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JAN 15 2019

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

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.
NMNM125635

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No.
LUSITANO 27-34 FED COM
734H
319562

9. API Well No.
30-015-45636

2. Name of Operator
DEVON ENERGY PRODUCTION COMPANY LP

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

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

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

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

At surface NWNE / 23 FNL / 1904 FEL / LAT 32.1079089 / LONG -103.7634962

At proposed prod. zone SWSE / 20 FSL / 2310 FEL / LAT 32.0795011 / LONG -103.7648926

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

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

12. County or Parish
EDDY

13. State
NM

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

16. No of acres in lease
720

17. Spacing Unit dedicated to this well
320

18. Distance from proposed location*
to nearest well, drilling, completed,
applied for, on this lease, ft.
1520 feet

19. Proposed Depth
12092 feet / 22381 feet

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

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
3337 feet

22. Approximate date work will start*
01/14/2019

23. Estimated duration
45 days

24. Attachments

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

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).

4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
6. Such other site specific information and/or plans as may be requested by the BLM.

25. Signature
(Electronic Submission)

Name (Printed/Typed)
Linda Good / Ph: (405)552-6558

Date
08/29/2018

Title
Regulatory Compliance Professional

Approved by (Signature)
(Electronic Submission)

Name (Printed/Typed)
Cody Layton / Ph: (575)234-5959

Date
01/11/2019

Title
Assistant Field Manager Lands & Minerals

Office
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.

NSP Required

APPROVED WITH CONDITIONS

RUP 1-16-19.

Approval Date: 01/11/2019

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

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

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

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

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

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 well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM connects this information to an 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 Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

1. SHL: NWNE / 23 FNL / 1904 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.1079089 / LONG: -103.7634962 (TVD: 0 feet, MD: 0 feet)
PPP: NWNE / 100 FNL / 2310 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.10829 / LONG: -103.764805 (TVD: 11753 feet, MD: 11774 feet)
BHL: SWSE / 20 FSL / 2310 FEL / TWSP: 25S / RANGE: 31E / SECTION: 34 / LAT: 32.0795011 / LONG: -103.7648926 (TVD: 12092 feet, MD: 22381 feet)

BLM Point of Contact

Name: Tenille Ortiz

Title: Legal Instruments Examiner

Phone: 5752342224

Email: tortiz@blm.gov

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Review and Appeal Rights

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

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PECOS DISTRICT DRILLING OPERATIONS CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM125635
WELL NAME & NO.:	LUSITANO 27-34 FED COM 734H
SURFACE HOLE FOOTAGE:	23'/N & 1904'/E
BOTTOM HOLE FOOTAGE:	20'/S & 2310'/E
LOCATION:	SECTION 27, T25S, R31E, NMPM
COUNTY:	EDDY

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

A. Hydrogen Sulfide

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

B. CASING

1. The 10-3/4" surface casing shall be set at approximately **928'** (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
 - a. **If cement does not circulate to surface**, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of **6 hours** after pumping cement, ideally between 8-10 hours after completing the cement job.
 - b. WOC time for a primary cement job will be a minimum of **8 hours** or **500 psi** compressive strength, whichever is greater. This is to include the lead cement.
 - c. If cement falls back, remedial cementing will be done prior to drilling out that string.
 - d. WOC time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 psi compressive strength, whichever is greater.

2. The 7-5/8" intermediate casing shall be set at approximately 12293' and cemented to surface.
 - a. **If cement does not circulate to surface**, see B.1.a, b, c & d.
 - b. 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.
 - i. 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 the second stage.
 - ii. Second stage via DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
3. The minimum required fill of cement behind the 5-1/2" production casing is:
 - a. Cement shall tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Alternate Intermediate Casing Design:

4. The 13-3/8" surface casing shall be set at approximately 928' (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
 - a. **If cement does not circulate to surface**, see B.1.a, b, c & d.
5. The 8-5/8" intermediate casing shall be set at approximately 12293' and cemented to surface.
 - a. **If cement does not circulate to surface**, see B.1.a, b, c & d.
 - b. 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.
 - i. 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 the second stage.
 - ii. Second stage via DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
6. The minimum required fill of cement behind the 5-1/2" production casing is:
 - a. Cement shall 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. 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**.
3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be **10,000 (10M) psi**. **Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi).**
4. Variance approved to run intermediate casing which does not meet BLM standards for collapse rating. **Operator shall keep pipe full while running intermediate casing.**

DR 1/10/2019

GENERAL REQUIREMENTS

1. The BLM is to be notified in advance for a representative to witness:
 - a. Spudding well (minimum of 24 hours)
 - b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
 - c. BOPE tests (minimum of 4 hours)
 - ☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)
 - ☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822
 - ☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)
393-3612
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
4. The record of the drilling rate along with the GR/N well log (one log per well pad is acceptable) run from TD to surface (horizontal well – vertical portion of hole) shall

be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity 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 integrity 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

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

D. WASTE MATERIAL AND FLUIDS

1. All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.
2. Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

PECOS DISTRICT SURFACE USE CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM125635
WELL NAME & NO.:	LUSITANO 27-34 FED COM 734H
SURFACE HOLE FOOTAGE:	23'/N & 1904'/E
BOTTOM HOLE FOOTAGE:	20'/S & 2310'/E
LOCATION:	SECTION 27, T25S, R31E, NMPM
COUNTY:	EDDY

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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.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology,**
- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Lesser Prairie-Chicken Timing Stipulations
 - Below Ground-level Abandoned Well Marker
 - Cave/Karst
 - Range
 - Watershed
- ☐ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines
- Abandonment & Reclamation**

I. GENERAL PROVISIONS

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

II. PERMIT EXPIRATION

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

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

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

IV. NOXIOUS WEEDS

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

V. SPECIAL REQUIREMENT(S)

Timing Limitation Stipulation / Condition of Approval for lesser prairie-chicken:

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

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

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

Temporary Fence Crossing Requirement

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

Cattle Guard Requirement

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

Livestock Watering Requirement

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

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

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

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

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

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

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

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

Construction Mitigation

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

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

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 valves, or similar systems will be installed for pipelines and tanks to minimize the effects of line failures used in production or drilling.

Residual and Cumulative Mitigation

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

Plugging and Abandonment Mitigation

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

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

VI. CONSTRUCTION

A. NOTIFICATION

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

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

B. TOPSOIL

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

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

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

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

D. FEDERAL MINERAL MATERIALS PIT

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

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

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

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing

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

G. ON LEASE ACCESS ROADS**Road Width**

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

Surfacing

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

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

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

Crowning

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

Ditching

Ditching shall be required on both sides of the road.

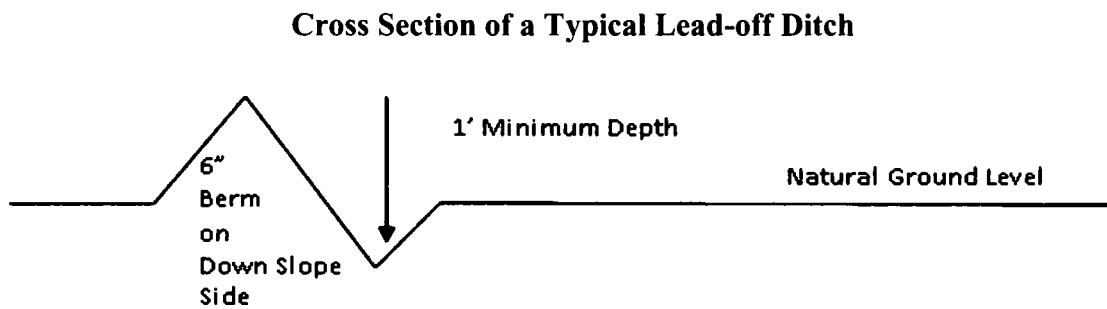
Turnouts

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

Drainage

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

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



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:

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

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.

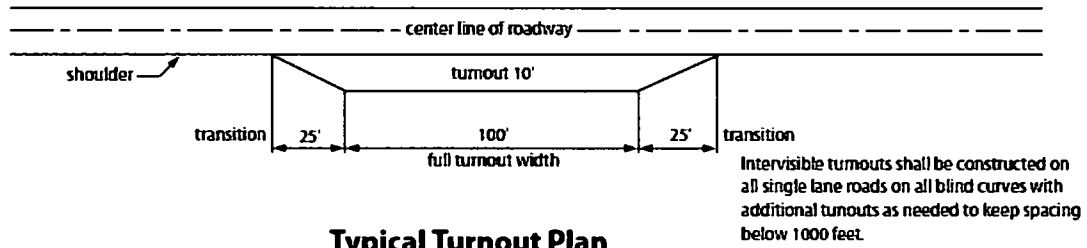
Public Access

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

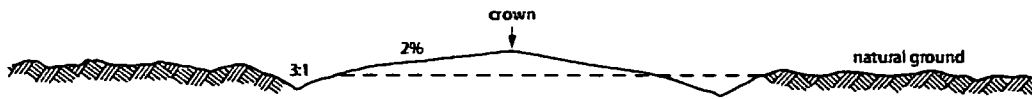
Construction Steps

1. Salvage topsoil
2. Construct road

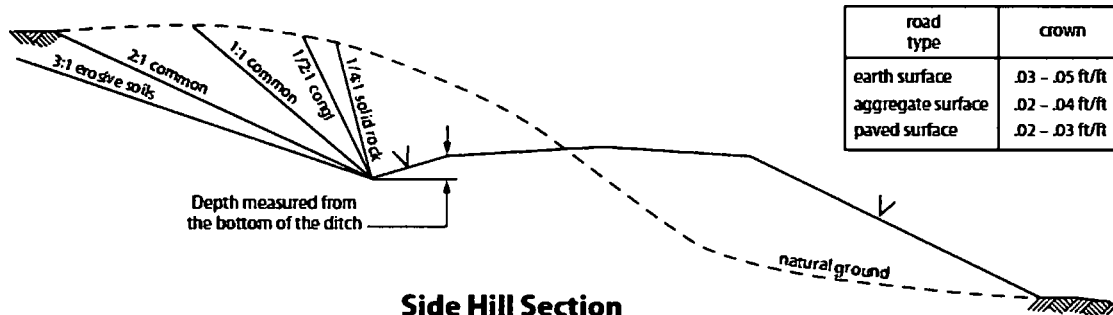
3. Redistribute topsoil
4. Revegetate slopes



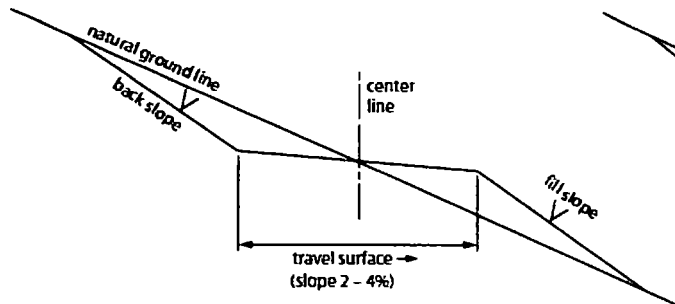
Typical Turnout Plan



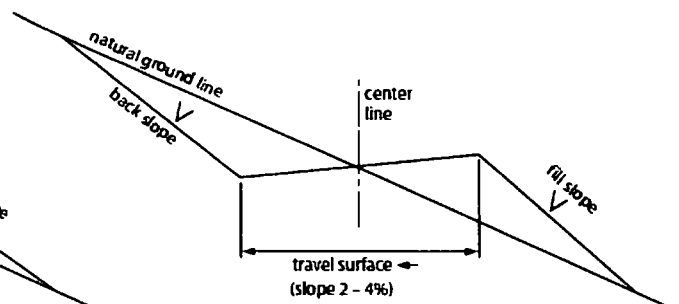
Level Ground Section



Side Hill Section



Typical Outsloped Section



Typical Insloped Section

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

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

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

Exclosure Netting (Open-top Tanks)

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

Chemical and Fuel Secondary Containment and Exclosure Screening

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

Open-Vent Exhaust Stack Exclosures

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

Containment Structures

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

Painting Requirement

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

BURIED PIPELINE STIPULATIONS

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

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

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting

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

5. All construction and maintenance activity will be confined to the authorized right-of-way.
6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.
7. The maximum allowable disturbance for construction in this right-of-way will be 30 feet:
 - Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 20 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
 - Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
 - The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)
8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.
9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

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

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

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

- | | |
|--|--|
| ☐ seed mixture 1 | ☐ seed mixture 3 |
| ☐ seed mixture 2 | ☐ seed mixture 4 |
| ☒ seed mixture 2/LPC | ☐ Aplomado Falcon Mixture |

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

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

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

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

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

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

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

19. Special Stipulations:

Lesser Prairie-Chicken

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

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

STANDARD STIPULATIONS FOR OVERHEAD ELECTRIC DISTRIBUTION LINES

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

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

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
4. There will be no clearing or blading of the right-of-way unless otherwise agreed to in writing by the Authorized Officer.
5. Power lines shall be constructed and designed in accordance to standards outlined in "Suggested Practices for Avian Protection on Power lines: The State of the Art in 2006" Edison Electric Institute, APLIC, and the California Energy Commission 2006 . The holder shall assume the burden and expense of proving that pole designs not shown in the above publication deter raptor perching, roosting, and nesting. Such proof shall be provided by a raptor expert approved by the Authorized Officer. The BLM reserves the right to require modification or additions to all powerline structures placed on this right-of-way, should they be necessary to ensure the safety of large perching birds. Such modifications and/or additions shall be made by the holder without liability or expense to the United States.

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

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

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

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

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

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

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

11. Special Stipulations:

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

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken:

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

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

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

VIII. INTERIM RECLAMATION

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

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

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

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

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

IX. FINAL ABANDONMENT & RECLAMATION

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

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

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

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

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

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

Seed Mixture for LPC Sand/Shinnery Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
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



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

Operator Certification Data Report

01/14/2019

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: 08/29/2018

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



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

Application Data Report

01/14/2019

APD ID: 10400033536

Submission Date: 08/29/2018

Highlighted data
reflects the most
recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400033536

Tie to previous NOS?

Submission Date: 08/29/2018

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

Master 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: 734H

Well API Number:

Field/Pool or Exploratory? Field and Pool

Field Name: PURPLE SAGE

Pool Name: WOLFCAMP

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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:

Number: 4

LUSITANO 27 WELLPAD

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: 1520 FT

Distance to lease line: 235 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Lusitano_27_34_Fed_Com_734H_C_102_signed_20180828062000.pdf

Lusitano_27_34_Fed_Com_734H_Additional_points_required_20180828062037.pdf

Well work start Date: 01/14/2019

Duration: 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 6437

	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	23	FNL	190 4	FEL	25S	31E	27	Aliquot NWNE	32.10790 89	- 103.7634 962	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	333 7	0	0
KOP Leg #1	50	FNL	231 0	FEL	25S	31E	27	Aliquot NWNE	32.10842	- 103.7648 05	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	- 818 2	115 33	115 19
PPP Leg #1	100	FNL	231 0	FEL	25S	31E	27	Aliquot NWNE	32.10829	- 103.7648 05	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	- 841 6	117 74	117 53

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

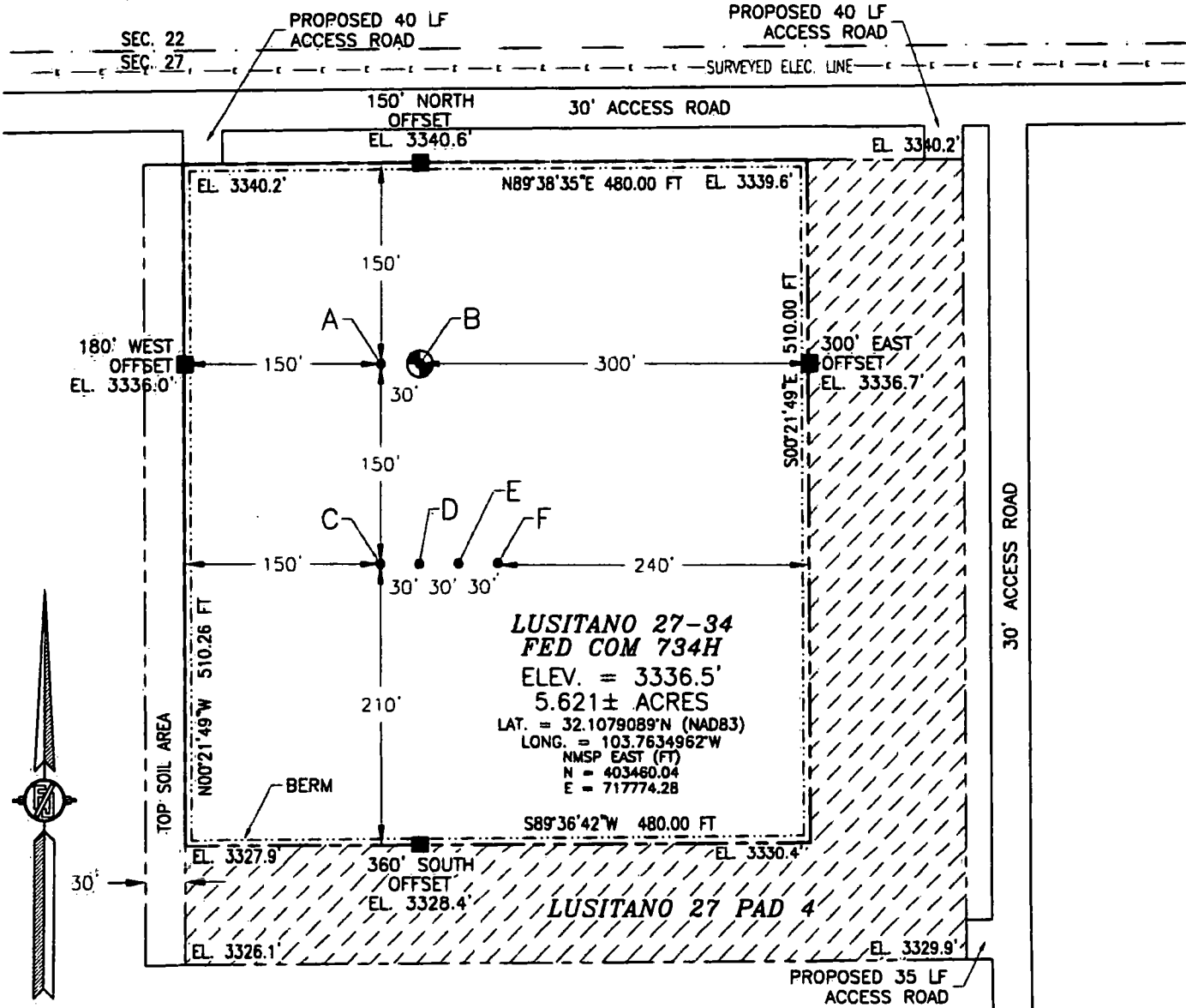
Well Number: 734H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
EXIT Leg #1	20	FSL	231 0	FEL	25S	31E	34	Aliquot SWSE	32.07950 11	- 103.7648 926	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 125635	- 875 5	223 81	120 92
BHL Leg #1	20	FSL	231 0	FEL	25S	31E	34	Aliquot SWSE	32.07950 11	- 103.7648 926	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 125635	- 875 5	223 81	120 92

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

- A - LUSITANO 27-34 FED COM 624H
- B - LUSITANO 27-34 FED COM 734H
- C - LUSITANO 27-34 FED COM 232H
- D - LUSITANO 27-34 FED COM 524H
- E - LUSITANO 27-34 FED COM 535H
- F - LUSITANO 27-34 FED COM 525H

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 0.40 OF A MILE, THEN SOUTH 40' TO THE NORTHWEST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 734H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1904 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 2, 2018

SURVEY NO. 6437

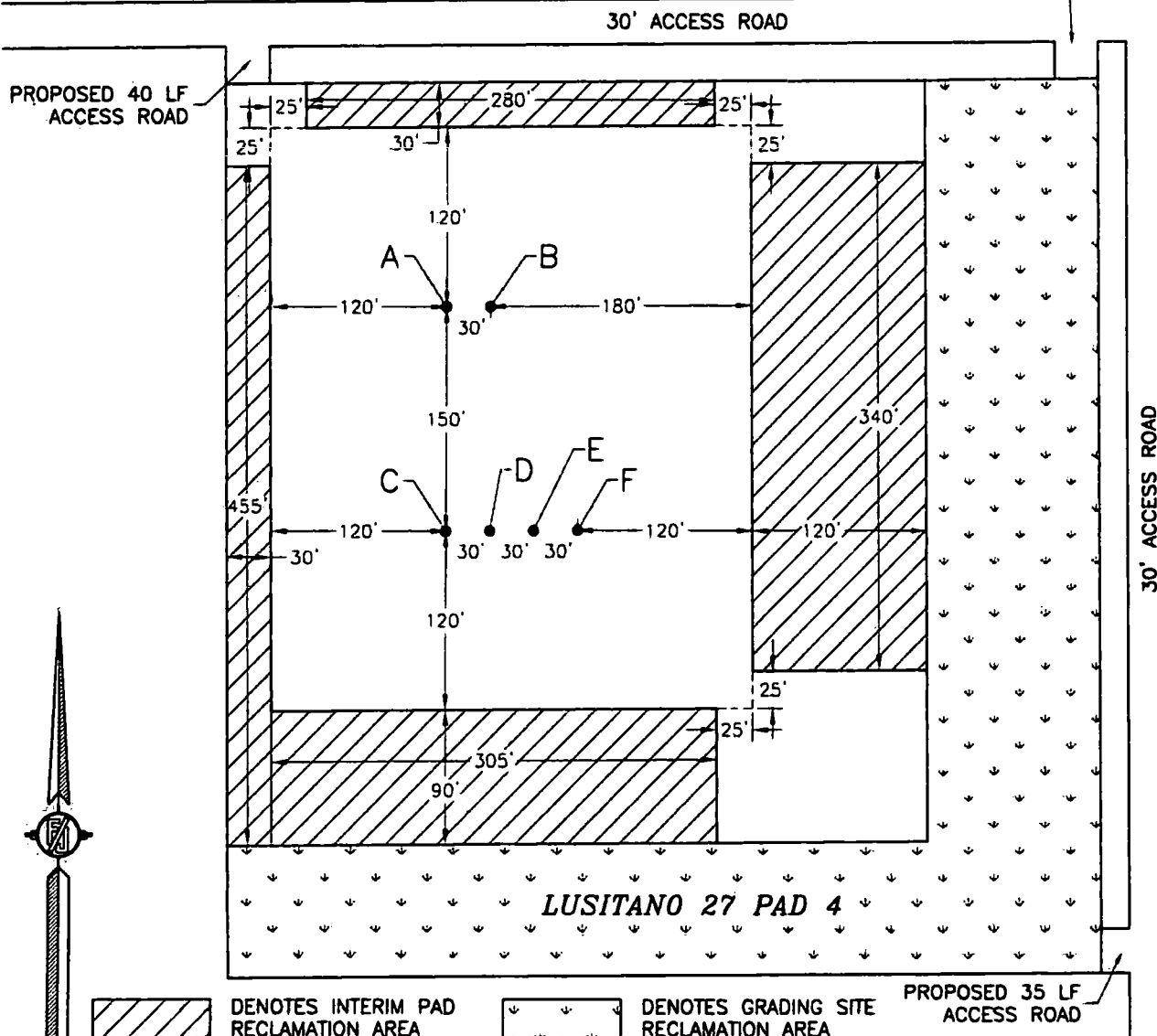
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

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

A - LUSITANO 27-34 FED COM 624H D - LUSITANO 27-34 FED COM 524H
B - LUSITANO 27-34 FED COM 734H E - LUSITANO 27-34 FED COM 535H
C - LUSITANO 27-34 FED COM 232H F - LUSITANO 27-34 FED COM 525H

SEC. 22
SEC. 27

PROPOSED 40 LF
ACCESS ROAD



010 50 100 200
SCALE 1" = 100'

2.074± ACRES INTERIM PAD RECLAMATION AREA
2.647± ACRES GRADING SITE RECLAMATION AREA
3.548± ACRES NON-RECLAIMED AREA
8.269± ACRES LUSITANO 27 PAD 4

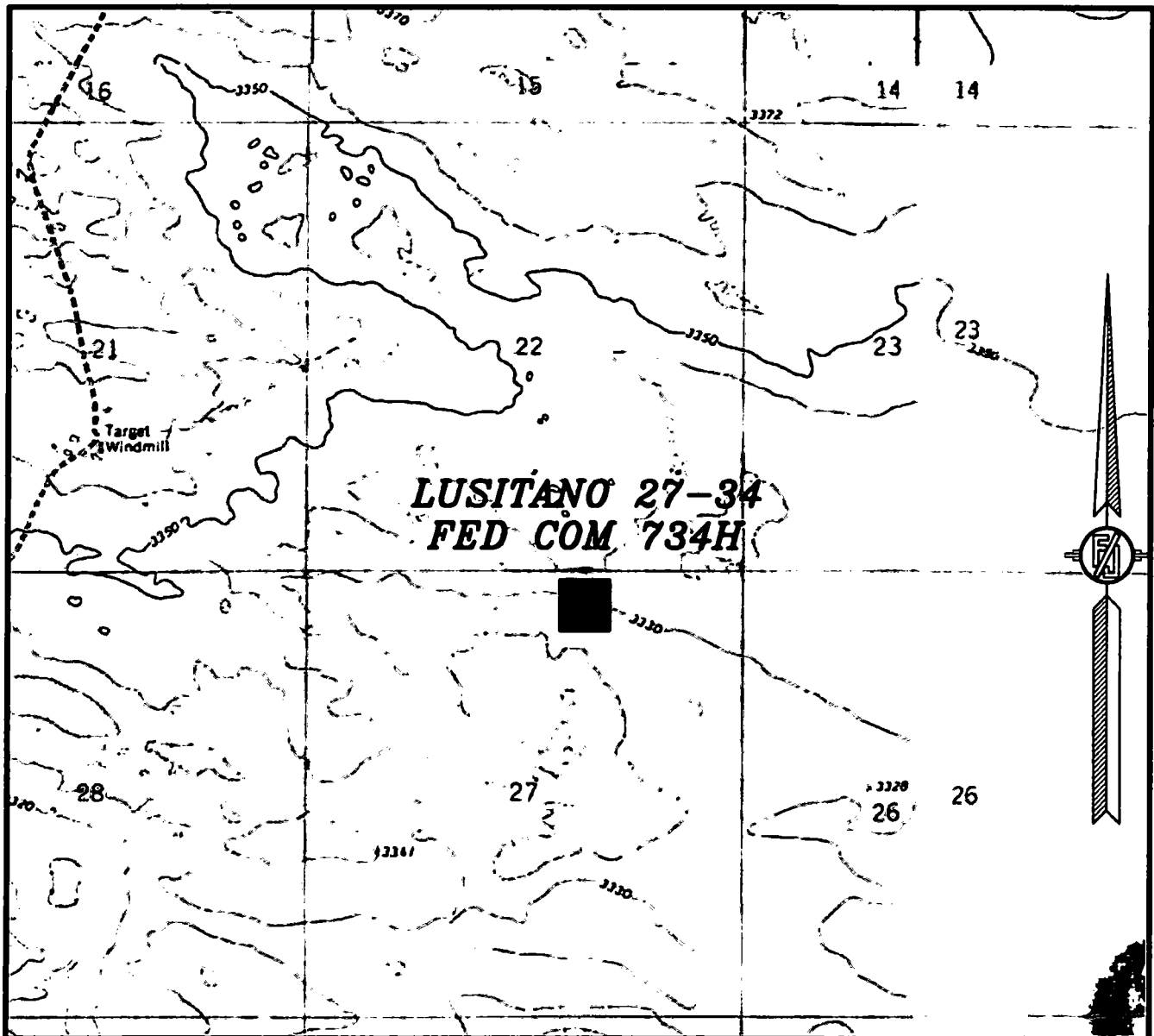
**DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 734H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1904 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM**

AUGUST 2, 2018

SURVEY NO. 6437

MADRON SURVEYING, INC. 301 SOUTH CAVAL (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

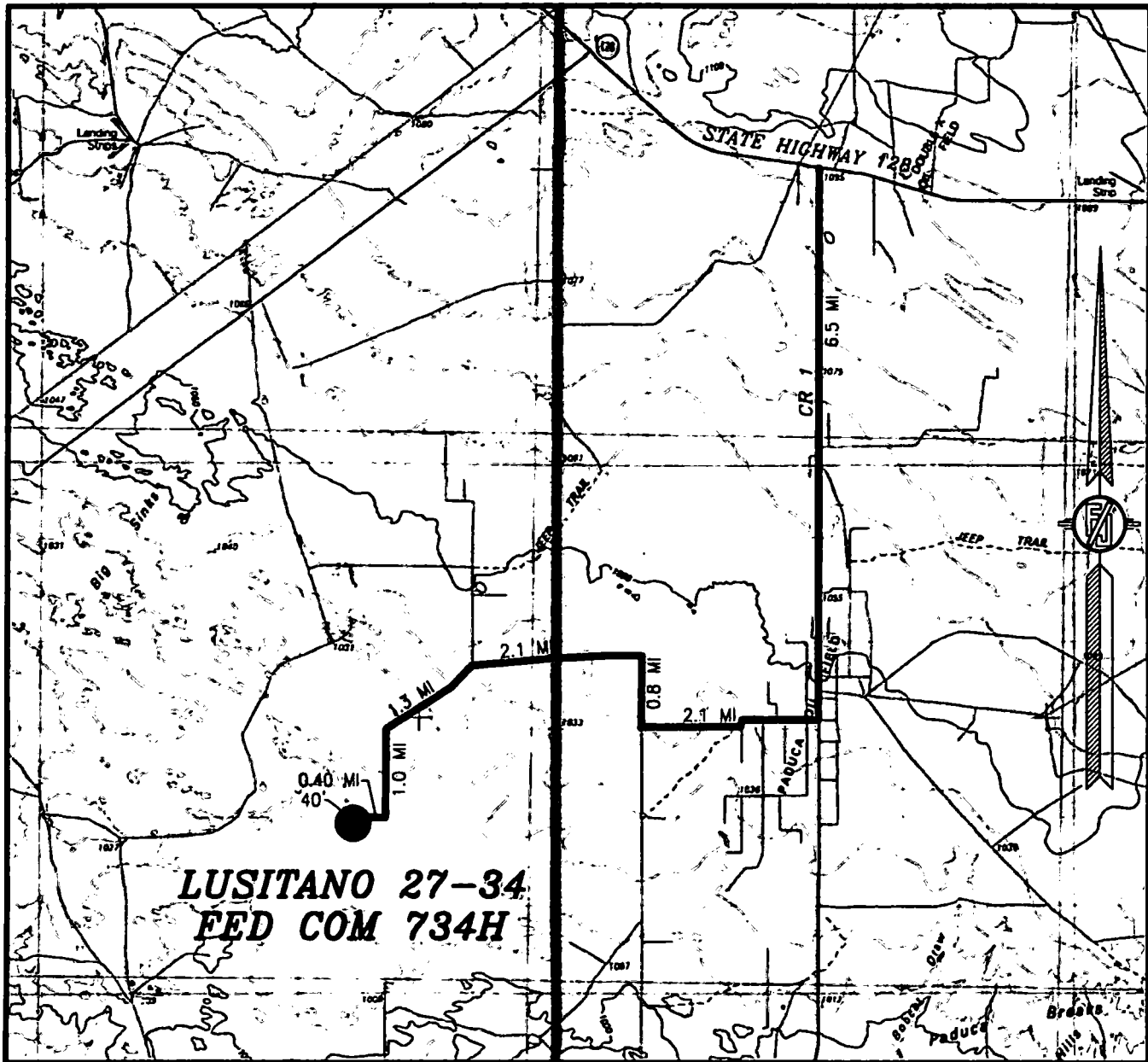
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LUSITANO 27-34 FED COM 734H
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AND 1904 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 2, 2018

SURVEY NO. 6437

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 734H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1904 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

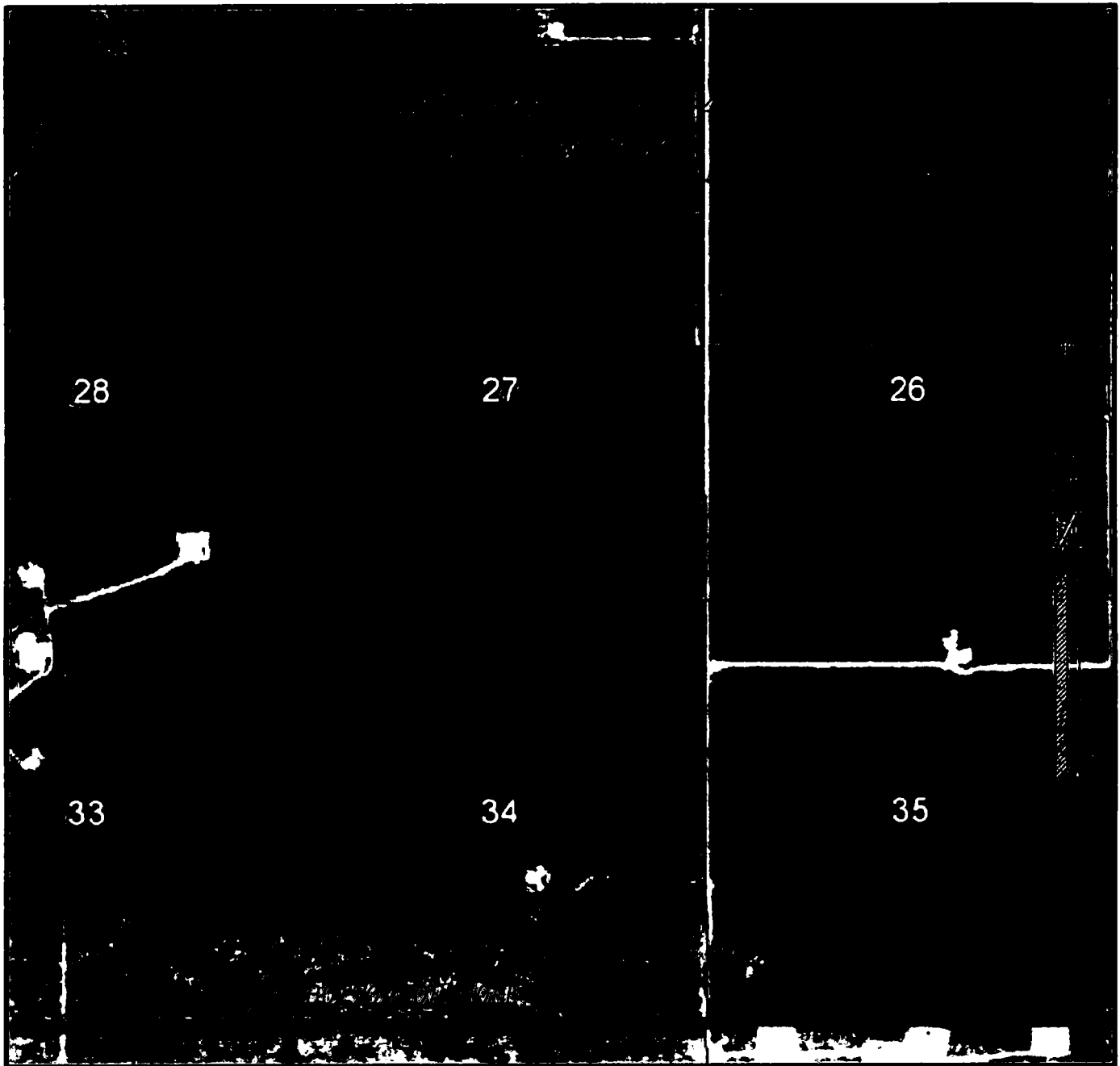
FROM STATE HIGHWAY 128 AND CR 1 (ORLA HIGHWAY) GO SOUTH ON CR 1 6.5 MILES TO MONSANTO ROAD, TURN RIGHT GO WEST 2.1 MILES, TURN RIGHT GO NORTH 0.8 OF A MILE, TURN LEFT GO WEST 2.1 MILES, BEND LEFT GO SOUTHWEST 1.3 MILES, TURN LEFT GO SOUTH 1.0 MILE TO BEGIN ROAD SURVEY, GO WEST 0.40 OF A MILE, THEN SOUTH 40' TO THE NORTHWEST PAD CORNER FOR THIS LOCATION.

AUGUST 2, 2018

SURVEY NO. 6437

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

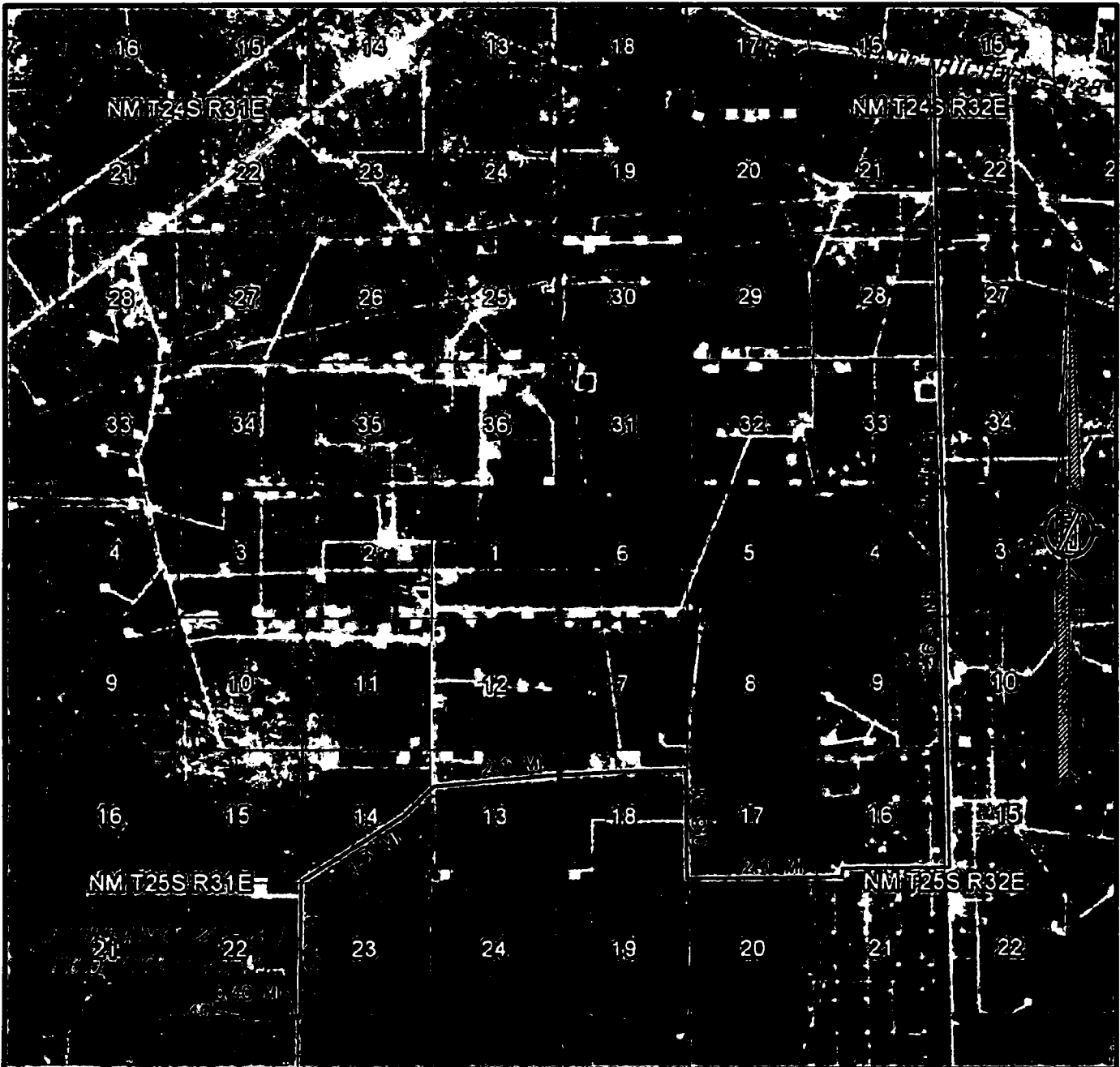
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LUSITANO 27-34 FED COM 734H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1904 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 2, 2018

SURVEY NO. 6437

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

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

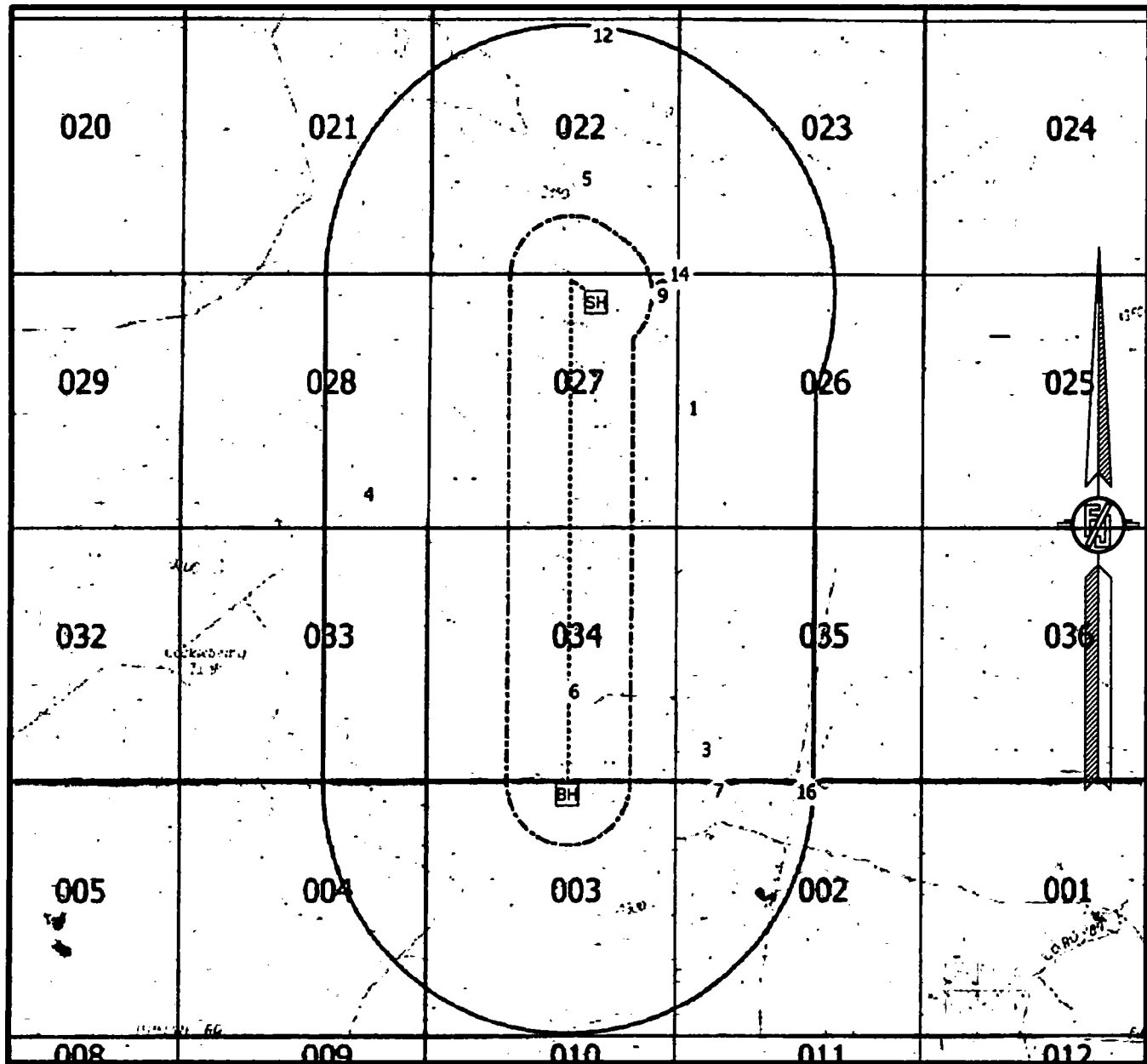
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 AND 1904 FT. FROM THE EAST LINE OF
 SECTION 27, TOWNSHIP 25 SOUTH,
 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LAND STATUS: BLM

AUGUST 2, 2018

SURVEY NO. 6437

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

1-MILE MAP



NOT TO SCALE

WELL DATA FROM NMCD GIS - 8/15/18

SH SURFACE LOCATION

BH BOTTOM OF HOLE

XX WELLS WITHIN 1 MILE

----- WELL PATH

----- 1/4 MILE BOUNDARY

----- 1-MILE BOUNDARY

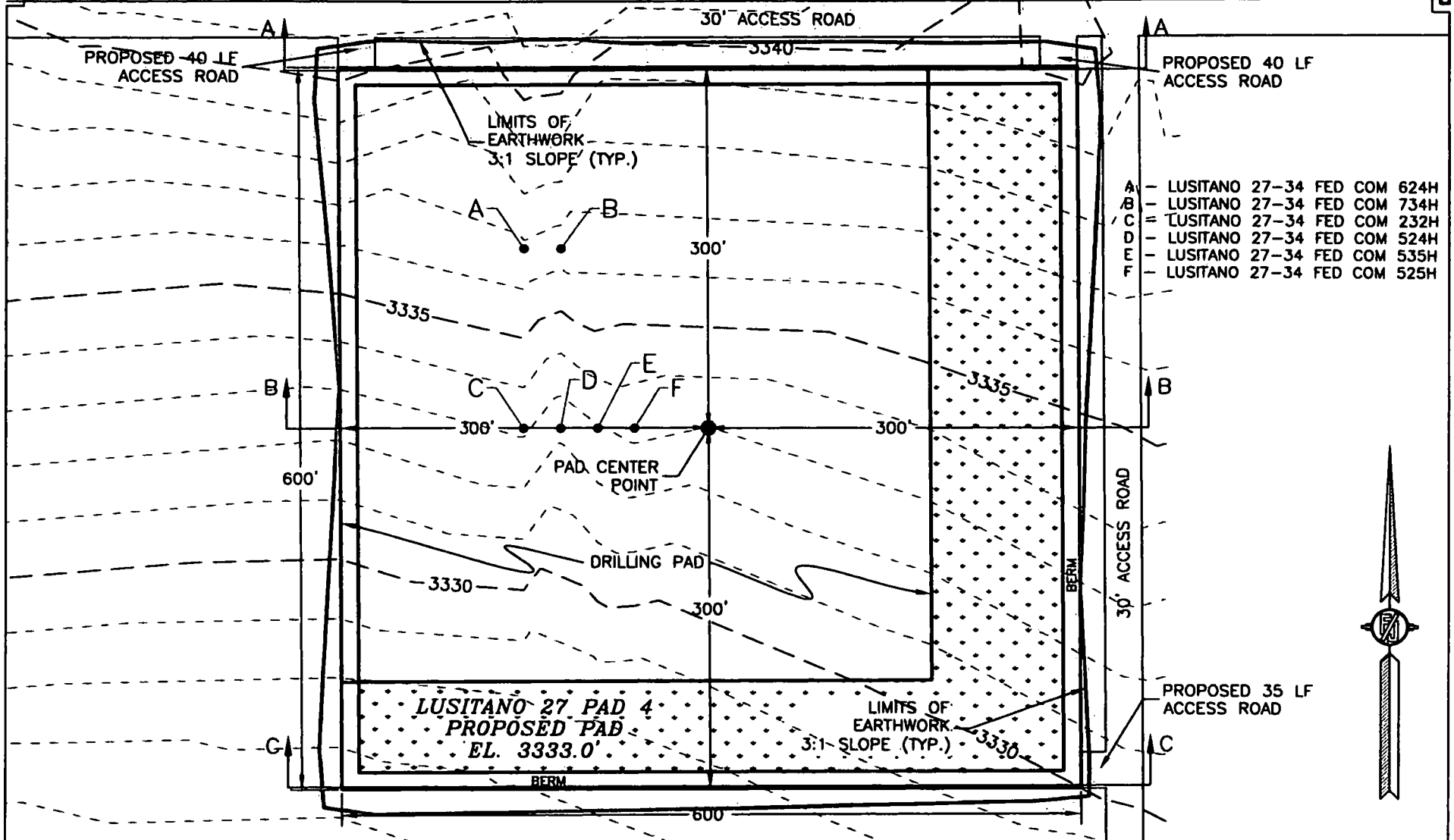
DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 734H
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 AND 1904 FT. FROM THE EAST LINE OF
 SECTION 27, TOWNSHIP 25 SOUTH,
 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LAND STATUS: BLM

AUGUST 2, 2018

SURVEY NO. 6437

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

PLAN VIEW



- A - LUSITANO 27-34 FED COM 624H
- B - LUSITANO 27-34 FED COM 734H
- C - LUSITANO 27-34 FED COM 232H
- D - LUSITANO 27-34 FED COM 524H
- E - LUSITANO 27-34 FED COM 535H
- F - LUSITANO 27-34 FED COM 525H

DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR LUSITANO 27-34 FED COM 734H
SECTION 27, TOWNSHIP 26 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 2, 2018

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

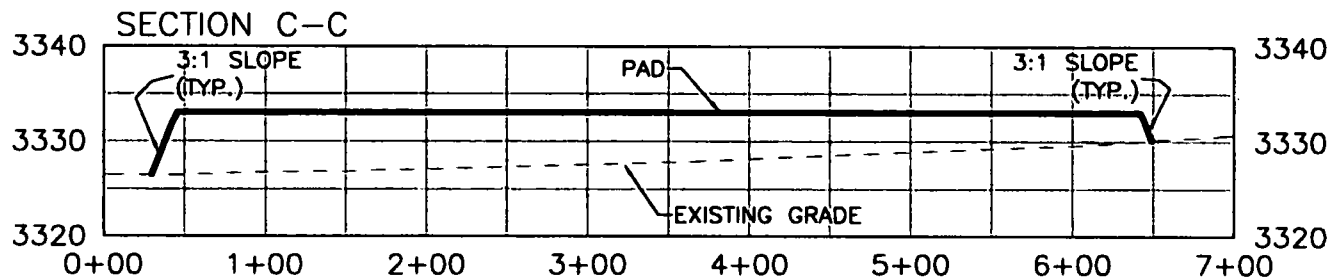
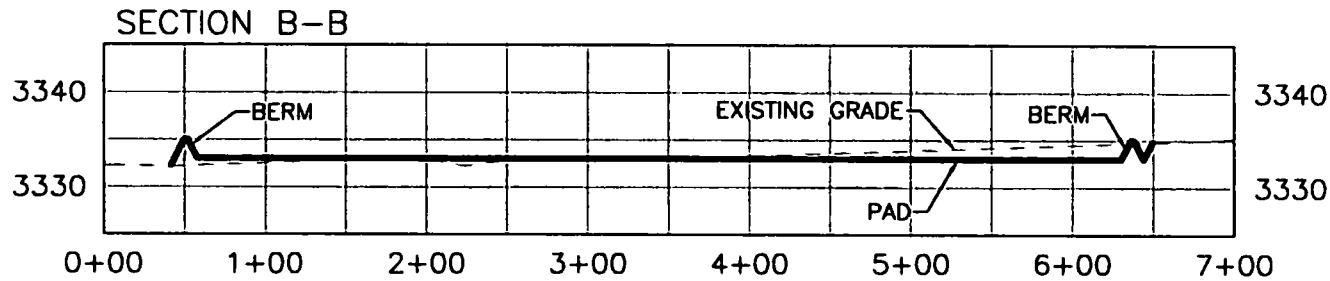
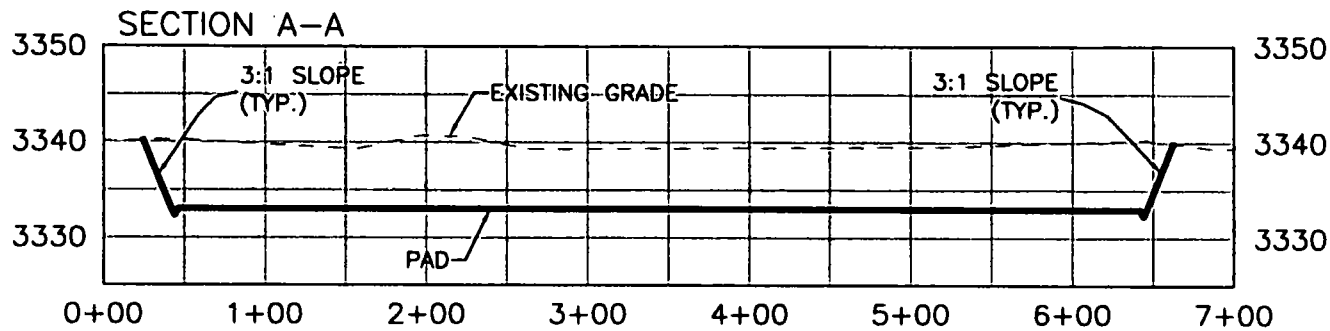
0 12 60 120 240
SCALE 1" = 120'

CUT	FILL	NET
25639 CU. YD	18808 CU. YD	6831 CU. YD (CUT)

EARTHWORK QUANTITIES ARE ESTIMATED

SHEET 1-2
SURVEY NO. 6437

CROSS SECTIONS



DEVON ENERGY PRODUCTION COMPANY, L.P.
 GRADING PLAN AND CROSS SECTIONS
 FOR LUSITANO 27-34 FED COM 734H
 SECTION 27, TOWNSHIP 25 SOUTH,
 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

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

CUT	FILL	NET
25639 CU. YD	18808 CU. YD	6831 CU. YD (CUT)

EARTHWORK QUANTITIES ARE ESTIMATED

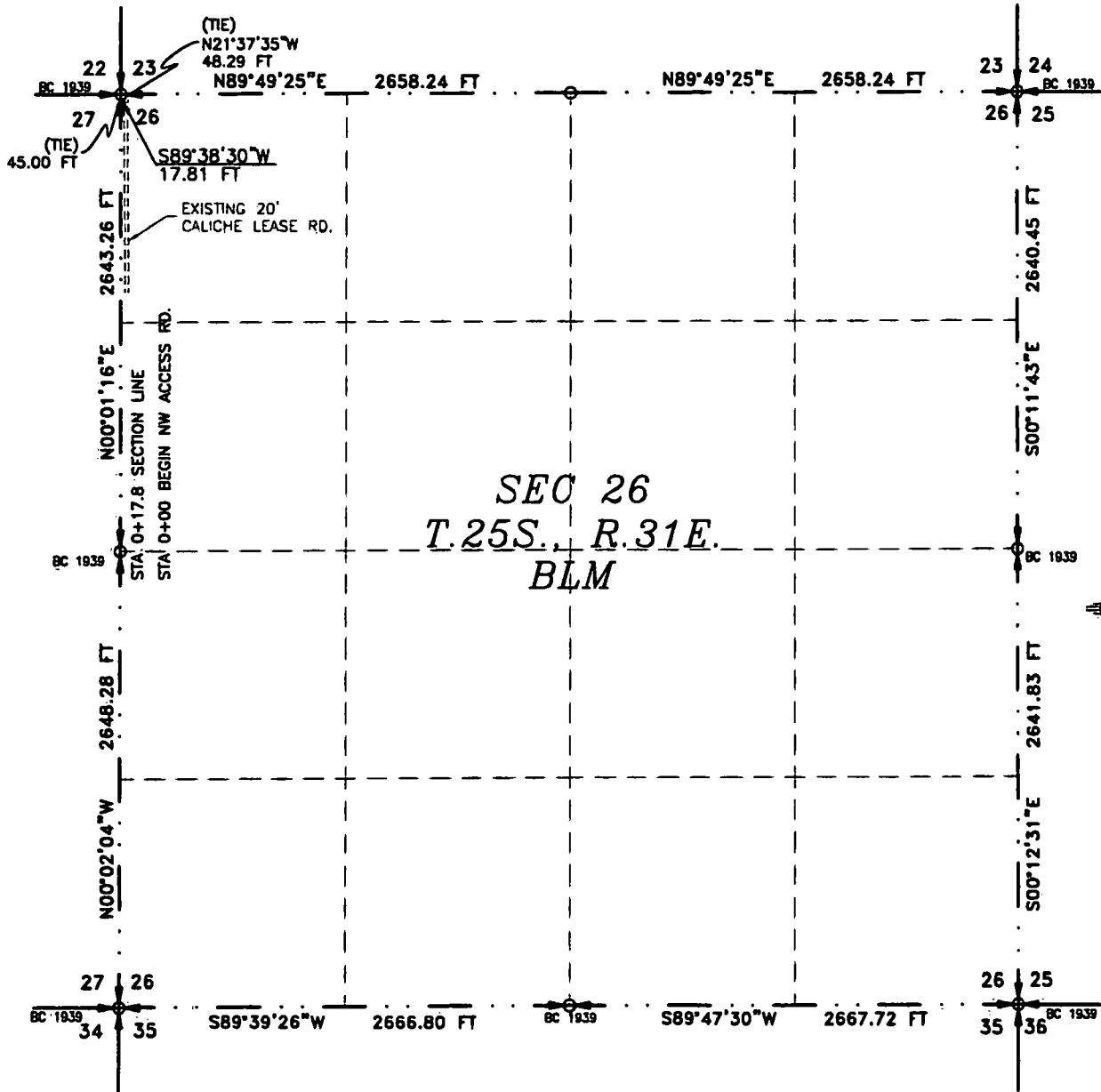
AUGUST 2, 2018
 MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
 (575) 234-3341

SHEET 2-2
 SURVEY NO. 6437

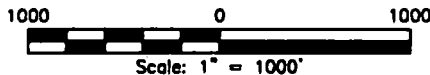
ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 525H)

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 2, 2018



SEE NEXT SHEET (2-4) FOR DESCRIPTION



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, FILMON 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

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

SHEET: 1-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEY NO. 6437

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 525H)

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 2, 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, FILMON 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

Filmon F. Jaramillo
FILMON F. JARAMILLO, PLS. 12797
SURV.

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.

SHEET: 2-4

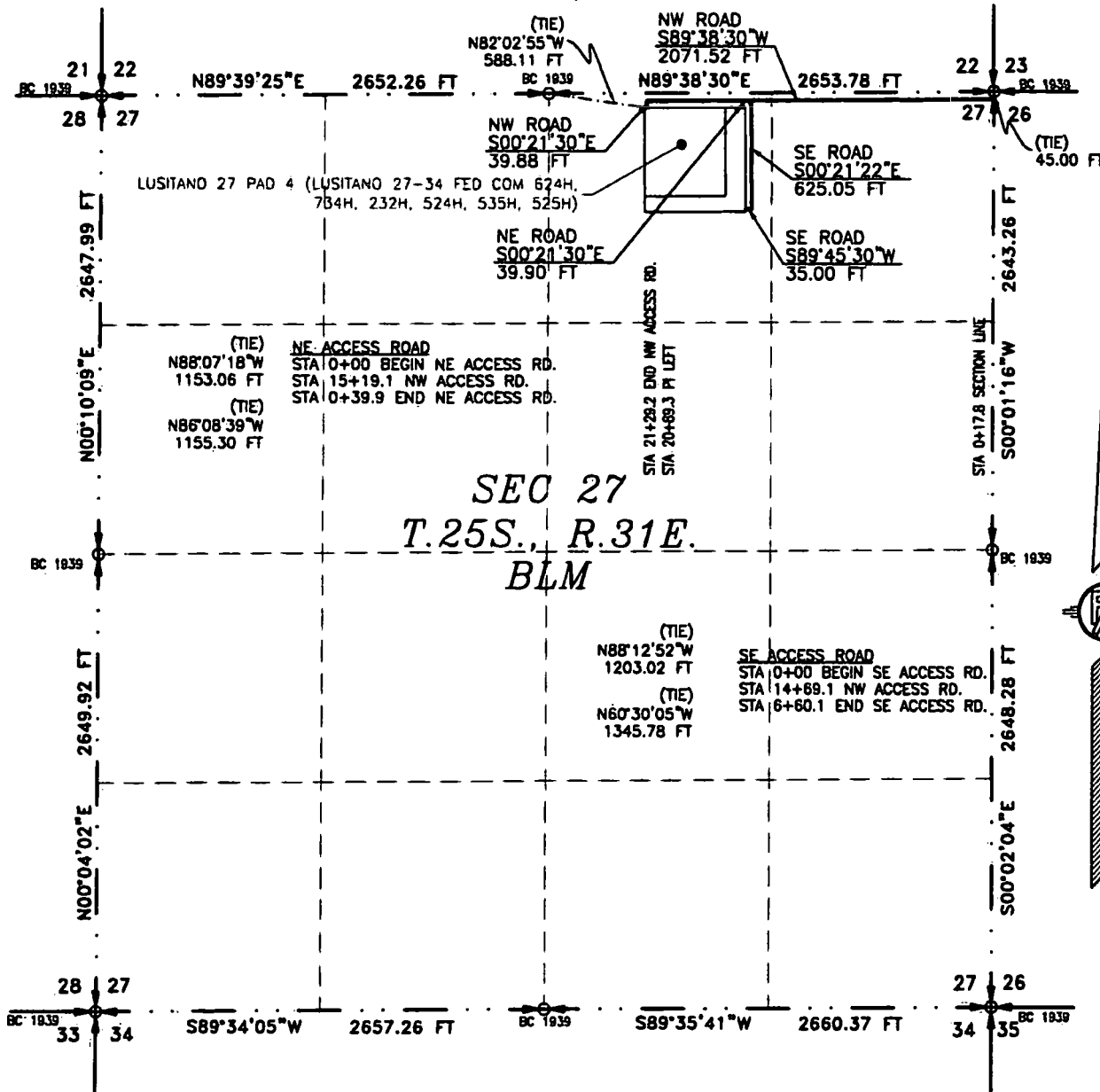
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SURVEY NO. 6437

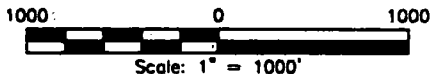
ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 525H)

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 2, 2018



SEE NEXT SHEET (4-4) FOR DESCRIPTION



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, FILMON 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 27th DAY OF AUGUST 2018

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

SURVEY NO. 6437
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SHEET: 3-4

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 525H)

**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 2, 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 2071.52 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S00°21'30"E A DISTANCE OF 39.88 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 N82°02'55"W, A DISTANCE OF 588.11 FEET;

SAID STRIP OF LAND BEING 2111.40 FEET OR 127.97 RODS IN LENGTH, CONTAINING 1.454 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/4 784.50 L.F. 47.55 RODS 0.540 ACRES

NORTHEAST 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°07'18"W, A DISTANCE OF 1153.06 FEET;

THENCE S00°21'30"E A DISTANCE OF 39.90 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°08'39"W, A DISTANCE OF 1155.30 FEET;

SAID STRIP OF LAND BEING 39.90 FEET OR 2.42 RODS IN LENGTH, CONTAINING 0.027 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 39.90 L.F. 2.42 RODS 0.027 ACRES

SOUTHEAST 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°12'52"W, A DISTANCE OF 1203.02 FEET;

THENCE S00°21'22"E A DISTANCE OF 625.05 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S89°45'30"W A DISTANCE OF 35.00 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 N60°30'05"W, A DISTANCE OF 1345.78 FEET;

SAID STRIP OF LAND BEING 660.05 FEET OR 40.00 RODS IN LENGTH, CONTAINING 0.455 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 660.05 L.F. 40.00 RODS 0.455 ACRES

SURVEYOR CERTIFICATE

I, FILMON 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 27 DAY OF AUGUST 2018

FILMON F. JARAMILLO, P.S. 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 NMSF EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 4-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEY NO. 6437



APD ID: 10400033536

Submission Date: 08/29/2018

Highlighted data
reflects the most
recent changes

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

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	2426	912	912	SALT	NONE	No
3	BASE OF SALT	-939	4277	4277	SALT	NONE	No
4	DELAWARE	-959	4297	4297	SANDSTONE	NATURAL GAS,OIL	No
5	BONE SPRING	-4909	8247	8247	SANDSTONE	NATURAL GAS,OIL	No
6	WOLFCAMP	-8309	11647	11647	SANDSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 12092

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

Requesting Variance? YES

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

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

Choke Diagram Attachment:

Lusitano_27_34_Fed_Com_734H_WLFMP_10M_BOPE_Double_Ram_and_CLS_Schematic_Remote_Kill_Line_20181210122158.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_734H_WLFMP_10M_BOPE_Double_Ram_and_CLS_Schematic_Remote_Kill_Line_20181210122206.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

Pressure Rating (PSI): 5M

Rating Depth: 11817

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

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_734H_5M_BOPE_CK_20180828063629.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_734H_5M_BOPE_CK_20180828063639.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	14.75	10.75	NEW	API	N	0	937	0	937	-6993	-7781	937	J-55	40.5	STC	1.125	1.25	BUOY	1.6	BUOY	1.6
2	INTERMEDIATE	9.875	7.625	NEW	API	N	0	11533	0	11519	-6993	-11343	11533	P-110	29.7	OTHER - BTC	1.125	1.25	BUOY	1.6	BUOY	1.69
3	INTERMEDIATE	8.75	7.625	NEW	API	N	11533	12433	11519	11817			900	P-110	29.7	OTHER - FLUSHMAX	1.125	1.25	BUOY	1.6	BUOY	1.6
4	PRODUCTION	6.75	5.5	NEW	API	N	0	22381	0	12092	-6993		22381	P-110	20	OTHER - VAM SG	1.125	1.25	BUOY	1.6	BUOY	1.6

Casing Attachments

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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_734H_Surf_Csg_Ass_20180828063840.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_734H_Int_Csg_Ass_20180828064009.pdf

Casing ID: 3 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_734H_Int_Csg_Ass_20181210072858.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

Casing Attachments

Casing ID: 4 String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_734H_Prod_Csg_Ass_20180828064110.pdf

Section 4 - Cement

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
INTERMEDIATE	Lead		0	0	0	0	0	0	0	N/A SEE ATTACHED DRILLING PLAN	0

SURFACE	Lead		0	937	605	1.33	13.2	804	50	C	Class C + adds
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INTERMEDIATE	Lead		0	8433	1244	1.85	9	2301	30	TUNED	TUNED LIGHT
INTERMEDIATE	Tail		8433	1243 3	747	1.33	13.2	993	30	H	Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
PRODUCTION	Lead		1193 3	2238 1	651	1.33	13.2	965	10	H	0.125 lbs/sack Poly-E-Flake

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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
937	1229 3	OTHER : SATURATED BRINE	9	10							
0	937	WATER-BASED MUD	8.5	9							
1229 3	2224 1	OIL-BASED MUD	10	10.5							

Section 6 - Test, Logging, Coring

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

Will run GR/CNL from TD 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:

CBL,DS,GR,MUDLOG

Coring operation description for the well:

N/A

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6602

Anticipated Surface Pressure: 3941.76

Anticipated Bottom Hole Temperature(F): 181

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

Describe:

Contingency Plans geohazards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Lusitano_27_34_Fed_Com_734H_H2S_Plan_20180828065140.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Lusitano_27_34_Fed_Com_734H_AC_Rpt_20180828065205.pdf

Lusitano_27_34_Fed_Com_734H_Dir_Plan_20180828065353.pdf

Lusitano_27_34_Fed_Com_734H_Plot_20180828065404.pdf

Lusitano_27_34_Fed_Com_734H_Permit_Plan_1_20180828065415.pdf

Other proposed operations facets description:

FLUSHMAX

GAS CAPTURE PLAN

CLOSED LOOP DESIGN

VAM FJL

WELLHEAD SCHEMATIC

WELLHEAD SCHEMATIC CONTINGENCY

VAM SG

WLFMP MB VERB 5M ALT

DRILLING PLAN_REV2

MB VERB 5M

ANNULAR PREVENTER SUMMARY

Intermediate hole section drilled with 2 hole sizes/casing connections see Drilling Plan

Other proposed operations facets attachment:

Lusitano_27_34_Fed_Com_734H_7.625_29.70_P110_Flushmax_20180828065536.pdf

Lusitano_27_34_Fed_Com_734H_Gas_Capture_Plan_20180828065546.pdf

Lusitano_27_34_Fed_Com_734H_Clsd_Loop_20180828065629.pdf

Lusitano_27_34_Fed_Com_734H_8.625_32_P110EC_VAM_FJL_NA_7.875_SD_20181206131309.PDF

Lusitano_27_34_Fed_Com_734H_WLFMP_Wellhead_Schematic_10.75x7.625x5.5_20181210122419.pdf

Lusitano_27_34_Fed_Com_734H_WLFMP_Wellhead_Schematic_Contingency_13.375x8.625x5.5_20181210122420.pdf

Lusitano_27_34_Fed_Com_734H_5.5_x_20_P110_EC_VAMSG_20181212054446.pdf

Lusitano_27_34_Fed_Com_733H_WLFMP_MB_Verb_5M_Alt_Design_20181212075113.pdf

Lusitano_27_34_Fed_Com_733H_Drilling_Plan_rev2_20181212075124.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

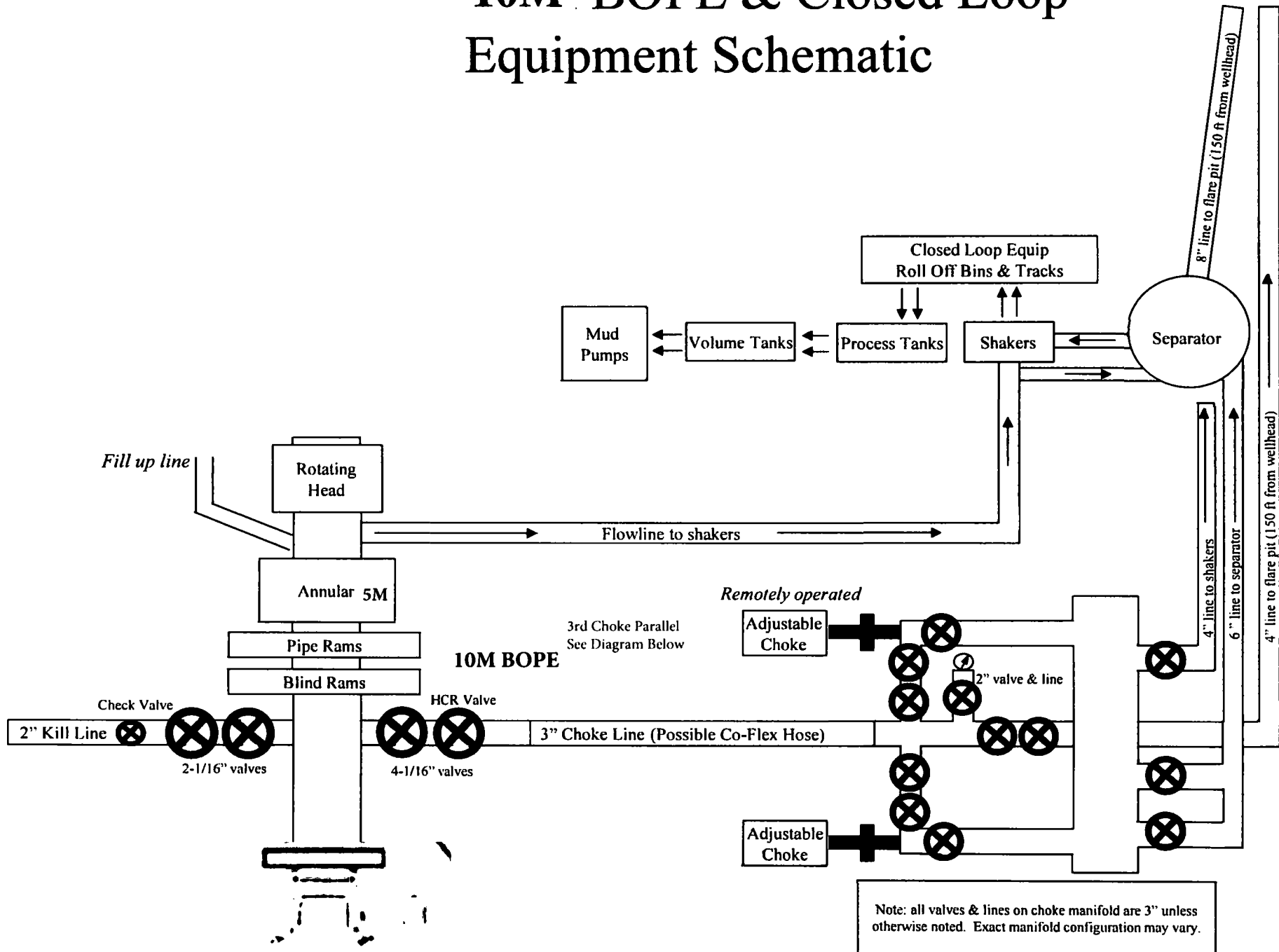
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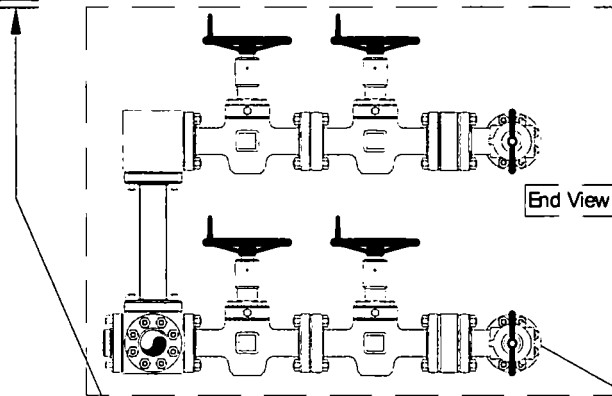
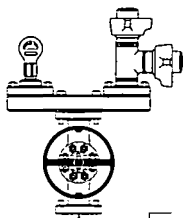
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Other Variance attachment:

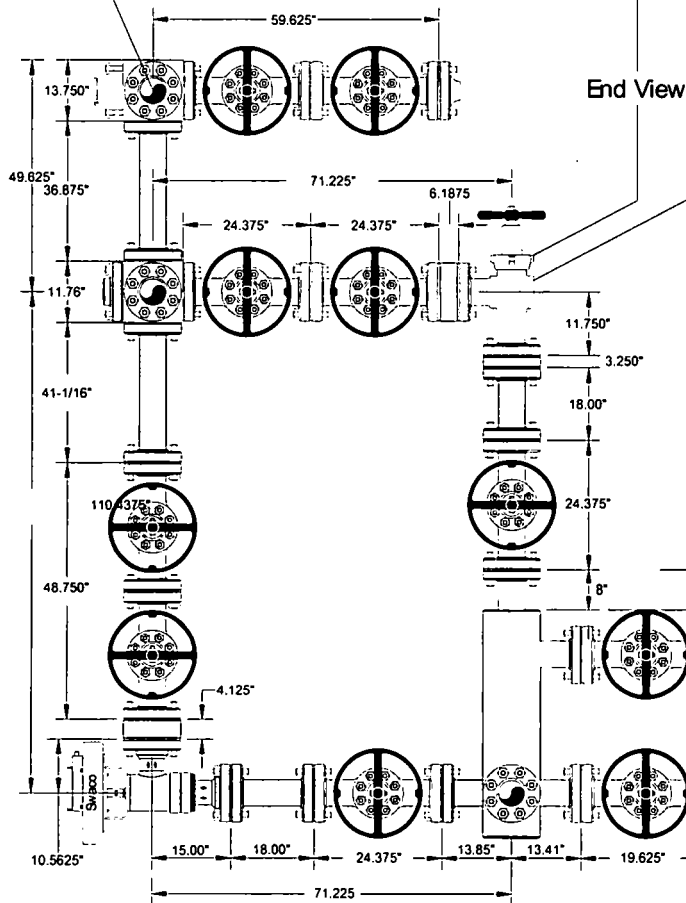
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10M BOPE & Closed Loop Equipment Schematic

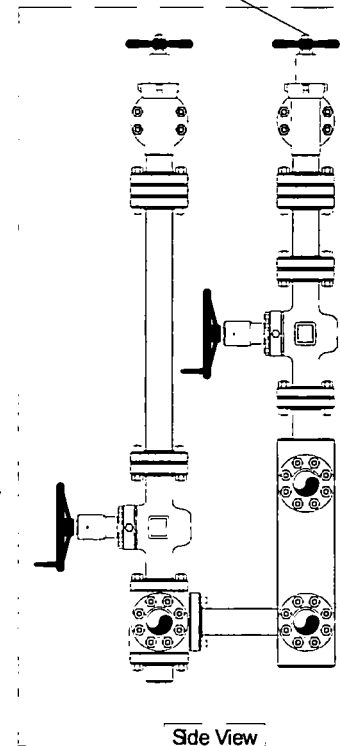




End View



Side View

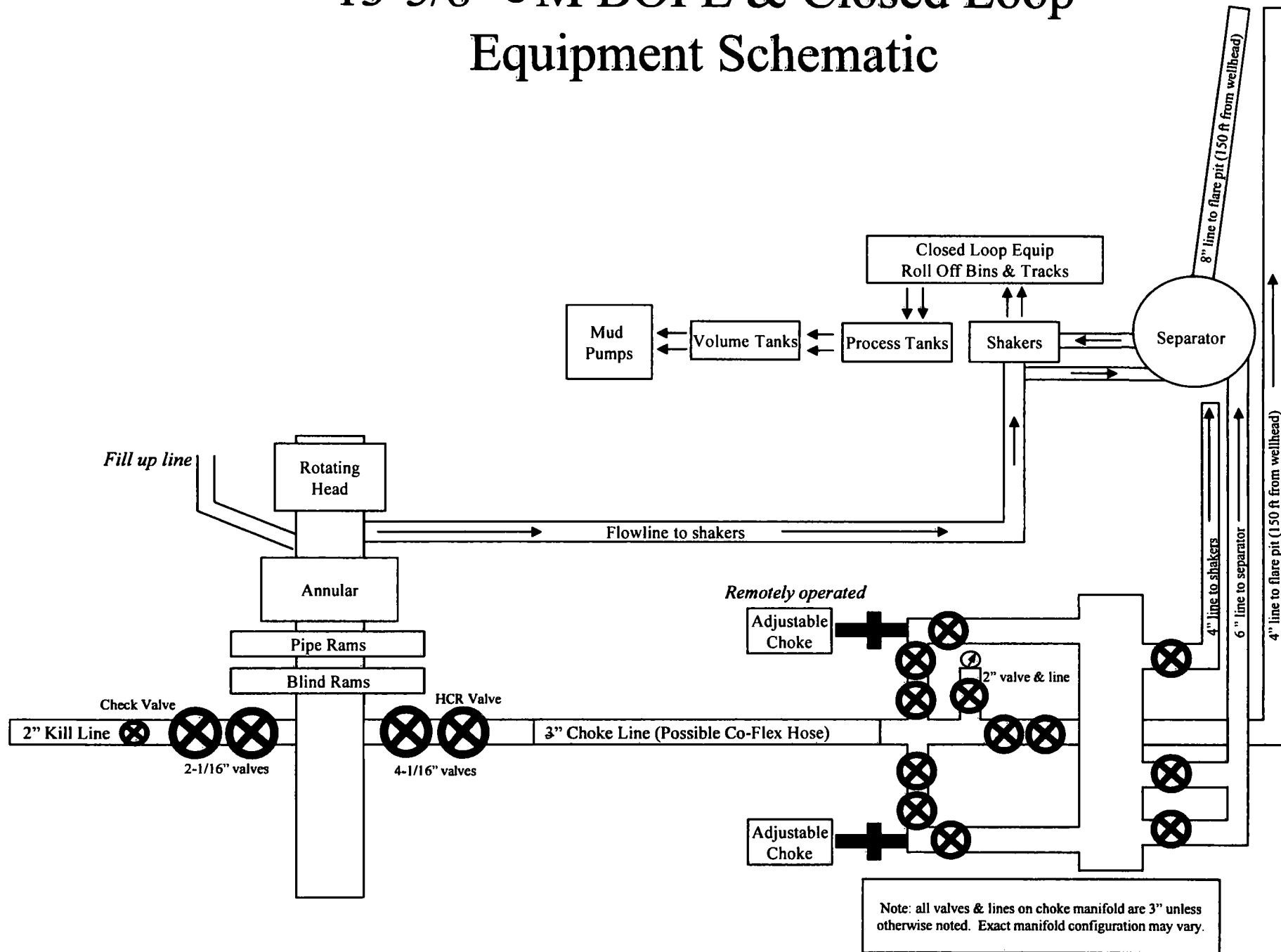


Helmerich & Payne
Fig 282

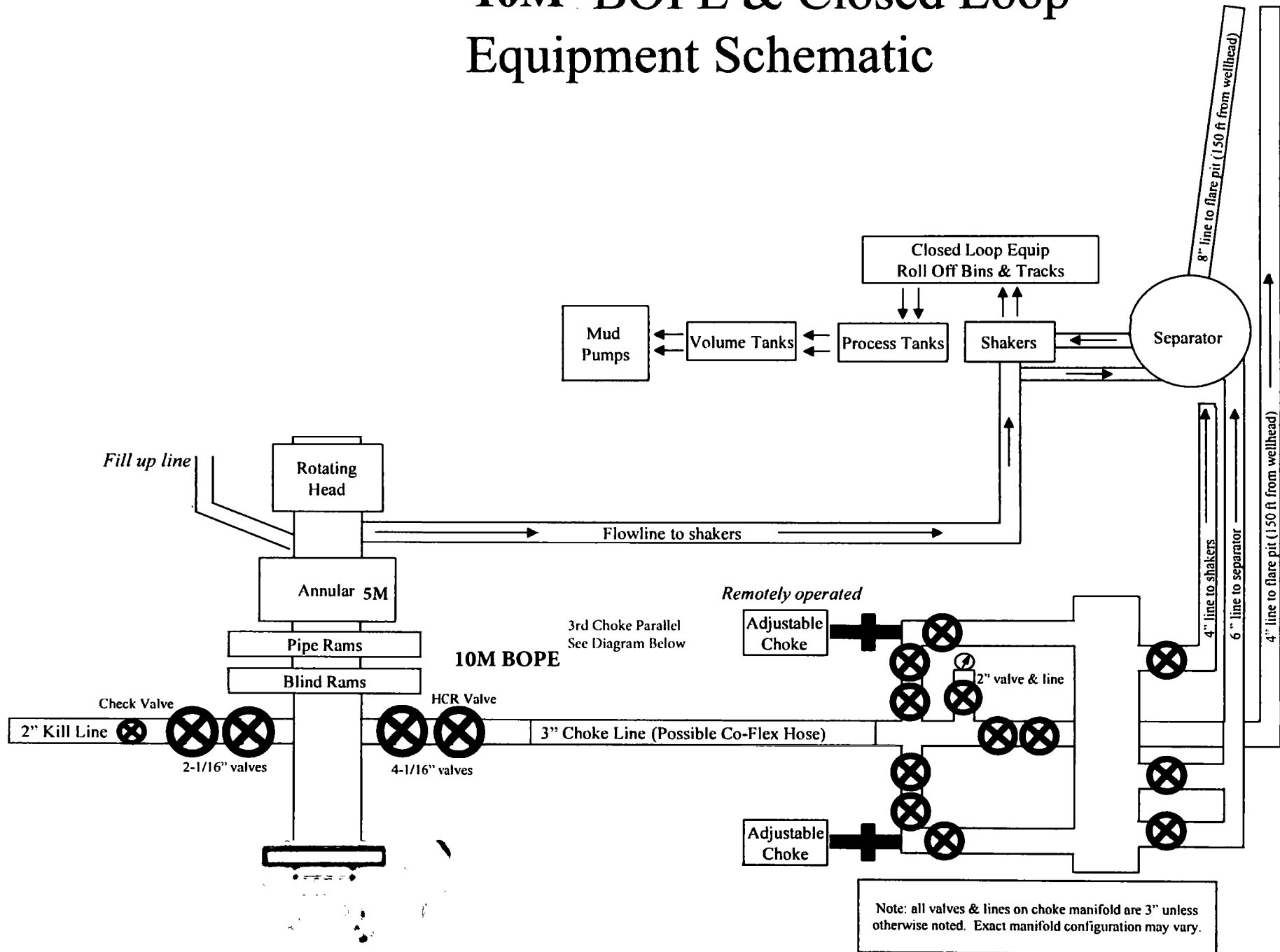
CAMERON

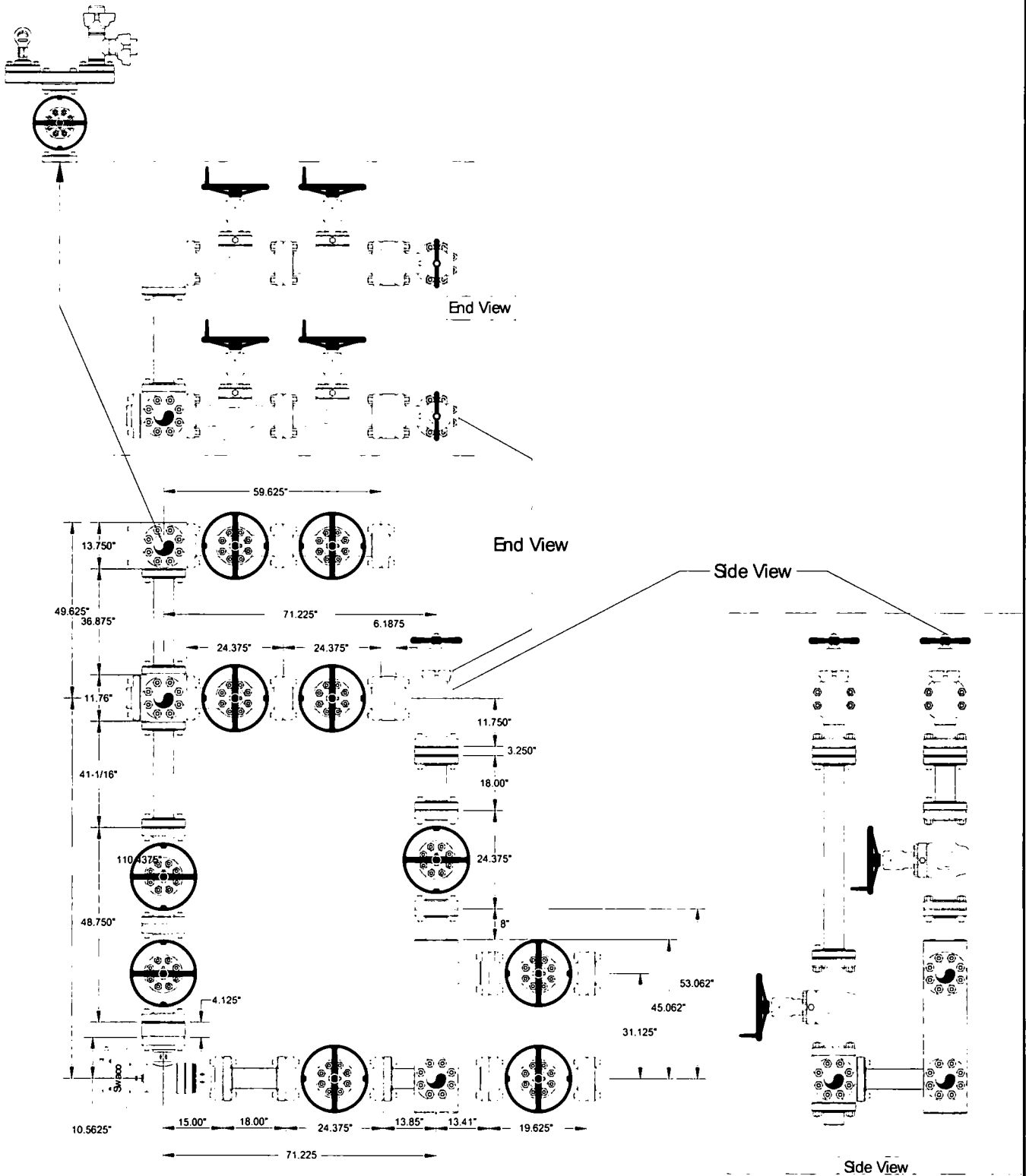
Name	Jeanette	Date	7-19-06	Working Pressure		#	J-5132-E
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13-5/8" 5M BOPE & Closed Loop Equipment Schematic



10M BOPE & Closed Loop Equipment Schematic



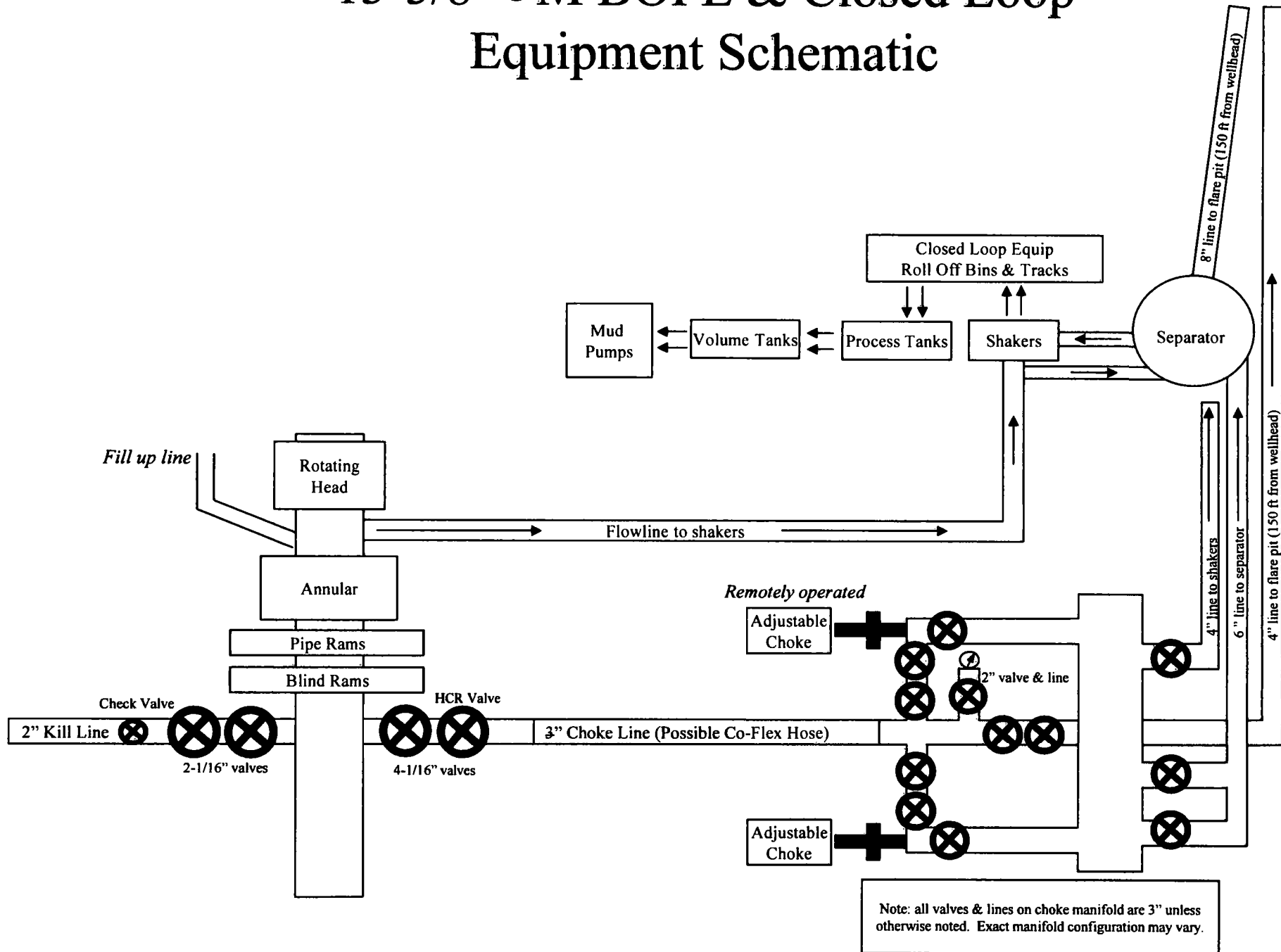


Helmerich & Payne
Rg 282

CAMERON

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

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



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

Hydrogen Sulfide (H₂S) Contingency Plan

For

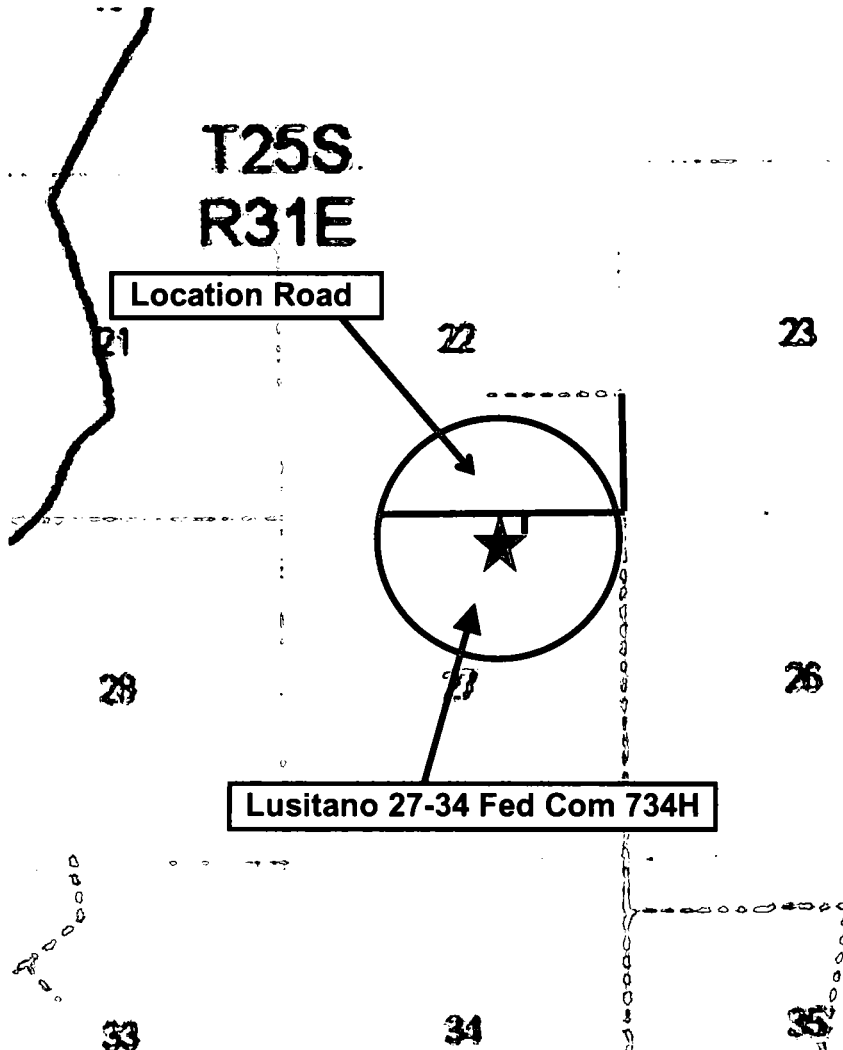
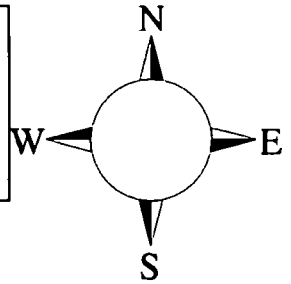
Lusitano 27-34 Fed Com 734H

**Sec-27 T-25S R-31E
235' FNL & 1904' FEL
LAT. = 32.1079089' N (NAD83)
LONG = 103.7634962' W**

Eddy County NM

Lusitano 27-34 Fed Com 734H

This is an open drilling site. H₂S monitoring equipment and emergency response equipment will be used within 500' of zones known to contain H₂S, including warning signs, wind indicators and H₂S monitor.



