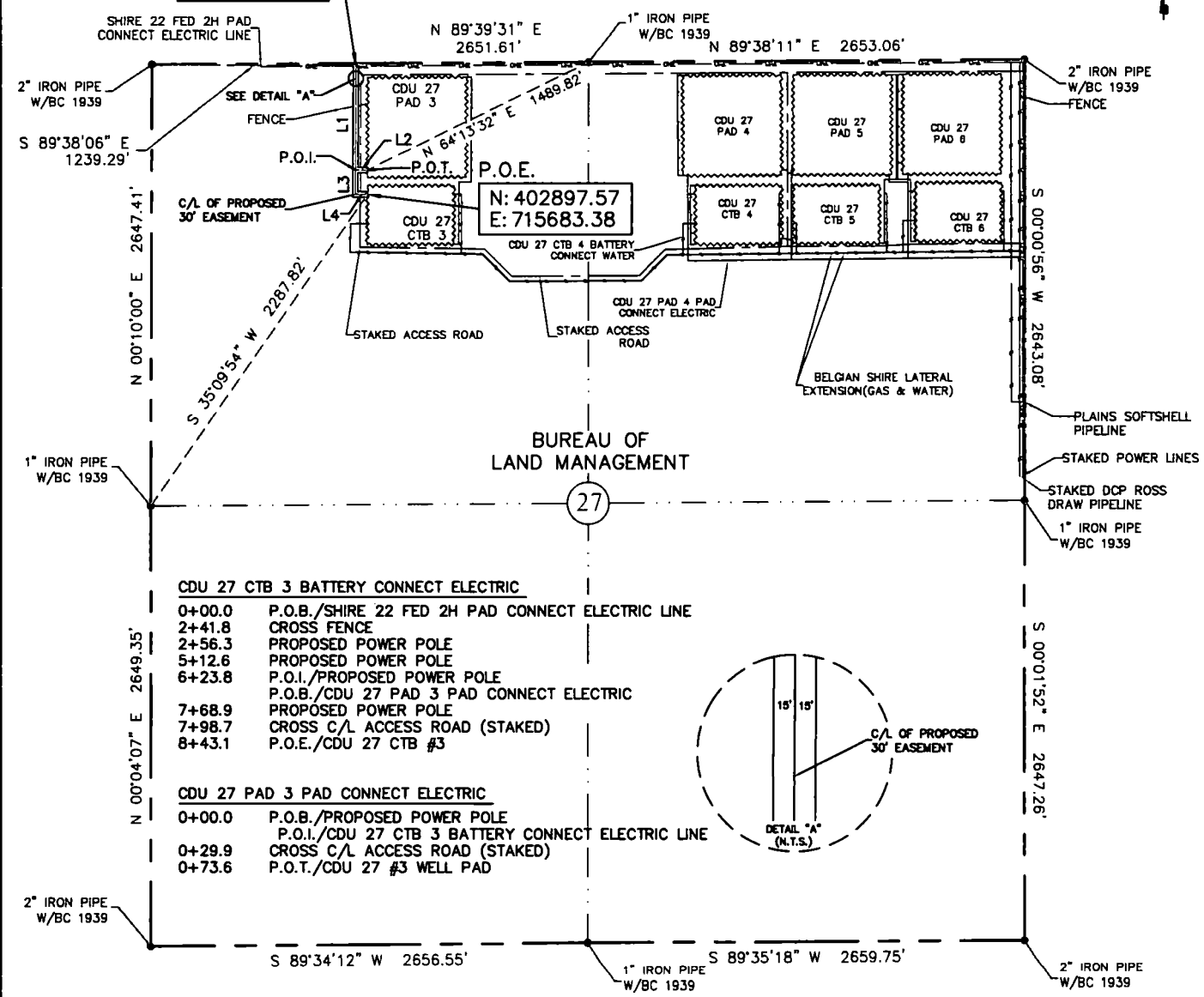


SHEET: 3-3

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.

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**.