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

Escape

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

Assumed 100 ppm ROE = 3000'

100 ppm H₂S concentration shall trigger activation of this plan.

Emergency Procedures

In the event of a release of gas containing H₂S, 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 H₂S 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 H₂S, 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 (SO₂). 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 H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H₂S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO₂	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 (H₂S) 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 (H₂S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H₂S 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 H₂S 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 H₂S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500 feet) and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan.

II. HYDROGEN SULFIDE TRAINING

Note: All H₂S 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 H₂S.

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. H₂S detection and monitoring equipment:

Portable H₂S monitors positioned on location for best coverage and response. These units have warning lights which activate when H₂S levels reach 10 ppm and audible sirens which activate at 15 ppm. Sensor locations:

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

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 H₂S circulated to surface. Proper mud weight, safe drilling practices and the use of H₂S scavengers will minimize hazards when penetrating H₂S bearing zones.

5. Metallurgy:

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold lines, and valves shall be H₂S trim.
- B. All elastomers used for packing and seals shall be H₂S 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 H₂S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

<u>Devon Energy Corp. Company Call List</u>		
Drilling Supervisor – Basin – Mark Kramer		405-823-4796
EHS Professional – Laura Wright		405-439-8129
<u>Agency Call List</u>		
<u>Lea County (575)</u>	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
<u>Eddy County (575)</u>	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



WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Lusitano 27-34 Fed Com 734H

Wellbore #1

Permit Plan 1

Anticollision Report

24 August, 2018

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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	8/24/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	22,381.87	Permit Plan 1 (Wellbore #1)	MWD+HDGM	OWSG MWD + HDGM	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
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 PI	9,885.89	9,820.40	1,486.73	1,416.81	21.262 CC	
Lusitano 27_22 Fed Com 232H - Wellbore #1 - Permit PI	9,900.00	9,828.97	1,486.77	1,416.77	21.242 ES	
Lusitano 27_22 Fed Com 232H - Wellbore #1 - Permit PI	10,050.00	9,907.56	1,492.11	1,421.57	21.151 SF	
Lusitano 27_34 Fed Com 523H - Wellbore #1 - Permit PI	8,363.27	8,319.37	1,087.39	1,028.62	18.502 CC, ES	
Lusitano 27_34 Fed Com 523H - Wellbore #1 - Permit PI	8,500.00	8,408.83	1,090.59	1,031.23	18.372 SF	
Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit PI	8,777.77	8,813.64	603.47	541.25	9.699 CC, ES	
Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit PI	8,800.00	8,829.54	603.65	541.39	9.696 SF	
Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit PI	11,198.59	11,184.97	1,294.03	1,214.40	16.251 CC	
Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit PI	22,381.87	22,010.80	1,400.90	1,094.92	4.578 Alert, ES, SF	
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit PI	11,199.93	11,204.66	686.08	606.51	8.622 CC	
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit PI	22,381.87	22,075.11	761.29	466.69	2.584 Alert, ES, SF	
Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit PI	10,603.92	10,644.82	641.52	566.13	8.510 CC	
Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit PI	22,381.87	22,091.52	723.04	430.52	2.472 Minor Risk, ES, SF	
Lusitano 27_34 Fed Com 736H - Wellbore #1 - Permit PI	4,000.00	4,001.30	699.89	671.64	24.773 CC, ES	
Lusitano 27_34 Fed Com 736H - Wellbore #1 - Permit PI	22,379.08	22,067.64	1,354.56	1,047.65	4.413 Alert, SF	
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	5,375.90	5,376.47	137.76	99.75	3.624 Alert, CC	
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	5,750.00	5,750.09	139.06	98.38	3.419 Alert, ES	
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	6,800.00	6,801.25	155.44	107.28	3.227 Alert, SF	
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore						Out of range
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	10,757.34	10,737.46	724.04	648.00	9.523 CC, ES	
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	22,381.87	21,300.52	1,169.33	939.42	5.086 SF	
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	4,281.56	4,317.11	584.76	554.58	19.373 CC	
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	9,250.00	9,284.34	611.11	545.59	9.327 ES	
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	22,381.87	21,311.45	1,132.82	907.13	5.019 SF	
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore						Out of range
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	4,203.15	4,271.56	1,480.71	1,450.85	49.596 CC	
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	4,250.00	4,316.29	1,480.98	1,450.79	49.067 ES	
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	5,200.00	5,256.24	1,498.95	1,461.94	40.509 SF	
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	6,253.54	6,352.02	1,315.55	1,270.49	29.191 CC	
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	6,550.00	6,642.01	1,316.34	1,269.13	27.884 ES	
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	8,900.00	8,913.59	1,420.06	1,357.22	22.597 SF	
Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Pla	2,500.00	2,500.30	29.99	12.49	1.713 Minor Risk, CC	
Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Pla	2,550.00	2,550.04	30.21	12.35	1.692 Minor Risk, ES, SF	
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore	8,059.98	8,145.12	1,183.83	1,129.11	21.636 CC	
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore	22,200.00	21,945.00	1,320.25	1,022.20	4.430 Alert, ES, SF	
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore						Out of range

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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

Summary

Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						

Offset Design Sec 27-T25S-R31E - Lusitano 27_22 Fed Com 232H - 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			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
9,600.00	9,588.73	9,594.76	9,589.41	34.28	34.17	-24.14	156.44	-1,817.67	1,497.46	1,429.31	68.15	21.973		
9,650.00	9,638.63	9,641.44	9,632.79	34.47	34.33	-23.53	173.64	-1,817.48	1,494.54	1,426.04	68.50	21.819		
9,700.00	9,688.52	9,685.19	9,672.05	34.65	34.48	-22.82	192.92	-1,817.27	1,491.88	1,423.05	68.83	21.674		
9,750.00	9,738.42	9,725.80	9,707.08	34.83	34.62	-22.07	213.45	-1,817.04	1,489.64	1,420.49	69.16	21.540		
9,800.00	9,788.32	9,763.24	9,738.01	35.01	34.75	-21.28	234.53	-1,816.81	1,487.95	1,418.50	69.46	21.422		
9,850.00	9,838.21	9,797.58	9,765.12	35.20	34.87	-20.50	255.60	-1,816.58	1,486.95	1,417.21	69.74	21.321		
9,885.89	9,874.03	9,820.40	9,782.41	35.33	34.95	-19.94	270.49	-1,816.42	1,486.73	1,416.81	69.92	21.262 CC		
9,900.00	9,888.11	9,828.97	9,788.75	35.38	34.98	-19.72	276.26	-1,816.36	1,486.77	1,416.77	69.99	21.242 ES		
9,950.00	9,938.00	9,857.62	9,809.31	35.56	35.08	-18.97	296.21	-1,816.14	1,487.50	1,417.29	70.21	21.185		
10,000.00	9,987.90	9,883.74	9,827.15	35.74	35.17	-18.26	315.28	-1,815.93	1,489.26	1,418.86	70.40	21.154		
10,050.00	10,037.79	9,907.56	9,842.66	35.93	35.25	-17.58	333.35	-1,815.73	1,492.11	1,421.57	70.55	21.151 SF		
10,100.00	10,087.69	9,929.29	9,856.14	36.11	35.33	-16.94	350.40	-1,815.54	1,496.14	1,425.49	70.65	21.177		

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 523H - 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			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,550.00	5,547.18	5,756.24	5,749.28	19.61	20.35	-31.47	-134.29	-1,554.62	1,496.42	1,456.91	39.51	37.872	
5,600.00	5,597.07	5,805.30	5,797.87	19.78	20.53	-31.51	-132.81	-1,548.01	1,486.84	1,446.98	39.86	37.302	
5,650.00	5,646.97	5,854.37	5,846.47	19.96	20.71	-31.55	-131.34	-1,541.41	1,477.25	1,437.05	40.21	36.742	
5,700.00	5,696.87	5,903.43	5,895.06	20.14	20.89	-31.59	-129.86	-1,534.80	1,467.67	1,427.12	40.55	36.192	
5,750.00	5,746.76	5,952.49	5,943.65	20.32	21.07	-31.63	-128.39	-1,528.19	1,458.09	1,417.19	40.90	35.650	
5,800.00	5,796.66	6,001.56	5,992.25	20.50	21.25	-31.67	-126.91	-1,521.58	1,448.51	1,407.26	41.25	35.118	
5,850.00	5,846.55	6,050.62	6,040.84	20.68	21.43	-31.71	-125.43	-1,514.98	1,438.93	1,397.33	41.59	34.594	
5,900.00	5,896.45	6,100.32	6,089.44	20.86	21.61	-31.75	-123.96	-1,508.37	1,429.35	1,387.40	41.94	34.077	
5,950.00	5,946.35	6,148.75	6,138.03	21.04	21.79	-31.79	-122.48	-1,501.76	1,419.77	1,377.48	42.29	33.571	
6,000.00	5,996.24	6,202.19	6,186.62	21.22	21.98	-31.84	-121.00	-1,495.15	1,410.19	1,367.53	42.65	33.061	
6,050.00	6,046.14	6,246.87	6,235.22	21.40	22.15	-31.88	-119.53	-1,488.55	1,400.61	1,357.62	42.99	32.581	
6,100.00	6,096.03	6,304.07	6,283.81	21.58	22.36	-31.92	-118.05	-1,481.94	1,391.03	1,347.67	43.37	32.077	
6,150.00	6,145.93	6,345.00	6,332.41	21.76	22.51	-31.97	-116.57	-1,475.33	1,381.46	1,337.77	43.69	31.623	
6,200.00	6,195.82	6,394.06	6,381.00	21.94	22.70	-32.01	-115.10	-1,468.73	1,371.88	1,327.84	44.03	31.154	
6,250.00	6,245.72	6,443.12	6,429.59	22.12	22.88	-32.06	-113.62	-1,462.12	1,362.30	1,317.92	44.38	30.693	
6,300.00	6,295.62	6,507.81	6,478.19	22.30	23.12	-32.10	-112.14	-1,455.51	1,352.73	1,307.94	44.79	30.202	
6,350.00	6,345.51	6,541.25	6,526.78	22.48	23.25	-32.15	-110.67	-1,448.90	1,343.16	1,298.07	45.08	29.792	
6,400.00	6,395.41	6,609.69	6,575.37	22.66	23.50	-32.20	-109.19	-1,442.30	1,333.59	1,288.08	45.50	29.308	
6,450.00	6,445.30	6,639.38	6,623.97	22.84	23.61	-32.24	-107.71	-1,435.69	1,324.01	1,278.23	45.78	28.919	
6,500.00	6,495.20	6,688.44	6,672.56	23.02	23.80	-32.29	-106.24	-1,429.08	1,314.44	1,268.31	46.13	28.492	
6,550.00	6,545.09	6,737.50	6,721.16	23.20	23.98	-32.34	-104.76	-1,422.48	1,304.87	1,258.39	46.49	28.071	
6,600.00	6,594.99	6,786.57	6,769.75	23.38	24.17	-32.39	-103.29	-1,415.87	1,295.30	1,248.47	46.84	27.656	
6,650.00	6,644.89	6,835.63	6,818.34	23.56	24.35	-32.44	-101.81	-1,409.26	1,285.74	1,238.55	47.19	27.248	
6,700.00	6,694.78	6,884.69	6,866.94	23.74	24.54	-32.49	-100.33	-1,402.65	1,276.17	1,228.63	47.54	26.845	
6,750.00	6,744.68	6,933.76	6,915.53	23.92	24.72	-32.55	-98.86	-1,396.05	1,266.60	1,218.72	47.89	26.449	
6,800.00	6,794.57	6,982.82	6,964.13	24.10	24.91	-32.60	-97.38	-1,389.44	1,257.04	1,208.80	48.24	26.058	
6,850.00	6,844.47	7,031.88	7,012.72	24.28	25.09	-32.65	-95.90	-1,382.83	1,247.48	1,198.88	48.59	25.672	
6,900.00	6,894.36	7,080.95	7,061.31	24.46	25.28	-32.71	-94.43	-1,376.23	1,237.91	1,188.97	48.94	25.292	
6,950.00	6,944.26	7,130.01	7,109.91	24.65	25.46	-32.76	-92.95	-1,369.62	1,228.35	1,179.06	49.30	24.918	
7,000.00	6,994.16	7,179.07	7,158.50	24.83	25.65	-32.82	-91.47	-1,363.01	1,218.79	1,169.14	49.65	24.549	
7,050.00	7,044.05	7,228.14	7,207.09	25.01	25.84	-32.88	-90.00	-1,356.40	1,209.23	1,159.23	50.00	24.184	
7,100.00	7,093.95	7,277.20	7,255.69	25.19	26.02	-32.94	-88.52	-1,349.80	1,199.67	1,149.32	50.35	23.825	
7,150.00	7,143.84	7,317.56	7,295.68	25.37	26.18	-32.99	-87.03	-1,343.46	1,190.25	1,139.54	50.71	23.472	
7,200.00	7,193.74	7,355.11	7,332.93	25.55	26.32	-33.03	-85.54	-1,337.05	1,181.30	1,130.23	51.07	23.132	
7,250.00	7,243.63	7,392.79	7,370.36	25.73	26.46	-33.08	-84.06	-1,330.64	1,172.83	1,121.40	51.42	22.808	
7,300.00	7,293.53	7,430.60	7,407.95	25.91	26.60	-33.13	-82.57	-1,324.23	1,164.84	1,113.07	51.77	22.499	
7,350.00	7,343.43	7,468.52	7,445.69	26.09	26.74	-33.19	-81.08	-1,317.82	1,157.35	1,105.23	52.12	22.205	
7,400.00	7,393.32	7,506.54	7,483.57	26.28	26.88	-33.24	-79.59	-1,311.41	1,150.35	1,097.88	52.47	21.926	
7,450.00	7,443.22	7,544.67	7,521.59	26.46	27.02	-33.30	-78.10	-1,305.00	1,143.84	1,091.03	52.81	21.661	
7,500.00	7,493.11	7,582.90	7,559.73	26.64	27.16	-33.36	-76.61	-1,298.59	1,137.83	1,084.68	53.14	21.411	
7,550.00	7,543.01	7,621.21	7,597.98	26.82	27.30	-33.42	-75.12	-1,292.18	1,132.32	1,078.84	53.48	21.174	
7,600.00	7,592.90	7,659.60	7,636.33	27.00	27.44	-33.49	-73.63	-1,285.77	1,127.30	1,073.50	53.81	20.951	
7,650.00	7,642.80	7,700.00	7,676.70	27.18	27.58	-33.56	-72.14	-1,279.36	1,122.79	1,068.66	54.14	20.739	
7,700.00	7,692.70	7,736.59	7,713.28	27.36	27.71	-33.62	-70.65	-1,272.95	1,118.78	1,064.33	54.45	20.545	
7,750.00	7,742.59	7,775.18	7,751.86	27.55	27.84	-33.69	-69.16	-1,266.54	1,115.28	1,060.51	54.77	20.362	
7,800.00	7,792.49	7,824.13	7,799.19	27.73	28.01	-33.76	-67.67	-1,260.13	1,112.28	1,057.16	55.12	20.179	
7,850.00	7,842.38	7,862.40	7,839.08	27.91	28.15	-33.85	-66.18	-1,253.72	1,109.60	1,054.16	55.44	20.016	
7,900.00	7,892.28	7,912.29	7,888.98	28.09	28.32	-33.94	-64.69	-1,247.31	1,106.92	1,051.12	55.79	19.840	
7,950.00	7,942.17	7,962.19	7,938.87	28.27	28.50	-34.04	-63.20	-1,240.90	1,104.24	1,048.09	56.15	19.667	
8,000.00	7,992.07	8,012.09	7,988.77	28.45	28.67	-34.13	-61.71	-1,234.49	1,101.56	1,045.06	56.50	19.495	
8,050.00	8,041.97	8,061.98	8,038.67	28.64	28.85	-34.22	-60.22	-1,228.08	1,098.89	1,042.03	56.86	19.326	
8,100.00	8,091.86	8,111.88	8,088.56	28.82	29.02	-34.32	-58.73	-1,221.67	1,096.22	1,039.01	57.22	19.159	

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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 523H - 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			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
8,150.00	8,141.76	8,161.77	8,138.46	29.00	29.20	-34.41	-80.18	-1,312.47	1,093.56	1,035.99	57.57	18.995	
8,200.00	8,191.65	8,200.00	8,176.67	29.18	29.33	-34.53	-81.05	-1,312.47	1,091.11	1,033.23	57.88	18.853	
8,250.00	8,241.55	8,238.16	8,214.67	29.36	29.45	-34.78	-84.43	-1,312.47	1,089.23	1,031.07	58.17	18.726	
8,300.00	8,291.44	8,274.64	8,250.71	29.54	29.56	-35.14	-90.01	-1,312.46	1,087.98	1,029.54	58.44	18.616	
8,350.00	8,341.34	8,310.14	8,285.38	29.73	29.67	-35.60	-97.63	-1,312.45	1,087.41	1,028.71	58.70	18.523	
8,363.27	8,354.58	8,319.37	8,294.31	29.77	29.70	-35.74	-99.97	-1,312.44	1,087.39	1,028.62	58.77	18.502 CC, ES	
8,400.00	8,391.24	8,344.45	8,318.37	29.91	29.78	-36.15	-107.03	-1,312.43	1,087.60	1,028.65	58.95	18.450	
8,450.00	8,441.13	8,377.39	8,349.46	30.09	29.87	-36.78	-117.89	-1,312.41	1,088.63	1,029.46	59.17	18.399	
8,500.00	8,491.03	8,408.83	8,378.52	30.27	29.96	-37.45	-129.91	-1,312.40	1,090.59	1,031.23	59.36	18.372 SF	
8,550.00	8,540.92	8,438.71	8,405.47	30.45	30.04	-38.17	-142.79	-1,312.38	1,093.57	1,034.05	59.52	18.373	
8,600.00	8,590.82	8,466.98	8,430.33	30.64	30.12	-38.91	-156.26	-1,312.35	1,097.65	1,038.01	59.64	18.403	
8,650.00	8,640.71	8,493.65	8,453.14	30.82	30.18	-39.65	-170.07	-1,312.33	1,102.93	1,043.20	59.73	18.467	
8,700.00	8,690.61	8,518.74	8,473.99	31.00	30.24	-40.40	-184.02	-1,312.31	1,109.47	1,049.71	59.76	18.565	
8,750.00	8,740.51	8,542.30	8,492.99	31.18	30.30	-41.14	-197.94	-1,312.29	1,117.34	1,057.59	59.75	18.700	
8,800.00	8,790.40	8,564.39	8,510.28	31.37	30.35	-41.86	-211.69	-1,312.27	1,126.59	1,066.90	59.69	18.874	
8,850.00	8,840.30	8,585.09	8,525.99	31.55	30.39	-42.56	-225.17	-1,312.25	1,137.26	1,077.67	59.58	19.088	
8,900.00	8,890.19	8,600.00	8,537.00	31.73	30.42	-43.08	-235.23	-1,312.23	1,149.38	1,090.01	59.36	19.361	
8,950.00	8,940.09	8,622.62	8,553.19	31.91	30.47	-43.89	-251.02	-1,312.21	1,162.93	1,103.71	59.21	19.640	
9,000.00	8,989.98	8,639.61	8,564.93	32.09	30.50	-44.51	-263.30	-1,312.19	1,177.95	1,118.99	58.96	19.980	
9,050.00	9,039.88	8,650.00	8,571.93	32.28	30.52	-44.89	-270.98	-1,312.18	1,194.45	1,135.87	58.58	20.390	
9,100.00	9,089.78	8,670.46	8,585.30	32.46	30.56	-45.66	-286.46	-1,312.15	1,212.33	1,154.01	58.32	20.788	
9,150.00	9,139.67	8,684.46	8,594.13	32.64	30.59	-46.20	-297.33	-1,312.13	1,231.64	1,173.70	57.94	21.255	
9,200.00	9,189.57	8,700.00	8,603.61	32.82	30.62	-46.80	-309.64	-1,312.11	1,252.34	1,194.76	57.58	21.750	
9,250.00	9,239.46	8,700.00	8,603.61	33.01	30.62	-46.80	-309.64	-1,312.11	1,274.45	1,217.48	56.96	22.373	
9,300.00	9,289.36	8,721.57	8,616.22	33.19	30.66	-47.64	-327.14	-1,312.09	1,297.68	1,241.01	56.66	22.901	
9,350.00	9,339.25	8,732.50	8,622.35	33.37	30.68	-48.07	-336.19	-1,312.07	1,322.24	1,266.04	56.20	23.528	
9,400.00	9,389.15	8,750.00	8,631.81	33.55	30.72	-48.77	-350.91	-1,312.05	1,348.06	1,292.23	55.83	24.146	
9,450.00	9,439.05	8,750.00	8,631.81	33.74	30.72	-48.77	-350.91	-1,312.05	1,374.93	1,319.73	55.20	24.910	
9,500.00	9,488.94	8,750.00	8,631.81	33.92	30.72	-48.77	-350.91	-1,312.05	1,403.06	1,348.50	54.56	25.714	
9,550.00	9,538.84	8,770.41	8,642.26	34.10	30.76	-49.59	-368.44	-1,312.02	1,431.99	1,377.74	54.25	26.394	
9,600.00	9,588.73	8,778.63	8,646.30	34.28	30.77	-49.92	-375.60	-1,312.01	1,462.04	1,408.28	53.77	27.193	
9,650.00	9,638.63	8,800.00	8,656.29	34.47	30.82	-50.78	-394.49	-1,311.98	1,493.23	1,439.74	53.49	27.917	

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
3,350.00	3,350.00	3,577.83	3,585.83	11.80	12.73	-93.46	-89.52	-1,478.95	1,497.86	1,473.70	24.17	61.981	
3,400.00	3,400.00	3,627.22	3,614.62	11.97	12.93	-93.36	-86.44	-1,471.89	1,490.53	1,466.01	24.52	60.779	
3,450.00	3,450.00	3,676.60	3,663.40	12.15	13.12	-93.26	-83.36	-1,464.83	1,483.20	1,458.32	24.88	59.611	
3,500.00	3,500.00	3,725.99	3,712.18	12.33	13.31	-93.15	-80.28	-1,457.77	1,475.88	1,450.64	25.24	58.476	
3,550.00	3,550.00	3,775.38	3,760.97	12.51	13.50	-93.05	-77.20	-1,450.70	1,468.56	1,442.96	25.60	57.372	
3,600.00	3,600.00	3,824.77	3,809.75	12.69	13.70	-92.94	-74.12	-1,443.64	1,461.25	1,435.29	25.96	56.298	
3,650.00	3,650.00	3,874.16	3,858.53	12.87	13.89	-92.83	-71.04	-1,436.58	1,453.94	1,427.63	26.31	55.253	
3,700.00	3,700.00	3,923.54	3,907.32	13.05	14.09	-92.72	-67.96	-1,429.52	1,446.64	1,419.96	26.67	54.236	
3,750.00	3,750.00	3,972.93	3,956.10	13.23	14.28	-92.61	-64.88	-1,422.46	1,439.34	1,412.31	27.03	53.245	
3,800.00	3,800.00	4,022.32	4,004.88	13.41	14.47	-92.50	-61.80	-1,415.40	1,432.05	1,404.66	27.39	52.281	
3,850.00	3,850.00	4,071.71	4,053.67	13.59	14.67	-92.39	-58.72	-1,408.34	1,424.76	1,397.01	27.75	51.341	
3,900.00	3,900.00	4,121.10	4,102.45	13.77	14.86	-92.27	-55.64	-1,401.27	1,417.48	1,389.37	28.11	50.425	
3,950.00	3,950.00	4,170.48	4,151.23	13.94	15.06	-92.16	-52.56	-1,394.21	1,410.20	1,381.73	28.47	49.532	
4,000.00	4,000.00	4,219.87	4,200.02	14.12	15.26	-92.04	-49.48	-1,387.15	1,402.93	1,374.10	28.83	48.661	
4,050.00	4,050.00	4,269.23	4,248.77	14.30	15.45	-26.47	-46.40	-1,380.09	1,395.43	1,366.24	29.19	47.808	
4,100.00	4,099.99	4,318.53	4,297.46	14.48	15.65	-26.41	-43.33	-1,373.05	1,387.44	1,357.90	29.55	46.959	
4,150.00	4,149.97	4,367.75	4,346.09	14.65	15.84	-26.36	-40.26	-1,366.01	1,378.98	1,349.08	29.90	46.120	
4,200.00	4,199.94	4,416.91	4,394.64	14.83	16.04	-26.33	-37.19	-1,358.98	1,370.04	1,339.79	30.25	45.284	
4,250.00	4,249.88	4,465.98	4,443.11	15.00	16.24	-26.31	-34.13	-1,351.96	1,360.62	1,330.02	30.61	44.452	
4,300.00	4,299.79	4,514.96	4,491.50	15.18	16.43	-26.29	-31.08	-1,344.96	1,350.73	1,319.77	30.96	43.625	
4,350.00	4,349.68	4,563.91	4,539.85	15.35	16.63	-26.23	-28.02	-1,337.96	1,340.64	1,309.32	31.32	42.810	
4,400.00	4,399.58	4,612.86	4,588.20	15.53	16.82	-26.16	-24.97	-1,330.96	1,330.54	1,298.87	31.67	42.015	
4,450.00	4,449.47	4,661.81	4,636.55	15.70	17.02	-26.10	-21.92	-1,323.96	1,320.45	1,288.43	32.02	41.236	
4,500.00	4,499.37	4,710.76	4,684.90	15.88	17.22	-26.03	-18.86	-1,316.96	1,310.36	1,277.98	32.38	40.474	
4,550.00	4,549.26	4,759.71	4,733.24	16.05	17.41	-25.96	-15.81	-1,309.97	1,300.27	1,267.54	32.73	39.728	
4,600.00	4,599.16	4,808.66	4,781.59	16.23	17.61	-25.90	-12.76	-1,302.97	1,290.18	1,257.10	33.08	38.998	
4,650.00	4,649.06	4,857.60	4,829.94	16.41	17.81	-25.83	-9.71	-1,295.97	1,280.10	1,246.66	33.44	38.283	
4,700.00	4,698.95	4,906.55	4,878.29	16.58	18.00	-25.76	-6.65	-1,288.97	1,270.02	1,236.22	33.79	37.582	
4,750.00	4,748.85	4,955.50	4,926.64	16.76	18.20	-25.68	-3.60	-1,281.97	1,259.93	1,225.79	34.15	36.896	
4,800.00	4,798.74	5,004.45	4,974.99	16.94	18.40	-25.61	-0.55	-1,274.97	1,249.86	1,215.35	34.50	36.225	
4,850.00	4,848.64	5,053.40	5,023.34	17.11	18.60	-25.54	2.51	-1,267.97	1,239.78	1,204.92	34.86	35.566	
4,900.00	4,898.53	5,102.35	5,071.69	17.29	18.80	-25.46	5.56	-1,260.97	1,229.70	1,194.49	35.21	34.921	
4,950.00	4,948.43	5,151.29	5,120.04	17.47	18.99	-25.38	8.61	-1,253.98	1,219.63	1,184.06	35.57	34.288	
5,000.00	4,998.33	5,200.24	5,168.39	17.65	19.19	-25.31	11.66	-1,246.98	1,209.56	1,173.63	35.93	33.668	
5,050.00	5,048.22	5,249.19	5,216.74	17.82	19.39	-25.23	14.72	-1,239.98	1,199.49	1,163.21	36.28	33.059	
5,100.00	5,098.12	5,301.86	5,265.09	18.00	19.60	-25.15	17.77	-1,232.98	1,189.42	1,152.77	36.65	32.450	
5,150.00	5,148.01	5,347.09	5,313.44	18.18	19.79	-25.06	20.82	-1,225.98	1,179.36	1,142.36	37.00	31.878	
5,200.00	5,197.91	5,403.96	5,361.79	18.36	20.02	-24.98	23.87	-1,218.98	1,169.30	1,131.91	37.38	31.279	
5,250.00	5,247.80	5,444.99	5,410.13	18.53	20.18	-24.90	26.93	-1,211.98	1,159.24	1,121.52	37.71	30.740	
5,300.00	5,297.70	5,506.07	5,458.48	18.71	20.43	-24.81	29.98	-1,204.98	1,149.18	1,111.06	38.11	30.151	
5,350.00	5,347.60	5,542.88	5,506.83	18.89	20.58	-24.72	33.03	-1,197.99	1,139.12	1,100.70	38.43	29.644	
5,400.00	5,397.49	5,591.83	5,555.18	19.07	20.78	-24.63	36.09	-1,190.99	1,129.07	1,090.29	38.78	29.112	
5,450.00	5,447.39	5,640.78	5,603.53	19.25	20.98	-24.54	39.14	-1,183.99	1,119.02	1,079.88	39.14	28.588	
5,500.00	5,497.28	5,689.73	5,651.88	19.43	21.18	-24.45	42.19	-1,176.99	1,108.98	1,069.47	39.50	28.075	
5,550.00	5,547.18	5,738.68	5,700.23	19.61	21.38	-24.36	45.24	-1,169.99	1,098.93	1,059.07	39.86	27.570	
5,600.00	5,597.07	5,787.62	5,748.58	19.78	21.58	-24.26	48.30	-1,162.99	1,088.89	1,048.67	40.22	27.075	
5,650.00	5,646.97	5,836.57	5,796.93	19.96	21.78	-24.16	51.35	-1,155.99	1,078.85	1,038.28	40.58	26.588	
5,700.00	5,696.87	5,885.52	5,845.28	20.14	21.98	-24.06	54.40	-1,148.99	1,068.82	1,027.88	40.94	26.109	
5,750.00	5,746.76	5,934.47	5,893.63	20.32	22.18	-23.96	57.46	-1,142.00	1,058.79	1,017.49	41.30	25.639	
5,800.00	5,796.66	5,983.42	5,941.98	20.50	22.38	-23.86	60.51	-1,135.00	1,048.76	1,007.10	41.66	25.177	
5,850.00	5,846.55	6,032.37	5,990.33	20.68	22.58	-23.75	63.56	-1,128.00	1,038.73	996.72	42.02	24.723	
5,900.00	5,896.45	6,081.32	6,038.67	20.86	22.78	-23.64	66.61	-1,121.00	1,028.71	986.34	42.38	24.276	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
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		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,950.00	5,946.35	6,130.26	6,087.02	21.04	22.98	-23.53	69.67	-1,114.00	1,018.69	975.96	42.74	23.837	
6,000.00	5,996.24	6,179.21	6,135.37	21.22	23.18	-23.42	72.72	-1,107.00	1,008.68	965.58	43.10	23.405	
6,050.00	6,046.14	6,228.16	6,183.72	21.40	23.38	-23.31	75.77	-1,100.00	998.67	955.21	43.46	22.981	
6,100.00	6,096.03	6,277.11	6,232.07	21.58	23.58	-23.19	78.83	-1,093.01	988.66	944.84	43.82	22.563	
6,150.00	6,145.93	6,326.06	6,280.42	21.76	23.78	-23.07	81.88	-1,086.01	978.66	934.48	44.18	22.152	
6,200.00	6,195.82	6,375.01	6,328.77	21.94	23.98	-22.95	84.93	-1,079.01	968.66	924.12	44.54	21.748	
6,250.00	6,245.72	6,423.95	6,377.12	22.12	24.18	-22.83	87.98	-1,072.01	958.67	913.76	44.90	21.350	
6,300.00	6,295.62	6,472.90	6,425.47	22.30	24.38	-22.70	91.04	-1,065.01	948.68	903.41	45.26	20.959	
6,350.00	6,345.51	6,521.85	6,473.82	22.48	24.58	-22.57	94.09	-1,058.01	938.69	893.07	45.63	20.574	
6,400.00	6,395.41	6,570.80	6,522.17	22.66	24.78	-22.44	97.14	-1,051.01	928.71	882.72	45.99	20.195	
6,450.00	6,445.30	6,619.75	6,570.52	22.84	24.98	-22.31	100.20	-1,044.02	918.73	872.38	46.35	19.822	
6,500.00	6,495.20	6,668.70	6,618.87	23.02	25.18	-22.17	103.25	-1,037.02	908.76	862.05	46.71	19.454	
6,550.00	6,545.09	6,717.65	6,667.22	23.20	25.38	-22.03	106.30	-1,030.02	898.80	851.72	47.08	19.093	
6,600.00	6,594.99	6,766.59	6,715.58	23.38	25.58	-21.89	109.35	-1,023.02	888.84	841.40	47.44	18.737	
6,650.00	6,644.89	6,815.54	6,763.91	23.56	25.78	-21.74	112.41	-1,016.02	878.88	831.08	47.80	18.386	
6,700.00	6,694.78	6,864.49	6,812.26	23.74	25.98	-21.59	115.46	-1,009.02	868.93	820.77	48.17	18.041	
6,750.00	6,744.68	6,913.44	6,860.61	23.92	26.18	-21.43	118.51	-1,002.02	858.99	810.46	48.53	17.701	
6,800.00	6,794.57	6,962.39	6,908.96	24.10	26.39	-21.28	121.56	-995.02	849.05	800.16	48.89	17.366	
6,850.00	6,844.47	7,011.34	6,957.31	24.28	26.59	-21.12	124.62	-988.03	839.12	789.86	49.26	17.035	
6,900.00	6,894.36	7,060.28	7,005.66	24.46	26.79	-20.95	127.67	-981.03	829.20	779.57	49.62	16.710	
6,950.00	6,944.26	7,109.23	7,054.01	24.65	26.99	-20.78	130.72	-974.03	819.28	769.29	49.99	16.390	
7,000.00	6,994.16	7,158.18	7,102.36	24.83	27.19	-20.61	133.78	-967.03	809.37	759.02	50.35	16.074	
7,050.00	7,044.05	7,207.13	7,150.71	25.01	27.39	-20.43	136.83	-960.03	799.46	748.75	50.72	15.763	
7,100.00	7,093.95	7,256.08	7,199.06	25.19	27.59	-20.25	139.88	-953.03	789.57	738.49	51.08	15.457	
7,150.00	7,143.84	7,305.03	7,247.41	25.37	27.80	-20.06	142.93	-946.03	779.68	728.23	51.45	15.154	
7,200.00	7,193.74	7,353.98	7,295.76	25.55	28.00	-19.87	145.99	-939.04	769.80	717.98	51.82	14.857	
7,250.00	7,243.63	7,402.92	7,344.11	25.73	28.20	-19.68	149.04	-932.04	759.93	707.75	52.18	14.563	
7,300.00	7,293.53	7,451.87	7,392.45	25.91	28.40	-19.48	152.09	-925.04	750.07	697.52	52.55	14.274	
7,350.00	7,343.43	7,500.82	7,440.80	26.09	28.60	-19.27	155.15	-918.04	740.21	687.30	52.92	13.988	
7,400.00	7,393.32	7,549.42	7,484.87	26.28	28.78	-19.08	157.89	-911.74	730.46	677.17	53.29	13.707	
7,450.00	7,443.22	7,597.49	7,526.50	26.46	28.95	-18.91	160.31	-905.20	721.15	667.48	53.67	13.437	
7,500.00	7,493.11	7,629.74	7,568.37	26.64	29.12	-18.76	162.56	-901.05	712.33	658.29	54.04	13.181	
7,550.00	7,543.01	7,672.14	7,610.47	26.82	29.29	-18.62	164.62	-896.31	703.98	649.57	54.41	12.938	
7,600.00	7,592.90	7,714.70	7,652.76	27.00	29.45	-18.50	166.51	-891.99	696.12	641.35	54.77	12.709	
7,650.00	7,642.80	7,757.41	7,695.25	27.18	29.62	-18.40	168.21	-888.09	688.74	633.61	55.13	12.492	
7,700.00	7,692.70	7,800.24	7,737.92	27.36	29.78	-18.31	169.73	-884.61	681.85	626.36	55.49	12.288	
7,750.00	7,742.59	7,843.20	7,780.75	27.55	29.94	-18.25	171.06	-881.56	675.44	619.60	55.84	12.097	
7,800.00	7,792.49	7,886.27	7,823.72	27.73	30.09	-18.20	172.20	-878.95	669.51	613.33	56.18	11.917	
7,850.00	7,842.38	7,929.44	7,866.83	27.91	30.25	-18.17	173.15	-876.77	664.07	607.55	56.52	11.749	
7,900.00	7,892.28	7,972.70	7,910.05	28.09	30.40	-18.17	173.90	-875.05	659.12	602.27	56.85	11.593	
7,950.00	7,942.17	8,016.04	7,953.37	28.27	30.55	-18.18	174.46	-873.76	654.66	597.48	57.18	11.449	
8,000.00	7,992.07	8,059.46	7,996.77	28.45	30.69	-18.22	174.82	-872.93	650.69	593.18	57.50	11.315	
8,050.00	8,041.97	8,102.92	8,040.24	28.64	30.84	-18.28	174.99	-872.55	647.21	589.39	57.82	11.193	
8,100.00	8,091.86	8,150.65	8,087.96	28.82	31.00	-18.36	175.00	-872.52	644.12	585.96	58.16	11.076	
8,150.00	8,141.76	8,200.55	8,137.86	29.00	31.16	-18.45	175.00	-872.52	641.05	582.55	58.50	10.958	
8,200.00	8,191.65	8,250.44	8,187.75	29.18	31.32	-18.55	175.00	-872.52	637.99	579.15	58.85	10.842	
8,250.00	8,241.55	8,300.34	8,237.65	29.36	31.49	-18.64	175.00	-872.52	634.93	575.74	59.19	10.727	
8,300.00	8,291.44	8,350.23	8,287.54	29.54	31.65	-18.73	175.00	-872.52	631.87	572.34	59.54	10.613	
8,350.00	8,341.34	8,400.13	8,337.44	29.73	31.82	-18.83	175.00	-872.52	628.82	568.93	59.88	10.501	
8,400.00	8,391.24	8,450.02	8,387.34	29.91	31.98	-18.92	175.00	-872.52	625.76	565.53	60.23	10.390	
8,450.00	8,441.13	8,503.69	8,440.98	30.09	32.15	-19.13	173.87	-872.52	622.61	562.02	60.59	10.276	
8,500.00	8,491.03	8,558.55	8,495.48	30.27	32.31	-19.80	167.82	-872.51	619.07	558.15	60.92	10.162	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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	Offset	Semi Major Axis		Distance		Minimum		Separation		Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
8,550.00	8,540.92	8,611.51	8,547.32	30.45	32.45	-20.90	157.05	-872.50	615.26	554.04	61.23	10.049	
8,600.00	8,590.82	8,661.83	8,595.45	30.64	32.58	-22.38	142.44	-872.47	611.47	549.96	61.51	9.941	
8,650.00	8,640.71	8,708.98	8,639.22	30.82	32.68	-24.13	124.96	-872.45	608.02	546.26	61.76	9.845	
8,700.00	8,690.61	8,752.68	8,678.39	31.00	32.77	-26.06	105.59	-872.42	605.31	543.33	61.98	9.766	
8,750.00	8,740.51	8,792.85	8,712.99	31.18	32.85	-28.09	85.21	-872.39	603.73	541.57	62.16	9.713	
8,777.77	8,768.22	8,813.64	8,730.32	31.28	32.88	-29.23	73.71	-872.37	603.47	541.25	62.22	9.699 CC, ES	
8,800.00	8,790.40	8,829.54	8,743.28	31.37	32.91	-30.14	64.51	-872.36	603.65	541.39	62.26	9.696 SF	
8,850.00	8,840.30	8,882.93	8,769.64	31.55	32.96	-32.15	44.02	-872.32	605.41	543.15	62.26	9.724	
8,900.00	8,890.19	8,893.25	8,792.51	31.73	33.00	-34.09	24.12	-872.29	609.31	547.17	62.15	9.804	
8,950.00	8,940.09	8,920.74	8,812.31	31.91	33.03	-35.92	5.05	-872.27	615.57	553.68	61.89	9.946	
9,000.00	8,989.98	8,945.69	8,829.46	32.09	33.05	-37.65	-13.06	-872.24	624.34	562.85	61.49	10.153	
9,050.00	9,039.88	8,968.34	8,844.34	32.28	33.07	-39.25	-30.14	-872.21	635.71	574.76	60.95	10.430	
9,100.00	9,089.78	8,988.94	8,857.28	32.46	33.09	-40.74	-46.16	-872.19	649.70	589.44	60.27	10.781	
9,150.00	9,139.67	9,007.70	8,868.56	32.64	33.11	-42.11	-61.16	-872.16	666.28	606.82	59.46	11.205	
9,200.00	9,189.57	9,024.83	8,878.42	32.82	33.12	-43.37	-75.17	-872.14	685.38	626.81	58.57	11.702	
9,250.00	9,239.46	9,040.50	8,887.07	33.01	33.13	-44.53	-88.23	-872.12	706.87	649.27	57.60	12.272	
9,300.00	9,289.36	9,050.00	8,892.14	33.19	33.13	-45.23	-96.26	-872.11	730.65	674.19	56.46	12.940	
9,350.00	9,339.25	9,068.09	8,901.42	33.37	33.14	-46.57	-111.79	-872.09	756.48	700.93	55.55	13.619	
9,400.00	9,389.15	9,080.27	8,907.39	33.55	33.15	-47.47	-122.41	-872.07	784.30	729.79	54.51	14.388	
9,450.00	9,439.05	9,100.00	8,916.58	33.74	33.16	-48.93	-139.87	-872.04	814.00	760.30	53.70	15.159	
9,500.00	9,488.94	9,100.00	8,916.58	33.92	33.16	-48.93	-139.87	-872.04	845.16	792.72	52.45	16.114	
9,550.00	9,538.84	9,111.59	8,921.69	34.10	33.16	-49.79	-150.26	-872.03	877.91	826.36	51.54	17.032	
9,600.00	9,588.73	9,120.57	8,925.51	34.28	33.16	-50.45	-158.39	-872.02	912.01	861.37	50.64	18.011	
9,650.00	9,638.63	9,128.94	8,928.95	34.47	33.16	-51.06	-166.02	-872.01	947.35	897.56	49.78	19.029	
9,700.00	9,688.52	9,136.75	8,932.07	34.65	33.17	-51.62	-173.19	-871.99	983.80	934.82	48.98	20.084	
9,750.00	9,738.42	9,150.00	8,937.12	34.83	33.17	-52.58	-185.43	-871.98	1,021.31	972.94	48.37	21.114	
9,800.00	9,788.32	9,150.00	8,937.12	35.01	33.17	-52.58	-185.43	-871.98	1,059.65	1,012.12	47.53	22.295	
9,850.00	9,838.21	9,150.00	8,937.12	35.20	33.17	-52.58	-185.43	-871.98	1,098.93	1,052.17	46.76	23.501	
9,900.00	9,888.11	9,150.00	8,937.12	35.38	33.17	-52.58	-185.43	-871.98	1,139.04	1,092.98	46.06	24.730	
9,950.00	9,938.00	9,169.08	8,943.91	35.56	33.18	-53.94	-203.27	-871.95	1,179.48	1,133.68	45.80	25.753	
10,000.00	9,987.90	9,174.46	8,945.71	35.74	33.18	-54.33	-208.33	-871.94	1,220.75	1,175.44	45.31	26.941	
10,050.00	10,037.79	9,179.53	8,947.37	35.93	33.18	-54.68	-213.13	-871.93	1,262.59	1,217.72	44.87	28.138	
10,100.00	10,087.69	9,184.34	8,948.90	36.11	33.18	-55.02	-217.68	-871.93	1,304.96	1,260.48	44.47	29.344	
10,150.00	10,137.59	9,200.00	8,953.62	36.29	33.19	-56.11	-232.61	-871.90	1,347.93	1,303.64	44.30	30.428	
10,200.00	10,187.48	9,200.00	8,953.62	36.48	33.19	-56.11	-232.61	-871.90	1,391.11	1,347.21	43.90	31.691	
10,250.00	10,237.38	9,200.00	8,953.62	36.66	33.19	-56.11	-232.61	-871.90	1,434.73	1,391.19	43.54	32.955	
10,300.00	10,287.27	9,200.00	8,953.62	36.84	33.19	-56.11	-232.61	-871.90	1,478.75	1,435.54	43.22	34.218	

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,600.00	7,592.90	7,607.54	7,591.17	27.00	27.06	-24.32	98.12	-1,700.05	1,497.30	1,443.40	53.89	27.782		
7,650.00	7,642.80	7,642.38	7,641.07	27.18	27.18	-24.33	99.32	-1,700.05	1,494.36	1,440.16	54.20	27.573		
7,700.00	7,692.70	7,707.71	7,690.96	27.36	27.42	-24.33	100.51	-1,700.05	1,491.42	1,436.81	54.61	27.310		
7,750.00	7,742.59	7,742.20	7,740.86	27.55	27.54	-24.34	101.71	-1,700.05	1,488.48	1,433.57	54.91	27.106		
7,800.00	7,792.49	7,807.88	7,790.76	27.73	27.78	-24.34	102.91	-1,700.05	1,485.55	1,430.22	55.33	26.850		
7,850.00	7,842.38	7,842.03	7,840.66	27.91	27.90	-24.35	104.10	-1,700.05	1,482.61	1,426.98	55.63	26.652		
7,900.00	7,892.28	7,908.06	7,890.56	28.09	28.14	-24.35	105.30	-1,700.05	1,479.67	1,423.63	56.04	26.402		
7,950.00	7,942.17	7,941.88	7,940.46	28.27	28.26	-24.36	106.50	-1,700.05	1,476.73	1,420.39	56.34	26.209		
8,000.00	7,992.07	8,008.23	7,990.36	28.45	28.50	-24.36	107.70	-1,700.05	1,473.80	1,417.04	56.76	25.985		
8,050.00	8,041.97	8,041.68	8,040.26	28.64	28.62	-24.37	108.89	-1,700.05	1,470.86	1,413.80	57.06	25.778		
8,100.00	8,091.86	8,108.40	8,090.16	28.82	28.86	-24.37	110.09	-1,700.05	1,467.92	1,410.44	57.48	25.539		
8,150.00	8,141.76	8,141.51	8,140.06	29.00	28.97	-24.38	111.29	-1,700.05	1,464.98	1,407.21	57.78	25.356		
8,200.00	8,191.65	8,208.58	8,189.96	29.18	29.21	-24.38	112.49	-1,700.05	1,462.05	1,403.85	58.20	25.123		
8,250.00	8,241.55	8,241.34	8,239.86	29.36	29.33	-24.39	113.68	-1,700.05	1,459.11	1,400.62	58.49	24.948		
8,300.00	8,291.44	8,308.75	8,289.75	29.54	29.57	-24.39	114.88	-1,700.05	1,456.17	1,397.26	58.91	24.717		
8,350.00	8,341.34	8,341.16	8,339.65	29.73	29.69	-24.40	116.08	-1,700.05	1,453.24	1,394.03	59.21	24.545		
8,400.00	8,391.24	8,408.92	8,389.55	29.91	29.93	-24.40	117.27	-1,700.05	1,450.30	1,390.67	59.63	24.322		
8,450.00	8,441.13	8,440.99	8,439.45	30.09	30.05	-24.41	118.47	-1,700.05	1,447.36	1,387.44	59.92	24.153		
8,500.00	8,491.03	8,509.10	8,489.35	30.27	30.29	-24.42	119.67	-1,700.05	1,444.42	1,384.08	60.35	23.935		
8,550.00	8,540.92	8,540.82	8,539.25	30.45	30.41	-24.42	120.87	-1,700.05	1,441.49	1,380.85	60.64	23.771		
8,600.00	8,590.82	8,590.27	8,589.15	30.64	30.65	-24.43	122.06	-1,700.05	1,438.55	1,377.48	61.07	23.558		
8,650.00	8,640.71	8,640.64	8,639.05	30.82	30.77	-24.43	123.26	-1,700.05	1,435.61	1,374.25	61.36	23.398		
8,700.00	8,690.61	8,709.44	8,688.95	31.00	31.01	-24.44	124.46	-1,700.05	1,432.67	1,370.89	61.78	23.189		
8,750.00	8,740.51	8,740.47	8,738.85	31.18	31.12	-24.44	125.66	-1,700.05	1,429.74	1,367.66	62.07	23.033		
8,800.00	8,790.40	8,809.62	8,788.75	31.37	31.37	-24.45	126.85	-1,700.05	1,426.80	1,364.30	62.50	22.829		
8,850.00	8,840.30	8,840.30	8,838.64	31.55	31.48	-24.45	128.05	-1,700.05	1,423.86	1,361.07	62.79	22.677		
8,900.00	8,890.19	8,909.79	8,888.54	31.73	31.73	-24.46	129.25	-1,700.05	1,420.93	1,357.71	63.22	22.478		
8,950.00	8,940.09	8,940.13	8,938.44	31.91	31.84	-24.46	130.44	-1,700.05	1,417.99	1,354.48	63.51	22.328		
9,000.00	8,989.98	9,009.96	8,988.34	32.09	32.09	-24.47	131.64	-1,700.05	1,415.05	1,351.11	63.94	22.132		
9,050.00	9,039.88	9,039.95	9,038.24	32.28	32.20	-24.48	132.84	-1,700.05	1,412.11	1,347.89	64.22	21.987		
9,100.00	9,089.78	9,089.87	9,088.14	32.46	32.38	-24.48	134.04	-1,700.05	1,409.18	1,344.60	64.58	21.820		
9,150.00	9,139.67	9,139.78	9,138.04	32.64	32.56	-24.49	135.23	-1,700.05	1,406.24	1,341.30	64.94	21.654		
9,200.00	9,189.57	9,189.69	9,187.94	32.82	32.74	-24.49	136.43	-1,700.05	1,403.30	1,338.00	65.30	21.490		
9,250.00	9,239.46	9,239.61	9,237.84	33.01	32.92	-24.50	137.63	-1,700.05	1,400.37	1,334.71	65.66	21.328		
9,300.00	9,289.36	9,289.52	9,287.74	33.19	33.09	-24.50	138.83	-1,700.05	1,397.43	1,331.41	66.02	21.168		
9,350.00	9,339.25	9,339.43	9,337.64	33.37	33.27	-24.51	140.02	-1,700.05	1,394.49	1,328.12	66.37	21.009		
9,400.00	9,389.15	9,389.35	9,387.53	33.55	33.45	-24.52	141.22	-1,700.05	1,391.55	1,324.82	66.73	20.853		
9,450.00	9,439.05	9,439.26	9,437.43	33.74	33.63	-24.52	142.42	-1,700.05	1,388.62	1,321.53	67.09	20.697		
9,500.00	9,488.94	9,489.17	9,487.33	33.92	33.81	-24.53	143.61	-1,700.05	1,385.68	1,318.23	67.45	20.544		
9,550.00	9,538.84	9,539.09	9,537.23	34.10	33.99	-24.53	144.81	-1,700.05	1,382.74	1,314.94	67.81	20.392		
9,600.00	9,588.73	9,589.00	9,587.13	34.28	34.17	-24.54	146.01	-1,700.05	1,379.81	1,311.64	68.17	20.241		
9,650.00	9,638.63	9,638.91	9,637.03	34.47	34.35	-24.54	147.21	-1,700.05	1,376.87	1,308.34	68.53	20.093		
9,700.00	9,688.52	9,688.83	9,686.93	34.65	34.53	-24.55	148.40	-1,700.05	1,373.93	1,305.05	68.88	19.945		
9,750.00	9,738.42	9,738.74	9,736.83	34.83	34.71	-24.56	149.60	-1,700.05	1,371.00	1,301.75	69.24	19.800		
9,800.00	9,788.32	9,788.65	9,786.73	35.01	34.89	-24.56	150.80	-1,700.05	1,368.06	1,298.46	69.60	19.655		
9,850.00	9,838.21	9,838.57	9,836.63	35.20	35.07	-24.57	151.99	-1,700.05	1,365.12	1,295.16	69.96	19.513		
9,900.00	9,888.11	9,888.48	9,886.53	35.38	35.24	-24.57	153.19	-1,700.05	1,362.19	1,291.87	70.32	19.371		
9,950.00	9,938.00	9,938.39	9,936.42	35.56	35.42	-24.58	154.39	-1,700.05	1,359.25	1,288.57	70.68	19.232		
10,000.00	9,987.90	9,988.31	9,986.32	35.74	35.60	-24.59	155.59	-1,700.05	1,356.31	1,285.27	71.04	19.093		
10,050.00	10,037.79	10,038.22	10,036.22	35.93	35.78	-24.59	156.78	-1,700.05	1,353.37	1,281.98	71.40	18.956		
10,100.00	10,087.69	10,088.14	10,086.12	36.11	35.96	-24.60	157.98	-1,700.05	1,350.44	1,278.68	71.75	18.820		
10,150.00	10,137.59	10,138.05	10,136.02	36.29	36.14	-24.60	159.18	-1,700.05	1,347.50	1,275.39	72.11	18.686		

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 622H - 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			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
10,200.00	10,187.48	10,187.96	10,185.92	36.48	36.32	-24.61	160.38	-1,700.05	1,344.56	1,272.09	72.47	18.553	
10,250.00	10,237.38	10,237.88	10,235.82	36.66	36.50	-24.62	161.57	-1,700.05	1,341.63	1,268.80	72.83	18.421	
10,300.00	10,287.27	10,287.79	10,285.72	36.84	36.68	-24.62	162.77	-1,700.05	1,338.69	1,265.50	73.19	18.291	
10,350.00	10,337.17	10,337.70	10,335.62	37.02	36.86	-24.63	163.97	-1,700.05	1,335.75	1,262.21	73.55	18.162	
10,400.00	10,387.06	10,387.62	10,385.52	37.21	37.04	-24.64	165.16	-1,700.05	1,332.82	1,258.91	73.91	18.034	
10,450.00	10,436.96	10,437.53	10,435.42	37.39	37.22	-24.64	166.36	-1,700.05	1,329.88	1,255.61	74.27	17.907	
10,500.00	10,486.86	10,487.44	10,485.31	37.57	37.39	-24.65	167.56	-1,700.05	1,326.94	1,252.32	74.63	17.781	
10,550.00	10,536.75	10,537.36	10,535.21	37.76	37.57	-24.65	168.76	-1,700.05	1,324.01	1,249.02	74.98	17.657	
10,600.00	10,586.65	10,587.27	10,585.11	37.94	37.75	-24.66	169.95	-1,700.05	1,321.07	1,245.73	75.34	17.534	
10,650.00	10,636.54	10,637.18	10,635.01	38.12	37.93	-24.67	171.15	-1,700.05	1,318.13	1,242.43	75.70	17.412	
10,700.00	10,686.44	10,687.10	10,684.91	38.30	38.11	-24.67	172.35	-1,700.05	1,315.20	1,239.14	76.06	17.291	
10,750.00	10,736.33	10,737.01	10,734.81	38.49	38.29	-24.68	173.55	-1,700.05	1,312.26	1,235.84	76.42	17.172	
10,800.00	10,786.23	10,786.88	10,784.67	38.67	38.47	-24.70	174.40	-1,700.05	1,309.32	1,232.55	76.78	17.053	
10,850.00	10,836.13	10,836.73	10,834.53	38.85	38.65	-24.75	174.61	-1,700.05	1,306.39	1,229.25	77.14	16.936	
10,900.00	10,886.02	10,886.63	10,884.42	39.04	38.83	-24.81	174.61	-1,700.05	1,303.46	1,225.96	77.50	16.820	
10,950.00	10,935.92	10,936.53	10,934.32	39.22	39.00	-24.87	174.61	-1,700.05	1,300.55	1,222.70	77.85	16.705	
11,000.00	10,985.84	10,986.45	10,984.24	39.40	39.18	-24.90	174.61	-1,700.05	1,298.08	1,219.87	78.21	16.597	
11,050.00	11,035.80	11,036.41	11,034.20	39.58	39.36	-24.93	174.61	-1,700.05	1,296.20	1,217.63	78.57	16.497	
11,100.00	11,085.78	11,086.39	11,084.18	39.76	39.54	-24.95	174.61	-1,700.05	1,294.92	1,215.99	78.93	16.406	
11,150.00	11,135.77	11,136.38	11,134.17	39.94	39.72	-24.96	174.61	-1,700.05	1,294.23	1,214.94	79.28	16.324	
11,198.59	11,184.36	11,184.97	11,182.76	40.11	39.89	-24.96	174.61	-1,700.05	1,294.03	1,214.40	79.63	16.251 CC	
11,200.00	11,185.77	11,186.15	11,183.94	40.11	39.90	-90.46	174.54	-1,700.05	1,294.10	1,214.46	79.64	16.250	
11,250.00	11,235.77	11,234.69	11,232.39	40.29	40.05	-90.59	171.73	-1,700.06	1,294.13	1,214.16	79.97	16.183	
11,300.00	11,285.77	11,282.43	11,279.63	40.46	40.20	-90.89	164.98	-1,700.09	1,294.25	1,213.95	80.29	16.119	
11,350.00	11,335.77	11,328.73	11,324.76	40.64	40.34	-91.34	154.70	-1,700.12	1,294.51	1,213.90	80.61	16.059	
11,400.00	11,385.77	11,373.10	11,367.10	40.81	40.47	-91.93	141.46	-1,700.17	1,295.01	1,214.09	80.92	16.004	
11,450.00	11,435.77	11,415.15	11,406.16	40.99	40.58	-92.61	125.93	-1,700.22	1,295.87	1,214.66	81.21	15.957	
11,500.00	11,485.77	11,454.65	11,441.73	41.17	40.69	-93.37	108.76	-1,700.28	1,297.22	1,215.73	81.49	15.919	
11,550.00	11,535.77	11,491.59	11,473.85	41.34	40.78	85.91	90.52	-1,700.34	1,299.17	1,217.43	81.74	15.893	
11,600.00	11,585.62	11,527.32	11,503.74	41.50	40.87	84.91	70.95	-1,700.41	1,301.58	1,219.62	81.96	15.880	
11,650.00	11,634.97	11,562.36	11,531.81	41.65	40.95	83.93	49.98	-1,700.48	1,304.32	1,222.17	82.16	15.876	
11,700.00	11,683.43	11,596.81	11,558.10	41.80	41.03	82.97	27.74	-1,700.56	1,307.32	1,225.00	82.32	15.880	
11,750.00	11,730.64	11,630.73	11,582.64	41.95	41.11	82.04	4.32	-1,700.64	1,310.52	1,228.05	82.46	15.892	
11,800.00	11,776.24	11,664.21	11,605.48	42.08	41.18	81.15	-20.16	-1,700.73	1,313.83	1,231.25	82.58	15.910	
11,850.00	11,819.89	11,700.00	11,628.23	42.20	41.26	80.26	-47.77	-1,700.82	1,317.20	1,234.51	82.69	15.930	
11,900.00	11,861.24	11,730.05	11,645.98	42.31	41.33	79.51	-72.01	-1,700.90	1,320.54	1,237.80	82.75	15.959	
11,950.00	11,899.99	11,762.51	11,663.70	42.40	41.40	78.76	-99.20	-1,701.00	1,323.81	1,241.01	82.81	15.987	
12,000.00	11,935.84	11,794.71	11,679.74	42.49	41.47	78.08	-127.12	-1,701.09	1,326.95	1,244.09	82.86	16.015	
12,050.00	11,968.52	11,826.71	11,694.09	42.56	41.53	77.46	-155.71	-1,701.19	1,329.89	1,246.99	82.91	16.041	
12,100.00	11,997.78	11,858.52	11,706.75	42.63	41.60	76.91	-184.89	-1,701.29	1,332.60	1,249.64	82.95	16.064	
12,150.00	12,023.39	11,890.18	11,717.73	42.69	41.67	76.44	-214.58	-1,701.40	1,335.02	1,252.01	83.01	16.082	
12,200.00	12,045.17	11,921.72	11,727.02	42.77	41.73	76.04	-244.72	-1,701.50	1,337.13	1,254.05	83.08	16.094	
12,250.00	12,062.94	11,950.00	11,733.93	42.86	41.79	75.73	-272.14	-1,701.59	1,338.89	1,255.73	83.16	16.101	
12,300.00	12,076.57	11,984.52	11,740.51	42.97	41.86	75.47	-306.02	-1,701.71	1,340.26	1,256.99	83.27	16.095	
12,350.00	12,085.96	12,015.84	11,744.71	43.07	41.93	75.30	-337.05	-1,701.82	1,341.24	1,257.84	83.40	16.082	
12,400.00	12,091.03	12,050.00	11,747.35	43.18	42.00	75.22	-371.11	-1,701.94	1,341.82	1,258.26	83.56	16.058	
12,450.00	12,092.00	12,079.12	11,748.00	43.30	42.05	75.22	-400.21	-1,702.04	1,342.03	1,258.30	83.73	16.028	
12,500.00	12,092.00	12,129.12	11,748.00	43.41	42.17	75.22	-450.21	-1,702.21	1,342.33	1,258.38	83.95	15.989	
12,550.00	12,092.00	12,179.12	11,748.00	43.55	42.28	75.22	-500.21	-1,702.38	1,342.63	1,258.42	84.20	15.945	
12,600.00	12,092.00	12,229.12	11,748.00	43.68	42.42	75.23	-550.21	-1,702.55	1,342.92	1,258.46	84.46	15.900	
12,650.00	12,092.00	12,279.12	11,748.00	43.84	42.56	75.23	-600.21	-1,702.73	1,343.22	1,258.46	84.76	15.848	
12,700.00	12,092.00	12,329.11	11,748.00	44.00	42.71	75.23	-650.21	-1,702.90	1,343.51	1,258.45	85.06	15.794	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 622H - 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			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
12,750.00	12,092.00	12,379.11	11,748.00	44.17	42.88	75.24	-700.21	-1,703.07	1,343.81	1,258.41	85.40	15.735	
12,800.00	12,092.00	12,429.11	11,748.00	44.35	43.06	75.24	-750.21	-1,703.24	1,344.10	1,258.35	85.75	15.874	
12,850.00	12,092.00	12,479.11	11,748.00	44.55	43.25	75.24	-800.20	-1,703.41	1,344.40	1,258.26	86.14	15.608	
12,900.00	12,092.00	12,529.11	11,748.00	44.75	43.45	75.25	-850.20	-1,703.59	1,344.70	1,258.16	86.53	15.540	
12,950.00	12,092.00	12,579.11	11,748.00	44.97	43.66	75.25	-900.20	-1,703.76	1,344.99	1,258.04	86.96	15.467	
13,000.00	12,092.00	12,629.11	11,748.00	45.19	43.88	75.25	-950.20	-1,703.93	1,345.29	1,257.89	87.39	15.393	
13,050.00	12,092.00	12,679.11	11,748.00	45.43	44.12	75.26	-1,000.20	-1,704.10	1,345.58	1,257.72	87.86	15.315	
13,100.00	12,092.00	12,729.11	11,748.00	45.67	44.36	75.26	-1,050.20	-1,704.28	1,345.88	1,257.54	88.34	15.235	
13,150.00	12,092.00	12,779.11	11,748.00	45.93	44.62	75.26	-1,100.20	-1,704.45	1,346.18	1,257.33	88.85	15.151	
13,200.00	12,092.00	12,829.11	11,748.00	46.19	44.88	75.27	-1,150.20	-1,704.62	1,346.47	1,257.11	89.37	15.067	
13,250.00	12,092.00	12,879.10	11,748.00	46.47	45.16	75.27	-1,200.19	-1,704.79	1,346.77	1,256.86	89.91	14.979	
13,300.00	12,092.00	12,929.10	11,748.00	46.75	45.44	75.27	-1,250.19	-1,704.97	1,347.06	1,256.59	90.47	14.890	
13,350.00	12,092.00	12,979.10	11,748.00	47.05	45.74	75.28	-1,300.19	-1,705.14	1,347.36	1,256.31	91.05	14.797	
13,400.00	12,092.00	13,029.10	11,748.00	47.35	46.04	75.28	-1,350.19	-1,705.31	1,347.66	1,256.01	91.65	14.705	
13,450.00	12,092.00	13,079.10	11,748.00	47.67	46.35	75.28	-1,400.19	-1,705.48	1,347.95	1,255.68	92.27	14.609	
13,500.00	12,092.00	13,129.10	11,748.00	47.99	46.68	75.29	-1,450.19	-1,705.66	1,348.25	1,255.35	92.90	14.513	
13,550.00	12,092.00	13,179.10	11,748.00	48.32	47.01	75.29	-1,500.19	-1,705.83	1,348.54	1,254.99	93.55	14.415	
13,600.00	12,092.00	13,229.10	11,748.00	48.66	47.35	75.29	-1,550.19	-1,706.00	1,348.84	1,254.62	94.22	14.316	
13,650.00	12,092.00	13,279.10	11,748.00	49.01	47.70	75.30	-1,600.19	-1,706.17	1,349.14	1,254.23	94.91	14.216	
13,700.00	12,092.00	13,329.10	11,748.00	49.36	48.06	75.30	-1,650.18	-1,706.35	1,349.43	1,253.83	95.60	14.115	
13,750.00	12,092.00	13,379.09	11,748.00	49.73	48.42	75.30	-1,700.18	-1,706.52	1,349.73	1,253.41	96.32	14.013	
13,800.00	12,092.00	13,429.09	11,748.00	50.09	48.80	75.31	-1,750.18	-1,706.69	1,350.02	1,252.97	97.05	13.910	
13,850.00	12,092.00	13,479.09	11,748.00	50.48	49.18	75.31	-1,800.18	-1,706.86	1,350.32	1,252.52	97.80	13.807	
13,900.00	12,092.00	13,529.09	11,748.00	50.86	49.57	75.31	-1,850.18	-1,707.04	1,350.62	1,252.06	98.56	13.703	
13,950.00	12,092.00	13,579.09	11,748.00	51.26	49.96	75.32	-1,900.18	-1,707.21	1,350.91	1,251.57	99.34	13.599	
14,000.00	12,092.00	13,629.09	11,748.00	51.66	50.37	75.32	-1,950.18	-1,707.38	1,351.21	1,251.08	100.13	13.495	
14,050.00	12,092.00	13,679.09	11,748.00	52.07	50.78	75.32	-2,000.18	-1,707.55	1,351.50	1,250.57	100.93	13.390	
14,100.00	12,092.00	13,729.09	11,748.00	52.48	51.20	75.33	-2,050.17	-1,707.72	1,351.80	1,250.05	101.75	13.286	
14,150.00	12,092.00	13,779.09	11,748.00	52.90	51.62	75.33	-2,100.17	-1,707.90	1,352.10	1,249.51	102.58	13.181	
14,200.00	12,092.00	13,829.09	11,748.00	53.33	52.06	75.33	-2,150.17	-1,708.07	1,352.39	1,248.97	103.42	13.076	
14,250.00	12,092.00	13,879.09	11,748.00	53.77	52.49	75.34	-2,200.17	-1,708.24	1,352.69	1,248.41	104.28	12.971	
14,300.00	12,092.00	13,929.08	11,748.00	54.21	52.94	75.34	-2,250.17	-1,708.41	1,352.98	1,247.84	105.15	12.867	
14,350.00	12,092.00	13,979.08	11,748.00	54.66	53.39	75.34	-2,300.17	-1,708.59	1,353.28	1,247.25	106.03	12.763	
14,400.00	12,092.00	14,029.08	11,748.00	55.11	53.85	75.35	-2,350.17	-1,708.76	1,353.58	1,246.66	106.92	12.660	
14,450.00	12,092.00	14,079.08	11,748.00	55.57	54.31	75.35	-2,400.17	-1,708.93	1,353.87	1,246.05	107.83	12.556	
14,500.00	12,092.00	14,129.08	11,748.00	56.03	54.78	75.35	-2,450.16	-1,709.10	1,354.17	1,245.43	108.74	12.454	
14,550.00	12,092.00	14,179.08	11,748.00	56.50	55.25	75.36	-2,500.16	-1,709.28	1,354.47	1,244.80	109.66	12.351	
14,600.00	12,092.00	14,229.08	11,748.00	56.97	55.73	75.36	-2,550.16	-1,709.45	1,354.76	1,244.16	110.60	12.249	
14,650.00	12,092.00	14,279.08	11,748.00	57.46	56.21	75.36	-2,600.16	-1,709.62	1,355.06	1,243.51	111.55	12.148	
14,700.00	12,092.00	14,329.08	11,748.00	57.94	56.70	75.37	-2,650.16	-1,709.79	1,355.35	1,242.85	112.50	12.048	
14,750.00	12,092.00	14,379.08	11,748.00	58.43	57.20	75.37	-2,700.16	-1,709.97	1,355.65	1,242.18	113.47	11.947	
14,800.00	12,092.00	14,429.08	11,748.00	58.93	57.70	75.37	-2,750.16	-1,710.14	1,355.95	1,241.51	114.44	11.848	
14,850.00	12,092.00	14,479.07	11,748.00	59.43	58.20	75.38	-2,800.16	-1,710.31	1,356.24	1,240.82	115.43	11.750	
14,900.00	12,092.00	14,529.07	11,748.00	59.93	58.71	75.38	-2,850.15	-1,710.48	1,356.54	1,240.12	116.42	11.652	
14,950.00	12,092.00	14,579.07	11,748.00	60.44	59.22	75.38	-2,900.15	-1,710.66	1,356.83	1,239.41	117.42	11.555	
15,000.00	12,092.00	14,629.07	11,748.00	60.96	59.74	75.39	-2,950.15	-1,710.83	1,357.13	1,238.70	118.43	11.459	
15,050.00	12,092.00	14,679.07	11,748.00	61.48	60.26	75.39	-3,000.15	-1,711.00	1,357.43	1,237.98	119.45	11.364	
15,100.00	12,092.00	14,729.07	11,748.00	62.00	60.79	75.39	-3,050.15	-1,711.17	1,357.72	1,237.25	120.48	11.270	
15,150.00	12,092.00	14,779.07	11,748.00	62.53	61.32	75.40	-3,100.15	-1,711.35	1,358.02	1,236.51	121.51	11.176	
15,200.00	12,092.00	14,829.07	11,748.00	63.05	61.86	75.40	-3,150.15	-1,711.52	1,358.31	1,235.76	122.55	11.083	
15,250.00	12,092.00	14,879.07	11,748.00	63.59	62.39	75.40	-3,200.15	-1,711.69	1,358.61	1,235.00	123.61	10.991	
15,300.00	12,092.00	14,929.07	11,748.00	64.13	62.94	75.41	-3,250.14	-1,711.86	1,358.91	1,234.25	124.66	10.901	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 622H - 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			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
15,350.00	12,092.00	14,979.07	11,748.00	64.67	63.48	75.41	-3,300.14	-1,712.03	1,359.20	1,233.48	125.73	10.811	
15,400.00	12,092.00	15,029.06	11,748.00	65.21	64.03	75.41	-3,350.14	-1,712.21	1,359.50	1,232.70	126.80	10.722	
15,450.00	12,092.00	15,079.06	11,748.00	65.76	64.58	75.42	-3,400.14	-1,712.38	1,359.80	1,231.92	127.88	10.634	
15,500.00	12,092.00	15,129.06	11,748.00	66.31	65.14	75.42	-3,450.14	-1,712.55	1,360.09	1,231.13	128.96	10.546	
15,550.00	12,092.00	15,179.06	11,748.00	66.87	65.70	75.42	-3,500.14	-1,712.72	1,360.39	1,230.33	130.05	10.460	
15,600.00	12,092.00	15,229.06	11,748.00	67.43	66.26	75.43	-3,550.14	-1,712.90	1,360.68	1,229.53	131.15	10.375	
15,650.00	12,092.00	15,279.06	11,748.00	67.99	66.83	75.43	-3,600.14	-1,713.07	1,360.98	1,228.72	132.26	10.290	
15,700.00	12,092.00	15,329.06	11,748.00	68.56	67.40	75.43	-3,650.13	-1,713.24	1,361.28	1,227.91	133.37	10.207	
15,750.00	12,092.00	15,379.06	11,748.00	69.13	67.97	75.43	-3,700.13	-1,713.41	1,361.57	1,227.09	134.48	10.124	
15,800.00	12,092.00	15,429.06	11,748.00	69.70	68.54	75.44	-3,750.13	-1,713.59	1,361.87	1,226.27	135.60	10.043	
15,850.00	12,092.00	15,479.06	11,748.00	70.27	69.12	75.44	-3,800.13	-1,713.76	1,362.16	1,225.43	136.73	9.962	
15,900.00	12,092.00	15,529.05	11,748.00	70.85	69.70	75.44	-3,850.13	-1,713.93	1,362.46	1,224.60	137.86	9.883	
15,950.00	12,092.00	15,579.05	11,748.00	71.43	70.28	75.45	-3,900.13	-1,714.10	1,362.76	1,223.75	139.00	9.804	
16,000.00	12,092.00	15,629.05	11,748.00	72.01	70.87	75.45	-3,950.13	-1,714.28	1,363.05	1,222.91	140.14	9.726	
16,050.00	12,092.00	15,679.05	11,748.00	72.59	71.46	75.45	-4,000.13	-1,714.45	1,363.35	1,222.06	141.29	9.649	
16,100.00	12,092.00	15,729.05	11,748.00	73.18	72.05	75.46	-4,050.12	-1,714.62	1,363.65	1,221.20	142.45	9.573	
16,150.00	12,092.00	15,779.05	11,748.00	73.77	72.64	75.46	-4,100.12	-1,714.79	1,363.94	1,220.34	143.60	9.498	
16,200.00	12,092.00	15,829.05	11,748.00	74.36	73.24	75.46	-4,150.12	-1,714.97	1,364.24	1,219.47	144.77	9.424	
16,250.00	12,092.00	15,879.05	11,748.00	74.96	73.83	75.47	-4,200.12	-1,715.14	1,364.53	1,218.60	145.93	9.350	
16,300.00	12,092.00	15,929.05	11,748.00	75.55	74.43	75.47	-4,250.12	-1,715.31	1,364.83	1,217.73	147.11	9.278	
16,350.00	12,092.00	15,979.05	11,748.00	76.16	75.04	75.47	-4,300.12	-1,715.48	1,365.13	1,216.84	148.28	9.206	
16,400.00	12,092.00	16,029.05	11,748.00	76.76	75.64	75.48	-4,350.12	-1,715.66	1,365.42	1,215.96	149.46	9.136	
16,450.00	12,092.00	16,079.04	11,748.00	77.36	76.25	75.48	-4,400.12	-1,715.83	1,365.72	1,215.07	150.65	9.066	
16,500.00	12,092.00	16,129.04	11,748.00	77.96	76.86	75.48	-4,450.11	-1,716.00	1,366.02	1,214.18	151.84	8.997	
16,550.00	12,092.00	16,179.04	11,748.00	78.57	77.47	75.49	-4,500.11	-1,716.17	1,366.31	1,213.28	153.03	8.928	
16,600.00	12,092.00	16,229.04	11,748.00	79.18	78.08	75.49	-4,550.11	-1,716.34	1,366.61	1,212.38	154.22	8.861	
16,650.00	12,092.00	16,279.04	11,748.00	79.80	78.69	75.49	-4,600.11	-1,716.52	1,366.90	1,211.48	155.43	8.795	
16,700.00	12,092.00	16,329.04	11,748.00	80.41	79.31	75.50	-4,650.11	-1,716.69	1,367.20	1,210.57	156.63	8.729	
16,750.00	12,092.00	16,379.04	11,748.00	81.02	79.93	75.50	-4,700.11	-1,716.86	1,367.50	1,209.66	157.84	8.664	
16,800.00	12,092.00	16,429.04	11,748.00	81.64	80.55	75.50	-4,750.11	-1,717.03	1,367.79	1,208.75	159.05	8.600	
16,850.00	12,092.00	16,479.04	11,748.00	82.26	81.17	75.51	-4,800.11	-1,717.21	1,368.09	1,207.83	160.26	8.537	
16,900.00	12,092.00	16,529.04	11,748.00	82.88	81.79	75.51	-4,850.10	-1,717.38	1,368.39	1,206.91	161.48	8.474	
16,950.00	12,092.00	16,579.04	11,748.00	83.50	82.42	75.51	-4,900.10	-1,717.55	1,368.68	1,205.98	162.70	8.412	
17,000.00	12,092.00	16,629.03	11,748.00	84.13	83.04	75.52	-4,950.10	-1,717.72	1,368.98	1,205.05	163.93	8.351	
17,050.00	12,092.00	16,679.03	11,748.00	84.75	83.67	75.52	-5,000.10	-1,717.90	1,369.27	1,204.12	165.15	8.291	
17,100.00	12,092.00	16,729.03	11,748.00	85.38	84.30	75.52	-5,050.10	-1,718.07	1,369.57	1,203.19	166.38	8.231	
17,150.00	12,092.00	16,779.03	11,748.00	86.01	84.93	75.53	-5,100.10	-1,718.24	1,369.87	1,202.25	167.62	8.173	
17,200.00	12,092.00	16,829.03	11,748.00	86.64	85.57	75.53	-5,150.10	-1,718.41	1,370.16	1,201.31	168.85	8.114	
17,250.00	12,092.00	16,879.03	11,748.00	87.27	86.20	75.53	-5,200.10	-1,718.59	1,370.46	1,200.37	170.10	8.057	
17,300.00	12,092.00	16,929.03	11,748.00	87.91	86.84	75.53	-5,250.10	-1,718.76	1,370.76	1,199.42	171.34	8.000	
17,350.00	12,092.00	16,979.03	11,748.00	88.54	87.47	75.54	-5,300.09	-1,718.93	1,371.05	1,198.47	172.58	7.944	
17,400.00	12,092.00	17,029.03	11,748.00	89.18	88.11	75.54	-5,350.09	-1,719.10	1,371.35	1,197.52	173.83	7.889	
17,450.00	12,092.00	17,079.03	11,748.00	89.82	88.75	75.54	-5,400.09	-1,719.28	1,371.65	1,196.56	175.08	7.834	
17,500.00	12,092.00	17,129.02	11,748.00	90.45	89.39	75.55	-5,450.09	-1,719.45	1,371.94	1,195.61	176.33	7.780	
17,550.00	12,092.00	17,179.02	11,748.00	91.10	90.04	75.55	-5,500.09	-1,719.62	1,372.24	1,194.65	177.59	7.727	
17,600.00	12,092.00	17,229.02	11,748.00	91.74	90.68	75.55	-5,550.09	-1,719.79	1,372.53	1,193.69	178.85	7.674	
17,650.00	12,092.00	17,279.02	11,748.00	92.38	91.33	75.56	-5,600.09	-1,719.97	1,372.83	1,192.72	180.11	7.622	
17,700.00	12,092.00	17,329.02	11,748.00	93.02	91.97	75.56	-5,650.09	-1,720.14	1,373.13	1,191.75	181.37	7.571	
17,750.00	12,092.00	17,379.02	11,748.00	93.67	92.62	75.56	-5,700.08	-1,720.31	1,373.42	1,190.79	182.64	7.520	
17,800.00	12,092.00	17,429.02	11,748.00	94.32	93.27	75.57	-5,750.08	-1,720.48	1,373.72	1,189.81	183.91	7.470	
17,850.00	12,092.00	17,479.02	11,748.00	94.96	93.92	75.57	-5,800.08	-1,720.65	1,374.02	1,188.84	185.18	7.420	
17,900.00	12,092.00	17,529.02	11,748.00	95.61	94.57	75.57	-5,850.08	-1,720.83	1,374.31	1,187.86	186.45	7.371	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 622H - 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			Distance							
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
17,950.00	12,092.00	17,579.02	11,748.00	96.26	95.22	75.58	-5,900.08	-1,721.00	1,374.61	1,186.89	187.72	7.323		
18,000.00	12,092.00	17,629.02	11,748.00	96.91	95.87	75.58	-5,950.08	-1,721.17	1,374.91	1,185.91	189.00	7.275		
18,050.00	12,092.00	17,679.01	11,748.00	97.57	96.53	75.58	-6,000.08	-1,721.34	1,375.20	1,184.92	190.28	7.227		
18,100.00	12,092.00	17,729.01	11,748.00	98.22	97.18	75.59	-6,050.08	-1,721.52	1,375.50	1,183.94	191.56	7.181		
18,150.00	12,092.00	17,779.01	11,748.00	98.87	97.84	75.59	-6,100.07	-1,721.69	1,375.79	1,182.95	192.84	7.134		
18,200.00	12,092.00	17,829.01	11,748.00	99.53	98.49	75.59	-6,150.07	-1,721.86	1,376.09	1,181.96	194.13	7.089		
18,250.00	12,092.00	17,879.01	11,748.00	100.19	99.15	75.60	-6,200.07	-1,722.03	1,376.39	1,180.97	195.41	7.043		
18,300.00	12,092.00	17,929.01	11,748.00	100.84	99.81	75.60	-6,250.07	-1,722.21	1,376.68	1,179.98	196.70	6.999		
18,350.00	12,092.00	17,979.01	11,748.00	101.50	100.47	75.60	-6,300.07	-1,722.38	1,376.98	1,178.99	197.99	6.955		
18,400.00	12,092.00	18,029.01	11,748.00	102.16	101.13	75.60	-6,350.07	-1,722.55	1,377.28	1,177.99	199.28	6.911		
18,450.00	12,092.00	18,079.01	11,748.00	102.82	101.79	75.61	-6,400.07	-1,722.72	1,377.57	1,177.00	200.58	6.868		
18,500.00	12,092.00	18,129.01	11,748.00	103.48	102.45	75.61	-6,450.07	-1,722.90	1,377.87	1,176.00	201.87	6.825		
18,550.00	12,092.00	18,179.01	11,748.00	104.14	103.12	75.61	-6,500.06	-1,723.07	1,378.17	1,175.00	203.17	6.783		
18,600.00	12,092.00	18,229.00	11,748.00	104.81	103.78	75.62	-6,550.06	-1,723.24	1,378.46	1,173.99	204.47	6.742		
18,650.00	12,092.00	18,279.00	11,748.00	105.47	104.45	75.62	-6,600.06	-1,723.41	1,378.76	1,172.99	205.77	6.700		
18,700.00	12,092.00	18,329.00	11,748.00	106.13	105.11	75.62	-6,650.06	-1,723.59	1,379.06	1,171.98	207.07	6.660		
18,750.00	12,092.00	18,379.00	11,748.00	106.80	105.78	75.63	-6,700.06	-1,723.76	1,379.35	1,170.98	208.38	6.620		
18,800.00	12,092.00	18,429.00	11,748.00	107.46	106.45	75.63	-6,750.06	-1,723.93	1,379.65	1,169.97	209.68	6.580		
18,850.00	12,092.00	18,479.00	11,748.00	108.13	107.11	75.63	-6,800.06	-1,724.10	1,379.94	1,168.96	210.99	6.540		
18,900.00	12,092.00	18,529.00	11,748.00	108.80	107.78	75.64	-6,850.06	-1,724.28	1,380.24	1,167.94	212.30	6.501		
18,950.00	12,092.00	18,579.00	11,748.00	109.47	108.45	75.64	-6,900.05	-1,724.45	1,380.54	1,166.93	213.61	6.463		
19,000.00	12,092.00	18,629.00	11,748.00	110.14	109.12	75.64	-6,950.05	-1,724.62	1,380.83	1,165.92	214.92	6.425		
19,050.00	12,092.00	18,679.00	11,748.00	110.81	109.79	75.65	-7,000.05	-1,724.79	1,381.13	1,164.90	216.23	6.387		
19,100.00	12,092.00	18,728.99	11,748.00	111.48	110.46	75.65	-7,050.05	-1,724.96	1,381.43	1,163.88	217.55	6.350		
19,150.00	12,092.00	18,778.99	11,748.00	112.15	111.14	75.65	-7,100.05	-1,725.14	1,381.72	1,162.86	218.86	6.313		
19,200.00	12,092.00	18,828.99	11,748.00	112.82	111.81	75.66	-7,150.05	-1,725.31	1,382.02	1,161.84	220.18	6.277		
19,250.00	12,092.00	18,878.99	11,748.00	113.49	112.48	75.66	-7,200.05	-1,725.48	1,382.32	1,160.82	221.50	6.241		
19,300.00	12,092.00	18,928.99	11,748.00	114.16	113.16	75.66	-7,250.05	-1,725.65	1,382.61	1,159.80	222.82	6.205		
19,350.00	12,092.00	18,978.99	11,748.00	114.84	113.83	75.66	-7,300.04	-1,725.83	1,382.91	1,158.77	224.14	6.170		
19,400.00	12,092.00	19,028.99	11,748.00	115.51	114.51	75.67	-7,350.04	-1,726.00	1,383.21	1,157.75	225.46	6.135		
19,450.00	12,092.00	19,078.99	11,748.00	116.19	115.18	75.67	-7,400.04	-1,726.17	1,383.50	1,156.72	226.78	6.101		
19,500.00	12,092.00	19,128.99	11,748.00	116.86	115.86	75.67	-7,450.04	-1,726.34	1,383.80	1,155.69	228.11	6.066		
19,550.00	12,092.00	19,178.99	11,748.00	117.54	116.54	75.68	-7,500.04	-1,726.52	1,384.10	1,154.66	229.43	6.033		
19,600.00	12,092.00	19,228.99	11,748.00	118.22	117.21	75.68	-7,550.04	-1,726.69	1,384.39	1,153.63	230.76	5.999		
19,650.00	12,092.00	19,278.98	11,748.00	118.90	117.89	75.68	-7,600.04	-1,726.86	1,384.69	1,152.60	232.09	5.966		
19,700.00	12,092.00	19,328.98	11,748.00	119.57	118.57	75.69	-7,650.04	-1,727.03	1,384.99	1,151.57	233.42	5.934		
19,750.00	12,092.00	19,378.98	11,748.00	120.25	119.25	75.69	-7,700.03	-1,727.21	1,385.28	1,150.53	234.75	5.901		
19,800.00	12,092.00	19,428.98	11,748.00	120.93	119.93	75.69	-7,750.03	-1,727.38	1,385.58	1,149.50	236.08	5.869		
19,850.00	12,092.00	19,478.98	11,748.00	121.61	120.61	75.70	-7,800.03	-1,727.55	1,385.87	1,148.46	237.41	5.837		
19,900.00	12,092.00	19,528.98	11,748.00	122.29	121.29	75.70	-7,850.03	-1,727.72	1,386.17	1,147.43	238.74	5.806		
19,950.00	12,092.00	19,578.98	11,748.00	122.97	121.97	75.70	-7,900.03	-1,727.90	1,386.47	1,146.39	240.08	5.775		
20,000.00	12,092.00	19,628.98	11,748.00	123.65	122.66	75.71	-7,950.03	-1,728.07	1,386.76	1,145.35	241.41	5.744		
20,050.00	12,092.00	19,678.98	11,748.00	124.34	123.34	75.71	-8,000.03	-1,728.24	1,387.06	1,144.31	242.75	5.714		
20,100.00	12,092.00	19,728.98	11,748.00	125.02	124.02	75.71	-8,050.03	-1,728.41	1,387.36	1,143.27	244.09	5.684		
20,150.00	12,092.00	19,778.98	11,748.00	125.70	124.70	75.71	-8,100.02	-1,728.59	1,387.65	1,142.23	245.43	5.654		
20,200.00	12,092.00	19,828.97	11,748.00	126.38	125.39	75.72	-8,150.02	-1,728.76	1,387.95	1,141.18	246.77	5.625		
20,250.00	12,092.00	19,878.97	11,748.00	127.07	126.07	75.72	-8,200.02	-1,728.93	1,388.25	1,140.14	248.11	5.595		
20,300.00	12,092.00	19,928.97	11,748.00	127.75	126.76	75.72	-8,250.02	-1,729.10	1,388.54	1,139.10	249.45	5.566		
20,350.00	12,092.00	19,978.97	11,748.00	128.44	127.44	75.73	-8,300.02	-1,729.27	1,388.84	1,138.05	250.79	5.538		
20,400.00	12,092.00	20,028.97	11,748.00	129.12	128.13	75.73	-8,350.02	-1,729.45	1,389.14	1,137.00	252.13	5.510		
20,450.00	12,092.00	20,078.97	11,748.00	129.81	128.81	75.73	-8,400.02	-1,729.62	1,389.43	1,135.96	253.48	5.481		
20,500.00	12,092.00	20,128.97	11,748.00	130.49	129.50	75.74	-8,450.02	-1,729.79	1,389.73	1,134.91	254.82	5.454		

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 622H - 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			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
20,550.00	12,092.00	20,178.97	11,748.00	131.18	130.19	75.74	-8,500.01	-1,729.96	1,390.03	1,133.86	256.17	5.426	
20,600.00	12,092.00	20,228.97	11,748.00	131.87	130.88	75.74	-8,550.01	-1,730.14	1,390.32	1,132.81	257.52	5.399	
20,650.00	12,092.00	20,278.97	11,748.00	132.56	131.56	75.75	-8,600.01	-1,730.31	1,390.62	1,131.76	258.86	5.372	
20,700.00	12,092.00	20,328.96	11,748.00	133.24	132.25	75.75	-8,650.01	-1,730.48	1,390.92	1,130.70	260.21	5.345	
20,750.00	12,092.00	20,378.96	11,748.00	133.93	132.94	75.75	-8,700.01	-1,730.65	1,391.21	1,129.65	261.56	5.319	
20,800.00	12,092.00	20,428.96	11,748.00	134.62	133.63	75.76	-8,750.01	-1,730.83	1,391.51	1,128.60	262.91	5.293	
20,850.00	12,092.00	20,478.96	11,748.00	135.31	134.32	75.76	-8,800.01	-1,731.00	1,391.81	1,127.54	264.26	5.267	
20,900.00	12,092.00	20,528.96	11,748.00	136.00	135.01	75.76	-8,850.01	-1,731.17	1,392.10	1,126.49	265.61	5.241	
20,950.00	12,092.00	20,578.96	11,748.00	136.69	135.70	75.76	-8,900.01	-1,731.34	1,392.40	1,125.43	266.97	5.216	
21,000.00	12,092.00	20,628.96	11,748.00	137.38	136.39	75.77	-8,950.00	-1,731.52	1,392.70	1,124.38	268.32	5.190	
21,050.00	12,092.00	20,678.96	11,748.00	138.07	137.08	75.77	-9,000.00	-1,731.69	1,392.99	1,123.32	269.67	5.165	
21,100.00	12,092.00	20,728.96	11,748.00	138.76	137.77	75.77	-9,050.00	-1,731.86	1,393.29	1,122.26	271.03	5.141	
21,150.00	12,092.00	20,778.96	11,748.00	139.45	138.46	75.78	-9,100.00	-1,732.03	1,393.59	1,121.20	272.38	5.116	
21,200.00	12,092.00	20,828.96	11,748.00	140.14	139.16	75.78	-9,150.00	-1,732.21	1,393.88	1,120.14	273.74	5.092	
21,250.00	12,092.00	20,878.95	11,748.00	140.84	139.85	75.78	-9,200.00	-1,732.38	1,394.18	1,119.08	275.10	5.068	
21,300.00	12,092.00	20,928.95	11,748.00	141.53	140.54	75.79	-9,250.00	-1,732.55	1,394.48	1,118.02	276.45	5.044	
21,350.00	12,092.00	20,978.95	11,748.00	142.22	141.23	75.79	-9,300.00	-1,732.72	1,394.77	1,116.96	277.81	5.021	
21,400.00	12,092.00	21,028.95	11,748.00	142.91	141.93	75.79	-9,349.99	-1,732.90	1,395.07	1,115.90	279.17	4.997	Alert
21,450.00	12,092.00	21,078.95	11,748.00	143.61	142.62	75.80	-9,399.99	-1,733.07	1,395.37	1,114.84	280.53	4.974	Alert
21,500.00	12,092.00	21,128.95	11,748.00	144.30	143.31	75.80	-9,449.99	-1,733.24	1,395.66	1,113.77	281.89	4.951	Alert
21,550.00	12,092.00	21,178.95	11,748.00	145.00	144.01	75.80	-9,499.99	-1,733.41	1,395.96	1,112.71	283.25	4.928	Alert
21,600.00	12,092.00	21,228.95	11,748.00	145.69	144.70	75.80	-9,549.99	-1,733.58	1,396.26	1,111.65	284.61	4.906	Alert
21,650.00	12,092.00	21,278.95	11,748.00	146.39	145.40	75.81	-9,599.99	-1,733.76	1,396.55	1,110.58	285.97	4.884	Alert
21,700.00	12,092.00	21,328.95	11,748.00	147.08	146.09	75.81	-9,649.99	-1,733.93	1,396.85	1,109.51	287.34	4.861	Alert
21,750.00	12,092.00	21,378.95	11,748.00	147.78	146.79	75.81	-9,699.99	-1,734.10	1,397.15	1,108.45	288.70	4.839	Alert
21,800.00	12,092.00	21,428.94	11,748.00	148.47	147.48	75.82	-9,749.98	-1,734.27	1,397.44	1,107.38	290.06	4.818	Alert
21,850.00	12,092.00	21,478.94	11,748.00	149.17	148.18	75.82	-9,799.98	-1,734.45	1,397.74	1,106.31	291.43	4.796	Alert
21,900.00	12,092.00	21,528.94	11,748.00	149.86	148.88	75.82	-9,849.98	-1,734.62	1,398.04	1,105.24	292.79	4.775	Alert
21,950.00	12,092.00	21,578.94	11,748.00	150.56	149.57	75.83	-9,899.98	-1,734.79	1,398.33	1,104.18	294.16	4.754	Alert
22,000.00	12,092.00	21,628.94	11,748.00	151.26	150.27	75.83	-9,949.98	-1,734.96	1,398.63	1,103.11	295.52	4.733	Alert
22,050.00	12,092.00	21,678.94	11,748.00	151.95	150.97	75.83	-9,999.98	-1,735.14	1,398.93	1,102.04	296.89	4.712	Alert
22,100.00	12,092.00	21,728.94	11,748.00	152.65	151.66	75.84	-10,049.98	-1,735.31	1,399.22	1,100.97	298.26	4.691	Alert
22,150.00	12,092.00	21,778.94	11,748.00	153.35	152.36	75.84	-10,099.98	-1,735.48	1,399.52	1,099.89	299.63	4.671	Alert
22,200.00	12,092.00	21,828.94	11,748.00	154.05	153.06	75.84	-10,149.97	-1,735.65	1,399.82	1,098.82	300.99	4.651	Alert
22,250.00	12,092.00	21,878.94	11,748.00	154.75	153.76	75.84	-10,199.97	-1,735.83	1,400.11	1,097.75	302.36	4.631	Alert
22,300.00	12,092.00	21,928.94	11,748.00	155.44	154.46	75.85	-10,249.97	-1,736.00	1,400.41	1,096.68	303.73	4.611	Alert
22,350.00	12,092.00	21,978.93	11,748.00	156.14	155.15	75.85	-10,299.97	-1,736.17	1,400.71	1,095.60	305.10	4.591	Alert
22,381.87	12,092.00	22,010.80	11,748.00	156.59	155.60	75.85	-10,331.84	-1,736.28	1,400.90	1,094.92	305.98	4.578	Alert, ES, SF

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
4,450.00	4,449.47	4,553.64	4,548.94	15.70	16.08	-23.68	33.24	-1,511.99	1,497.87	1,466.24	31.63	47.360	
4,500.00	4,499.37	4,603.24	4,598.41	15.88	16.26	-23.68	34.37	-1,508.63	1,491.55	1,459.58	31.98	46.644	
4,550.00	4,549.26	4,652.84	4,647.88	16.05	16.44	-23.68	35.51	-1,505.27	1,485.24	1,452.91	32.33	45.942	
4,600.00	4,599.16	4,702.44	4,697.36	16.23	16.62	-23.69	36.64	-1,501.91	1,478.92	1,446.24	32.68	45.256	
4,650.00	4,649.06	4,752.04	4,746.83	16.41	16.80	-23.69	37.78	-1,498.54	1,472.61	1,439.58	33.03	44.584	
4,700.00	4,698.95	4,801.64	4,796.30	16.58	16.98	-23.70	38.91	-1,495.18	1,466.29	1,432.91	33.38	43.927	
4,750.00	4,748.85	4,851.24	4,845.77	16.76	17.16	-23.70	40.05	-1,491.82	1,459.98	1,426.24	33.73	43.282	
4,800.00	4,798.74	4,900.84	4,895.25	16.94	17.34	-23.70	41.18	-1,488.46	1,453.66	1,419.58	34.08	42.651	
4,850.00	4,848.64	4,950.44	4,944.72	17.11	17.52	-23.71	42.32	-1,485.10	1,447.35	1,412.91	34.43	42.032	
4,900.00	4,898.53	5,000.04	4,994.19	17.29	17.70	-23.71	43.45	-1,481.73	1,441.03	1,406.24	34.79	41.425	
4,950.00	4,948.43	5,049.64	5,043.66	17.47	17.88	-23.72	44.59	-1,478.37	1,434.71	1,399.58	35.14	40.831	
5,000.00	4,998.33	5,100.77	5,093.14	17.65	18.07	-23.72	45.72	-1,475.01	1,428.40	1,392.90	35.50	40.242	
5,050.00	5,048.22	5,148.83	5,142.61	17.82	18.24	-23.72	46.86	-1,471.65	1,422.08	1,386.24	35.84	39.676	
5,100.00	5,098.12	5,198.43	5,192.08	18.00	18.42	-23.73	47.99	-1,468.29	1,415.77	1,379.57	36.19	39.115	
5,150.00	5,148.01	5,248.03	5,241.55	18.18	18.60	-23.73	49.13	-1,464.92	1,409.45	1,372.90	36.55	38.565	
5,200.00	5,197.91	5,302.37	5,291.02	18.36	18.80	-23.74	50.26	-1,461.56	1,403.14	1,366.22	36.92	38.008	
5,250.00	5,247.80	5,347.23	5,340.50	18.53	18.97	-23.74	51.40	-1,458.20	1,396.82	1,359.57	37.25	37.496	
5,300.00	5,297.70	5,403.17	5,389.97	18.71	19.17	-23.75	52.53	-1,454.84	1,390.51	1,352.88	37.63	36.954	
5,350.00	5,347.60	5,446.43	5,439.44	18.89	19.33	-23.75	53.67	-1,451.48	1,384.19	1,346.23	37.96	36.466	
5,400.00	5,397.49	5,503.97	5,488.91	19.07	19.54	-23.75	54.80	-1,448.11	1,377.87	1,339.53	38.34	35.938	
5,450.00	5,447.39	5,545.63	5,538.39	19.25	19.69	-23.76	55.94	-1,444.75	1,371.56	1,332.89	38.66	35.473	
5,500.00	5,497.28	5,595.23	5,587.86	19.43	19.87	-23.76	57.07	-1,441.39	1,365.24	1,326.23	39.02	34.990	
5,550.00	5,547.18	5,644.83	5,637.33	19.61	20.05	-23.77	58.21	-1,438.03	1,358.93	1,319.56	39.37	34.515	
5,600.00	5,597.07	5,705.57	5,686.80	19.78	20.28	-23.77	59.34	-1,434.67	1,352.61	1,312.85	39.77	34.015	
5,650.00	5,646.97	5,744.03	5,736.28	19.96	20.42	-23.78	60.48	-1,431.30	1,346.30	1,306.22	40.08	33.591	
5,700.00	5,696.87	5,806.37	5,785.75	20.14	20.64	-23.78	61.61	-1,427.94	1,339.98	1,299.50	40.48	33.104	
5,750.00	5,746.76	5,843.23	5,835.22	20.32	20.78	-23.79	62.75	-1,424.58	1,333.67	1,292.88	40.79	32.699	
5,800.00	5,796.66	5,907.17	5,884.69	20.50	21.01	-23.79	63.88	-1,421.22	1,327.35	1,286.16	41.19	32.223	
5,850.00	5,846.55	5,942.43	5,934.17	20.68	21.14	-23.80	65.02	-1,417.86	1,321.03	1,279.54	41.49	31.836	
5,900.00	5,896.45	6,007.98	5,983.64	20.86	21.38	-23.80	66.15	-1,414.50	1,314.72	1,272.81	41.91	31.373	
5,950.00	5,946.35	6,041.62	6,033.11	21.04	21.51	-23.81	67.29	-1,411.13	1,308.40	1,266.20	42.20	31.002	
6,000.00	5,996.24	6,108.78	6,082.58	21.22	21.75	-23.81	68.42	-1,407.77	1,302.09	1,259.47	42.62	30.551	
6,050.00	6,046.14	6,140.82	6,132.05	21.40	21.87	-23.82	69.56	-1,404.41	1,295.77	1,252.86	42.91	30.196	
6,100.00	6,096.03	6,190.42	6,181.53	21.58	22.05	-23.82	70.69	-1,401.05	1,289.46	1,246.19	43.27	29.803	
6,150.00	6,145.93	6,240.02	6,231.00	21.76	22.23	-23.83	71.83	-1,397.69	1,283.14	1,239.52	43.62	29.415	
6,200.00	6,195.82	6,289.62	6,280.47	21.94	22.41	-23.83	72.96	-1,394.32	1,276.83	1,232.85	43.98	29.035	
6,250.00	6,245.72	6,339.22	6,329.94	22.12	22.60	-23.84	74.10	-1,390.96	1,270.51	1,226.18	44.33	28.660	
6,300.00	6,295.62	6,388.82	6,379.42	22.30	22.78	-23.84	75.23	-1,387.60	1,264.20	1,219.51	44.69	28.291	
6,350.00	6,345.51	6,438.42	6,428.89	22.48	22.96	-23.85	76.37	-1,384.24	1,257.88	1,212.84	45.04	27.928	
6,400.00	6,395.41	6,488.02	6,478.36	22.66	23.14	-23.85	77.50	-1,380.88	1,251.57	1,206.17	45.40	27.570	
6,450.00	6,445.30	6,537.62	6,527.83	22.84	23.32	-23.86	78.64	-1,377.51	1,245.25	1,199.50	45.75	27.218	
6,500.00	6,495.20	6,587.22	6,577.31	23.02	23.51	-23.86	79.77	-1,374.15	1,238.94	1,192.83	46.11	26.871	
6,550.00	6,545.09	6,636.82	6,626.78	23.20	23.69	-23.87	80.91	-1,370.79	1,232.62	1,186.16	46.46	26.530	
6,600.00	6,594.99	6,686.42	6,676.25	23.38	23.87	-23.87	82.04	-1,367.43	1,226.30	1,179.49	46.82	26.194	
6,650.00	6,644.89	6,736.02	6,725.72	23.56	24.05	-23.88	83.18	-1,364.07	1,219.99	1,172.82	47.17	25.862	
6,700.00	6,694.78	6,785.62	6,775.20	23.74	24.24	-23.89	84.31	-1,360.70	1,213.67	1,166.15	47.53	25.536	
6,750.00	6,744.68	6,835.21	6,824.67	23.92	24.42	-23.89	85.45	-1,357.34	1,207.36	1,159.48	47.88	25.215	
6,800.00	6,794.57	6,884.81	6,874.14	24.10	24.60	-23.90	86.58	-1,353.98	1,201.04	1,152.80	48.24	24.898	
6,850.00	6,844.47	6,934.41	6,923.61	24.28	24.78	-23.90	87.72	-1,350.62	1,194.73	1,146.13	48.59	24.586	
6,900.00	6,894.36	6,984.01	6,973.08	24.46	24.96	-23.91	88.85	-1,347.26	1,188.41	1,139.46	48.95	24.278	
6,950.00	6,944.26	7,033.61	7,022.56	24.65	25.15	-23.91	89.99	-1,343.89	1,182.10	1,132.79	49.31	23.975	
7,000.00	6,994.16	7,083.21	7,072.03	24.83	25.33	-23.92	91.12	-1,340.53	1,175.78	1,126.12	49.66	23.676	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
7,050.00	7,044.05	7,132.81	7,121.50	25.01	25.51	-23.93	92.26	-1,337.17	1,169.47	1,119.45	50.02	23.381	
7,100.00	7,093.95	7,182.41	7,170.97	25.19	25.69	-23.93	93.39	-1,333.81	1,163.15	1,112.78	50.37	23.090	
7,150.00	7,143.84	7,232.01	7,220.45	25.37	25.88	-23.94	94.53	-1,330.45	1,156.84	1,106.11	50.73	22.804	
7,200.00	7,193.74	7,281.61	7,269.92	25.55	26.06	-23.95	95.66	-1,327.08	1,150.52	1,099.44	51.09	22.521	
7,250.00	7,243.63	7,331.21	7,319.39	25.73	26.24	-23.95	96.80	-1,323.72	1,144.21	1,092.76	51.44	22.242	
7,300.00	7,293.53	7,380.81	7,368.86	25.91	26.42	-23.96	97.93	-1,320.36	1,137.89	1,086.09	51.80	21.968	
7,350.00	7,343.43	7,430.41	7,418.34	26.09	26.61	-23.96	99.07	-1,317.00	1,131.58	1,079.42	52.16	21.696	
7,400.00	7,393.32	7,480.01	7,467.81	26.28	26.79	-23.97	100.20	-1,313.64	1,125.26	1,072.75	52.51	21.429	
7,450.00	7,443.22	7,529.61	7,517.28	26.46	26.97	-23.98	101.34	-1,310.27	1,118.95	1,066.08	52.87	21.165	
7,500.00	7,493.11	7,579.21	7,566.75	26.64	27.15	-23.98	102.47	-1,306.91	1,112.63	1,059.41	53.22	20.905	
7,550.00	7,543.01	7,628.81	7,616.22	26.82	27.34	-23.99	103.61	-1,303.55	1,106.32	1,052.74	53.58	20.648	
7,600.00	7,592.90	7,678.41	7,665.70	27.00	27.52	-24.00	104.74	-1,300.19	1,100.00	1,046.06	53.94	20.394	
7,650.00	7,642.80	7,728.00	7,715.17	27.18	27.70	-24.01	105.88	-1,296.83	1,093.69	1,039.39	54.29	20.144	
7,700.00	7,692.70	7,777.60	7,764.64	27.36	27.88	-24.01	107.01	-1,293.46	1,087.37	1,032.72	54.65	19.897	
7,750.00	7,742.59	7,827.20	7,814.11	27.55	28.07	-24.02	108.15	-1,290.10	1,081.06	1,026.05	55.01	19.653	
7,800.00	7,792.49	7,876.80	7,863.59	27.73	28.25	-24.03	109.28	-1,286.74	1,074.74	1,019.38	55.36	19.412	
7,850.00	7,842.38	7,926.40	7,913.06	27.91	28.43	-24.03	110.42	-1,283.38	1,068.43	1,012.71	55.72	19.175	
7,900.00	7,892.28	7,976.00	7,962.53	28.09	28.61	-24.04	111.55	-1,280.02	1,062.11	1,006.03	56.08	18.940	
7,950.00	7,942.17	8,025.60	8,012.00	28.27	28.80	-24.05	112.69	-1,276.66	1,055.80	999.36	56.43	18.708	
8,000.00	7,992.07	8,075.20	8,061.48	28.45	28.98	-24.06	113.82	-1,273.29	1,049.48	992.69	56.79	18.480	
8,050.00	8,041.97	8,124.80	8,110.95	28.64	29.16	-24.06	114.96	-1,269.93	1,043.17	986.02	57.15	18.254	
8,100.00	8,091.86	8,174.40	8,160.42	28.82	29.35	-24.07	116.09	-1,266.57	1,036.85	979.35	57.51	18.031	
8,150.00	8,141.76	8,224.00	8,209.89	29.00	29.53	-24.08	117.23	-1,263.21	1,030.54	972.68	57.86	17.810	
8,200.00	8,191.65	8,273.60	8,259.37	29.18	29.71	-24.09	118.36	-1,259.85	1,024.22	966.00	58.22	17.593	
8,250.00	8,241.55	8,323.20	8,308.84	29.36	29.89	-24.10	119.50	-1,256.48	1,017.91	959.33	58.58	17.377	
8,300.00	8,291.44	8,372.80	8,358.31	29.54	30.08	-24.10	120.63	-1,253.12	1,011.59	952.66	58.93	17.165	
8,350.00	8,341.34	8,422.40	8,407.78	29.73	30.26	-24.11	121.77	-1,249.76	1,005.28	945.99	59.29	16.955	
8,400.00	8,391.24	8,472.00	8,457.25	29.91	30.44	-24.12	122.90	-1,246.40	998.96	939.32	59.65	16.748	
8,450.00	8,441.13	8,521.60	8,506.73	30.09	30.62	-24.13	124.04	-1,243.04	992.65	932.64	60.01	16.543	
8,500.00	8,491.03	8,571.19	8,556.20	30.27	30.81	-24.14	125.17	-1,239.67	986.33	925.97	60.36	16.340	
8,550.00	8,540.92	8,620.79	8,605.67	30.45	30.99	-24.15	126.31	-1,236.31	980.02	919.30	60.72	16.140	
8,600.00	8,590.82	8,670.39	8,655.14	30.64	31.17	-24.16	127.44	-1,232.95	973.71	912.63	61.08	15.942	
8,650.00	8,640.71	8,719.99	8,704.62	30.82	31.36	-24.16	128.58	-1,229.59	967.39	905.96	61.43	15.747	
8,700.00	8,690.61	8,769.59	8,754.09	31.00	31.54	-24.17	129.71	-1,226.23	961.08	899.28	61.79	15.553	
8,750.00	8,740.51	8,819.19	8,803.56	31.18	31.72	-24.18	130.85	-1,222.86	954.76	892.61	62.15	15.362	
8,800.00	8,790.40	8,868.79	8,853.03	31.37	31.90	-24.19	131.98	-1,219.50	948.45	885.94	62.51	15.173	
8,850.00	8,840.30	8,918.39	8,902.51	31.55	32.09	-24.20	133.12	-1,216.14	942.13	879.27	62.86	14.987	
8,900.00	8,890.19	8,967.99	8,951.98	31.73	32.27	-24.21	134.25	-1,212.78	935.82	872.60	63.22	14.802	
8,950.00	8,940.09	9,017.59	9,001.45	31.91	32.45	-24.22	135.39	-1,209.42	929.50	865.92	63.58	14.619	
9,000.00	8,989.98	9,067.19	9,050.92	32.09	32.64	-24.23	136.52	-1,206.05	923.19	859.25	63.94	14.439	
9,050.00	9,039.88	9,116.79	9,100.40	32.28	32.82	-24.24	137.66	-1,202.69	916.87	852.58	64.30	14.260	
9,100.00	9,089.78	9,166.39	9,149.87	32.46	33.00	-24.25	138.79	-1,199.33	910.56	845.91	64.65	14.084	
9,150.00	9,139.67	9,215.99	9,199.34	32.64	33.19	-24.26	139.93	-1,195.97	904.25	839.24	65.01	13.909	
9,200.00	9,189.57	9,265.59	9,248.81	32.82	33.37	-24.27	141.06	-1,192.61	897.93	832.56	65.37	13.737	
9,250.00	9,239.46	9,315.19	9,298.28	33.01	33.55	-24.28	142.20	-1,189.24	891.62	825.89	65.73	13.566	
9,300.00	9,289.36	9,364.79	9,347.76	33.19	33.73	-24.29	143.33	-1,185.88	885.30	819.22	66.08	13.397	
9,350.00	9,339.25	9,414.39	9,397.23	33.37	33.92	-24.30	144.47	-1,182.52	878.99	812.55	66.44	13.229	
9,400.00	9,389.15	9,463.98	9,446.70	33.55	34.10	-24.31	145.60	-1,179.16	872.67	805.87	66.80	13.064	
9,450.00	9,439.05	9,513.58	9,496.17	33.74	34.28	-24.33	146.74	-1,175.80	866.36	799.20	67.16	12.900	
9,500.00	9,488.94	9,563.18	9,545.65	33.92	34.47	-24.34	147.87	-1,172.43	860.05	792.53	67.52	12.738	
9,550.00	9,538.84	9,612.78	9,595.12	34.10	34.65	-24.35	149.01	-1,169.07	853.73	785.86	67.87	12.578	
9,600.00	9,588.73	9,662.38	9,644.59	34.28	34.83	-24.36	150.14	-1,165.71	847.42	779.19	68.23	12.420	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
9,650.00	9,638.63	9,711.98	9,694.06	34.47	35.02	-24.37	151.28	-1,162.35	841.10	772.51	68.59	12.263	
9,700.00	9,688.52	9,761.58	9,743.54	34.65	35.20	-24.38	152.41	-1,158.99	834.79	765.84	68.95	12.108	
9,750.00	9,738.42	9,811.18	9,793.01	34.83	35.38	-24.40	153.55	-1,155.62	828.48	759.17	69.31	11.954	
9,800.00	9,788.32	9,860.78	9,842.48	35.01	35.56	-24.41	154.68	-1,152.26	822.16	752.50	69.66	11.802	
9,850.00	9,838.21	9,910.38	9,891.95	35.20	35.75	-24.42	155.82	-1,148.90	815.85	745.83	70.02	11.651	
9,900.00	9,888.11	9,959.98	9,941.42	35.38	35.93	-24.43	156.95	-1,145.54	809.53	739.15	70.38	11.502	
9,950.00	9,938.00	10,009.58	9,990.90	35.56	36.11	-24.45	158.09	-1,142.18	803.22	732.48	70.74	11.355	
10,000.00	9,987.90	10,059.18	10,040.37	35.74	36.30	-24.46	159.22	-1,138.82	796.91	725.81	71.10	11.209	
10,050.00	10,037.79	10,108.78	10,089.84	35.93	36.48	-24.47	160.36	-1,135.45	790.59	719.14	71.45	11.064	
10,100.00	10,087.69	10,158.38	10,139.31	36.11	36.66	-24.49	161.49	-1,132.09	784.28	712.47	71.81	10.921	
10,150.00	10,137.59	10,207.98	10,188.79	36.29	36.85	-24.50	162.63	-1,128.73	777.97	705.79	72.17	10.779	
10,200.00	10,187.48	10,257.58	10,238.26	36.48	37.03	-24.51	163.76	-1,125.37	771.65	699.12	72.53	10.639	
10,250.00	10,237.38	10,307.17	10,287.73	36.66	37.21	-24.53	164.90	-1,122.01	765.34	692.45	72.89	10.500	
10,300.00	10,287.27	10,356.77	10,337.20	36.84	37.40	-24.54	166.03	-1,118.64	759.03	685.78	73.25	10.363	
10,350.00	10,337.17	10,406.37	10,386.68	37.02	37.58	-24.56	167.17	-1,115.28	752.71	679.11	73.60	10.226	
10,400.00	10,387.06	10,455.97	10,436.15	37.21	37.76	-24.57	168.30	-1,111.92	746.40	672.43	73.96	10.091	
10,450.00	10,436.96	10,505.57	10,485.62	37.39	37.95	-24.59	169.44	-1,108.56	740.08	665.76	74.32	9.958	
10,500.00	10,486.86	10,555.17	10,535.09	37.57	38.13	-24.60	170.57	-1,105.20	733.77	659.09	74.68	9.826	
10,550.00	10,536.75	10,604.77	10,584.57	37.76	38.31	-24.62	171.70	-1,101.83	727.46	652.42	75.04	9.694	
10,600.00	10,586.65	10,647.93	10,627.63	37.94	38.47	-24.64	172.84	-1,099.07	721.33	645.94	75.40	9.567	
10,650.00	10,636.54	10,690.10	10,669.73	38.12	38.63	-24.67	173.40	-1,096.81	715.72	639.97	75.76	9.448	
10,700.00	10,686.44	10,732.36	10,711.94	38.30	38.78	-24.71	174.02	-1,094.98	710.63	634.53	76.11	9.337	
10,750.00	10,736.33	10,774.69	10,754.25	38.49	38.93	-24.77	174.49	-1,093.59	706.07	629.62	76.45	9.236	
10,800.00	10,786.23	10,817.11	10,796.65	38.67	39.08	-24.83	174.80	-1,092.65	702.03	625.24	76.79	9.142	
10,850.00	10,836.13	10,859.58	10,839.12	38.85	39.23	-24.91	174.97	-1,092.16	698.51	621.39	77.12	9.057	
10,900.00	10,886.02	10,904.98	10,884.52	39.04	39.39	-25.01	175.00	-1,092.07	695.49	618.03	77.46	8.979	
10,950.00	10,935.92	10,954.88	10,934.42	39.22	39.56	-25.12	175.00	-1,092.07	692.59	614.78	77.81	8.901	
11,000.00	10,985.84	11,004.80	10,984.34	39.40	39.73	-25.20	175.00	-1,092.07	690.12	611.96	78.16	8.829	
11,050.00	11,035.80	11,054.76	11,034.30	39.58	39.90	-25.26	175.00	-1,092.07	688.25	609.73	78.52	8.766	
11,100.00	11,085.78	11,104.74	11,084.28	39.76	40.08	-25.31	175.00	-1,092.07	686.97	608.10	78.87	8.710	
11,150.00	11,135.77	11,154.73	11,134.27	39.94	40.25	-25.33	175.00	-1,092.07	686.28	607.06	79.22	8.663	
11,199.93	11,185.70	11,204.66	11,184.20	40.11	40.42	-90.84	175.00	-1,092.07	686.08	606.51	79.57	8.622 CC	
11,200.00	11,185.77	11,204.73	11,184.27	40.11	40.42	-90.84	175.00	-1,092.07	686.15	606.57	79.57	8.623	
11,203.20	11,188.97	11,207.93	11,187.47	40.12	40.43	-90.84	175.00	-1,092.07	686.15	606.55	79.59	8.621	
11,250.00	11,235.77	11,254.43	11,233.97	40.29	40.59	-90.86	174.69	-1,092.07	686.15	606.23	79.92	8.586	
11,300.00	11,285.77	11,303.34	11,282.73	40.46	40.75	-91.17	170.99	-1,092.07	686.21	605.96	80.25	8.551	
11,350.00	11,335.77	11,351.29	11,330.04	40.64	40.90	-91.81	163.34	-1,092.06	686.41	605.83	80.58	8.519	
11,400.00	11,385.77	11,397.65	11,375.03	40.81	41.04	-92.74	152.21	-1,092.04	686.88	606.00	80.89	8.492	
11,450.00	11,435.77	11,441.93	11,417.03	40.99	41.16	-93.90	138.21	-1,092.02	687.83	606.65	81.18	8.473	
11,500.00	11,485.77	11,483.77	11,455.62	41.17	41.27	-95.24	122.04	-1,091.99	689.47	608.03	81.44	8.466	
11,550.00	11,535.77	11,523.08	11,490.69	41.34	41.37	83.36	104.33	-1,091.97	692.04	610.38	81.66	8.474	
11,600.00	11,585.62	11,561.08	11,523.38	41.50	41.46	81.65	84.96	-1,091.94	695.32	613.49	81.82	8.498	
11,650.00	11,634.97	11,598.27	11,554.06	41.65	41.54	79.98	63.94	-1,091.91	699.10	617.18	81.93	8.533	
11,700.00	11,683.43	11,634.77	11,582.77	41.80	41.62	78.38	41.42	-1,091.88	703.29	621.32	81.97	8.580	
11,750.00	11,730.64	11,670.67	11,609.56	41.95	41.68	76.84	17.54	-1,091.84	707.77	625.81	81.96	8.635	
11,800.00	11,776.24	11,706.03	11,634.44	42.08	41.75	75.39	-7.59	-1,091.80	712.43	630.54	81.89	8.700	
11,850.00	11,819.89	11,740.93	11,657.42	42.20	41.80	74.02	-33.84	-1,091.76	717.16	635.38	81.78	8.770	
11,900.00	11,861.24	11,775.43	11,678.53	42.31	41.85	72.74	-61.12	-1,091.72	721.86	640.24	81.62	8.844	
11,950.00	11,899.99	11,809.58	11,697.77	42.40	41.90	71.57	-89.33	-1,091.68	726.43	645.00	81.44	8.920	
12,000.00	11,935.84	11,843.43	11,715.15	42.49	41.95	70.51	-118.37	-1,091.64	730.80	649.56	81.24	8.996	
12,050.00	11,968.52	11,877.02	11,730.68	42.56	42.00	69.56	-148.16	-1,091.59	734.87	653.84	81.04	9.068	
12,100.00	11,997.78	11,910.39	11,744.34	42.63	42.05	68.72	-178.60	-1,091.55	738.59	657.74	80.84	9.136	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
12,150.00	12,023.39	11,943.58	11,756.15	42.69	42.10	68.00	-209.61	-1,091.50	741.88	661.20	80.67	9.196	
12,200.00	12,045.17	11,976.62	11,766.11	42.77	42.16	67.40	-241.10	-1,091.46	744.69	664.15	80.53	9.247	
12,250.00	12,062.94	12,009.53	11,774.21	42.86	42.22	66.92	-273.00	-1,091.41	746.98	666.54	80.44	9.286	
12,300.00	12,076.57	12,042.36	11,780.45	42.97	42.29	66.57	-305.23	-1,091.36	748.72	668.31	80.41	9.312	
12,350.00	12,085.96	12,075.12	11,784.82	43.07	42.36	66.33	-337.69	-1,091.31	749.87	669.44	80.43	9.323	
12,400.00	12,091.03	12,107.85	11,787.33	43.18	42.44	66.23	-370.32	-1,091.26	750.42	669.90	80.52	9.320	
12,450.00	12,092.00	12,143.25	11,788.00	43.30	42.52	66.23	-405.71	-1,091.21	750.46	669.78	80.68	9.302	
12,500.00	12,092.00	12,206.75	11,788.00	43.41	42.67	66.23	-455.71	-1,091.14	750.51	669.60	80.91	9.276	
12,550.00	12,092.00	12,243.25	11,788.00	43.55	42.77	66.23	-505.71	-1,091.06	750.57	669.44	81.12	9.252	
12,600.00	12,092.00	12,306.75	11,788.00	43.68	42.96	66.23	-555.71	-1,090.99	750.62	669.22	81.40	9.222	
12,650.00	12,092.00	12,343.25	11,788.00	43.84	43.07	66.24	-605.71	-1,090.92	750.67	669.03	81.65	9.194	
12,700.00	12,092.00	12,406.75	11,788.00	44.00	43.28	66.24	-655.71	-1,090.84	750.73	668.76	81.97	9.158	
12,750.00	12,092.00	12,443.25	11,788.00	44.17	43.42	66.24	-705.71	-1,090.77	750.78	668.53	82.26	9.127	
12,800.00	12,092.00	12,506.75	11,788.00	44.35	43.65	66.24	-755.71	-1,090.69	750.84	668.21	82.63	9.087	
12,850.00	12,092.00	12,543.25	11,788.00	44.55	43.80	66.24	-805.71	-1,090.62	750.89	667.94	82.96	9.052	
12,900.00	12,092.00	12,606.75	11,788.00	44.75	44.06	66.25	-855.71	-1,090.55	750.95	667.57	83.38	9.007	
12,950.00	12,092.00	12,643.25	11,788.00	44.97	44.23	66.25	-905.71	-1,090.47	751.00	667.27	83.74	8.969	
13,000.00	12,092.00	12,706.75	11,788.00	45.19	44.52	66.25	-955.71	-1,090.40	751.06	666.85	84.21	8.919	
13,050.00	12,092.00	12,743.25	11,788.00	45.43	44.70	66.25	-1,005.71	-1,090.32	751.11	666.51	84.60	8.879	
13,100.00	12,092.00	12,806.75	11,788.00	45.67	45.01	66.25	-1,055.71	-1,090.25	751.16	666.05	85.11	8.826	
13,150.00	12,092.00	12,843.25	11,788.00	45.93	45.21	66.25	-1,105.71	-1,090.17	751.22	665.68	85.54	8.782	
13,200.00	12,092.00	12,906.75	11,788.00	46.19	45.55	66.26	-1,155.71	-1,090.10	751.27	665.18	86.10	8.726	
13,250.00	12,092.00	12,943.25	11,788.00	46.47	45.76	66.26	-1,205.71	-1,090.03	751.33	664.77	86.56	8.680	
13,300.00	12,092.00	13,006.75	11,788.00	46.75	46.12	66.26	-1,255.71	-1,089.95	751.38	664.22	87.16	8.621	
13,350.00	12,092.00	13,043.25	11,788.00	47.05	46.35	66.26	-1,305.71	-1,089.88	751.44	663.79	87.65	8.573	
13,400.00	12,092.00	13,106.75	11,788.00	47.35	46.74	66.26	-1,355.71	-1,089.80	751.49	663.20	88.29	8.512	
13,450.00	12,092.00	13,143.25	11,788.00	47.67	46.97	66.27	-1,405.71	-1,089.73	751.55	662.74	88.81	8.462	
13,500.00	12,092.00	13,206.75	11,788.00	47.99	47.38	66.27	-1,455.71	-1,089.66	751.60	662.11	89.49	8.399	
13,550.00	12,092.00	13,243.25	11,788.00	48.32	47.63	66.27	-1,505.71	-1,089.58	751.66	661.62	90.04	8.348	
13,600.00	12,092.00	13,306.75	11,788.00	48.66	48.07	66.27	-1,555.71	-1,089.51	751.71	660.95	90.76	8.282	
13,650.00	12,092.00	13,343.25	11,788.00	49.01	48.33	66.27	-1,605.70	-1,089.43	751.76	660.43	91.34	8.231	
13,700.00	12,092.00	13,406.75	11,788.00	49.36	48.78	66.27	-1,655.70	-1,089.36	751.82	659.73	92.09	8.164	
13,750.00	12,092.00	13,443.25	11,788.00	49.73	49.05	66.28	-1,705.70	-1,089.29	751.87	659.18	92.69	8.111	
13,800.00	12,092.00	13,506.75	11,788.00	50.09	49.53	66.28	-1,755.70	-1,089.21	751.93	658.44	93.48	8.043	
13,850.00	12,092.00	13,543.25	11,788.00	50.48	49.81	66.28	-1,805.70	-1,089.14	751.98	657.87	94.11	7.990	
13,900.00	12,092.00	13,606.75	11,788.00	50.86	50.31	66.28	-1,855.70	-1,089.06	752.04	657.10	94.94	7.922	
13,950.00	12,092.00	13,643.25	11,788.00	51.26	50.60	66.28	-1,905.70	-1,088.99	752.09	656.50	95.59	7.868	
14,000.00	12,092.00	13,706.75	11,788.00	51.66	51.12	66.29	-1,955.70	-1,088.91	752.15	655.70	96.44	7.799	
14,050.00	12,092.00	13,743.25	11,788.00	52.07	51.42	66.29	-2,005.70	-1,088.84	752.20	655.08	97.12	7.745	
14,100.00	12,092.00	13,806.75	11,788.00	52.48	51.95	66.29	-2,055.70	-1,088.77	752.25	654.25	98.00	7.676	
14,150.00	12,092.00	13,843.25	11,788.00	52.90	52.27	66.29	-2,105.70	-1,088.69	752.31	653.61	98.70	7.622	
14,200.00	12,092.00	13,906.75	11,788.00	53.33	52.82	66.29	-2,155.70	-1,088.62	752.36	652.75	99.62	7.553	
14,250.00	12,092.00	13,943.25	11,788.00	53.77	53.14	66.29	-2,205.70	-1,088.54	752.42	652.08	100.33	7.499	
14,300.00	12,092.00	14,006.75	11,788.00	54.21	53.71	66.30	-2,255.70	-1,088.47	752.47	651.20	101.28	7.430	
14,350.00	12,092.00	14,043.25	11,788.00	54.66	54.04	66.30	-2,305.70	-1,088.40	752.53	650.51	102.01	7.377	
14,400.00	12,092.00	14,106.75	11,788.00	55.11	54.62	66.30	-2,355.70	-1,088.32	752.58	649.60	102.98	7.308	
14,450.00	12,092.00	14,143.25	11,788.00	55.57	54.96	66.30	-2,405.70	-1,088.25	752.64	648.90	103.74	7.255	
14,500.00	12,092.00	14,206.75	11,788.00	56.03	55.55	66.30	-2,455.70	-1,088.17	752.69	647.96	104.73	7.187	
14,550.00	12,092.00	14,243.25	11,788.00	56.50	55.90	66.31	-2,505.70	-1,088.10	752.74	647.24	105.51	7.135	
14,600.00	12,092.00	14,306.75	11,788.00	56.97	56.51	66.31	-2,555.70	-1,088.03	752.80	646.28	106.52	7.067	
14,650.00	12,092.00	14,343.25	11,788.00	57.46	56.87	66.31	-2,605.70	-1,087.95	752.85	645.54	107.31	7.015	
14,700.00	12,092.00	14,406.75	11,788.00	57.94	57.49	66.31	-2,655.70	-1,087.88	752.91	644.55	108.35	6.949	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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		Offset		Semi Major Axis			Distance						Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
14,750.00	12,092.00	14,443.25	11,788.00	58.43	57.85	66.31	-2,705.70	-1,087.80	752.96	643.80	109.16	6.898				
14,800.00	12,092.00	14,506.75	11,788.00	58.93	58.49	66.31	-2,755.70	-1,087.73	753.02	642.79	110.22	6.832				
14,850.00	12,092.00	14,543.25	11,788.00	59.43	58.86	66.32	-2,805.70	-1,087.65	753.07	642.03	111.05	6.782				
14,900.00	12,092.00	14,593.25	11,788.00	59.93	59.36	66.32	-2,855.70	-1,087.58	753.13	641.13	112.00	6.725				
14,950.00	12,092.00	14,643.25	11,788.00	60.44	59.88	66.32	-2,905.70	-1,087.51	753.18	640.22	112.96	6.667				
15,000.00	12,092.00	14,706.75	11,788.00	60.96	60.54	66.32	-2,955.70	-1,087.43	753.24	639.17	114.06	6.604				
15,050.00	12,092.00	14,743.25	11,788.00	61.48	60.92	66.32	-3,005.70	-1,087.36	753.29	638.37	114.92	6.555				
15,100.00	12,092.00	14,806.75	11,788.00	62.00	61.59	66.33	-3,055.70	-1,087.28	753.34	637.31	116.04	6.492				
15,150.00	12,092.00	14,843.25	11,788.00	62.53	61.98	66.33	-3,105.70	-1,087.21	753.40	636.50	116.90	6.445				
15,200.00	12,092.00	14,906.75	11,788.00	63.05	62.65	66.33	-3,155.70	-1,087.14	753.45	635.42	118.04	6.383				
15,250.00	12,092.00	14,943.25	11,788.00	63.59	63.05	66.33	-3,205.70	-1,087.06	753.51	634.59	118.91	6.337				
15,300.00	12,092.00	15,006.75	11,788.00	64.13	63.74	66.33	-3,255.70	-1,086.99	753.56	633.50	120.07	6.276				
15,350.00	12,092.00	15,043.25	11,788.00	64.67	64.14	66.33	-3,305.70	-1,086.91	753.62	632.66	120.96	6.230				
15,400.00	12,092.00	15,106.75	11,788.00	65.21	64.83	66.34	-3,355.70	-1,086.84	753.67	631.55	122.12	6.171				
15,450.00	12,092.00	15,143.25	11,788.00	65.76	65.24	66.34	-3,405.70	-1,086.77	753.73	630.70	123.03	6.127				
15,500.00	12,092.00	15,206.75	11,788.00	66.31	65.94	66.34	-3,455.70	-1,086.69	753.78	629.57	124.21	6.069				
15,550.00	12,092.00	15,243.25	11,788.00	66.87	66.35	66.34	-3,505.70	-1,086.62	753.83	628.71	125.12	6.025				
15,600.00	12,092.00	15,306.75	11,788.00	67.43	67.07	66.34	-3,555.70	-1,086.54	753.89	627.57	126.32	5.968				
15,650.00	12,092.00	15,343.25	11,788.00	67.99	67.48	66.35	-3,605.70	-1,086.47	753.94	626.70	127.24	5.925				
15,700.00	12,092.00	15,406.75	11,788.00	68.56	68.20	66.35	-3,655.70	-1,086.39	754.00	625.55	128.45	5.870				
15,750.00	12,092.00	15,443.25	11,788.00	69.13	68.62	66.35	-3,705.70	-1,086.32	754.05	624.67	129.38	5.828				
15,800.00	12,092.00	15,506.75	11,788.00	69.70	69.35	66.35	-3,755.70	-1,086.25	754.11	623.50	130.61	5.774				
15,850.00	12,092.00	15,543.25	11,788.00	70.27	69.77	66.35	-3,805.70	-1,086.17	754.16	622.61	131.55	5.733				
15,900.00	12,092.00	15,606.75	11,788.00	70.85	70.51	66.35	-3,855.70	-1,086.10	754.22	621.43	132.78	5.680				
15,950.00	12,092.00	15,643.25	11,788.00	71.43	70.94	66.36	-3,905.70	-1,086.02	754.27	620.54	133.73	5.640				
16,000.00	12,092.00	15,706.75	11,788.00	72.01	71.68	66.36	-3,955.70	-1,085.95	754.33	619.34	134.98	5.588				
16,050.00	12,092.00	15,743.25	11,788.00	72.59	72.11	66.36	-4,005.70	-1,085.88	754.38	618.44	135.94	5.549				
16,100.00	12,092.00	15,793.25	11,788.00	73.18	72.70	66.36	-4,055.70	-1,085.80	754.43	617.39	137.05	5.505				
16,150.00	12,092.00	15,843.25	11,788.00	73.77	73.29	66.36	-4,105.70	-1,085.73	754.49	616.32	138.17	5.461				
16,200.00	12,092.00	15,906.75	11,788.00	74.36	74.05	66.37	-4,155.70	-1,085.65	754.54	615.11	139.43	5.411				
16,250.00	12,092.00	15,943.25	11,788.00	74.96	74.49	66.37	-4,205.70	-1,085.58	754.60	614.19	140.41	5.374				
16,300.00	12,092.00	16,006.75	11,788.00	75.55	75.25	66.37	-4,255.70	-1,085.51	754.65	612.96	141.69	5.326				
16,350.00	12,092.00	16,043.25	11,788.00	76.16	75.69	66.37	-4,305.70	-1,085.43	754.71	612.04	142.67	5.290				
16,400.00	12,092.00	16,106.75	11,788.00	76.76	76.46	66.37	-4,355.70	-1,085.36	754.76	610.80	143.96	5.243				
16,450.00	12,092.00	16,143.25	11,788.00	77.36	76.90	66.37	-4,405.70	-1,085.28	754.82	609.87	144.95	5.208				
16,500.00	12,092.00	16,206.75	11,788.00	77.96	77.67	66.38	-4,455.70	-1,085.21	754.87	608.63	146.24	5.162				
16,550.00	12,092.00	16,243.25	11,788.00	78.57	78.12	66.38	-4,505.70	-1,085.13	754.92	607.69	147.24	5.127				
16,600.00	12,092.00	16,306.75	11,788.00	79.18	78.90	66.38	-4,555.70	-1,085.06	754.98	606.43	148.55	5.082				
16,650.00	12,092.00	16,343.25	11,788.00	79.80	79.35	66.38	-4,605.70	-1,084.99	755.03	605.49	149.55	5.049				
16,700.00	12,092.00	16,406.75	11,788.00	80.41	80.13	66.38	-4,655.70	-1,084.91	755.09	604.23	150.86	5.005				
16,750.00	12,092.00	16,443.25	11,788.00	81.02	80.58	66.39	-4,705.70	-1,084.84	755.14	603.27	151.87	4.972 Alert				
16,800.00	12,092.00	16,506.75	11,788.00	81.64	81.37	66.39	-4,755.70	-1,084.76	755.20	602.00	153.19	4.930 Alert				
16,850.00	12,092.00	16,543.25	11,788.00	82.26	81.82	66.39	-4,805.70	-1,084.69	755.25	601.05	154.21	4.898 Alert				
16,900.00	12,092.00	16,606.75	11,788.00	82.88	82.61	66.39	-4,855.70	-1,084.62	755.31	599.77	155.54	4.856 Alert				
16,950.00	12,092.00	16,643.25	11,788.00	83.50	83.07	66.39	-4,905.70	-1,084.54	755.36	598.80	156.56	4.825 Alert				
17,000.00	12,092.00	16,706.75	11,788.00	84.13	83.87	66.39	-4,955.70	-1,084.47	755.42	597.52	157.89	4.784 Alert				
17,050.00	12,092.00	16,743.25	11,788.00	84.75	84.33	66.40	-5,005.70	-1,084.39	755.47	596.55	158.92	4.754 Alert				
17,100.00	12,092.00	16,806.75	11,788.00	85.38	85.13	66.40	-5,055.70	-1,084.32	755.52	595.26	160.26	4.714 Alert				
17,150.00	12,092.00	16,843.25	11,788.00	86.01	85.59	66.40	-5,105.70	-1,084.24	755.58	594.29	161.29	4.685 Alert				
17,200.00	12,092.00	16,906.75	11,788.00	86.64	86.39	66.40	-5,155.70	-1,084.17	755.63	592.99	162.64	4.646 Alert				
17,250.00	12,092.00	16,943.25	11,788.00	87.27	86.85	66.40	-5,205.70	-1,084.10	755.69	592.01	163.68	4.617 Alert				
17,300.00	12,092.00	17,006.75	11,788.00	87.91	87.66	66.41	-5,255.70	-1,084.02	755.74	590.71	165.04	4.579 Alert				

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
17,350.00	12,092.00	17,043.25	11,788.00	88.54	88.13	66.41	-5,305.70	-1,083.95	755.80	589.72	166.07	4.551 Alert	
17,400.00	12,092.00	17,106.76	11,788.00	89.18	88.94	66.41	-5,355.70	-1,083.87	755.85	588.41	167.44	4.514 Alert	
17,450.00	12,092.00	17,143.25	11,788.00	89.82	89.41	66.41	-5,405.70	-1,083.80	755.91	587.43	168.48	4.487 Alert	
17,500.00	12,092.00	17,206.76	11,788.00	90.45	90.22	66.41	-5,455.70	-1,083.73	755.96	586.11	169.85	4.451 Alert	
17,550.00	12,092.00	17,243.25	11,788.00	91.10	90.69	66.41	-5,505.70	-1,083.65	756.02	585.12	170.90	4.424 Alert	
17,600.00	12,092.00	17,306.76	11,788.00	91.74	91.51	66.42	-5,555.70	-1,083.58	756.07	583.80	172.27	4.389 Alert	
17,650.00	12,092.00	17,343.25	11,788.00	92.38	91.98	66.42	-5,605.70	-1,083.50	756.12	582.80	173.32	4.362 Alert	
17,700.00	12,092.00	17,406.76	11,788.00	93.02	92.80	66.42	-5,655.70	-1,083.43	756.18	581.47	174.71	4.328 Alert	
17,750.00	12,092.00	17,443.25	11,788.00	93.67	93.27	66.42	-5,705.70	-1,083.36	756.23	580.47	175.76	4.303 Alert	
17,800.00	12,092.00	17,506.76	11,788.00	94.32	94.10	66.42	-5,755.70	-1,083.28	756.29	579.14	177.15	4.269 Alert	
17,850.00	12,092.00	17,543.25	11,788.00	94.96	94.57	66.42	-5,805.70	-1,083.21	756.34	578.14	178.21	4.244 Alert	
17,900.00	12,092.00	17,606.76	11,788.00	95.61	95.40	66.43	-5,855.70	-1,083.13	756.40	576.80	179.60	4.212 Alert	
17,950.00	12,092.00	17,643.25	11,788.00	96.26	95.87	66.43	-5,905.70	-1,083.06	756.45	575.79	180.66	4.187 Alert	
18,000.00	12,092.00	17,706.76	11,788.00	96.91	96.70	66.43	-5,955.70	-1,082.98	756.51	574.45	182.05	4.155 Alert	
18,050.00	12,092.00	17,743.25	11,788.00	97.57	97.18	66.43	-6,005.70	-1,082.91	756.56	573.44	183.12	4.131 Alert	
18,100.00	12,092.00	17,806.76	11,788.00	98.22	98.01	66.43	-6,055.70	-1,082.84	756.62	572.09	184.52	4.100 Alert	
18,150.00	12,092.00	17,843.25	11,788.00	98.87	98.49	66.44	-6,105.70	-1,082.76	756.67	571.08	185.59	4.077 Alert	
18,200.00	12,092.00	17,906.76	11,788.00	99.53	99.33	66.44	-6,155.70	-1,082.69	756.72	569.73	186.99	4.047 Alert	
18,250.00	12,092.00	17,943.25	11,788.00	100.19	99.81	66.44	-6,205.70	-1,082.61	756.78	568.71	188.07	4.024 Alert	
18,300.00	12,092.00	18,006.76	11,788.00	100.84	100.64	66.44	-6,255.70	-1,082.54	756.83	567.36	189.48	3.994 Alert	
18,350.00	12,092.00	18,043.25	11,788.00	101.50	101.13	66.44	-6,305.70	-1,082.47	756.89	566.34	190.55	3.972 Alert	
18,400.00	12,092.00	18,106.76	11,788.00	102.16	101.96	66.44	-6,355.70	-1,082.39	756.94	564.98	191.96	3.943 Alert	
18,450.00	12,092.00	18,143.24	11,788.00	102.82	102.45	66.45	-6,405.70	-1,082.32	757.00	563.95	193.04	3.921 Alert	
18,500.00	12,092.00	18,206.76	11,788.00	103.48	103.29	66.45	-6,455.70	-1,082.24	757.05	562.59	194.46	3.893 Alert	
18,550.00	12,092.00	18,243.24	11,788.00	104.14	103.77	66.45	-6,505.70	-1,082.17	757.11	561.56	195.54	3.872 Alert	
18,600.00	12,092.00	18,306.76	11,788.00	104.81	104.62	66.45	-6,555.70	-1,082.10	757.16	560.20	196.96	3.844 Alert	
18,650.00	12,092.00	18,343.24	11,788.00	105.47	105.10	66.45	-6,605.70	-1,082.02	757.22	559.17	198.05	3.823 Alert	
18,700.00	12,092.00	18,406.76	11,788.00	106.13	105.95	66.46	-6,655.70	-1,081.95	757.27	557.80	199.47	3.796 Alert	
18,750.00	12,092.00	18,443.24	11,788.00	106.80	106.44	66.46	-6,705.70	-1,081.87	757.32	556.77	200.56	3.776 Alert	
18,800.00	12,092.00	18,506.76	11,788.00	107.46	107.28	66.46	-6,755.70	-1,081.80	757.38	555.39	201.98	3.750 Alert	
18,850.00	12,092.00	18,543.24	11,788.00	108.13	107.77	66.46	-6,805.70	-1,081.72	757.43	554.36	203.07	3.730 Alert	
18,900.00	12,092.00	18,606.76	11,788.00	108.80	108.62	66.46	-6,855.70	-1,081.65	757.49	552.98	204.50	3.704 Alert	
18,950.00	12,092.00	18,643.24	11,788.00	109.47	109.11	66.46	-6,905.70	-1,081.58	757.54	551.95	205.60	3.685 Alert	
19,000.00	12,092.00	18,706.76	11,788.00	110.14	109.96	66.47	-6,955.70	-1,081.50	757.60	550.57	207.03	3.659 Alert	
19,050.00	12,092.00	18,743.24	11,788.00	110.81	110.45	66.47	-7,005.70	-1,081.43	757.65	549.53	208.13	3.640 Alert	
19,100.00	12,092.00	18,806.76	11,788.00	111.48	111.31	66.47	-7,055.70	-1,081.35	757.71	548.14	209.56	3.616 Alert	
19,150.00	12,092.00	18,843.24	11,788.00	112.15	111.80	66.47	-7,105.70	-1,081.28	757.76	547.10	210.66	3.597 Alert	
19,200.00	12,092.00	18,906.76	11,788.00	112.82	112.65	66.47	-7,155.70	-1,081.21	757.82	545.72	212.10	3.573 Alert	
19,250.00	12,092.00	18,943.24	11,788.00	113.49	113.14	66.48	-7,205.69	-1,081.13	757.87	544.67	213.20	3.555 Alert	
19,300.00	12,092.00	19,006.76	11,788.00	114.16	114.00	66.48	-7,255.69	-1,081.06	757.92	543.28	214.64	3.531 Alert	
19,350.00	12,092.00	19,043.24	11,788.00	114.84	114.49	66.48	-7,305.69	-1,080.98	757.98	542.24	215.74	3.513 Alert	
19,400.00	12,092.00	19,106.76	11,788.00	115.51	115.35	66.48	-7,355.69	-1,080.91	758.03	540.85	217.19	3.490 Alert	
19,450.00	12,092.00	19,143.24	11,788.00	116.19	115.85	66.48	-7,405.69	-1,080.84	758.09	539.80	218.29	3.473 Alert	
19,500.00	12,092.00	19,206.76	11,788.00	116.86	116.71	66.48	-7,455.69	-1,080.76	758.14	538.40	219.74	3.450 Alert	
19,550.00	12,092.00	19,243.24	11,788.00	117.54	117.20	66.49	-7,505.69	-1,080.69	758.20	537.35	220.84	3.433 Alert	
19,600.00	12,092.00	19,306.76	11,788.00	118.22	118.06	66.49	-7,555.69	-1,080.61	758.25	535.96	222.30	3.411 Alert	
19,650.00	12,092.00	19,343.24	11,788.00	118.90	118.56	66.49	-7,605.69	-1,080.54	758.31	534.90	223.40	3.394 Alert	
19,700.00	12,092.00	19,406.76	11,788.00	119.57	119.42	66.49	-7,655.69	-1,080.46	758.36	533.50	224.86	3.373 Alert	
19,750.00	12,092.00	19,443.24	11,788.00	120.25	119.92	66.49	-7,705.69	-1,080.39	758.42	532.45	225.97	3.356 Alert	
19,800.00	12,092.00	19,506.76	11,788.00	120.93	120.78	66.49	-7,755.69	-1,080.32	758.47	531.05	227.42	3.335 Alert	
19,850.00	12,092.00	19,543.24	11,788.00	121.61	121.28	66.50	-7,805.69	-1,080.24	758.52	529.99	228.53	3.319 Alert	
19,900.00	12,092.00	19,593.24	11,788.00	122.29	121.96	66.50	-7,855.69	-1,080.17	758.58	528.76	229.82	3.301 Alert	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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		Offset		Semi Major Axis			Distance							Warning
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore +N/-S (ft)	Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
19,950.00	12,092.00	19,643.24	11,788.00	122.97	122.64	66.50	-7,905.69	-1,080.09	758.63	527.53	231.10	3.283	Alert	
20,000.00	12,092.00	19,706.76	11,788.00	123.65	123.51	66.50	-7,955.69	-1,080.02	758.69	526.13	232.56	3.262	Alert	
20,050.00	12,092.00	19,743.24	11,788.00	124.34	124.01	66.50	-8,005.69	-1,079.95	758.74	525.07	233.68	3.247	Alert	
20,100.00	12,092.00	19,806.76	11,788.00	125.02	124.87	66.51	-8,055.69	-1,079.87	758.80	523.66	235.14	3.227	Alert	
20,150.00	12,092.00	19,843.24	11,788.00	125.70	125.37	66.51	-8,105.69	-1,079.80	758.85	522.60	236.26	3.212	Alert	
20,200.00	12,092.00	19,906.76	11,788.00	126.38	126.24	66.51	-8,155.69	-1,079.72	758.91	521.19	237.72	3.192	Alert	
20,250.00	12,092.00	19,943.24	11,788.00	127.07	126.74	66.51	-8,205.69	-1,079.65	758.96	520.12	238.84	3.178	Alert	
20,300.00	12,092.00	20,006.76	11,788.00	127.75	127.61	66.51	-8,255.69	-1,079.58	759.02	518.71	240.31	3.159	Alert	
20,350.00	12,092.00	20,043.24	11,788.00	128.44	128.11	66.51	-8,305.69	-1,079.50	759.07	517.65	241.42	3.144	Alert	
20,400.00	12,092.00	20,093.24	11,788.00	129.12	128.80	66.52	-8,355.69	-1,079.43	759.13	516.41	242.72	3.128	Alert	
20,450.00	12,092.00	20,143.24	11,788.00	129.81	129.49	66.52	-8,405.69	-1,079.35	759.18	515.17	244.01	3.111	Alert	
20,500.00	12,092.00	20,193.24	11,788.00	130.49	130.17	66.52	-8,455.69	-1,079.28	759.23	513.92	245.31	3.095	Alert	
20,550.00	12,092.00	20,243.24	11,788.00	131.18	130.86	66.52	-8,505.69	-1,079.20	759.29	512.68	246.61	3.079	Alert	
20,600.00	12,092.00	20,306.76	11,788.00	131.87	131.74	66.52	-8,555.69	-1,079.13	759.34	511.26	248.08	3.061	Alert	
20,650.00	12,092.00	20,343.24	11,788.00	132.56	132.24	66.53	-8,605.69	-1,079.06	759.40	510.19	249.20	3.047	Alert	
20,700.00	12,092.00	20,406.76	11,788.00	133.24	133.11	66.53	-8,655.69	-1,078.98	759.45	508.77	250.68	3.030	Alert	
20,750.00	12,092.00	20,443.24	11,788.00	133.93	133.62	66.53	-8,705.69	-1,078.91	759.51	507.70	251.80	3.016	Alert	
20,800.00	12,092.00	20,506.76	11,788.00	134.62	134.49	66.53	-8,755.69	-1,078.83	759.56	506.28	253.28	2.999	Alert	
20,850.00	12,092.00	20,543.24	11,788.00	135.31	135.00	66.53	-8,805.69	-1,078.76	759.62	505.21	254.41	2.986	Alert	
20,900.00	12,092.00	20,606.76	11,788.00	136.00	135.87	66.53	-8,855.69	-1,078.69	759.67	503.79	255.88	2.969	Alert	
20,950.00	12,092.00	20,643.24	11,788.00	136.69	136.38	66.54	-8,905.69	-1,078.61	759.73	502.71	257.01	2.956	Alert	
21,000.00	12,092.00	20,706.76	11,788.00	137.38	137.26	66.54	-8,955.69	-1,078.54	759.78	501.29	258.49	2.939	Alert	
21,050.00	12,092.00	20,743.24	11,788.00	138.07	137.76	66.54	-9,005.69	-1,078.46	759.83	500.22	259.62	2.927	Alert	
21,100.00	12,092.00	20,806.76	11,788.00	138.76	138.64	66.54	-9,055.69	-1,078.39	759.89	498.79	261.10	2.910	Alert	
21,150.00	12,092.00	20,843.24	11,788.00	139.45	139.14	66.54	-9,105.69	-1,078.32	759.94	497.71	262.23	2.898	Alert	
21,200.00	12,092.00	20,906.76	11,788.00	140.14	140.02	66.55	-9,155.69	-1,078.24	760.00	496.28	263.71	2.882	Alert	
21,250.00	12,092.00	20,943.24	11,788.00	140.84	140.53	66.55	-9,205.69	-1,078.17	760.05	495.21	264.84	2.870	Alert	
21,300.00	12,092.00	21,006.76	11,788.00	141.53	141.41	66.55	-9,255.69	-1,078.09	760.11	493.78	266.33	2.854	Alert	
21,350.00	12,092.00	21,043.24	11,788.00	142.22	141.92	66.55	-9,305.69	-1,078.02	760.16	492.70	267.46	2.842	Alert	
21,400.00	12,092.00	21,106.76	11,788.00	142.91	142.80	66.55	-9,355.69	-1,077.94	760.22	491.27	268.95	2.827	Alert	
21,450.00	12,092.00	21,143.24	11,788.00	143.61	143.30	66.55	-9,405.69	-1,077.87	760.27	490.19	270.08	2.815	Alert	
21,500.00	12,092.00	21,206.76	11,788.00	144.30	144.19	66.56	-9,455.69	-1,077.80	760.33	488.76	271.57	2.800	Alert	
21,550.00	12,092.00	21,243.24	11,788.00	145.00	144.69	66.56	-9,505.69	-1,077.72	760.38	487.68	272.70	2.788	Alert	
21,600.00	12,092.00	21,306.76	11,788.00	145.69	145.58	66.56	-9,555.69	-1,077.65	760.44	486.24	274.19	2.773	Alert	
21,650.00	12,092.00	21,343.24	11,788.00	146.39	146.08	66.56	-9,605.69	-1,077.57	760.49	485.16	275.33	2.762	Alert	
21,700.00	12,092.00	21,393.24	11,788.00	147.08	146.78	66.56	-9,655.69	-1,077.50	760.54	483.90	276.64	2.749	Alert	
21,750.00	12,092.00	21,443.24	11,788.00	147.78	147.48	66.56	-9,705.69	-1,077.43	760.60	482.65	277.95	2.736	Alert	
21,800.00	12,092.00	21,506.76	11,788.00	148.47	148.36	66.57	-9,755.69	-1,077.35	760.65	481.21	279.44	2.722	Alert	
21,850.00	12,092.00	21,543.24	11,788.00	149.17	148.87	66.57	-9,805.69	-1,077.28	760.71	480.13	280.58	2.711	Alert	
21,900.00	12,092.00	21,606.76	11,788.00	149.86	149.75	66.57	-9,855.69	-1,077.20	760.76	478.69	282.07	2.697	Alert	
21,950.00	12,092.00	21,643.24	11,788.00	150.56	150.26	66.57	-9,905.69	-1,077.13	760.82	477.60	283.21	2.686	Alert	
22,000.00	12,092.00	21,706.76	11,788.00	151.26	151.15	66.57	-9,955.69	-1,077.06	760.87	476.16	284.71	2.672	Alert	
22,050.00	12,092.00	21,743.24	11,788.00	151.95	151.66	66.58	-10,005.69	-1,076.98	760.93	475.08	285.85	2.662	Alert	
22,100.00	12,092.00	21,806.76	11,788.00	152.65	152.55	66.58	-10,055.69	-1,076.91	760.98	473.64	287.34	2.648	Alert	
22,150.00	12,092.00	21,843.24	11,788.00	153.35	153.06	66.58	-10,105.69	-1,076.83	761.04	472.55	288.48	2.638	Alert	
22,200.00	12,092.00	21,906.76	11,788.00	154.05	153.94	66.58	-10,155.69	-1,076.76	761.09	471.11	289.98	2.625	Alert	
22,250.00	12,092.00	21,943.24	11,788.00	154.75	154.45	66.58	-10,205.69	-1,076.68	761.14	470.02	291.12	2.615	Alert	
22,300.00	12,092.00	22,006.76	11,788.00	155.44	155.34	66.58	-10,255.69	-1,076.61	761.20	468.58	292.62	2.601	Alert	
22,350.00	12,092.00	22,043.24	11,788.00	156.14	155.85	66.59	-10,305.69	-1,076.54	761.25	467.49	293.76	2.591	Alert	
22,381.87	12,092.00	22,075.11	11,788.00	156.59	156.30	66.59	-10,337.56	-1,076.49	761.29	466.69	294.60	2.584	Alert, ES, SF	