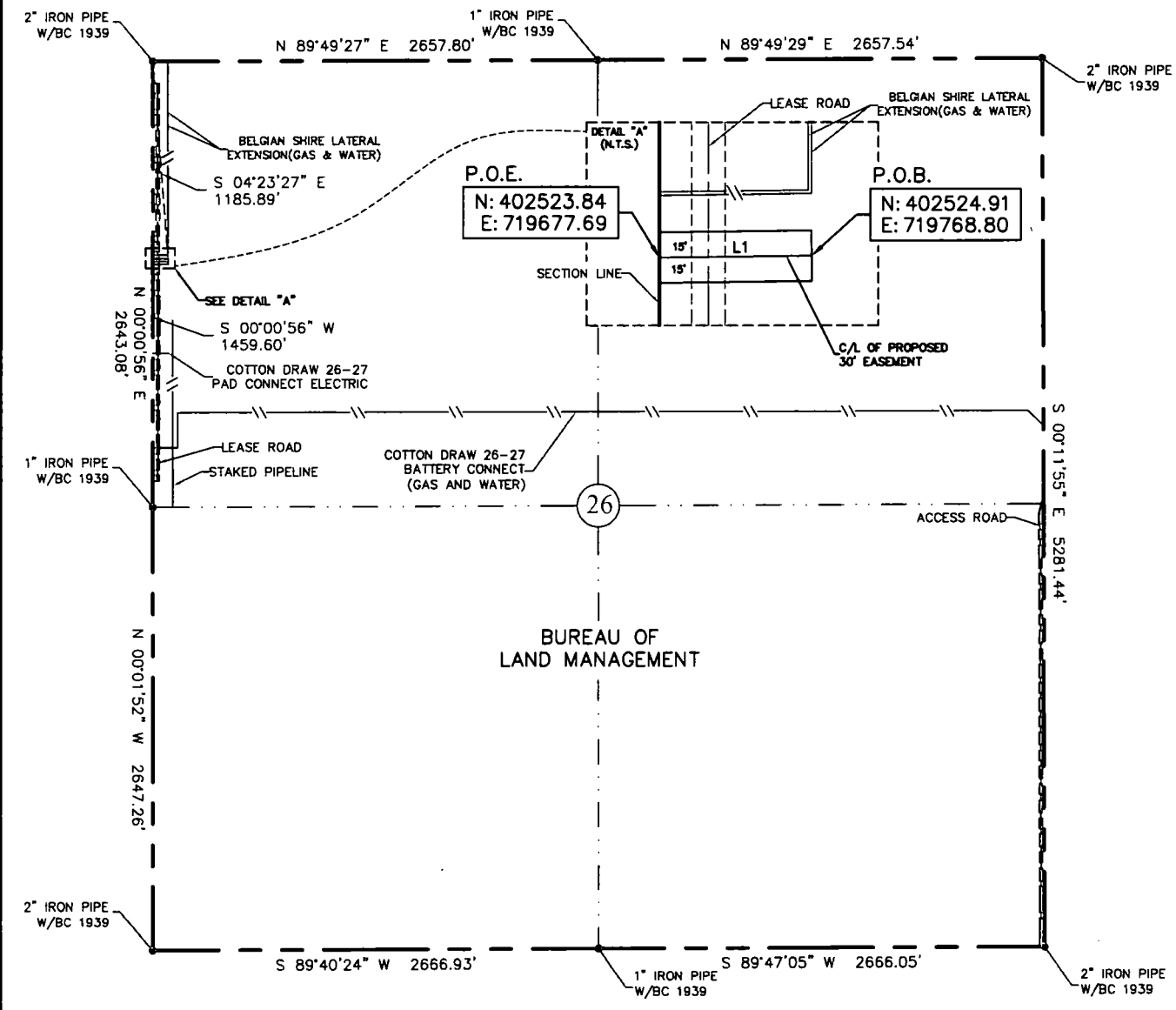
NOTES:

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 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

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**.

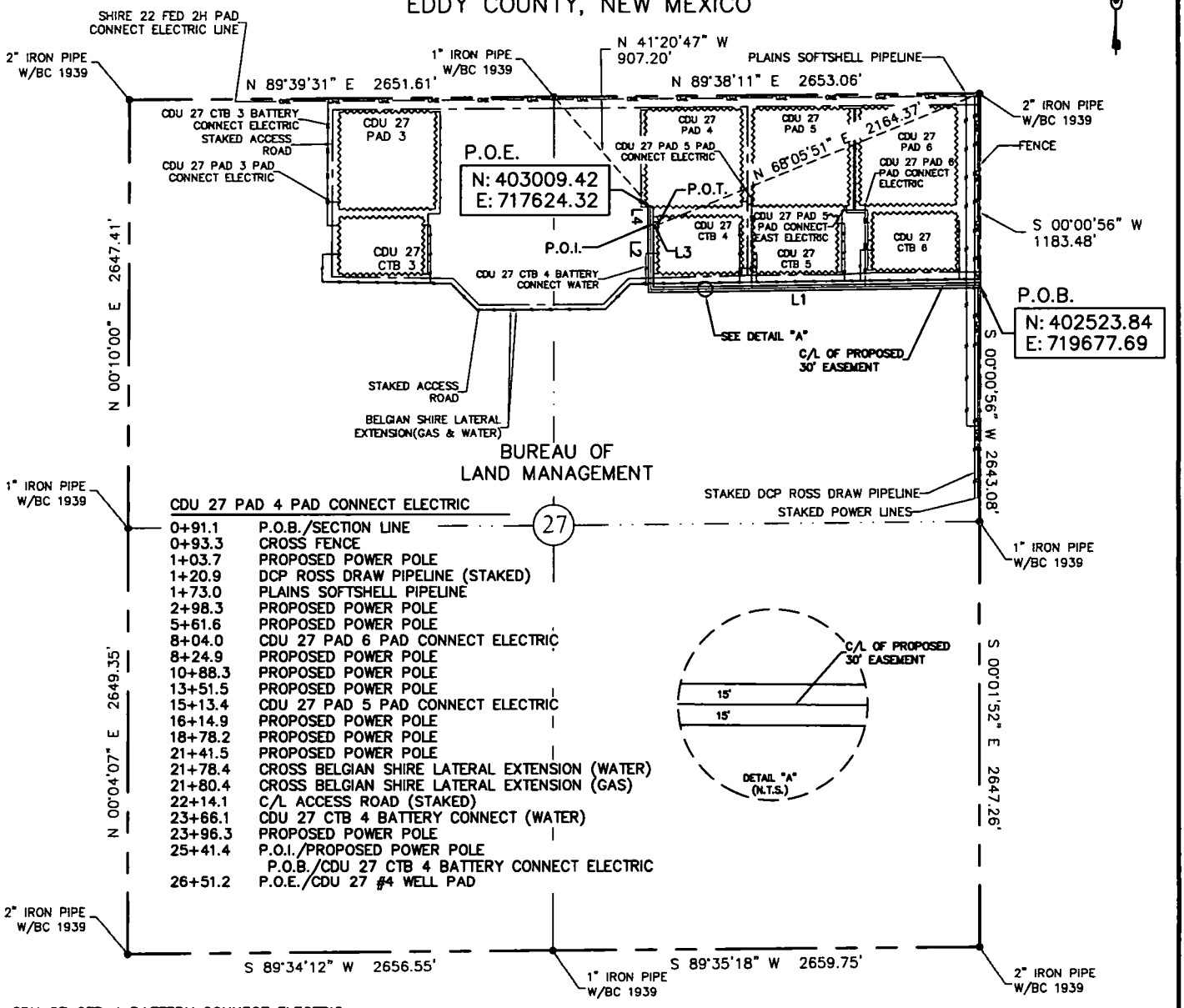
NOTES:

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.