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 716H - 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		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	1.60	1.60	0.50	0.50	89.65	4.15	669.86	669.87				
50.00	50.00	51.60	51.60	0.50	0.50	89.65	4.15	669.86	669.87	668.87	1.01	665.355	
100.00	100.00	101.60	101.60	0.52	0.52	89.65	4.15	669.86	669.87	668.84	1.04	645.955	
150.00	150.00	151.60	151.60	0.59	0.59	89.65	4.15	669.86	669.87	668.69	1.18	565.987	
200.00	200.00	201.60	201.60	0.70	0.71	89.65	4.15	669.86	669.87	668.47	1.41	475.680	
250.00	250.00	251.60	251.60	0.84	0.84	89.65	4.15	669.86	669.87	668.19	1.68	398.726	
300.00	300.00	301.60	301.60	0.99	0.99	89.65	4.15	669.86	669.87	667.89	1.98	338.385	
350.00	350.00	351.60	351.60	1.15	1.15	89.65	4.15	669.86	669.87	667.58	2.30	291.739	
400.00	400.00	401.60	401.60	1.31	1.31	89.65	4.15	669.86	669.87	667.25	2.62	255.338	
450.00	450.00	451.60	451.60	1.48	1.48	89.65	4.15	669.86	669.87	666.92	2.96	226.458	
500.00	500.00	501.60	501.60	1.65	1.65	89.65	4.15	669.86	669.87	666.58	3.30	203.137	
550.00	550.00	551.60	551.60	1.82	1.82	89.65	4.15	669.86	669.87	666.23	3.64	183.988	
600.00	600.00	601.60	601.60	1.99	2.00	89.65	4.15	669.86	669.87	665.89	3.99	168.025	
650.00	650.00	651.60	651.60	2.16	2.17	89.65	4.15	669.86	669.87	665.54	4.33	154.538	
700.00	700.00	701.60	701.60	2.34	2.34	89.65	4.15	669.86	669.87	665.19	4.68	143.006	
750.00	750.00	751.60	751.60	2.51	2.52	89.65	4.15	669.86	669.87	664.84	5.04	133.043	
800.00	800.00	801.60	801.60	2.69	2.70	89.65	4.15	669.86	669.87	664.49	5.39	124.354	
850.00	850.00	851.60	851.60	2.87	2.87	89.65	4.15	669.86	669.87	664.13	5.74	116.714	
900.00	900.00	901.60	901.60	3.04	3.05	89.65	4.15	669.86	669.87	663.78	6.09	109.946	
950.00	950.00	951.60	951.60	3.22	3.23	89.65	4.15	669.86	669.87	663.43	6.45	103.911	
1,000.00	1,000.00	1,001.60	1,001.60	3.40	3.40	89.65	4.15	669.86	669.87	663.07	6.80	98.496	
1,050.00	1,050.00	1,051.60	1,051.60	3.58	3.58	89.65	4.15	669.86	669.87	662.72	7.16	93.613	
1,100.00	1,100.00	1,101.60	1,101.60	3.75	3.76	89.65	4.15	669.86	669.87	662.36	7.51	89.187	
1,150.00	1,150.00	1,151.60	1,151.60	3.93	3.94	89.65	4.15	669.86	669.87	662.01	7.87	85.157	
1,200.00	1,200.00	1,201.60	1,201.60	4.11	4.11	89.65	4.15	669.86	669.87	661.65	8.22	81.473	
1,250.00	1,250.00	1,251.60	1,251.60	4.29	4.29	89.65	4.15	669.86	669.87	661.30	8.58	78.093	
1,300.00	1,300.00	1,301.60	1,301.60	4.46	4.47	89.65	4.15	669.86	669.87	660.94	8.93	74.980	
1,350.00	1,350.00	1,351.60	1,351.60	4.64	4.65	89.65	4.15	669.86	669.87	660.58	9.29	72.104	
1,400.00	1,400.00	1,401.60	1,401.60	4.82	4.83	89.65	4.15	669.86	669.87	660.23	9.65	69.440	
1,450.00	1,450.00	1,451.60	1,451.60	5.00	5.00	89.65	4.15	669.86	669.87	659.87	10.00	66.964	
1,500.00	1,500.00	1,501.60	1,501.60	5.18	5.18	89.65	4.15	669.86	669.87	659.51	10.36	64.659	
1,550.00	1,550.00	1,551.60	1,551.60	5.36	5.36	89.65	4.15	669.86	669.87	659.16	10.72	62.506	
1,600.00	1,600.00	1,601.60	1,601.60	5.53	5.54	89.65	4.15	669.86	669.87	658.80	11.07	60.491	
1,650.00	1,650.00	1,651.60	1,651.60	5.71	5.72	89.65	4.15	669.86	669.87	658.44	11.43	58.601	
1,700.00	1,700.00	1,701.60	1,701.60	5.89	5.90	89.65	4.15	669.86	669.87	658.09	11.79	56.826	
1,750.00	1,750.00	1,751.60	1,751.60	6.07	6.08	89.65	4.15	669.86	669.87	657.73	12.15	55.155	
1,800.00	1,800.00	1,801.60	1,801.60	6.25	6.25	89.65	4.15	669.86	669.87	657.37	12.50	53.578	
1,850.00	1,850.00	1,851.60	1,851.60	6.43	6.43	89.65	4.15	669.86	669.87	657.01	12.86	52.090	
1,900.00	1,900.00	1,901.60	1,901.60	6.61	6.61	89.65	4.15	669.86	669.87	656.66	13.22	50.681	
1,950.00	1,950.00	1,951.60	1,951.60	6.78	6.79	89.65	4.15	669.86	669.87	656.30	13.57	49.346	
2,000.00	2,000.00	2,001.60	2,001.60	6.96	6.97	89.65	4.15	669.86	669.87	655.94	13.93	48.080	
2,050.00	2,050.00	2,051.60	2,051.60	7.14	7.15	89.65	4.15	669.86	669.87	655.58	14.29	46.877	
2,100.00	2,100.00	2,101.60	2,101.60	7.32	7.33	89.65	4.15	669.86	669.87	655.23	14.65	45.733	
2,150.00	2,150.00	2,151.60	2,151.60	7.50	7.51	89.65	4.15	669.86	669.87	654.87	15.01	44.643	
2,200.00	2,200.00	2,201.60	2,201.60	7.68	7.68	89.65	4.15	669.86	669.87	654.51	15.36	43.603	
2,250.00	2,250.00	2,251.60	2,251.60	7.86	7.86	89.65	4.15	669.86	669.87	654.15	15.72	42.611	
2,300.00	2,300.00	2,301.60	2,301.60	8.04	8.04	89.65	4.15	669.86	669.87	653.80	16.08	41.663	
2,350.00	2,350.00	2,351.60	2,351.60	8.22	8.22	89.65	4.15	669.86	669.87	653.44	16.44	40.756	
2,400.00	2,400.00	2,401.60	2,401.60	8.39	8.40	89.65	4.15	669.86	669.87	653.08	16.79	39.888	
2,450.00	2,450.00	2,451.60	2,451.60	8.57	8.58	89.65	4.15	669.86	669.87	652.72	17.15	39.055	
2,500.00	2,500.00	2,501.60	2,501.60	8.75	8.76	89.65	4.15	669.86	669.87	652.36	17.51	38.257	
2,550.00	2,550.00	2,551.60	2,551.60	8.93	8.94	89.65	4.15	669.86	669.87	652.01	17.87	37.491	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 716H - 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		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
2,600.00	2,600.00	2,601.60	2,601.60	9.11	9.12	89.65	4.15	669.86	669.87	651.65	18.23	36.755		
2,650.00	2,650.00	2,651.60	2,651.60	9.29	9.29	89.65	4.15	669.86	669.87	651.29	18.58	36.047		
2,700.00	2,700.00	2,701.60	2,701.60	9.47	9.47	89.65	4.15	669.86	669.87	650.93	18.94	35.365		
2,750.00	2,750.00	2,751.60	2,751.60	9.65	9.65	89.65	4.15	669.86	669.87	650.57	19.30	34.709		
2,800.00	2,800.00	2,801.60	2,801.60	9.83	9.83	89.65	4.15	669.86	669.87	650.22	19.66	34.077		
2,850.00	2,850.00	2,851.60	2,851.60	10.00	10.01	89.65	4.15	669.86	669.87	649.86	20.02	33.468		
2,900.00	2,900.00	2,901.60	2,901.60	10.18	10.19	89.65	4.15	669.86	669.87	649.50	20.37	32.880		
2,950.00	2,950.00	2,951.60	2,951.60	10.36	10.37	89.65	4.15	669.86	669.87	649.14	20.73	32.312		
3,000.00	3,000.00	3,001.60	3,001.60	10.54	10.55	89.65	4.15	669.86	669.87	648.78	21.09	31.763		
3,050.00	3,050.00	3,051.60	3,051.60	10.72	10.73	89.65	4.15	669.86	669.87	648.43	21.45	31.233		
3,100.00	3,100.00	3,101.60	3,101.60	10.90	10.91	89.65	4.15	669.86	669.87	648.07	21.81	30.720		
3,150.00	3,150.00	3,151.60	3,151.60	11.08	11.08	89.65	4.15	669.86	669.87	647.71	22.16	30.224		
3,200.00	3,200.00	3,201.60	3,201.60	11.26	11.26	89.65	4.15	669.86	669.87	647.35	22.52	29.743		
3,250.00	3,250.00	3,251.60	3,251.60	11.44	11.44	89.65	4.15	669.86	669.87	646.99	22.88	29.278		
3,300.00	3,300.00	3,301.60	3,301.60	11.62	11.62	89.65	4.15	669.86	669.87	646.64	23.24	28.826		
3,350.00	3,350.00	3,351.60	3,351.60	11.80	11.80	89.65	4.15	669.86	669.87	646.28	23.60	28.389		
3,400.00	3,400.00	3,401.60	3,401.60	11.97	11.98	89.65	4.15	669.86	669.87	645.92	23.95	27.964		
3,450.00	3,450.00	3,451.60	3,451.60	12.15	12.16	89.65	4.15	669.86	669.87	645.56	24.31	27.552		
3,500.00	3,500.00	3,501.60	3,501.60	12.33	12.34	89.65	4.15	669.86	669.87	645.20	24.67	27.152		
3,550.00	3,550.00	3,551.60	3,551.60	12.51	12.52	89.65	4.15	669.86	669.87	644.85	25.03	26.764		
3,600.00	3,600.00	3,601.60	3,601.60	12.69	12.70	89.65	4.15	669.86	669.87	644.49	25.39	26.386		
3,650.00	3,650.00	3,651.60	3,651.60	12.87	12.88	89.65	4.15	669.86	669.87	644.13	25.75	26.019		
3,700.00	3,700.00	3,701.60	3,701.60	13.05	13.05	89.65	4.15	669.86	669.87	643.77	26.10	25.662		
3,750.00	3,750.00	3,751.60	3,751.60	13.23	13.23	89.65	4.15	669.86	669.87	643.41	26.46	25.315		
3,800.00	3,800.00	3,801.60	3,801.60	13.41	13.41	89.65	4.15	669.86	669.87	643.05	26.82	24.977		
3,850.00	3,850.00	3,851.60	3,851.60	13.59	13.59	89.65	4.15	669.86	669.87	642.70	27.18	24.647		
3,900.00	3,900.00	3,901.60	3,901.60	13.77	13.77	89.65	4.15	669.86	669.87	642.34	27.54	24.327		
3,950.00	3,950.00	3,951.60	3,951.60	13.94	13.95	89.65	4.15	669.86	669.87	641.98	27.89	24.014		
4,000.00	4,000.00	4,001.85	4,001.85	14.12	14.13	89.65	4.15	669.86	669.87	641.62	28.25	23.709		
4,050.00	4,050.00	4,059.53	4,059.52	14.30	14.33	155.15	4.31	669.51	669.82	641.18	28.63	23.394		
4,100.00	4,099.99	4,117.21	4,117.19	14.48	14.54	155.14	4.76	668.49	669.68	640.67	29.01	23.088		
4,150.00	4,149.97	4,174.88	4,174.84	14.65	14.74	155.13	5.51	666.81	669.47	640.09	29.37	22.793		
4,200.00	4,199.94	4,232.55	4,232.45	14.83	14.94	155.12	6.55	664.47	669.17	639.44	29.73	22.505		
4,250.00	4,249.88	4,290.22	4,290.02	15.00	15.14	155.11	7.88	661.47	668.80	638.71	30.09	22.224		
4,300.00	4,299.79	4,343.70	4,343.38	15.18	15.33	155.10	9.35	658.17	668.44	637.99	30.45	21.955		
4,350.00	4,349.68	4,406.30	4,393.28	15.35	15.55	155.10	10.75	655.02	668.22	637.39	30.84	21.669		
4,400.00	4,399.58	4,443.70	4,443.14	15.53	15.68	155.09	12.15	651.86	668.01	636.87	31.14	21.450		
4,450.00	4,449.47	4,506.30	4,493.02	15.70	15.90	155.08	13.55	648.71	667.79	636.26	31.54	21.176		
4,500.00	4,499.37	4,543.70	4,542.90	15.88	16.03	155.08	14.96	645.56	667.58	635.74	31.84	20.967		
4,550.00	4,549.26	4,606.30	4,592.78	16.05	16.25	155.07	16.36	642.41	667.37	635.13	32.23	20.704		
4,600.00	4,599.16	4,643.69	4,642.66	16.23	16.38	155.07	17.76	639.26	667.15	634.61	32.54	20.503		
4,650.00	4,649.06	4,706.31	4,692.54	16.41	16.60	155.06	19.16	636.11	666.94	634.00	32.93	20.251		
4,700.00	4,698.95	4,743.69	4,742.43	16.58	16.74	155.06	20.56	632.96	666.72	633.48	33.24	20.059		
4,750.00	4,748.85	4,806.31	4,792.31	16.76	16.96	155.05	21.96	629.81	666.51	632.88	33.63	19.817		
4,800.00	4,798.74	4,843.69	4,842.19	16.94	17.09	155.05	23.36	626.65	666.29	632.35	33.94	19.632		
4,850.00	4,848.64	4,906.31	4,892.07	17.11	17.31	155.04	24.77	623.50	666.08	631.75	34.34	19.399		
4,900.00	4,898.53	4,943.69	4,941.95	17.29	17.45	155.03	26.17	620.35	665.87	631.22	34.64	19.221		
4,950.00	4,948.43	5,006.31	4,991.83	17.47	17.67	155.03	27.57	617.20	665.65	630.61	35.04	18.998		
5,000.00	4,998.33	5,043.69	5,041.71	17.65	17.80	155.02	28.97	614.05	665.44	630.09	35.34	18.827		
5,050.00	5,048.22	5,106.31	5,091.59	17.82	18.02	155.02	30.37	610.90	665.22	629.48	35.74	18.612		
5,100.00	5,098.12	5,143.69	5,141.47	18.00	18.16	155.01	31.77	607.75	665.01	628.96	36.05	18.448		
5,150.00	5,148.01	5,206.31	5,191.35	18.18	18.38	155.01	33.17	604.60	664.80	628.35	36.45	18.241		

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 716H - 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			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,200.00	5,197.91	5,243.69	5,241.23	18.36	18.51	155.00	34.58	601.44	664.58	627.83	36.75	18.082		
5,250.00	5,247.80	5,306.31	5,291.11	18.53	18.74	155.00	35.98	598.29	664.37	627.22	37.15	17.883		
5,300.00	5,297.70	5,343.69	5,340.99	18.71	18.87	154.99	37.38	595.14	664.15	626.69	37.46	17.731		
5,350.00	5,347.60	5,406.31	5,390.87	18.89	19.09	154.98	38.78	591.99	663.94	626.08	37.86	17.539		
5,400.00	5,397.49	5,443.69	5,440.75	19.07	19.23	154.98	40.18	588.84	663.72	625.56	38.16	17.391		
5,450.00	5,447.39	5,506.31	5,490.63	19.25	19.45	154.97	41.58	585.69	663.51	624.95	38.56	17.206		
5,500.00	5,497.28	5,543.69	5,540.51	19.43	19.59	154.97	42.98	582.54	663.30	624.43	38.87	17.064		
5,550.00	5,547.18	5,606.31	5,590.39	19.61	19.81	154.96	44.39	579.39	663.08	623.81	39.27	16.886		
5,600.00	5,597.07	5,643.68	5,640.27	19.78	19.95	154.96	45.79	576.24	662.87	623.29	39.58	16.748		
5,650.00	5,646.97	5,693.68	5,690.15	19.96	20.12	154.95	47.19	573.08	662.65	622.72	39.93	16.595		
5,700.00	5,696.87	5,743.68	5,740.03	20.14	20.30	154.94	48.59	569.93	662.44	622.15	40.29	16.443		
5,750.00	5,746.76	5,806.32	5,789.91	20.32	20.53	154.94	49.99	566.78	662.23	621.54	40.68	16.277		
5,800.00	5,796.66	5,843.68	5,839.79	20.50	20.66	154.93	51.39	563.63	662.01	621.02	40.99	16.149		
5,850.00	5,846.55	5,906.32	5,889.67	20.68	20.89	154.93	52.79	560.48	661.80	620.40	41.39	15.988		
5,900.00	5,896.45	5,943.68	5,939.56	20.86	21.02	154.92	54.19	557.33	661.58	619.88	41.70	15.864		
5,950.00	5,946.35	6,006.32	5,989.44	21.04	21.25	154.92	55.60	554.18	661.37	619.27	42.10	15.708		
6,000.00	5,996.24	6,043.68	6,039.32	21.22	21.38	154.91	57.00	551.03	661.16	618.74	42.41	15.588		
6,050.00	6,046.14	6,106.32	6,089.20	21.40	21.61	154.90	58.40	547.87	660.94	618.13	42.81	15.438		
6,100.00	6,096.03	6,143.68	6,139.08	21.58	21.74	154.90	59.80	544.72	660.73	617.60	43.12	15.322		
6,150.00	6,145.93	6,193.68	6,188.96	21.76	21.92	154.89	61.20	541.57	660.51	617.03	43.48	15.192		
6,200.00	6,195.82	6,243.68	6,238.84	21.94	22.10	154.89	62.60	538.42	660.30	616.47	43.83	15.064		
6,250.00	6,245.72	6,306.32	6,288.72	22.12	22.33	154.88	64.00	535.27	660.08	615.85	44.23	14.923		
6,300.00	6,295.62	6,343.68	6,338.60	22.30	22.47	154.88	65.41	532.12	659.87	615.33	44.54	14.814		
6,350.00	6,345.51	6,406.32	6,388.48	22.48	22.69	154.87	66.81	528.97	659.66	614.71	44.95	14.677		
6,400.00	6,395.41	6,443.68	6,438.36	22.66	22.83	154.87	68.21	525.82	659.44	614.19	45.26	14.571		
6,450.00	6,445.30	6,506.32	6,488.24	22.84	23.05	154.86	69.61	522.66	659.23	613.57	45.66	14.439		
6,500.00	6,495.20	6,543.68	6,538.12	23.02	23.19	154.85	71.01	519.51	659.01	613.05	45.97	14.336		
6,550.00	6,545.09	6,606.32	6,588.00	23.20	23.41	154.85	72.41	516.36	658.80	612.43	46.37	14.208		
6,600.00	6,594.99	6,643.67	6,637.88	23.38	23.55	154.84	73.81	513.21	658.59	611.91	46.68	14.109		
6,650.00	6,644.89	6,706.33	6,687.76	23.56	23.78	154.84	75.22	510.06	658.37	611.29	47.08	13.984		
6,700.00	6,694.78	6,743.67	6,737.64	23.74	23.91	154.83	76.62	506.91	658.16	610.77	47.39	13.887		
6,750.00	6,744.68	6,806.33	6,787.52	23.92	24.14	154.83	78.02	503.76	657.94	610.15	47.79	13.766		
6,800.00	6,794.57	6,843.67	6,837.40	24.10	24.27	154.82	79.42	500.61	657.73	609.63	48.11	13.673		
6,850.00	6,844.47	6,906.33	6,887.28	24.28	24.50	154.81	80.82	497.45	657.52	609.01	48.51	13.555		
6,900.00	6,894.36	6,943.67	6,937.16	24.46	24.64	154.81	82.22	494.30	657.30	608.48	48.82	13.464		
6,950.00	6,944.26	7,006.33	6,987.04	24.65	24.86	154.80	83.62	491.15	657.09	607.87	49.22	13.350		
7,000.00	6,994.16	7,043.67	7,036.92	24.83	25.00	154.80	85.03	488.00	656.87	607.34	49.53	13.262		
7,050.00	7,044.05	7,106.33	7,086.80	25.01	25.23	154.79	86.43	484.85	656.66	606.73	49.93	13.150		
7,100.00	7,093.95	7,143.67	7,136.69	25.19	25.36	154.78	87.83	481.70	656.45	606.20	50.25	13.065		
7,150.00	7,143.84	7,206.33	7,186.57	25.37	25.59	154.78	89.23	478.55	656.23	605.58	50.65	12.957		
7,200.00	7,193.74	7,243.67	7,236.45	25.55	25.73	154.77	90.63	475.40	656.02	605.06	50.96	12.873		
7,250.00	7,243.63	7,306.33	7,286.33	25.73	25.95	154.77	92.03	472.25	655.81	604.44	51.36	12.768		
7,300.00	7,293.53	7,343.67	7,336.21	25.91	26.09	154.76	93.43	469.09	655.59	603.92	51.68	12.687		
7,350.00	7,343.43	7,406.33	7,386.09	26.09	26.32	154.76	94.84	465.94	655.38	603.30	52.08	12.585		
7,400.00	7,393.32	7,443.67	7,435.97	26.28	26.45	154.75	96.24	462.79	655.16	602.77	52.39	12.506		
7,450.00	7,443.22	7,506.33	7,485.85	26.46	26.68	154.74	97.64	459.64	654.95	602.16	52.79	12.406		
7,500.00	7,493.11	7,543.67	7,535.73	26.64	26.82	154.74	99.04	456.49	654.74	601.63	53.10	12.329		
7,550.00	7,543.01	7,606.33	7,585.61	26.82	27.04	154.73	100.44	453.34	654.52	601.01	53.51	12.232		
7,600.00	7,592.90	7,643.66	7,635.49	27.00	27.18	154.73	101.84	450.19	654.31	600.49	53.82	12.157		
7,650.00	7,642.80	7,706.34	7,685.37	27.18	27.41	154.72	103.24	447.04	654.09	599.87	54.22	12.063		
7,700.00	7,692.70	7,743.66	7,735.25	27.36	27.54	154.72	104.64	443.88	653.88	599.34	54.54	11.990		
7,750.00	7,742.59	7,806.34	7,785.13	27.55	27.77	154.71	106.05	440.73	653.67	598.73	54.94	11.898		

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 716H - 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			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,800.00	7,792.49	7,843.66	7,835.01	27.73	27.91	154.70	107.45	437.58	653.45	598.20	55.25	11.827		
7,850.00	7,842.38	7,906.34	7,894.89	27.91	28.14	154.70	108.85	434.43	653.24	597.58	55.65	11.737		
7,900.00	7,892.28	7,943.66	7,934.77	28.09	28.27	154.69	110.25	431.28	653.02	597.06	55.97	11.668		
7,950.00	7,942.17	8,006.34	7,984.65	28.27	28.50	154.69	111.65	428.13	652.81	596.44	56.37	11.581		
8,000.00	7,992.07	8,043.66	8,034.53	28.45	28.64	154.68	113.05	424.98	652.60	595.91	56.68	11.513		
8,050.00	8,041.97	8,106.34	8,084.41	28.64	28.87	154.67	114.45	421.83	652.38	595.30	57.09	11.428		
8,100.00	8,091.86	8,143.66	8,134.29	28.82	29.00	154.67	115.86	418.67	652.17	594.77	57.40	11.362		
8,150.00	8,141.76	8,206.34	8,184.17	29.00	29.23	154.66	117.26	415.52	651.96	594.15	57.80	11.279		
8,200.00	8,191.65	8,243.66	8,234.05	29.18	29.37	154.66	118.66	412.37	651.74	593.63	58.12	11.214		
8,250.00	8,241.55	8,306.34	8,283.93	29.36	29.60	154.65	120.06	409.22	651.53	593.01	58.52	11.133		
8,300.00	8,291.44	8,343.66	8,333.82	29.54	29.73	154.65	121.46	406.07	651.31	592.48	58.83	11.070		
8,350.00	8,341.34	8,406.34	8,383.70	29.73	29.96	154.64	122.86	402.92	651.10	591.86	59.24	10.991		
8,400.00	8,391.24	8,443.66	8,433.58	29.91	30.10	154.63	124.26	399.77	650.89	591.34	59.55	10.930		
8,450.00	8,441.13	8,506.34	8,483.46	30.09	30.33	154.63	125.67	396.62	650.67	590.72	59.95	10.853		
8,500.00	8,491.03	8,543.66	8,533.34	30.27	30.46	154.62	127.07	393.46	650.46	590.19	60.27	10.793		
8,550.00	8,540.92	8,606.34	8,583.22	30.45	30.69	154.62	128.47	390.31	650.25	589.57	60.67	10.717		
8,600.00	8,590.82	8,643.65	8,633.10	30.64	30.83	154.61	129.87	387.16	650.03	589.05	60.99	10.659		
8,650.00	8,640.71	8,706.35	8,682.98	30.82	31.06	154.60	131.27	384.01	649.82	588.43	61.39	10.585		
8,700.00	8,690.61	8,743.65	8,732.86	31.00	31.19	154.60	132.67	380.86	649.60	587.90	61.70	10.528		
8,750.00	8,740.51	8,806.35	8,782.74	31.18	31.42	154.59	134.07	377.71	649.39	587.28	62.11	10.456		
8,800.00	8,790.40	8,843.65	8,832.62	31.37	31.56	154.59	135.48	374.56	649.18	586.76	62.42	10.400		
8,850.00	8,840.30	8,906.35	8,882.50	31.55	31.79	154.58	136.88	371.41	648.96	586.14	62.82	10.330		
8,900.00	8,890.19	8,943.65	8,932.38	31.73	31.92	154.57	138.28	368.25	648.75	585.61	63.14	10.275		
8,950.00	8,940.09	9,006.35	8,982.26	31.91	32.15	154.57	139.68	365.10	648.54	584.99	63.54	10.206		
9,000.00	8,989.98	9,043.65	9,032.14	32.09	32.29	154.56	141.08	361.95	648.32	584.47	63.86	10.153		
9,050.00	9,039.88	9,106.35	9,082.02	32.28	32.52	154.56	142.48	358.80	648.11	583.85	64.26	10.086		
9,100.00	9,089.78	9,143.65	9,131.90	32.46	32.66	154.55	143.88	355.65	647.90	583.32	64.57	10.033		
9,150.00	9,139.67	9,193.65	9,181.78	32.64	32.84	154.55	145.28	352.50	647.68	582.75	64.93	9.975		
9,200.00	9,189.57	9,243.65	9,231.66	32.82	33.02	154.54	146.69	349.35	647.47	582.18	65.29	9.916		
9,250.00	9,239.46	9,306.35	9,281.54	33.01	33.25	154.53	148.09	346.20	647.25	581.56	65.70	9.852		
9,300.00	9,289.36	9,343.65	9,331.42	33.19	33.39	154.53	149.49	343.05	647.04	581.03	66.01	9.802		
9,350.00	9,339.25	9,406.35	9,381.30	33.37	33.62	154.52	150.89	339.89	646.83	580.41	66.42	9.739		
9,400.00	9,389.15	9,443.65	9,431.18	33.55	33.75	154.52	152.29	336.74	646.61	579.88	66.73	9.690		
9,450.00	9,439.05	9,506.35	9,481.06	33.74	33.98	154.51	153.69	333.59	646.40	579.27	67.13	9.628		
9,500.00	9,488.94	9,543.65	9,530.95	33.92	34.12	154.50	155.09	330.44	646.19	578.74	67.45	9.580		
9,550.00	9,538.84	9,606.35	9,580.83	34.10	34.35	154.50	156.50	327.29	645.97	578.12	67.85	9.520		
9,600.00	9,588.73	9,643.64	9,630.71	34.28	34.49	154.49	157.90	324.14	645.76	577.59	68.17	9.473		
9,650.00	9,638.63	9,706.36	9,680.59	34.47	34.72	154.49	159.30	320.99	645.55	576.97	68.57	9.414		
9,700.00	9,688.52	9,743.64	9,730.47	34.65	34.85	154.48	160.70	317.84	645.33	576.45	68.89	9.368		
9,750.00	9,738.42	9,806.36	9,780.35	34.83	35.08	154.47	162.10	314.68	645.12	575.83	69.29	9.310		
9,800.00	9,788.32	9,843.64	9,830.23	35.01	35.22	154.47	163.50	311.53	644.90	575.30	69.61	9.265		
9,850.00	9,838.21	9,906.36	9,880.11	35.20	35.45	154.46	164.90	308.38	644.69	574.68	70.01	9.208		
9,900.00	9,888.11	9,943.64	9,929.99	35.38	35.59	154.46	166.31	305.23	644.48	574.15	70.32	9.164		
9,950.00	9,938.00	9,993.64	9,979.87	35.56	35.77	154.45	167.71	302.08	644.26	573.58	70.68	9.115		
10,000.00	9,987.90	10,043.64	10,029.75	35.74	35.95	154.44	169.11	298.93	644.05	573.01	71.04	9.066		
10,050.00	10,037.79	10,106.36	10,079.63	35.93	36.18	154.44	170.51	295.78	643.84	572.39	71.45	9.011		
10,100.00	10,087.69	10,143.64	10,129.51	36.11	36.32	154.43	171.91	292.63	643.62	571.86	71.76	8.969		
10,150.00	10,137.59	10,206.36	10,179.39	36.29	36.55	154.43	173.31	289.47	643.41	571.24	72.17	8.915		
10,200.00	10,187.48	10,243.64	10,229.27	36.48	36.69	154.42	174.71	286.32	643.20	570.71	72.48	8.874		
10,250.00	10,237.38	10,306.36	10,279.15	36.66	36.92	154.41	176.12	283.17	642.98	570.09	72.89	8.821		
10,300.00	10,287.27	10,343.64	10,329.03	36.84	37.05	154.41	177.52	280.02	642.77	569.57	73.20	8.781		
10,350.00	10,337.17	10,406.36	10,378.91	37.02	37.28	154.40	178.92	276.87	642.56	568.95	73.61	8.729		

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 716H - 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			Distance						Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
10,400.00	10,387.06	10,443.64	10,428.79	37.21	37.42	154.40	180.32	273.72	642.34	568.42	73.92	8.689		
10,450.00	10,436.96	10,506.36	10,478.67	37.39	37.65	154.39	181.72	270.57	642.13	567.80	74.33	8.639		
10,500.00	10,486.86	10,543.64	10,528.55	37.57	37.79	154.38	183.12	267.42	641.92	567.27	74.64	8.600		
10,550.00	10,536.75	10,593.64	10,578.43	37.76	37.97	154.38	184.52	264.26	641.70	566.70	75.00	8.556		
10,600.00	10,586.65	10,641.41	10,626.10	37.94	38.15	154.37	185.85	261.28	641.52	566.16	75.36	8.513		
10,603.92	10,590.56	10,644.82	10,629.50	37.95	38.16	154.37	185.94	261.08	641.52	566.13	75.39	8.510 CC		
10,650.00	10,636.54	10,684.81	10,669.42	38.12	38.30	154.38	186.90	258.92	641.73	566.03	75.71	8.477		
10,700.00	10,686.44	10,728.20	10,712.76	38.30	38.46	154.41	187.75	257.01	642.47	566.42	76.05	8.448		
10,750.00	10,736.33	10,771.57	10,756.09	38.49	38.62	154.46	188.40	255.55	643.71	567.33	76.38	8.428		
10,800.00	10,786.23	10,814.90	10,799.41	38.67	38.77	154.53	188.85	254.54	645.47	568.76	76.71	8.414		
10,850.00	10,836.13	10,858.19	10,842.70	38.85	38.93	154.61	189.09	253.99	647.75	570.72	77.03	8.409		
10,900.00	10,886.02	10,903.11	10,887.62	39.04	39.08	154.71	189.15	253.86	650.52	573.17	77.36	8.409		
10,950.00	10,935.92	10,953.01	10,937.52	39.22	39.26	154.84	189.15	253.86	653.42	575.71	77.71	8.408		
11,000.00	10,985.84	11,002.93	10,987.44	39.40	39.43	154.96	189.15	253.86	655.89	577.82	78.07	8.402		
11,050.00	11,035.80	11,052.89	11,037.40	39.58	39.61	155.04	189.15	253.86	657.77	579.35	78.42	8.388		
11,100.00	11,085.78	11,102.87	11,087.38	39.76	39.78	155.10	189.15	253.86	659.05	580.28	78.78	8.366		
11,150.00	11,135.77	11,152.86	11,137.37	39.94	39.96	155.14	189.15	253.86	659.74	580.61	79.13	8.338		
11,200.00	11,185.77	11,202.86	11,187.37	40.11	40.13	89.64	189.15	253.86	659.87	580.39	79.48	8.302		
11,250.00	11,235.77	11,252.91	11,237.42	40.29	40.31	89.65	189.02	253.86	659.87	580.04	79.83	8.266		
11,289.91	11,275.69	11,292.85	11,277.29	40.43	40.44	89.85	186.76	253.87	659.87	579.77	80.10	8.238		
11,300.00	11,285.77	11,302.88	11,287.26	40.46	40.47	89.93	185.76	253.87	659.87	579.70	80.17	8.231		
11,350.00	11,335.77	11,351.91	11,335.72	40.64	40.62	90.58	178.36	253.89	659.93	579.44	80.49	8.199		
11,400.00	11,385.77	11,399.35	11,381.83	40.81	40.76	91.54	167.28	253.92	660.18	579.39	80.79	8.172		
11,450.00	11,435.77	11,444.65	11,424.87	40.99	40.89	92.76	153.17	253.96	660.84	579.78	81.06	8.152		
11,500.00	11,485.77	11,487.45	11,464.39	41.17	41.01	94.18	136.76	254.00	662.16	580.86	81.30	8.144		
11,550.00	11,535.77	11,527.60	11,500.25	41.34	41.11	-84.04	118.73	254.05	664.38	582.89	81.49	8.153		
11,600.00	11,585.62	11,566.37	11,533.59	41.50	41.20	-82.27	98.97	254.10	667.34	585.73	81.62	8.177		
11,650.00	11,634.97	11,604.27	11,564.83	41.65	41.28	-80.54	77.52	254.16	670.87	589.18	81.69	8.213		
11,700.00	11,683.43	11,641.41	11,594.01	41.80	41.35	-78.88	54.54	254.22	674.84	593.14	81.70	8.260		
11,750.00	11,730.64	11,677.90	11,621.16	41.95	41.42	-77.28	30.16	254.29	679.15	597.50	81.65	8.318		
11,800.00	11,776.24	11,713.82	11,646.31	42.08	41.48	-75.77	4.54	254.35	683.69	602.14	81.55	8.384		
11,850.00	11,819.89	11,750.00	11,669.98	42.20	41.53	-74.32	-22.82	254.43	688.35	606.94	81.41	8.455		
11,900.00	11,861.24	11,784.21	11,690.73	42.31	41.58	-73.00	-50.02	254.50	693.02	611.81	81.20	8.534		
11,950.00	11,899.99	11,818.81	11,710.02	42.40	41.62	-71.77	-78.73	254.58	697.60	616.62	80.98	8.614		
12,000.00	11,935.84	11,850.00	11,725.90	42.49	41.66	-70.70	-105.57	254.65	702.02	621.33	80.69	8.700		
12,050.00	11,968.52	11,887.07	11,742.85	42.56	41.71	-69.63	-138.53	254.74	706.17	625.67	80.49	8.773		
12,100.00	11,997.78	11,920.82	11,756.39	42.63	41.76	-68.73	-169.44	254.82	709.99	629.73	80.25	8.847		
12,150.00	12,023.39	11,950.00	11,766.61	42.69	41.82	-68.00	-196.77	254.89	713.43	633.45	79.98	8.920		
12,200.00	12,045.17	11,987.73	11,777.75	42.77	41.89	-67.29	-232.81	254.99	716.38	636.53	79.85	8.971		
12,250.00	12,062.94	12,020.97	11,785.57	42.86	41.96	-66.76	-265.11	255.07	718.85	639.13	79.71	9.018		
12,300.00	12,076.57	12,050.00	11,790.86	42.97	42.03	-66.37	-293.65	255.15	720.79	641.19	79.60	9.055		
12,350.00	12,085.96	12,087.15	11,795.51	43.07	42.11	-66.06	-330.51	255.25	722.12	642.52	79.60	9.071		
12,400.00	12,091.03	12,120.16	11,797.64	43.18	42.18	-65.90	-363.44	255.34	722.88	643.24	79.65	9.076		
12,450.00	12,092.00	12,159.65	11,798.00	43.30	42.28	-65.87	-402.93	255.44	723.05	643.27	79.78	9.063		
12,500.00	12,092.00	12,209.65	11,798.00	43.41	42.40	-65.87	-452.93	255.58	723.05	643.09	79.97	9.042		
12,550.00	12,092.00	12,259.65	11,798.00	43.55	42.53	-65.87	-502.93	255.71	723.05	642.86	80.19	9.017		
12,600.00	12,092.00	12,309.65	11,798.00	43.68	42.68	-65.87	-552.93	255.84	723.05	642.64	80.41	8.992		
12,650.00	12,092.00	12,359.65	11,798.00	43.84	42.83	-65.87	-602.93	255.98	723.05	642.37	80.68	8.962		
12,700.00	12,092.00	12,409.65	11,798.00	44.00	43.00	-65.87	-652.93	256.11	723.05	642.10	80.95	8.932		
12,750.00	12,092.00	12,459.65	11,798.00	44.17	43.18	-65.87	-702.93	256.24	723.05	641.79	81.26	8.898		
12,800.00	12,092.00	12,509.65	11,798.00	44.35	43.36	-65.87	-752.93	256.38	723.05	641.48	81.58	8.863		
12,850.00	12,092.00	12,559.65	11,798.00	44.55	43.57	-65.87	-802.93	256.51	723.05	641.12	81.93	8.825		

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
12,900.00	12,092.00	12,609.65	11,798.00	44.75	43.77	-65.87	-852.92	256.64	723.05	640.77	82.29	8.787		
12,950.00	12,092.00	12,659.65	11,798.00	44.97	44.00	-65.87	-902.92	256.78	723.05	640.37	82.68	8.745		
13,000.00	12,092.00	12,709.65	11,798.00	45.19	44.23	-65.87	-952.92	256.91	723.05	639.97	83.08	8.703		
13,050.00	12,092.00	12,759.65	11,798.00	45.43	44.47	-65.87	-1,002.92	257.05	723.05	639.53	83.52	8.657		
13,100.00	12,092.00	12,809.65	11,798.00	45.67	44.72	-65.87	-1,052.92	257.18	723.05	639.09	83.96	8.612		
13,150.00	12,092.00	12,859.65	11,798.00	45.93	44.98	-65.87	-1,102.92	257.31	723.05	638.62	84.43	8.564		
13,200.00	12,092.00	12,909.65	11,798.00	46.19	45.25	-65.87	-1,152.92	257.45	723.05	638.14	84.91	8.515		
13,250.00	12,092.00	12,959.65	11,798.00	46.47	45.54	-65.87	-1,202.92	257.58	723.05	637.63	85.43	8.464		
13,300.00	12,092.00	13,009.65	11,798.00	46.75	45.83	-65.87	-1,252.92	257.71	723.05	637.11	85.94	8.413		
13,350.00	12,092.00	13,059.65	11,798.00	47.05	46.13	-65.87	-1,302.92	257.85	723.05	636.56	86.49	8.360		
13,400.00	12,092.00	13,109.65	11,798.00	47.35	46.44	-65.87	-1,352.92	257.98	723.05	636.00	87.05	8.306		
13,450.00	12,092.00	13,159.65	11,798.00	47.67	46.76	-65.87	-1,402.92	258.11	723.05	635.42	87.63	8.251		
13,500.00	12,092.00	13,209.65	11,798.00	47.99	47.09	-65.87	-1,452.92	258.25	723.05	634.83	88.22	8.196		
13,550.00	12,092.00	13,259.65	11,798.00	48.32	47.43	-65.87	-1,502.92	258.38	723.05	634.21	88.84	8.139		
13,600.00	12,092.00	13,309.65	11,798.00	48.66	47.77	-65.87	-1,552.92	258.51	723.05	633.59	89.47	8.082		
13,650.00	12,092.00	13,359.65	11,798.00	49.01	48.13	-65.87	-1,602.92	258.65	723.05	632.93	90.12	8.023		
13,700.00	12,092.00	13,409.65	11,798.00	49.36	48.49	-65.87	-1,652.92	258.78	723.05	632.28	90.77	7.965		
13,750.00	12,092.00	13,459.65	11,798.00	49.73	48.86	-65.87	-1,702.92	258.92	723.05	631.59	91.46	7.906		
13,800.00	12,092.00	13,509.65	11,798.00	50.09	49.24	-65.87	-1,752.92	259.05	723.05	630.91	92.15	7.847		
13,850.00	12,092.00	13,559.65	11,798.00	50.48	49.63	-65.87	-1,802.92	259.18	723.05	630.19	92.86	7.787		
13,900.00	12,092.00	13,609.65	11,798.00	50.86	50.02	-65.87	-1,852.92	259.32	723.05	629.48	93.57	7.727		
13,950.00	12,092.00	13,659.65	11,798.00	51.26	50.42	-65.87	-1,902.92	259.45	723.05	628.73	94.32	7.666		
14,000.00	12,092.00	13,709.65	11,798.00	51.66	50.83	-65.87	-1,952.92	259.58	723.05	627.99	95.06	7.606		
14,050.00	12,092.00	13,759.65	11,798.00	52.07	51.25	-65.87	-2,002.92	259.72	723.05	627.22	95.83	7.545		
14,100.00	12,092.00	13,809.65	11,798.00	52.48	51.67	-65.87	-2,052.92	259.85	723.05	626.45	96.60	7.485		
14,150.00	12,092.00	13,859.65	11,798.00	52.90	52.10	-65.87	-2,102.92	259.98	723.05	625.65	97.40	7.424		
14,200.00	12,092.00	13,909.65	11,798.00	53.33	52.53	-65.87	-2,152.92	260.12	723.05	624.85	98.20	7.363		
14,250.00	12,092.00	13,959.65	11,798.00	53.77	52.97	-65.87	-2,202.92	260.25	723.05	624.03	99.02	7.302		
14,300.00	12,092.00	14,009.65	11,798.00	54.21	53.42	-65.87	-2,252.92	260.38	723.05	623.21	99.84	7.242		
14,350.00	12,092.00	14,059.65	11,798.00	54.66	53.88	-65.87	-2,302.92	260.52	723.05	622.37	100.68	7.181		
14,400.00	12,092.00	14,109.65	11,798.00	55.11	54.34	-65.87	-2,352.92	260.65	723.05	621.52	101.53	7.122		
14,450.00	12,092.00	14,159.65	11,798.00	55.57	54.80	-65.87	-2,402.92	260.78	723.05	620.66	102.40	7.061		
14,500.00	12,092.00	14,209.65	11,798.00	56.03	55.27	-65.87	-2,452.92	260.92	723.05	619.79	103.26	7.002		
14,550.00	12,092.00	14,259.65	11,798.00	56.50	55.75	-65.87	-2,502.92	261.05	723.05	618.90	104.15	6.942		
14,600.00	12,092.00	14,309.65	11,798.00	56.97	56.23	-65.87	-2,552.92	261.19	723.05	618.01	105.04	6.884		
14,650.00	12,092.00	14,359.65	11,798.00	57.46	56.72	-65.87	-2,602.92	261.32	723.05	617.10	105.95	6.825		
14,700.00	12,092.00	14,409.65	11,798.00	57.94	57.21	-65.87	-2,652.92	261.45	723.05	616.19	106.86	6.767		
14,750.00	12,092.00	14,459.65	11,798.00	58.43	57.71	-65.87	-2,702.92	261.59	723.05	615.27	107.78	6.708		
14,800.00	12,092.00	14,509.65	11,798.00	58.93	58.21	-65.87	-2,752.92	261.72	723.05	614.34	108.71	6.651		
14,850.00	12,092.00	14,559.65	11,798.00	59.43	58.72	-65.87	-2,802.92	261.85	723.05	613.39	109.66	6.594		
14,900.00	12,092.00	14,609.65	11,798.00	59.93	59.23	-65.87	-2,852.92	261.99	723.05	612.45	110.60	6.537		
14,950.00	12,092.00	14,659.65	11,798.00	60.44	59.75	-65.87	-2,902.92	262.12	723.05	611.49	111.56	6.481		
15,000.00	12,092.00	14,709.65	11,798.00	60.96	60.27	-65.87	-2,952.92	262.25	723.05	610.52	112.53	6.425		
15,050.00	12,092.00	14,759.65	11,798.00	61.48	60.79	-65.87	-3,002.92	262.39	723.05	609.54	113.51	6.370		
15,100.00	12,092.00	14,809.65	11,798.00	62.00	61.32	-65.87	-3,052.92	262.52	723.05	608.56	114.49	6.316		
15,150.00	12,092.00	14,859.65	11,798.00	62.53	61.86	-65.87	-3,102.92	262.65	723.05	607.57	115.48	6.261		
15,200.00	12,092.00	14,909.65	11,798.00	63.05	62.39	-65.87	-3,152.92	262.79	723.05	606.57	116.48	6.208		
15,250.00	12,092.00	14,959.65	11,798.00	63.59	62.93	-65.87	-3,202.92	262.92	723.05	605.56	117.49	6.154		
15,300.00	12,092.00	15,009.65	11,798.00	64.13	63.48	-65.87	-3,252.92	263.06	723.05	604.55	118.50	6.102		
15,350.00	12,092.00	15,059.65	11,798.00	64.67	64.02	-65.87	-3,302.92	263.19	723.05	603.53	119.52	6.050		
15,400.00	12,092.00	15,109.65	11,798.00	65.21	64.58	-65.87	-3,352.92	263.32	723.05	602.51	120.54	5.998		
15,450.00	12,092.00	15,159.65	11,798.00	65.76	65.13	-65.87	-3,402.92	263.46	723.05	601.47	121.58	5.947		

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 716H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
15,500.00	12,092.00	15,209.65	11,798.00	66.31	65.69	-65.87	-3,452.92	263.59	723.05	600.43	122.62	5.897	
15,550.00	12,092.00	15,259.65	11,798.00	66.87	66.25	-65.87	-3,502.92	263.72	723.05	599.38	123.67	5.847	
15,600.00	12,092.00	15,309.65	11,798.00	67.43	66.81	-65.87	-3,552.92	263.86	723.05	598.33	124.72	5.798	
15,650.00	12,092.00	15,359.65	11,798.00	67.99	67.38	-65.87	-3,602.92	263.99	723.05	597.27	125.78	5.749	
15,700.00	12,092.00	15,409.65	11,798.00	68.56	67.95	-65.87	-3,652.91	264.12	723.05	596.21	126.84	5.701	
15,750.00	12,092.00	15,459.65	11,798.00	69.13	68.53	-65.87	-3,702.91	264.26	723.05	595.14	127.91	5.653	
15,800.00	12,092.00	15,509.65	11,798.00	69.70	69.10	-65.87	-3,752.91	264.39	723.05	594.06	128.98	5.606	
15,850.00	12,092.00	15,559.65	11,798.00	70.27	69.68	-65.87	-3,802.91	264.52	723.05	592.98	130.07	5.559	
15,900.00	12,092.00	15,609.65	11,798.00	70.85	70.27	-65.87	-3,852.91	264.66	723.05	591.90	131.15	5.513	
15,950.00	12,092.00	15,659.65	11,798.00	71.43	70.85	-65.87	-3,902.91	264.79	723.05	590.80	132.25	5.467	
16,000.00	12,092.00	15,709.65	11,798.00	72.01	71.44	-65.87	-3,952.91	264.92	723.05	589.71	133.34	5.423	
16,050.00	12,092.00	15,759.65	11,798.00	72.59	72.03	-65.87	-4,002.91	265.06	723.05	588.60	134.44	5.378	
16,100.00	12,092.00	15,809.65	11,798.00	73.18	72.62	-65.87	-4,052.91	265.19	723.05	587.50	135.55	5.334	
16,150.00	12,092.00	15,859.65	11,798.00	73.77	73.22	-65.87	-4,102.91	265.33	723.05	586.39	136.66	5.291	
16,200.00	12,092.00	15,909.65	11,798.00	74.36	73.81	-65.87	-4,152.91	265.46	723.05	585.27	137.78	5.248	
16,250.00	12,092.00	15,959.65	11,798.00	74.96	74.41	-65.87	-4,202.91	265.59	723.05	584.15	138.90	5.206	
16,300.00	12,092.00	16,009.65	11,798.00	75.55	75.01	-65.87	-4,252.91	265.73	723.05	583.03	140.02	5.164	
16,350.00	12,092.00	16,059.65	11,798.00	76.16	75.62	-65.87	-4,302.91	265.86	723.05	581.90	141.15	5.123	
16,400.00	12,092.00	16,109.65	11,798.00	76.76	76.22	-65.87	-4,352.91	265.99	723.05	580.77	142.28	5.082	
16,450.00	12,092.00	16,159.65	11,798.00	77.36	76.83	-65.87	-4,402.91	266.13	723.05	579.63	143.42	5.041	
16,500.00	12,092.00	16,209.65	11,798.00	77.96	77.44	-65.87	-4,452.91	266.26	723.05	578.49	144.56	5.002	
16,550.00	12,092.00	16,259.65	11,798.00	78.57	78.06	-65.87	-4,502.91	266.39	723.05	577.34	145.71	4.962 Alert	
16,600.00	12,092.00	16,309.65	11,798.00	79.18	78.67	-65.87	-4,552.91	266.53	723.05	576.19	146.85	4.924 Alert	
16,650.00	12,092.00	16,359.65	11,798.00	79.80	79.29	-65.87	-4,602.91	266.66	723.05	575.04	148.01	4.885 Alert	
16,700.00	12,092.00	16,409.65	11,798.00	80.41	79.90	-65.87	-4,652.91	266.79	723.05	573.89	149.16	4.847 Alert	
16,750.00	12,092.00	16,459.65	11,798.00	81.02	80.52	-65.87	-4,702.91	266.93	723.05	572.73	150.32	4.810 Alert	
16,800.00	12,092.00	16,509.65	11,798.00	81.64	81.14	-65.87	-4,752.91	267.06	723.05	571.56	151.48	4.773 Alert	
16,850.00	12,092.00	16,559.65	11,798.00	82.26	81.77	-65.87	-4,802.91	267.20	723.05	570.40	152.65	4.737 Alert	
16,900.00	12,092.00	16,609.65	11,798.00	82.88	82.39	-65.87	-4,852.91	267.33	723.05	569.23	153.82	4.701 Alert	
16,950.00	12,092.00	16,659.65	11,798.00	83.50	83.02	-65.87	-4,902.91	267.46	723.05	568.05	154.99	4.665 Alert	
17,000.00	12,092.00	16,709.65	11,798.00	84.13	83.65	-65.87	-4,952.91	267.60	723.05	566.88	156.17	4.630 Alert	
17,050.00	12,092.00	16,759.65	11,798.00	84.75	84.28	-65.87	-5,002.91	267.73	723.05	565.70	157.35	4.595 Alert	
17,100.00	12,092.00	16,809.65	11,798.00	85.38	84.91	-65.87	-5,052.91	267.86	723.05	564.52	158.53	4.561 Alert	
17,150.00	12,092.00	16,859.65	11,798.00	86.01	85.54	-65.87	-5,102.91	268.00	723.05	563.33	159.71	4.527 Alert	
17,200.00	12,092.00	16,909.65	11,798.00	86.64	86.18	-65.87	-5,152.91	268.13	723.05	562.15	160.90	4.494 Alert	
17,250.00	12,092.00	16,959.65	11,798.00	87.27	86.81	-65.87	-5,202.91	268.26	723.05	560.96	162.09	4.461 Alert	
17,300.00	12,092.00	17,009.65	11,798.00	87.91	87.45	-65.87	-5,252.91	268.40	723.05	559.76	163.28	4.428 Alert	
17,350.00	12,092.00	17,059.65	11,798.00	88.54	88.09	-65.87	-5,302.91	268.53	723.05	558.57	164.48	4.396 Alert	
17,400.00	12,092.00	17,109.65	11,798.00	89.18	88.73	-65.87	-5,352.91	268.66	723.05	557.37	165.68	4.364 Alert	
17,450.00	12,092.00	17,159.65	11,798.00	89.82	89.37	-65.87	-5,402.91	268.80	723.05	556.17	166.88	4.333 Alert	
17,500.00	12,092.00	17,209.65	11,798.00	90.45	90.01	-65.87	-5,452.91	268.93	723.05	554.96	168.08	4.302 Alert	
17,550.00	12,092.00	17,259.65	11,798.00	91.10	90.66	-65.87	-5,502.91	269.06	723.05	553.76	169.29	4.271 Alert	
17,600.00	12,092.00	17,309.65	11,798.00	91.74	91.30	-65.87	-5,552.91	269.20	723.05	552.55	170.50	4.241 Alert	
17,650.00	12,092.00	17,359.65	11,798.00	92.38	91.95	-65.87	-5,602.91	269.33	723.05	551.34	171.71	4.211 Alert	
17,700.00	12,092.00	17,409.65	11,798.00	93.02	92.60	-65.87	-5,652.91	269.47	723.05	550.13	172.92	4.181 Alert	
17,750.00	12,092.00	17,459.65	11,798.00	93.67	93.24	-65.87	-5,702.91	269.60	723.05	548.91	174.14	4.152 Alert	
17,800.00	12,092.00	17,509.65	11,798.00	94.32	93.89	-65.87	-5,752.91	269.73	723.05	547.69	175.35	4.123 Alert	
17,850.00	12,092.00	17,559.65	11,798.00	94.96	94.55	-65.87	-5,802.91	269.87	723.05	546.47	176.57	4.095 Alert	
17,900.00	12,092.00	17,609.65	11,798.00	95.61	95.20	-65.87	-5,852.91	270.00	723.05	545.25	177.79	4.067 Alert	
17,950.00	12,092.00	17,659.65	11,798.00	96.26	95.85	-65.87	-5,902.91	270.13	723.05	544.03	179.02	4.039 Alert	
18,000.00	12,092.00	17,709.65	11,798.00	96.91	96.51	-65.87	-5,952.91	270.27	723.05	542.80	180.24	4.011 Alert	
18,050.00	12,092.00	17,759.65	11,798.00	97.57	97.16	-65.87	-6,002.91	270.40	723.05	541.57	181.47	3.984 Alert	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
18,100.00	12,092.00	17,809.65	11,798.00	98.22	97.82	-65.87	-6,052.91	270.53	723.05	540.34	182.70	3.958	Alert	
18,150.00	12,092.00	17,859.65	11,798.00	98.87	98.47	-65.87	-6,102.91	270.67	723.05	539.11	183.93	3.931	Alert	
18,200.00	12,092.00	17,909.65	11,798.00	99.53	99.13	-65.87	-6,152.91	270.80	723.05	537.88	185.17	3.905	Alert	
18,250.00	12,092.00	17,959.65	11,798.00	100.19	99.79	-65.87	-6,202.91	270.93	723.05	536.64	186.40	3.879	Alert	
18,300.00	12,092.00	18,009.65	11,798.00	100.84	100.45	-65.87	-6,252.91	271.07	723.05	535.41	187.64	3.853	Alert	
18,350.00	12,092.00	18,059.65	11,798.00	101.50	101.11	-65.87	-6,302.91	271.20	723.05	534.17	188.88	3.828	Alert	
18,400.00	12,092.00	18,109.65	11,798.00	102.16	101.77	-65.87	-6,352.91	271.34	723.05	532.93	190.12	3.803	Alert	
18,450.00	12,092.00	18,159.65	11,798.00	102.82	102.44	-65.87	-6,402.91	271.47	723.05	531.68	191.36	3.778	Alert	
18,500.00	12,092.00	18,209.65	11,798.00	103.48	103.10	-65.87	-6,452.90	271.60	723.05	530.44	192.61	3.754	Alert	
18,550.00	12,092.00	18,259.65	11,798.00	104.14	103.77	-65.87	-6,502.90	271.74	723.05	529.19	193.85	3.730	Alert	
18,600.00	12,092.00	18,309.65	11,798.00	104.81	104.43	-65.87	-6,552.90	271.87	723.05	527.95	195.10	3.706	Alert	
18,650.00	12,092.00	18,359.65	11,798.00	105.47	105.10	-65.87	-6,602.90	272.00	723.05	526.70	196.35	3.682	Alert	
18,700.00	12,092.00	18,409.65	11,798.00	106.13	105.76	-65.87	-6,652.90	272.14	723.05	525.45	197.60	3.659	Alert	
18,750.00	12,092.00	18,459.65	11,798.00	106.80	106.43	-65.87	-6,702.90	272.27	723.04	524.19	198.85	3.636	Alert	
18,800.00	12,092.00	18,509.65	11,798.00	107.46	107.10	-65.87	-6,752.90	272.40	723.04	522.94	200.10	3.613	Alert	
18,850.00	12,092.00	18,559.65	11,798.00	108.13	107.77	-65.87	-6,802.90	272.54	723.04	521.68	201.36	3.591	Alert	
18,900.00	12,092.00	18,609.65	11,798.00	108.80	108.44	-65.87	-6,852.90	272.67	723.04	520.43	202.62	3.569	Alert	
18,950.00	12,092.00	18,659.65	11,798.00	109.47	109.11	-65.87	-6,902.90	272.80	723.04	519.17	203.87	3.547	Alert	
19,000.00	12,092.00	18,709.65	11,798.00	110.14	109.78	-65.87	-6,952.90	272.94	723.04	517.91	205.13	3.525	Alert	
19,050.00	12,092.00	18,759.65	11,798.00	110.81	110.45	-65.87	-7,002.90	273.07	723.04	516.65	206.39	3.503	Alert	
19,100.00	12,092.00	18,809.65	11,798.00	111.48	111.13	-65.87	-7,052.90	273.20	723.04	515.39	207.65	3.482	Alert	
19,150.00	12,092.00	18,859.65	11,798.00	112.15	111.80	-65.87	-7,102.90	273.34	723.04	514.13	208.92	3.461	Alert	
19,200.00	12,092.00	18,909.65	11,798.00	112.82	112.48	-65.87	-7,152.90	273.47	723.04	512.86	210.18	3.440	Alert	
19,250.00	12,092.00	18,959.65	11,798.00	113.49	113.15	-65.87	-7,202.90	273.61	723.04	511.60	211.45	3.419	Alert	
19,300.00	12,092.00	19,009.65	11,798.00	114.16	113.83	-65.87	-7,252.90	273.74	723.04	510.33	212.71	3.399	Alert	
19,350.00	12,092.00	19,059.65	11,798.00	114.84	114.50	-65.87	-7,302.90	273.87	723.04	509.06	213.98	3.379	Alert	
19,400.00	12,092.00	19,109.65	11,798.00	115.51	115.18	-65.87	-7,352.90	274.01	723.04	507.79	215.25	3.359	Alert	
19,450.00	12,092.00	19,159.65	11,798.00	116.19	115.86	-65.87	-7,402.90	274.14	723.04	506.52	216.52	3.339	Alert	
19,500.00	12,092.00	19,209.65	11,798.00	116.86	116.53	-65.87	-7,452.90	274.27	723.04	505.25	217.79	3.320	Alert	
19,550.00	12,092.00	19,259.65	11,798.00	117.54	117.21	-65.87	-7,502.90	274.41	723.04	503.98	219.07	3.301	Alert	
19,600.00	12,092.00	19,309.65	11,798.00	118.22	117.89	-65.87	-7,552.90	274.54	723.04	502.70	220.34	3.281	Alert	
19,650.00	12,092.00	19,359.65	11,798.00	118.90	118.57	-65.87	-7,602.90	274.67	723.04	501.43	221.62	3.263	Alert	
19,700.00	12,092.00	19,409.65	11,798.00	119.57	119.25	-65.87	-7,652.90	274.81	723.04	500.15	222.89	3.244	Alert	
19,750.00	12,092.00	19,459.65	11,798.00	120.25	119.93	-65.87	-7,702.90	274.94	723.04	498.87	224.17	3.225	Alert	
19,800.00	12,092.00	19,509.65	11,798.00	120.93	120.61	-65.87	-7,752.90	275.07	723.04	497.60	225.45	3.207	Alert	
19,850.00	12,092.00	19,559.65	11,798.00	121.61	121.30	-65.87	-7,802.90	275.21	723.04	496.32	226.73	3.189	Alert	
19,900.00	12,092.00	19,609.65	11,798.00	122.29	121.98	-65.87	-7,852.90	275.34	723.04	495.04	228.01	3.171	Alert	
19,950.00	12,092.00	19,659.65	11,798.00	122.97	122.66	-65.87	-7,902.90	275.48	723.04	493.76	229.29	3.153	Alert	
20,000.00	12,092.00	19,709.65	11,798.00	123.65	123.34	-65.87	-7,952.90	275.61	723.04	492.47	230.57	3.136	Alert	
20,050.00	12,092.00	19,759.65	11,798.00	124.34	124.03	-65.87	-8,002.90	275.74	723.04	491.19	231.85	3.119	Alert	
20,100.00	12,092.00	19,809.65	11,798.00	125.02	124.71	-65.87	-8,052.90	275.88	723.04	489.91	233.14	3.101	Alert	
20,150.00	12,092.00	19,859.65	11,798.00	125.70	125.40	-65.87	-8,102.90	276.01	723.04	488.62	234.42	3.084	Alert	
20,200.00	12,092.00	19,909.65	11,798.00	126.38	126.08	-65.87	-8,152.90	276.14	723.04	487.34	235.71	3.068	Alert	
20,250.00	12,092.00	19,959.65	11,798.00	127.07	126.77	-65.87	-8,202.90	276.28	723.04	486.05	236.99	3.051	Alert	
20,300.00	12,092.00	20,009.65	11,798.00	127.75	127.46	-65.87	-8,252.90	276.41	723.04	484.76	238.28	3.034	Alert	
20,350.00	12,092.00	20,059.65	11,798.00	128.44	128.14	-65.87	-8,302.90	276.54	723.04	483.47	239.57	3.018	Alert	
20,400.00	12,092.00	20,109.65	11,798.00	129.12	128.83	-65.87	-8,352.90	276.68	723.04	482.18	240.86	3.002	Alert	
20,450.00	12,092.00	20,159.65	11,798.00	129.81	129.52	-65.87	-8,402.90	276.81	723.04	480.89	242.15	2.986	Alert	
20,500.00	12,092.00	20,209.65	11,798.00	130.49	130.20	-65.87	-8,452.90	276.94	723.04	479.60	243.44	2.970	Alert	
20,550.00	12,092.00	20,259.65	11,798.00	131.18	130.89	-65.87	-8,502.90	277.08	723.04	478.31	244.73	2.954	Alert	
20,600.00	12,092.00	20,309.65	11,798.00	131.87	131.58	-65.87	-8,552.90	277.21	723.04	477.02	246.02	2.939	Alert	
20,650.00	12,092.00	20,359.65	11,798.00	132.56	132.27	-65.87	-8,602.90	277.35	723.04	475.73	247.32	2.924	Alert	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 716H - 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		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
20,700.00	12,092.00	20,409.65	11,798.00	133.24	132.96	-65.87	-8,652.90	277.48	723.04	474.43	248.61	2.908	Alert
20,750.00	12,092.00	20,459.65	11,798.00	133.93	133.65	-65.87	-8,702.90	277.61	723.04	473.14	249.91	2.893	Alert
20,800.00	12,092.00	20,509.65	11,798.00	134.62	134.34	-65.87	-8,752.90	277.75	723.04	471.84	251.20	2.878	Alert
20,850.00	12,092.00	20,559.65	11,798.00	135.31	135.03	-65.87	-8,802.90	277.88	723.04	470.54	252.50	2.864	Alert
20,900.00	12,092.00	20,609.65	11,798.00	136.00	135.72	-65.87	-8,852.90	278.01	723.04	469.25	253.79	2.849	Alert
20,950.00	12,092.00	20,659.65	11,798.00	136.69	136.41	-65.87	-8,902.90	278.15	723.04	467.95	255.09	2.834	Alert
21,000.00	12,092.00	20,709.65	11,798.00	137.38	137.11	-65.87	-8,952.90	278.28	723.04	466.65	256.39	2.820	Alert
21,050.00	12,092.00	20,759.65	11,798.00	138.07	137.80	-65.87	-9,002.90	278.41	723.04	465.35	257.69	2.806	Alert
21,100.00	12,092.00	20,809.65	11,798.00	138.76	138.49	-65.87	-9,052.90	278.55	723.04	464.05	258.99	2.792	Alert
21,150.00	12,092.00	20,859.65	11,798.00	139.45	139.18	-65.87	-9,102.90	278.68	723.04	462.75	260.29	2.778	Alert
21,200.00	12,092.00	20,909.65	11,798.00	140.14	139.88	-65.87	-9,152.90	278.81	723.04	461.45	261.59	2.764	Alert
21,250.00	12,092.00	20,959.65	11,798.00	140.84	140.57	-65.87	-9,202.90	278.95	723.04	460.15	262.89	2.750	Alert
21,300.00	12,092.00	21,009.65	11,798.00	141.53	141.27	-65.87	-9,252.90	279.08	723.04	458.85	264.20	2.737	Alert
21,350.00	12,092.00	21,059.65	11,798.00	142.22	141.96	-65.87	-9,302.89	279.21	723.04	457.54	265.50	2.723	Alert
21,400.00	12,092.00	21,109.65	11,798.00	142.91	142.65	-65.87	-9,352.89	279.35	723.04	456.24	266.80	2.710	Alert
21,450.00	12,092.00	21,159.65	11,798.00	143.61	143.35	-65.87	-9,402.89	279.48	723.04	454.93	268.11	2.697	Alert
21,500.00	12,092.00	21,209.65	11,798.00	144.30	144.04	-65.87	-9,452.89	279.62	723.04	453.63	269.41	2.684	Alert
21,550.00	12,092.00	21,259.65	11,798.00	145.00	144.74	-65.87	-9,502.89	279.75	723.04	452.32	270.72	2.671	Alert
21,600.00	12,092.00	21,309.65	11,798.00	145.69	145.44	-65.87	-9,552.89	279.88	723.04	451.02	272.02	2.658	Alert
21,650.00	12,092.00	21,359.65	11,798.00	146.39	146.13	-65.87	-9,602.89	280.02	723.04	449.71	273.33	2.645	Alert
21,700.00	12,092.00	21,409.65	11,798.00	147.08	146.83	-65.87	-9,652.89	280.15	723.04	448.40	274.64	2.633	Alert
21,750.00	12,092.00	21,459.65	11,798.00	147.78	147.53	-65.87	-9,702.89	280.28	723.04	447.10	275.94	2.620	Alert
21,800.00	12,092.00	21,509.65	11,798.00	148.47	148.22	-65.87	-9,752.89	280.42	723.04	445.79	277.25	2.608	Alert
21,850.00	12,092.00	21,559.65	11,798.00	149.17	148.92	-65.87	-9,802.89	280.55	723.04	444.48	278.56	2.596	Alert
21,900.00	12,092.00	21,609.65	11,798.00	149.86	149.62	-65.87	-9,852.89	280.68	723.04	443.17	279.87	2.583	Alert
21,950.00	12,092.00	21,659.65	11,798.00	150.56	150.32	-65.87	-9,902.89	280.82	723.04	441.86	281.18	2.571	Alert
22,000.00	12,092.00	21,709.65	11,798.00	151.26	151.01	-65.87	-9,952.89	280.95	723.04	440.55	282.49	2.560	Alert
22,050.00	12,092.00	21,759.65	11,798.00	151.95	151.71	-65.87	-10,002.89	281.08	723.04	439.24	283.80	2.548	Alert
22,100.00	12,092.00	21,809.65	11,798.00	152.65	152.41	-65.87	-10,052.89	281.22	723.04	437.93	285.11	2.536	Alert
22,150.00	12,092.00	21,859.65	11,798.00	153.35	153.11	-65.87	-10,102.89	281.35	723.04	436.61	286.43	2.524	Alert
22,200.00	12,092.00	21,909.65	11,798.00	154.05	153.81	-65.87	-10,152.89	281.49	723.04	435.30	287.74	2.513	Alert
22,250.00	12,092.00	21,959.65	11,798.00	154.75	154.51	-65.87	-10,202.89	281.62	723.04	433.99	289.05	2.501	Alert
22,300.00	12,092.00	22,009.65	11,798.00	155.44	155.21	-65.87	-10,252.89	281.75	723.04	432.67	290.37	2.490	Minor Risk
22,350.00	12,092.00	22,059.65	11,798.00	156.14	155.91	-65.87	-10,302.89	281.89	723.04	431.36	291.68	2.479	Minor Risk
22,381.87	12,092.00	22,091.52	11,798.00	156.59	156.36	-65.87	-10,334.76	281.97	723.04	430.52	292.52	2.472	Minor Risk, ES, SF

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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		Distance		Warning							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	1.30	1.30	0.50	0.50	89.64	4.36	699.88	699.89				
50.00	50.00	51.30	51.30	0.50	0.50	89.64	4.36	699.88	699.89	698.89	1.01	695.211	
100.00	100.00	101.30	101.30	0.52	0.52	89.64	4.36	699.88	699.89	698.86	1.04	675.082	
150.00	150.00	151.30	151.30	0.59	0.59	89.64	4.36	699.88	699.89	698.71	1.18	591.641	
200.00	200.00	201.30	201.30	0.70	0.71	89.64	4.36	699.88	699.89	698.49	1.41	497.266	
250.00	250.00	251.30	251.30	0.84	0.84	89.64	4.36	699.88	699.89	698.22	1.68	416.810	
300.00	300.00	301.30	301.30	0.99	0.99	89.64	4.36	699.88	699.89	697.92	1.98	353.716	
350.00	350.00	351.30	351.30	1.15	1.15	89.64	4.36	699.88	699.89	697.60	2.30	304.942	
400.00	400.00	401.30	401.30	1.31	1.31	89.64	4.36	699.88	699.89	697.27	2.62	266.882	
450.00	450.00	451.30	451.30	1.48	1.48	89.64	4.36	699.88	699.89	696.94	2.96	236.688	
500.00	500.00	501.30	501.30	1.65	1.65	89.64	4.36	699.88	699.89	696.60	3.30	212.307	
550.00	550.00	551.30	551.30	1.82	1.82	89.64	4.36	699.88	699.89	696.26	3.64	192.288	
600.00	600.00	601.30	601.30	1.99	2.00	89.64	4.36	699.88	699.89	695.91	3.99	175.601	
650.00	650.00	651.30	651.30	2.16	2.17	89.64	4.36	699.88	699.89	695.56	4.33	161.502	
700.00	700.00	701.30	701.30	2.34	2.34	89.64	4.36	699.88	699.89	695.21	4.68	149.449	
750.00	750.00	751.30	751.30	2.51	2.52	89.64	4.36	699.88	699.89	694.86	5.03	139.034	
800.00	800.00	801.30	801.30	2.69	2.70	89.64	4.36	699.88	699.89	694.51	5.39	129.953	
850.00	850.00	851.30	851.30	2.87	2.87	89.64	4.36	699.88	699.89	694.16	5.74	121.967	
900.00	900.00	901.30	901.30	3.04	3.05	89.64	4.36	699.88	699.89	693.80	6.09	114.893	
950.00	950.00	951.30	951.30	3.22	3.23	89.64	4.36	699.88	699.89	693.45	6.45	108.585	
1,000.00	1,000.00	1,001.30	1,001.30	3.40	3.40	89.64	4.36	699.88	699.89	693.10	6.80	102.927	
1,050.00	1,050.00	1,051.30	1,051.30	3.58	3.58	89.64	4.36	699.88	699.89	692.74	7.15	97.823	
1,100.00	1,100.00	1,101.30	1,101.30	3.75	3.76	89.64	4.36	699.88	699.89	692.39	7.51	93.197	
1,150.00	1,150.00	1,151.30	1,151.30	3.93	3.93	89.64	4.36	699.88	699.89	692.03	7.87	88.986	
1,200.00	1,200.00	1,201.30	1,201.30	4.11	4.11	89.64	4.36	699.88	699.89	691.67	8.22	85.136	
1,250.00	1,250.00	1,251.30	1,251.30	4.29	4.29	89.64	4.36	699.88	699.89	691.32	8.58	81.603	
1,300.00	1,300.00	1,301.30	1,301.30	4.46	4.47	89.64	4.36	699.88	699.89	690.96	8.93	78.350	
1,350.00	1,350.00	1,351.30	1,351.30	4.64	4.65	89.64	4.36	699.88	699.89	690.61	9.29	75.344	
1,400.00	1,400.00	1,401.30	1,401.30	4.82	4.83	89.64	4.36	699.88	699.89	690.25	9.65	72.560	
1,450.00	1,450.00	1,451.30	1,451.30	5.00	5.00	89.64	4.36	699.88	699.89	689.89	10.00	69.973	
1,500.00	1,500.00	1,501.30	1,501.30	5.18	5.18	89.64	4.36	699.88	699.89	689.54	10.36	67.563	
1,550.00	1,550.00	1,551.30	1,551.30	5.36	5.36	89.64	4.36	699.88	699.89	689.18	10.72	65.313	
1,600.00	1,600.00	1,601.30	1,601.30	5.53	5.54	89.64	4.36	699.88	699.89	688.82	11.07	63.208	
1,650.00	1,650.00	1,651.30	1,651.30	5.71	5.72	89.64	4.36	699.88	699.89	688.47	11.43	61.233	
1,700.00	1,700.00	1,701.30	1,701.30	5.89	5.90	89.64	4.36	699.88	699.89	688.11	11.79	59.378	
1,750.00	1,750.00	1,751.30	1,751.30	6.07	6.07	89.64	4.36	699.88	699.89	687.75	12.14	57.631	
1,800.00	1,800.00	1,801.30	1,801.30	6.25	6.25	89.64	4.36	699.88	699.89	687.39	12.50	55.984	
1,850.00	1,850.00	1,851.30	1,851.30	6.43	6.43	89.64	4.36	699.88	699.89	687.04	12.86	54.429	
1,900.00	1,900.00	1,901.30	1,901.30	6.61	6.61	89.64	4.36	699.88	699.89	686.68	13.22	52.957	
1,950.00	1,950.00	1,951.30	1,951.30	6.78	6.79	89.64	4.36	699.88	699.89	686.32	13.57	51.562	
2,000.00	2,000.00	2,001.30	2,001.30	6.96	6.97	89.64	4.36	699.88	699.89	685.96	13.93	50.239	
2,050.00	2,050.00	2,051.30	2,051.30	7.14	7.15	89.64	4.36	699.88	699.89	685.61	14.29	48.982	
2,100.00	2,100.00	2,101.30	2,101.30	7.32	7.33	89.64	4.36	699.88	699.89	685.25	14.65	47.786	
2,150.00	2,150.00	2,151.30	2,151.30	7.50	7.50	89.64	4.36	699.88	699.89	684.89	15.00	46.647	
2,200.00	2,200.00	2,201.30	2,201.30	7.68	7.68	89.64	4.36	699.88	699.89	684.53	15.36	45.560	
2,250.00	2,250.00	2,251.30	2,251.30	7.86	7.86	89.64	4.36	699.88	699.89	684.18	15.72	44.524	
2,300.00	2,300.00	2,301.30	2,301.30	8.04	8.04	89.64	4.36	699.88	699.89	683.82	16.08	43.533	
2,350.00	2,350.00	2,351.30	2,351.30	8.22	8.22	89.64	4.36	699.88	699.89	683.46	16.44	42.585	
2,400.00	2,400.00	2,401.30	2,401.30	8.39	8.40	89.64	4.36	699.88	699.89	683.10	16.79	41.678	
2,450.00	2,450.00	2,451.30	2,451.30	8.57	8.58	89.64	4.36	699.88	699.89	682.74	17.15	40.808	
2,500.00	2,500.00	2,501.30	2,501.30	8.75	8.76	89.64	4.36	699.88	699.89	682.39	17.51	39.974	
2,550.00	2,550.00	2,551.30	2,551.30	8.93	8.94	89.64	4.36	699.88	699.89	682.03	17.87	39.173	

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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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			Distance						Warning	
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2,600.00	2,600.00	2,601.30	2,601.30	9.11	9.11	89.64	4.36	699.88	699.89	681.67	18.22	38.404		
2,650.00	2,650.00	2,651.30	2,651.30	9.29	9.29	89.64	4.36	699.88	699.89	681.31	18.58	37.664		
2,700.00	2,700.00	2,701.30	2,701.30	9.47	9.47	89.64	4.36	699.88	699.89	680.95	18.94	36.952		
2,750.00	2,750.00	2,751.30	2,751.30	9.65	9.65	89.64	4.36	699.88	699.89	680.60	19.30	36.267		
2,800.00	2,800.00	2,801.30	2,801.30	9.83	9.83	89.64	4.36	699.88	699.89	680.24	19.66	35.606		
2,850.00	2,850.00	2,851.30	2,851.30	10.00	10.01	89.64	4.36	699.88	699.89	679.88	20.01	34.969		
2,900.00	2,900.00	2,901.30	2,901.30	10.18	10.19	89.64	4.36	699.88	699.89	679.52	20.37	34.355		
2,950.00	2,950.00	2,951.30	2,951.30	10.36	10.37	89.64	4.36	699.88	699.89	679.16	20.73	33.762		
3,000.00	3,000.00	3,001.30	3,001.30	10.54	10.55	89.64	4.36	699.88	699.89	678.81	21.09	33.188		
3,050.00	3,050.00	3,051.30	3,051.30	10.72	10.73	89.64	4.36	699.88	699.89	678.45	21.45	32.634		
3,100.00	3,100.00	3,101.30	3,101.30	10.90	10.90	89.64	4.36	699.88	699.89	678.09	21.80	32.098		
3,150.00	3,150.00	3,151.30	3,151.30	11.08	11.08	89.64	4.36	699.88	699.89	677.73	22.16	31.580		
3,200.00	3,200.00	3,201.30	3,201.30	11.26	11.26	89.64	4.36	699.88	699.89	677.37	22.52	31.077		
3,250.00	3,250.00	3,251.30	3,251.30	11.44	11.44	89.64	4.36	699.88	699.89	677.02	22.88	30.591		
3,300.00	3,300.00	3,301.30	3,301.30	11.62	11.62	89.64	4.36	699.88	699.89	676.66	23.24	30.120		
3,350.00	3,350.00	3,351.30	3,351.30	11.80	11.80	89.64	4.36	699.88	699.89	676.30	23.60	29.662		
3,400.00	3,400.00	3,401.30	3,401.30	11.97	11.98	89.64	4.36	699.88	699.89	675.94	23.95	29.219		
3,450.00	3,450.00	3,451.30	3,451.30	12.15	12.16	89.64	4.36	699.88	699.89	675.58	24.31	28.788		
3,500.00	3,500.00	3,501.30	3,501.30	12.33	12.34	89.64	4.36	699.88	699.89	675.23	24.67	28.370		
3,550.00	3,550.00	3,551.30	3,551.30	12.51	12.52	89.64	4.36	699.88	699.89	674.87	25.03	27.964		
3,600.00	3,600.00	3,601.30	3,601.30	12.69	12.70	89.64	4.36	699.88	699.89	674.51	25.39	27.570		
3,650.00	3,650.00	3,651.30	3,651.30	12.87	12.87	89.64	4.36	699.88	699.89	674.15	25.74	27.186		
3,700.00	3,700.00	3,701.30	3,701.30	13.05	13.05	89.64	4.36	699.88	699.89	673.79	26.10	26.813		
3,750.00	3,750.00	3,751.30	3,751.30	13.23	13.23	89.64	4.36	699.88	699.89	673.43	26.46	26.450		
3,800.00	3,800.00	3,801.30	3,801.30	13.41	13.41	89.64	4.36	699.88	699.89	673.08	26.82	26.097		
3,850.00	3,850.00	3,851.30	3,851.30	13.59	13.59	89.64	4.36	699.88	699.89	672.72	27.18	25.753		
3,900.00	3,900.00	3,901.30	3,901.30	13.77	13.77	89.64	4.36	699.88	699.89	672.36	27.54	25.418		
3,950.00	3,950.00	3,951.30	3,951.30	13.94	13.95	89.64	4.36	699.88	699.89	672.00	27.89	25.091		
4,000.00	4,000.00	4,001.30	4,001.30	14.12	14.13	89.64	4.36	699.88	699.89	671.64	28.25	24.773 CC, ES		
4,050.00	4,050.00	4,045.96	4,045.96	14.30	14.29	155.14	4.51	700.06	700.34	671.75	28.59	24.499		
4,100.00	4,099.99	4,090.73	4,090.73	14.48	14.45	155.12	4.95	700.56	701.65	672.73	28.92	24.262		
4,150.00	4,149.97	4,135.47	4,135.45	14.65	14.60	155.09	5.67	701.40	703.82	674.57	29.25	24.065		
4,200.00	4,199.94	4,180.14	4,180.09	14.83	14.76	155.06	6.67	702.56	706.86	677.29	29.57	23.902		
4,250.00	4,249.88	4,228.39	4,228.30	15.00	14.93	155.01	8.00	704.09	710.68	680.76	29.91	23.757		
4,300.00	4,299.78	4,278.20	4,278.07	15.18	15.11	154.98	9.37	705.68	715.00	684.73	30.26	23.625		
4,350.00	4,349.68	4,328.00	4,327.82	15.35	15.28	154.98	10.75	707.27	719.53	688.92	30.61	23.504		
4,400.00	4,399.58	4,377.79	4,377.57	15.53	15.46	154.98	12.12	708.86	724.06	693.10	30.96	23.386		
4,450.00	4,449.47	4,427.59	4,427.32	15.70	15.64	154.98	13.50	710.46	728.59	697.28	31.31	23.270		
4,500.00	4,499.37	4,477.38	4,477.07	15.88	15.81	154.98	14.88	712.05	733.12	701.46	31.66	23.156		
4,550.00	4,549.26	4,527.18	4,526.82	16.05	15.99	154.98	16.25	713.64	737.66	705.65	32.01	23.045		
4,600.00	4,599.16	4,576.97	4,576.57	16.23	16.16	154.98	17.63	715.23	742.19	709.83	32.36	22.936		
4,650.00	4,649.06	4,626.76	4,626.32	16.41	16.34	154.98	19.01	716.82	746.72	714.01	32.71	22.829		
4,700.00	4,698.95	4,676.56	4,676.07	16.58	16.52	154.98	20.38	718.42	751.25	718.19	33.06	22.724		
4,750.00	4,748.85	4,726.35	4,725.82	16.76	16.69	154.98	21.76	720.01	755.78	722.37	33.41	22.621		
4,800.00	4,798.74	4,776.15	4,775.57	16.94	16.87	154.98	23.13	721.60	760.31	726.55	33.76	22.521		
4,850.00	4,848.64	4,825.94	4,825.32	17.11	17.05	154.98	24.51	723.19	764.84	730.73	34.11	22.422		
4,900.00	4,898.53	4,875.74	4,875.07	17.29	17.22	154.98	25.89	724.78	769.38	734.91	34.46	22.325		
4,950.00	4,948.43	4,925.53	4,924.82	17.47	17.40	154.98	27.26	726.38	773.91	739.09	34.81	22.230		
5,000.00	4,998.33	4,975.32	4,974.57	17.65	17.58	154.98	28.64	727.97	778.44	743.27	35.17	22.137		
5,050.00	5,048.22	5,025.12	5,024.32	17.82	17.75	154.98	30.02	729.56	782.97	747.45	35.52	22.045		
5,100.00	5,098.12	5,074.91	5,074.07	18.00	17.93	154.98	31.39	731.15	787.50	751.63	35.87	21.955		
5,150.00	5,148.01	5,124.71	5,123.82	18.18	18.11	154.98	32.77	732.74	792.03	755.81	36.22	21.867		

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,200.00	5,197.91	5,174.50	5,173.57	18.36	18.29	154.98	34.15	734.34	796.57	759.99	36.57	21.781		
5,250.00	5,247.80	5,224.29	5,223.32	18.53	18.46	154.98	35.52	735.93	801.10	764.17	36.92	21.696		
5,300.00	5,297.70	5,274.09	5,273.07	18.71	18.64	154.98	36.90	737.52	805.63	768.35	37.28	21.612		
5,350.00	5,347.60	5,323.88	5,322.82	18.89	18.82	154.97	38.27	739.11	810.16	772.53	37.63	21.530		
5,400.00	5,397.49	5,373.68	5,372.57	19.07	18.99	154.97	39.65	740.70	814.69	776.71	37.98	21.449		
5,450.00	5,447.39	5,423.47	5,422.32	19.25	19.17	154.97	41.03	742.30	819.22	780.89	38.33	21.370		
5,500.00	5,497.28	5,473.27	5,472.07	19.43	19.35	154.97	42.40	743.89	823.75	785.07	38.69	21.293		
5,550.00	5,547.18	5,523.06	5,521.81	19.61	19.53	154.97	43.78	745.48	828.29	789.25	39.04	21.216		
5,600.00	5,597.07	5,572.85	5,571.56	19.78	19.70	154.97	45.16	747.07	832.82	793.42	39.39	21.141		
5,650.00	5,646.97	5,622.65	5,621.31	19.96	19.88	154.97	46.53	748.66	837.35	797.60	39.75	21.067		
5,700.00	5,696.87	5,672.44	5,671.06	20.14	20.06	154.97	47.91	750.26	841.88	801.78	40.10	20.994		
5,750.00	5,746.76	5,722.24	5,720.81	20.32	20.24	154.97	49.28	751.85	846.41	805.96	40.45	20.923		
5,800.00	5,796.66	5,772.03	5,770.56	20.50	20.42	154.97	50.66	753.44	850.94	810.14	40.81	20.853		
5,850.00	5,846.55	5,821.83	5,820.31	20.68	20.59	154.97	52.04	755.03	855.47	814.31	41.16	20.784		
5,900.00	5,896.45	5,871.62	5,870.06	20.86	20.77	154.97	53.41	756.62	860.01	818.49	41.51	20.716		
5,950.00	5,946.35	5,921.41	5,919.81	21.04	20.95	154.97	54.79	758.22	864.54	822.67	41.87	20.649		
6,000.00	5,996.24	5,971.21	5,969.56	21.22	21.13	154.97	56.17	759.81	869.07	826.85	42.22	20.583		
6,050.00	6,046.14	6,021.00	6,019.31	21.40	21.30	154.97	57.54	761.40	873.60	831.02	42.58	20.518		
6,100.00	6,096.03	6,070.80	6,069.06	21.58	21.48	154.97	58.92	762.99	878.13	835.20	42.93	20.454		
6,150.00	6,145.93	6,120.59	6,118.81	21.76	21.66	154.97	60.29	764.58	882.66	839.38	43.29	20.392		
6,200.00	6,195.82	6,170.39	6,168.56	21.94	21.84	154.97	61.67	766.18	887.19	843.56	43.64	20.330		
6,250.00	6,245.72	6,220.18	6,218.31	22.12	22.02	154.97	63.05	767.77	891.73	847.73	43.99	20.269		
6,300.00	6,295.62	6,269.97	6,268.06	22.30	22.20	154.97	64.42	769.36	896.26	851.91	44.35	20.209		
6,350.00	6,345.51	6,319.77	6,317.81	22.48	22.37	154.97	65.80	770.95	900.79	856.09	44.70	20.150		
6,400.00	6,395.41	6,369.56	6,367.56	22.66	22.55	154.97	67.18	772.54	905.32	860.26	45.06	20.092		
6,450.00	6,445.30	6,419.36	6,417.31	22.84	22.73	154.97	68.55	774.14	909.85	864.44	45.41	20.035		
6,500.00	6,495.20	6,469.15	6,467.06	23.02	22.91	154.97	69.93	775.73	914.38	868.62	45.77	19.979		
6,550.00	6,545.09	6,518.95	6,516.81	23.20	23.09	154.97	71.30	777.32	918.92	872.79	46.12	19.923		
6,600.00	6,594.99	6,568.74	6,566.56	23.38	23.26	154.97	72.68	778.91	923.45	876.97	46.48	19.868		
6,650.00	6,644.89	6,618.53	6,616.31	23.56	23.44	154.97	74.06	780.50	927.98	881.15	46.83	19.815		
6,700.00	6,694.78	6,668.33	6,666.06	23.74	23.62	154.97	75.43	782.10	932.51	885.32	47.19	19.761		
6,750.00	6,744.68	6,718.12	6,715.81	23.92	23.80	154.97	76.81	783.69	937.04	889.50	47.54	19.709		
6,800.00	6,794.57	6,767.92	6,765.56	24.10	23.98	154.97	78.19	785.28	941.57	893.67	47.90	19.657		
6,850.00	6,844.47	6,817.71	6,815.31	24.28	24.16	154.97	79.56	786.87	946.10	897.85	48.25	19.607		
6,900.00	6,894.36	6,867.50	6,865.06	24.46	24.34	154.97	80.94	788.46	950.64	902.03	48.61	19.556		
6,950.00	6,944.26	6,917.30	6,914.81	24.65	24.51	154.97	82.32	790.06	955.17	906.20	48.97	19.507		
7,000.00	6,994.16	6,967.09	6,964.56	24.83	24.69	154.97	83.69	791.65	959.70	910.38	49.32	19.458		
7,050.00	7,044.05	7,016.89	7,014.31	25.01	24.87	154.97	85.07	793.24	964.23	914.55	49.68	19.410		
7,100.00	7,093.95	7,066.68	7,064.06	25.19	25.05	154.97	86.44	794.83	968.76	918.73	50.03	19.363		
7,150.00	7,143.84	7,116.48	7,113.81	25.37	25.23	154.97	87.82	796.42	973.29	922.91	50.39	19.316		
7,200.00	7,193.74	7,166.27	7,163.56	25.55	25.41	154.97	89.20	798.02	977.82	927.08	50.74	19.270		
7,250.00	7,243.63	7,216.06	7,213.31	25.73	25.59	154.97	90.57	799.61	982.36	931.26	51.10	19.224		
7,300.00	7,293.53	7,265.86	7,263.06	25.91	25.76	154.97	91.95	801.20	986.89	935.43	51.46	19.179		
7,350.00	7,343.43	7,315.65	7,312.81	26.09	25.94	154.97	93.33	802.79	991.42	939.61	51.81	19.135		
7,400.00	7,393.32	7,365.45	7,362.56	26.28	26.12	154.97	94.70	804.38	995.95	943.78	52.17	19.091		
7,450.00	7,443.22	7,415.24	7,412.31	26.46	26.30	154.97	96.08	805.98	1,000.48	947.96	52.52	19.048		
7,500.00	7,493.11	7,465.04	7,462.05	26.64	26.48	154.97	97.45	807.57	1,005.01	952.13	52.88	19.005		
7,550.00	7,543.01	7,514.83	7,511.80	26.82	26.66	154.97	98.83	809.16	1,009.55	956.31	53.24	18.963		
7,600.00	7,592.90	7,564.62	7,561.55	27.00	26.84	154.97	100.21	810.75	1,014.08	960.48	53.59	18.922		
7,650.00	7,642.80	7,614.42	7,611.30	27.18	27.02	154.96	101.58	812.34	1,018.61	964.66	53.95	18.881		
7,700.00	7,692.70	7,664.21	7,661.05	27.36	27.19	154.96	102.96	813.94	1,023.14	968.83	54.31	18.840		
7,750.00	7,742.59	7,714.01	7,710.80	27.55	27.37	154.96	104.34	815.53	1,027.67	973.01	54.66	18.800		

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
7,800.00	7,792.49	7,763.80	7,760.55	27.73	27.55	154.96	105.71	817.12	1,032.20	977.18	55.02	18.761		
7,850.00	7,842.38	7,813.60	7,810.30	27.91	27.73	154.96	107.09	818.71	1,036.73	981.36	55.38	18.722		
7,900.00	7,892.28	7,863.39	7,860.05	28.09	27.91	154.96	108.46	820.31	1,041.27	985.53	55.73	18.683		
7,950.00	7,942.17	7,913.18	7,909.80	28.27	28.09	154.96	109.84	821.90	1,045.80	989.71	56.09	18.645		
8,000.00	7,992.07	7,962.98	7,959.55	28.45	28.27	154.96	111.22	823.49	1,050.33	993.88	56.45	18.608		
8,050.00	8,041.97	8,012.77	8,009.30	28.64	28.45	154.96	112.59	825.08	1,054.86	998.06	56.80	18.571		
8,100.00	8,091.86	8,062.57	8,059.05	28.82	28.63	154.96	113.97	826.67	1,059.39	1,002.23	57.16	18.534		
8,150.00	8,141.76	8,112.36	8,108.80	29.00	28.81	154.96	115.35	828.27	1,063.92	1,006.41	57.52	18.498		
8,200.00	8,191.65	8,162.15	8,158.55	29.18	28.98	154.96	116.72	829.86	1,068.45	1,010.58	57.87	18.462		
8,250.00	8,241.55	8,211.95	8,208.30	29.36	29.16	154.96	118.10	831.45	1,072.99	1,014.76	58.23	18.427		
8,300.00	8,291.44	8,261.74	8,258.05	29.54	29.34	154.96	119.47	833.04	1,077.52	1,018.93	58.59	18.392		
8,350.00	8,341.34	8,311.54	8,307.80	29.73	29.52	154.96	120.85	834.63	1,082.05	1,023.11	58.94	18.357		
8,400.00	8,391.24	8,361.33	8,357.55	29.91	29.70	154.96	122.23	836.23	1,086.58	1,027.28	59.30	18.323		
8,450.00	8,441.13	8,411.13	8,407.30	30.09	29.88	154.96	123.60	837.82	1,091.11	1,031.45	59.66	18.290		
8,500.00	8,491.03	8,460.92	8,457.05	30.27	30.06	154.96	124.98	839.41	1,095.64	1,035.63	60.01	18.256		
8,550.00	8,540.92	8,510.71	8,506.80	30.45	30.24	154.96	126.36	841.00	1,100.18	1,039.80	60.37	18.223		
8,600.00	8,590.82	8,560.51	8,556.55	30.64	30.42	154.96	127.73	842.59	1,104.71	1,043.98	60.73	18.191		
8,650.00	8,640.71	8,610.30	8,606.30	30.82	30.60	154.96	129.11	844.19	1,109.24	1,048.15	61.09	18.159		
8,700.00	8,690.61	8,660.10	8,656.05	31.00	30.78	154.96	130.49	845.78	1,113.77	1,052.33	61.44	18.127		
8,750.00	8,740.51	8,709.89	8,705.80	31.18	30.96	154.96	131.86	847.37	1,118.30	1,056.50	61.80	18.095		
8,800.00	8,790.40	8,759.69	8,755.55	31.37	31.13	154.96	133.24	848.96	1,122.83	1,060.67	62.16	18.064		
8,850.00	8,840.30	8,809.48	8,805.30	31.55	31.31	154.96	134.61	850.55	1,127.36	1,064.85	62.52	18.033		
8,900.00	8,890.19	8,859.27	8,855.05	31.73	31.49	154.96	135.99	852.15	1,131.90	1,069.02	62.87	18.003		
8,950.00	8,940.09	8,909.07	8,904.80	31.91	31.67	154.96	137.37	853.74	1,136.43	1,073.20	63.23	17.973		
9,000.00	8,989.98	8,958.86	8,954.55	32.09	31.85	154.96	138.74	855.33	1,140.96	1,077.37	63.59	17.943		
9,050.00	9,039.88	9,008.66	9,004.30	32.28	32.03	154.96	140.12	856.92	1,145.49	1,081.55	63.94	17.914		
9,100.00	9,089.78	9,058.45	9,054.05	32.46	32.21	154.96	141.50	858.51	1,150.02	1,085.72	64.30	17.885		
9,150.00	9,139.67	9,108.25	9,103.80	32.64	32.39	154.96	142.87	860.11	1,154.55	1,089.89	64.66	17.856		
9,200.00	9,189.57	9,158.04	9,153.55	32.82	32.57	154.96	144.25	861.70	1,159.08	1,094.07	65.02	17.827		
9,250.00	9,239.46	9,207.83	9,203.30	33.01	32.75	154.96	145.62	863.29	1,163.62	1,098.24	65.38	17.799		
9,300.00	9,289.36	9,257.63	9,253.05	33.19	32.93	154.96	147.00	864.88	1,168.15	1,102.42	65.73	17.771		
9,350.00	9,339.25	9,307.42	9,302.80	33.37	33.11	154.96	148.38	866.47	1,172.68	1,106.59	66.09	17.744		
9,400.00	9,389.15	9,357.22	9,352.55	33.55	33.29	154.96	149.75	868.07	1,177.21	1,110.76	66.45	17.716		
9,450.00	9,439.05	9,407.01	9,402.29	33.74	33.47	154.96	151.13	869.66	1,181.74	1,114.94	66.81	17.689		
9,500.00	9,488.94	9,456.80	9,452.04	33.92	33.64	154.96	152.51	871.25	1,186.27	1,119.11	67.16	17.662		
9,550.00	9,538.84	9,506.60	9,501.79	34.10	33.82	154.96	153.88	872.84	1,190.81	1,123.28	67.52	17.636		
9,600.00	9,588.73	9,556.39	9,551.54	34.28	34.00	154.96	155.26	874.43	1,195.34	1,127.46	67.88	17.610		
9,650.00	9,638.63	9,606.19	9,601.29	34.47	34.18	154.96	156.63	876.03	1,199.87	1,131.63	68.24	17.584		
9,700.00	9,688.52	9,655.98	9,651.04	34.65	34.36	154.96	158.01	877.62	1,204.40	1,135.81	68.59	17.558		
9,750.00	9,738.42	9,705.78	9,700.79	34.83	34.54	154.96	159.39	879.21	1,208.93	1,139.98	68.95	17.533		
9,800.00	9,788.32	9,755.57	9,750.54	35.01	34.72	154.96	160.76	880.80	1,213.46	1,144.15	69.31	17.508		
9,850.00	9,838.21	9,805.36	9,800.29	35.20	34.90	154.96	162.14	882.39	1,217.99	1,148.33	69.67	17.483		
9,900.00	9,888.11	9,855.16	9,850.04	35.38	35.08	154.96	163.52	883.99	1,222.53	1,152.50	70.03	17.458		
9,950.00	9,938.00	9,904.95	9,899.79	35.56	35.26	154.96	164.89	885.58	1,227.06	1,156.67	70.38	17.434		
10,000.00	9,987.90	9,954.75	9,949.54	35.74	35.44	154.96	166.27	887.17	1,231.59	1,160.85	70.74	17.409		
10,050.00	10,037.79	10,004.54	9,999.29	35.93	35.62	154.96	167.64	888.76	1,236.12	1,165.02	71.10	17.386		
10,100.00	10,087.69	10,054.34	10,049.04	36.11	35.80	154.96	169.02	890.35	1,240.65	1,169.19	71.46	17.362		
10,150.00	10,137.59	10,104.13	10,098.79	36.29	35.98	154.96	170.40	891.95	1,245.18	1,173.37	71.82	17.338		
10,200.00	10,187.48	10,153.92	10,148.54	36.48	36.16	154.96	171.77	893.54	1,249.71	1,177.54	72.17	17.315		
10,250.00	10,237.38	10,203.72	10,198.29	36.66	36.34	154.96	173.15	895.13	1,254.25	1,181.71	72.53	17.292		
10,300.00	10,287.27	10,253.51	10,248.04	36.84	36.52	154.96	174.53	896.72	1,258.78	1,185.89	72.89	17.269		
10,350.00	10,337.17	10,303.31	10,297.79	37.02	36.70	154.96	175.90	898.31	1,263.31	1,190.06	73.25	17.247		

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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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: O-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,400.00	10,387.06	10,353.10	10,347.54	37.21	36.88	154.96	177.28	899.91	1,267.84	1,194.23	73.61	17.224	
10,450.00	10,436.96	10,402.90	10,397.29	37.39	37.05	154.96	178.66	901.50	1,272.37	1,198.41	73.97	17.202	
10,500.00	10,486.86	10,452.69	10,447.04	37.57	37.23	154.96	180.03	903.09	1,276.90	1,202.58	74.32	17.180	
10,550.00	10,536.75	10,502.48	10,496.79	37.76	37.41	154.96	181.41	904.68	1,281.44	1,206.75	74.68	17.159	
10,600.00	10,586.65	10,552.28	10,546.54	37.94	37.59	154.96	182.78	906.27	1,285.97	1,210.93	75.04	17.137	
10,650.00	10,636.54	10,602.07	10,596.29	38.12	37.77	154.96	184.16	907.87	1,290.50	1,215.10	75.40	17.116	
10,700.00	10,686.44	10,651.87	10,646.04	38.30	37.95	154.96	185.54	909.46	1,295.03	1,219.27	75.76	17.095	
10,750.00	10,736.33	10,701.66	10,695.79	38.49	38.13	154.96	186.91	911.05	1,299.56	1,223.45	76.12	17.074	
10,800.00	10,786.23	10,766.22	10,760.31	38.67	38.36	154.97	188.42	912.80	1,303.85	1,227.31	76.55	17.034	
10,850.00	10,836.13	10,833.63	10,827.71	38.85	38.61	155.01	189.24	913.74	1,307.49	1,230.51	76.98	16.984	
10,900.00	10,886.02	10,906.75	10,887.32	39.04	38.87	155.08	189.36	913.88	1,310.52	1,233.09	77.43	16.926	
10,950.00	10,935.92	10,943.15	10,937.22	39.22	38.99	155.14	189.36	913.88	1,313.42	1,235.69	77.73	16.896	
11,000.00	10,985.84	11,006.93	10,987.14	39.40	39.22	155.21	189.36	913.88	1,315.90	1,237.76	78.14	16.840	
11,050.00	11,035.80	11,043.03	11,037.10	39.58	39.35	155.26	189.36	913.88	1,317.78	1,239.33	78.45	16.798	
11,100.00	11,085.78	11,106.99	11,087.08	39.76	39.58	155.29	189.36	913.88	1,319.06	1,240.21	78.85	16.728	
11,150.00	11,135.77	11,143.00	11,137.07	39.94	39.70	155.31	189.36	913.88	1,319.76	1,240.60	79.16	16.672	
11,200.00	11,185.77	11,193.00	11,187.07	40.11	39.88	89.81	189.36	913.88	1,319.89	1,240.38	79.51	16.600	
11,250.00	11,235.77	11,243.02	11,237.09	40.29	40.05	89.83	188.94	913.88	1,319.89	1,240.03	79.86	16.527	
11,259.31	11,245.08	11,252.32	11,246.38	40.32	40.09	89.85	188.50	913.88	1,319.89	1,239.96	79.93	16.514	
11,300.00	11,285.77	11,292.73	11,286.62	40.46	40.21	90.01	184.87	913.89	1,319.89	1,239.70	80.20	16.458	
11,350.00	11,335.77	11,341.38	11,334.57	40.64	40.36	90.36	176.75	913.91	1,319.94	1,239.42	80.52	16.392	
11,400.00	11,385.77	11,388.33	11,380.03	40.81	40.50	90.86	165.09	913.95	1,320.11	1,239.28	80.83	16.331	
11,450.00	11,435.77	11,433.08	11,422.34	40.99	40.63	91.50	150.54	913.98	1,320.52	1,239.38	81.13	16.276	
11,500.00	11,485.77	11,475.28	11,461.08	41.17	40.74	92.22	133.84	914.03	1,321.28	1,239.86	81.41	16.229	
11,550.00	11,535.77	11,514.82	11,496.18	41.34	40.84	-86.80	115.64	914.08	1,322.52	1,240.84	81.67	16.193	
11,600.00	11,585.62	11,553.00	11,528.80	41.50	40.93	-85.88	95.81	914.13	1,324.15	1,242.25	81.90	16.168	
11,650.00	11,634.97	11,590.35	11,559.36	41.65	41.01	-84.99	74.36	914.19	1,326.08	1,243.98	82.10	16.151	
11,700.00	11,683.43	11,626.96	11,587.90	41.80	41.09	-84.12	51.44	914.25	1,328.25	1,245.97	82.28	16.143	
11,750.00	11,730.64	11,662.94	11,614.47	41.95	41.15	-83.27	27.18	914.31	1,330.60	1,248.16	82.44	16.140	
11,800.00	11,776.24	11,700.00	11,640.18	42.08	41.22	-82.44	0.51	914.38	1,333.08	1,250.50	82.58	16.142	
11,850.00	11,819.89	11,733.31	11,661.78	42.20	41.28	-81.70	-24.84	914.45	1,335.63	1,252.94	82.69	16.153	
11,900.00	11,861.24	11,767.83	11,682.57	42.31	41.36	-80.97	-52.40	914.52	1,338.19	1,255.40	82.78	16.165	
11,950.00	11,899.99	11,800.00	11,700.42	42.40	41.44	-80.32	-79.15	914.59	1,340.71	1,257.85	82.85	16.182	
12,000.00	11,935.84	11,835.84	11,718.50	42.49	41.52	-79.67	-110.09	914.68	1,343.13	1,260.20	82.93	16.195	
12,050.00	11,968.52	11,869.41	11,733.66	42.56	41.59	-79.10	-140.04	914.76	1,345.43	1,262.43	83.00	16.210	
12,100.00	11,997.78	11,900.00	11,745.91	42.63	41.66	-78.62	-168.07	914.83	1,347.54	1,264.49	83.05	16.226	
12,150.00	12,023.39	11,935.90	11,758.37	42.69	41.74	-78.16	-201.73	914.92	1,349.43	1,266.30	83.13	16.232	
12,200.00	12,045.17	11,968.89	11,767.93	42.77	41.81	-77.78	-233.29	915.00	1,351.07	1,267.87	83.21	16.237	
12,250.00	12,062.94	12,000.00	11,775.28	42.86	41.88	-77.49	-263.52	915.08	1,352.44	1,269.15	83.29	16.238	
12,300.00	12,076.57	12,034.50	11,781.49	42.97	41.95	-77.24	-297.46	915.17	1,353.50	1,270.10	83.40	16.229	
12,350.00	12,085.96	12,067.18	11,785.48	43.07	42.02	-77.08	-329.89	915.26	1,354.24	1,270.72	83.52	16.215	
12,400.00	12,091.03	12,100.00	11,787.62	43.18	42.09	-76.99	-362.63	915.35	1,354.65	1,270.99	83.66	16.193	
12,450.00	12,092.00	12,138.56	11,788.00	43.30	42.18	-76.98	-401.18	915.45	1,354.73	1,270.90	83.83	16.160	
12,500.00	12,092.00	12,188.56	11,788.00	43.41	42.29	-76.98	-451.18	915.58	1,354.73	1,270.68	84.04	16.119	
12,550.00	12,092.00	12,238.56	11,788.00	43.55	42.42	-76.98	-501.18	915.72	1,354.73	1,270.43	84.29	16.072	
12,600.00	12,092.00	12,288.56	11,788.00	43.68	42.56	-76.98	-551.18	915.85	1,354.73	1,270.18	84.55	16.023	
12,650.00	12,092.00	12,338.56	11,788.00	43.84	42.71	-76.98	-601.18	915.98	1,354.72	1,269.88	84.84	15.988	
12,700.00	12,092.00	12,388.56	11,788.00	44.00	42.87	-76.98	-651.18	916.11	1,354.72	1,269.58	85.14	15.911	
12,750.00	12,092.00	12,438.56	11,788.00	44.17	43.05	-76.98	-701.18	916.25	1,354.72	1,269.24	85.48	15.848	
12,800.00	12,092.00	12,488.56	11,788.00	44.35	43.23	-76.98	-751.18	916.38	1,354.72	1,268.89	85.83	15.784	
12,850.00	12,092.00	12,538.56	11,788.00	44.55	43.43	-76.98	-801.18	916.51	1,354.72	1,268.51	86.21	15.713	
12,900.00	12,092.00	12,588.56	11,788.00	44.75	43.64	-76.98	-851.18	916.64	1,354.72	1,268.12	86.60	15.643	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 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			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
12,950.00	12,092.00	12,638.56	11,788.00	44.97	43.86	-76.98	-901.18	916.78	1,354.72	1,267.69	87.03	15.566				
13,000.00	12,092.00	12,688.56	11,788.00	45.19	44.08	-76.98	-951.18	916.91	1,354.72	1,267.25	87.47	15.488				
13,050.00	12,092.00	12,738.56	11,788.00	45.43	44.33	-76.98	-1,001.18	917.04	1,354.72	1,266.78	87.94	15.406				
13,100.00	12,092.00	12,788.56	11,788.00	45.67	44.57	-76.98	-1,051.18	917.18	1,354.72	1,266.30	88.41	15.323				
13,150.00	12,092.00	12,838.56	11,788.00	45.93	44.84	-76.98	-1,101.18	917.31	1,354.72	1,265.79	88.92	15.235				
13,200.00	12,092.00	12,888.56	11,788.00	46.19	45.10	-76.98	-1,151.18	917.44	1,354.71	1,265.28	89.44	15.147				
13,250.00	12,092.00	12,938.56	11,788.00	46.47	45.39	-76.98	-1,201.18	917.57	1,354.71	1,264.72	89.99	15.054				
13,300.00	12,092.00	12,988.56	11,788.00	46.75	45.68	-76.98	-1,251.18	917.71	1,354.71	1,264.17	90.54	14.962				
13,350.00	12,092.00	13,038.56	11,788.00	47.05	45.98	-76.98	-1,301.18	917.84	1,354.71	1,263.58	91.13	14.865				
13,400.00	12,092.00	13,088.56	11,788.00	47.35	46.29	-76.98	-1,351.18	917.97	1,354.71	1,262.99	91.73	14.769				
13,450.00	12,092.00	13,138.56	11,788.00	47.67	46.61	-76.98	-1,401.18	918.10	1,354.71	1,262.36	92.35	14.669				
13,500.00	12,092.00	13,188.56	11,788.00	47.99	46.93	-76.98	-1,451.18	918.24	1,354.71	1,261.73	92.98	14.570				
13,550.00	12,092.00	13,238.56	11,788.00	48.32	47.27	-76.98	-1,501.18	918.37	1,354.71	1,261.07	93.64	14.467				
13,600.00	12,092.00	13,288.56	11,788.00	48.66	47.61	-76.98	-1,551.18	918.50	1,354.71	1,260.41	94.30	14.366				
13,650.00	12,092.00	13,338.56	11,788.00	49.01	47.97	-76.98	-1,601.18	918.64	1,354.71	1,259.71	95.00	14.261				
13,700.00	12,092.00	13,388.56	11,788.00	49.36	48.33	-76.98	-1,651.18	918.77	1,354.71	1,259.01	95.69	14.157				
13,750.00	12,092.00	13,438.56	11,788.00	49.73	48.70	-76.98	-1,701.18	918.90	1,354.71	1,258.29	96.42	14.050				
13,800.00	12,092.00	13,488.56	11,788.00	50.09	49.08	-76.98	-1,751.18	919.03	1,354.70	1,257.56	97.15	13.945				
13,850.00	12,092.00	13,538.56	11,788.00	50.48	49.47	-76.98	-1,801.18	919.17	1,354.70	1,256.80	97.90	13.837				
13,900.00	12,092.00	13,588.56	11,788.00	50.86	49.86	-76.98	-1,851.18	919.30	1,354.70	1,256.04	98.66	13.731				
13,950.00	12,092.00	13,638.56	11,788.00	51.26	50.26	-76.98	-1,901.18	919.43	1,354.70	1,255.26	99.45	13.622				
14,000.00	12,092.00	13,688.56	11,788.00	51.66	50.67	-76.98	-1,951.18	919.57	1,354.70	1,254.47	100.24	13.515				
14,050.00	12,092.00	13,738.56	11,788.00	52.07	51.09	-76.98	-2,001.18	919.70	1,354.70	1,253.65	101.05	13.406				
14,100.00	12,092.00	13,788.56	11,788.00	52.48	51.51	-76.98	-2,051.18	919.83	1,354.70	1,252.83	101.87	13.299				
14,150.00	12,092.00	13,838.56	11,788.00	52.90	51.94	-76.98	-2,101.18	919.96	1,354.70	1,251.99	102.71	13.190				
14,200.00	12,092.00	13,888.56	11,788.00	53.33	52.37	-76.98	-2,151.18	920.10	1,354.70	1,251.15	103.55	13.083				
14,250.00	12,092.00	13,938.56	11,788.00	53.77	52.82	-76.98	-2,201.18	920.23	1,354.70	1,250.28	104.41	12.974				
14,300.00	12,092.00	13,988.56	11,788.00	54.21	53.26	-76.98	-2,251.18	920.36	1,354.70	1,249.42	105.28	12.867				
14,350.00	12,092.00	14,038.56	11,788.00	54.66	53.72	-76.98	-2,301.18	920.49	1,354.70	1,248.52	106.17	12.760				
14,400.00	12,092.00	14,088.56	11,788.00	55.11	54.18	-76.98	-2,351.18	920.63	1,354.69	1,247.63	107.06	12.653				
14,450.00	12,092.00	14,138.56	11,788.00	55.57	54.64	-76.98	-2,401.18	920.76	1,354.69	1,246.72	107.98	12.546				
14,500.00	12,092.00	14,188.56	11,788.00	56.03	55.11	-76.98	-2,451.18	920.89	1,354.69	1,245.80	108.89	12.441				
14,550.00	12,092.00	14,238.56	11,788.00	56.50	55.59	-76.98	-2,501.18	921.03	1,354.69	1,244.87	109.82	12.335				
14,600.00	12,092.00	14,288.56	11,788.00	56.97	56.07	-76.98	-2,551.18	921.16	1,354.69	1,243.93	110.76	12.231				
14,650.00	12,092.00	14,338.56	11,788.00	57.46	56.56	-76.98	-2,601.18	921.29	1,354.69	1,242.98	111.72	12.126				
14,700.00	12,092.00	14,388.56	11,788.00	57.94	57.06	-76.98	-2,651.18	921.42	1,354.69	1,242.02	112.67	12.023				
14,750.00	12,092.00	14,438.56	11,788.00	58.43	57.55	-76.98	-2,701.18	921.56	1,354.69	1,241.04	113.65	11.920				
14,800.00	12,092.00	14,488.56	11,788.00	58.93	58.06	-76.98	-2,751.18	921.69	1,354.69	1,240.06	114.62	11.819				
14,850.00	12,092.00	14,538.56	11,788.00	59.43	58.57	-76.98	-2,801.18	921.82	1,354.69	1,239.07	115.62	11.717				
14,900.00	12,092.00	14,588.56	11,788.00	59.93	59.08	-76.98	-2,851.18	921.96	1,354.69	1,238.07	116.61	11.617				
14,950.00	12,092.00	14,638.56	11,788.00	60.44	59.59	-76.98	-2,901.18	922.09	1,354.69	1,237.06	117.62	11.517				
15,000.00	12,092.00	14,688.56	11,788.00	60.96	60.11	-76.98	-2,951.18	922.22	1,354.68	1,236.05	118.64	11.419				
15,050.00	12,092.00	14,738.56	11,788.00	61.48	60.64	-76.98	-3,001.18	922.35	1,354.68	1,235.02	119.66	11.321				
15,100.00	12,092.00	14,788.56	11,788.00	62.00	61.17	-76.98	-3,051.17	922.49	1,354.68	1,233.99	120.69	11.224				
15,150.00	12,092.00	14,838.56	11,788.00	62.53	61.70	-76.98	-3,101.17	922.62	1,354.68	1,232.95	121.74	11.128				
15,200.00	12,092.00	14,888.56	11,788.00	63.05	62.24	-76.98	-3,151.17	922.75	1,354.68	1,231.90	122.78	11.033				
15,250.00	12,092.00	14,938.56	11,788.00	63.59	62.78	-76.98	-3,201.17	922.88	1,354.68	1,230.84	123.84	10.939				
15,300.00	12,092.00	14,988.56	11,788.00	64.13	63.32	-76.98	-3,251.17	923.02	1,354.68	1,229.78	124.90	10.846				
15,350.00	12,092.00	15,038.56	11,788.00	64.67	63.87	-76.98	-3,301.17	923.15	1,354.68	1,228.70	125.98	10.754				
15,400.00	12,092.00	15,088.56	11,788.00	65.21	64.42	-76.98	-3,351.17	923.28	1,354.68	1,227.63	127.05	10.663				
15,450.00	12,092.00	15,138.56	11,788.00	65.76	64.98	-76.98	-3,401.17	923.42	1,354.68	1,226.54	128.14	10.572				
15,500.00	12,092.00	15,188.56	11,788.00	66.31	65.54	-76.98	-3,451.17	923.55	1,354.68	1,225.45	129.23	10.483				

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
15,550.00	12,092.00	15,238.56	11,788.00	66.87	66.10	-76.98	-3,501.17	923.68	1,354.68	1,224.35	130.33	10.394		
15,600.00	12,092.00	15,288.56	11,788.00	67.43	66.66	-76.98	-3,551.17	923.81	1,354.67	1,223.25	131.43	10.307		
15,650.00	12,092.00	15,338.56	11,788.00	67.99	67.23	-76.98	-3,601.17	923.95	1,354.67	1,222.13	132.54	10.221		
15,700.00	12,092.00	15,388.56	11,788.00	68.56	67.80	-76.98	-3,651.17	924.08	1,354.67	1,221.02	133.65	10.136		
15,750.00	12,092.00	15,438.56	11,788.00	69.13	68.38	-76.98	-3,701.17	924.21	1,354.67	1,219.89	134.78	10.051		
15,800.00	12,092.00	15,488.56	11,788.00	69.70	68.96	-76.98	-3,751.17	924.35	1,354.67	1,218.77	135.90	9.968		
15,850.00	12,092.00	15,538.56	11,788.00	70.27	69.54	-76.98	-3,801.17	924.48	1,354.67	1,217.63	137.04	9.885		
15,900.00	12,092.00	15,588.56	11,788.00	70.85	70.12	-76.98	-3,851.17	924.61	1,354.67	1,216.49	138.18	9.804		
15,950.00	12,092.00	15,638.56	11,788.00	71.43	70.70	-76.98	-3,901.17	924.74	1,354.67	1,215.35	139.32	9.723		
16,000.00	12,092.00	15,688.56	11,788.00	72.01	71.29	-76.98	-3,951.17	924.88	1,354.67	1,214.20	140.47	9.644		
16,050.00	12,092.00	15,738.56	11,788.00	72.59	71.88	-76.98	-4,001.17	925.01	1,354.67	1,213.04	141.63	9.565		
16,100.00	12,092.00	15,788.56	11,788.00	73.18	72.48	-76.98	-4,051.17	925.14	1,354.67	1,211.88	142.79	9.487		
16,150.00	12,092.00	15,838.56	11,788.00	73.77	73.07	-76.98	-4,101.17	925.27	1,354.67	1,210.71	143.95	9.411		
16,200.00	12,092.00	15,888.56	11,788.00	74.36	73.67	-76.98	-4,151.17	925.41	1,354.66	1,209.55	145.12	9.335		
16,250.00	12,092.00	15,938.56	11,788.00	74.96	74.27	-76.98	-4,201.17	925.54	1,354.66	1,208.37	146.29	9.260		
16,300.00	12,092.00	15,988.56	11,788.00	75.55	74.87	-76.98	-4,251.17	925.67	1,354.66	1,207.19	147.47	9.186		
16,350.00	12,092.00	16,038.56	11,788.00	76.16	75.48	-76.98	-4,301.17	925.81	1,354.66	1,206.01	148.65	9.113		
16,400.00	12,092.00	16,088.56	11,788.00	76.76	76.08	-76.98	-4,351.17	925.94	1,354.66	1,204.82	149.84	9.041		
16,450.00	12,092.00	16,138.56	11,788.00	77.36	76.69	-76.98	-4,401.17	926.07	1,354.66	1,203.63	151.03	8.969		
16,500.00	12,092.00	16,188.56	11,788.00	77.96	77.30	-76.98	-4,451.17	926.20	1,354.66	1,202.44	152.22	8.899		
16,550.00	12,092.00	16,238.56	11,788.00	78.57	77.91	-76.98	-4,501.17	926.34	1,354.66	1,201.23	153.43	8.829		
16,600.00	12,092.00	16,288.56	11,788.00	79.18	78.53	-76.98	-4,551.17	926.47	1,354.66	1,200.03	154.63	8.761		
16,650.00	12,092.00	16,338.56	11,788.00	79.80	79.15	-76.98	-4,601.17	926.60	1,354.66	1,198.82	155.83	8.693		
16,700.00	12,092.00	16,388.56	11,788.00	80.41	79.76	-76.98	-4,651.17	926.73	1,354.66	1,197.61	157.04	8.626		
16,750.00	12,092.00	16,438.56	11,788.00	81.02	80.38	-76.98	-4,701.17	926.87	1,354.66	1,196.40	158.26	8.560		
16,800.00	12,092.00	16,488.56	11,788.00	81.64	81.01	-76.98	-4,751.17	927.00	1,354.65	1,195.18	159.47	8.494		
16,850.00	12,092.00	16,538.56	11,788.00	82.26	81.63	-76.98	-4,801.17	927.13	1,354.65	1,193.96	160.70	8.430		
16,900.00	12,092.00	16,588.56	11,788.00	82.88	82.26	-76.98	-4,851.17	927.27	1,354.65	1,192.73	161.92	8.366		
16,950.00	12,092.00	16,638.56	11,788.00	83.50	82.88	-76.98	-4,901.17	927.40	1,354.65	1,191.50	163.15	8.303		
17,000.00	12,092.00	16,688.56	11,788.00	84.13	83.51	-76.98	-4,951.17	927.53	1,354.65	1,190.27	164.38	8.241		
17,050.00	12,092.00	16,738.56	11,788.00	84.75	84.14	-76.98	-5,001.17	927.66	1,354.65	1,189.04	165.61	8.180		
17,100.00	12,092.00	16,788.56	11,788.00	85.38	84.77	-76.98	-5,051.17	927.80	1,354.65	1,187.80	166.85	8.119		
17,150.00	12,092.00	16,838.56	11,788.00	86.01	85.41	-76.98	-5,101.17	927.93	1,354.65	1,186.56	168.09	8.059		
17,200.00	12,092.00	16,888.56	11,788.00	86.64	86.04	-76.98	-5,151.17	928.06	1,354.65	1,185.32	169.33	8.000		
17,250.00	12,092.00	16,938.56	11,788.00	87.27	86.68	-76.98	-5,201.17	928.20	1,354.65	1,184.07	170.58	7.941		
17,300.00	12,092.00	16,988.56	11,788.00	87.91	87.32	-76.98	-5,251.17	928.33	1,354.65	1,182.82	171.83	7.884		
17,350.00	12,092.00	17,038.56	11,788.00	88.54	87.95	-76.98	-5,301.17	928.46	1,354.65	1,181.57	173.08	7.827		
17,400.00	12,092.00	17,088.56	11,788.00	89.18	88.60	-76.98	-5,351.17	928.59	1,354.64	1,180.31	174.33	7.770		
17,450.00	12,092.00	17,138.56	11,788.00	89.82	89.24	-76.98	-5,401.17	928.73	1,354.64	1,179.05	175.59	7.715		
17,500.00	12,092.00	17,188.56	11,788.00	90.45	89.88	-76.98	-5,451.17	928.86	1,354.64	1,177.79	176.85	7.660		
17,550.00	12,092.00	17,238.56	11,788.00	91.10	90.52	-76.98	-5,501.17	928.99	1,354.64	1,176.53	178.11	7.606		
17,600.00	12,092.00	17,288.56	11,788.00	91.74	91.17	-76.98	-5,551.17	929.12	1,354.64	1,175.27	179.38	7.552		
17,650.00	12,092.00	17,338.56	11,788.00	92.38	91.82	-76.98	-5,601.17	929.26	1,354.64	1,174.00	180.64	7.499		
17,700.00	12,092.00	17,388.56	11,788.00	93.02	92.46	-76.98	-5,651.17	929.39	1,354.64	1,172.73	181.91	7.447		
17,750.00	12,092.00	17,438.56	11,788.00	93.67	93.11	-76.98	-5,701.17	929.52	1,354.64	1,171.45	183.18	7.395		
17,800.00	12,092.00	17,488.56	11,788.00	94.32	93.76	-76.98	-5,751.17	929.66	1,354.64	1,170.18	184.46	7.344		
17,850.00	12,092.00	17,538.56	11,788.00	94.96	94.42	-76.98	-5,801.17	929.79	1,354.64	1,168.90	185.73	7.293		
17,900.00	12,092.00	17,588.56	11,788.00	95.61	95.07	-76.98	-5,851.17	929.92	1,354.64	1,167.62	187.01	7.244		
17,950.00	12,092.00	17,638.56	11,788.00	96.26	95.72	-76.98	-5,901.16	930.05	1,354.64	1,166.34	188.29	7.194		
18,000.00	12,092.00	17,688.56	11,788.00	96.91	96.38	-76.98	-5,951.16	930.19	1,354.63	1,165.06	189.58	7.146		
18,050.00	12,092.00	17,738.56	11,788.00	97.57	97.03	-76.98	-6,001.16	930.32	1,354.63	1,163.77	190.86	7.097		
18,100.00	12,092.00	17,788.56	11,788.00	98.22	97.69	-76.98	-6,051.16	930.45	1,354.63	1,162.49	192.15	7.050		

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)				
18,150.00	12,092.00	17,838.56	11,788.00	98.87	98.35	-76.98	-6,101.16	930.59	1,354.63	1,161.20	193.44	7.003		
18,200.00	12,092.00	17,888.56	11,788.00	99.53	99.00	-76.98	-6,151.16	930.72	1,354.63	1,159.91	194.73	6.957		
18,250.00	12,092.00	17,938.56	11,788.00	100.19	99.66	-76.98	-6,201.16	930.85	1,354.63	1,158.61	196.02	6.911		
18,300.00	12,092.00	17,988.56	11,788.00	100.84	100.32	-76.98	-6,251.16	930.98	1,354.63	1,157.32	197.31	6.865		
18,350.00	12,092.00	18,038.56	11,788.00	101.50	100.99	-76.98	-6,301.16	931.12	1,354.63	1,156.02	198.61	6.821		
18,400.00	12,092.00	18,088.56	11,788.00	102.16	101.65	-76.98	-6,351.16	931.25	1,354.63	1,154.72	199.91	6.776		
18,450.00	12,092.00	18,138.56	11,788.00	102.82	102.31	-76.98	-6,401.16	931.38	1,354.63	1,153.42	201.21	6.732		
18,500.00	12,092.00	18,188.56	11,788.00	103.48	102.98	-76.98	-6,451.16	931.51	1,354.63	1,152.12	202.51	6.689		
18,550.00	12,092.00	18,238.56	11,788.00	104.14	103.64	-76.98	-6,501.16	931.65	1,354.63	1,150.81	203.81	6.646		
18,600.00	12,092.00	18,288.56	11,788.00	104.81	104.31	-76.98	-6,551.16	931.78	1,354.62	1,149.51	205.12	6.604		
18,650.00	12,092.00	18,338.56	11,788.00	105.47	104.97	-76.97	-6,601.16	931.91	1,354.62	1,148.20	206.42	6.562		
18,700.00	12,092.00	18,388.56	11,788.00	106.13	105.64	-76.97	-6,651.16	932.05	1,354.62	1,146.89	207.73	6.521		
18,750.00	12,092.00	18,438.56	11,788.00	106.80	106.31	-76.97	-6,701.16	932.18	1,354.62	1,145.58	209.04	6.480		
18,800.00	12,092.00	18,488.56	11,788.00	107.46	106.98	-76.97	-6,751.16	932.31	1,354.62	1,144.27	210.35	6.440		
18,850.00	12,092.00	18,538.56	11,788.00	108.13	107.65	-76.97	-6,801.16	932.44	1,354.62	1,142.96	211.66	6.400		
18,900.00	12,092.00	18,588.56	11,788.00	108.80	108.32	-76.97	-6,851.16	932.58	1,354.62	1,141.64	212.98	6.360		
18,950.00	12,092.00	18,638.56	11,788.00	109.47	108.99	-76.97	-6,901.16	932.71	1,354.62	1,140.32	214.29	6.321		
19,000.00	12,092.00	18,688.56	11,788.00	110.14	109.66	-76.97	-6,951.16	932.84	1,354.62	1,139.01	215.61	6.283		
19,050.00	12,092.00	18,738.56	11,788.00	110.81	110.33	-76.97	-7,001.16	932.98	1,354.62	1,137.69	216.93	6.244		
19,100.00	12,092.00	18,788.56	11,788.00	111.48	111.01	-76.97	-7,051.16	933.11	1,354.62	1,136.37	218.25	6.207		
19,150.00	12,092.00	18,838.56	11,788.00	112.15	111.68	-76.97	-7,101.16	933.24	1,354.62	1,135.04	219.57	6.169		
19,200.00	12,092.00	18,888.56	11,788.00	112.82	112.35	-76.97	-7,151.16	933.37	1,354.61	1,133.72	220.89	6.132		
19,250.00	12,092.00	18,938.56	11,788.00	113.49	113.03	-76.97	-7,201.16	933.51	1,354.61	1,132.40	222.22	6.096		
19,300.00	12,092.00	18,988.56	11,788.00	114.16	113.71	-76.97	-7,251.16	933.64	1,354.61	1,131.07	223.54	6.060		
19,350.00	12,092.00	19,038.56	11,788.00	114.84	114.38	-76.97	-7,301.16	933.77	1,354.61	1,129.74	224.87	6.024		
19,400.00	12,092.00	19,088.56	11,788.00	115.51	115.06	-76.97	-7,351.16	933.90	1,354.61	1,128.42	226.20	5.989		
19,450.00	12,092.00	19,138.56	11,788.00	116.19	115.74	-76.97	-7,401.16	934.04	1,354.61	1,127.09	227.52	5.954		
19,500.00	12,092.00	19,188.56	11,788.00	116.86	116.41	-76.97	-7,451.16	934.17	1,354.61	1,125.76	228.85	5.919		
19,550.00	12,092.00	19,238.56	11,788.00	117.54	117.09	-76.97	-7,501.16	934.30	1,354.61	1,124.42	230.19	5.885		
19,600.00	12,092.00	19,288.56	11,788.00	118.22	117.77	-76.97	-7,551.16	934.44	1,354.61	1,123.09	231.52	5.851		
19,650.00	12,092.00	19,338.56	11,788.00	118.90	118.45	-76.97	-7,601.16	934.57	1,354.61	1,121.76	232.85	5.817		
19,700.00	12,092.00	19,388.56	11,788.00	119.57	119.13	-76.97	-7,651.16	934.70	1,354.61	1,120.42	234.18	5.784		
19,750.00	12,092.00	19,438.56	11,788.00	120.25	119.81	-76.97	-7,701.16	934.83	1,354.61	1,119.08	235.52	5.752		
19,800.00	12,092.00	19,488.56	11,788.00	120.93	120.50	-76.97	-7,751.16	934.97	1,354.60	1,117.75	236.86	5.719		
19,850.00	12,092.00	19,538.56	11,788.00	121.61	121.18	-76.97	-7,801.16	935.10	1,354.60	1,116.41	238.20	5.687		
19,900.00	12,092.00	19,588.56	11,788.00	122.29	121.86	-76.97	-7,851.16	935.23	1,354.60	1,115.07	239.53	5.655		
19,950.00	12,092.00	19,638.56	11,788.00	122.97	122.54	-76.97	-7,901.16	935.36	1,354.60	1,113.73	240.87	5.624		
20,000.00	12,092.00	19,688.56	11,788.00	123.65	123.23	-76.97	-7,951.16	935.50	1,354.60	1,112.39	242.21	5.593		
20,050.00	12,092.00	19,738.56	11,788.00	124.34	123.91	-76.97	-8,001.16	935.63	1,354.60	1,111.04	243.56	5.562		
20,100.00	12,092.00	19,788.56	11,788.00	125.02	124.60	-76.97	-8,051.16	935.76	1,354.60	1,109.70	244.90	5.531		
20,150.00	12,092.00	19,838.56	11,788.00	125.70	125.28	-76.97	-8,101.16	935.90	1,354.60	1,108.36	246.24	5.501		
20,200.00	12,092.00	19,888.56	11,788.00	126.38	125.97	-76.97	-8,151.16	936.03	1,354.60	1,107.01	247.59	5.471		
20,250.00	12,092.00	19,938.56	11,788.00	127.07	126.65	-76.97	-8,201.16	936.16	1,354.60	1,105.66	248.93	5.442		
20,300.00	12,092.00	19,988.56	11,788.00	127.75	127.34	-76.97	-8,251.16	936.29	1,354.60	1,104.32	250.28	5.412		
20,350.00	12,092.00	20,038.56	11,788.00	128.44	128.03	-76.97	-8,301.16	936.43	1,354.60	1,102.97	251.63	5.383		
20,400.00	12,092.00	20,088.56	11,788.00	129.12	128.71	-76.97	-8,351.16	936.56	1,354.59	1,101.62	252.97	5.355		
20,450.00	12,092.00	20,138.56	11,788.00	129.81	129.40	-76.97	-8,401.16	936.69	1,354.59	1,100.27	254.32	5.326		
20,500.00	12,092.00	20,188.56	11,788.00	130.49	130.09	-76.97	-8,451.16	936.83	1,354.59	1,098.92	255.67	5.298		
20,550.00	12,092.00	20,238.56	11,788.00	131.18	130.78	-76.97	-8,501.16	936.96	1,354.59	1,097.57	257.02	5.270		
20,600.00	12,092.00	20,288.56	11,788.00	131.87	131.47	-76.97	-8,551.16	937.09	1,354.59	1,096.22	258.38	5.243		
20,650.00	12,092.00	20,338.56	11,788.00	132.56	132.16	-76.97	-8,601.16	937.22	1,354.59	1,094.86	259.73	5.215		
20,700.00	12,092.00	20,388.56	11,788.00	133.24	132.85	-76.97	-8,651.16	937.36	1,354.59	1,093.51	261.08	5.188		

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 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			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
20,750.00	12,092.00	20,438.56	11,788.00	133.93	133.54	-76.97	-8,701.16	937.49	1,354.59	1,092.15	262.44	5.162	
20,800.00	12,092.00	20,488.56	11,788.00	134.62	134.23	-76.97	-8,751.15	937.62	1,354.59	1,090.80	263.79	5.135	
20,850.00	12,092.00	20,538.56	11,788.00	135.31	134.92	-76.97	-8,801.15	937.75	1,354.59	1,089.44	265.15	5.109	
20,900.00	12,092.00	20,588.56	11,788.00	136.00	135.61	-76.97	-8,851.15	937.89	1,354.59	1,088.08	266.50	5.083	
20,950.00	12,092.00	20,638.56	11,788.00	136.69	136.30	-76.97	-8,901.15	938.02	1,354.59	1,086.73	267.86	5.057	
21,000.00	12,092.00	20,688.56	11,788.00	137.38	136.99	-76.97	-8,951.15	938.15	1,354.58	1,085.37	269.22	5.032	
21,050.00	12,092.00	20,738.56	11,788.00	138.07	137.69	-76.97	-9,001.15	938.29	1,354.58	1,084.01	270.58	5.006	
21,100.00	12,092.00	20,788.56	11,788.00	138.76	138.38	-76.97	-9,051.15	938.42	1,354.58	1,082.65	271.93	4.981	Alert
21,150.00	12,092.00	20,838.56	11,788.00	139.45	139.07	-76.97	-9,101.15	938.55	1,354.58	1,081.29	273.29	4.956	Alert
21,200.00	12,092.00	20,888.56	11,788.00	140.14	139.77	-76.97	-9,151.15	938.68	1,354.58	1,079.93	274.65	4.932	Alert
21,250.00	12,092.00	20,938.56	11,788.00	140.84	140.46	-76.97	-9,201.15	938.82	1,354.58	1,078.56	276.02	4.908	Alert
21,300.00	12,092.00	20,988.56	11,788.00	141.53	141.15	-76.97	-9,251.15	938.95	1,354.58	1,077.20	277.38	4.884	Alert
21,350.00	12,092.00	21,038.56	11,788.00	142.22	141.85	-76.97	-9,301.15	939.08	1,354.58	1,075.84	278.74	4.860	Alert
21,400.00	12,092.00	21,088.56	11,788.00	142.91	142.54	-76.97	-9,351.15	939.22	1,354.58	1,074.47	280.10	4.836	Alert
21,450.00	12,092.00	21,138.56	11,788.00	143.61	143.24	-76.97	-9,401.15	939.35	1,354.58	1,073.11	281.47	4.813	Alert
21,500.00	12,092.00	21,188.56	11,788.00	144.30	143.93	-76.97	-9,451.15	939.48	1,354.58	1,071.74	282.83	4.789	Alert
21,550.00	12,092.00	21,238.56	11,788.00	145.00	144.63	-76.97	-9,501.15	939.61	1,354.58	1,070.38	284.20	4.766	Alert
21,600.00	12,092.00	21,288.56	11,788.00	145.69	145.33	-76.97	-9,551.15	939.75	1,354.57	1,069.01	285.56	4.744	Alert
21,650.00	12,092.00	21,338.56	11,788.00	146.39	146.02	-76.97	-9,601.15	939.88	1,354.57	1,067.64	286.93	4.721	Alert
21,700.00	12,092.00	21,388.56	11,788.00	147.08	146.72	-76.97	-9,651.15	940.01	1,354.57	1,066.28	288.30	4.699	Alert
21,750.00	12,092.00	21,438.56	11,788.00	147.78	147.42	-76.97	-9,701.15	940.14	1,354.57	1,064.91	289.66	4.676	Alert
21,800.00	12,092.00	21,488.56	11,788.00	148.47	148.11	-76.97	-9,751.15	940.28	1,354.57	1,063.54	291.03	4.654	Alert
21,850.00	12,092.00	21,538.56	11,788.00	149.17	148.81	-76.97	-9,801.15	940.41	1,354.57	1,062.17	292.40	4.633	Alert
21,900.00	12,092.00	21,588.56	11,788.00	149.86	149.51	-76.97	-9,851.15	940.54	1,354.57	1,060.80	293.77	4.611	Alert
21,950.00	12,092.00	21,638.56	11,788.00	150.56	150.21	-76.97	-9,901.15	940.68	1,354.57	1,059.43	295.14	4.590	Alert
22,000.00	12,092.00	21,688.56	11,788.00	151.26	150.91	-76.97	-9,951.15	940.81	1,354.57	1,058.06	296.51	4.568	Alert
22,050.00	12,092.00	21,738.56	11,788.00	151.95	151.60	-76.97	-10,001.15	940.94	1,354.57	1,056.69	297.88	4.547	Alert
22,100.00	12,092.00	21,788.56	11,788.00	152.65	152.30	-76.97	-10,051.15	941.07	1,354.57	1,055.31	299.25	4.527	Alert
22,150.00	12,092.00	21,838.56	11,788.00	153.35	153.00	-76.97	-10,101.15	941.21	1,354.57	1,053.94	300.62	4.506	Alert
22,200.00	12,092.00	21,888.56	11,788.00	154.05	153.70	-76.97	-10,151.15	941.34	1,354.56	1,052.57	302.00	4.485	Alert
22,250.00	12,092.00	21,938.56	11,788.00	154.75	154.40	-76.97	-10,201.15	941.47	1,354.56	1,051.19	303.37	4.465	Alert
22,300.00	12,092.00	21,988.56	11,788.00	155.44	155.10	-76.97	-10,251.15	941.61	1,354.56	1,049.82	304.74	4.445	Alert
22,350.00	12,092.00	22,038.56	11,788.00	156.14	155.80	-76.97	-10,301.15	941.74	1,354.56	1,048.45	306.12	4.425	Alert
22,379.08	12,092.00	22,067.64	11,788.00	156.55	156.21	-76.97	-10,330.23	941.82	1,354.56	1,047.65	306.92	4.413	Alert, SF
22,381.87	12,092.00	22,062.69	11,788.00	156.59	156.14	-76.97	-10,325.28	941.80	1,354.58	1,047.70	306.88	4.414	Alert

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 232H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: O-MWD+IFR1												Offset Well Error:	0.50 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	3.30	-3.30	0.50	0.50	-168.70	-150.18	-30.02	153.15				
50.00	50.00	46.70	46.70	0.50	0.50	-168.70	-150.18	-30.02	153.15	152.15	1.01	152.249	
100.00	100.00	103.30	96.70	0.52	0.52	-168.70	-150.18	-30.02	153.15	152.11	1.04	147.444	
150.00	150.00	146.70	146.70	0.59	0.58	-168.70	-150.18	-30.02	153.15	151.98	1.17	130.421	
200.00	200.00	203.30	196.70	0.70	0.71	-168.70	-150.18	-30.02	153.15	151.74	1.41	108.421	
250.00	250.00	246.70	246.70	0.84	0.83	-168.70	-150.18	-30.02	153.15	151.49	1.67	91.929	
300.00	300.00	303.30	296.70	0.99	1.00	-168.70	-150.18	-30.02	153.15	151.17	1.98	77.159	
350.00	350.00	346.70	346.70	1.15	1.13	-168.70	-150.18	-30.02	153.15	150.87	2.28	67.161	
400.00	400.00	403.30	396.70	1.31	1.32	-168.70	-150.18	-30.02	153.15	150.52	2.63	58.252	
450.00	450.00	446.70	446.70	1.48	1.47	-168.70	-150.18	-30.02	153.15	150.21	2.94	52.065	
500.00	500.00	503.30	496.70	1.65	1.66	-168.70	-150.18	-30.02	153.15	149.85	3.30	46.361	
550.00	550.00	546.70	546.70	1.82	1.81	-168.70	-150.18	-30.02	153.15	149.53	3.62	42.261	
600.00	600.00	603.30	596.70	1.99	2.00	-168.70	-150.18	-30.02	153.15	149.16	3.99	38.358	
650.00	650.00	646.70	646.70	2.16	2.15	-168.70	-150.18	-30.02	153.15	148.83	4.32	35.471	
700.00	700.00	703.30	696.70	2.34	2.35	-168.70	-150.18	-30.02	153.15	148.46	4.69	32.654	
750.00	750.00	746.70	746.70	2.51	2.50	-168.70	-150.18	-30.02	153.15	148.13	5.02	30.522	
800.00	800.00	803.30	796.70	2.69	2.70	-168.70	-150.18	-30.02	153.15	147.76	5.39	28.399	
850.00	850.00	846.70	846.70	2.87	2.86	-168.70	-150.18	-30.02	153.15	147.43	5.72	26.765	
900.00	900.00	903.30	896.70	3.04	3.06	-168.70	-150.18	-30.02	153.15	147.05	6.10	25.112	
950.00	950.00	946.70	946.70	3.22	3.21	-168.70	-150.18	-30.02	153.15	146.72	6.43	23.821	
1,000.00	1,000.00	1,003.30	996.70	3.40	3.41	-168.70	-150.18	-30.02	153.15	146.34	6.81	22.499	
1,050.00	1,050.00	1,046.70	1,046.70	3.58	3.56	-168.70	-150.18	-30.02	153.15	146.01	7.14	21.455	
1,100.00	1,100.00	1,103.30	1,096.70	3.75	3.76	-168.70	-150.18	-30.02	153.15	145.63	7.52	20.374	
1,150.00	1,150.00	1,146.70	1,146.70	3.93	3.92	-168.70	-150.18	-30.02	153.15	145.30	7.85	19.512	
1,200.00	1,200.00	1,203.30	1,196.70	4.11	4.12	-168.70	-150.18	-30.02	153.15	144.92	8.23	18.613	
1,250.00	1,250.00	1,246.70	1,246.70	4.29	4.27	-168.70	-150.18	-30.02	153.15	144.59	8.56	17.891	
1,300.00	1,300.00	1,303.30	1,296.70	4.46	4.48	-168.70	-150.18	-30.02	153.15	144.21	8.94	17.131	
1,350.00	1,350.00	1,346.70	1,346.70	4.64	4.63	-168.70	-150.18	-30.02	153.15	143.88	9.27	16.516	
1,400.00	1,400.00	1,403.30	1,396.70	4.82	4.83	-168.70	-150.18	-30.02	153.15	143.50	9.65	15.866	
1,450.00	1,450.00	1,446.70	1,446.70	5.00	4.99	-168.70	-150.18	-30.02	153.15	143.17	9.99	15.337	
1,500.00	1,500.00	1,503.30	1,496.70	5.18	5.19	-168.70	-150.18	-30.02	153.15	142.79	10.37	14.774	
1,550.00	1,550.00	1,546.70	1,546.70	5.36	5.34	-168.70	-150.18	-30.02	153.15	142.45	10.70	14.314	
1,600.00	1,600.00	1,603.30	1,596.70	5.53	5.55	-168.70	-150.18	-30.02	153.15	142.07	11.08	13.822	
1,650.00	1,650.00	1,646.70	1,646.70	5.71	5.70	-168.70	-150.18	-30.02	153.15	141.74	11.41	13.418	
1,700.00	1,700.00	1,703.30	1,696.70	5.89	5.90	-168.70	-150.18	-30.02	153.15	141.36	11.79	12.985	
1,750.00	1,750.00	1,746.70	1,746.70	6.07	6.06	-168.70	-150.18	-30.02	153.15	141.02	12.13	12.628	
1,800.00	1,800.00	1,803.30	1,796.70	6.25	6.26	-168.70	-150.18	-30.02	153.15	140.64	12.51	12.244	
1,850.00	1,850.00	1,846.70	1,846.70	6.43	6.42	-168.70	-150.18	-30.02	153.15	140.31	12.84	11.925	
1,900.00	1,900.00	1,903.30	1,896.70	6.61	6.62	-168.70	-150.18	-30.02	153.15	139.93	13.22	11.582	
1,950.00	1,950.00	1,946.70	1,946.70	6.78	6.77	-168.70	-150.18	-30.02	153.15	139.59	13.56	11.297	
2,000.00	2,000.00	2,003.30	1,996.70	6.96	6.98	-168.70	-150.18	-30.02	153.15	139.21	13.94	10.988	
2,050.00	2,050.00	2,046.70	2,046.70	7.14	7.13	-168.70	-150.18	-30.02	153.15	138.88	14.27	10.731	
2,100.00	2,100.00	2,103.30	2,096.70	7.32	7.33	-168.70	-150.18	-30.02	153.15	138.50	14.65	10.451	
2,150.00	2,150.00	2,146.70	2,146.70	7.50	7.49	-168.70	-150.18	-30.02	153.15	138.16	14.99	10.218	
2,200.00	2,200.00	2,203.30	2,196.70	7.68	7.69	-168.70	-150.18	-30.02	153.15	137.78	15.37	9.965	
2,250.00	2,250.00	2,246.70	2,246.70	7.86	7.85	-168.70	-150.18	-30.02	153.15	137.45	15.70	9.753	
2,300.00	2,300.00	2,303.30	2,296.70	8.04	8.05	-168.70	-150.18	-30.02	153.15	137.07	16.08	9.522	
2,350.00	2,350.00	2,346.70	2,346.70	8.22	8.20	-168.70	-150.18	-30.02	153.15	136.73	16.42	9.328	
2,400.00	2,400.00	2,403.30	2,396.70	8.39	8.41	-168.70	-150.18	-30.02	153.15	136.35	16.80	9.116	
2,450.00	2,450.00	2,446.70	2,446.70	8.57	8.56	-168.70	-150.18	-30.02	153.15	136.02	17.13	8.938	
2,500.00	2,500.00	2,503.30	2,496.70	8.75	8.76	-168.70	-150.18	-30.02	153.15	135.64	17.52	8.744	
2,550.00	2,550.00	2,546.70	2,546.70	8.93	8.92	-168.70	-150.18	-30.02	153.15	135.30	17.85	8.580	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+IFR1													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbore Centre		Between	Between	Minimum	Separation		
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
2,600.00	2,600.00	2,603.30	2,596.70	9.11	9.12	-168.70	-150.18	-30.02	153.15	134.92	18.23	8.400		
2,650.00	2,650.00	2,646.70	2,646.70	9.29	9.28	-168.70	-150.18	-30.02	153.15	134.59	18.57	8.249		
2,700.00	2,700.00	2,703.30	2,696.70	9.47	9.48	-168.70	-150.18	-30.02	153.15	134.20	18.95	8.083		
2,750.00	2,750.00	2,746.70	2,746.70	9.65	9.64	-168.70	-150.18	-30.02	153.15	133.87	19.28	7.943		
2,800.00	2,800.00	2,803.30	2,796.70	9.83	9.84	-168.70	-150.18	-30.02	153.15	133.49	19.66	7.789		
2,850.00	2,850.00	2,846.70	2,846.70	10.00	9.99	-168.70	-150.18	-30.02	153.15	133.15	20.00	7.658		
2,900.00	2,900.00	2,903.30	2,896.70	10.18	10.20	-168.70	-150.18	-30.02	153.15	132.77	20.38	7.515		
2,950.00	2,950.00	2,946.70	2,946.70	10.36	10.35	-168.70	-150.18	-30.02	153.15	132.44	20.71	7.394		
3,000.00	3,000.00	3,003.30	2,996.70	10.54	10.55	-168.70	-150.18	-30.02	153.15	132.06	21.10	7.260		
3,050.00	3,050.00	3,046.70	3,046.70	10.72	10.71	-168.70	-150.18	-30.02	153.15	131.72	21.43	7.147		
3,100.00	3,100.00	3,103.30	3,096.70	10.90	10.91	-168.70	-150.18	-30.02	153.15	131.34	21.81	7.021		
3,150.00	3,150.00	3,146.70	3,146.70	11.08	11.07	-168.70	-150.18	-30.02	153.15	131.00	22.15	6.915		
3,200.00	3,200.00	3,203.30	3,196.70	11.26	11.27	-168.70	-150.18	-30.02	153.15	130.62	22.53	6.798		
3,250.00	3,250.00	3,246.70	3,246.70	11.44	11.43	-168.70	-150.18	-30.02	153.15	130.29	22.86	6.699		
3,300.00	3,300.00	3,303.30	3,296.70	11.62	11.63	-168.70	-150.18	-30.02	153.15	129.91	23.24	6.589		
3,350.00	3,350.00	3,346.70	3,346.70	11.80	11.78	-168.70	-150.18	-30.02	153.15	129.57	23.58	6.495		
3,400.00	3,400.00	3,403.30	3,396.70	11.97	11.99	-168.70	-150.18	-30.02	153.15	129.19	23.96	6.392		
3,450.00	3,450.00	3,446.70	3,446.70	12.15	12.14	-168.70	-150.18	-30.02	153.15	128.86	24.30	6.304		
3,500.00	3,500.00	3,503.30	3,496.70	12.33	12.34	-168.70	-150.18	-30.02	153.15	128.47	24.68	6.206		
3,550.00	3,550.00	3,546.70	3,546.70	12.51	12.50	-168.70	-150.18	-30.02	153.15	128.14	25.01	6.123		
3,600.00	3,600.00	3,603.30	3,596.70	12.69	12.70	-168.70	-150.18	-30.02	153.15	127.76	25.39	6.031		
3,650.00	3,650.00	3,646.70	3,646.70	12.87	12.86	-168.70	-150.18	-30.02	153.15	127.42	25.73	5.953		
3,700.00	3,700.00	3,703.30	3,696.70	13.05	13.06	-168.70	-150.18	-30.02	153.15	127.04	26.11	5.866		
3,750.00	3,750.00	3,746.70	3,746.70	13.23	13.22	-168.70	-150.18	-30.02	153.15	126.71	26.44	5.791		
3,800.00	3,800.00	3,803.30	3,796.70	13.41	13.42	-168.70	-150.18	-30.02	153.15	126.33	26.83	5.709		
3,850.00	3,850.00	3,846.70	3,846.70	13.59	13.57	-168.70	-150.18	-30.02	153.15	125.99	27.16	5.639		
3,900.00	3,900.00	3,903.30	3,896.70	13.77	13.78	-168.70	-150.18	-30.02	153.15	125.61	27.54	5.561		
3,950.00	3,950.00	3,946.70	3,946.70	13.94	13.93	-168.70	-150.18	-30.02	153.15	125.27	27.88	5.494		
4,000.00	4,000.00	3,996.70	3,996.70	14.12	14.11	-168.70	-150.18	-30.02	153.15	124.92	28.24	5.424		
4,050.00	4,050.00	4,048.15	4,048.15	14.30	14.30	-103.26	-149.93	-30.08	152.99	124.40	28.60	5.350		
4,100.00	4,099.99	4,099.70	4,099.70	14.48	14.48	-103.44	-149.13	-30.28	152.45	123.50	28.95	5.266		
4,150.00	4,149.97	4,151.24	4,151.21	14.65	14.66	-103.74	-147.76	-30.62	151.53	122.22	29.30	5.171		
4,200.00	4,199.94	4,202.04	4,201.97	14.83	14.85	-104.17	-145.92	-31.08	150.29	120.63	29.66	5.068		
4,250.00	4,249.88	4,252.00	4,251.90	15.00	15.03	-104.79	-144.03	-31.55	149.12	119.11	30.01	4.969 Alert		
4,300.00	4,299.79	4,301.94	4,301.80	15.18	15.20	-105.62	-142.14	-32.02	148.11	117.75	30.36	4.878 Alert		
4,350.00	4,349.68	4,351.88	4,351.70	15.35	15.38	-106.53	-140.25	-32.49	147.20	116.49	30.72	4.792 Alert		
4,400.00	4,399.58	4,401.82	4,401.60	15.53	15.56	-107.46	-138.36	-32.96	146.33	115.26	31.07	4.710 Alert		
4,450.00	4,449.47	4,451.75	4,451.50	15.70	15.74	-108.40	-136.47	-33.43	145.50	114.07	31.42	4.630 Alert		
4,500.00	4,499.37	4,501.69	4,501.40	15.88	15.92	-109.34	-134.58	-33.90	144.71	112.93	31.78	4.553 Alert		
4,550.00	4,549.26	4,551.62	4,551.29	16.05	16.10	-110.30	-132.69	-34.37	143.95	111.82	32.13	4.480 Alert		
4,600.00	4,599.16	4,601.56	4,601.19	16.23	16.28	-111.27	-130.80	-34.84	143.24	110.75	32.49	4.409 Alert		
4,650.00	4,649.06	4,651.50	4,651.09	16.41	16.45	-112.24	-128.91	-35.31	142.57	109.72	32.84	4.341 Alert		
4,700.00	4,698.95	4,701.43	4,700.99	16.58	16.63	-113.23	-127.02	-35.78	141.94	108.74	33.20	4.275 Alert		
4,750.00	4,748.85	4,751.37	4,750.89	16.76	16.81	-114.22	-125.13	-36.25	141.35	107.80	33.55	4.213 Alert		
4,800.00	4,798.74	4,801.30	4,800.79	16.94	16.99	-115.22	-123.24	-36.72	140.81	106.90	33.91	4.152 Alert		
4,850.00	4,848.64	4,851.24	4,850.68	17.11	17.17	-116.23	-121.36	-37.19	140.31	106.04	34.26	4.095 Alert		
4,900.00	4,898.53	4,901.18	4,900.58	17.29	17.35	-117.25	-119.47	-37.66	139.85	105.23	34.62	4.039 Alert		
4,950.00	4,948.43	4,951.11	4,950.48	17.47	17.53	-118.27	-117.58	-38.13	139.44	104.46	34.98	3.987 Alert		
5,000.00	4,998.33	5,001.05	5,000.38	17.65	17.71	-119.30	-115.69	-38.60	139.07	103.74	35.33	3.936 Alert		
5,050.00	5,048.22	5,050.98	5,050.28	17.82	17.88	-120.33	-113.80	-39.07	138.74	103.06	35.69	3.888 Alert		
5,100.00	5,098.12	5,100.92	5,100.17	18.00	18.06	-121.37	-111.91	-39.54	138.47	102.42	36.04	3.842 Alert		
5,150.00	5,148.01	5,150.86	5,150.07	18.18	18.24	-122.41	-110.02	-40.01	138.24	101.84	36.40	3.798 Alert		

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 232H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: O-MWD+IFR1													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,200.00	5,197.91	5,200.79	5,199.97	18.36	18.42	-123.45	-108.13	-40.48	138.05	101.29	36.76	3.756 Alert		
5,250.00	5,247.80	5,250.73	5,249.87	18.53	18.60	-124.50	-106.24	-40.95	137.91	100.80	37.11	3.716 Alert		
5,300.00	5,297.70	5,300.66	5,299.77	18.71	18.78	-125.55	-104.35	-41.42	137.82	100.35	37.47	3.678 Alert		
5,350.00	5,347.60	5,350.60	5,349.66	18.89	18.96	-126.60	-102.46	-41.88	137.77	99.94	37.83	3.642 Alert		
5,375.90	5,373.45	5,376.47	5,375.52	18.98	19.05	-127.14	-101.48	-42.13	137.76	99.75	38.01	3.624 Alert, CC		
5,400.00	5,397.49	5,400.54	5,399.56	19.07	19.14	-127.65	-100.57	-42.35	137.77	99.59	38.18	3.608 Alert		
5,450.00	5,447.39	5,450.47	5,449.46	19.25	19.31	-128.70	-98.68	-42.82	137.81	99.28	38.54	3.576 Alert		
5,500.00	5,497.28	5,500.41	5,499.36	19.43	19.49	-129.75	-96.80	-43.29	137.91	99.01	38.89	3.546 Alert		
5,550.00	5,547.18	5,550.34	5,549.26	19.61	19.67	-130.79	-94.91	-43.76	138.04	98.79	39.25	3.517 Alert		
5,600.00	5,597.07	5,600.28	5,599.15	19.78	19.85	-131.84	-93.02	-44.23	138.23	98.62	39.61	3.490 Alert		
5,650.00	5,646.97	5,650.22	5,649.05	19.96	20.03	-132.88	-91.13	-44.70	138.46	98.49	39.96	3.465 Alert		
5,700.00	5,696.87	5,700.15	5,698.95	20.14	20.21	-133.92	-89.24	-45.17	138.73	98.41	40.32	3.441 Alert		
5,750.00	5,746.76	5,750.09	5,748.85	20.32	20.39	-134.95	-87.35	-45.64	139.06	98.38	40.68	3.419 Alert, ES		
5,800.00	5,796.66	5,800.02	5,798.75	20.50	20.57	-135.98	-85.46	-46.11	139.42	98.39	41.03	3.398 Alert		
5,850.00	5,846.55	5,849.96	5,848.65	20.68	20.75	-137.00	-83.57	-46.58	139.83	98.44	41.39	3.378 Alert		
5,900.00	5,896.45	5,899.90	5,898.54	20.86	20.93	-138.02	-81.68	-47.05	140.29	98.54	41.75	3.361 Alert		
5,950.00	5,946.35	5,949.83	5,948.44	21.04	21.10	-139.02	-79.79	-47.52	140.79	98.69	42.10	3.344 Alert		
6,000.00	5,996.24	6,000.23	5,998.34	21.22	21.28	-140.03	-77.90	-47.99	141.33	98.87	42.46	3.329 Alert		
6,050.00	6,046.14	6,049.71	6,048.24	21.40	21.46	-141.02	-76.01	-48.46	141.92	99.10	42.81	3.315 Alert		
6,100.00	6,096.03	6,099.64	6,098.14	21.58	21.64	-142.01	-74.12	-48.93	142.54	99.37	43.17	3.302 Alert		
6,150.00	6,145.93	6,149.58	6,148.03	21.76	21.82	-142.98	-72.24	-49.40	143.21	99.69	43.53	3.290 Alert		
6,200.00	6,195.82	6,200.49	6,197.93	21.94	22.00	-143.95	-70.35	-49.87	143.93	100.04	43.89	3.280 Alert		
6,250.00	6,245.72	6,249.45	6,247.83	22.12	22.18	-144.91	-68.46	-50.34	144.68	100.44	44.24	3.270 Alert		
6,300.00	6,295.62	6,300.61	6,297.73	22.30	22.36	-145.85	-66.57	-50.81	145.47	100.87	44.60	3.262 Alert		
6,350.00	6,345.51	6,349.32	6,347.63	22.48	22.54	-146.79	-64.68	-51.28	146.30	101.35	44.95	3.255 Alert		
6,400.00	6,395.41	6,400.74	6,397.52	22.66	22.72	-147.72	-62.79	-51.75	147.17	101.86	45.31	3.248 Alert		
6,450.00	6,445.30	6,449.19	6,447.42	22.84	22.89	-148.63	-60.90	-52.22	148.08	102.42	45.66	3.243 Alert		
6,500.00	6,495.20	6,500.87	6,497.32	23.02	23.08	-149.53	-59.01	-52.69	149.03	103.00	46.03	3.238 Alert		
6,550.00	6,545.09	6,549.07	6,547.22	23.20	23.25	-150.43	-57.12	-53.16	150.01	103.63	46.38	3.235 Alert		
6,600.00	6,594.99	6,601.00	6,597.12	23.38	23.44	-151.31	-55.23	-53.63	151.03	104.29	46.74	3.231 Alert		
6,650.00	6,644.89	6,648.94	6,647.01	23.56	23.61	-152.17	-53.34	-54.10	152.08	104.99	47.09	3.230 Alert		
6,700.00	6,694.78	6,701.13	6,696.91	23.74	23.80	-153.03	-51.45	-54.57	153.17	105.72	47.45	3.228 Alert		
6,750.00	6,744.68	6,748.81	6,746.81	23.92	23.97	-153.87	-49.56	-55.04	154.29	106.49	47.80	3.228 Alert		
6,800.00	6,794.57	6,801.25	6,796.71	24.10	24.16	-154.71	-47.67	-55.51	155.44	107.28	48.16	3.227 Alert, SF		
6,850.00	6,844.47	6,848.68	6,846.61	24.28	24.33	-155.52	-45.79	-55.98	156.63	108.12	48.51	3.229 Alert		
6,900.00	6,894.36	6,901.38	6,896.51	24.46	24.52	-156.33	-43.90	-56.45	157.85	108.97	48.88	3.230 Alert		
6,950.00	6,944.26	6,948.55	6,946.40	24.65	24.69	-157.12	-42.01	-56.92	159.10	109.88	49.22	3.232 Alert		
7,000.00	6,994.16	7,001.51	6,996.30	24.83	24.88	-157.91	-40.12	-57.39	160.38	110.79	49.59	3.234 Alert		
7,050.00	7,044.05	7,048.43	7,046.20	25.01	25.04	-158.68	-38.23	-57.86	161.69	111.75	49.94	3.238 Alert		
7,100.00	7,093.95	7,101.64	7,096.10	25.19	25.23	-159.43	-36.34	-58.33	163.03	112.72	50.30	3.241 Alert		
7,150.00	7,143.84	7,148.30	7,146.00	25.37	25.40	-160.18	-34.45	-58.80	164.39	113.74	50.65	3.246 Alert		
7,200.00	7,193.74	7,201.77	7,195.89	25.55	25.59	-160.91	-32.56	-59.27	165.78	114.77	51.02	3.250 Alert		
7,250.00	7,243.63	7,248.17	7,245.79	25.73	25.76	-161.63	-30.67	-59.74	167.20	115.84	51.36	3.256 Alert		
7,300.00	7,293.53	7,301.89	7,295.69	25.91	25.95	-162.33	-28.78	-60.21	168.65	116.92	51.73	3.260 Alert		
7,350.00	7,343.43	7,348.04	7,345.59	26.09	26.12	-163.03	-26.89	-60.68	170.12	118.05	52.07	3.267 Alert		
7,400.00	7,393.32	7,402.02	7,395.49	26.28	26.31	-163.71	-25.00	-61.15	171.61	119.17	52.44	3.272 Alert		
7,450.00	7,443.22	7,447.91	7,445.38	26.46	26.48	-164.38	-23.11	-61.61	173.13	120.35	52.78	3.280 Alert		
7,500.00	7,493.11	7,502.15	7,495.28	26.64	26.67	-165.04	-21.23	-62.08	174.68	121.52	53.16	3.286 Alert		
7,550.00	7,543.01	7,547.79	7,545.18	26.82	26.84	-165.69	-19.34	-62.55	176.24	122.75	53.50	3.294 Alert		
7,600.00	7,592.90	7,602.28	7,595.08	27.00	27.03	-166.33	-17.45	-63.02	177.83	123.96	53.87	3.301 Alert		
7,650.00	7,642.80	7,647.66	7,644.98	27.18	27.19	-166.95	-15.56	-63.49	179.44	125.23	54.21	3.310 Alert		
7,700.00	7,692.70	7,702.41	7,694.87	27.36	27.39	-167.57	-13.67	-63.96	181.07	126.49	54.58	3.317 Alert		

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

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 232H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: O-MWD+IFR1												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,750.00	7,742.59	7,747.53	7,744.77	27.55	27.55	-168.17	-11.78	-64.43	182.72	127.80	54.92	3.327	Alert
7,800.00	7,792.49	7,802.53	7,794.67	27.73	27.75	-168.76	-9.89	-64.90	184.39	129.09	55.30	3.335	Alert
7,850.00	7,842.38	7,847.40	7,844.57	27.91	27.91	-169.34	-8.00	-65.37	186.08	130.45	55.63	3.345	Alert
7,900.00	7,892.28	7,902.66	7,894.47	28.09	28.11	-169.92	-6.11	-65.84	187.79	131.78	56.01	3.353	Alert
7,950.00	7,942.17	7,947.28	7,944.37	28.27	28.27	-170.48	-4.22	-66.31	189.52	133.17	56.35	3.363	Alert
8,000.00	7,992.07	7,997.21	7,994.26	28.45	28.45	-171.03	-2.33	-66.78	191.26	134.56	56.70	3.373	Alert
8,050.00	8,041.97	8,047.15	8,044.16	28.64	28.63	-171.57	-0.44	-67.25	193.02	135.96	57.06	3.383	Alert
8,100.00	8,091.86	8,102.92	8,094.06	28.82	28.83	-172.10	1.45	-67.72	194.80	137.36	57.44	3.392	Alert
8,150.00	8,141.76	8,147.02	8,143.96	29.00	28.99	-172.62	3.34	-68.19	196.60	138.82	57.77	3.403	Alert
8,200.00	8,191.65	8,203.04	8,193.86	29.18	29.19	-173.13	5.22	-68.66	198.41	140.26	58.15	3.412	Alert
8,250.00	8,241.55	8,246.89	8,243.75	29.36	29.34	-173.63	7.11	-69.13	200.24	141.75	58.49	3.424	Alert
8,300.00	8,291.44	8,303.17	8,293.65	29.54	29.55	-174.13	9.00	-69.60	202.08	143.21	58.87	3.433	Alert
8,350.00	8,341.34	8,346.76	8,343.55	29.73	29.70	-174.61	10.89	-70.07	203.93	144.73	59.20	3.445	Alert
8,400.00	8,391.24	8,403.30	8,393.45	29.91	29.91	-175.09	12.78	-70.54	205.81	146.23	59.58	3.454	Alert
8,450.00	8,441.13	8,446.64	8,443.35	30.09	30.06	-175.55	14.67	-71.01	207.69	147.78	59.91	3.466	Alert
8,500.00	8,491.03	8,503.43	8,493.24	30.27	30.27	-176.01	16.56	-71.48	209.59	149.29	60.30	3.476	Alert
8,550.00	8,540.92	8,546.51	8,543.14	30.45	30.42	-176.46	18.45	-71.95	211.50	150.87	60.63	3.489	Alert
8,600.00	8,590.82	8,603.56	8,593.04	30.64	30.62	-176.90	20.34	-72.42	213.43	152.42	61.01	3.498	Alert
8,650.00	8,640.71	8,646.38	8,642.94	30.82	30.78	-177.34	22.23	-72.89	215.36	154.02	61.34	3.511	Alert
8,700.00	8,690.61	8,703.68	8,692.84	31.00	30.98	-177.76	24.12	-73.36	217.31	155.59	61.73	3.521	Alert
8,750.00	8,740.51	8,746.25	8,742.73	31.18	31.14	-178.18	26.01	-73.83	219.27	157.22	62.06	3.533	Alert
8,800.00	8,790.40	8,803.81	8,792.63	31.37	31.34	-178.59	27.90	-74.30	221.25	158.80	62.44	3.543	Alert
8,850.00	8,840.30	8,846.12	8,842.53	31.55	31.50	-179.00	29.78	-74.77	223.23	160.46	62.77	3.556	Alert
8,900.00	8,890.19	8,896.06	8,892.43	31.73	31.67	-179.40	31.67	-75.24	225.22	162.10	63.13	3.568	Alert
8,950.00	8,940.09	8,944.51	8,940.85	31.91	31.85	-179.73	33.31	-75.64	227.36	163.88	63.48	3.582	Alert
9,000.00	8,989.98	8,992.64	8,988.97	32.09	32.02	-179.95	34.35	-75.90	229.90	166.07	63.83	3.602	Alert
9,050.00	9,039.88	9,040.75	9,037.07	32.28	32.19	179.96	34.80	-76.01	232.82	168.65	64.17	3.628	Alert
9,100.00	9,089.78	9,109.85	9,086.48	32.46	32.44	179.96	34.82	-76.02	236.04	171.44	64.60	3.654	Alert
9,150.00	9,139.67	9,140.05	9,136.37	32.64	32.55	179.96	34.82	-76.02	239.26	174.38	64.88	3.688	Alert
9,200.00	9,189.57	9,189.94	9,186.27	32.82	32.73	179.96	34.82	-76.02	242.49	177.25	65.24	3.717	Alert
9,250.00	9,239.46	9,239.84	9,236.16	33.01	32.91	179.96	34.82	-76.02	245.72	180.12	65.60	3.746	Alert
9,300.00	9,289.36	9,310.27	9,286.06	33.19	33.16	179.96	34.82	-76.02	248.95	182.92	66.03	3.770	Alert
9,350.00	9,339.25	9,339.63	9,335.95	33.37	33.28	179.96	34.82	-76.02	252.17	185.86	66.31	3.803	Alert
9,400.00	9,389.15	9,389.53	9,385.85	33.55	33.44	179.96	34.82	-76.02	255.40	188.73	66.67	3.831	Alert
9,450.00	9,439.05	9,433.74	9,430.05	33.74	33.59	-179.88	34.03	-76.02	259.02	192.05	66.97	3.868	Alert
9,500.00	9,488.94	9,475.25	9,471.39	33.92	33.73	-179.15	30.36	-76.01	264.13	196.94	67.19	3.931	Alert
9,550.00	9,538.84	9,515.87	9,511.47	34.10	33.85	-177.91	23.88	-75.99	270.90	203.56	67.33	4.023	Alert
9,600.00	9,588.73	9,555.22	9,549.78	34.28	33.97	-176.25	14.91	-75.97	279.48	212.10	67.38	4.148	Alert
9,650.00	9,638.63	9,593.01	9,585.91	34.47	34.08	-174.30	3.83	-75.94	290.08	222.77	67.31	4.309	Alert
9,700.00	9,688.52	9,629.03	9,619.60	34.65	34.19	-172.18	-8.92	-75.90	302.87	235.77	67.10	4.514	Alert
9,750.00	9,738.42	9,663.14	9,650.69	34.83	34.28	-169.98	-22.92	-75.86	317.98	251.26	66.72	4.766	Alert
9,800.00	9,788.32	9,695.26	9,679.17	35.01	34.36	-167.79	-37.77	-75.82	335.51	269.32	66.19	5.069	
9,850.00	9,838.21	9,725.38	9,705.07	35.20	34.43	-165.66	-53.13	-75.78	355.45	289.94	65.51	5.426	
9,900.00	9,888.11	9,750.00	9,725.62	35.38	34.50	-163.90	-66.68	-75.75	377.79	313.27	64.52	5.855	
9,950.00	9,938.00	9,779.77	9,749.67	35.56	34.57	-161.77	-84.22	-75.70	402.35	338.53	63.82	6.305	
10,000.00	9,987.90	9,800.00	9,765.48	35.74	34.62	-160.32	-96.85	-75.66	429.11	366.47	62.64	6.851	
10,050.00	10,037.79	9,826.89	9,785.77	35.93	34.68	-158.43	-114.47	-75.62	457.78	395.90	61.88	7.398	
10,100.00	10,087.69	9,850.00	9,802.55	36.11	34.74	-156.84	-130.38	-75.57	488.32	427.33	60.99	8.007	
10,150.00	10,137.59	9,867.59	9,814.87	36.29	34.78	-155.65	-142.92	-75.54	520.50	460.60	59.90	8.690	
10,200.00	10,187.48	9,885.81	9,827.23	36.48	34.82	-154.44	-156.31	-75.50	554.18	495.24	58.94	9.402	
10,250.00	10,237.38	9,900.00	9,836.55	36.66	34.85	-153.52	-167.01	-75.47	589.24	531.35	57.89	10.178	
10,300.00	10,287.27	9,918.53	9,848.33	36.84	34.89	-152.35	-181.32	-75.44	625.50	568.34	57.16	10.943	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 232H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+IFR1												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,350.00	10,337.17	9,933.24	9,857.34	37.02	34.93	-151.45	-192.94	-75.40	662.86	606.52	56.34	11.766	
10,400.00	10,387.06	9,950.00	9,867.24	37.21	34.96	-150.44	-206.46	-75.37	701.22	645.52	55.70	12.589	
10,450.00	10,436.96	9,950.00	9,867.24	37.39	34.96	-150.44	-206.46	-75.37	740.59	686.13	54.47	13.598	
10,500.00	10,486.86	9,971.75	9,879.49	37.57	35.01	-149.18	-224.43	-75.32	780.49	726.29	54.20	14.400	
10,550.00	10,536.75	9,982.97	9,885.54	37.76	35.03	-148.55	-233.88	-75.29	821.25	767.66	53.59	15.324	
10,600.00	10,586.65	10,000.00	9,894.37	37.94	35.07	-147.61	-248.45	-75.25	862.73	809.47	53.26	16.197	
10,650.00	10,636.54	10,000.00	9,894.37	38.12	35.07	-147.61	-248.45	-75.25	904.69	852.28	52.41	17.262	
10,700.00	10,686.44	10,000.00	9,894.37	38.30	35.07	-147.61	-248.45	-75.25	947.43	895.78	51.65	18.343	
10,750.00	10,736.33	10,021.40	9,904.84	38.49	35.11	-146.48	-267.11	-75.20	990.25	938.62	51.63	19.180	
10,800.00	10,786.23	10,029.65	9,908.69	38.67	35.12	-146.06	-274.40	-75.18	1,033.72	982.48	51.24	20.174	
10,850.00	10,836.13	10,050.00	9,917.74	38.85	35.16	-145.04	-292.63	-75.13	1,077.80	1,026.56	51.24	21.034	
10,900.00	10,886.02	10,050.00	9,917.74	39.04	35.16	-145.04	-292.63	-75.13	1,121.88	1,071.16	50.71	22.122	
10,950.00	10,935.92	10,050.00	9,917.74	39.22	35.16	-145.28	-292.63	-75.13	1,166.42	1,116.18	50.25	23.214	
11,000.00	10,985.84	10,050.00	9,917.74	39.40	35.16	-146.13	-292.63	-75.13	1,211.22	1,161.40	49.82	24.310	
11,050.00	11,035.80	10,050.00	9,917.74	39.58	35.16	-146.98	-292.63	-75.13	1,256.18	1,206.74	49.44	25.408	
11,100.00	11,085.78	10,070.98	9,926.38	39.76	35.20	-146.79	-311.75	-75.08	1,300.74	1,251.19	49.55	26.251	
11,150.00	11,135.77	10,076.92	9,928.70	39.94	35.21	-147.33	-317.22	-75.07	1,345.61	1,296.28	49.34	27.273	
11,200.00	11,185.77	10,082.65	9,930.88	40.11	35.22	-146.89	-322.51	-75.05	1,390.54	1,341.40	49.14	28.297	
11,250.00	11,235.77	10,100.00	9,937.16	40.29	35.25	-147.71	-338.69	-75.01	1,435.84	1,386.64	49.20	29.184	
11,300.00	11,285.77	10,100.00	9,937.16	40.46	35.25	-147.71	-338.69	-75.01	1,481.10	1,432.16	48.94	30.263	