NEW MEXICO 22404 LAMAN PROFESSIONAL SURVEYOR

B.L. Laman PLS #22404
Date Signed: 05-13-2016
Horizonrow, LLC
571 State Street Jasper, TX. 75951
(409) 202-5111
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
Drawn by: WAYNE BEETS
Date: 05/09/2016

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

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**.

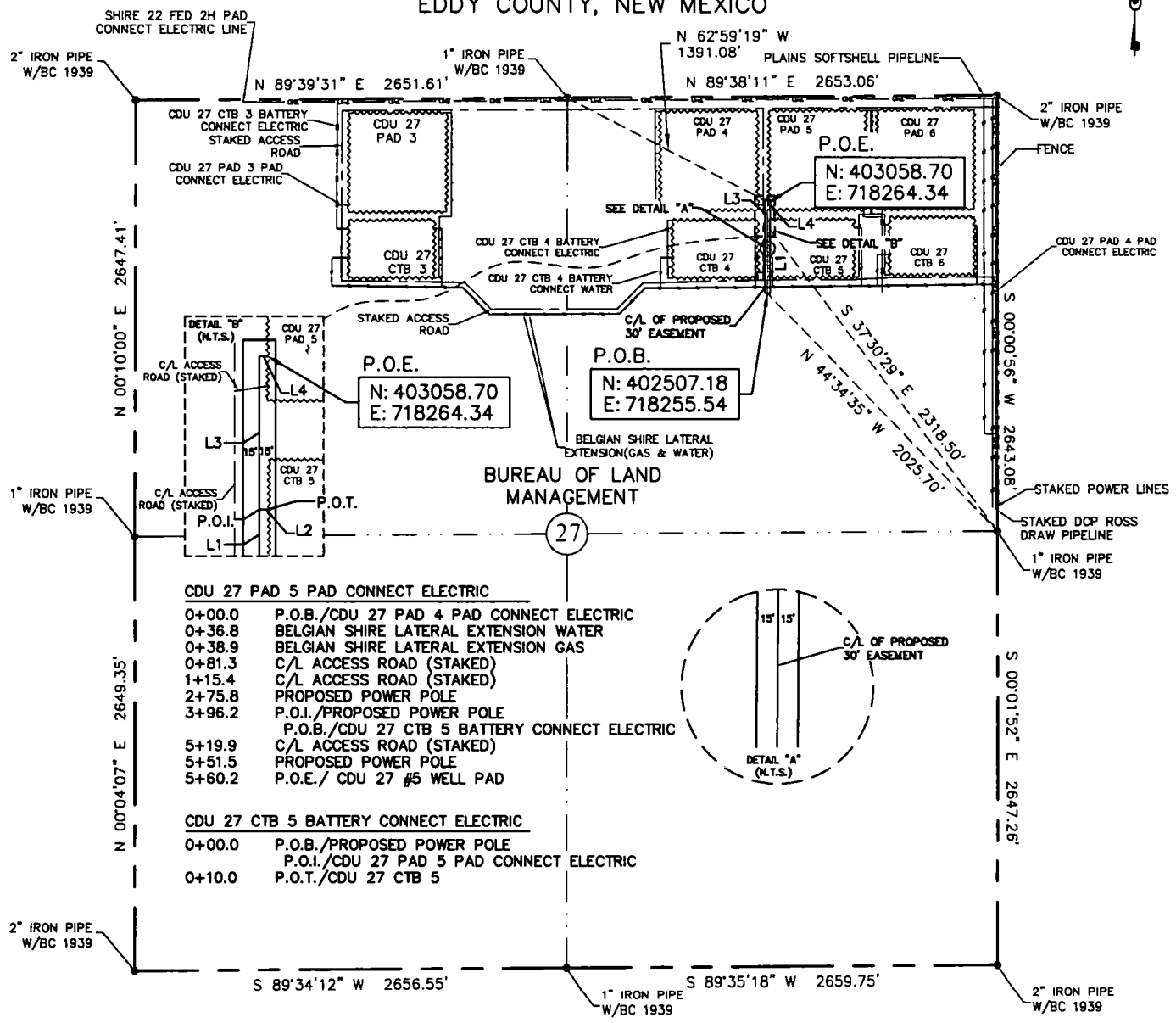
NOTES:

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
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, 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

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

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 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**.