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 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: O-MWD+HDGM													Offset Well Error: 0.50 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
5,550.00	5,547.18	5,716.47	5,711.60	19.61	20.17	-26.33	-4.19	-1,570.71	1,498.13	1,458.68	39.45	37.972	
5,600.00	5,597.07	5,765.74	5,760.57	19.78	20.35	-26.38	-3.86	-1,565.27	1,489.74	1,449.94	39.80	37.430	
5,650.00	5,646.97	5,815.02	5,809.54	19.96	20.52	-26.43	-3.53	-1,559.82	1,481.34	1,441.19	40.15	36.898	
5,700.00	5,696.87	5,864.29	5,858.51	20.14	20.70	-26.48	-3.20	-1,554.38	1,472.94	1,432.45	40.49	36.374	
5,750.00	5,746.76	5,913.56	5,907.48	20.32	20.88	-26.53	-2.87	-1,548.94	1,464.54	1,423.70	40.84	35.859	
5,800.00	5,796.66	5,962.84	5,956.45	20.50	21.05	-26.58	-2.54	-1,543.49	1,456.15	1,414.96	41.19	35.353	
5,850.00	5,846.55	6,012.11	6,005.42	20.68	21.23	-26.63	-2.21	-1,538.05	1,447.75	1,406.22	41.54	34.855	
5,900.00	5,896.45	6,061.39	6,054.40	20.86	21.41	-26.68	-1.88	-1,532.61	1,439.36	1,397.48	41.88	34.365	
5,950.00	5,946.35	6,110.66	6,103.37	21.04	21.59	-26.74	-1.55	-1,527.16	1,430.97	1,388.74	42.23	33.883	
6,000.00	5,996.24	6,159.93	6,152.34	21.22	21.77	-26.79	-1.22	-1,521.72	1,422.58	1,380.00	42.58	33.409	
6,050.00	6,046.14	6,209.21	6,201.31	21.40	21.94	-26.84	-0.89	-1,516.28	1,414.19	1,371.26	42.93	32.942	
6,100.00	6,096.03	6,258.48	6,250.28	21.58	22.12	-26.90	-0.56	-1,510.83	1,405.80	1,362.52	43.28	32.483	
6,150.00	6,145.93	6,307.75	6,299.25	21.76	22.30	-26.95	-0.23	-1,505.39	1,397.42	1,353.79	43.63	32.031	
6,200.00	6,195.82	6,357.03	6,348.22	21.94	22.48	-27.01	0.10	-1,499.95	1,389.03	1,345.05	43.98	31.586	
6,250.00	6,245.72	6,406.30	6,397.19	22.12	22.66	-27.06	0.43	-1,494.50	1,380.65	1,336.32	44.33	31.148	
6,300.00	6,295.62	6,455.58	6,446.16	22.30	22.84	-27.12	0.76	-1,489.06	1,372.26	1,327.59	44.68	30.716	
6,350.00	6,345.51	6,504.85	6,495.13	22.48	23.02	-27.18	1.09	-1,483.62	1,363.88	1,318.86	45.03	30.292	
6,400.00	6,395.41	6,554.12	6,544.11	22.66	23.20	-27.24	1.42	-1,478.17	1,355.50	1,310.13	45.37	29.873	
6,450.00	6,445.30	6,603.40	6,593.08	22.84	23.38	-27.30	1.75	-1,472.73	1,347.12	1,301.40	45.73	29.461	
6,500.00	6,495.20	6,652.67	6,642.05	23.02	23.56	-27.36	2.08	-1,467.29	1,338.75	1,292.67	46.08	29.056	
6,550.00	6,545.09	6,701.94	6,691.02	23.20	23.74	-27.42	2.41	-1,461.84	1,330.37	1,283.94	46.43	28.656	
6,600.00	6,594.99	6,751.22	6,739.99	23.38	23.92	-27.48	2.74	-1,456.40	1,322.00	1,275.22	46.78	28.262	
6,650.00	6,644.89	6,800.49	6,788.96	23.56	24.10	-27.54	3.07	-1,450.96	1,313.62	1,266.50	47.13	27.874	
6,700.00	6,694.78	6,849.76	6,837.93	23.74	24.28	-27.61	3.40	-1,445.51	1,305.25	1,257.77	47.48	27.492	
6,750.00	6,744.68	6,899.04	6,886.90	23.92	24.47	-27.67	3.73	-1,440.07	1,296.88	1,249.05	47.83	27.115	
6,800.00	6,794.57	6,948.31	6,935.87	24.10	24.65	-27.73	4.05	-1,434.62	1,288.51	1,240.33	48.18	26.744	
6,850.00	6,844.47	7,002.41	6,984.84	24.28	24.85	-27.80	4.38	-1,429.18	1,280.15	1,231.60	48.55	26.368	
6,900.00	6,894.36	7,046.86	7,033.82	24.46	25.01	-27.87	4.71	-1,423.74	1,271.78	1,222.90	48.88	26.017	
6,950.00	6,944.26	7,096.13	7,082.79	24.65	25.19	-27.93	5.04	-1,418.29	1,263.42	1,214.18	49.23	25.661	
7,000.00	6,994.16	7,145.41	7,131.76	24.83	25.37	-28.00	5.37	-1,412.85	1,255.06	1,205.47	49.59	25.310	
7,050.00	7,044.05	7,205.32	7,180.73	25.01	25.60	-28.07	5.70	-1,407.41	1,246.70	1,196.72	49.98	24.946	
7,100.00	7,093.95	7,243.95	7,229.70	25.19	25.74	-28.14	6.03	-1,401.96	1,238.34	1,188.05	50.29	24.624	
7,150.00	7,143.84	7,306.77	7,278.67	25.37	25.97	-28.21	6.36	-1,396.52	1,229.98	1,179.29	50.69	24.264	
7,200.00	7,193.74	7,342.50	7,327.64	25.55	26.10	-28.28	6.69	-1,391.08	1,221.63	1,170.63	51.00	23.956	
7,250.00	7,243.63	7,391.78	7,376.61	25.73	26.29	-28.36	7.02	-1,385.63	1,213.28	1,161.93	51.35	23.629	
7,300.00	7,293.53	7,441.05	7,425.58	25.91	26.47	-28.43	7.35	-1,380.19	1,204.93	1,153.23	51.70	23.306	
7,350.00	7,343.43	7,509.68	7,474.55	26.09	26.72	-28.51	7.68	-1,374.75	1,196.58	1,144.45	52.12	22.957	
7,400.00	7,393.32	7,539.60	7,523.53	26.28	26.84	-28.58	8.01	-1,369.30	1,188.23	1,135.82	52.41	22.673	
7,450.00	7,443.22	7,588.87	7,572.50	26.46	27.02	-28.66	8.34	-1,363.86	1,179.89	1,127.13	52.76	22.364	
7,500.00	7,493.11	7,638.14	7,621.47	26.64	27.20	-28.74	8.67	-1,358.42	1,171.54	1,118.43	53.11	22.058	
7,550.00	7,543.01	7,687.42	7,670.44	26.82	27.39	-28.82	9.00	-1,352.97	1,163.20	1,109.74	53.47	21.756	
7,600.00	7,592.90	7,736.69	7,719.41	27.00	27.57	-28.90	9.33	-1,347.53	1,154.87	1,101.05	53.82	21.458	
7,650.00	7,642.80	7,785.97	7,768.38	27.18	27.75	-28.98	9.66	-1,342.09	1,146.53	1,092.36	54.17	21.164	
7,700.00	7,692.70	7,835.24	7,817.35	27.36	27.94	-29.06	9.99	-1,336.64	1,138.20	1,083.67	54.53	20.874	
7,750.00	7,742.59	7,884.51	7,866.32	27.55	28.12	-29.15	10.32	-1,331.20	1,129.87	1,074.99	54.88	20.588	
7,800.00	7,792.49	7,933.79	7,915.29	27.73	28.31	-29.23	10.65	-1,325.76	1,121.54	1,066.30	55.23	20.305	
7,850.00	7,842.38	7,983.06	7,964.26	27.91	28.49	-29.32	10.98	-1,320.31	1,113.21	1,057.62	55.59	20.026	
7,900.00	7,892.28	8,032.33	8,013.24	28.09	28.67	-29.41	11.31	-1,314.87	1,104.89	1,048.95	55.94	19.750	
7,950.00	7,942.17	8,081.61	8,062.21	28.27	28.86	-29.49	11.64	-1,309.43	1,096.57	1,040.27	56.30	19.478	
8,000.00	7,992.07	8,130.88	8,111.18	28.45	29.04	-29.59	11.97	-1,303.98	1,088.25	1,031.60	56.65	19.210	
8,050.00	8,041.97	8,180.15	8,160.15	28.64	29.23	-29.68	12.30	-1,298.54	1,079.93	1,022.93	57.01	18.944	
8,100.00	8,091.86	8,229.43	8,209.12	28.82	29.41	-29.77	12.62	-1,293.10	1,071.62	1,014.26	57.36	18.682	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
8,150.00	8,141.76	8,278.70	8,258.09	29.00	29.60	-29.87	12.95	-1,287.65	1,063.31	1,005.59	57.71	18.423	
8,200.00	8,191.65	8,327.98	8,307.06	29.18	29.78	-29.96	13.28	-1,282.21	1,055.00	996.93	58.07	18.168	
8,250.00	8,241.55	8,377.25	8,356.03	29.36	29.97	-30.06	13.61	-1,276.77	1,046.70	988.27	58.42	17.915	
8,300.00	8,291.44	8,426.52	8,405.00	29.54	30.15	-30.16	13.94	-1,271.32	1,038.40	979.62	58.78	17.666	
8,350.00	8,341.34	8,475.80	8,453.97	29.73	30.34	-30.26	14.27	-1,265.88	1,030.10	970.96	59.14	17.419	
8,400.00	8,391.24	8,525.07	8,502.95	29.91	30.52	-30.36	14.60	-1,260.44	1,021.80	962.31	59.49	17.176	
8,450.00	8,441.13	8,574.34	8,551.92	30.09	30.71	-30.47	14.93	-1,254.99	1,013.51	953.67	59.85	16.935	
8,500.00	8,491.03	8,623.62	8,600.89	30.27	30.89	-30.57	15.26	-1,249.55	1,005.22	945.02	60.20	16.698	
8,550.00	8,540.92	8,672.89	8,649.86	30.45	31.08	-30.68	15.59	-1,244.11	996.94	936.38	60.56	16.463	
8,600.00	8,590.82	8,722.17	8,698.83	30.64	31.26	-30.79	15.92	-1,238.66	988.66	927.74	60.91	16.231	
8,650.00	8,640.71	8,771.44	8,747.80	30.82	31.45	-30.90	16.25	-1,233.22	980.38	919.11	61.27	16.001	
8,700.00	8,690.61	8,820.71	8,796.77	31.00	31.63	-31.02	16.58	-1,227.78	972.10	910.48	61.62	15.775	
8,750.00	8,740.51	8,869.99	8,845.74	31.18	31.82	-31.13	16.91	-1,222.33	963.83	901.85	61.98	15.551	
8,800.00	8,790.40	8,919.26	8,894.71	31.37	32.01	-31.25	17.24	-1,216.89	955.57	893.23	62.34	15.329	
8,850.00	8,840.30	8,968.53	8,943.68	31.55	32.19	-31.37	17.57	-1,211.45	947.30	884.61	62.69	15.110	
8,900.00	8,890.19	9,017.81	8,992.66	31.73	32.38	-31.49	17.90	-1,206.00	939.05	876.00	63.05	14.894	
8,950.00	8,940.09	9,067.08	9,041.63	31.91	32.56	-31.61	18.23	-1,200.56	930.79	867.38	63.41	14.680	
9,000.00	8,989.98	9,116.36	9,090.60	32.09	32.75	-31.74	18.56	-1,195.12	922.54	858.78	63.76	14.468	
9,050.00	9,039.88	9,165.63	9,139.57	32.28	32.94	-31.87	18.89	-1,189.67	914.30	850.18	64.12	14.259	
9,100.00	9,089.78	9,214.90	9,188.54	32.46	33.12	-32.00	19.22	-1,184.23	906.05	841.58	64.48	14.052	
9,150.00	9,139.67	9,264.18	9,237.51	32.64	33.31	-32.13	19.55	-1,178.79	897.82	832.98	64.83	13.848	
9,200.00	9,189.57	9,313.45	9,286.48	32.82	33.49	-32.27	19.88	-1,173.34	889.59	824.39	65.19	13.646	
9,250.00	9,239.46	9,362.72	9,335.45	33.01	33.68	-32.40	20.21	-1,167.90	881.36	815.81	65.55	13.446	
9,300.00	9,289.36	9,412.00	9,384.42	33.19	33.87	-32.54	20.54	-1,162.46	873.14	807.23	65.91	13.248	
9,350.00	9,339.25	9,461.27	9,433.39	33.37	34.05	-32.69	20.87	-1,157.01	864.92	798.66	66.26	13.053	
9,400.00	9,389.15	9,510.54	9,482.37	33.55	34.24	-32.83	21.19	-1,151.57	856.71	790.09	66.62	12.859	
9,450.00	9,439.05	9,559.82	9,531.34	33.74	34.43	-32.98	21.52	-1,146.13	848.50	781.53	66.98	12.668	
9,500.00	9,488.94	9,609.09	9,580.31	33.92	34.61	-33.13	21.85	-1,140.68	840.30	772.97	67.34	12.479	
9,550.00	9,538.84	9,658.37	9,629.28	34.10	34.80	-33.29	22.18	-1,135.24	832.11	764.41	67.70	12.292	
9,600.00	9,588.73	9,707.64	9,678.25	34.28	34.99	-33.45	22.51	-1,129.80	823.92	755.87	68.05	12.107	
9,650.00	9,638.63	9,756.91	9,727.22	34.47	35.17	-33.61	22.84	-1,124.35	815.74	747.33	68.41	11.924	
9,700.00	9,688.52	9,806.19	9,776.19	34.65	35.36	-33.77	23.17	-1,118.91	807.56	738.79	68.77	11.743	
9,750.00	9,738.42	9,855.35	9,825.08	34.83	35.54	-33.93	23.48	-1,113.47	799.43	730.29	69.14	11.563	
9,800.00	9,788.32	9,893.23	9,862.75	35.01	35.69	-34.07	23.73	-1,109.70	791.72	722.21	69.51	11.390	
9,850.00	9,838.21	9,934.25	9,903.59	35.20	35.84	-34.20	23.96	-1,105.98	784.55	714.67	69.88	11.227	
9,900.00	9,888.11	9,975.39	9,944.60	35.38	35.99	-34.34	24.15	-1,102.69	777.91	707.66	70.25	11.074	
9,950.00	9,938.00	10,016.64	9,985.76	35.56	36.15	-34.48	24.33	-1,099.84	771.81	701.20	70.61	10.931	
10,000.00	9,987.90	10,058.01	10,027.05	35.74	36.30	-34.61	24.47	-1,097.42	766.24	695.28	70.96	10.798	
10,050.00	10,037.79	10,099.48	10,068.47	35.93	36.45	-34.74	24.59	-1,095.44	761.22	689.91	71.31	10.675	
10,100.00	10,087.69	10,141.03	10,110.00	36.11	36.59	-34.87	24.69	-1,093.92	756.74	685.09	71.65	10.561	
10,150.00	10,137.59	10,182.67	10,151.62	36.29	36.74	-35.00	24.75	-1,092.84	752.81	680.82	71.99	10.457	
10,200.00	10,187.48	10,224.38	10,193.32	36.48	36.89	-35.12	24.79	-1,092.21	749.42	677.10	72.32	10.363	
10,250.00	10,237.38	10,267.13	10,236.08	36.66	37.04	-35.25	24.80	-1,092.03	746.57	673.92	72.65	10.277	
10,300.00	10,287.27	10,317.03	10,285.97	36.84	37.21	-35.39	24.80	-1,092.03	743.93	670.93	73.00	10.190	
10,350.00	10,337.17	10,366.92	10,335.87	37.02	37.38	-35.53	24.80	-1,092.03	741.30	667.94	73.36	10.105	
10,400.00	10,387.06	10,416.82	10,385.76	37.21	37.55	-35.68	24.80	-1,092.03	738.68	664.96	73.72	10.021	
10,450.00	10,436.96	10,466.72	10,435.66	37.39	37.73	-35.83	24.80	-1,092.03	736.06	661.98	74.07	9.937	
10,500.00	10,486.86	10,516.61	10,485.56	37.57	37.90	-35.97	24.80	-1,092.03	733.44	659.01	74.43	9.854	
10,550.00	10,536.75	10,566.51	10,535.45	37.76	38.07	-36.12	24.80	-1,092.03	730.83	656.04	74.79	9.772	
10,600.00	10,586.65	10,616.32	10,584.26	37.94	38.24	-36.27	24.78	-1,092.03	728.23	653.09	75.14	9.692	
10,650.00	10,636.54	10,654.87	10,623.77	38.12	38.37	-36.52	23.13	-1,092.03	726.06	650.61	75.44	9.624	
10,700.00	10,686.44	10,693.86	10,662.52	38.30	38.50	-36.97	18.83	-1,092.02	724.64	648.91	75.73	9.569	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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: O-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,750.00	10,736.33	10,731.96	10,700.01	38.49	38.62	-37.60	12.10	-1,092.01	724.05	648.05	76.00	9.527		
10,757.34	10,743.66	10,737.46	10,705.38	38.51	38.63	-37.71	10.92	-1,092.01	724.04	648.00	76.03	9.523 CC, ES		
10,800.00	10,786.23	10,768.87	10,735.83	38.67	38.73	-38.40	3.21	-1,092.00	724.40	648.16	76.24	9.502		
10,850.00	10,836.13	10,804.36	10,769.66	38.85	38.84	-39.33	-7.49	-1,091.98	725.82	649.37	76.44	9.495		
10,900.00	10,886.02	10,838.24	10,801.29	39.04	38.94	-40.35	-19.64	-1,091.97	728.44	651.84	76.60	9.510		
10,950.00	10,935.92	10,870.42	10,830.60	39.22	39.03	-41.46	-32.89	-1,091.95	732.44	655.74	76.70	9.550		
11,000.00	10,985.84	10,900.00	10,856.86	39.40	39.11	-42.62	-46.51	-1,091.93	738.28	661.57	76.71	9.624		
11,050.00	11,035.80	10,929.73	10,882.50	39.58	39.19	-43.87	-61.54	-1,091.90	746.18	669.50	76.68	9.732		
11,100.00	11,085.78	10,956.90	10,905.23	39.76	39.26	-45.10	-76.43	-1,091.88	756.20	679.66	76.54	9.879		
11,150.00	11,135.77	10,982.48	10,925.96	39.94	39.32	-46.34	-91.41	-1,091.86	768.39	692.07	76.32	10.067		
11,200.00	11,185.77	11,000.00	10,939.76	40.11	39.36	-112.72	-102.20	-1,091.84	782.78	706.90	75.89	10.315		
11,250.00	11,235.77	11,029.02	10,961.88	40.29	39.43	-114.04	-120.98	-1,091.81	798.92	723.28	75.64	10.562		
11,300.00	11,285.77	11,050.00	10,977.26	40.46	39.48	-115.03	-135.25	-1,091.79	816.85	741.68	75.17	10.866		
11,350.00	11,335.77	11,069.69	10,991.22	40.64	39.52	-115.98	-149.14	-1,091.77	836.52	761.87	74.64	11.207		
11,400.00	11,385.77	11,088.04	11,003.78	40.81	39.56	-116.87	-162.51	-1,091.75	857.87	783.82	74.05	11.585		
11,450.00	11,435.77	11,100.00	11,011.74	40.99	39.58	-117.46	-171.44	-1,091.74	880.90	807.62	73.29	12.020		
11,500.00	11,485.77	11,121.20	11,025.38	41.17	39.62	-118.52	-187.66	-1,091.71	905.46	832.72	72.74	12.448		
11,550.00	11,535.77	11,136.28	11,034.71	41.34	39.66	59.98	-199.51	-1,091.70	931.45	859.42	72.03	12.931		
11,600.00	11,585.62	11,150.00	11,042.93	41.50	39.68	56.76	-210.50	-1,091.68	957.41	886.15	71.26	13.435		
11,650.00	11,634.97	11,167.52	11,053.04	41.65	39.72	53.65	-224.81	-1,091.66	982.69	912.12	70.56	13.926		
11,700.00	11,683.43	11,183.91	11,062.09	41.80	39.75	50.87	-238.47	-1,091.64	1,007.05	937.22	69.82	14.423		
11,750.00	11,730.64	11,200.00	11,070.60	41.95	39.78	48.38	-252.12	-1,091.62	1,030.28	961.21	69.07	14.917		
11,800.00	11,776.24	11,217.88	11,079.59	42.08	39.82	46.12	-267.57	-1,091.59	1,052.20	983.85	68.35	15.393		
11,850.00	11,819.89	11,235.35	11,087.92	42.20	39.85	44.14	-282.94	-1,091.57	1,072.65	1,005.01	67.64	15.858		
11,900.00	11,861.24	11,250.00	11,094.53	42.31	39.88	42.46	-296.00	-1,091.55	1,091.50	1,024.62	66.88	16.319		
11,950.00	11,899.99	11,271.08	11,103.46	42.40	39.92	40.91	-315.10	-1,091.52	1,108.59	1,042.30	66.29	16.724		
12,000.00	11,935.84	11,300.00	11,114.55	42.49	39.99	39.50	-341.80	-1,091.48	1,123.98	1,058.11	65.87	17.064		
12,050.00	11,968.52	11,300.00	11,114.55	42.56	39.99	38.63	-341.80	-1,091.48	1,137.24	1,072.30	64.94	17.512		
12,100.00	11,997.78	11,326.09	11,123.39	42.63	40.04	37.67	-366.35	-1,091.45	1,148.49	1,083.94	64.55	17.792		
12,150.00	12,023.39	11,350.00	11,130.50	42.69	40.10	36.94	-389.18	-1,091.41	1,157.76	1,093.60	64.16	18.044		
12,200.00	12,045.17	11,350.00	11,130.50	42.77	40.10	36.50	-389.18	-1,091.41	1,165.04	1,101.56	63.48	18.352		
12,250.00	12,062.94	11,382.10	11,138.54	42.86	40.18	36.09	-420.25	-1,091.37	1,169.79	1,106.45	63.34	18.468		
12,300.00	12,076.57	11,400.00	11,142.26	42.97	40.22	35.89	-437.76	-1,091.34	1,172.56	1,109.47	63.08	18.588		
12,350.00	12,085.96	11,419.67	11,145.72	43.07	40.27	35.85	-457.12	-1,091.31	1,173.12	1,110.19	62.92	18.643		
12,400.00	12,091.03	11,450.00	11,149.74	43.18	40.35	35.99	-487.18	-1,091.27	1,171.62	1,108.68	62.94	18.614		
12,450.00	12,092.00	11,450.00	11,149.74	43.30	40.35	36.14	-487.18	-1,091.27	1,167.88	1,105.06	62.82	18.590		
12,500.00	12,092.00	11,476.08	11,151.93	43.41	40.42	36.20	-513.16	-1,091.23	1,164.73	1,101.80	62.93	18.508		
12,550.00	12,092.00	11,500.00	11,152.89	43.55	40.49	36.23	-537.06	-1,091.19	1,162.99	1,099.94	63.05	18.446		
12,583.76	12,092.00	11,519.77	11,153.00	43.64	40.54	36.23	-539.48	-1,091.19	1,162.50	1,099.37	63.14	18.412		
12,600.00	12,092.00	11,518.66	11,153.00	43.68	40.54	36.23	-555.72	-1,091.16	1,162.52	1,099.34	63.17	18.402		
12,650.00	12,092.00	11,568.66	11,153.00	43.84	40.69	36.24	-605.72	-1,091.09	1,162.55	1,099.17	63.38	18.343		
12,700.00	12,092.00	11,618.66	11,153.00	44.00	40.85	36.24	-655.72	-1,091.01	1,162.59	1,098.99	63.59	18.281		
12,750.00	12,092.00	11,668.66	11,153.00	44.17	41.02	36.24	-705.72	-1,090.94	1,162.62	1,098.78	63.83	18.213		
12,800.00	12,092.00	11,718.66	11,153.00	44.35	41.20	36.24	-755.72	-1,090.86	1,162.65	1,098.57	64.08	18.143		
12,850.00	12,092.00	11,768.66	11,153.00	44.55	41.40	36.25	-805.72	-1,090.79	1,162.69	1,098.33	64.36	18.066		
12,900.00	12,092.00	11,818.66	11,153.00	44.75	41.60	36.25	-855.72	-1,090.71	1,162.72	1,098.09	64.64	17.988		
12,950.00	12,092.00	11,868.66	11,153.00	44.97	41.82	36.25	-905.72	-1,090.64	1,162.76	1,097.81	64.95	17.904		
13,000.00	12,092.00	11,918.66	11,153.00	45.19	42.05	36.25	-955.72	-1,090.56	1,162.79	1,097.53	65.26	17.818		
13,050.00	12,092.00	11,968.66	11,153.00	45.43	42.29	36.25	-1,005.72	-1,090.49	1,162.83	1,097.23	65.60	17.726		
13,100.00	12,092.00	12,018.66	11,153.00	45.67	42.54	36.26	-1,055.72	-1,090.41	1,162.86	1,096.92	65.94	17.634		
13,150.00	12,092.00	12,068.66	11,153.00	45.93	42.81	36.26	-1,105.72	-1,090.34	1,162.90	1,096.58	66.32	17.536		
13,200.00	12,092.00	12,118.66	11,153.00	46.19	43.08	36.26	-1,155.72	-1,090.26	1,162.93	1,096.24	66.69	17.437		

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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	Offset	Semi Major Axis		Distance								Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
13,250.00	12,092.00	12,168.66	11,153.00	46.47	43.36	36.26	-1,205.72	-1,090.19	1,162.97	1,095.87	67.09	17.334	
13,300.00	12,092.00	12,218.66	11,153.00	46.75	43.65	36.27	-1,255.72	-1,090.11	1,163.00	1,095.50	67.50	17.230	
13,350.00	12,092.00	12,268.66	11,153.00	47.05	43.96	36.27	-1,305.72	-1,090.04	1,163.04	1,095.11	67.93	17.121	
13,400.00	12,092.00	12,318.66	11,153.00	47.35	44.27	36.27	-1,355.72	-1,089.96	1,163.07	1,094.71	68.36	17.013	
13,450.00	12,092.00	12,368.66	11,153.00	47.67	44.59	36.27	-1,405.72	-1,089.89	1,163.11	1,094.28	68.82	16.900	
13,500.00	12,092.00	12,418.66	11,153.00	47.99	44.92	36.28	-1,455.72	-1,089.81	1,163.14	1,093.86	69.28	16.788	
13,550.00	12,092.00	12,468.66	11,153.00	48.32	45.27	36.28	-1,505.72	-1,089.74	1,163.17	1,093.41	69.77	16.672	
13,600.00	12,092.00	12,518.66	11,153.00	48.66	45.61	36.28	-1,555.72	-1,089.66	1,163.21	1,092.95	70.26	16.556	
13,650.00	12,092.00	12,568.66	11,153.00	49.01	45.97	36.28	-1,605.72	-1,089.59	1,163.24	1,092.48	70.77	16.438	
13,700.00	12,092.00	12,618.66	11,153.00	49.36	46.34	36.28	-1,655.72	-1,089.51	1,163.28	1,092.00	71.28	16.319	
13,750.00	12,092.00	12,668.66	11,153.00	49.73	46.72	36.29	-1,705.72	-1,089.44	1,163.31	1,091.50	71.82	16.198	
13,800.00	12,092.00	12,718.66	11,153.00	50.09	47.10	36.29	-1,755.72	-1,089.36	1,163.35	1,090.99	72.36	16.078	
13,850.00	12,092.00	12,768.66	11,153.00	50.48	47.49	36.29	-1,805.72	-1,089.29	1,163.38	1,090.47	72.91	15.956	
13,900.00	12,092.00	12,818.66	11,153.00	50.86	47.89	36.29	-1,855.72	-1,089.21	1,163.42	1,089.94	73.48	15.834	
13,950.00	12,092.00	12,868.66	11,153.00	51.26	48.30	36.30	-1,905.72	-1,089.14	1,163.45	1,089.39	74.06	15.710	
14,000.00	12,092.00	12,918.66	11,153.00	51.66	48.71	36.30	-1,955.72	-1,089.06	1,163.49	1,088.84	74.64	15.588	
14,050.00	12,092.00	12,968.66	11,153.00	52.07	49.13	36.30	-2,005.72	-1,088.99	1,163.52	1,088.28	75.24	15.463	
14,100.00	12,092.00	13,018.66	11,153.00	52.48	49.56	36.30	-2,055.72	-1,088.91	1,163.56	1,087.71	75.85	15.340	
14,150.00	12,092.00	13,068.66	11,153.00	52.90	50.00	36.31	-2,105.72	-1,088.84	1,163.59	1,087.12	76.47	15.216	
14,200.00	12,092.00	13,118.66	11,153.00	53.33	50.44	36.31	-2,155.72	-1,088.76	1,163.63	1,086.53	77.10	15.093	
14,250.00	12,092.00	13,168.66	11,153.00	53.77	50.89	36.31	-2,205.72	-1,088.69	1,163.66	1,085.92	77.74	14.968	
14,300.00	12,092.00	13,218.66	11,153.00	54.21	51.34	36.31	-2,255.72	-1,088.61	1,163.70	1,085.31	78.39	14.846	
14,350.00	12,092.00	13,268.66	11,153.00	54.66	51.80	36.32	-2,305.72	-1,088.54	1,163.73	1,084.68	79.05	14.722	
14,400.00	12,092.00	13,318.66	11,153.00	55.11	52.27	36.32	-2,355.72	-1,088.46	1,163.76	1,084.05	79.71	14.600	
14,450.00	12,092.00	13,368.66	11,153.00	55.57	52.75	36.32	-2,405.72	-1,088.39	1,163.80	1,083.41	80.39	14.477	
14,500.00	12,092.00	13,418.66	11,153.00	56.03	53.22	36.32	-2,455.72	-1,088.31	1,163.83	1,082.76	81.07	14.356	
14,550.00	12,092.00	13,468.66	11,153.00	56.50	53.71	36.32	-2,505.72	-1,088.24	1,163.87	1,082.10	81.77	14.234	
14,600.00	12,092.00	13,518.66	11,153.00	56.97	54.20	36.33	-2,555.72	-1,088.16	1,163.90	1,081.44	82.46	14.114	
14,650.00	12,092.00	13,568.66	11,153.00	57.46	54.69	36.33	-2,605.72	-1,088.09	1,163.94	1,080.76	83.17	13.994	
14,700.00	12,092.00	13,618.66	11,153.00	57.94	55.19	36.33	-2,655.72	-1,088.01	1,163.97	1,080.09	83.89	13.875	
14,750.00	12,092.00	13,668.66	11,153.00	58.43	55.70	36.33	-2,705.72	-1,087.94	1,164.01	1,079.39	84.61	13.757	
14,800.00	12,092.00	13,718.66	11,153.00	58.93	56.21	36.34	-2,755.72	-1,087.86	1,164.04	1,078.70	85.34	13.640	
14,850.00	12,092.00	13,768.66	11,153.00	59.43	56.72	36.34	-2,805.72	-1,087.79	1,164.08	1,077.99	86.08	13.523	
14,900.00	12,092.00	13,818.66	11,153.00	59.93	57.24	36.34	-2,855.72	-1,087.71	1,164.11	1,077.29	86.82	13.408	
14,950.00	12,092.00	13,868.66	11,153.00	60.44	57.77	36.34	-2,905.71	-1,087.64	1,164.15	1,076.57	87.58	13.293	
15,000.00	12,092.00	13,918.66	11,153.00	60.96	58.29	36.35	-2,955.71	-1,087.56	1,164.18	1,075.85	88.34	13.179	
15,050.00	12,092.00	13,968.66	11,153.00	61.48	58.83	36.35	-3,005.71	-1,087.49	1,164.22	1,075.11	89.10	13.066	
15,100.00	12,092.00	14,018.66	11,153.00	62.00	59.36	36.35	-3,055.71	-1,087.41	1,164.25	1,074.38	89.87	12.955	
15,150.00	12,092.00	14,068.66	11,153.00	62.53	59.90	36.35	-3,105.71	-1,087.34	1,164.29	1,073.64	90.65	12.844	
15,200.00	12,092.00	14,118.66	11,153.00	63.05	60.45	36.35	-3,155.71	-1,087.26	1,164.32	1,072.89	91.43	12.734	
15,250.00	12,092.00	14,168.66	11,153.00	63.59	61.00	36.36	-3,205.71	-1,087.19	1,164.35	1,072.13	92.22	12.626	
15,300.00	12,092.00	14,218.66	11,153.00	64.13	61.55	36.36	-3,255.71	-1,087.11	1,164.39	1,071.37	93.01	12.518	
15,350.00	12,092.00	14,268.66	11,153.00	64.67	62.10	36.36	-3,305.71	-1,087.04	1,164.42	1,070.61	93.82	12.412	
15,400.00	12,092.00	14,318.66	11,153.00	65.21	62.66	36.36	-3,355.71	-1,086.96	1,164.46	1,069.84	94.62	12.307	
15,450.00	12,092.00	14,368.66	11,153.00	65.76	63.22	36.37	-3,405.71	-1,086.89	1,164.49	1,069.06	95.43	12.202	
15,500.00	12,092.00	14,418.66	11,153.00	66.31	63.79	36.37	-3,455.71	-1,086.81	1,164.53	1,068.28	96.25	12.099	
15,550.00	12,092.00	14,468.66	11,153.00	66.87	64.36	36.37	-3,505.71	-1,086.74	1,164.56	1,067.49	97.07	11.997	
15,600.00	12,092.00	14,518.66	11,153.00	67.43	64.93	36.37	-3,555.71	-1,086.66	1,164.60	1,066.70	97.89	11.897	
15,650.00	12,092.00	14,568.66	11,153.00	67.99	65.51	36.38	-3,605.71	-1,086.59	1,164.63	1,065.91	98.73	11.797	
15,700.00	12,092.00	14,618.66	11,153.00	68.56	66.08	36.38	-3,655.71	-1,086.51	1,164.67	1,065.11	99.56	11.698	
15,750.00	12,092.00	14,668.66	11,153.00	69.13	66.66	36.38	-3,705.71	-1,086.44	1,164.70	1,064.30	100.40	11.601	
15,800.00	12,092.00	14,718.66	11,153.00	69.70	67.25	36.38	-3,755.71	-1,086.36	1,164.74	1,063.49	101.24	11.504	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
15,850.00	12,092.00	14,768.66	11,153.00	70.27	67.83	36.38	-3,805.71	-1,086.29	1,164.77	1,062.68	102.09	11.409	
15,900.00	12,092.00	14,818.66	11,153.00	70.85	68.42	36.39	-3,855.71	-1,086.21	1,164.81	1,061.86	102.94	11.315	
15,950.00	12,092.00	14,868.66	11,153.00	71.43	69.02	36.39	-3,905.71	-1,086.14	1,164.84	1,061.04	103.80	11.222	
16,000.00	12,092.00	14,918.66	11,153.00	72.01	69.61	36.39	-3,955.71	-1,086.06	1,164.88	1,060.22	104.66	11.130	
16,050.00	12,092.00	14,968.66	11,153.00	72.59	70.21	36.39	-4,005.71	-1,085.99	1,164.91	1,059.38	105.53	11.039	
16,100.00	12,092.00	15,018.66	11,153.00	73.18	70.81	36.40	-4,055.71	-1,085.91	1,164.95	1,058.55	106.39	10.949	
16,150.00	12,092.00	15,068.66	11,153.00	73.77	71.41	36.40	-4,105.71	-1,085.84	1,164.98	1,057.71	107.27	10.861	
16,200.00	12,092.00	15,118.66	11,153.00	74.36	72.01	36.40	-4,155.71	-1,085.76	1,165.02	1,056.87	108.14	10.773	
16,250.00	12,092.00	15,168.66	11,153.00	74.96	72.62	36.40	-4,205.71	-1,085.69	1,165.05	1,056.03	109.02	10.686	
16,300.00	12,092.00	15,218.66	11,153.00	75.55	73.23	36.41	-4,255.71	-1,085.61	1,165.09	1,055.18	109.90	10.601	
16,350.00	12,092.00	15,268.66	11,153.00	76.16	73.84	36.41	-4,305.71	-1,085.54	1,165.12	1,054.33	110.79	10.516	
16,400.00	12,092.00	15,318.66	11,153.00	76.76	74.45	36.41	-4,355.71	-1,085.46	1,165.15	1,053.48	111.68	10.433	
16,450.00	12,092.00	15,368.66	11,153.00	77.36	75.06	36.41	-4,405.71	-1,085.39	1,165.19	1,052.62	112.57	10.351	
16,500.00	12,092.00	15,418.66	11,153.00	77.96	75.68	36.42	-4,455.71	-1,085.31	1,165.22	1,051.76	113.47	10.269	
16,550.00	12,092.00	15,468.66	11,153.00	78.57	76.30	36.42	-4,505.71	-1,085.24	1,165.26	1,050.89	114.37	10.189	
16,600.00	12,092.00	15,518.66	11,153.00	79.18	76.92	36.42	-4,555.71	-1,085.16	1,165.29	1,050.03	115.27	10.110	
16,650.00	12,092.00	15,568.66	11,153.00	79.80	77.54	36.42	-4,605.71	-1,085.09	1,165.33	1,049.16	116.17	10.031	
16,700.00	12,092.00	15,618.66	11,153.00	80.41	78.17	36.42	-4,655.71	-1,085.01	1,165.36	1,048.29	117.08	9.954	
16,750.00	12,092.00	15,668.66	11,153.00	81.02	78.79	36.43	-4,705.71	-1,084.94	1,165.40	1,047.41	117.99	9.877	
16,800.00	12,092.00	15,718.66	11,153.00	81.64	79.42	36.43	-4,755.71	-1,084.86	1,165.43	1,046.53	118.90	9.802	
16,850.00	12,092.00	15,768.66	11,153.00	82.26	80.05	36.43	-4,805.71	-1,084.79	1,165.47	1,045.65	119.82	9.727	
16,900.00	12,092.00	15,818.66	11,153.00	82.88	80.68	36.43	-4,855.71	-1,084.71	1,165.50	1,044.77	120.73	9.653	
16,950.00	12,092.00	15,868.66	11,153.00	83.50	81.31	36.44	-4,905.71	-1,084.64	1,165.54	1,043.88	121.66	9.581	
17,000.00	12,092.00	15,918.66	11,153.00	84.13	81.95	36.44	-4,955.71	-1,084.56	1,165.57	1,042.99	122.58	9.509	
17,050.00	12,092.00	15,968.66	11,153.00	84.75	82.58	36.44	-5,005.71	-1,084.49	1,165.61	1,042.10	123.50	9.438	
17,100.00	12,092.00	16,018.66	11,153.00	85.38	83.22	36.44	-5,055.71	-1,084.41	1,165.64	1,041.21	124.43	9.368	
17,150.00	12,092.00	16,068.66	11,153.00	86.01	83.86	36.45	-5,105.71	-1,084.34	1,165.68	1,040.31	125.36	9.298	
17,200.00	12,092.00	16,118.66	11,153.00	86.64	84.50	36.45	-5,155.71	-1,084.26	1,165.71	1,039.42	126.30	9.230	
17,250.00	12,092.00	16,168.66	11,153.00	87.27	85.14	36.45	-5,205.71	-1,084.19	1,165.75	1,038.52	127.23	9.162	
17,300.00	12,092.00	16,218.66	11,153.00	87.91	85.78	36.45	-5,255.71	-1,084.11	1,165.78	1,037.61	128.17	9.096	
17,350.00	12,092.00	16,268.66	11,153.00	88.54	86.43	36.45	-5,305.71	-1,084.04	1,165.82	1,036.71	129.11	9.030	
17,400.00	12,092.00	16,318.66	11,153.00	89.18	87.07	36.46	-5,355.71	-1,083.96	1,165.85	1,035.80	130.05	8.965	
17,450.00	12,092.00	16,368.66	11,153.00	89.82	87.72	36.46	-5,405.71	-1,083.89	1,165.89	1,034.89	130.99	8.900	
17,500.00	12,092.00	16,418.66	11,153.00	90.45	88.36	36.46	-5,455.71	-1,083.81	1,165.92	1,033.98	131.94	8.837	
17,550.00	12,092.00	16,468.66	11,153.00	91.10	89.01	36.46	-5,505.71	-1,083.74	1,165.96	1,033.07	132.88	8.774	
17,600.00	12,092.00	16,518.66	11,153.00	91.74	89.66	36.47	-5,555.71	-1,083.66	1,165.99	1,032.16	133.83	8.712	
17,650.00	12,092.00	16,568.66	11,153.00	92.38	90.32	36.47	-5,605.71	-1,083.59	1,166.03	1,031.24	134.78	8.651	
17,700.00	12,092.00	16,618.66	11,153.00	93.02	90.97	36.47	-5,655.71	-1,083.51	1,166.06	1,030.32	135.74	8.591	
17,750.00	12,092.00	16,668.66	11,153.00	93.67	91.62	36.47	-5,705.71	-1,083.44	1,166.10	1,029.40	136.69	8.531	
17,800.00	12,092.00	16,718.66	11,153.00	94.32	92.28	36.48	-5,755.71	-1,083.36	1,166.13	1,028.48	137.65	8.472	
17,850.00	12,092.00	16,768.66	11,153.00	94.96	92.93	36.48	-5,805.71	-1,083.29	1,166.16	1,027.56	138.61	8.413	
17,900.00	12,092.00	16,818.66	11,153.00	95.61	93.59	36.48	-5,855.71	-1,083.21	1,166.20	1,026.63	139.57	8.356	
17,950.00	12,092.00	16,868.66	11,153.00	96.26	94.25	36.48	-5,905.71	-1,083.14	1,166.23	1,025.70	140.53	8.299	
18,000.00	12,092.00	16,918.66	11,153.00	96.91	94.91	36.48	-5,955.71	-1,083.06	1,166.27	1,024.78	141.49	8.243	
18,050.00	12,092.00	16,968.66	11,153.00	97.57	95.57	36.49	-6,005.71	-1,082.99	1,166.30	1,023.85	142.46	8.187	
18,100.00	12,092.00	17,018.66	11,153.00	98.22	96.23	36.49	-6,055.71	-1,082.91	1,166.34	1,022.92	143.42	8.132	
18,150.00	12,092.00	17,068.66	11,153.00	98.87	96.89	36.49	-6,105.71	-1,082.84	1,166.37	1,021.98	144.39	8.078	
18,200.00	12,092.00	17,118.66	11,153.00	99.53	97.55	36.49	-6,155.71	-1,082.76	1,166.41	1,021.05	145.36	8.024	
18,250.00	12,092.00	17,168.66	11,153.00	100.19	98.21	36.50	-6,205.71	-1,082.69	1,166.44	1,020.11	146.33	7.971	
18,300.00	12,092.00	17,218.66	11,153.00	100.84	98.88	36.50	-6,255.71	-1,082.61	1,166.48	1,019.17	147.31	7.919	
18,350.00	12,092.00	17,268.66	11,153.00	101.50	99.54	36.50	-6,305.71	-1,082.54	1,166.51	1,018.23	148.28	7.867	
18,400.00	12,092.00	17,318.66	11,153.00	102.16	100.21	36.50	-6,355.71	-1,082.46	1,166.55	1,017.29	149.25	7.816	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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		Offset		Semi Major Axis			Distance				Separation Factor	Warning		
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)			Minimum Separation (ft)	
18,450.00	12,092.00	17,368.65	11,153.00	102.82	100.88	36.51	-6,405.71	-1,082.39	1,166.58	1,016.35	150.23	7.765		
18,500.00	12,092.00	17,418.65	11,153.00	103.48	101.55	36.51	-6,455.71	-1,082.31	1,166.62	1,015.41	151.21	7.715		
18,550.00	12,092.00	17,468.65	11,153.00	104.14	102.21	36.51	-6,505.71	-1,082.24	1,166.65	1,014.46	152.19	7.666		
18,600.00	12,092.00	17,518.65	11,153.00	104.81	102.88	36.51	-6,555.71	-1,082.16	1,166.69	1,013.52	153.17	7.617		
18,650.00	12,092.00	17,568.65	11,153.00	105.47	103.55	36.51	-6,605.71	-1,082.09	1,166.72	1,012.57	154.15	7.569		
18,700.00	12,092.00	17,618.65	11,153.00	106.13	104.22	36.52	-6,655.71	-1,082.01	1,166.76	1,011.62	155.14	7.521		
18,750.00	12,092.00	17,668.65	11,153.00	106.80	104.90	36.52	-6,705.71	-1,081.94	1,166.79	1,010.67	156.12	7.474		
18,800.00	12,092.00	17,718.65	11,153.00	107.46	105.57	36.52	-6,755.71	-1,081.86	1,166.83	1,009.72	157.11	7.427		
18,850.00	12,092.00	17,768.65	11,153.00	108.13	106.24	36.52	-6,805.71	-1,081.79	1,166.86	1,008.77	158.09	7.381		
18,900.00	12,092.00	17,818.65	11,153.00	108.80	106.92	36.53	-6,855.71	-1,081.71	1,166.90	1,007.82	159.08	7.335		
18,950.00	12,092.00	17,868.65	11,153.00	109.47	107.59	36.53	-6,905.71	-1,081.64	1,166.93	1,006.86	160.07	7.290		
19,000.00	12,092.00	17,918.65	11,153.00	110.14	108.27	36.53	-6,955.71	-1,081.56	1,166.97	1,005.91	161.06	7.246		
19,050.00	12,092.00	17,968.65	11,153.00	110.81	108.94	36.53	-7,005.71	-1,081.49	1,167.00	1,004.95	162.05	7.201		
19,100.00	12,092.00	18,018.65	11,153.00	111.48	109.62	36.54	-7,055.71	-1,081.41	1,167.04	1,003.99	163.04	7.158		
19,150.00	12,092.00	18,068.65	11,153.00	112.15	110.30	36.54	-7,105.71	-1,081.34	1,167.07	1,003.03	164.04	7.115		
19,200.00	12,092.00	18,118.65	11,153.00	112.82	110.97	36.54	-7,155.71	-1,081.26	1,167.11	1,002.07	165.03	7.072		
19,250.00	12,092.00	18,168.65	11,153.00	113.49	111.65	36.54	-7,205.71	-1,081.19	1,167.14	1,001.11	166.03	7.030		
19,300.00	12,092.00	18,218.65	11,153.00	114.16	112.33	36.54	-7,255.71	-1,081.11	1,167.18	1,000.15	167.03	6.988		
19,350.00	12,092.00	18,268.65	11,153.00	114.84	113.01	36.55	-7,305.71	-1,081.04	1,167.21	999.19	168.02	6.947		
19,400.00	12,092.00	18,318.65	11,153.00	115.51	113.69	36.55	-7,355.71	-1,080.96	1,167.25	998.22	169.02	6.906		
19,450.00	12,092.00	18,368.65	11,153.00	116.19	114.37	36.55	-7,405.71	-1,080.89	1,167.28	997.26	170.02	6.865		
19,500.00	12,092.00	18,418.65	11,153.00	116.86	115.05	36.55	-7,455.71	-1,080.81	1,167.32	996.29	171.02	6.826		
19,550.00	12,092.00	18,468.65	11,153.00	117.54	115.73	36.56	-7,505.71	-1,080.74	1,167.35	995.33	172.02	6.786		
19,600.00	12,092.00	18,518.65	11,153.00	118.22	116.42	36.56	-7,555.71	-1,080.66	1,167.39	994.36	173.03	6.747		
19,650.00	12,092.00	18,568.65	11,153.00	118.90	117.10	36.56	-7,605.71	-1,080.59	1,167.42	993.39	174.03	6.708		
19,700.00	12,092.00	18,618.65	11,153.00	119.57	117.78	36.56	-7,655.71	-1,080.51	1,167.46	992.42	175.03	6.670		
19,750.00	12,092.00	18,668.65	11,153.00	120.25	118.47	36.57	-7,705.71	-1,080.44	1,167.49	991.45	176.04	6.632		
19,800.00	12,092.00	18,718.65	11,153.00	120.93	119.15	36.57	-7,755.71	-1,080.36	1,167.53	990.48	177.05	6.594		
19,850.00	12,092.00	18,768.65	11,153.00	121.61	119.84	36.57	-7,805.71	-1,080.29	1,167.56	989.51	178.05	6.557		
19,900.00	12,092.00	18,818.65	11,153.00	122.29	120.52	36.57	-7,855.71	-1,080.21	1,167.60	988.54	179.06	6.521		
19,950.00	12,092.00	18,868.65	11,153.00	122.97	121.21	36.57	-7,905.71	-1,080.14	1,167.63	987.56	180.07	6.484		
20,000.00	12,092.00	18,918.65	11,153.00	123.65	121.89	36.58	-7,955.71	-1,080.06	1,167.67	986.59	181.08	6.448		
20,050.00	12,092.00	18,968.65	11,153.00	124.34	122.58	36.58	-8,005.71	-1,079.99	1,167.70	985.61	182.09	6.413		
20,100.00	12,092.00	19,018.65	11,153.00	125.02	123.27	36.58	-8,055.71	-1,079.91	1,167.73	984.64	183.10	6.378		
20,150.00	12,092.00	19,068.65	11,153.00	125.70	123.96	36.58	-8,105.71	-1,079.84	1,167.77	983.66	184.11	6.343		
20,200.00	12,092.00	19,118.65	11,153.00	126.38	124.64	36.59	-8,155.71	-1,079.76	1,167.80	982.68	185.12	6.308		
20,250.00	12,092.00	19,168.65	11,153.00	127.07	125.33	36.59	-8,205.71	-1,079.69	1,167.84	981.70	186.14	6.274		
20,300.00	12,092.00	19,218.65	11,153.00	127.75	126.02	36.59	-8,255.71	-1,079.61	1,167.87	980.72	187.15	6.240		
20,350.00	12,092.00	19,268.65	11,153.00	128.44	126.71	36.59	-8,305.71	-1,079.54	1,167.91	979.74	188.17	6.207		
20,400.00	12,092.00	19,318.65	11,153.00	129.12	127.40	36.60	-8,355.71	-1,079.46	1,167.94	978.76	189.18	6.174		
20,450.00	12,092.00	19,368.65	11,153.00	129.81	128.09	36.60	-8,405.71	-1,079.39	1,167.98	977.78	190.20	6.141		
20,500.00	12,092.00	19,418.65	11,153.00	130.49	128.78	36.60	-8,455.71	-1,079.31	1,168.01	976.80	191.21	6.108		
20,550.00	12,092.00	19,468.65	11,153.00	131.18	129.47	36.60	-8,505.70	-1,079.24	1,168.05	975.82	192.23	6.076		
20,600.00	12,092.00	19,518.65	11,153.00	131.87	130.16	36.60	-8,555.70	-1,079.16	1,168.08	974.83	193.25	6.044		
20,650.00	12,092.00	19,568.65	11,153.00	132.56	130.86	36.61	-8,605.70	-1,079.09	1,168.12	973.85	194.27	6.013		
20,700.00	12,092.00	19,618.65	11,153.00	133.24	131.55	36.61	-8,655.70	-1,079.01	1,168.15	972.87	195.29	5.982		
20,750.00	12,092.00	19,668.65	11,153.00	133.93	132.24	36.61	-8,705.70	-1,078.94	1,168.19	971.88	196.31	5.951		
20,800.00	12,092.00	19,718.65	11,153.00	134.62	132.93	36.61	-8,755.70	-1,078.86	1,168.22	970.90	197.33	5.920		
20,850.00	12,092.00	19,768.65	11,153.00	135.31	133.63	36.62	-8,805.70	-1,078.79	1,168.26	969.91	198.35	5.890		
20,900.00	12,092.00	19,818.65	11,153.00	136.00	134.32	36.62	-8,855.70	-1,078.71	1,168.29	968.92	199.37	5.860		
20,950.00	12,092.00	19,868.65	11,153.00	136.69	135.02	36.62	-8,905.70	-1,078.64	1,168.33	967.93	200.40	5.830		
21,000.00	12,092.00	19,918.65	11,153.00	137.38	135.71	36.62	-8,955.70	-1,078.56	1,168.36	966.95	201.42	5.801		

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 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		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
21,050.00	12,092.00	19,968.65	11,153.00	138.07	136.40	36.63	-9,005.70	-1,078.49	1,168.40	965.96	202.44	5.772	
21,100.00	12,092.00	20,018.65	11,153.00	138.76	137.10	36.63	-9,055.70	-1,078.41	1,168.43	964.97	203.47	5.743	
21,150.00	12,092.00	20,068.65	11,153.00	139.45	137.80	36.63	-9,105.70	-1,078.34	1,168.47	963.98	204.49	5.714	
21,200.00	12,092.00	20,118.65	11,153.00	140.14	138.49	36.63	-9,155.70	-1,078.26	1,168.50	962.99	205.52	5.686	
21,250.00	12,092.00	20,168.65	11,153.00	140.84	139.19	36.63	-9,205.70	-1,078.19	1,168.54	962.00	206.54	5.658	
21,300.00	12,092.00	20,218.65	11,153.00	141.53	139.88	36.64	-9,255.70	-1,078.11	1,168.57	961.00	207.57	5.630	
21,350.00	12,092.00	20,268.65	11,153.00	142.22	140.58	36.64	-9,305.70	-1,078.04	1,168.61	960.01	208.60	5.602	
21,400.00	12,092.00	20,318.65	11,153.00	142.91	141.28	36.64	-9,355.70	-1,077.96	1,168.64	959.02	209.63	5.575	
21,450.00	12,092.00	20,368.65	11,153.00	143.61	141.97	36.64	-9,405.70	-1,077.89	1,168.68	958.02	210.65	5.548	
21,500.00	12,092.00	20,418.65	11,153.00	144.30	142.67	36.65	-9,455.70	-1,077.81	1,168.71	957.03	211.68	5.521	
21,550.00	12,092.00	20,468.65	11,153.00	145.00	143.37	36.65	-9,505.70	-1,077.74	1,168.75	956.04	212.71	5.495	
21,600.00	12,092.00	20,518.65	11,153.00	145.69	144.07	36.65	-9,555.70	-1,077.66	1,168.78	955.04	213.74	5.468	
21,650.00	12,092.00	20,568.65	11,153.00	146.39	144.77	36.65	-9,605.70	-1,077.59	1,168.82	954.05	214.77	5.442	
21,700.00	12,092.00	20,618.65	11,153.00	147.08	145.46	36.66	-9,655.70	-1,077.51	1,168.85	953.05	215.80	5.416	
21,750.00	12,092.00	20,668.65	11,153.00	147.78	146.16	36.66	-9,705.70	-1,077.44	1,168.89	952.05	216.84	5.391	
21,800.00	12,092.00	20,718.65	11,153.00	148.47	146.86	36.66	-9,755.70	-1,077.36	1,168.92	951.06	217.87	5.365	
21,850.00	12,092.00	20,768.65	11,153.00	149.17	147.56	36.66	-9,805.70	-1,077.29	1,168.96	950.06	218.90	5.340	
21,900.00	12,092.00	20,818.65	11,153.00	149.86	148.26	36.66	-9,855.70	-1,077.21	1,168.99	949.06	219.93	5.315	
21,950.00	12,092.00	20,868.65	11,153.00	150.56	148.96	36.67	-9,905.70	-1,077.14	1,169.03	948.06	220.97	5.291	
22,000.00	12,092.00	20,918.65	11,153.00	151.26	149.66	36.67	-9,955.70	-1,077.06	1,169.06	947.06	222.00	5.266	
22,050.00	12,092.00	20,968.65	11,153.00	151.95	150.36	36.67	-10,005.70	-1,076.99	1,169.10	946.07	223.03	5.242	
22,100.00	12,092.00	21,018.65	11,153.00	152.65	151.06	36.67	-10,055.70	-1,076.91	1,169.13	945.07	224.07	5.218	
22,150.00	12,092.00	21,068.65	11,153.00	153.35	151.76	36.68	-10,105.70	-1,076.84	1,169.17	944.07	225.10	5.194	
22,200.00	12,092.00	21,118.65	11,153.00	154.05	152.47	36.68	-10,155.70	-1,076.76	1,169.20	943.06	226.14	5.170	
22,250.00	12,092.00	21,168.65	11,153.00	154.75	153.17	36.68	-10,205.70	-1,076.69	1,169.24	942.06	227.18	5.147	
22,300.00	12,092.00	21,218.65	11,153.00	155.44	153.87	36.68	-10,255.70	-1,076.61	1,169.27	941.06	228.21	5.124	
22,350.00	12,092.00	21,268.65	11,153.00	156.14	154.57	36.69	-10,305.70	-1,076.54	1,169.31	940.06	229.25	5.101	
22,381.87	12,092.00	21,300.52	11,153.00	156.59	155.02	36.69	-10,337.57	-1,076.49	1,169.33	939.42	229.91	5.086 SF	

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	1.80	1.80	0.50	0.50	89.64	3.99	639.89	639.90				
50.00	50.00	51.80	51.80	0.50	0.50	89.64	3.99	639.89	639.90	638.90	1.01	635.563	
100.00	100.00	101.80	101.80	0.52	0.52	89.64	3.99	639.89	639.90	638.87	1.04	616.939	
150.00	150.00	151.80	151.80	0.59	0.59	89.64	3.99	639.89	639.90	638.72	1.18	540.488	
200.00	200.00	201.80	201.80	0.70	0.71	89.64	3.99	639.89	639.90	638.49	1.41	454.235	
250.00	250.00	251.80	251.80	0.84	0.84	89.64	3.99	639.89	639.90	638.22	1.68	380.756	
300.00	300.00	301.80	301.80	0.99	0.99	89.64	3.99	639.89	639.90	637.92	1.98	323.145	
350.00	350.00	351.80	351.80	1.15	1.15	89.64	3.99	639.89	639.90	637.61	2.30	278.608	
400.00	400.00	401.80	401.80	1.31	1.32	89.64	3.99	639.89	639.90	637.28	2.62	243.852	
450.00	450.00	451.80	451.80	1.48	1.48	89.64	3.99	639.89	639.90	636.95	2.96	216.277	
500.00	500.00	501.80	501.80	1.65	1.65	89.64	3.99	639.89	639.90	636.61	3.30	194.009	
550.00	550.00	551.80	551.80	1.82	1.82	89.64	3.99	639.89	639.90	636.26	3.64	175.723	
600.00	600.00	601.80	601.80	1.99	2.00	89.64	3.99	639.89	639.90	635.92	3.99	160.479	
650.00	650.00	651.80	651.80	2.16	2.17	89.64	3.99	639.89	639.90	635.57	4.34	147.600	
700.00	700.00	701.80	701.80	2.34	2.35	89.64	3.99	639.89	639.90	635.22	4.68	136.588	
750.00	750.00	751.80	751.80	2.51	2.52	89.64	3.99	639.89	639.90	634.87	5.04	127.073	
800.00	800.00	801.80	801.80	2.69	2.70	89.64	3.99	639.89	639.90	634.52	5.39	118.775	
850.00	850.00	851.80	851.80	2.87	2.87	89.64	3.99	639.89	639.90	634.16	5.74	111.478	
900.00	900.00	901.80	901.80	3.04	3.05	89.64	3.99	639.89	639.90	633.81	6.09	105.015	
950.00	950.00	951.80	951.80	3.22	3.23	89.64	3.99	639.89	639.90	633.46	6.45	99.251	
1,000.00	1,000.00	1,001.80	1,001.80	3.40	3.40	89.64	3.99	639.89	639.90	633.10	6.80	94.080	
1,050.00	1,050.00	1,051.80	1,051.80	3.58	3.58	89.64	3.99	639.89	639.90	632.75	7.16	89.416	
1,100.00	1,100.00	1,101.80	1,101.80	3.75	3.76	89.64	3.99	639.89	639.90	632.39	7.51	85.189	
1,150.00	1,150.00	1,151.80	1,151.80	3.93	3.94	89.64	3.99	639.89	639.90	632.04	7.87	81.340	
1,200.00	1,200.00	1,201.80	1,201.80	4.11	4.11	89.64	3.99	639.89	639.90	631.68	8.22	77.821	
1,250.00	1,250.00	1,251.80	1,251.80	4.29	4.29	89.64	3.99	639.89	639.90	631.33	8.58	74.593	
1,300.00	1,300.00	1,301.80	1,301.80	4.46	4.47	89.64	3.99	639.89	639.90	630.97	8.93	71.620	
1,350.00	1,350.00	1,351.80	1,351.80	4.64	4.65	89.64	3.99	639.89	639.90	630.61	9.29	68.873	
1,400.00	1,400.00	1,401.80	1,401.80	4.82	4.83	89.64	3.99	639.89	639.90	630.26	9.65	66.328	
1,450.00	1,450.00	1,451.80	1,451.80	5.00	5.01	89.64	3.99	639.89	639.90	629.90	10.00	63.964	
1,500.00	1,500.00	1,501.80	1,501.80	5.18	5.18	89.64	3.99	639.89	639.90	629.54	10.36	61.762	
1,550.00	1,550.00	1,551.80	1,551.80	5.36	5.36	89.64	3.99	639.89	639.90	629.19	10.72	59.705	
1,600.00	1,600.00	1,601.80	1,601.80	5.53	5.54	89.64	3.99	639.89	639.90	628.83	11.07	57.781	
1,650.00	1,650.00	1,651.80	1,651.80	5.71	5.72	89.64	3.99	639.89	639.90	628.47	11.43	55.976	
1,700.00	1,700.00	1,701.80	1,701.80	5.89	5.90	89.64	3.99	639.89	639.90	628.11	11.79	54.280	
1,750.00	1,750.00	1,751.80	1,751.80	6.07	6.08	89.64	3.99	639.89	639.90	627.76	12.15	52.684	
1,800.00	1,800.00	1,801.80	1,801.80	6.25	6.25	89.64	3.99	639.89	639.90	627.40	12.50	51.178	
1,850.00	1,850.00	1,851.80	1,851.80	6.43	6.43	89.64	3.99	639.89	639.90	627.04	12.86	49.756	
1,900.00	1,900.00	1,901.80	1,901.80	6.61	6.61	89.64	3.99	639.89	639.90	626.69	13.22	48.411	
1,950.00	1,950.00	1,951.80	1,951.80	6.78	6.79	89.64	3.99	639.89	639.90	626.33	13.58	47.136	
2,000.00	2,000.00	2,001.80	2,001.80	6.96	6.97	89.64	3.99	639.89	639.90	625.97	13.93	45.927	
2,050.00	2,050.00	2,051.80	2,051.80	7.14	7.15	89.64	3.99	639.89	639.90	625.61	14.29	44.778	
2,100.00	2,100.00	2,101.80	2,101.80	7.32	7.33	89.64	3.99	639.89	639.90	625.26	14.65	43.684	
2,150.00	2,150.00	2,151.80	2,151.80	7.50	7.51	89.64	3.99	639.89	639.90	624.90	15.01	42.643	
2,200.00	2,200.00	2,201.80	2,201.80	7.68	7.69	89.64	3.99	639.89	639.90	624.54	15.36	41.650	
2,250.00	2,250.00	2,251.80	2,251.80	7.86	7.86	89.64	3.99	639.89	639.90	624.18	15.72	40.703	
2,300.00	2,300.00	2,301.80	2,301.80	8.04	8.04	89.64	3.99	639.89	639.90	623.82	16.08	39.797	
2,350.00	2,350.00	2,351.80	2,351.80	8.22	8.22	89.64	3.99	639.89	639.90	623.47	16.44	38.931	
2,400.00	2,400.00	2,401.80	2,401.80	8.39	8.40	89.64	3.99	639.89	639.90	623.11	16.79	38.101	
2,450.00	2,450.00	2,451.80	2,451.80	8.57	8.58	89.64	3.99	639.89	639.90	622.75	17.15	37.306	
2,500.00	2,500.00	2,501.80	2,501.80	8.75	8.76	89.64	3.99	639.89	639.90	622.39	17.51	36.544	
2,550.00	2,550.00	2,551.80	2,551.80	8.93	8.94	89.64	3.99	639.89	639.90	622.04	17.87	35.812	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,600.00	2,600.00	2,601.80	2,601.80	9.11	9.12	89.64	3.99	639.89	639.90	621.68	18.23	35.109	
2,650.00	2,650.00	2,651.80	2,651.80	9.29	9.30	89.64	3.99	639.89	639.90	621.32	18.58	34.433	
2,700.00	2,700.00	2,701.80	2,701.80	9.47	9.47	89.64	3.99	639.89	639.90	620.96	18.94	33.782	
2,750.00	2,750.00	2,751.80	2,751.80	9.65	9.65	89.64	3.99	639.89	639.90	620.60	19.30	33.155	
2,800.00	2,800.00	2,801.80	2,801.80	9.83	9.83	89.64	3.99	639.89	639.90	620.25	19.66	32.551	
2,850.00	2,850.00	2,851.80	2,851.80	10.00	10.01	89.64	3.99	639.89	639.90	619.89	20.02	31.969	
2,900.00	2,900.00	2,901.80	2,901.80	10.18	10.19	89.64	3.99	639.89	639.90	619.53	20.37	31.407	
2,950.00	2,950.00	2,951.80	2,951.80	10.36	10.37	89.64	3.99	639.89	639.90	619.17	20.73	30.865	
3,000.00	3,000.00	3,002.03	3,002.03	10.54	10.55	89.64	3.99	639.89	639.90	618.81	21.09	30.340	
3,050.00	3,050.00	3,058.28	3,058.28	10.72	10.75	89.64	4.02	639.60	639.64	618.18	21.47	29.798	
3,100.00	3,100.00	3,114.52	3,114.51	10.90	10.94	89.63	4.09	638.75	638.89	617.05	21.84	29.255	
3,150.00	3,150.00	3,170.73	3,170.71	11.08	11.13	89.62	4.22	637.36	637.65	615.45	22.20	28.717	
3,200.00	3,200.00	3,228.92	3,228.86	11.26	11.33	89.60	4.40	635.42	635.93	613.36	22.57	28.176	
3,250.00	3,250.00	3,283.06	3,282.95	11.44	11.52	89.58	4.62	632.93	633.71	610.78	22.93	27.633	
3,300.00	3,300.00	3,336.78	3,336.59	11.62	11.71	89.56	4.88	630.07	631.05	607.76	23.29	27.095	
3,350.00	3,350.00	3,386.71	3,386.44	11.80	11.88	89.53	5.13	627.31	628.29	604.65	23.64	26.576	
3,400.00	3,400.00	3,436.63	3,436.29	11.97	12.05	89.51	5.38	624.56	625.53	601.54	23.99	26.073	
3,450.00	3,450.00	3,486.55	3,486.13	12.15	12.23	89.48	5.63	621.81	622.78	598.43	24.34	25.584	
3,500.00	3,500.00	3,536.48	3,535.98	12.33	12.40	89.46	5.88	619.05	620.02	595.33	24.69	25.108	
3,550.00	3,550.00	3,586.40	3,585.83	12.51	12.57	89.43	6.13	616.30	617.27	592.22	25.05	24.646	
3,600.00	3,600.00	3,636.32	3,635.67	12.69	12.75	89.40	6.38	613.54	614.51	589.11	25.40	24.196	
3,650.00	3,650.00	3,686.25	3,685.52	12.87	12.92	89.38	6.63	610.79	611.75	586.00	25.75	23.758	
3,700.00	3,700.00	3,736.17	3,735.36	13.05	13.10	89.35	6.88	608.03	609.00	582.90	26.10	23.332	
3,750.00	3,750.00	3,786.09	3,785.21	13.23	13.27	89.33	7.13	605.28	606.24	579.79	26.45	22.917	
3,800.00	3,800.00	3,836.02	3,835.06	13.41	13.45	89.30	7.38	602.52	603.49	576.68	26.81	22.513	
3,850.00	3,850.00	3,885.94	3,884.90	13.59	13.62	89.27	7.63	599.77	600.73	573.57	27.16	22.119	
3,900.00	3,900.00	3,935.86	3,934.75	13.77	13.80	89.24	7.88	597.01	597.98	570.46	27.51	21.736	
3,950.00	3,950.00	3,985.79	3,984.60	13.94	13.97	89.22	8.13	594.26	595.22	567.36	27.86	21.361	
4,000.00	4,000.00	4,035.71	4,034.44	14.12	14.15	89.19	8.38	591.51	592.47	564.25	28.22	20.996	
4,050.00	4,050.00	4,085.65	4,084.30	14.30	14.33	154.69	8.63	588.75	589.96	561.39	28.57	20.651	
4,100.00	4,099.99	4,135.61	4,134.19	14.48	14.50	154.70	8.88	585.99	587.94	559.02	28.92	20.331	
4,150.00	4,149.97	4,185.58	4,184.09	14.65	14.68	154.74	9.13	583.24	586.42	557.15	29.27	20.037	
4,200.00	4,199.94	4,235.57	4,233.99	14.83	14.86	154.80	9.38	580.48	585.39	555.77	29.62	19.766	
4,250.00	4,249.88	4,285.56	4,283.91	15.00	15.03	154.88	9.63	577.72	584.85	554.89	29.96	19.518	
4,281.56	4,281.38	4,317.11	4,315.41	15.11	15.14	154.93	9.79	575.98	584.76	554.58	30.18	19.373 CC	
4,300.00	4,299.79	4,335.55	4,333.82	15.18	15.21	154.97	9.88	574.96	584.81	554.50	30.31	19.292	
4,350.00	4,349.68	4,385.54	4,383.73	15.35	15.39	155.08	10.13	572.20	584.98	554.32	30.66	19.078	
4,400.00	4,399.58	4,435.52	4,433.64	15.53	15.57	155.19	10.38	569.45	585.15	554.14	31.01	18.868	
4,450.00	4,449.47	4,485.51	4,483.56	15.70	15.74	155.29	10.63	566.69	585.32	553.96	31.36	18.663	
4,500.00	4,499.37	4,535.50	4,533.47	15.88	15.92	155.40	10.88	563.93	585.50	553.79	31.71	18.463	
4,550.00	4,549.26	4,585.49	4,583.38	16.05	16.10	155.51	11.13	561.17	585.68	553.62	32.06	18.266	
4,600.00	4,599.16	4,635.48	4,633.29	16.23	16.28	155.61	11.38	558.41	585.86	553.44	32.41	18.074	
4,650.00	4,649.06	4,685.46	4,683.20	16.41	16.45	155.72	11.63	555.66	586.04	553.28	32.76	17.886	
4,700.00	4,698.95	4,735.45	4,733.11	16.58	16.63	155.83	11.88	552.90	586.22	553.11	33.12	17.702	
4,750.00	4,748.85	4,785.44	4,783.02	16.76	16.81	155.93	12.13	550.14	586.41	552.94	33.47	17.522	
4,800.00	4,798.74	4,835.43	4,832.93	16.94	16.99	156.04	12.38	547.38	586.60	552.78	33.82	17.346	
4,850.00	4,848.64	4,885.41	4,882.84	17.11	17.17	156.14	12.63	544.62	586.79	552.62	34.17	17.173	
4,900.00	4,898.53	4,935.40	4,932.76	17.29	17.35	156.25	12.88	541.87	586.98	552.46	34.52	17.003	
4,950.00	4,948.43	4,985.39	4,982.67	17.47	17.52	156.36	13.13	539.11	587.17	552.30	34.87	16.837	
5,000.00	4,998.33	5,035.38	5,032.58	17.65	17.70	156.46	13.38	536.35	587.37	552.14	35.23	16.674	
5,050.00	5,048.22	5,085.37	5,082.49	17.82	17.88	156.57	13.63	533.59	587.57	551.99	35.58	16.515	
5,100.00	5,098.12	5,135.35	5,132.40	18.00	18.06	156.67	13.88	530.83	587.77	551.84	35.93	16.358	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,150.00	5,148.01	5,185.34	5,182.31	18.18	18.24	156.78	14.13	528.08	587.97	551.69	36.28	16.205		
5,200.00	5,197.91	5,235.33	5,232.22	18.36	18.42	156.88	14.38	525.32	588.17	551.54	36.64	16.054		
5,250.00	5,247.80	5,285.32	5,282.13	18.53	18.60	156.99	14.63	522.56	588.38	551.39	36.99	15.907		
5,300.00	5,297.70	5,335.30	5,332.04	18.71	18.78	157.10	14.88	519.80	588.59	551.24	37.34	15.762		
5,350.00	5,347.60	5,385.29	5,381.95	18.89	18.96	157.20	15.13	517.04	588.80	551.10	37.70	15.619		
5,400.00	5,397.49	5,435.28	5,431.87	19.07	19.14	157.31	15.38	514.29	589.01	550.96	38.05	15.480		
5,450.00	5,447.39	5,485.27	5,481.78	19.25	19.32	157.41	15.63	511.53	589.22	550.82	38.40	15.343		
5,500.00	5,497.28	5,535.26	5,531.69	19.43	19.50	157.52	15.88	508.77	589.44	550.68	38.76	15.208		
5,550.00	5,547.18	5,585.24	5,581.60	19.61	19.67	157.62	16.13	506.01	589.66	550.55	39.11	15.076		
5,600.00	5,597.07	5,635.23	5,631.51	19.78	19.85	157.73	16.38	503.25	589.88	550.41	39.47	14.947		
5,650.00	5,646.97	5,685.22	5,681.42	19.96	20.03	157.83	16.63	500.50	590.10	550.28	39.82	14.819		
5,700.00	5,696.87	5,735.21	5,731.33	20.14	20.21	157.94	16.88	497.74	590.32	550.15	40.17	14.694		
5,750.00	5,746.76	5,785.20	5,781.24	20.32	20.39	158.04	17.13	494.98	590.55	550.02	40.53	14.571		
5,800.00	5,796.66	5,835.18	5,831.15	20.50	20.57	158.15	17.38	492.22	590.78	549.89	40.88	14.450		
5,850.00	5,846.55	5,885.17	5,881.07	20.68	20.75	158.25	17.63	489.46	591.01	549.77	41.24	14.332		
5,900.00	5,896.45	5,935.16	5,930.98	20.86	20.93	158.35	17.88	486.71	591.24	549.64	41.59	14.215		
5,950.00	5,946.35	5,985.15	5,980.89	21.04	21.11	158.46	18.13	483.95	591.47	549.52	41.95	14.100		
6,000.00	5,996.24	6,035.13	6,030.80	21.22	21.29	158.56	18.38	481.19	591.71	549.40	42.30	13.988		
6,050.00	6,046.14	6,085.12	6,080.71	21.40	21.47	158.67	18.63	478.43	591.94	549.29	42.66	13.877		
6,100.00	6,096.03	6,135.11	6,130.62	21.58	21.65	158.77	18.88	475.67	592.18	549.17	43.01	13.768		
6,150.00	6,145.93	6,185.10	6,180.53	21.76	21.83	158.88	19.13	472.92	592.42	549.06	43.37	13.661		
6,200.00	6,195.82	6,235.09	6,230.44	21.94	22.02	158.98	19.38	470.16	592.67	548.95	43.72	13.555		
6,250.00	6,245.72	6,285.07	6,280.35	22.12	22.20	159.08	19.63	467.40	592.91	548.84	44.08	13.451		
6,300.00	6,295.62	6,335.06	6,330.26	22.30	22.38	159.19	19.88	464.64	593.16	548.73	44.43	13.349		
6,350.00	6,345.51	6,385.05	6,380.18	22.48	22.56	159.29	20.13	461.88	593.41	548.62	44.79	13.249		
6,400.00	6,395.41	6,435.04	6,430.09	22.66	22.74	159.39	20.38	459.12	593.66	548.52	45.15	13.150		
6,450.00	6,445.30	6,485.03	6,480.00	22.84	22.92	159.50	20.63	456.37	593.91	548.41	45.50	13.053		
6,500.00	6,495.20	6,535.01	6,529.91	23.02	23.10	159.60	20.88	453.61	594.17	548.31	45.86	12.957		
6,550.00	6,545.09	6,585.00	6,579.82	23.20	23.28	159.71	21.13	450.85	594.43	548.21	46.21	12.863		
6,600.00	6,594.99	6,634.99	6,629.73	23.38	23.46	159.81	21.38	448.09	594.69	548.12	46.57	12.770		
6,650.00	6,644.89	6,684.98	6,679.64	23.56	23.64	159.91	21.63	445.33	594.95	548.02	46.93	12.679		
6,700.00	6,694.78	6,734.96	6,729.55	23.74	23.82	160.01	21.88	442.58	595.21	547.93	47.28	12.589		
6,750.00	6,744.68	6,784.95	6,779.46	23.92	24.00	160.12	22.13	439.82	595.47	547.84	47.64	12.500		
6,800.00	6,794.57	6,834.94	6,829.38	24.10	24.18	160.22	22.38	437.06	595.74	547.75	47.99	12.413		
6,850.00	6,844.47	6,884.93	6,879.29	24.28	24.36	160.32	22.63	434.30	596.01	547.66	48.35	12.327		
6,900.00	6,894.36	6,934.92	6,929.20	24.46	24.54	160.43	22.88	431.54	596.28	547.57	48.71	12.242		
6,950.00	6,944.26	6,984.90	6,979.11	24.65	24.73	160.53	23.13	428.79	596.55	547.49	49.06	12.159		
7,000.00	6,994.16	7,034.89	7,029.02	24.83	24.91	160.63	23.38	426.03	596.83	547.41	49.42	12.077		
7,050.00	7,044.05	7,084.88	7,078.93	25.01	25.09	160.73	23.63	423.27	597.10	547.33	49.78	11.996		
7,100.00	7,093.95	7,134.87	7,128.84	25.19	25.27	160.84	23.88	420.51	597.38	547.25	50.13	11.916		
7,150.00	7,143.84	7,184.85	7,178.75	25.37	25.45	160.94	24.13	417.75	597.66	547.17	50.49	11.837		
7,200.00	7,193.74	7,234.84	7,228.66	25.55	25.63	161.04	24.38	415.00	597.94	547.10	50.85	11.760		
7,250.00	7,243.63	7,284.83	7,278.58	25.73	25.81	161.14	24.63	412.24	598.23	547.02	51.20	11.683		
7,300.00	7,293.53	7,334.82	7,328.49	25.91	25.99	161.25	24.88	409.48	598.51	546.95	51.56	11.608		
7,350.00	7,343.43	7,384.81	7,378.40	26.09	26.17	161.35	25.13	406.72	598.80	546.88	51.92	11.534		
7,400.00	7,393.32	7,434.79	7,428.31	26.28	26.36	161.45	25.38	403.96	599.09	546.82	52.28	11.460		
7,450.00	7,443.22	7,484.78	7,478.22	26.46	26.54	161.55	25.63	401.21	599.38	546.75	52.63	11.388		
7,500.00	7,493.11	7,534.77	7,528.13	26.64	26.72	161.65	25.88	398.45	599.68	546.69	52.99	11.317		
7,550.00	7,543.01	7,584.76	7,578.04	26.82	26.90	161.75	26.13	395.69	599.97	546.62	53.35	11.247		
7,600.00	7,592.90	7,634.75	7,627.95	27.00	27.08	161.85	26.38	392.93	600.27	546.56	53.70	11.177		
7,650.00	7,642.80	7,684.73	7,677.86	27.18	27.26	161.96	26.63	390.17	600.57	546.51	54.06	11.109		
7,700.00	7,692.70	7,734.72	7,727.77	27.36	27.44	162.06	26.88	387.42	600.87	546.45	54.42	11.041		

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
7,750.00	7,742.59	7,784.71	7,777.69	27.55	27.62	162.16	27.13	384.66	601.17	546.39	54.78	10.975	
7,800.00	7,792.49	7,834.70	7,827.60	27.73	27.81	162.26	27.38	381.90	601.48	546.34	55.13	10.909	
7,850.00	7,842.38	7,884.68	7,877.51	27.91	27.99	162.36	27.63	379.14	601.78	546.29	55.49	10.845	
7,900.00	7,892.28	7,934.67	7,927.42	28.09	28.17	162.46	27.88	376.38	602.09	546.24	55.85	10.781	
7,950.00	7,942.17	7,984.66	7,977.33	28.27	28.35	162.56	28.13	373.63	602.40	546.19	56.21	10.718	
8,000.00	7,992.07	8,034.65	8,027.24	28.45	28.53	162.66	28.38	370.87	602.71	546.15	56.56	10.655	
8,050.00	8,041.97	8,084.64	8,077.15	28.64	28.71	162.76	28.63	368.11	603.03	546.10	56.92	10.594	
8,100.00	8,091.86	8,134.62	8,127.06	28.82	28.89	162.86	28.88	365.35	603.34	546.06	57.28	10.533	
8,150.00	8,141.76	8,184.61	8,176.97	29.00	29.08	162.96	29.13	362.59	603.66	546.02	57.64	10.473	
8,200.00	8,191.65	8,234.60	8,226.89	29.18	29.26	163.06	29.38	359.84	603.98	545.98	58.00	10.414	
8,250.00	8,241.55	8,284.59	8,276.80	29.36	29.44	163.16	29.63	357.08	604.30	545.95	58.35	10.356	
8,300.00	8,291.44	8,334.58	8,326.71	29.54	29.62	163.26	29.88	354.32	604.62	545.91	58.71	10.298	
8,350.00	8,341.34	8,384.56	8,376.62	29.73	29.80	163.36	30.13	351.56	604.95	545.88	59.07	10.241	
8,400.00	8,391.24	8,434.55	8,426.53	29.91	29.98	163.46	30.38	348.80	605.28	545.85	59.43	10.185	
8,450.00	8,441.13	8,484.54	8,476.44	30.09	30.17	163.56	30.63	346.05	605.60	545.82	59.79	10.130	
8,500.00	8,491.03	8,534.53	8,526.35	30.27	30.35	163.66	30.88	343.29	605.93	545.79	60.14	10.075	
8,550.00	8,540.92	8,584.51	8,576.26	30.45	30.53	163.76	31.13	340.53	606.27	545.76	60.50	10.021	
8,600.00	8,590.82	8,634.50	8,626.17	30.64	30.71	163.86	31.38	337.77	606.60	545.74	60.86	9.967	
8,650.00	8,640.71	8,684.49	8,676.08	30.82	30.89	163.96	31.63	335.01	606.94	545.72	61.22	9.914	
8,700.00	8,690.61	8,734.48	8,726.00	31.00	31.08	164.06	31.88	332.26	607.28	545.70	61.58	9.862	
8,750.00	8,740.51	8,784.47	8,775.91	31.18	31.26	164.16	32.13	329.50	607.61	545.68	61.94	9.810	
8,800.00	8,790.40	8,834.45	8,825.82	31.37	31.44	164.26	32.38	326.74	607.96	545.66	62.29	9.759	
8,850.00	8,840.30	8,884.44	8,875.73	31.55	31.62	164.36	32.63	323.98	608.30	545.65	62.65	9.709	
8,900.00	8,890.19	8,934.43	8,925.64	31.73	31.80	164.45	32.88	321.22	608.64	545.63	63.01	9.659	
8,950.00	8,940.09	8,984.42	8,975.55	31.91	31.98	164.55	33.13	318.46	608.99	545.62	63.37	9.610	
9,000.00	8,989.98	9,034.40	9,025.46	32.09	32.17	164.65	33.38	315.71	609.34	545.61	63.73	9.562	
9,050.00	9,039.88	9,084.39	9,075.37	32.28	32.35	164.75	33.64	312.95	609.69	545.60	64.09	9.514	
9,100.00	9,089.78	9,134.38	9,125.28	32.46	32.53	164.85	33.89	310.19	610.04	545.60	64.44	9.466	
9,150.00	9,139.67	9,184.37	9,175.20	32.64	32.71	164.95	34.14	307.43	610.40	545.59	64.80	9.419	
9,200.00	9,189.57	9,234.36	9,225.11	32.82	32.89	165.04	34.39	304.67	610.75	545.59	65.16	9.373	
9,250.00	9,239.46	9,284.34	9,275.02	33.01	33.08	165.14	34.64	301.92	611.11	545.59	65.52	9.327 ES	
9,300.00	9,289.36	9,334.33	9,324.93	33.19	33.26	165.24	34.89	299.16	611.47	545.59	65.88	9.282	
9,350.00	9,339.25	9,384.32	9,374.84	33.37	33.44	165.34	35.14	296.40	611.83	545.59	66.24	9.237	
9,400.00	9,389.15	9,434.31	9,424.75	33.55	33.62	165.43	35.39	293.64	612.19	545.60	66.60	9.193	
9,450.00	9,439.05	9,484.30	9,474.66	33.74	33.80	165.53	35.64	290.88	612.56	545.60	66.96	9.149	
9,500.00	9,488.94	9,534.28	9,524.57	33.92	33.99	165.63	35.89	288.13	612.92	545.61	67.31	9.105	
9,550.00	9,538.84	9,584.27	9,574.48	34.10	34.17	165.73	36.14	285.37	613.29	545.62	67.67	9.063	
9,600.00	9,588.73	9,634.26	9,624.40	34.28	34.35	165.82	36.39	282.61	613.66	545.63	68.03	9.020	
9,650.00	9,638.63	9,684.25	9,674.31	34.47	34.53	165.92	36.64	279.85	614.03	545.64	68.39	8.978	
9,700.00	9,688.52	9,734.23	9,724.22	34.65	34.71	166.02	36.89	277.09	614.41	545.66	68.75	8.937	
9,750.00	9,738.42	9,784.22	9,774.13	34.83	34.90	166.11	37.14	274.34	614.78	545.67	69.11	8.896	
9,800.00	9,788.32	9,834.21	9,824.04	35.01	35.08	166.21	37.39	271.58	615.16	545.69	69.47	8.855	
9,850.00	9,838.21	9,884.20	9,873.95	35.20	35.26	166.31	37.64	268.82	615.54	545.71	69.83	8.815	
9,900.00	9,888.11	9,934.19	9,923.86	35.38	35.44	166.40	37.89	266.06	615.92	545.73	70.19	8.775	
9,950.00	9,938.00	9,984.17	9,973.77	35.56	35.62	166.50	38.14	263.30	616.30	545.76	70.55	8.736	
10,000.00	9,987.90	10,034.16	10,023.68	35.74	35.81	166.59	38.39	260.55	616.69	545.78	70.90	8.697	
10,050.00	10,037.79	10,079.27	10,068.73	35.93	35.97	166.68	38.60	258.18	617.21	545.96	71.25	8.662	
10,100.00	10,087.69	10,122.32	10,111.74	36.11	36.13	166.76	38.76	256.38	618.27	546.68	71.59	8.636	
10,150.00	10,137.59	10,165.35	10,154.75	36.29	36.28	166.83	38.88	255.07	619.90	547.98	71.92	8.619	
10,200.00	10,187.48	10,208.35	10,197.74	36.48	36.43	166.90	38.96	254.25	622.08	549.84	72.25	8.611	
10,250.00	10,237.38	10,251.30	10,240.69	36.66	36.59	166.96	38.99	253.90	624.83	552.27	72.56	8.611	
10,300.00	10,287.27	10,300.32	10,289.07	36.84	36.76	167.02	38.99	253.89	627.96	555.05	72.91	8.613	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,350.00	10,337.17	10,349.58	10,338.97	37.02	36.93	167.09	38.99	253.89	631.10	557.84	73.26	8.615	
10,400.00	10,387.06	10,400.53	10,388.86	37.21	37.10	167.15	38.99	253.89	634.25	560.63	73.62	8.616	
10,450.00	10,436.96	10,449.37	10,438.76	37.39	37.27	167.22	38.99	253.89	637.40	563.43	73.97	8.617	
10,500.00	10,486.86	10,500.74	10,488.66	37.57	37.45	167.28	38.99	253.89	640.55	566.22	74.33	8.618	
10,550.00	10,536.75	10,549.16	10,538.55	37.76	37.62	167.34	38.99	253.89	643.70	569.02	74.67	8.620	
10,600.00	10,586.65	10,600.94	10,588.45	37.94	37.80	167.41	38.99	253.89	646.85	571.81	75.03	8.621	
10,650.00	10,636.54	10,641.54	10,630.92	38.12	37.94	167.53	38.16	253.89	650.21	574.88	75.33	8.632	
10,700.00	10,686.44	10,681.36	10,670.57	38.30	38.07	167.88	34.63	253.90	654.32	578.72	75.60	8.655	
10,750.00	10,736.33	10,720.35	10,709.07	38.49	38.20	168.45	28.52	253.92	659.24	583.40	75.85	8.692	
10,800.00	10,786.23	10,758.20	10,745.97	38.67	38.32	169.20	20.09	253.94	665.07	589.01	76.06	8.744	
10,850.00	10,836.13	10,794.65	10,780.90	38.85	38.43	170.11	9.70	253.97	671.93	595.68	76.24	8.813	
10,900.00	10,886.02	10,829.49	10,813.60	39.04	38.54	171.13	-2.30	254.00	679.93	603.56	76.37	8.903	
10,950.00	10,935.92	10,862.59	10,843.94	39.22	38.63	172.24	-15.52	254.04	689.18	612.74	76.44	9.016	
11,000.00	10,985.84	10,893.96	10,871.95	39.40	38.72	173.41	-29.64	254.08	699.37	622.94	76.43	9.150	
11,050.00	11,035.80	10,923.61	10,897.67	39.58	38.80	174.61	-44.38	254.12	710.44	634.09	76.35	9.305	
11,100.00	11,085.78	10,950.00	10,919.90	39.76	38.87	175.73	-58.60	254.16	722.49	646.34	76.15	9.487	
11,150.00	11,135.77	10,977.83	10,942.60	39.94	38.94	176.97	-74.69	254.20	735.60	659.68	75.92	9.689	
11,200.00	11,185.77	11,000.00	10,960.11	40.11	39.00	178.49	-88.29	254.24	749.89	674.37	75.52	9.930	
11,250.00	11,235.77	11,025.59	10,979.65	40.29	39.06	179.70	-104.81	254.28	765.82	690.69	75.14	10.192	
11,300.00	11,285.77	11,050.00	10,997.58	40.46	39.12	180.89	-121.37	254.33	783.57	708.88	74.69	10.491	
11,350.00	11,335.77	11,067.24	11,009.82	40.64	39.16	182.05	-133.51	254.36	803.09	729.05	74.04	10.847	
11,400.00	11,385.77	11,086.00	11,022.71	40.81	39.20	183.20	-147.14	254.40	824.36	750.97	73.39	11.233	
11,450.00	11,435.77	11,100.00	11,032.03	40.99	39.23	184.34	-157.58	254.42	847.34	774.73	72.61	11.670	
11,500.00	11,485.77	11,119.85	11,044.81	41.17	39.27	185.48	-172.78	254.46	871.93	799.96	71.97	12.115	
11,550.00	11,535.77	11,135.22	11,054.34	41.34	39.31	186.61	-184.83	254.50	897.98	826.76	71.22	12.609	
11,600.00	11,585.62	11,150.00	11,063.19	41.50	39.34	187.75	-196.67	254.53	924.03	853.60	70.43	13.120	
11,650.00	11,634.97	11,167.01	11,073.00	41.65	39.38	188.89	-210.56	254.57	949.41	879.74	69.67	13.627	
11,700.00	11,683.43	11,183.86	11,082.19	41.80	39.42	189.99	-224.44	254.60	973.89	904.99	68.90	14.135	
11,750.00	11,730.64	11,200.00	11,090.83	41.95	39.46	191.08	-238.32	254.64	997.26	929.14	68.11	14.641	
11,800.00	11,776.24	11,218.13	11,099.93	42.08	39.50	192.16	-253.99	254.68	1,019.32	951.95	67.37	15.129	
11,850.00	11,819.89	11,235.85	11,108.35	42.20	39.55	193.24	-269.58	254.73	1,039.92	973.29	66.64	15.606	
11,900.00	11,861.24	11,250.00	11,114.73	42.31	39.58	194.32	-282.21	254.76	1,058.94	993.10	65.84	16.085	
11,950.00	11,899.99	11,272.05	11,124.03	42.40	39.64	195.39	-302.21	254.81	1,076.19	1,010.96	65.23	16.498	
12,000.00	11,935.84	11,300.00	11,134.71	42.49	39.71	196.46	-328.03	254.88	1,091.72	1,026.95	64.77	16.855	
12,050.00	11,968.52	11,300.00	11,134.71	42.56	39.71	197.53	-328.03	254.88	1,105.21	1,041.41	63.81	17.322	
12,100.00	11,997.78	11,327.75	11,144.05	42.63	39.79	198.60	-354.16	254.96	1,116.61	1,053.20	63.42	17.607	
12,150.00	12,023.39	11,350.00	11,150.62	42.69	39.85	199.67	-375.41	255.01	1,126.05	1,063.08	62.97	17.881	
12,200.00	12,045.17	11,365.48	11,154.71	42.77	39.89	200.74	-390.34	255.05	1,133.34	1,070.86	62.48	18.139	
12,250.00	12,062.94	11,384.44	11,159.16	42.86	39.94	201.81	-408.78	255.10	1,138.48	1,076.37	62.12	18.328	
12,300.00	12,076.57	11,400.00	11,162.35	42.97	39.99	202.88	-424.00	255.14	1,141.45	1,079.66	61.79	18.473	
12,350.00	12,085.96	11,422.48	11,166.23	43.07	40.05	203.95	-446.14	255.20	1,142.19	1,080.56	61.63	18.533	
12,400.00	12,091.03	11,450.00	11,169.79	43.18	40.13	205.02	-473.43	255.28	1,140.83	1,079.24	61.59	18.523	
12,450.00	12,092.00	11,450.00	11,169.79	43.30	40.13	206.09	-473.43	255.28	1,137.42	1,075.99	61.43	18.517	
12,500.00	12,092.00	11,479.59	11,172.16	43.41	40.22	207.16	-502.92	255.36	1,134.41	1,072.89	61.52	18.440	
12,550.00	12,092.00	11,500.00	11,172.90	43.55	40.27	208.23	-523.32	255.41	1,132.89	1,071.30	61.59	18.395	
12,572.34	12,092.00	11,519.37	11,173.00	43.61	40.33	209.30	-525.25	255.42	1,132.62	1,070.99	61.64	18.376	
12,600.00	12,092.00	11,529.59	11,173.00	43.68	40.36	210.37	-552.90	255.49	1,132.62	1,070.93	61.70	18.358	
12,650.00	12,092.00	11,579.59	11,173.00	43.84	40.52	211.44	-602.90	255.63	1,132.63	1,070.75	61.88	18.305	
12,700.00	12,092.00	11,629.59	11,173.00	44.00	40.69	212.51	-652.90	255.76	1,132.63	1,070.56	62.07	18.248	
12,750.00	12,092.00	11,679.59	11,173.00	44.17	40.86	213.58	-702.90	255.90	1,132.63	1,070.34	62.28	18.185	
12,800.00	12,092.00	11,729.59	11,173.00	44.35	41.05	214.65	-752.90	256.03	1,132.63	1,070.12	62.51	18.120	
12,850.00	12,092.00	11,779.59	11,173.00	44.55	41.25	215.72	-802.90	256.17	1,132.63	1,069.87	62.76	18.048	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
12,900.00	12,092.00	11,829.59	11,173.00	44.75	41.47	-35.61	-852.90	256.31	1,132.63	1,069.61	63.02	17.973	
12,950.00	12,092.00	11,879.59	11,173.00	44.97	41.69	-35.61	-902.90	256.44	1,132.63	1,069.33	63.30	17.893	
13,000.00	12,092.00	11,929.59	11,173.00	45.19	41.92	-35.61	-952.90	256.58	1,132.63	1,069.04	63.59	17.811	
13,050.00	12,092.00	11,979.59	11,173.00	45.43	42.17	-35.61	-1,002.90	256.71	1,132.63	1,068.72	63.91	17.723	
13,100.00	12,092.00	12,029.59	11,173.00	45.67	42.42	-35.61	-1,052.90	256.85	1,132.63	1,068.40	64.23	17.633	
13,150.00	12,092.00	12,079.59	11,173.00	45.93	42.69	-35.61	-1,102.90	256.98	1,132.64	1,068.05	64.58	17.538	
13,200.00	12,092.00	12,129.59	11,173.00	46.19	42.97	-35.61	-1,152.90	257.12	1,132.64	1,067.70	64.94	17.442	
13,250.00	12,092.00	12,179.59	11,173.00	46.47	43.26	-35.61	-1,202.90	257.25	1,132.64	1,067.32	65.32	17.341	
13,300.00	12,092.00	12,229.59	11,173.00	46.75	43.55	-35.61	-1,252.90	257.39	1,132.64	1,066.93	65.70	17.239	
13,350.00	12,092.00	12,279.59	11,173.00	47.05	43.86	-35.61	-1,302.90	257.52	1,132.64	1,066.53	66.11	17.132	
13,400.00	12,092.00	12,329.59	11,173.00	47.35	44.18	-35.61	-1,352.90	257.66	1,132.64	1,066.11	66.53	17.025	
13,450.00	12,092.00	12,379.59	11,173.00	47.67	44.50	-35.61	-1,402.90	257.79	1,132.64	1,065.68	66.96	16.914	
13,500.00	12,092.00	12,429.59	11,173.00	47.99	44.84	-35.61	-1,452.90	257.93	1,132.64	1,065.23	67.41	16.803	
13,550.00	12,092.00	12,479.59	11,173.00	48.32	45.19	-35.61	-1,502.90	258.06	1,132.64	1,064.77	67.87	16.688	
13,600.00	12,092.00	12,529.59	11,173.00	48.66	45.54	-35.61	-1,552.90	258.20	1,132.64	1,064.30	68.34	16.573	
13,650.00	12,092.00	12,579.59	11,173.00	49.01	45.90	-35.61	-1,602.90	258.34	1,132.65	1,063.81	68.83	16.455	
13,700.00	12,092.00	12,629.59	11,173.00	49.36	46.28	-35.61	-1,652.90	258.47	1,132.65	1,063.31	69.33	16.336	
13,750.00	12,092.00	12,679.59	11,173.00	49.73	46.65	-35.61	-1,702.90	258.61	1,132.65	1,062.80	69.85	16.216	
13,800.00	12,092.00	12,729.59	11,173.00	50.09	47.04	-35.61	-1,752.90	258.74	1,132.65	1,062.28	70.37	16.095	
13,850.00	12,092.00	12,779.59	11,173.00	50.48	47.44	-35.61	-1,802.90	258.88	1,132.65	1,061.74	70.91	15.973	
13,900.00	12,092.00	12,829.59	11,173.00	50.86	47.84	-35.61	-1,852.90	259.01	1,132.65	1,061.19	71.46	15.851	
13,950.00	12,092.00	12,879.59	11,173.00	51.26	48.25	-35.61	-1,902.90	259.15	1,132.65	1,060.63	72.02	15.727	
14,000.00	12,092.00	12,929.59	11,173.00	51.66	48.67	-35.61	-1,952.90	259.28	1,132.65	1,060.06	72.59	15.604	
14,050.00	12,092.00	12,979.59	11,173.00	52.07	49.10	-35.61	-2,002.90	259.42	1,132.65	1,059.48	73.17	15.479	
14,100.00	12,092.00	13,029.59	11,173.00	52.48	49.53	-35.61	-2,052.90	259.55	1,132.65	1,058.89	73.77	15.355	
14,150.00	12,092.00	13,079.59	11,173.00	52.90	49.97	-35.61	-2,102.90	259.69	1,132.66	1,058.28	74.37	15.230	
14,200.00	12,092.00	13,129.59	11,173.00	53.33	50.42	-35.61	-2,152.90	259.82	1,132.66	1,057.67	74.98	15.106	
14,250.00	12,092.00	13,179.59	11,173.00	53.77	50.87	-35.61	-2,202.90	259.96	1,132.66	1,057.05	75.61	14.981	
14,300.00	12,092.00	13,229.59	11,173.00	54.21	51.33	-35.61	-2,252.90	260.09	1,132.66	1,056.42	76.24	14.857	
14,350.00	12,092.00	13,279.59	11,173.00	54.66	51.79	-35.61	-2,302.90	260.23	1,132.66	1,055.78	76.88	14.732	
14,400.00	12,092.00	13,329.59	11,173.00	55.11	52.26	-35.61	-2,352.90	260.37	1,132.66	1,055.13	77.53	14.609	
14,450.00	12,092.00	13,379.59	11,173.00	55.57	52.74	-35.61	-2,402.90	260.50	1,132.66	1,054.46	78.20	14.485	
14,500.00	12,092.00	13,429.59	11,173.00	56.03	53.22	-35.61	-2,452.90	260.64	1,132.66	1,053.80	78.86	14.362	
14,550.00	12,092.00	13,479.59	11,173.00	56.50	53.71	-35.61	-2,502.90	260.77	1,132.66	1,053.12	79.54	14.239	
14,600.00	12,092.00	13,529.59	11,173.00	56.97	54.20	-35.61	-2,552.90	260.91	1,132.66	1,052.44	80.23	14.118	
14,650.00	12,092.00	13,579.59	11,173.00	57.46	54.70	-35.61	-2,602.90	261.04	1,132.67	1,051.74	80.93	13.996	
14,700.00	12,092.00	13,629.59	11,173.00	57.94	55.21	-35.61	-2,652.90	261.18	1,132.67	1,051.04	81.63	13.876	
14,750.00	12,092.00	13,679.59	11,173.00	58.43	55.71	-35.61	-2,702.90	261.31	1,132.67	1,050.33	82.34	13.756	
14,800.00	12,092.00	13,729.59	11,173.00	58.93	56.23	-35.62	-2,752.90	261.45	1,132.67	1,049.61	83.05	13.638	
14,850.00	12,092.00	13,779.59	11,173.00	59.43	56.75	-35.62	-2,802.90	261.58	1,132.67	1,048.89	83.78	13.520	
14,900.00	12,092.00	13,829.59	11,173.00	59.93	57.27	-35.62	-2,852.89	261.72	1,132.67	1,048.16	84.51	13.403	
14,950.00	12,092.00	13,879.59	11,173.00	60.44	57.79	-35.62	-2,902.89	261.85	1,132.67	1,047.42	85.25	13.286	
15,000.00	12,092.00	13,929.59	11,173.00	60.96	58.33	-35.62	-2,952.89	261.99	1,132.67	1,046.68	85.99	13.171	
15,050.00	12,092.00	13,979.59	11,173.00	61.48	58.86	-35.62	-3,002.89	262.13	1,132.67	1,045.93	86.75	13.057	
15,100.00	12,092.00	14,029.59	11,173.00	62.00	59.40	-35.62	-3,052.89	262.26	1,132.67	1,045.17	87.51	12.944	
15,150.00	12,092.00	14,079.59	11,173.00	62.53	59.94	-35.62	-3,102.89	262.40	1,132.68	1,044.40	88.27	12.832	
15,200.00	12,092.00	14,129.59	11,173.00	63.05	60.49	-35.62	-3,152.89	262.53	1,132.68	1,043.64	89.04	12.721	
15,250.00	12,092.00	14,179.59	11,173.00	63.59	61.04	-35.62	-3,202.89	262.67	1,132.68	1,042.86	89.82	12.611	
15,300.00	12,092.00	14,229.59	11,173.00	64.13	61.60	-35.62	-3,252.89	262.80	1,132.68	1,042.08	90.60	12.502	
15,350.00	12,092.00	14,279.59	11,173.00	64.67	62.16	-35.62	-3,302.89	262.94	1,132.68	1,041.29	91.39	12.394	
15,400.00	12,092.00	14,329.59	11,173.00	65.21	62.72	-35.62	-3,352.89	263.07	1,132.68	1,040.50	92.18	12.287	
15,450.00	12,092.00	14,379.59	11,173.00	65.76	63.28	-35.62	-3,402.89	263.21	1,132.68	1,039.70	92.98	12.182	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
15,500.00	12,092.00	14,429.59	11,173.00	66.31	63.85	-35.62	-3,452.89	263.34	1,132.68	1,038.90	93.78	12.078	
15,550.00	12,092.00	14,479.59	11,173.00	66.87	64.42	-35.62	-3,502.89	263.48	1,132.68	1,038.09	94.59	11.974	
15,600.00	12,092.00	14,529.59	11,173.00	67.43	65.00	-35.62	-3,552.89	263.61	1,132.68	1,037.28	95.41	11.872	
15,650.00	12,092.00	14,579.59	11,173.00	67.99	65.57	-35.62	-3,602.89	263.75	1,132.69	1,036.46	96.23	11.771	
15,700.00	12,092.00	14,629.59	11,173.00	68.56	66.15	-35.62	-3,652.89	263.88	1,132.69	1,035.64	97.05	11.671	
15,750.00	12,092.00	14,679.59	11,173.00	69.13	66.74	-35.62	-3,702.89	264.02	1,132.69	1,034.81	97.88	11.572	
15,800.00	12,092.00	14,729.59	11,173.00	69.70	67.32	-35.62	-3,752.89	264.16	1,132.69	1,033.98	98.71	11.475	
15,850.00	12,092.00	14,779.59	11,173.00	70.27	67.91	-35.62	-3,802.89	264.29	1,132.69	1,033.14	99.55	11.378	
15,900.00	12,092.00	14,829.59	11,173.00	70.85	68.50	-35.62	-3,852.89	264.43	1,132.69	1,032.30	100.39	11.283	
15,950.00	12,092.00	14,879.59	11,173.00	71.43	69.10	-35.62	-3,902.89	264.56	1,132.69	1,031.46	101.23	11.189	
16,000.00	12,092.00	14,929.59	11,173.00	72.01	69.69	-35.62	-3,952.89	264.70	1,132.69	1,030.61	102.08	11.096	
16,050.00	12,092.00	14,979.59	11,173.00	72.59	70.29	-35.62	-4,002.89	264.83	1,132.69	1,029.76	102.94	11.004	
16,100.00	12,092.00	15,029.59	11,173.00	73.18	70.90	-35.62	-4,052.89	264.97	1,132.69	1,028.90	103.79	10.913	
16,150.00	12,092.00	15,079.59	11,173.00	73.77	71.50	-35.62	-4,102.89	265.10	1,132.70	1,028.04	104.65	10.823	
16,200.00	12,092.00	15,129.59	11,173.00	74.36	72.11	-35.62	-4,152.89	265.24	1,132.70	1,027.18	105.52	10.735	
16,250.00	12,092.00	15,179.59	11,173.00	74.96	72.71	-35.62	-4,202.89	265.37	1,132.70	1,026.31	106.39	10.647	
16,300.00	12,092.00	15,229.59	11,173.00	75.55	73.32	-35.62	-4,252.89	265.51	1,132.70	1,025.44	107.26	10.561	
16,350.00	12,092.00	15,279.59	11,173.00	76.16	73.94	-35.62	-4,302.89	265.64	1,132.70	1,024.57	108.13	10.475	
16,400.00	12,092.00	15,329.59	11,173.00	76.76	74.55	-35.62	-4,352.89	265.78	1,132.70	1,023.69	109.01	10.391	
16,450.00	12,092.00	15,379.59	11,173.00	77.36	75.17	-35.62	-4,402.89	265.91	1,132.70	1,022.81	109.89	10.307	
16,500.00	12,092.00	15,429.59	11,173.00	77.96	75.79	-35.62	-4,452.89	266.05	1,132.70	1,021.93	110.78	10.225	
16,550.00	12,092.00	15,479.59	11,173.00	78.57	76.41	-35.62	-4,502.89	266.19	1,132.70	1,021.04	111.66	10.144	
16,600.00	12,092.00	15,529.59	11,173.00	79.18	77.03	-35.62	-4,552.89	266.32	1,132.70	1,020.15	112.55	10.064	
16,650.00	12,092.00	15,579.59	11,173.00	79.80	77.65	-35.62	-4,602.89	266.46	1,132.71	1,019.26	113.45	9.984	
16,700.00	12,092.00	15,629.59	11,173.00	80.41	78.28	-35.62	-4,652.89	266.59	1,132.71	1,018.36	114.34	9.906	
16,750.00	12,092.00	15,679.59	11,173.00	81.02	78.91	-35.62	-4,702.89	266.73	1,132.71	1,017.46	115.24	9.829	
16,800.00	12,092.00	15,729.59	11,173.00	81.64	79.54	-35.62	-4,752.89	266.86	1,132.71	1,016.56	116.14	9.753	
16,850.00	12,092.00	15,779.59	11,173.00	82.26	80.17	-35.62	-4,802.89	267.00	1,132.71	1,015.66	117.05	9.677	
16,900.00	12,092.00	15,829.59	11,173.00	82.88	80.80	-35.62	-4,852.89	267.13	1,132.71	1,014.75	117.96	9.603	
16,950.00	12,092.00	15,879.59	11,173.00	83.50	81.43	-35.62	-4,902.89	267.27	1,132.71	1,013.84	118.87	9.529	
17,000.00	12,092.00	15,929.59	11,173.00	84.13	82.07	-35.62	-4,952.89	267.40	1,132.71	1,012.93	119.78	9.457	
17,050.00	12,092.00	15,979.59	11,173.00	84.75	82.71	-35.62	-5,002.89	267.54	1,132.71	1,012.02	120.69	9.385	
17,100.00	12,092.00	16,029.59	11,173.00	85.38	83.35	-35.62	-5,052.89	267.67	1,132.71	1,011.10	121.61	9.314	
17,150.00	12,092.00	16,079.59	11,173.00	86.01	83.99	-35.62	-5,102.89	267.81	1,132.72	1,010.19	122.53	9.244	
17,200.00	12,092.00	16,129.59	11,173.00	86.64	84.63	-35.62	-5,152.89	267.94	1,132.72	1,009.27	123.45	9.175	
17,250.00	12,092.00	16,179.59	11,173.00	87.27	85.27	-35.62	-5,202.89	268.08	1,132.72	1,008.34	124.37	9.107	
17,300.00	12,092.00	16,229.59	11,173.00	87.91	85.91	-35.62	-5,252.89	268.22	1,132.72	1,007.42	125.30	9.040	
17,350.00	12,092.00	16,279.59	11,173.00	88.54	86.56	-35.62	-5,302.89	268.35	1,132.72	1,006.49	126.23	8.974	
17,400.00	12,092.00	16,329.59	11,173.00	89.18	87.21	-35.62	-5,352.89	268.49	1,132.72	1,005.56	127.16	8.908	
17,450.00	12,092.00	16,379.59	11,173.00	89.82	87.85	-35.62	-5,402.89	268.62	1,132.72	1,004.63	128.09	8.843	
17,500.00	12,092.00	16,429.59	11,173.00	90.45	88.50	-35.62	-5,452.89	268.76	1,132.72	1,003.70	129.02	8.779	
17,550.00	12,092.00	16,479.59	11,173.00	91.10	89.15	-35.62	-5,502.89	268.89	1,132.72	1,002.76	129.96	8.716	
17,600.00	12,092.00	16,529.59	11,173.00	91.74	89.81	-35.62	-5,552.89	269.03	1,132.72	1,001.83	130.90	8.653	
17,650.00	12,092.00	16,579.59	11,173.00	92.38	90.46	-35.62	-5,602.88	269.16	1,132.73	1,000.89	131.84	8.592	
17,700.00	12,092.00	16,629.59	11,173.00	93.02	91.11	-35.62	-5,652.88	269.30	1,132.73	999.95	132.78	8.531	
17,750.00	12,092.00	16,679.59	11,173.00	93.67	91.77	-35.62	-5,702.88	269.43	1,132.73	999.00	133.72	8.471	
17,800.00	12,092.00	16,729.59	11,173.00	94.32	92.42	-35.62	-5,752.88	269.57	1,132.73	998.06	134.67	8.411	
17,850.00	12,092.00	16,779.59	11,173.00	94.96	93.08	-35.62	-5,802.88	269.70	1,132.73	997.11	135.62	8.352	
17,900.00	12,092.00	16,829.59	11,173.00	95.61	93.74	-35.62	-5,852.88	269.84	1,132.73	996.17	136.56	8.295	
17,950.00	12,092.00	16,879.59	11,173.00	96.26	94.40	-35.62	-5,902.88	269.97	1,132.73	995.22	137.51	8.237	
18,000.00	12,092.00	16,929.59	11,173.00	96.91	95.06	-35.62	-5,952.88	270.11	1,132.73	994.27	138.47	8.181	
18,050.00	12,092.00	16,979.59	11,173.00	97.57	95.72	-35.62	-6,002.88	270.25	1,132.73	993.31	139.42	8.125	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: O-MWD+HDGM												Offset Well Error:	0.50 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
18,100.00	12,092.00	17,029.59	11,173.00	98.22	96.38	-35.62	-6,052.88	270.38	1,132.73	992.36	140.37	8.069	
18,150.00	12,092.00	17,079.59	11,173.00	98.87	97.04	-35.62	-6,102.88	270.52	1,132.74	991.40	141.33	8.015	
18,200.00	12,092.00	17,129.59	11,173.00	99.53	97.71	-35.62	-6,152.88	270.65	1,132.74	990.45	142.29	7.961	
18,250.00	12,092.00	17,179.59	11,173.00	100.19	98.37	-35.62	-6,202.88	270.79	1,132.74	989.49	143.25	7.908	
18,300.00	12,092.00	17,229.59	11,173.00	100.84	99.04	-35.62	-6,252.88	270.92	1,132.74	988.53	144.21	7.855	
18,350.00	12,092.00	17,279.59	11,173.00	101.50	99.71	-35.62	-6,302.88	271.06	1,132.74	987.57	145.17	7.803	
18,400.00	12,092.00	17,329.59	11,173.00	102.16	100.37	-35.62	-6,352.88	271.19	1,132.74	986.61	146.13	7.751	
18,450.00	12,092.00	17,379.59	11,173.00	102.82	101.04	-35.62	-6,402.88	271.33	1,132.74	985.64	147.10	7.701	
18,500.00	12,092.00	17,429.59	11,173.00	103.48	101.71	-35.62	-6,452.88	271.46	1,132.74	984.68	148.07	7.650	
18,550.00	12,092.00	17,479.59	11,173.00	104.14	102.38	-35.62	-6,502.88	271.60	1,132.74	983.71	149.03	7.601	
18,600.00	12,092.00	17,529.59	11,173.00	104.81	103.05	-35.62	-6,552.88	271.73	1,132.74	982.74	150.00	7.552	
18,650.00	12,092.00	17,579.59	11,173.00	105.47	103.72	-35.62	-6,602.88	271.87	1,132.75	981.77	150.97	7.503	
18,700.00	12,092.00	17,629.59	11,173.00	106.13	104.39	-35.62	-6,652.88	272.00	1,132.75	980.80	151.94	7.455	
18,750.00	12,092.00	17,679.59	11,173.00	106.80	105.07	-35.62	-6,702.88	272.14	1,132.75	979.83	152.92	7.408	
18,800.00	12,092.00	17,729.59	11,173.00	107.46	105.74	-35.62	-6,752.88	272.28	1,132.75	978.86	153.89	7.361	
18,850.00	12,092.00	17,779.59	11,173.00	108.13	106.42	-35.62	-6,802.88	272.41	1,132.75	977.89	154.86	7.314	
18,900.00	12,092.00	17,829.59	11,173.00	108.80	107.09	-35.62	-6,852.88	272.55	1,132.75	976.91	155.84	7.269	
18,950.00	12,092.00	17,879.59	11,173.00	109.47	107.77	-35.62	-6,902.88	272.68	1,132.75	975.93	156.82	7.223	
19,000.00	12,092.00	17,929.59	11,173.00	110.14	108.44	-35.62	-6,952.88	272.82	1,132.75	974.96	157.79	7.179	
19,050.00	12,092.00	17,979.59	11,173.00	110.81	109.12	-35.62	-7,002.88	272.95	1,132.75	973.98	158.77	7.134	
19,100.00	12,092.00	18,029.59	11,173.00	111.48	109.80	-35.62	-7,052.88	273.09	1,132.75	973.00	159.75	7.091	
19,150.00	12,092.00	18,079.59	11,173.00	112.15	110.47	-35.62	-7,102.88	273.22	1,132.76	972.02	160.73	7.047	
19,200.00	12,092.00	18,129.59	11,173.00	112.82	111.15	-35.62	-7,152.88	273.36	1,132.76	971.04	161.72	7.005	
19,250.00	12,092.00	18,179.59	11,173.00	113.49	111.83	-35.62	-7,202.88	273.49	1,132.76	970.06	162.70	6.962	
19,300.00	12,092.00	18,229.59	11,173.00	114.16	112.51	-35.62	-7,252.88	273.63	1,132.76	969.07	163.68	6.920	
19,350.00	12,092.00	18,279.59	11,173.00	114.84	113.19	-35.62	-7,302.88	273.76	1,132.76	968.09	164.67	6.879	
19,400.00	12,092.00	18,329.59	11,173.00	115.51	113.87	-35.62	-7,352.88	273.90	1,132.76	967.10	165.66	6.838	
19,450.00	12,092.00	18,379.59	11,173.00	116.19	114.56	-35.62	-7,402.88	274.03	1,132.76	966.12	166.64	6.798	
19,500.00	12,092.00	18,429.59	11,173.00	116.86	115.24	-35.62	-7,452.88	274.17	1,132.76	965.13	167.63	6.758	
19,550.00	12,092.00	18,479.59	11,173.00	117.54	115.92	-35.62	-7,502.88	274.31	1,132.76	964.14	168.62	6.718	
19,600.00	12,092.00	18,529.59	11,173.00	118.22	116.60	-35.62	-7,552.88	274.44	1,132.76	963.16	169.61	6.679	
19,650.00	12,092.00	18,579.59	11,173.00	118.90	117.29	-35.62	-7,602.88	274.58	1,132.77	962.17	170.60	6.640	
19,700.00	12,092.00	18,629.59	11,173.00	119.57	117.97	-35.62	-7,652.88	274.71	1,132.77	961.18	171.59	6.602	
19,750.00	12,092.00	18,679.59	11,173.00	120.25	118.66	-35.62	-7,702.88	274.85	1,132.77	960.18	172.58	6.564	
19,800.00	12,092.00	18,729.59	11,173.00	120.93	119.34	-35.62	-7,752.88	274.98	1,132.77	959.19	173.58	6.526	
19,850.00	12,092.00	18,779.59	11,173.00	121.61	120.03	-35.62	-7,802.88	275.12	1,132.77	958.20	174.57	6.489	
19,900.00	12,092.00	18,829.59	11,173.00	122.29	120.72	-35.62	-7,852.88	275.25	1,132.77	957.21	175.56	6.452	
19,950.00	12,092.00	18,879.59	11,173.00	122.97	121.40	-35.62	-7,902.88	275.39	1,132.77	956.21	176.56	6.416	
20,000.00	12,092.00	18,929.59	11,173.00	123.65	122.09	-35.62	-7,952.88	275.52	1,132.77	955.22	177.55	6.380	
20,050.00	12,092.00	18,979.59	11,173.00	124.34	122.78	-35.62	-8,002.88	275.66	1,132.77	954.22	178.55	6.344	
20,100.00	12,092.00	19,029.59	11,173.00	125.02	123.47	-35.62	-8,052.88	275.79	1,132.77	953.22	179.55	6.309	
20,150.00	12,092.00	19,079.59	11,173.00	125.70	124.15	-35.62	-8,102.88	275.93	1,132.78	952.23	180.55	6.274	
20,200.00	12,092.00	19,129.59	11,173.00	126.38	124.84	-35.62	-8,152.88	276.07	1,132.78	951.23	181.55	6.240	
20,250.00	12,092.00	19,179.59	11,173.00	127.07	125.53	-35.62	-8,202.88	276.20	1,132.78	950.23	182.55	6.205	
20,300.00	12,092.00	19,229.59	11,173.00	127.75	126.22	-35.62	-8,252.88	276.34	1,132.78	949.23	183.55	6.172	
20,350.00	12,092.00	19,279.59	11,173.00	128.44	126.91	-35.62	-8,302.88	276.47	1,132.78	948.23	184.55	6.138	
20,400.00	12,092.00	19,329.59	11,173.00	129.12	127.60	-35.62	-8,352.87	276.61	1,132.78	947.23	185.55	6.105	
20,450.00	12,092.00	19,379.59	11,173.00	129.81	128.29	-35.62	-8,402.87	276.74	1,132.78	946.23	186.55	6.072	
20,500.00	12,092.00	19,429.59	11,173.00	130.49	128.99	-35.62	-8,452.87	276.88	1,132.78	945.23	187.55	6.040	
20,550.00	12,092.00	19,479.59	11,173.00	131.18	129.68	-35.62	-8,502.87	277.01	1,132.78	944.22	188.56	6.008	
20,600.00	12,092.00	19,529.59	11,173.00	131.87	130.37	-35.62	-8,552.87	277.15	1,132.78	943.22	189.56	5.976	
20,650.00	12,092.00	19,579.59	11,173.00	132.56	131.06	-35.62	-8,602.87	277.28	1,132.78	942.22	190.57	5.944	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
20,700.00	12,092.00	19,629.59	11,173.00	133.24	131.76	-35.62	-8,652.87	277.42	1,132.79	941.21	191.57	5.913	
20,750.00	12,092.00	19,679.59	11,173.00	133.93	132.45	-35.62	-8,702.87	277.55	1,132.79	940.21	192.58	5.882	
20,800.00	12,092.00	19,729.59	11,173.00	134.62	133.14	-35.62	-8,752.87	277.69	1,132.79	939.20	193.59	5.852	
20,850.00	12,092.00	19,779.59	11,173.00	135.31	133.84	-35.62	-8,802.87	277.82	1,132.79	938.20	194.59	5.821	
20,900.00	12,092.00	19,829.59	11,173.00	136.00	134.53	-35.62	-8,852.87	277.96	1,132.79	937.19	195.60	5.791	
20,950.00	12,092.00	19,879.59	11,173.00	136.69	135.23	-35.62	-8,902.87	278.10	1,132.79	936.18	196.61	5.762	
21,000.00	12,092.00	19,929.59	11,173.00	137.38	135.92	-35.62	-8,952.87	278.23	1,132.79	935.17	197.62	5.732	
21,050.00	12,092.00	19,979.59	11,173.00	138.07	136.62	-35.62	-9,002.87	278.37	1,132.79	934.17	198.63	5.703	
21,100.00	12,092.00	20,029.59	11,173.00	138.76	137.31	-35.62	-9,052.87	278.50	1,132.79	933.16	199.64	5.674	
21,150.00	12,092.00	20,079.59	11,173.00	139.45	138.01	-35.62	-9,102.87	278.64	1,132.79	932.15	200.65	5.646	
21,200.00	12,092.00	20,129.59	11,173.00	140.14	138.71	-35.62	-9,152.87	278.77	1,132.80	931.14	201.66	5.617	
21,250.00	12,092.00	20,179.59	11,173.00	140.84	139.40	-35.62	-9,202.87	278.91	1,132.80	930.13	202.67	5.589	
21,300.00	12,092.00	20,229.59	11,173.00	141.53	140.10	-35.62	-9,252.87	279.04	1,132.80	929.12	203.68	5.562	
21,350.00	12,092.00	20,279.59	11,173.00	142.22	140.80	-35.62	-9,302.87	279.18	1,132.80	928.10	204.70	5.534	
21,400.00	12,092.00	20,329.59	11,173.00	142.91	141.49	-35.62	-9,352.87	279.31	1,132.80	927.09	205.71	5.507	
21,450.00	12,092.00	20,379.59	11,173.00	143.61	142.19	-35.62	-9,402.87	279.45	1,132.80	926.08	206.72	5.480	
21,500.00	12,092.00	20,429.59	11,173.00	144.30	142.89	-35.62	-9,452.87	279.58	1,132.80	925.07	207.74	5.453	
21,550.00	12,092.00	20,479.59	11,173.00	145.00	143.59	-35.62	-9,502.87	279.72	1,132.80	924.05	208.75	5.427	
21,600.00	12,092.00	20,529.59	11,173.00	145.69	144.29	-35.62	-9,552.87	279.85	1,132.80	923.04	209.77	5.400	
21,650.00	12,092.00	20,579.59	11,173.00	146.39	144.99	-35.62	-9,602.87	279.99	1,132.80	922.02	210.78	5.374	
21,700.00	12,092.00	20,629.59	11,173.00	147.08	145.69	-35.62	-9,652.87	280.13	1,132.81	921.01	211.80	5.349	
21,750.00	12,092.00	20,679.59	11,173.00	147.78	146.39	-35.62	-9,702.87	280.26	1,132.81	919.99	212.81	5.323	
21,800.00	12,092.00	20,729.59	11,173.00	148.47	147.09	-35.62	-9,752.87	280.40	1,132.81	918.98	213.83	5.298	
21,850.00	12,092.00	20,779.59	11,173.00	149.17	147.79	-35.62	-9,802.87	280.53	1,132.81	917.96	214.85	5.273	
21,900.00	12,092.00	20,829.59	11,173.00	149.86	148.49	-35.63	-9,852.87	280.67	1,132.81	916.95	215.86	5.248	
21,950.00	12,092.00	20,879.59	11,173.00	150.56	149.19	-35.63	-9,902.87	280.80	1,132.81	915.93	216.88	5.223	
22,000.00	12,092.00	20,929.59	11,173.00	151.26	149.89	-35.63	-9,952.87	280.94	1,132.81	914.91	217.90	5.199	
22,050.00	12,092.00	20,979.59	11,173.00	151.95	150.59	-35.63	-10,002.87	281.07	1,132.81	913.89	218.92	5.175	
22,100.00	12,092.00	21,029.59	11,173.00	152.65	151.29	-35.63	-10,052.87	281.21	1,132.81	912.88	219.94	5.151	
22,150.00	12,092.00	21,079.59	11,173.00	153.35	151.99	-35.63	-10,102.87	281.34	1,132.81	911.86	220.96	5.127	
22,200.00	12,092.00	21,129.59	11,173.00	154.05	152.69	-35.63	-10,152.87	281.48	1,132.82	910.84	221.98	5.103	
22,250.00	12,092.00	21,179.59	11,173.00	154.75	153.40	-35.63	-10,202.87	281.61	1,132.82	909.82	223.00	5.080	
22,300.00	12,092.00	21,229.59	11,173.00	155.44	154.10	-35.63	-10,252.87	281.75	1,132.82	908.80	224.02	5.057	
22,350.00	12,092.00	21,279.59	11,173.00	156.14	154.80	-35.63	-10,302.87	281.88	1,132.82	907.78	225.04	5.034	
22,381.87	12,092.00	21,311.45	11,173.00	156.59	155.25	-35.63	-10,334.73	281.97	1,132.82	907.13	225.69	5.019 SF	

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
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		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
3,450.00	3,450.00	3,511.66	3,505.79	12.15	12.26	91.98	-51.74	1,497.81	1,499.73	1,475.34	24.39	61.485	
3,500.00	3,500.00	3,557.34	3,551.34	12.33	12.42	91.86	-48.58	1,496.31	1,497.96	1,473.22	24.74	60.550	
3,550.00	3,550.00	3,603.25	3,597.11	12.51	12.59	91.74	-45.40	1,494.92	1,496.33	1,471.25	25.09	59.645	
3,600.00	3,600.00	3,647.98	3,641.71	12.69	12.76	91.62	-42.22	1,493.70	1,494.87	1,469.44	25.43	58.781	
3,650.00	3,650.00	3,692.79	3,686.38	12.87	12.92	91.49	-38.93	1,492.64	1,493.58	1,467.80	25.78	57.946	
3,700.00	3,700.00	3,741.64	3,735.08	13.05	13.10	91.35	-35.17	1,491.59	1,492.40	1,466.27	26.13	57.106	
3,750.00	3,750.00	3,790.75	3,784.02	13.23	13.28	91.20	-31.16	1,490.56	1,491.26	1,464.77	26.49	56.289	
3,800.00	3,800.00	3,842.41	3,835.48	13.41	13.47	91.03	-26.88	1,489.46	1,490.11	1,463.25	26.86	55.474	
3,850.00	3,850.00	3,894.75	3,887.64	13.59	13.66	90.87	-22.63	1,488.28	1,488.91	1,461.68	27.23	54.674	
3,900.00	3,900.00	3,949.92	3,942.62	13.77	13.86	90.70	-18.26	1,486.87	1,487.58	1,459.97	27.61	53.872	
3,950.00	3,950.00	4,006.99	3,999.49	13.94	14.08	90.53	-13.85	1,485.19	1,486.06	1,458.06	28.00	53.075	
4,000.00	4,000.00	4,066.17	4,058.46	14.12	14.29	90.36	-9.37	1,483.10	1,484.26	1,455.87	28.39	52.277	
4,050.00	4,050.00	4,114.36	4,106.50	14.30	14.47	155.74	-5.84	1,481.25	1,482.57	1,453.82	28.75	51.574	
4,100.00	4,099.99	4,161.19	4,153.18	14.48	14.64	155.64	-2.65	1,479.55	1,481.48	1,452.39	29.10	50.917	
4,150.00	4,149.97	4,214.15	4,205.99	14.65	14.84	155.53	0.81	1,477.64	1,480.91	1,451.45	29.46	50.265	
4,200.00	4,199.94	4,268.16	4,259.85	14.83	15.04	155.42	4.38	1,475.54	1,480.71	1,450.88	29.83	49.635	
4,203.15	4,203.08	4,271.56	4,263.24	14.84	15.05	155.42	4.61	1,475.41	1,480.71	1,450.85	29.86	49.596 CC	
4,250.00	4,249.88	4,316.29	4,307.84	15.00	15.21	155.34	7.49	1,473.65	1,480.98	1,450.79	30.18	49.067 ES	
4,300.00	4,299.79	4,365.28	4,356.70	15.18	15.39	155.27	10.52	1,471.76	1,481.78	1,451.25	30.54	48.525	
4,350.00	4,349.68	4,415.57	4,406.86	15.35	15.58	155.20	13.52	1,469.84	1,482.81	1,451.91	30.89	47.996	
4,400.00	4,399.58	4,466.96	4,458.12	15.53	15.77	155.14	16.51	1,467.85	1,483.82	1,452.56	31.26	47.474	
4,450.00	4,449.47	4,521.87	4,512.87	15.70	15.97	155.06	20.02	1,465.59	1,484.71	1,453.08	31.63	46.942	
4,500.00	4,499.37	4,574.85	4,565.66	15.88	16.17	154.97	23.85	1,463.25	1,485.45	1,453.46	32.00	46.426	
4,550.00	4,549.26	4,626.07	4,616.67	16.05	16.36	154.87	27.91	1,460.93	1,486.15	1,453.79	32.36	45.926	
4,600.00	4,599.16	4,679.14	4,669.50	16.23	16.55	154.75	32.40	1,458.45	1,486.78	1,454.05	32.73	45.426	
4,650.00	4,649.06	4,733.15	4,723.25	16.41	16.76	154.63	36.93	1,455.78	1,487.28	1,454.18	33.10	44.930	
4,700.00	4,698.95	4,776.65	4,766.53	16.58	16.92	154.53	40.66	1,453.65	1,487.82	1,454.37	33.44	44.488	
4,750.00	4,748.85	4,819.07	4,808.73	16.76	17.08	154.42	44.56	1,451.79	1,488.61	1,454.83	33.78	44.066	
4,800.00	4,798.74	4,864.75	4,854.16	16.94	17.25	154.30	48.97	1,449.97	1,489.62	1,455.49	34.13	43.646	
4,850.00	4,848.64	4,912.04	4,901.20	17.11	17.43	154.18	53.53	1,448.18	1,490.73	1,456.25	34.48	43.231	
4,900.00	4,898.53	4,961.58	4,950.47	17.29	17.61	154.05	58.26	1,446.37	1,491.91	1,457.07	34.84	42.817	
4,950.00	4,948.43	5,012.26	5,000.90	17.47	17.80	153.92	63.03	1,444.49	1,493.08	1,457.88	35.21	42.407	
5,000.00	4,998.33	5,063.03	5,051.42	17.65	17.99	153.79	67.73	1,442.58	1,494.23	1,458.66	35.57	42.004	
5,050.00	5,048.22	5,113.83	5,101.96	17.82	18.18	153.66	72.42	1,440.65	1,495.36	1,459.42	35.94	41.608	
5,100.00	5,098.12	5,162.78	5,150.67	18.00	18.37	153.54	76.92	1,438.78	1,496.49	1,460.19	36.30	41.227	
5,150.00	5,148.01	5,211.62	5,199.27	18.18	18.55	153.42	81.35	1,436.95	1,497.66	1,461.00	36.66	40.855	
5,200.00	5,197.91	5,256.24	5,243.67	18.36	18.72	153.31	85.47	1,435.37	1,498.95	1,461.94	37.00	40.509 SF	

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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		Offset		Semi Major Axis			Distance						Warning	
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
2,350.00	2,350.00	2,490.96	2,484.22	8.22	8.68	93.33	-86.54	1,487.51	1,496.01	1,479.22	16.79	89.078		
2,400.00	2,400.00	2,541.26	2,534.21	8.39	8.87	93.21	-83.08	1,483.21	1,491.54	1,474.38	17.16	86.931		
2,450.00	2,450.00	2,588.78	2,581.46	8.57	9.05	93.09	-79.87	1,479.15	1,487.08	1,469.57	17.51	84.915		
2,500.00	2,500.00	2,635.18	2,627.59	8.75	9.22	92.98	-76.77	1,475.28	1,482.74	1,464.87	17.86	83.000		
2,550.00	2,550.00	2,678.48	2,670.65	8.93	9.39	92.87	-73.91	1,471.80	1,478.54	1,460.34	18.21	81.211		
2,600.00	2,600.00	2,720.20	2,712.16	9.11	9.54	92.77	-71.14	1,468.66	1,474.62	1,456.08	18.54	79.524		
2,650.00	2,650.00	2,764.35	2,756.11	9.29	9.71	92.66	-68.21	1,465.57	1,470.96	1,452.07	18.89	77.880		
2,700.00	2,700.00	2,812.42	2,803.96	9.47	9.89	92.55	-65.03	1,462.30	1,467.40	1,448.16	19.24	76.253		
2,750.00	2,750.00	2,864.90	2,856.21	9.65	10.09	92.42	-61.59	1,458.75	1,463.88	1,444.26	19.61	74.633		
2,800.00	2,800.00	2,923.84	2,914.87	9.83	10.31	92.28	-57.78	1,454.48	1,460.11	1,440.11	20.00	72.988		
2,850.00	2,850.00	2,980.06	2,970.81	10.00	10.52	92.14	-54.23	1,450.09	1,456.08	1,435.69	20.39	71.424		
2,900.00	2,900.00	3,035.55	3,026.00	10.18	10.73	92.01	-50.80	1,445.52	1,451.85	1,431.09	20.77	69.917		
2,950.00	2,950.00	3,079.90	3,070.11	10.36	10.90	91.91	-47.96	1,441.89	1,447.64	1,426.53	21.11	68.570		
3,000.00	3,000.00	3,125.09	3,115.05	10.54	11.07	91.79	-44.84	1,438.34	1,443.59	1,422.13	21.46	67.266		
3,050.00	3,050.00	3,172.89	3,162.59	10.72	11.25	91.65	-41.37	1,434.70	1,439.66	1,417.84	21.82	65.984		
3,100.00	3,100.00	3,220.75	3,210.17	10.90	11.44	91.51	-37.77	1,431.11	1,435.81	1,413.63	22.18	64.746		
3,150.00	3,150.00	3,276.71	3,265.82	11.08	11.65	91.35	-33.72	1,426.83	1,431.88	1,409.33	22.56	63.476		
3,200.00	3,200.00	3,332.48	3,321.29	11.26	11.86	91.21	-30.12	1,422.31	1,427.75	1,404.81	22.94	62.243		
3,250.00	3,250.00	3,387.66	3,376.18	11.44	12.07	91.09	-26.91	1,417.62	1,423.43	1,400.11	23.32	61.049		
3,300.00	3,300.00	3,441.56	3,429.79	11.62	12.28	90.98	-24.06	1,412.83	1,418.94	1,395.25	23.69	59.897		
3,350.00	3,350.00	3,494.50	3,482.44	11.80	12.48	90.87	-21.41	1,407.99	1,414.33	1,390.27	24.06	58.784		
3,400.00	3,400.00	3,539.59	3,527.29	11.97	12.65	90.79	-19.28	1,403.87	1,409.72	1,385.31	24.41	57.757		
3,450.00	3,450.00	3,582.77	3,570.27	12.15	12.81	90.71	-17.43	1,400.12	1,405.34	1,380.59	24.75	56.780		
3,500.00	3,500.00	3,625.62	3,612.94	12.33	12.97	90.64	-15.71	1,396.59	1,401.20	1,376.11	25.09	55.843		
3,550.00	3,550.00	3,668.24	3,655.39	12.51	13.13	90.57	-13.91	1,393.30	1,397.32	1,371.88	25.43	54.944		
3,600.00	3,600.00	3,711.21	3,698.21	12.69	13.29	90.49	-11.98	1,390.21	1,393.69	1,367.92	25.77	54.077		
3,650.00	3,650.00	3,754.75	3,741.61	12.87	13.45	90.41	-9.94	1,387.27	1,390.30	1,364.18	26.11	53.238		
3,700.00	3,700.00	3,799.28	3,785.99	13.05	13.62	90.32	-7.81	1,384.47	1,387.13	1,360.67	26.46	52.425		
3,750.00	3,750.00	3,847.85	3,834.42	13.23	13.80	90.23	-5.50	1,381.52	1,384.08	1,357.26	26.82	51.613		
3,800.00	3,800.00	3,897.10	3,883.52	13.41	13.98	90.13	-3.21	1,378.57	1,381.07	1,353.89	27.18	50.819		
3,850.00	3,850.00	3,948.24	3,934.51	13.59	14.17	90.03	-0.70	1,375.48	1,378.04	1,350.50	27.54	50.035		
3,900.00	3,900.00	4,000.72	3,986.82	13.77	14.37	89.91	2.08	1,372.25	1,374.96	1,347.05	27.91	49.261		
3,950.00	3,950.00	4,055.24	4,041.13	13.94	14.57	89.78	5.17	1,368.73	1,371.74	1,343.45	28.29	48.491		
4,000.00	4,000.00	4,107.30	4,092.98	14.12	14.77	89.65	8.32	1,365.23	1,368.38	1,339.73	28.66	47.749		
4,050.00	4,050.00	4,158.08	4,143.54	14.30	14.96	155.04	11.58	1,361.77	1,365.24	1,336.22	29.02	47.042		
4,100.00	4,099.99	4,210.35	4,195.56	14.48	15.16	154.91	15.20	1,358.14	1,362.53	1,333.14	29.39	46.360		
4,150.00	4,149.97	4,262.95	4,247.87	14.65	15.36	154.78	19.24	1,354.38	1,360.23	1,330.47	29.76	45.709		
4,200.00	4,199.94	4,315.32	4,299.92	14.83	15.56	154.64	23.57	1,350.54	1,356.33	1,328.21	30.13	45.087		
4,250.00	4,249.88	4,368.52	4,352.76	15.00	15.76	154.50	28.20	1,346.53	1,352.84	1,326.34	30.50	44.490		
4,300.00	4,299.79	4,424.93	4,408.77	15.18	15.98	154.35	33.25	1,342.06	1,355.65	1,324.77	30.88	43.903		
4,350.00	4,349.68	4,476.10	4,459.55	15.35	16.18	154.21	37.87	1,337.82	1,354.50	1,323.25	31.24	43.351		
4,400.00	4,399.58	4,523.10	4,506.21	15.53	16.36	154.09	42.00	1,333.99	1,353.42	1,321.82	31.60	42.830		
4,450.00	4,449.47	4,580.89	4,563.60	15.70	16.59	153.94	46.92	1,329.26	1,352.34	1,320.36	31.98	42.281		
4,500.00	4,499.37	4,647.27	4,629.46	15.88	16.84	153.78	52.55	1,323.14	1,350.74	1,318.35	32.39	41.702		
4,550.00	4,549.26	4,696.53	4,678.31	16.05	17.04	153.65	56.75	1,318.34	1,348.88	1,316.13	32.75	41.184		
4,600.00	4,599.16	4,745.64	4,726.99	16.23	17.23	153.52	60.97	1,313.52	1,346.99	1,313.88	33.11	40.676		
4,650.00	4,649.06	4,789.18	4,770.17	16.41	17.40	153.41	64.69	1,309.39	1,345.27	1,311.81	33.46	40.201		
4,700.00	4,698.95	4,833.16	4,813.82	16.58	17.57	153.30	68.40	1,305.42	1,343.79	1,309.98	33.81	39.742		
4,750.00	4,748.85	4,881.77	4,862.07	16.76	17.76	153.18	72.44	1,301.15	1,342.44	1,308.27	34.17	39.283		
4,800.00	4,798.74	4,930.89	4,910.85	16.94	17.95	153.06	76.44	1,296.89	1,341.15	1,306.61	34.54	38.834		
4,850.00	4,848.64	4,983.39	4,962.97	17.11	18.15	152.94	80.66	1,292.30	1,339.81	1,304.91	34.91	38.382		
4,900.00	4,898.53	5,035.65	5,014.86	17.29	18.36	152.82	84.81	1,287.63	1,338.39	1,303.11	35.28	37.939		

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
4,950.00	4,948.43	5,087.43	5,066.26	17.47	18.56	152.70	88.86	1,282.92	1,336.90	1,301.25	35.65	37.504	
5,000.00	4,998.33	5,138.88	5,117.34	17.65	18.76	152.59	92.83	1,278.18	1,335.34	1,299.33	36.02	37.077	
5,050.00	5,048.22	5,190.01	5,168.09	17.82	18.96	152.47	96.76	1,273.43	1,333.75	1,297.36	36.38	36.658	
5,100.00	5,098.12	5,240.22	5,217.94	18.00	19.15	152.36	100.59	1,268.72	1,332.12	1,295.37	36.75	36.249	
5,150.00	5,148.01	5,289.94	5,267.31	18.18	19.35	152.26	104.26	1,264.07	1,330.50	1,293.39	37.11	35.850	
5,200.00	5,197.91	5,338.05	5,315.09	18.36	19.53	152.16	107.66	1,259.60	1,328.92	1,291.44	37.47	35.464	
5,250.00	5,247.80	5,385.61	5,362.35	18.53	19.72	152.08	110.78	1,255.28	1,327.42	1,289.59	37.83	35.089	
5,300.00	5,297.70	5,433.28	5,409.73	18.71	19.90	152.00	113.85	1,251.04	1,326.02	1,287.83	38.19	34.723	
5,350.00	5,347.60	5,480.96	5,457.09	18.89	20.08	151.90	117.34	1,246.86	1,324.70	1,286.16	38.55	34.365	
5,400.00	5,397.49	5,532.56	5,508.33	19.07	20.29	151.78	121.46	1,242.34	1,323.42	1,284.51	38.92	34.005	
5,450.00	5,447.39	5,585.49	5,560.87	19.25	20.49	151.65	125.74	1,237.59	1,322.04	1,282.75	39.29	33.646	
5,500.00	5,497.28	5,623.90	5,599.01	19.43	20.64	151.55	128.87	1,234.25	1,320.81	1,281.18	39.63	33.330	
5,550.00	5,547.18	5,661.60	5,636.46	19.61	20.79	151.46	131.98	1,231.32	1,320.05	1,280.09	39.96	33.034	
5,600.00	5,597.07	5,705.41	5,680.02	19.78	20.95	151.35	135.60	1,228.28	1,319.70	1,279.40	40.31	32.741	
5,650.00	5,646.97	5,757.23	5,731.55	19.96	21.15	151.23	139.83	1,224.70	1,319.38	1,278.70	40.68	32.434	
5,700.00	5,696.87	5,808.07	5,782.10	20.14	21.35	151.11	143.88	1,221.13	1,319.00	1,277.95	41.05	32.133	
5,750.00	5,746.76	5,858.26	5,832.01	20.32	21.54	151.00	147.74	1,217.60	1,318.61	1,277.19	41.41	31.839	
5,800.00	5,796.66	5,911.19	5,884.66	20.50	21.74	150.89	151.66	1,213.84	1,318.18	1,276.39	41.79	31.544	
5,850.00	5,846.55	5,965.25	5,938.43	20.68	21.95	150.77	155.62	1,209.84	1,317.60	1,275.43	42.17	31.247	
5,900.00	5,896.45	6,013.82	5,986.75	20.86	22.13	150.68	159.04	1,206.20	1,316.97	1,274.44	42.53	30.967	
5,950.00	5,946.35	6,062.12	6,034.81	21.04	22.32	150.60	162.19	1,202.66	1,316.41	1,273.52	42.89	30.694	
6,000.00	5,996.24	6,106.26	6,078.75	21.22	22.49	150.52	165.10	1,199.55	1,315.99	1,272.75	43.24	30.438	
6,050.00	6,046.14	6,150.31	6,122.58	21.40	22.65	150.43	168.30	1,196.62	1,315.79	1,272.21	43.58	30.191	
6,100.00	6,096.03	6,200.03	6,172.05	21.58	22.84	150.32	172.12	1,193.43	1,315.74	1,271.79	43.95	29.939	
6,150.00	6,145.93	6,250.97	6,222.73	21.76	23.04	150.21	175.99	1,190.13	1,315.66	1,271.34	44.32	29.688	
6,200.00	6,195.82	6,299.81	6,271.33	21.94	23.22	150.11	179.65	1,186.97	1,315.58	1,270.90	44.68	29.445	
6,250.00	6,245.72	6,348.56	6,319.85	22.12	23.41	150.01	183.27	1,183.87	1,315.55	1,270.51	45.04	29.208	
6,253.54	6,249.25	6,352.02	6,323.29	22.13	23.42	150.00	183.53	1,183.65	1,315.55	1,270.49	45.07	29.191 CC	
6,300.00	6,295.62	6,397.38	6,368.44	22.30	23.59	149.91	186.80	1,180.81	1,315.57	1,270.17	45.40	28.976	
6,350.00	6,345.51	6,446.21	6,417.06	22.48	23.78	149.82	190.17	1,177.81	1,315.64	1,269.88	45.76	28.748	
6,400.00	6,395.41	6,494.29	6,464.96	22.66	23.96	149.74	193.34	1,174.92	1,315.77	1,269.65	46.12	28.528	
6,450.00	6,445.30	6,542.79	6,513.28	22.84	24.14	149.66	196.40	1,172.09	1,315.97	1,269.49	46.48	28.311	
6,500.00	6,495.20	6,594.04	6,564.34	23.02	24.33	149.58	199.61	1,169.10	1,316.17	1,269.32	46.85	28.093	
6,550.00	6,545.09	6,642.01	6,612.13	23.20	24.51	149.50	202.65	1,166.26	1,316.34	1,269.13	47.21	27.884 ES	
6,600.00	6,594.99	6,681.53	6,651.54	23.38	24.66	149.46	204.84	1,164.18	1,316.79	1,269.26	47.53	27.702	
6,650.00	6,644.89	6,721.07	6,690.99	23.56	24.80	149.43	206.61	1,162.46	1,317.64	1,269.79	47.86	27.533	
6,700.00	6,694.78	6,768.66	6,738.52	23.74	24.97	149.41	208.35	1,160.68	1,318.75	1,270.55	48.21	27.357	
6,750.00	6,744.68	6,817.15	6,786.95	23.92	25.15	149.41	209.95	1,158.94	1,319.92	1,271.36	48.56	27.182	
6,800.00	6,794.57	6,864.56	6,834.31	24.10	25.32	149.41	211.31	1,157.33	1,321.17	1,272.26	48.90	27.015	
6,850.00	6,844.47	6,911.89	6,881.61	24.28	25.49	149.42	212.47	1,155.84	1,322.51	1,273.26	49.25	26.853	
6,900.00	6,894.36	6,960.88	6,930.57	24.46	25.66	149.44	213.48	1,154.39	1,323.93	1,274.33	49.60	26.691	
6,950.00	6,944.26	7,009.99	6,979.65	24.65	25.83	149.47	214.29	1,152.99	1,325.38	1,275.42	49.95	26.533	
7,000.00	6,994.16	7,048.72	7,018.36	24.83	25.97	149.49	214.96	1,152.06	1,327.05	1,276.79	50.26	26.403	
7,050.00	7,044.05	7,097.43	7,067.06	25.01	26.11	149.50	215.84	1,151.43	1,329.15	1,278.59	50.57	26.285	
7,100.00	7,093.95	7,133.97	7,103.58	25.19	26.27	149.51	217.09	1,150.99	1,331.60	1,280.69	50.91	26.158	
7,150.00	7,143.84	7,187.03	7,156.62	25.37	26.45	149.53	218.39	1,150.43	1,333.98	1,282.71	51.27	26.017	
7,200.00	7,193.74	7,238.01	7,207.58	25.55	26.63	149.55	219.46	1,149.81	1,336.27	1,284.64	51.63	25.881	
7,250.00	7,243.63	7,288.31	7,257.87	25.73	26.81	149.58	220.32	1,149.21	1,338.55	1,286.57	51.99	25.748	
7,300.00	7,293.53	7,339.25	7,308.81	25.91	26.98	149.62	221.02	1,148.60	1,340.81	1,288.46	52.34	25.615	
7,350.00	7,343.43	7,390.30	7,359.84	26.09	27.16	149.67	221.59	1,147.95	1,343.02	1,290.32	52.70	25.484	
7,400.00	7,393.32	7,441.02	7,410.56	26.28	27.34	149.71	222.02	1,147.29	1,345.20	1,292.15	53.06	25.354	
7,450.00	7,443.22	7,491.75	7,461.28	26.46	27.51	149.77	222.28	1,146.61	1,347.36	1,293.94	53.41	25.226	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,500.00	7,493.11	7,538.01	7,507.54	26.64	27.67	149.83	222.38	1,146.07	1,349.58	1,295.83	53.75	25.110		
7,550.00	7,543.01	7,584.71	7,554.24	26.82	27.83	149.89	222.38	1,145.64	1,351.91	1,297.83	54.08	24.998		
7,600.00	7,592.90	7,630.53	7,600.06	27.00	27.98	149.95	222.33	1,145.35	1,354.38	1,299.97	54.41	24.892		
7,650.00	7,642.80	7,676.58	7,646.11	27.18	28.13	150.02	222.27	1,145.20	1,357.01	1,302.27	54.74	24.791		
7,700.00	7,692.70	7,725.64	7,695.17	27.36	28.29	150.09	222.16	1,145.12	1,359.72	1,304.64	55.08	24.688		
7,750.00	7,742.59	7,774.70	7,744.23	27.55	28.45	150.16	221.99	1,145.08	1,362.46	1,307.05	55.42	24.586		
7,800.00	7,792.49	7,823.57	7,793.10	27.73	28.61	150.24	221.71	1,145.09	1,365.24	1,309.49	55.75	24.489		
7,850.00	7,842.38	7,872.38	7,841.90	27.91	28.76	150.32	221.34	1,145.13	1,368.06	1,311.98	56.08	24.394		
7,900.00	7,892.28	7,920.91	7,890.43	28.09	28.91	150.40	221.08	1,145.22	1,370.93	1,314.52	56.41	24.302		
7,950.00	7,942.17	7,969.93	7,939.46	28.27	29.07	150.47	221.04	1,145.33	1,373.84	1,317.10	56.75	24.210		
8,000.00	7,992.07	8,020.34	7,989.87	28.45	29.23	150.54	220.99	1,145.44	1,376.76	1,319.68	57.09	24.117		
8,050.00	8,041.97	8,070.92	8,040.45	28.64	29.39	150.61	220.85	1,145.54	1,379.66	1,322.23	57.43	24.024		
8,100.00	8,091.86	8,121.79	8,091.31	28.82	29.55	150.69	220.58	1,145.62	1,382.53	1,324.76	57.77	23.931		
8,150.00	8,141.76	8,172.52	8,142.05	29.00	29.71	150.77	220.16	1,145.68	1,385.37	1,327.26	58.11	23.839		
8,200.00	8,191.65	8,223.14	8,192.66	29.18	29.87	150.85	219.65	1,145.71	1,388.18	1,329.73	58.45	23.748		
8,250.00	8,241.55	8,275.33	8,244.85	29.36	30.04	150.94	219.20	1,145.70	1,390.96	1,332.15	58.81	23.652		
8,300.00	8,291.44	8,328.43	8,297.94	29.54	30.22	151.00	219.39	1,145.51	1,393.62	1,334.45	59.17	23.553		
8,350.00	8,341.34	8,380.53	8,350.04	29.73	30.40	151.05	219.96	1,145.20	1,396.19	1,336.66	59.53	23.453		
8,400.00	8,391.24	8,432.46	8,401.97	29.91	30.58	151.09	220.42	1,144.82	1,398.69	1,338.79	59.89	23.353		
8,450.00	8,441.13	8,483.26	8,452.77	30.09	30.76	151.15	220.72	1,144.41	1,401.13	1,340.88	60.25	23.255		
8,500.00	8,491.03	8,541.56	8,511.06	30.27	30.96	151.21	220.87	1,143.83	1,403.49	1,342.85	60.64	23.145		
8,550.00	8,540.92	8,627.34	8,596.49	30.45	31.23	151.58	214.44	1,141.97	1,404.95	1,343.85	61.10	22.994		
8,600.00	8,590.82	8,704.28	8,671.13	30.64	31.44	152.40	196.29	1,139.48	1,405.37	1,343.90	61.47	22.883		
8,626.18	8,616.94	8,741.51	8,705.95	30.73	31.54	152.97	183.22	1,138.04	1,405.30	1,343.65	61.65	22.794		
8,650.00	8,640.71	8,741.03	8,705.53	30.82	31.53	152.96	183.44	1,138.20	1,405.53	1,343.79	61.74	22.765		
8,700.00	8,690.61	8,765.29	8,727.71	31.00	31.58	153.39	173.63	1,137.80	1,406.61	1,344.65	61.97	22.700		
8,750.00	8,740.51	8,788.45	8,748.45	31.18	31.63	153.83	163.34	1,137.81	1,408.72	1,346.55	62.17	22.660		
8,800.00	8,790.40	8,817.00	8,773.37	31.37	31.69	154.43	149.42	1,138.34	1,411.93	1,349.56	62.37	22.639		
8,850.00	8,840.30	8,859.41	8,808.99	31.55	31.76	155.40	126.46	1,139.35	1,415.90	1,353.31	62.59	22.622		
8,900.00	8,890.19	8,913.59	8,851.96	31.73	31.84	156.78	93.49	1,140.01	1,420.06	1,357.22	62.84	22.597 SF		
8,950.00	8,940.09	8,942.36	8,873.58	31.91	31.88	157.57	74.51	1,140.23	1,424.89	1,361.90	62.99	22.621		
9,000.00	8,989.98	8,969.55	8,893.29	32.09	31.91	158.34	55.78	1,140.51	1,430.75	1,367.64	63.11	22.670		
9,050.00	9,039.88	8,994.71	8,910.87	32.28	31.94	159.08	37.78	1,140.85	1,437.68	1,374.49	63.20	22.749		
9,100.00	9,089.78	9,152.16	9,006.94	32.46	32.08	164.15	-86.35	1,134.20	1,444.20	1,380.37	63.82	22.628		
9,150.00	9,139.67	9,205.18	9,033.94	32.64	32.12	165.98	-131.59	1,128.28	1,450.55	1,386.54	64.02	22.659		
9,200.00	9,189.57	9,200.00	9,032.98	32.82	32.11	165.89	-129.24	1,128.75	1,458.31	1,394.35	63.96	22.802		
9,250.00	9,239.46	9,197.00	9,029.95	33.01	32.11	165.70	-124.52	1,129.29	1,467.73	1,403.90	63.83	22.994		
9,300.00	9,289.36	9,197.00	9,029.95	33.19	32.11	165.70	-124.52	1,129.29	1,478.78	1,415.10	63.68	23.222		
9,350.00	9,339.25	9,197.00	9,029.95	33.37	32.11	165.70	-124.52	1,129.29	1,491.42	1,427.94	63.49	23.492		