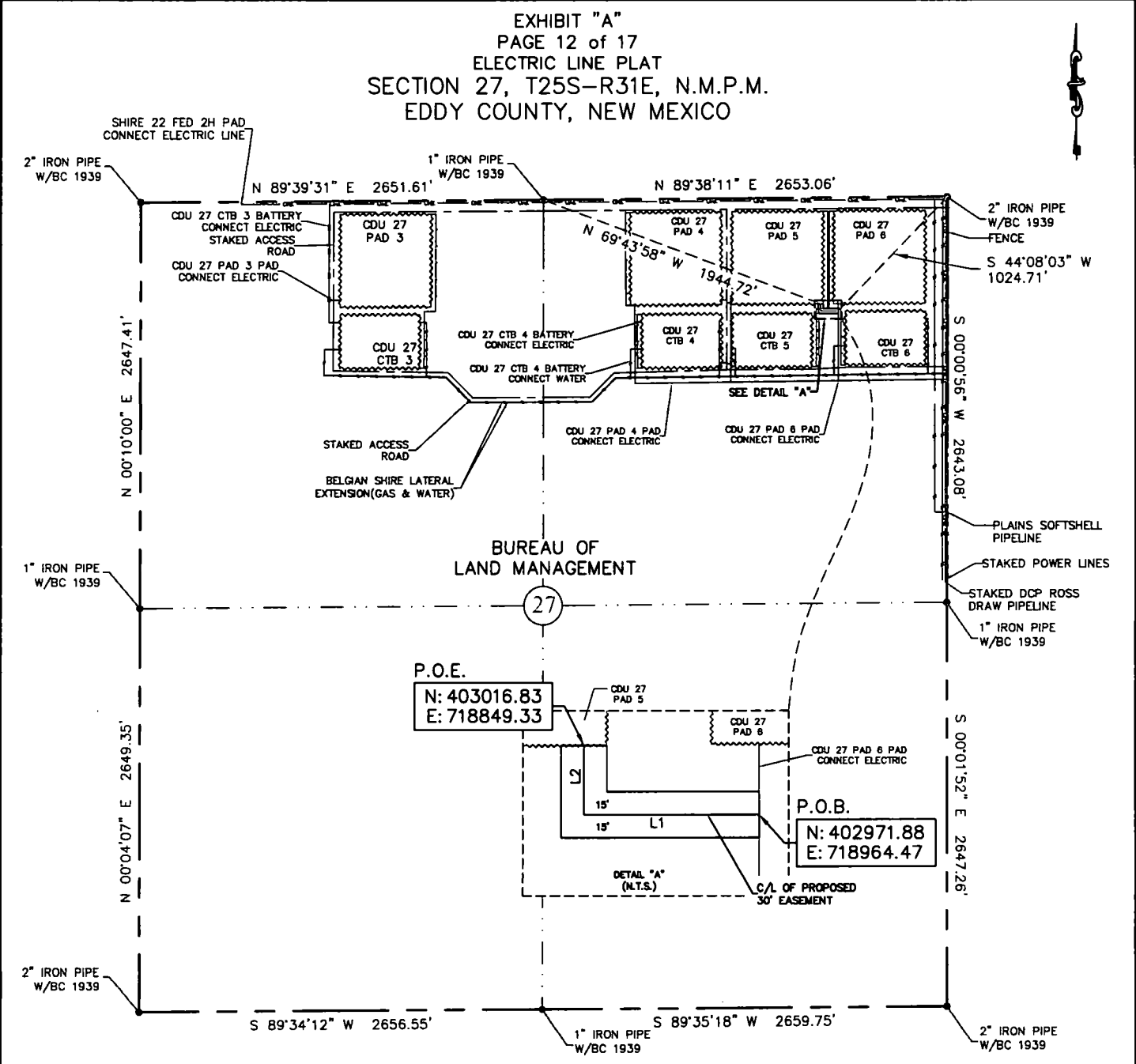
NOTES:

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.

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**.

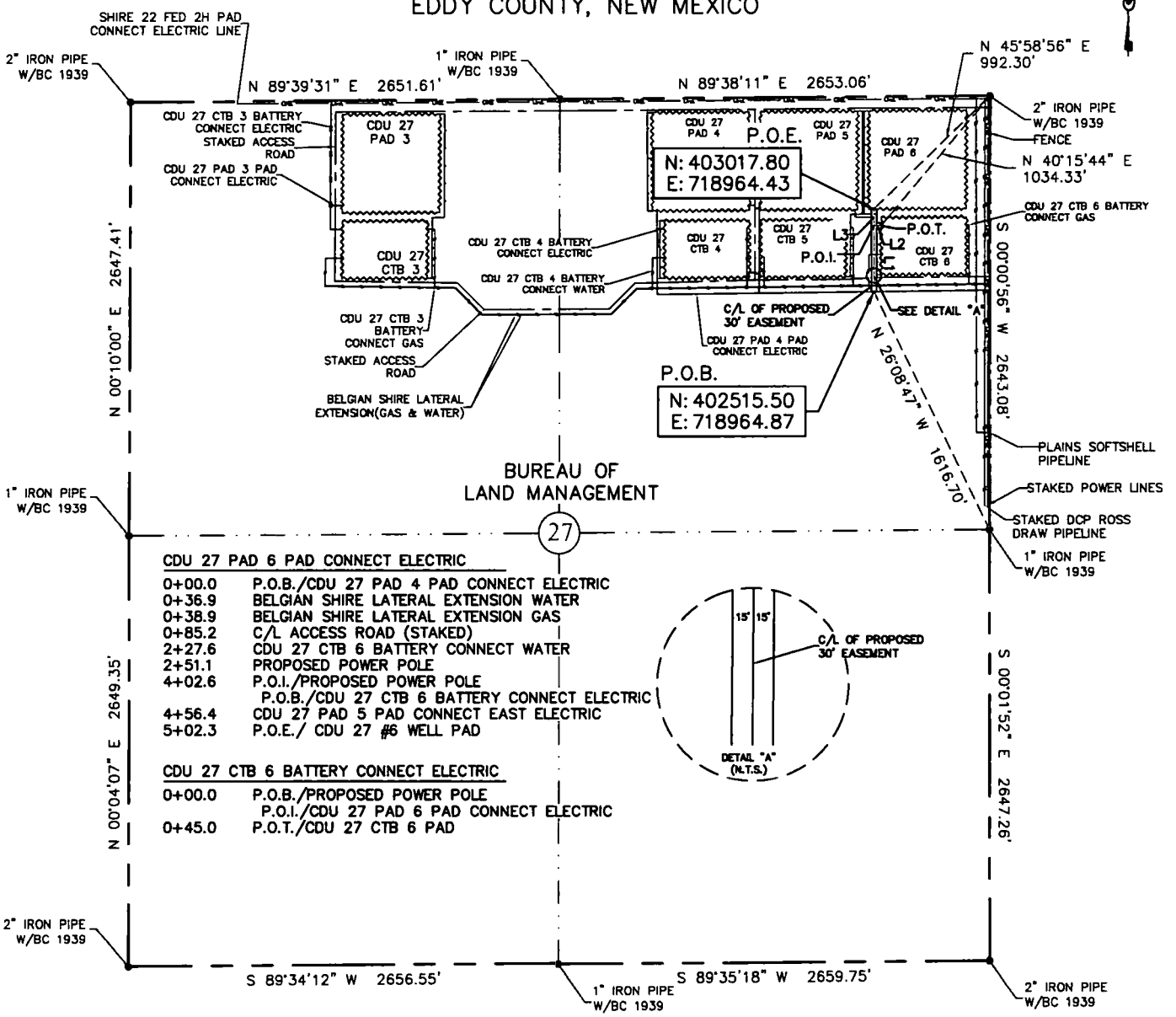
NOTES:

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.

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
Drawn by: WAYNE BEETS
Date: 05/09/2016

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

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;

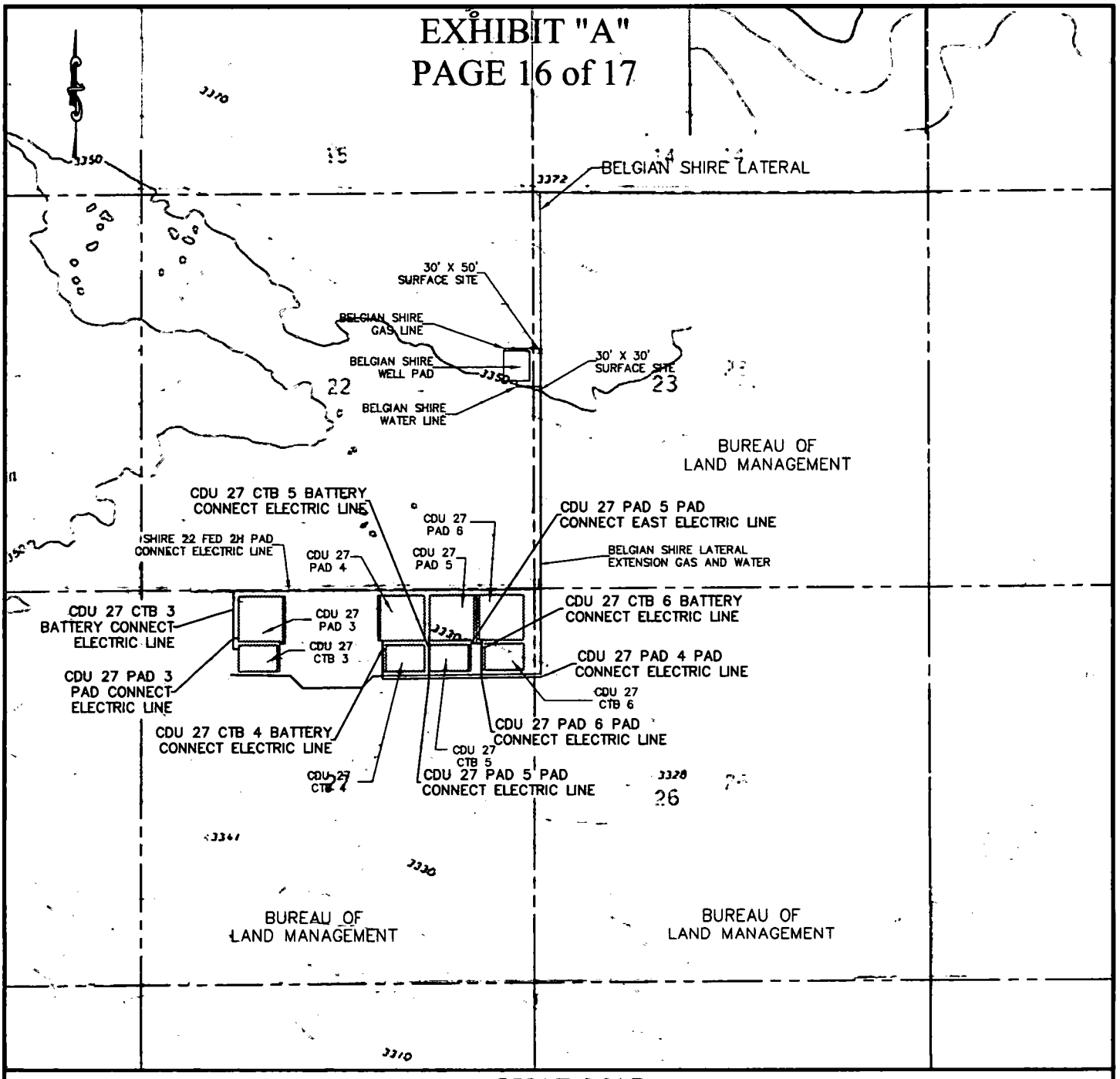
Thence N 00°03'00" W, a distance of 99.74' to the **Point of Ending** having coordinates of Northing=403017.80 feet, Easting=718964.43 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 45°58'56" E a distance 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



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.

PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT

Drawn by: WAYNE BEETS

Date: 05/10/2016

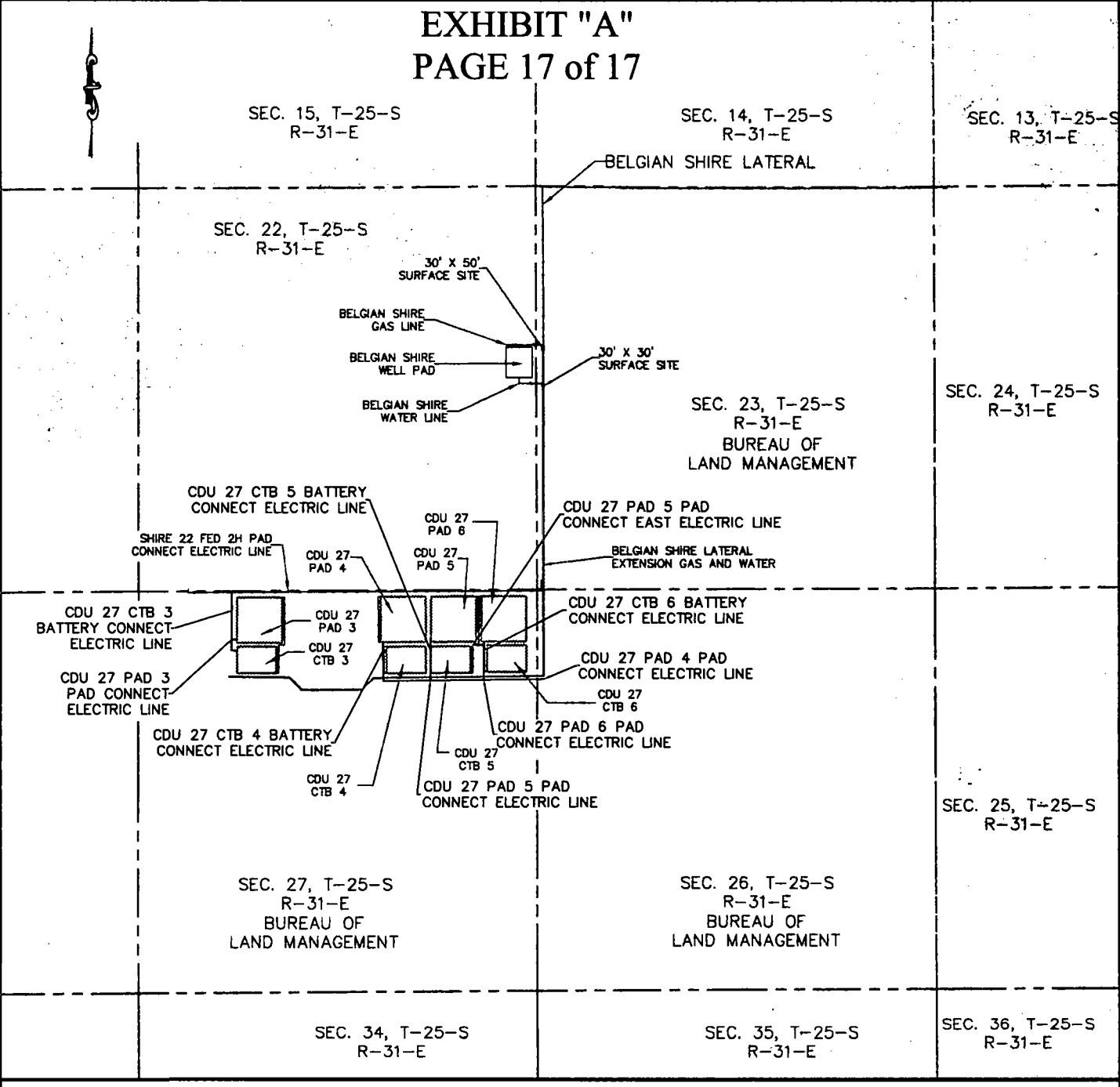
SCALE: 1" = 2000'

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

SCALE: 1" = 2000'

REVISIONS:

SHEET: 17 OF 17

Drawn by: WAYNE SEETS

Date: 05/10/2016

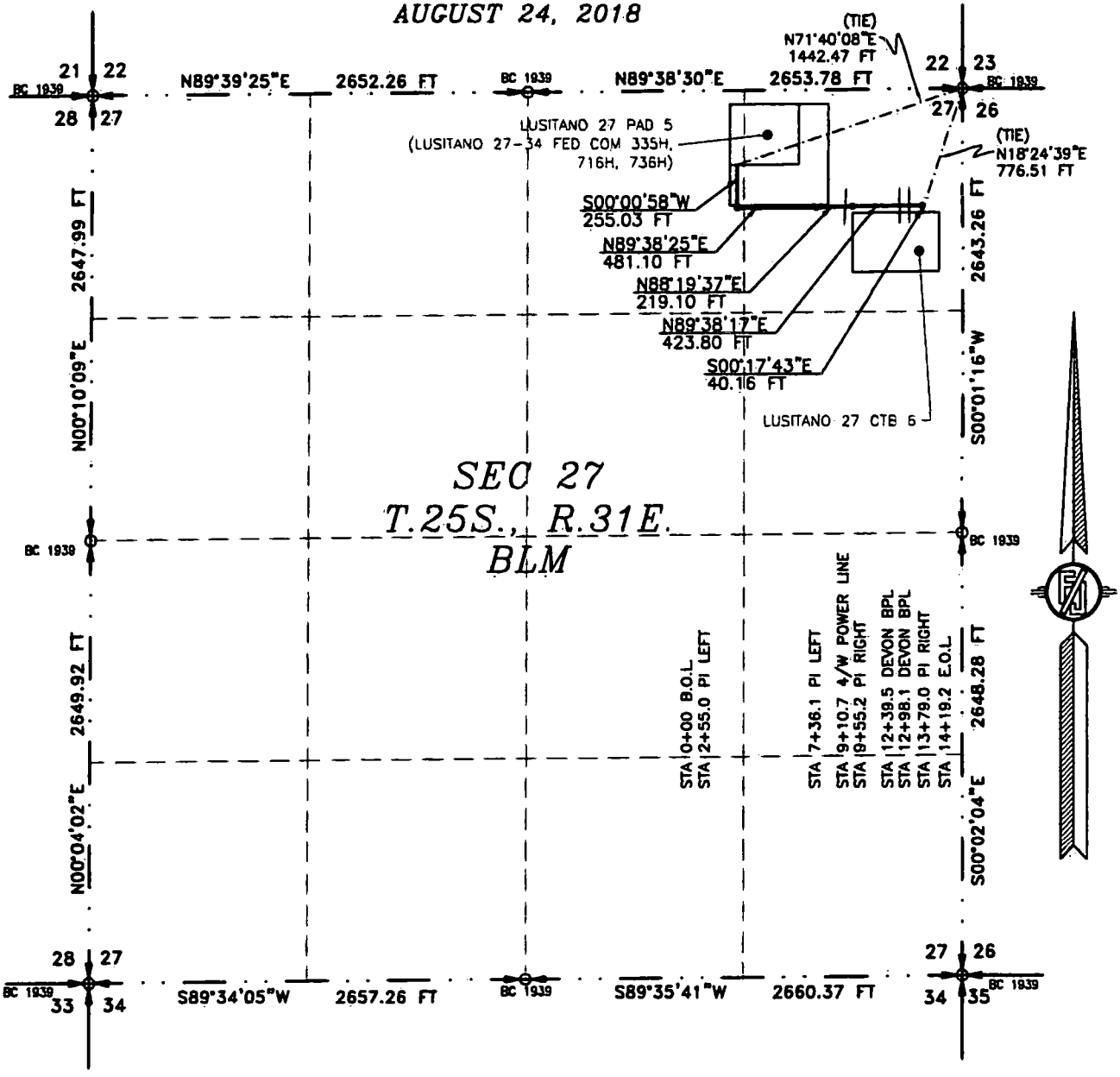
HORIZON ROW LLC

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

SHEET: 1-4

SURVEY NO. 6506

MADRON SURVEYING, INC. 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

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

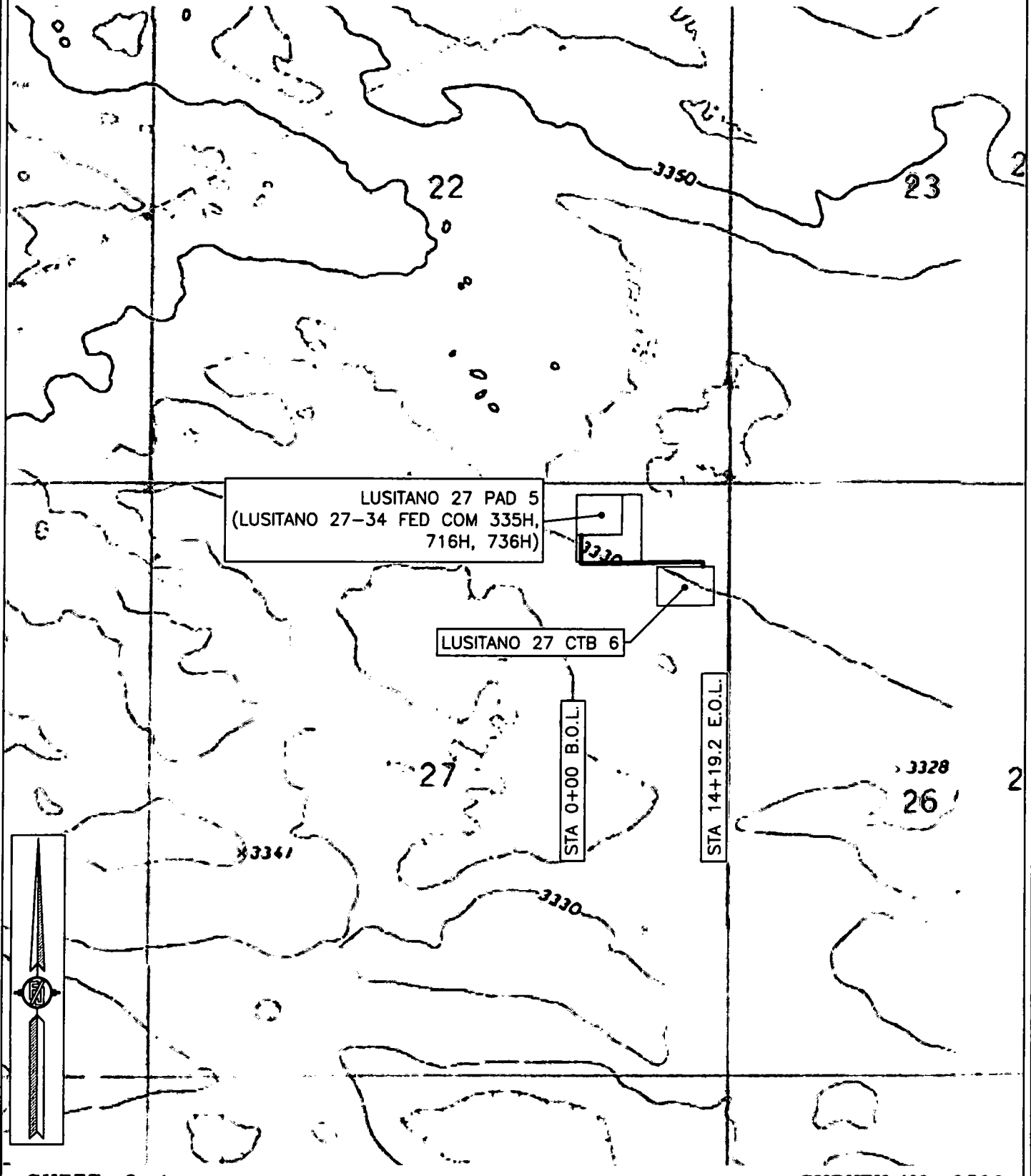
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