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 624H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.30	0.30	0.50	0.50	-90.42	-0.22	-29.99	29.99				
50.00	50.00	50.30	50.30	0.50	0.50	-90.42	-0.22	-29.99	29.99	28.98	1.01	29.796	
100.00	100.00	100.30	100.30	0.52	0.52	-90.42	-0.22	-29.99	29.99	28.96	1.04	28.955	
150.00	150.00	150.30	150.30	0.59	0.59	-90.42	-0.22	-29.99	29.99	28.81	1.18	25.393	
200.00	200.00	200.30	200.30	0.70	0.70	-90.42	-0.22	-29.99	29.99	28.59	1.40	21.346	
250.00	250.00	250.30	250.30	0.84	0.84	-90.42	-0.22	-29.99	29.99	28.31	1.68	17.891	
300.00	300.00	300.30	300.30	0.99	0.99	-90.42	-0.22	-29.99	29.99	28.02	1.98	15.181	
350.00	350.00	350.30	350.30	1.15	1.15	-90.42	-0.22	-29.99	29.99	27.70	2.29	13.085	
400.00	400.00	400.30	400.30	1.31	1.31	-90.42	-0.22	-29.99	29.99	27.37	2.62	11.451	
450.00	450.00	450.30	450.30	1.48	1.48	-90.42	-0.22	-29.99	29.99	27.04	2.95	10.154	
500.00	500.00	500.30	500.30	1.65	1.65	-90.42	-0.22	-29.99	29.99	26.70	3.29	9.107	
550.00	550.00	550.30	550.30	1.82	1.82	-90.42	-0.22	-29.99	29.99	26.35	3.64	8.247	
600.00	600.00	600.30	600.30	1.99	1.99	-90.42	-0.22	-29.99	29.99	26.01	3.98	7.531	
650.00	650.00	650.30	650.30	2.16	2.17	-90.42	-0.22	-29.99	29.99	25.66	4.33	6.926	
700.00	700.00	700.30	700.30	2.34	2.34	-90.42	-0.22	-29.99	29.99	25.31	4.68	6.409	
750.00	750.00	750.30	750.30	2.51	2.52	-90.42	-0.22	-29.99	29.99	24.96	5.03	5.962	
800.00	800.00	800.30	800.30	2.69	2.69	-90.42	-0.22	-29.99	29.99	24.61	5.38	5.572	
850.00	850.00	850.30	850.30	2.87	2.87	-90.42	-0.22	-29.99	29.99	24.26	5.73	5.230	
900.00	900.00	900.30	900.30	3.04	3.04	-90.42	-0.22	-29.99	29.99	23.90	6.09	4.926 Alert	
950.00	950.00	950.30	950.30	3.22	3.22	-90.42	-0.22	-29.99	29.99	23.55	6.44	4.655 Alert	
1,000.00	1,000.00	1,000.30	1,000.30	3.40	3.40	-90.42	-0.22	-29.99	29.99	23.19	6.80	4.413 Alert	
1,050.00	1,050.00	1,050.30	1,050.30	3.58	3.58	-90.42	-0.22	-29.99	29.99	22.84	7.15	4.194 Alert	
1,100.00	1,100.00	1,100.30	1,100.30	3.75	3.75	-90.42	-0.22	-29.99	29.99	22.48	7.51	3.995 Alert	
1,150.00	1,150.00	1,150.30	1,150.30	3.93	3.93	-90.42	-0.22	-29.99	29.99	22.13	7.86	3.815 Alert	
1,200.00	1,200.00	1,200.30	1,200.30	4.11	4.11	-90.42	-0.22	-29.99	29.99	21.77	8.22	3.650 Alert	
1,250.00	1,250.00	1,250.30	1,250.30	4.29	4.29	-90.42	-0.22	-29.99	29.99	21.42	8.57	3.498 Alert	
1,300.00	1,300.00	1,300.30	1,300.30	4.46	4.47	-90.42	-0.22	-29.99	29.99	21.06	8.93	3.359 Alert	
1,350.00	1,350.00	1,350.30	1,350.30	4.64	4.64	-90.42	-0.22	-29.99	29.99	20.71	9.29	3.230 Alert	
1,400.00	1,400.00	1,400.30	1,400.30	4.82	4.82	-90.42	-0.22	-29.99	29.99	20.35	9.64	3.110 Alert	
1,450.00	1,450.00	1,450.30	1,450.30	5.00	5.00	-90.42	-0.22	-29.99	29.99	19.99	10.00	2.999 Alert	
1,500.00	1,500.00	1,500.30	1,500.30	5.18	5.18	-90.42	-0.22	-29.99	29.99	19.64	10.36	2.896 Alert	
1,550.00	1,550.00	1,550.30	1,550.30	5.36	5.36	-90.42	-0.22	-29.99	29.99	19.28	10.71	2.800 Alert	
1,600.00	1,600.00	1,600.30	1,600.30	5.53	5.54	-90.42	-0.22	-29.99	29.99	18.92	11.07	2.709 Alert	
1,650.00	1,650.00	1,650.30	1,650.30	5.71	5.71	-90.42	-0.22	-29.99	29.99	18.56	11.43	2.625 Alert	
1,700.00	1,700.00	1,700.30	1,700.30	5.89	5.89	-90.42	-0.22	-29.99	29.99	18.21	11.78	2.545 Alert	
1,750.00	1,750.00	1,750.30	1,750.30	6.07	6.07	-90.42	-0.22	-29.99	29.99	17.85	12.14	2.470 Minor Risk	
1,800.00	1,800.00	1,800.30	1,800.30	6.25	6.25	-90.42	-0.22	-29.99	29.99	17.49	12.50	2.400 Minor Risk	
1,850.00	1,850.00	1,850.30	1,850.30	6.43	6.43	-90.42	-0.22	-29.99	29.99	17.14	12.86	2.333 Minor Risk	
1,900.00	1,900.00	1,900.30	1,900.30	6.61	6.61	-90.42	-0.22	-29.99	29.99	16.78	13.21	2.270 Minor Risk	
1,950.00	1,950.00	1,950.30	1,950.30	6.78	6.79	-90.42	-0.22	-29.99	29.99	16.42	13.57	2.210 Minor Risk	
2,000.00	2,000.00	2,000.30	2,000.30	6.96	6.96	-90.42	-0.22	-29.99	29.99	16.06	13.93	2.153 Minor Risk	
2,050.00	2,050.00	2,050.30	2,050.30	7.14	7.14	-90.42	-0.22	-29.99	29.99	15.71	14.29	2.099 Minor Risk	
2,100.00	2,100.00	2,100.30	2,100.30	7.32	7.32	-90.42	-0.22	-29.99	29.99	15.35	14.64	2.048 Minor Risk	
2,150.00	2,150.00	2,150.30	2,150.30	7.50	7.50	-90.42	-0.22	-29.99	29.99	14.99	15.00	1.999 Minor Risk	
2,200.00	2,200.00	2,200.30	2,200.30	7.68	7.68	-90.42	-0.22	-29.99	29.99	14.63	15.36	1.953 Minor Risk	
2,250.00	2,250.00	2,250.30	2,250.30	7.86	7.86	-90.42	-0.22	-29.99	29.99	14.27	15.72	1.908 Minor Risk	
2,300.00	2,300.00	2,300.30	2,300.30	8.04	8.04	-90.42	-0.22	-29.99	29.99	13.92	16.07	1.866 Minor Risk	
2,350.00	2,350.00	2,350.30	2,350.30	8.22	8.22	-90.42	-0.22	-29.99	29.99	13.56	16.43	1.825 Minor Risk	
2,400.00	2,400.00	2,400.30	2,400.30	8.39	8.40	-90.42	-0.22	-29.99	29.99	13.20	16.79	1.786 Minor Risk	
2,450.00	2,450.00	2,450.30	2,450.30	8.57	8.57	-90.42	-0.22	-29.99	29.99	12.84	17.15	1.749 Minor Risk	
2,500.00	2,500.00	2,500.30	2,500.30	8.75	8.75	-90.42	-0.22	-29.99	29.99	12.49	17.51	1.713 Minor Risk, CC	
2,550.00	2,550.00	2,550.04	2,550.04	8.93	8.93	-90.38	-0.20	-30.21	30.21	12.35	17.86	1.692 Minor Risk, ES, SF	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - 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			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
2,600.00	2,600.00	2,599.77	2,599.77	9.11	9.10	-90.26	-0.14	-30.85	30.86	12.65	18.21	1.695	Minor Risk	
2,650.00	2,650.00	2,649.49	2,649.47	9.29	9.27	-90.07	-0.04	-31.93	31.94	13.39	18.55	1.722	Minor Risk	
2,700.00	2,700.00	2,699.18	2,699.14	9.47	9.44	-89.83	0.10	-33.44	33.46	14.56	18.90	1.770	Minor Risk	
2,750.00	2,750.00	2,748.85	2,748.77	9.65	9.61	-89.55	0.28	-35.37	35.40	16.16	19.24	1.840	Minor Risk	
2,800.00	2,800.00	2,798.47	2,798.34	9.83	9.78	-89.24	0.50	-37.73	37.78	18.20	19.59	1.929	Minor Risk	
2,850.00	2,850.00	2,848.06	2,847.84	10.00	9.96	-88.93	0.76	-40.51	40.59	20.67	19.93	2.037	Minor Risk	
2,900.00	2,900.00	2,902.04	2,897.66	10.18	10.14	-88.63	1.04	-43.53	43.62	23.33	20.29	2.150	Minor Risk	
2,950.00	2,950.00	2,947.87	2,947.47	10.36	10.30	-88.37	1.32	-46.55	46.65	26.02	20.63	2.261	Minor Risk	
3,000.00	3,000.00	3,002.22	2,997.29	10.54	10.49	-88.15	1.60	-49.56	49.68	28.68	21.00	2.366	Minor Risk	
3,050.00	3,050.00	3,047.69	3,047.11	10.72	10.65	-87.95	1.88	-52.58	52.71	31.38	21.33	2.471	Minor Risk	
3,100.00	3,100.00	3,102.40	3,096.92	10.90	10.84	-87.77	2.16	-55.59	55.74	34.04	21.70	2.569	Alert	
3,150.00	3,150.00	3,147.50	3,146.74	11.08	11.00	-87.61	2.44	-58.61	58.77	36.73	22.04	2.667	Alert	
3,200.00	3,200.00	3,202.59	3,196.55	11.26	11.19	-87.47	2.72	-61.63	61.80	39.40	22.41	2.758	Alert	
3,250.00	3,250.00	3,247.32	3,246.37	11.44	11.35	-87.34	3.01	-64.64	64.83	42.09	22.74	2.851	Alert	
3,300.00	3,300.00	3,302.77	3,296.18	11.62	11.55	-87.22	3.29	-67.66	67.86	44.75	23.11	2.936	Alert	
3,350.00	3,350.00	3,347.13	3,346.00	11.80	11.70	-87.11	3.57	-70.68	70.90	47.45	23.45	3.024	Alert	
3,400.00	3,400.00	3,402.96	3,395.82	11.97	11.90	-87.01	3.85	-73.69	73.93	50.11	23.82	3.104	Alert	
3,450.00	3,450.00	3,446.95	3,445.63	12.15	12.06	-86.92	4.13	-76.71	76.96	52.81	24.15	3.187	Alert	
3,500.00	3,500.00	3,503.14	3,495.45	12.33	12.25	-86.83	4.41	-79.72	79.99	55.47	24.53	3.261	Alert	
3,550.00	3,550.00	3,546.77	3,545.26	12.51	12.41	-86.76	4.69	-82.74	83.03	58.17	24.86	3.340	Alert	
3,600.00	3,600.00	3,603.33	3,595.08	12.69	12.61	-86.68	4.97	-85.76	86.06	60.82	25.24	3.410	Alert	
3,650.00	3,650.00	3,646.58	3,644.90	12.87	12.76	-86.61	5.25	-88.77	89.09	63.53	25.57	3.485	Alert	
3,700.00	3,700.00	3,696.49	3,694.71	13.05	12.94	-86.55	5.53	-91.79	92.13	66.21	25.92	3.554	Alert	
3,750.00	3,750.00	3,746.40	3,744.53	13.23	13.12	-86.49	5.81	-94.81	95.16	68.88	26.27	3.622	Alert	
3,800.00	3,800.00	3,803.69	3,794.34	13.41	13.32	-86.44	6.09	-97.82	98.19	71.54	26.65	3.684	Alert	
3,850.00	3,850.00	3,846.21	3,844.16	13.59	13.47	-86.38	6.37	-100.84	101.23	74.24	26.98	3.751	Alert	
3,900.00	3,900.00	3,903.88	3,893.97	13.77	13.68	-86.33	6.66	-103.85	104.26	76.89	27.36	3.810	Alert	
3,950.00	3,950.00	3,946.03	3,943.79	13.94	13.83	-86.29	6.94	-106.87	107.29	79.60	27.69	3.874	Alert	
4,000.00	4,000.00	4,004.06	3,993.61	14.12	14.04	-86.24	7.22	-109.89	110.33	82.25	28.08	3.930	Alert	
4,050.00	4,050.00	4,045.86	4,043.44	14.30	14.19	-20.73	7.50	-112.90	113.11	84.71	28.40	3.983	Alert	
4,100.00	4,099.99	4,104.19	4,093.29	14.48	14.40	-20.83	7.78	-115.92	115.38	86.60	28.78	4.009	Alert	
4,150.00	4,149.97	4,145.77	4,143.17	14.65	14.55	-21.01	8.06	-118.94	117.14	88.04	29.10	4.025	Alert	
4,200.00	4,199.94	4,204.25	4,193.06	14.83	14.75	-21.29	8.34	-121.96	118.39	88.91	29.48	4.016	Alert	
4,250.00	4,249.88	4,245.74	4,242.95	15.00	14.90	-21.66	8.62	-124.98	119.14	89.34	29.80	3.998	Alert	
4,300.00	4,299.79	4,304.27	4,292.85	15.18	15.11	-22.13	8.90	-128.01	119.39	89.21	30.18	3.956	Alert	
4,350.00	4,349.68	4,345.72	4,342.75	15.35	15.26	-22.64	9.19	-131.03	119.44	88.94	30.50	3.916	Alert	
4,400.00	4,399.58	4,404.29	4,392.64	15.53	15.47	-23.14	9.47	-134.05	119.50	88.61	30.88	3.869	Alert	
4,450.00	4,449.47	4,445.70	4,442.54	15.70	15.62	-23.65	9.75	-137.07	119.56	88.35	31.21	3.831	Alert	
4,500.00	4,499.37	4,504.31	4,492.44	15.88	15.83	-24.16	10.03	-140.09	119.63	88.05	31.59	3.787	Alert	
4,550.00	4,549.26	4,545.68	4,542.33	16.05	15.98	-24.66	10.31	-143.11	119.72	87.81	31.91	3.752	Alert	
4,600.00	4,599.16	4,604.34	4,592.23	16.23	16.19	-25.17	10.59	-146.13	119.81	87.52	32.29	3.710	Alert	
4,650.00	4,649.06	4,645.65	4,642.13	16.41	16.34	-25.67	10.87	-149.15	119.91	87.30	32.61	3.677	Alert	
4,700.00	4,698.95	4,704.36	4,692.02	16.58	16.55	-26.18	11.15	-152.17	120.02	87.03	33.00	3.637	Alert	
4,750.00	4,748.85	4,745.63	4,741.92	16.76	16.70	-26.68	11.43	-155.20	120.14	86.82	33.32	3.606	Alert	
4,800.00	4,798.74	4,804.38	4,791.81	16.94	16.91	-27.18	11.72	-158.22	120.27	86.57	33.70	3.569	Alert	
4,850.00	4,848.64	4,845.61	4,841.71	17.11	17.06	-27.68	12.00	-161.24	120.41	86.39	34.03	3.539	Alert	
4,900.00	4,898.53	4,904.40	4,891.61	17.29	17.28	-28.18	12.28	-164.26	120.56	86.15	34.41	3.504	Alert	
4,950.00	4,948.43	4,945.59	4,941.50	17.47	17.42	-28.68	12.56	-167.28	120.72	85.99	34.73	3.476	Alert	
5,000.00	4,998.33	5,004.43	4,991.40	17.65	17.64	-29.18	12.84	-170.30	120.88	85.77	35.12	3.442	Alert	
5,050.00	5,048.22	5,045.56	5,041.30	17.82	17.79	-29.67	13.12	-173.32	121.06	85.62	35.44	3.416	Alert	
5,100.00	5,098.12	5,095.55	5,091.19	18.00	17.97	-30.17	13.40	-176.34	121.24	85.45	35.79	3.387	Alert	
5,150.00	5,148.01	5,145.54	5,141.09	18.18	18.15	-30.66	13.68	-179.37	121.44	85.29	36.15	3.359	Alert	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 624H - 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		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,200.00	5,197.91	5,204.47	5,190.99	18.36	18.36	-31.15	13.97	-182.39	121.64	85.10	36.54	3.329 Alert	
5,250.00	5,247.80	5,245.52	5,240.88	18.53	18.51	-31.64	14.25	-185.41	121.85	84.99	36.86	3.306 Alert	
5,300.00	5,297.70	5,295.51	5,290.78	18.71	18.69	-32.12	14.53	-188.43	122.07	84.86	37.21	3.280 Alert	
5,350.00	5,347.60	5,345.50	5,340.68	18.89	18.87	-32.61	14.81	-191.45	122.30	84.73	37.57	3.255 Alert	
5,400.00	5,397.49	5,404.52	5,390.57	19.07	19.08	-33.09	15.09	-194.47	122.54	84.58	37.96	3.228 Alert	
5,450.00	5,447.39	5,445.47	5,440.47	19.25	19.23	-33.57	15.37	-197.49	122.78	84.50	38.28	3.208 Alert	
5,500.00	5,497.28	5,504.54	5,490.37	19.43	19.45	-34.05	15.65	-200.51	123.04	84.37	38.67	3.182 Alert	
5,550.00	5,547.18	5,545.45	5,540.26	19.61	19.60	-34.53	15.93	-203.53	123.30	84.31	38.99	3.162 Alert	
5,600.00	5,597.07	5,595.44	5,590.16	19.78	19.78	-35.01	16.22	-206.56	123.57	84.23	39.35	3.141 Alert	
5,650.00	5,646.97	5,645.43	5,640.06	19.96	19.96	-35.48	16.50	-209.58	123.85	84.15	39.70	3.119 Alert	
5,700.00	5,696.87	5,704.58	5,689.95	20.14	20.17	-35.95	16.78	-212.60	124.14	84.05	40.09	3.096 Alert	
5,750.00	5,746.76	5,745.41	5,739.85	20.32	20.32	-36.42	17.06	-215.62	124.44	84.02	40.42	3.079 Alert	
5,800.00	5,796.66	5,804.61	5,789.75	20.50	20.54	-36.89	17.34	-218.64	124.75	83.94	40.81	3.057 Alert	
5,850.00	5,846.55	5,845.38	5,839.64	20.68	20.68	-37.35	17.62	-221.66	125.06	83.93	41.13	3.041 Alert	
5,900.00	5,896.45	5,904.63	5,889.54	20.86	20.90	-37.82	17.90	-224.68	125.38	83.86	41.52	3.020 Alert	
5,950.00	5,946.35	5,945.36	5,939.44	21.04	21.05	-38.28	18.18	-227.70	125.71	83.87	41.85	3.004 Alert	
6,000.00	5,996.24	6,004.65	5,989.33	21.22	21.26	-38.73	18.47	-230.72	126.05	83.81	42.24	2.984 Alert	
6,050.00	6,046.14	6,045.34	6,039.23	21.40	21.41	-39.19	18.75	-233.75	126.40	83.84	42.56	2.970 Alert	
6,100.00	6,096.03	6,104.67	6,089.13	21.58	21.63	-39.64	19.03	-236.77	126.75	83.80	42.95	2.951 Alert	
6,150.00	6,145.93	6,145.32	6,139.02	21.76	21.77	-40.09	19.31	-239.79	127.11	83.84	43.28	2.937 Alert	
6,200.00	6,195.82	6,204.70	6,188.92	21.94	21.99	-40.54	19.59	-242.81	127.48	83.81	43.67	2.919 Alert	
6,250.00	6,245.72	6,245.29	6,238.82	22.12	22.14	-40.98	19.87	-245.83	127.86	83.87	43.99	2.906 Alert	
6,300.00	6,295.62	6,304.72	6,288.71	22.30	22.35	-41.42	20.15	-248.85	128.24	83.86	44.39	2.889 Alert	
6,350.00	6,345.51	6,345.27	6,338.61	22.48	22.50	-41.86	20.43	-251.87	128.64	83.93	44.71	2.877 Alert	
6,400.00	6,395.41	6,404.74	6,388.51	22.66	22.72	-42.30	20.72	-254.89	129.04	83.93	45.10	2.861 Alert	
6,450.00	6,445.30	6,445.25	6,438.40	22.84	22.87	-42.73	21.00	-257.92	129.45	84.02	45.43	2.849 Alert	
6,500.00	6,495.20	6,504.76	6,488.30	23.02	23.08	-43.16	21.28	-260.94	129.86	84.04	45.82	2.834 Alert	
6,550.00	6,545.09	6,545.23	6,538.20	23.20	23.23	-43.59	21.56	-263.96	130.28	84.14	46.15	2.823 Alert	
6,600.00	6,594.99	6,604.79	6,588.09	23.38	23.45	-44.02	21.84	-266.98	130.71	84.17	46.54	2.809 Alert	
6,650.00	6,644.89	6,645.20	6,637.99	23.56	23.59	-44.44	22.12	-270.00	131.15	84.28	46.87	2.798 Alert	
6,700.00	6,694.78	6,704.81	6,687.89	23.74	23.81	-44.86	22.40	-273.02	131.59	84.33	47.26	2.784 Alert	
6,750.00	6,744.68	6,745.18	6,737.78	23.92	23.96	-45.28	22.68	-276.04	132.04	84.46	47.59	2.775 Alert	
6,800.00	6,794.57	6,804.83	6,787.68	24.10	24.18	-45.69	22.97	-279.06	132.50	84.52	47.98	2.762 Alert	
6,850.00	6,844.47	6,845.16	6,837.57	24.28	24.32	-46.10	23.25	-282.08	132.97	84.66	48.31	2.753 Alert	
6,900.00	6,894.36	6,895.15	6,887.47	24.46	24.51	-46.51	23.53	-285.11	133.44	84.77	48.67	2.742 Alert	
6,950.00	6,944.26	6,945.14	6,937.37	24.65	24.69	-46.92	23.81	-288.13	133.92	84.89	49.03	2.731 Alert	
7,000.00	6,994.16	7,004.88	6,987.26	24.83	24.91	-47.32	24.09	-291.15	134.40	84.98	49.42	2.719 Alert	
7,050.00	7,044.05	7,045.11	7,037.16	25.01	25.05	-47.72	24.37	-294.17	134.89	85.14	49.75	2.711 Alert	
7,100.00	7,093.95	7,104.90	7,087.06	25.19	25.27	-48.12	24.65	-297.19	135.39	85.25	50.15	2.700 Alert	
7,150.00	7,143.84	7,145.09	7,136.95	25.37	25.42	-48.51	24.93	-300.21	135.90	85.42	50.47	2.693 Alert	
7,200.00	7,193.74	7,204.92	7,186.85	25.55	25.64	-48.90	25.21	-303.23	136.41	85.54	50.87	2.682 Alert	
7,250.00	7,243.63	7,245.07	7,236.75	25.73	25.78	-49.29	25.50	-306.25	136.92	85.73	51.19	2.675 Alert	
7,300.00	7,293.53	7,304.94	7,286.64	25.91	26.00	-49.68	25.78	-309.27	137.45	85.86	51.59	2.664 Alert	
7,350.00	7,343.43	7,345.05	7,336.54	26.09	26.15	-50.06	26.06	-312.30	137.98	86.06	51.92	2.658 Alert	
7,400.00	7,393.32	7,395.04	7,386.44	26.28	26.33	-50.44	26.34	-315.32	138.51	86.23	52.28	2.649 Alert	
7,450.00	7,443.22	7,445.02	7,436.33	26.46	26.51	-50.81	26.62	-318.34	139.06	86.41	52.64	2.642 Alert	
7,500.00	7,493.11	7,504.99	7,486.23	26.64	26.73	-51.19	26.90	-321.36	139.60	86.56	53.04	2.632 Alert	
7,550.00	7,543.01	7,545.00	7,536.13	26.82	26.88	-51.56	27.18	-324.38	140.16	86.79	53.37	2.626 Alert	
7,600.00	7,592.90	7,605.01	7,586.02	27.00	27.10	-51.92	27.46	-327.40	140.72	86.95	53.76	2.617 Alert	
7,650.00	7,642.80	7,644.98	7,635.92	27.18	27.24	-52.29	27.75	-330.42	141.28	87.19	54.09	2.612 Alert	
7,700.00	7,692.70	7,694.97	7,685.82	27.36	27.43	-52.65	28.03	-333.44	141.85	87.40	54.45	2.605 Alert	
7,750.00	7,742.59	7,744.96	7,735.71	27.55	27.61	-53.01	28.31	-336.47	142.43	87.61	54.82	2.598 Alert	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - 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			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
7,800.00	7,792.49	7,805.06	7,785.61	27.73	27.83	-53.37	28.59	-339.49	143.01	87.80	55.21	2.590 Alert	
7,850.00	7,842.38	7,844.93	7,835.51	27.91	27.97	-53.72	28.87	-342.51	143.60	88.06	55.54	2.585 Alert	
7,900.00	7,892.28	7,905.08	7,885.40	28.09	28.19	-54.07	29.15	-345.53	144.19	88.25	55.94	2.578 Alert	
7,950.00	7,942.17	7,944.91	7,935.30	28.27	28.34	-54.42	29.43	-348.55	144.79	88.52	56.27	2.573 Alert	
8,000.00	7,992.07	7,994.90	7,985.20	28.45	28.52	-54.76	29.71	-351.57	145.39	88.76	56.63	2.567 Alert	
8,050.00	8,041.97	8,044.89	8,035.09	28.64	28.70	-55.10	30.00	-354.59	146.00	89.01	56.99	2.562 Alert	
8,100.00	8,091.86	8,105.12	8,084.99	28.82	28.92	-55.44	30.28	-357.61	146.61	89.22	57.39	2.555 Alert	
8,150.00	8,141.76	8,144.87	8,134.89	29.00	29.07	-55.78	30.56	-360.63	147.23	89.51	57.72	2.551 Alert	
8,200.00	8,191.65	8,205.15	8,184.78	29.18	29.29	-56.11	30.84	-363.66	147.86	89.74	58.12	2.544 Alert	
8,250.00	8,241.55	8,244.84	8,234.68	29.36	29.44	-56.44	31.12	-366.68	148.49	90.04	58.45	2.541 Alert	
8,300.00	8,291.44	8,294.83	8,284.58	29.54	29.62	-56.77	31.40	-369.70	149.12	90.31	58.81	2.536 Alert	
8,350.00	8,341.34	8,344.82	8,334.47	29.73	29.80	-57.09	31.68	-372.72	149.76	90.58	59.17	2.531 Alert	
8,400.00	8,391.24	8,405.19	8,384.37	29.91	30.02	-57.41	31.96	-375.74	150.40	90.83	59.58	2.525 Alert	
8,450.00	8,441.13	8,444.80	8,434.27	30.09	30.17	-57.73	32.25	-378.76	151.05	91.15	59.90	2.522 Alert	
8,500.00	8,491.03	8,505.21	8,484.16	30.27	30.39	-58.05	32.53	-381.78	151.70	91.40	60.30	2.516 Alert	
8,550.00	8,540.92	8,544.78	8,534.06	30.45	30.53	-58.36	32.81	-384.80	152.36	91.73	60.63	2.513 Alert	
8,600.00	8,590.82	8,605.24	8,583.96	30.64	30.75	-58.67	33.09	-387.82	153.02	91.99	61.03	2.507 Alert	
8,650.00	8,640.71	8,644.75	8,633.85	30.82	30.90	-58.98	33.37	-390.85	153.69	92.33	61.36	2.505 Alert	
8,700.00	8,690.61	8,705.26	8,683.75	31.00	31.12	-59.29	33.65	-393.87	154.36	92.60	61.76	2.499 Minor Risk	
8,750.00	8,740.51	8,744.73	8,733.65	31.18	31.26	-59.59	33.93	-396.89	155.03	92.94	62.09	2.497 Minor Risk	
8,800.00	8,790.40	8,795.21	8,784.03	31.37	31.45	-59.90	34.21	-399.91	155.69	93.23	62.46	2.493 Minor Risk	
8,850.00	8,840.30	8,846.79	8,835.54	31.55	31.64	-60.34	34.45	-402.46	155.96	93.12	62.84	2.482 Minor Risk	
8,900.00	8,890.19	8,898.34	8,887.06	31.73	31.82	-60.95	34.63	-404.33	155.74	92.53	63.21	2.464 Minor Risk	
8,950.00	8,940.09	8,949.84	8,938.55	31.91	32.01	-61.74	34.73	-405.50	155.04	91.46	63.58	2.438 Minor Risk	
9,000.00	8,989.98	9,001.28	8,989.99	32.09	32.19	-62.71	34.78	-405.98	153.87	89.92	63.95	2.406 Minor Risk	
9,050.00	9,039.88	9,051.47	9,040.18	32.28	32.36	-63.79	34.78	-405.99	152.43	88.11	64.31	2.370 Minor Risk	
9,100.00	9,089.78	9,101.37	9,090.08	32.46	32.54	-64.88	34.78	-405.99	151.02	86.35	64.68	2.335 Minor Risk	
9,150.00	9,139.67	9,151.26	9,139.97	32.64	32.71	-66.00	34.78	-405.99	149.68	84.63	65.05	2.301 Minor Risk	
9,200.00	9,189.57	9,201.16	9,189.87	32.82	32.88	-67.14	34.78	-405.99	148.40	82.98	65.41	2.269 Minor Risk	
9,250.00	9,239.46	9,251.06	9,239.76	33.01	33.05	-68.29	34.78	-405.99	147.17	81.39	65.78	2.237 Minor Risk	
9,300.00	9,289.36	9,300.95	9,289.66	33.19	33.23	-69.47	34.78	-405.99	146.00	79.85	66.15	2.207 Minor Risk	
9,350.00	9,339.25	9,350.85	9,339.55	33.37	33.40	-70.66	34.78	-405.99	144.90	78.38	66.52	2.178 Minor Risk	
9,400.00	9,389.15	9,400.74	9,389.45	33.55	33.57	-71.87	34.78	-405.99	143.86	76.98	66.89	2.151 Minor Risk	
9,450.00	9,439.05	9,450.64	9,439.35	33.74	33.74	-73.10	34.78	-405.99	142.89	75.64	67.25	2.125 Minor Risk	
9,500.00	9,488.94	9,500.53	9,489.24	33.92	33.92	-74.34	34.78	-405.99	141.98	74.36	67.62	2.100 Minor Risk	
9,550.00	9,538.84	9,550.43	9,539.14	34.10	34.09	-75.60	34.78	-405.99	141.14	73.15	67.99	2.076 Minor Risk	
9,600.00	9,588.73	9,600.33	9,589.03	34.28	34.26	-76.88	34.78	-405.99	140.38	72.02	68.36	2.053 Minor Risk	
9,650.00	9,638.63	9,650.22	9,638.93	34.47	34.44	-78.16	34.78	-405.99	139.68	70.95	68.73	2.032 Minor Risk	
9,700.00	9,688.52	9,700.12	9,688.82	34.65	34.61	-79.46	34.78	-405.99	139.05	69.95	69.10	2.012 Minor Risk	
9,750.00	9,738.42	9,750.01	9,738.72	34.83	34.78	-80.77	34.78	-405.99	138.49	69.03	69.47	1.994 Minor Risk	
9,800.00	9,788.32	9,800.09	9,788.62	35.01	34.96	-82.09	34.78	-405.99	138.01	68.18	69.83	1.976 Minor Risk	
9,850.00	9,838.21	9,849.80	9,838.51	35.20	35.13	-83.42	34.78	-405.99	137.60	67.40	70.20	1.960 Minor Risk	
9,900.00	9,888.11	9,900.30	9,888.41	35.38	35.31	-84.76	34.78	-405.99	137.27	66.70	70.57	1.945 Minor Risk	
9,950.00	9,938.00	9,949.60	9,938.30	35.56	35.48	-86.10	34.78	-405.99	137.01	66.08	70.94	1.931 Minor Risk	
10,000.00	9,987.90	10,000.51	9,988.20	35.74	35.66	-87.44	34.78	-405.99	136.83	65.52	71.31	1.919 Minor Risk	
10,050.00	10,037.79	10,049.39	10,038.09	35.93	35.83	-88.79	34.78	-405.99	136.72	65.05	71.67	1.908 Minor Risk	
10,094.80	10,082.50	10,105.91	10,082.80	36.09	36.02	-90.00	34.78	-405.99	136.69	64.65	72.04	1.898 Minor Risk	
10,100.00	10,087.69	10,100.72	10,087.99	36.11	36.00	-90.14	34.78	-405.99	136.69	64.65	72.04	1.897 Minor Risk	
10,150.00	10,137.59	10,149.18	10,137.89	36.29	36.17	-91.49	34.78	-405.99	136.74	64.34	72.40	1.889 Minor Risk	
10,200.00	10,187.48	10,200.93	10,187.78	36.48	36.35	-92.84	34.78	-405.99	136.86	64.09	72.77	1.881 Minor Risk	
10,250.00	10,237.38	10,248.97	10,237.68	36.66	36.52	-94.18	34.78	-405.99	137.06	63.93	73.13	1.874 Minor Risk	
10,300.00	10,287.27	10,301.13	10,287.57	36.84	36.70	-95.52	34.78	-405.99	137.33	63.83	73.50	1.868 Minor Risk	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 624H - Wellbore #1 - Permit Plan 1		Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDM															Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/S (ft)	+E/W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
10,350.00	10,337.17	10,348.76	10,337.47	37.02	36.87	-96.86	34.78	-405.99	137.68	63.83	73.86	1.864	Minor Risk			
10,400.00	10,387.06	10,401.34	10,387.36	37.21	37.05	-98.18	34.78	-405.99	138.11	63.88	74.23	1.861	Minor Risk			
10,450.00	10,436.96	10,448.55	10,437.26	37.39	37.22	-99.50	34.78	-405.99	138.60	64.02	74.58	1.858	Minor Risk			
10,500.00	10,486.86	10,501.55	10,487.16	37.57	37.40	-100.81	34.78	-405.99	139.17	64.22	74.95	1.857	Minor Risk			
10,550.00	10,536.75	10,548.34	10,537.05	37.76	37.57	-102.11	34.78	-405.99	139.82	64.52	75.30	1.857	Minor Risk			
10,600.00	10,586.65	10,601.76	10,586.95	37.94	37.75	-103.39	34.78	-405.99	140.53	64.86	75.67	1.857	Minor Risk			
10,650.00	10,636.54	10,648.14	10,636.84	38.12	37.91	-104.66	34.78	-405.99	141.31	65.30	76.02	1.859	Minor Risk			
10,700.00	10,686.44	10,701.97	10,686.74	38.30	38.10	-105.92	34.78	-405.99	142.17	65.78	76.39	1.861	Minor Risk			
10,750.00	10,736.33	10,747.93	10,736.63	38.49	38.26	-107.16	34.78	-405.99	143.09	66.35	76.73	1.865	Minor Risk			
10,800.00	10,786.23	10,802.18	10,786.53	38.67	38.45	-108.38	34.78	-405.99	144.07	66.97	77.11	1.869	Minor Risk			
10,850.00	10,836.13	10,847.72	10,836.43	38.85	38.61	-109.59	34.78	-405.99	145.13	67.68	77.45	1.874	Minor Risk			
10,900.00	10,886.02	10,902.39	10,886.32	39.04	38.80	-110.78	34.78	-405.99	146.24	68.42	77.82	1.879	Minor Risk			
10,950.00	10,935.92	10,947.51	10,936.22	39.22	38.96	-111.95	34.78	-405.99	147.41	69.25	78.16	1.886	Minor Risk			
11,000.00	10,985.84	11,002.56	10,986.14	39.40	39.15	-112.93	34.78	-405.99	148.45	69.92	78.53	1.890	Minor Risk			
11,050.00	11,035.80	11,047.39	11,036.10	39.58	39.31	-113.68	34.78	-405.99	149.27	70.41	78.86	1.893	Minor Risk			
11,100.00	11,085.78	11,102.63	11,086.08	39.76	39.50	-114.18	34.78	-405.99	149.85	70.61	79.23	1.891	Minor Risk			
11,150.00	11,135.77	11,147.37	11,136.07	39.94	39.66	-114.45	34.78	-405.99	150.16	70.59	79.57	1.887	Minor Risk			
11,200.00	11,185.77	11,197.37	11,186.07	40.11	39.83	180.00	34.78	-405.99	150.22	70.30	79.92	1.880	Minor Risk			
11,250.00	11,235.77	11,238.81	11,227.50	40.29	39.98	180.00	33.86	-405.99	151.38	71.26	80.12	1.889	Minor Risk			
11,300.00	11,285.77	11,278.08	11,266.60	40.46	40.11	179.99	30.29	-405.98	155.93	75.87	80.05	1.948	Minor Risk			
11,350.00	11,335.77	11,316.69	11,304.71	40.64	40.23	179.99	24.19	-405.96	163.84	84.09	79.75	2.054	Minor Risk			
11,400.00	11,385.77	11,354.30	11,341.37	40.81	40.35	179.98	15.78	-405.94	175.03	95.80	79.23	2.209	Minor Risk			
11,450.00	11,435.77	11,390.66	11,376.21	40.99	40.46	179.97	5.38	-405.91	189.33	110.80	78.53	2.411	Minor Risk			
11,500.00	11,485.77	11,425.55	11,408.95	41.17	40.57	179.96	-6.65	-405.88	206.59	128.91	77.68	2.660	Alert			
11,550.00	11,535.77	11,458.88	11,439.49	41.34	40.67	0.11	-19.98	-405.84	226.38	149.67	76.71	2.951	Alert			
11,600.00	11,585.62	11,491.54	11,468.61	41.50	40.76	0.10	-34.75	-405.80	245.69	170.08	75.61	3.249	Alert			
11,650.00	11,634.97	11,523.86	11,496.56	41.65	40.84	0.09	-50.98	-405.76	263.58	189.18	74.39	3.543	Alert			
11,700.00	11,683.43	11,555.88	11,523.31	41.80	40.93	0.08	-68.58	-405.71	280.00	206.93	73.07	3.832	Alert			
11,750.00	11,730.64	11,587.65	11,548.83	41.95	41.00	0.08	-87.50	-405.66	294.93	223.28	71.66	4.116	Alert			
11,800.00	11,776.24	11,619.21	11,573.10	42.08	41.08	0.07	-107.65	-405.60	308.33	238.16	70.17	4.394	Alert			
11,850.00	11,819.89	11,650.00	11,595.68	42.20	41.15	0.07	-128.58	-405.55	320.15	251.61	68.55	4.670	Alert			
11,900.00	11,861.24	11,681.79	11,617.78	42.31	41.22	0.07	-151.43	-405.49	330.39	263.39	67.00	4.931	Alert			
11,950.00	11,899.99	11,712.87	11,638.12	42.40	41.28	0.07	-174.92	-405.42	339.01	273.65	65.36	5.187				
12,000.00	11,935.84	11,750.00	11,660.72	42.49	41.37	0.06	-204.38	-405.34	346.08	281.76	64.32	5.381				
12,050.00	11,968.52	11,774.75	11,674.70	42.56	41.42	0.06	-224.80	-405.29	351.33	289.27	62.06	5.661				
12,100.00	11,997.78	11,800.00	11,688.04	42.63	41.48	0.06	-246.23	-405.23	355.07	295.15	59.92	5.925				
12,150.00	12,023.39	11,836.40	11,705.58	42.69	41.56	0.06	-278.12	-405.14	357.00	298.13	58.87	6.065				
12,200.00	12,045.17	11,867.20	11,718.81	42.77	41.64	0.06	-305.93	-405.07	357.33	299.95	57.37	6.228				
12,250.00	12,062.94	11,900.00	11,731.24	42.86	41.72	0.06	-336.28	-404.98	355.99	299.85	56.14	6.342				
12,300.00	12,076.57	11,928.83	11,740.72	42.97	41.79	0.06	-363.50	-404.91	352.95	298.23	54.72	6.450				
12,350.00	12,085.96	11,959.70	11,749.34	43.07	41.87	0.06	-393.14	-404.83	348.27	294.64	53.63	6.494				
12,400.00	12,091.03	11,990.65	11,756.36	43.18	41.96	0.06	-423.28	-404.75	341.92	289.20	52.72	6.486				
12,450.00	12,092.00	12,021.71	11,761.76	43.30	42.04	0.06	-453.86	-404.67	334.18	282.15	52.03	6.423				
12,500.00	12,092.00	12,050.00	11,765.23	43.41	42.12	0.07	-481.94	-404.59	328.20	276.69	51.51	6.372				
12,550.00	12,092.00	12,084.96	11,767.60	43.55	42.21	0.07	-516.81	-404.50	324.93	273.52	51.40	6.321				
12,600.00	12,092.00	12,122.85	11,768.00	43.68	42.32	0.07	-554.69	-404.39	324.30	272.81	51.49	6.299				
12,650.00	12,092.00	12,172.85	11,768.00	43.84	42.46	0.06	-604.69	-404.26	324.30	272.67	51.63	6.281				
12,700.00	12,092.00	12,222.85	11,768.00	44.00	42.62	0.06	-654.69	-404.12	324.30	272.52	51.78	6.263				
12,750.00	12,092.00	12,272.85	11,768.00	44.17	42.79	0.06	-704.69	-403.99	324.30	272.35	51.95	6.243				
12,800.00	12,092.00	12,322.85	11,768.00	44.35	42.96	0.06	-754.69	-403.85	324.30	272.18	52.12	6.222				
12,850.00	12,092.00	12,372.85	11,768.00	44.55	43.15	0.06	-804.69	-403.71	324.30	271.99	52.31	6.199				
12,900.00	12,092.00	12,422.85	11,768.00	44.75	43.35	0.06	-854.69	-403.58	324.30	271.80	52.51	6.176				

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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 624H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: O-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
12,950.00	12,092.00	12,472.85	11,768.00	44.97	43.57	0.06	-904.69	-403.44	324.30	271.58	52.72	6.152		
13,000.00	12,092.00	12,522.85	11,768.00	45.19	43.79	0.06	-954.69	-403.31	324.30	271.37	52.93	6.126		
13,050.00	12,092.00	12,572.85	11,768.00	45.43	44.02	0.06	-1,004.69	-403.17	324.30	271.13	53.17	6.100		
13,100.00	12,092.00	12,622.85	11,768.00	45.67	44.26	0.06	-1,054.69	-403.04	324.30	270.90	53.41	6.072		
13,150.00	12,092.00	12,672.85	11,768.00	45.93	44.52	0.06	-1,104.69	-402.90	324.30	270.64	53.66	6.044		
13,200.00	12,092.00	12,722.85	11,768.00	46.19	44.78	0.06	-1,154.69	-402.77	324.30	270.38	53.92	6.015		
13,250.00	12,092.00	12,772.85	11,768.00	46.47	45.06	0.06	-1,204.69	-402.63	324.30	270.11	54.19	5.984		
13,300.00	12,092.00	12,822.85	11,768.00	46.75	45.34	0.06	-1,254.69	-402.50	324.30	269.83	54.47	5.954		
13,350.00	12,092.00	12,872.85	11,768.00	47.05	45.63	0.06	-1,304.69	-402.36	324.30	269.54	54.76	5.922		
13,400.00	12,092.00	12,922.85	11,768.00	47.35	45.94	0.06	-1,354.69	-402.22	324.30	269.24	55.06	5.890		
13,450.00	12,092.00	12,972.85	11,768.00	47.67	46.25	0.06	-1,404.69	-402.09	324.30	268.93	55.38	5.856		
13,500.00	12,092.00	13,022.85	11,768.00	47.99	46.57	0.06	-1,454.69	-401.95	324.30	268.61	55.69	5.823		
13,550.00	12,092.00	13,072.85	11,768.00	48.32	46.90	0.06	-1,504.69	-401.82	324.30	268.28	56.02	5.789		
13,600.00	12,092.00	13,122.85	11,768.00	48.66	47.24	0.06	-1,554.69	-401.68	324.30	267.94	56.36	5.754		
13,650.00	12,092.00	13,172.85	11,768.00	49.01	47.59	0.06	-1,604.69	-401.55	324.30	267.59	56.71	5.719		
13,700.00	12,092.00	13,222.85	11,768.00	49.36	47.94	0.06	-1,654.69	-401.41	324.30	267.24	57.06	5.683		
13,750.00	12,092.00	13,272.85	11,768.00	49.73	48.31	0.06	-1,704.69	-401.28	324.30	266.87	57.43	5.647		
13,800.00	12,092.00	13,322.85	11,768.00	50.09	48.68	0.06	-1,754.69	-401.14	324.30	266.50	57.80	5.611		
13,850.00	12,092.00	13,372.85	11,768.00	50.48	49.06	0.06	-1,804.68	-401.00	324.30	266.12	58.18	5.574		
13,900.00	12,092.00	13,422.85	11,768.00	50.86	49.45	0.06	-1,854.68	-400.87	324.30	265.74	58.57	5.537		
13,950.00	12,092.00	13,472.85	11,768.00	51.26	49.85	0.06	-1,904.68	-400.73	324.30	265.34	58.97	5.500		
14,000.00	12,092.00	13,522.85	11,768.00	51.66	50.25	0.06	-1,954.68	-400.60	324.30	264.93	59.37	5.463		
14,050.00	12,092.00	13,572.85	11,768.00	52.07	50.66	0.06	-2,004.68	-400.46	324.30	264.52	59.78	5.425		
14,100.00	12,092.00	13,622.85	11,768.00	52.48	51.08	0.06	-2,054.68	-400.33	324.30	264.10	60.20	5.387		
14,150.00	12,092.00	13,672.85	11,768.00	52.90	51.50	0.05	-2,104.68	-400.19	324.30	263.68	60.63	5.349		
14,200.00	12,092.00	13,722.85	11,768.00	53.33	51.93	0.05	-2,154.68	-400.06	324.30	263.24	61.06	5.311		
14,250.00	12,092.00	13,772.85	11,768.00	53.77	52.37	0.05	-2,204.68	-399.92	324.30	262.80	61.50	5.273		
14,300.00	12,092.00	13,822.85	11,768.00	54.21	52.81	0.05	-2,254.68	-399.78	324.30	262.36	61.95	5.235		
14,350.00	12,092.00	13,872.85	11,768.00	54.66	53.26	0.05	-2,304.68	-399.65	324.30	261.90	62.40	5.197		
14,400.00	12,092.00	13,922.85	11,768.00	55.11	53.72	0.05	-2,354.68	-399.51	324.30	261.44	62.86	5.159		
14,450.00	12,092.00	13,972.85	11,768.00	55.57	54.18	0.05	-2,404.68	-399.38	324.30	260.97	63.33	5.121		
14,500.00	12,092.00	14,022.85	11,768.00	56.03	54.65	0.05	-2,454.68	-399.24	324.30	260.50	63.80	5.083		
14,550.00	12,092.00	14,072.85	11,768.00	56.50	55.12	0.05	-2,504.68	-399.11	324.30	260.02	64.28	5.045		
14,600.00	12,092.00	14,122.85	11,768.00	56.97	55.60	0.05	-2,554.68	-398.97	324.30	259.54	64.77	5.007		
14,650.00	12,092.00	14,172.85	11,768.00	57.46	56.09	0.05	-2,604.68	-398.84	324.30	259.04	65.26	4.969 Alert		
14,700.00	12,092.00	14,222.85	11,768.00	57.94	56.58	0.05	-2,654.68	-398.70	324.30	258.55	65.75	4.932 Alert		
14,750.00	12,092.00	14,272.85	11,768.00	58.43	57.07	0.05	-2,704.68	-398.57	324.30	258.04	66.26	4.895 Alert		
14,800.00	12,092.00	14,322.85	11,768.00	58.93	57.57	0.05	-2,754.68	-398.43	324.30	257.54	66.76	4.857 Alert		
14,850.00	12,092.00	14,372.85	11,768.00	59.43	58.08	0.05	-2,804.68	-398.29	324.30	257.02	67.28	4.820 Alert		
14,900.00	12,092.00	14,422.85	11,768.00	59.93	58.58	0.05	-2,854.68	-398.16	324.30	256.51	67.80	4.784 Alert		
14,950.00	12,092.00	14,472.85	11,768.00	60.44	59.10	0.05	-2,904.68	-398.02	324.30	255.98	68.32	4.747 Alert		
15,000.00	12,092.00	14,522.85	11,768.00	60.96	59.62	0.05	-2,954.68	-397.89	324.30	255.45	68.85	4.710 Alert		
15,050.00	12,092.00	14,572.85	11,768.00	61.48	60.14	0.05	-3,004.68	-397.75	324.30	254.92	69.38	4.674 Alert		
15,100.00	12,092.00	14,622.85	11,768.00	62.00	60.66	0.05	-3,054.68	-397.62	324.30	254.38	69.92	4.638 Alert		
15,150.00	12,092.00	14,672.85	11,768.00	62.53	61.19	0.05	-3,104.68	-397.48	324.30	253.84	70.46	4.602 Alert		
15,200.00	12,092.00	14,722.85	11,768.00	63.05	61.73	0.05	-3,154.68	-397.35	324.30	253.29	71.01	4.567 Alert		
15,250.00	12,092.00	14,772.85	11,768.00	63.59	62.27	0.05	-3,204.68	-397.21	324.30	252.74	71.56	4.532 Alert		
15,300.00	12,092.00	14,822.85	11,768.00	64.13	62.81	0.05	-3,254.68	-397.07	324.30	252.19	72.12	4.497 Alert		
15,350.00	12,092.00	14,872.85	11,768.00	64.67	63.36	0.05	-3,304.68	-396.94	324.30	251.62	72.68	4.462 Alert		
15,400.00	12,092.00	14,922.85	11,768.00	65.21	63.91	0.05	-3,354.68	-396.80	324.30	251.06	73.24	4.428 Alert		
15,450.00	12,092.00	14,972.85	11,768.00	65.76	64.46	0.05	-3,404.68	-396.67	324.30	250.49	73.81	4.394 Alert		
15,500.00	12,092.00	15,022.85	11,768.00	66.31	65.01	0.05	-3,454.68	-396.53	324.30	249.92	74.38	4.360 Alert		

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - 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			Distance							Warning
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
15,550.00	12,092.00	15,072.85	11,768.00	66.87	65.57	0.05	-3,504.68	-396.40	324.30	249.34	74.96	4.326 Alert		
15,600.00	12,092.00	15,122.85	11,768.00	67.43	66.14	0.05	-3,554.68	-396.26	324.30	248.77	75.54	4.293 Alert		
15,650.00	12,092.00	15,172.85	11,768.00	67.99	66.70	0.04	-3,604.68	-396.13	324.30	248.18	76.12	4.260 Alert		
15,700.00	12,092.00	15,222.85	11,768.00	68.56	67.27	0.04	-3,654.68	-395.99	324.30	247.59	76.71	4.228 Alert		
15,750.00	12,092.00	15,272.85	11,768.00	69.13	67.85	0.04	-3,704.68	-395.86	324.30	247.00	77.30	4.195 Alert		
15,800.00	12,092.00	15,322.85	11,768.00	69.70	68.42	0.04	-3,754.68	-395.72	324.30	246.41	77.89	4.163 Alert		
15,850.00	12,092.00	15,372.85	11,768.00	70.27	69.00	0.04	-3,804.68	-395.58	324.30	245.81	78.49	4.132 Alert		
15,900.00	12,092.00	15,422.85	11,768.00	70.85	69.58	0.04	-3,854.68	-395.45	324.30	245.21	79.09	4.100 Alert		
15,950.00	12,092.00	15,472.85	11,768.00	71.43	70.16	0.04	-3,904.68	-395.31	324.30	244.61	79.70	4.069 Alert		
16,000.00	12,092.00	15,522.85	11,768.00	72.01	70.75	0.04	-3,954.68	-395.18	324.30	244.00	80.30	4.039 Alert		
16,050.00	12,092.00	15,572.85	11,768.00	72.59	71.34	0.04	-4,004.68	-395.04	324.30	243.39	80.91	4.008 Alert		
16,100.00	12,092.00	15,622.85	11,768.00	73.18	71.93	0.04	-4,054.68	-394.91	324.30	242.78	81.52	3.978 Alert		
16,150.00	12,092.00	15,672.85	11,768.00	73.77	72.52	0.04	-4,104.68	-394.77	324.30	242.16	82.14	3.948 Alert		
16,200.00	12,092.00	15,722.85	11,768.00	74.36	73.12	0.04	-4,154.68	-394.64	324.30	241.54	82.76	3.919 Alert		
16,250.00	12,092.00	15,772.85	11,768.00	74.96	73.72	0.04	-4,204.68	-394.50	324.30	240.92	83.38	3.889 Alert		
16,300.00	12,092.00	15,822.85	11,768.00	75.55	74.32	0.04	-4,254.68	-394.36	324.30	240.30	84.01	3.860 Alert		
16,350.00	12,092.00	15,872.85	11,768.00	76.16	74.92	0.04	-4,304.68	-394.23	324.30	239.67	84.63	3.832 Alert		
16,400.00	12,092.00	15,922.85	11,768.00	76.76	75.53	0.04	-4,354.68	-394.09	324.30	239.04	85.26	3.804 Alert		
16,450.00	12,092.00	15,972.85	11,768.00	77.36	76.14	0.04	-4,404.68	-393.96	324.30	238.41	85.89	3.776 Alert		
16,500.00	12,092.00	16,022.85	11,768.00	77.96	76.74	0.04	-4,454.68	-393.82	324.30	237.77	86.53	3.748 Alert		
16,550.00	12,092.00	16,072.85	11,768.00	78.57	77.36	0.04	-4,504.68	-393.69	324.30	237.14	87.17	3.720 Alert		
16,600.00	12,092.00	16,122.85	11,768.00	79.18	77.97	0.04	-4,554.67	-393.55	324.30	236.50	87.81	3.693 Alert		
16,650.00	12,092.00	16,172.85	11,768.00	79.80	78.59	0.04	-4,604.67	-393.42	324.30	235.85	88.45	3.667 Alert		
16,700.00	12,092.00	16,222.85	11,768.00	80.41	79.20	0.04	-4,654.67	-393.28	324.30	235.21	89.09	3.640 Alert		
16,750.00	12,092.00	16,272.85	11,768.00	81.02	79.82	0.04	-4,704.67	-393.14	324.30	234.56	89.74	3.614 Alert		
16,800.00	12,092.00	16,322.85	11,768.00	81.64	80.44	0.04	-4,754.67	-393.01	324.30	233.92	90.39	3.588 Alert		
16,850.00	12,092.00	16,372.85	11,768.00	82.26	81.07	0.04	-4,804.67	-392.87	324.30	233.26	91.04	3.562 Alert		
16,900.00	12,092.00	16,422.85	11,768.00	82.88	81.69	0.04	-4,854.67	-392.74	324.30	232.61	91.69	3.537 Alert		
16,950.00	12,092.00	16,472.85	11,768.00	83.50	82.32	0.04	-4,904.67	-392.60	324.30	231.96	92.35	3.512 Alert		
17,000.00	12,092.00	16,522.85	11,768.00	84.13	82.94	0.04	-4,954.67	-392.47	324.30	231.30	93.00	3.487 Alert		
17,050.00	12,092.00	16,572.85	11,768.00	84.75	83.57	0.04	-5,004.67	-392.33	324.30	230.64	93.66	3.462 Alert		
17,100.00	12,092.00	16,622.85	11,768.00	85.38	84.20	0.04	-5,054.67	-392.20	324.30	229.98	94.32	3.438 Alert		
17,150.00	12,092.00	16,672.85	11,768.00	86.01	84.84	0.03	-5,104.67	-392.06	324.30	229.32	94.98	3.414 Alert		
17,200.00	12,092.00	16,722.85	11,768.00	86.64	85.47	0.03	-5,154.67	-391.93	324.30	228.65	95.65	3.391 Alert		
17,250.00	12,092.00	16,772.85	11,768.00	87.27	86.11	0.03	-5,204.67	-391.79	324.30	227.99	96.32	3.367 Alert		
17,300.00	12,092.00	16,822.85	11,768.00	87.91	86.74	0.03	-5,254.67	-391.65	324.30	227.32	96.98	3.344 Alert		
17,350.00	12,092.00	16,872.85	11,768.00	88.54	87.38	0.03	-5,304.67	-391.52	324.30	226.65	97.65	3.321 Alert		
17,400.00	12,092.00	16,922.85	11,768.00	89.18	88.02	0.03	-5,354.67	-391.38	324.30	225.98	98.32	3.298 Alert		
17,450.00	12,092.00	16,972.85	11,768.00	89.82	88.66	0.03	-5,404.67	-391.25	324.30	225.30	99.00	3.276 Alert		
17,500.00	12,092.00	17,022.85	11,768.00	90.45	89.30	0.03	-5,454.67	-391.11	324.30	224.63	99.67	3.254 Alert		
17,550.00	12,092.00	17,072.85	11,768.00	91.10	89.95	0.03	-5,504.67	-390.98	324.30	223.95	100.35	3.232 Alert		
17,600.00	12,092.00	17,122.85	11,768.00	91.74	90.59	0.03	-5,554.67	-390.84	324.30	223.27	101.03	3.210 Alert		
17,650.00	12,092.00	17,172.85	11,768.00	92.38	91.24	0.03	-5,604.67	-390.71	324.30	222.59	101.71	3.189 Alert		
17,700.00	12,092.00	17,222.85	11,768.00	93.02	91.89	0.03	-5,654.67	-390.57	324.30	221.91	102.39	3.167 Alert		
17,750.00	12,092.00	17,272.85	11,768.00	93.67	92.54	0.03	-5,704.67	-390.43	324.30	221.23	103.07	3.146 Alert		
17,800.00	12,092.00	17,322.85	11,768.00	94.32	93.18	0.03	-5,754.67	-390.30	324.30	220.55	103.75	3.126 Alert		
17,850.00	12,092.00	17,372.85	11,768.00	94.96	93.84	0.03	-5,804.67	-390.16	324.30	219.86	104.44	3.105 Alert		
17,900.00	12,092.00	17,422.85	11,768.00	95.61	94.49	0.03	-5,854.67	-390.03	324.30	219.18	105.13	3.085 Alert		
17,950.00	12,092.00	17,472.85	11,768.00	96.26	95.14	0.03	-5,904.67	-389.89	324.30	218.49	105.82	3.065 Alert		
18,000.00	12,092.00	17,522.85	11,768.00	96.91	95.79	0.03	-5,954.67	-389.76	324.30	217.80	106.50	3.045 Alert		
18,050.00	12,092.00	17,572.85	11,768.00	97.57	96.45	0.03	-6,004.67	-389.62	324.30	217.11	107.20	3.025 Alert		
18,100.00	12,092.00	17,622.85	11,768.00	98.22	97.11	0.03	-6,054.67	-389.49	324.30	216.42	107.89	3.006 Alert		

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - 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		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S	+E/-W	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
18,150.00	12,092.00	17,672.85	11,768.00	98.87	97.76	0.03	-6,104.67	-389.35	324.30	215.72	108.58	2.987 Alert	
18,200.00	12,092.00	17,722.85	11,768.00	99.53	98.42	0.03	-6,154.67	-389.21	324.30	215.03	109.28	2.968 Alert	
18,250.00	12,092.00	17,772.85	11,768.00	100.19	99.08	0.03	-6,204.67	-389.08	324.30	214.33	109.97	2.949 Alert	
18,300.00	12,092.00	17,822.85	11,768.00	100.84	99.74	0.03	-6,254.67	-388.94	324.30	213.63	110.67	2.930 Alert	
18,350.00	12,092.00	17,872.85	11,768.00	101.50	100.40	0.03	-6,304.67	-388.81	324.30	212.94	111.37	2.912 Alert	
18,400.00	12,092.00	17,922.85	11,768.00	102.16	101.06	0.03	-6,354.67	-388.67	324.30	212.24	112.07	2.894 Alert	
18,450.00	12,092.00	17,972.85	11,768.00	102.82	101.73	0.03	-6,404.67	-388.54	324.30	211.54	112.77	2.876 Alert	
18,500.00	12,092.00	18,022.85	11,768.00	103.48	102.39	0.03	-6,454.67	-388.40	324.30	210.84	113.47	2.858 Alert	
18,550.00	12,092.00	18,072.85	11,768.00	104.14	103.05	0.03	-6,504.67	-388.27	324.30	210.13	114.17	2.841 Alert	
18,600.00	12,092.00	18,122.85	11,768.00	104.81	103.72	0.03	-6,554.67	-388.13	324.30	209.43	114.87	2.823 Alert	
18,650.00	12,092.00	18,172.85	11,768.00	105.47	104.39	0.02	-6,604.67	-388.00	324.30	208.72	115.58	2.806 Alert	
18,700.00	12,092.00	18,222.85	11,768.00	106.13	105.05	0.02	-6,654.67	-387.86	324.30	208.02	116.28	2.789 Alert	
18,750.00	12,092.00	18,272.85	11,768.00	106.80	105.72	0.02	-6,704.67	-387.72	324.30	207.31	116.99	2.772 Alert	
18,800.00	12,092.00	18,322.85	11,768.00	107.46	106.39	0.02	-6,754.67	-387.59	324.30	206.60	117.70	2.755 Alert	
18,850.00	12,092.00	18,372.85	11,768.00	108.13	107.06	0.02	-6,804.67	-387.45	324.30	205.89	118.41	2.739 Alert	
18,900.00	12,092.00	18,422.85	11,768.00	108.80	107.73	0.02	-6,854.67	-387.32	324.30	205.19	119.12	2.723 Alert	
18,950.00	12,092.00	18,472.85	11,768.00	109.47	108.40	0.02	-6,904.67	-387.18	324.30	204.47	119.83	2.706 Alert	
19,000.00	12,092.00	18,522.85	11,768.00	110.14	109.07	0.02	-6,954.67	-387.05	324.30	203.76	120.54	2.690 Alert	
19,050.00	12,092.00	18,572.85	11,768.00	110.81	109.74	0.02	-7,004.67	-386.91	324.30	203.05	121.25	2.675 Alert	
19,100.00	12,092.00	18,622.85	11,768.00	111.48	110.41	0.02	-7,054.67	-386.78	324.30	202.34	121.96	2.659 Alert	
19,150.00	12,092.00	18,672.85	11,768.00	112.15	111.09	0.02	-7,104.67	-386.64	324.30	201.62	122.68	2.644 Alert	
19,200.00	12,092.00	18,722.85	11,768.00	112.82	111.76	0.02	-7,154.67	-386.50	324.30	200.91	123.39	2.628 Alert	
19,250.00	12,092.00	18,772.85	11,768.00	113.49	112.44	0.02	-7,204.67	-386.37	324.30	200.19	124.11	2.613 Alert	
19,300.00	12,092.00	18,822.85	11,768.00	114.16	113.11	0.02	-7,254.66	-386.23	324.30	199.48	124.83	2.598 Alert	
19,350.00	12,092.00	18,872.85	11,768.00	114.84	113.79	0.02	-7,304.66	-386.10	324.30	198.76	125.54	2.583 Alert	
19,400.00	12,092.00	18,922.85	11,768.00	115.51	114.47	0.02	-7,354.66	-385.96	324.30	198.04	126.26	2.568 Alert	
19,450.00	12,092.00	18,972.85	11,768.00	116.19	115.14	0.02	-7,404.66	-385.83	324.30	197.32	126.98	2.554 Alert	
19,500.00	12,092.00	19,022.85	11,768.00	116.86	115.82	0.02	-7,454.66	-385.69	324.30	196.60	127.70	2.540 Alert	
19,550.00	12,092.00	19,072.85	11,768.00	117.54	116.50	0.02	-7,504.66	-385.56	324.30	195.88	128.42	2.525 Alert	
19,600.00	12,092.00	19,122.85	11,768.00	118.22	117.18	0.02	-7,554.66	-385.42	324.30	195.16	129.14	2.511 Alert	
19,650.00	12,092.00	19,172.85	11,768.00	118.90	117.86	0.02	-7,604.66	-385.28	324.30	194.44	129.87	2.497 Minor Risk	
19,700.00	12,092.00	19,222.85	11,768.00	119.57	118.54	0.02	-7,654.66	-385.15	324.30	193.71	130.59	2.483 Minor Risk	
19,750.00	12,092.00	19,272.85	11,768.00	120.25	119.22	0.02	-7,704.66	-385.01	324.30	192.99	131.31	2.470 Minor Risk	
19,800.00	12,092.00	19,322.85	11,768.00	120.93	119.90	0.02	-7,754.66	-384.88	324.30	192.27	132.04	2.456 Minor Risk	
19,850.00	12,092.00	19,372.85	11,768.00	121.61	120.58	0.02	-7,804.66	-384.74	324.30	191.54	132.76	2.443 Minor Risk	
19,900.00	12,092.00	19,422.85	11,768.00	122.29	121.27	0.02	-7,854.66	-384.61	324.30	190.82	133.49	2.429 Minor Risk	
19,950.00	12,092.00	19,472.85	11,768.00	122.97	121.95	0.02	-7,904.66	-384.47	324.30	190.09	134.21	2.416 Minor Risk	
20,000.00	12,092.00	19,522.85	11,768.00	123.65	122.63	0.02	-7,954.66	-384.34	324.30	189.36	134.94	2.403 Minor Risk	
20,050.00	12,092.00	19,572.85	11,768.00	124.34	123.32	0.02	-8,004.66	-384.20	324.30	188.63	135.67	2.390 Minor Risk	
20,100.00	12,092.00	19,622.85	11,768.00	125.02	124.00	0.02	-8,054.66	-384.07	324.30	187.91	136.40	2.378 Minor Risk	
20,150.00	12,092.00	19,672.85	11,768.00	125.70	124.69	0.01	-8,104.66	-383.93	324.30	187.18	137.12	2.365 Minor Risk	
20,200.00	12,092.00	19,722.85	11,768.00	126.38	125.37	0.01	-8,154.66	-383.79	324.30	186.45	137.85	2.353 Minor Risk	
20,250.00	12,092.00	19,772.85	11,768.00	127.07	126.06	0.01	-8,204.66	-383.66	324.30	185.72	138.58	2.340 Minor Risk	
20,300.00	12,092.00	19,822.85	11,768.00	127.75	126.74	0.01	-8,254.66	-383.52	324.30	184.99	139.31	2.328 Minor Risk	
20,350.00	12,092.00	19,872.85	11,768.00	128.44	127.43	0.01	-8,304.66	-383.39	324.30	184.26	140.05	2.316 Minor Risk	
20,400.00	12,092.00	19,922.85	11,768.00	129.12	128.12	0.01	-8,354.66	-383.25	324.30	183.52	140.78	2.304 Minor Risk	
20,450.00	12,092.00	19,972.85	11,768.00	129.81	128.80	0.01	-8,404.66	-383.12	324.30	182.79	141.51	2.292 Minor Risk	
20,500.00	12,092.00	20,022.85	11,768.00	130.49	129.49	0.01	-8,454.66	-382.98	324.30	182.06	142.24	2.280 Minor Risk	
20,550.00	12,092.00	20,072.85	11,768.00	131.18	130.18	0.01	-8,504.66	-382.85	324.30	181.33	142.98	2.268 Minor Risk	
20,600.00	12,092.00	20,122.85	11,768.00	131.87	130.87	0.01	-8,554.66	-382.71	324.30	180.59	143.71	2.257 Minor Risk	
20,650.00	12,092.00	20,172.85	11,768.00	132.56	131.56	0.01	-8,604.66	-382.57	324.30	179.86	144.44	2.245 Minor Risk	
20,700.00	12,092.00	20,222.85	11,768.00	133.24	132.25	0.01	-8,654.66	-382.44	324.30	179.12	145.18	2.234 Minor Risk	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 Offset TVD Reference: Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 624H - 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		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
20,750.00	12,092.00	20,272.85	11,768.00	133.93	132.94	0.01	-8,704.66	-382.30	324.30	178.39	145.92	2.223 Minor Risk	
20,800.00	12,092.00	20,322.85	11,768.00	134.62	133.63	0.01	-8,754.66	-382.17	324.30	177.65	146.65	2.211 Minor Risk	
20,850.00	12,092.00	20,372.85	11,768.00	135.31	134.32	0.01	-8,804.66	-382.03	324.30	176.91	147.39	2.200 Minor Risk	
20,900.00	12,092.00	20,422.85	11,768.00	136.00	135.01	0.01	-8,854.66	-381.90	324.30	176.18	148.13	2.189 Minor Risk	
20,950.00	12,092.00	20,472.85	11,768.00	136.69	135.70	0.01	-8,904.66	-381.76	324.30	175.44	148.86	2.179 Minor Risk	
21,000.00	12,092.00	20,522.85	11,768.00	137.38	136.39	0.01	-8,954.66	-381.63	324.30	174.70	149.60	2.168 Minor Risk	
21,050.00	12,092.00	20,572.85	11,768.00	138.07	137.09	0.01	-9,004.66	-381.49	324.30	173.96	150.34	2.157 Minor Risk	
21,100.00	12,092.00	20,622.85	11,768.00	138.76	137.78	0.01	-9,054.66	-381.35	324.30	173.22	151.08	2.147 Minor Risk	
21,150.00	12,092.00	20,672.85	11,768.00	139.45	138.47	0.01	-9,104.66	-381.22	324.30	172.48	151.82	2.136 Minor Risk	
21,200.00	12,092.00	20,722.85	11,768.00	140.14	139.17	0.01	-9,154.66	-381.08	324.30	171.74	152.56	2.126 Minor Risk	
21,250.00	12,092.00	20,772.85	11,768.00	140.84	139.86	0.01	-9,204.66	-380.95	324.30	171.00	153.30	2.115 Minor Risk	
21,300.00	12,092.00	20,822.85	11,768.00	141.53	140.55	0.01	-9,254.66	-380.81	324.30	170.26	154.04	2.105 Minor Risk	
21,350.00	12,092.00	20,872.85	11,768.00	142.22	141.25	0.01	-9,304.66	-380.68	324.30	169.52	154.78	2.095 Minor Risk	
21,400.00	12,092.00	20,922.85	11,768.00	142.91	141.94	0.01	-9,354.66	-380.54	324.30	168.78	155.52	2.085 Minor Risk	
21,450.00	12,092.00	20,972.85	11,768.00	143.61	142.64	0.01	-9,404.66	-380.41	324.30	168.04	156.26	2.075 Minor Risk	
21,500.00	12,092.00	21,022.85	11,768.00	144.30	143.33	0.01	-9,454.66	-380.27	324.30	167.30	157.01	2.066 Minor Risk	
21,550.00	12,092.00	21,072.85	11,768.00	145.00	144.03	0.01	-9,504.66	-380.14	324.30	166.55	157.75	2.056 Minor Risk	
21,600.00	12,092.00	21,122.85	11,768.00	145.69	144.73	0.01	-9,554.66	-380.00	324.30	165.81	158.49	2.046 Minor Risk	
21,650.00	12,092.00	21,172.85	11,768.00	146.39	145.42	0.00	-9,604.66	-379.86	324.30	165.07	159.24	2.037 Minor Risk	
21,700.00	12,092.00	21,222.85	11,768.00	147.08	146.12	0.00	-9,654.66	-379.73	324.30	164.32	159.98	2.027 Minor Risk	
21,750.00	12,092.00	21,272.85	11,768.00	147.78	146.82	0.00	-9,704.66	-379.59	324.30	163.58	160.73	2.018 Minor Risk	
21,800.00	12,092.00	21,322.85	11,768.00	148.47	147.51	0.00	-9,754.66	-379.46	324.30	162.83	161.47	2.008 Minor Risk	
21,850.00	12,092.00	21,372.85	11,768.00	149.17	148.21	0.00	-9,804.66	-379.32	324.30	162.09	162.22	1.999 Minor Risk	
21,900.00	12,092.00	21,422.85	11,768.00	149.86	148.91	0.00	-9,854.66	-379.19	324.30	161.34	162.96	1.990 Minor Risk	
21,950.00	12,092.00	21,472.85	11,768.00	150.56	149.61	0.00	-9,904.66	-379.05	324.30	160.60	163.71	1.981 Minor Risk	
22,000.00	12,092.00	21,522.85	11,768.00	151.26	150.30	0.00	-9,954.66	-378.92	324.30	159.85	164.45	1.972 Minor Risk	
22,050.00	12,092.00	21,572.85	11,768.00	151.95	151.00	0.00	-10,004.65	-378.78	324.30	159.10	165.20	1.963 Minor Risk	
22,100.00	12,092.00	21,622.85	11,768.00	152.65	151.70	0.00	-10,054.65	-378.64	324.30	158.36	165.95	1.954 Minor Risk	
22,150.00	12,092.00	21,672.85	11,768.00	153.35	152.40	0.00	-10,104.65	-378.51	324.30	157.61	166.69	1.945 Minor Risk	
22,200.00	12,092.00	21,722.85	11,768.00	154.05	153.10	0.00	-10,154.65	-378.37	324.30	156.86	167.44	1.937 Minor Risk	
22,250.00	12,092.00	21,772.85	11,768.00	154.75	153.80	0.00	-10,204.65	-378.24	324.30	156.11	168.19	1.928 Minor Risk	
22,300.00	12,092.00	21,822.85	11,768.00	155.44	154.50	0.00	-10,254.65	-378.10	324.30	155.36	168.94	1.920 Minor Risk	
22,350.00	12,092.00	21,872.85	11,768.00	156.14	155.20	0.00	-10,304.65	-377.97	324.30	154.61	169.69	1.911 Minor Risk	
22,381.87	12,092.00	21,904.71	11,768.00	156.59	155.65	0.00	-10,336.52	-377.88	324.30	154.14	170.16	1.906 Minor Risk	

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design												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			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
1,300.00	1,300.00	1,396.46	1,395.84	4.46	3.54	89.06	24.60	1,494.95	1,498.19	1,490.20	7.99	187.587	
1,350.00	1,350.00	1,452.77	1,451.94	4.64	3.63	88.94	27.53	1,491.21	1,494.91	1,486.65	8.26	181.079	
1,400.00	1,400.00	1,505.88	1,504.84	4.82	3.73	88.82	30.53	1,487.46	1,491.43	1,482.91	8.52	174.962	
1,450.00	1,450.00	1,554.87	1,553.62	5.00	3.82	88.71	33.45	1,483.99	1,487.95	1,479.15	8.79	169.187	
1,500.00	1,500.00	1,607.50	1,606.01	5.18	3.93	88.58	36.71	1,480.26	1,484.47	1,475.39	9.08	163.517	
1,550.00	1,550.00	1,663.11	1,661.36	5.36	4.05	88.44	40.13	1,476.12	1,480.82	1,471.44	9.37	157.991	
1,600.00	1,600.00	1,713.33	1,711.34	5.53	4.17	88.32	43.19	1,472.26	1,477.06	1,467.39	9.67	152.810	
1,650.00	1,650.00	1,762.53	1,760.30	5.71	4.29	88.20	46.19	1,468.49	1,473.32	1,463.36	9.96	147.940	
1,700.00	1,700.00	1,819.62	1,817.13	5.89	4.44	88.07	49.38	1,464.01	1,469.48	1,459.21	10.28	142.999	
1,750.00	1,750.00	1,877.52	1,874.77	6.07	4.59	87.96	51.95	1,459.17	1,465.38	1,454.78	10.60	138.292	
1,800.00	1,800.00	1,932.01	1,929.02	6.25	4.74	87.88	53.90	1,454.41	1,461.07	1,450.16	10.92	133.838	
1,850.00	1,850.00	1,983.77	1,980.55	6.43	4.88	87.81	55.40	1,449.74	1,456.62	1,445.38	11.23	129.677	
1,900.00	1,900.00	2,032.89	2,029.45	6.61	5.03	87.75	56.71	1,445.32	1,452.17	1,440.62	11.55	125.780	
1,950.00	1,950.00	2,081.29	2,077.64	6.78	5.17	87.70	57.95	1,440.99	1,447.75	1,435.89	11.86	122.077	
2,000.00	2,000.00	2,129.25	2,125.39	6.96	5.31	87.64	59.09	1,436.76	1,443.39	1,431.21	12.17	118.562	
2,050.00	2,050.00	2,177.34	2,173.29	7.14	5.45	87.59	60.19	1,432.58	1,439.09	1,426.60	12.49	115.201	
2,100.00	2,100.00	2,225.51	2,221.27	7.32	5.60	87.54	61.31	1,428.45	1,434.85	1,422.04	12.81	111.995	
2,150.00	2,150.00	2,273.30	2,268.87	7.50	5.75	87.49	62.44	1,424.41	1,430.68	1,417.55	13.13	108.938	
2,200.00	2,200.00	2,320.88	2,316.28	7.68	5.90	87.43	63.63	1,420.45	1,426.58	1,413.13	13.46	106.026	
2,250.00	2,250.00	2,368.17	2,375.33	7.86	6.09	87.37	65.12	1,415.44	1,422.42	1,408.61	13.81	103.002	
2,300.00	2,300.00	2,414.81	2,439.67	8.04	6.29	87.30	66.49	1,409.36	1,417.78	1,403.60	14.18	99.999	
2,350.00	2,350.00	2,466.90	2,481.57	8.22	6.43	87.26	67.28	1,405.38	1,413.08	1,398.59	14.49	97.504	
2,400.00	2,400.00	2,532.63	2,527.10	8.39	6.58	87.22	68.07	1,401.16	1,408.51	1,393.70	14.82	95.066	
2,450.00	2,450.00	2,577.60	2,571.88	8.57	6.73	87.18	68.75	1,397.16	1,404.11	1,388.97	15.14	92.747	
2,500.00	2,500.00	2,622.59	2,616.70	8.75	6.88	87.15	69.33	1,393.31	1,399.87	1,384.41	15.46	90.535	
2,550.00	2,550.00	2,666.67	2,660.63	8.93	7.02	87.12	69.82	1,389.72	1,395.82	1,380.04	15.78	88.432	
2,600.00	2,600.00	2,710.80	2,704.63	9.11	7.17	87.10	70.26	1,386.30	1,391.98	1,375.87	16.11	86.426	
2,650.00	2,650.00	2,757.08	2,750.78	9.29	7.33	87.07	70.81	1,382.87	1,388.31	1,371.87	16.44	84.470	
2,700.00	2,700.00	2,803.72	2,797.28	9.47	7.48	87.02	71.72	1,379.51	1,384.76	1,367.99	16.77	82.591	
2,750.00	2,750.00	2,866.93	2,860.30	9.65	7.70	86.95	73.23	1,374.75	1,381.07	1,363.93	17.15	80.550	
2,800.00	2,800.00	2,927.42	2,920.55	9.83	7.90	86.88	74.57	1,369.57	1,376.84	1,359.32	17.52	78.599	
2,850.00	2,850.00	2,978.58	2,971.50	10.00	8.08	86.83	75.58	1,365.02	1,372.45	1,354.59	17.86	76.826	
2,900.00	2,900.00	3,028.63	3,021.34	10.18	8.25	86.78	76.43	1,360.54	1,368.03	1,349.82	18.21	75.129	
2,950.00	2,950.00	3,077.76	3,070.27	10.36	8.42	86.75	77.11	1,356.17	1,363.63	1,345.08	18.55	73.504	
3,000.00	3,000.00	3,124.28	3,116.60	10.54	8.59	86.71	77.68	1,352.08	1,359.28	1,340.39	18.89	71.964	
3,050.00	3,050.00	3,169.11	3,161.27	10.72	8.74	86.67	78.50	1,348.28	1,355.10	1,335.88	19.22	70.503	
3,100.00	3,100.00	3,213.65	3,205.65	10.90	8.90	86.61	79.56	1,344.66	1,351.11	1,331.56	19.55	69.102	
3,150.00	3,150.00	3,257.87	3,249.73	11.08	9.05	86.56	80.62	1,341.24	1,347.32	1,327.44	19.88	67.759	
3,200.00	3,200.00	3,308.62	3,300.32	11.26	9.23	86.50	81.76	1,337.49	1,343.70	1,323.47	20.23	66.408	
3,250.00	3,250.00	3,371.83	3,363.32	11.44	9.45	86.44	82.87	1,332.41	1,339.74	1,319.12	20.62	64.977	
3,300.00	3,300.00	3,424.01	3,415.29	11.62	9.64	86.40	83.51	1,327.89	1,335.45	1,314.48	20.97	63.674	
3,350.00	3,350.00	3,474.08	3,465.17	11.80	9.82	86.37	83.94	1,323.54	1,331.15	1,309.83	21.32	62.431	
3,400.00	3,400.00	3,531.65	3,522.51	11.97	10.02	86.34	84.45	1,318.38	1,326.70	1,305.01	21.69	61.162	
3,450.00	3,450.00	3,589.62	3,580.21	12.15	10.23	86.29	85.23	1,312.81	1,321.95	1,299.89	22.06	59.921	
3,500.00	3,500.00	3,623.37	3,613.82	12.33	10.35	86.26	85.64	1,309.81	1,317.49	1,295.12	22.37	58.895	
3,550.00	3,550.00	3,662.82	3,653.13	12.51	10.49	86.23	86.06	1,306.54	1,313.38	1,290.69	22.69	57.879	
3,600.00	3,600.00	3,707.96	3,698.13	12.69	10.65	86.20	86.61	1,303.06	1,309.58	1,286.55	23.03	56.866	
3,650.00	3,650.00	3,753.95	3,743.99	12.87	10.82	86.15	87.50	1,299.63	1,305.93	1,282.56	23.37	55.883	
3,700.00	3,700.00	3,797.82	3,787.73	13.05	10.97	86.09	88.55	1,296.51	1,302.45	1,278.75	23.70	54.949	
3,750.00	3,750.00	3,841.19	3,831.00	13.23	11.13	86.04	89.57	1,293.64	1,299.23	1,275.20	24.04	54.055	
3,800.00	3,800.00	3,886.71	3,876.42	13.41	11.29	85.99	90.59	1,290.83	1,296.23	1,271.86	24.37	53.182	
3,850.00	3,850.00	3,933.73	3,923.35	13.59	11.45	85.94	91.52	1,288.06	1,293.36	1,268.65	24.72	52.329	

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

Anticollision Report

Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Reference Site: Sec 27-T25S-R31E
 Site Error: 0.00 ft
 Reference Well: Lusitano 27-34 Fed Com 734H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Output errors are at: 2.00 sigma
 Database: EDM r5000.141_Prod US
 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		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
3,900.00	3,900.00	3,988.88	3,978.40	13.77	11.65	85.88	92.51	1,284.83	1,290.51	1,265.43	25.08	51.448	
3,950.00	3,950.00	4,050.17	4,039.53	13.94	11.86	85.81	93.88	1,280.76	1,287.28	1,261.81	25.47	50.542	
4,000.00	4,000.00	4,114.06	4,103.21	14.12	12.10	85.71	95.79	1,275.84	1,283.55	1,257.68	25.86	49.629	
4,050.00	4,050.00	4,167.49	4,156.39	14.30	12.29	151.13	97.84	1,271.23	1,279.61	1,253.39	26.22	48.796	
4,100.00	4,099.99	4,210.58	4,199.31	14.48	12.45	151.08	99.49	1,267.64	1,276.32	1,249.77	26.56	48.059	
4,150.00	4,149.97	4,260.12	4,248.66	14.65	12.63	151.03	101.31	1,263.74	1,273.73	1,246.83	26.91	47.339	
4,200.00	4,199.94	4,321.96	4,310.24	14.83	12.86	150.98	103.57	1,258.50	1,271.31	1,244.02	27.29	46.588	
4,250.00	4,249.88	4,373.50	4,361.52	15.00	13.05	150.94	105.47	1,253.81	1,269.06	1,241.42	27.64	45.908	
4,300.00	4,299.79	4,422.56	4,410.35	15.18	13.23	150.92	107.33	1,249.37	1,267.32	1,239.33	27.99	45.274	
4,350.00	4,349.68	4,473.13	4,460.68	15.35	13.42	150.89	109.23	1,244.80	1,265.78	1,237.44	28.35	44.655	
4,400.00	4,399.58	4,523.92	4,511.23	15.53	13.60	150.86	111.06	1,240.19	1,264.22	1,235.52	28.70	44.050	
4,450.00	4,449.47	4,572.12	4,559.19	15.70	13.78	150.83	112.80	1,235.83	1,262.67	1,233.62	29.05	43.469	
4,500.00	4,499.37	4,620.34	4,607.19	15.88	13.96	150.80	114.64	1,231.53	1,261.20	1,231.80	29.40	42.904	
4,550.00	4,549.28	4,669.68	4,656.29	16.05	14.14	150.77	116.54	1,227.18	1,259.77	1,230.02	29.75	42.349	
4,600.00	4,599.16	4,719.02	4,705.41	16.23	14.33	150.74	118.38	1,222.85	1,258.37	1,228.27	30.10	41.808	
4,650.00	4,649.06	4,767.31	4,753.49	16.41	14.51	150.71	120.20	1,218.66	1,257.01	1,226.56	30.45	41.284	
4,700.00	4,698.95	4,815.84	4,801.80	16.58	14.69	150.68	122.12	1,214.50	1,255.72	1,224.92	30.80	40.773	
4,750.00	4,748.85	4,865.19	4,850.94	16.76	14.87	150.65	124.02	1,210.32	1,254.47	1,223.32	31.15	40.272	
4,800.00	4,798.74	4,914.16	4,899.70	16.94	15.05	150.62	125.77	1,206.21	1,253.24	1,221.74	31.50	39.784	
4,850.00	4,848.64	4,961.73	4,947.09	17.11	15.22	150.61	127.30	1,202.29	1,252.09	1,220.24	31.85	39.314	
4,900.00	4,898.53	5,010.49	4,995.67	17.29	15.40	150.60	128.69	1,198.39	1,251.03	1,218.83	32.20	38.854	
4,950.00	4,948.43	5,063.52	5,048.52	17.47	15.60	150.61	129.79	1,194.12	1,249.92	1,217.36	32.56	38.388	
5,000.00	4,998.33	5,120.71	5,105.50	17.65	15.81	150.64	130.52	1,189.36	1,248.65	1,215.72	32.93	37.916	
5,050.00	5,048.22	5,183.51	5,168.02	17.82	16.04	150.66	131.56	1,183.57	1,246.93	1,213.61	33.32	37.427	
5,100.00	5,098.12	5,235.94	5,220.18	18.00	16.24	150.67	132.62	1,178.37	1,244.88	1,211.21	33.68	36.966	
5,150.00	5,148.01	5,287.37	5,271.35	18.18	16.43	150.68	133.65	1,173.21	1,242.78	1,208.74	34.03	36.515	
5,200.00	5,197.91	5,332.23	5,315.98	18.36	16.60	150.68	134.52	1,168.79	1,240.75	1,206.37	34.38	36.092	
5,250.00	5,247.80	5,377.40	5,360.93	18.53	16.77	150.69	135.38	1,164.51	1,238.92	1,204.20	34.72	35.682	
5,300.00	5,297.70	5,426.41	5,409.73	18.71	16.95	150.71	136.25	1,159.98	1,237.21	1,202.13	35.07	35.274	
5,350.00	5,347.60	5,475.67	5,458.77	18.89	17.14	150.73	137.03	1,155.47	1,235.52	1,200.10	35.43	34.875	
5,400.00	5,397.49	5,523.22	5,506.13	19.07	17.31	150.75	137.77	1,151.18	1,233.90	1,198.13	35.78	34.490	
5,450.00	5,447.39	5,570.80	5,553.52	19.25	17.49	150.76	138.55	1,146.98	1,232.38	1,196.26	36.12	34.114	
5,500.00	5,497.28	5,619.08	5,601.60	19.43	17.67	150.78	139.40	1,142.79	1,230.94	1,194.47	36.48	33.747	
5,550.00	5,547.18	5,667.36	5,649.70	19.61	17.85	150.79	140.29	1,138.66	1,229.57	1,192.75	36.83	33.388	
5,600.00	5,597.07	5,715.71	5,697.87	19.78	18.03	150.80	141.25	1,134.59	1,228.27	1,191.09	37.18	33.037	
5,650.00	5,646.97	5,764.57	5,746.55	19.96	18.21	150.81	142.30	1,130.53	1,227.03	1,189.50	37.53	32.694	
5,700.00	5,696.87	5,818.92	5,800.69	20.14	18.41	150.81	143.55	1,125.93	1,225.72	1,187.82	37.90	32.342	
5,750.00	5,746.76	5,871.52	5,853.07	20.32	18.61	150.81	144.85	1,121.29	1,224.24	1,185.98	38.26	31.997	
5,800.00	5,796.66	5,920.37	5,901.71	20.50	18.79	150.81	146.13	1,116.97	1,222.76	1,184.14	38.62	31.665	
5,850.00	5,846.55	5,968.03	5,949.17	20.68	18.97	150.80	147.44	1,112.80	1,221.33	1,182.36	38.97	31.343	
5,900.00	5,896.45	6,013.68	5,994.64	20.86	19.14	150.80	148.66	1,108.96	1,220.05	1,180.74	39.31	31.035	
5,950.00	5,946.35	6,061.17	6,041.96	21.04	19.32	150.80	149.87	1,105.12	1,218.94	1,179.28	39.66	30.732	
6,000.00	5,996.24	6,113.14	6,093.74	21.22	19.51	150.78	151.44	1,100.87	1,217.81	1,177.78	40.03	30.426	
6,050.00	6,046.14	6,163.84	6,144.23	21.40	19.70	150.76	153.24	1,096.64	1,216.61	1,176.23	40.39	30.125	
6,100.00	6,096.03	6,213.09	6,193.28	21.58	19.88	150.74	154.84	1,092.56	1,215.43	1,174.69	40.74	29.833	
6,150.00	6,145.93	6,262.89	6,242.89	21.76	20.07	150.73	156.24	1,088.48	1,214.27	1,173.17	41.10	29.546	
6,200.00	6,195.82	6,313.18	6,293.00	21.94	20.25	150.73	157.60	1,084.35	1,213.11	1,171.65	41.46	29.262	
6,250.00	6,245.72	6,361.36	6,341.00	22.12	20.43	150.72	158.88	1,080.41	1,211.96	1,170.15	41.81	28.988	
6,300.00	6,295.62	6,408.39	6,387.86	22.30	20.61	150.72	160.13	1,076.67	1,210.92	1,168.76	42.16	28.723	
6,350.00	6,345.51	6,461.57	6,440.85	22.48	20.81	150.71	161.63	1,072.48	1,209.92	1,167.40	42.53	28.452	
6,400.00	6,395.41	6,518.42	6,497.46	22.66	21.02	150.68	163.65	1,067.68	1,208.68	1,165.77	42.90	28.173	
6,450.00	6,445.30	6,568.49	6,547.29	22.84	21.21	150.64	165.69	1,063.27	1,207.27	1,164.01	43.26	27.906	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,500.00	6,495.20	6,618.10	6,598.67	23.02	21.39	150.60	167.79	1,058.92	1,205.89	1,162.27	43.62	27.645	
6,550.00	6,545.09	6,662.35	6,640.72	23.20	21.56	150.56	169.63	1,055.15	1,204.63	1,160.67	43.97	27.400	
6,600.00	6,594.99	6,706.73	6,684.92	23.38	21.73	150.53	171.34	1,051.59	1,203.61	1,159.30	44.31	27.164	
6,650.00	6,644.89	6,751.74	6,729.77	23.56	21.89	150.51	172.98	1,048.18	1,202.80	1,158.15	44.65	26.936	
6,700.00	6,694.78	6,796.84	6,774.73	23.74	22.06	150.49	174.57	1,044.96	1,202.21	1,157.21	45.00	26.717	
6,750.00	6,744.68	6,847.17	6,824.91	23.92	22.25	150.47	176.29	1,041.49	1,201.73	1,156.37	45.36	26.495	
6,800.00	6,794.57	6,899.02	6,876.61	24.10	22.44	150.45	178.02	1,037.84	1,201.18	1,155.46	45.72	26.272	
6,850.00	6,844.47	6,949.34	6,926.77	24.28	22.62	150.43	179.72	1,034.25	1,200.58	1,154.50	46.08	26.054	
6,900.00	6,894.36	6,999.88	6,977.25	24.46	22.81	150.41	181.50	1,030.63	1,199.97	1,153.53	46.44	25.838	
6,950.00	6,944.26	7,058.41	7,035.47	24.65	23.03	150.38	183.68	1,026.20	1,199.17	1,152.35	46.83	25.609	
7,000.00	6,994.16	7,113.51	7,090.33	24.83	23.23	150.34	185.87	1,021.66	1,198.05	1,150.85	47.20	25.383	
7,050.00	7,044.05	7,164.12	7,140.73	25.01	23.42	150.30	187.90	1,017.41	1,196.84	1,149.28	47.56	25.164	
7,100.00	7,093.95	7,211.75	7,188.15	25.19	23.60	150.26	189.82	1,013.41	1,195.64	1,147.73	47.92	24.953	
7,150.00	7,143.84	7,256.94	7,233.15	25.37	23.77	150.23	191.61	1,009.78	1,194.63	1,146.36	48.26	24.753	
7,200.00	7,193.74	7,307.01	7,283.04	25.55	23.96	150.20	193.50	1,005.92	1,193.77	1,145.14	48.62	24.552	
7,250.00	7,243.63	7,363.73	7,339.54	25.73	24.17	150.18	195.33	1,001.36	1,192.70	1,143.70	49.00	24.341	
7,300.00	7,293.53	7,414.85	7,390.47	25.91	24.36	150.17	196.88	997.07	1,191.45	1,142.08	49.36	24.137	
7,350.00	7,343.43	7,464.10	7,439.54	26.09	24.55	150.18	197.82	992.97	1,190.21	1,140.49	49.72	23.938	
7,400.00	7,393.32	7,511.25	7,486.52	26.28	24.72	150.19	198.79	989.12	1,189.04	1,138.97	50.07	23.747	
7,450.00	7,443.22	7,557.89	7,533.00	26.46	24.89	150.20	199.73	985.45	1,188.01	1,137.59	50.42	23.562	
7,500.00	7,493.11	7,604.05	7,579.03	26.64	25.07	150.21	200.62	981.95	1,187.13	1,136.36	50.77	23.383	
7,550.00	7,543.01	7,650.08	7,624.92	26.82	25.24	150.23	201.43	978.63	1,186.42	1,135.30	51.12	23.210	
7,600.00	7,592.90	7,697.37	7,672.10	27.00	25.41	150.25	202.20	975.36	1,185.85	1,134.38	51.47	23.042	
7,650.00	7,642.80	7,745.22	7,719.84	27.18	25.58	150.27	202.94	972.15	1,185.38	1,133.56	51.82	22.876	
7,700.00	7,692.70	7,792.55	7,767.05	27.36	25.76	150.30	203.63	969.07	1,185.00	1,132.84	52.17	22.716	
7,750.00	7,742.59	7,839.66	7,814.07	27.55	25.93	150.33	204.27