FLOWLINE PLAT

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: 3-4

SURVEY NO. 6506

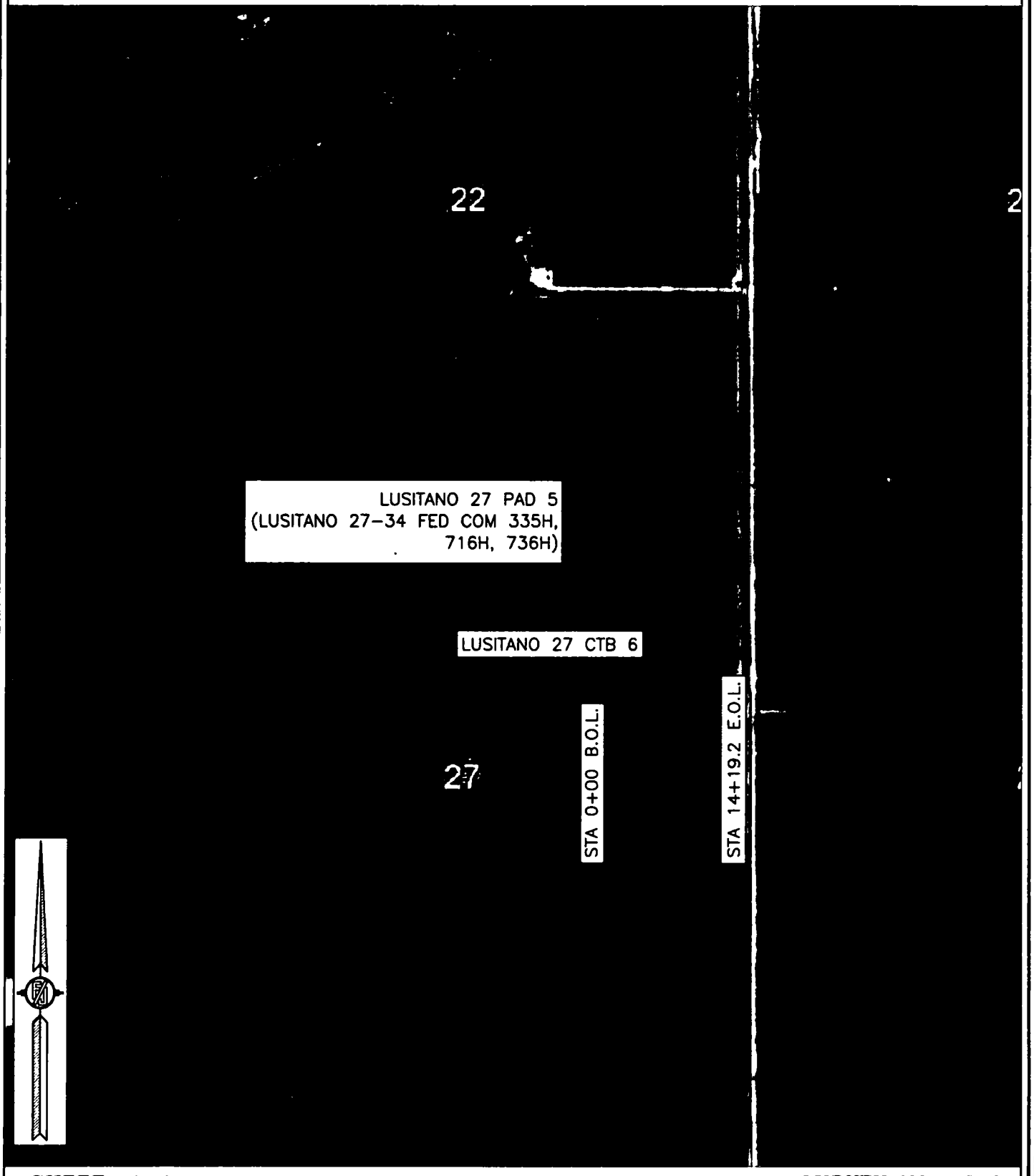
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

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: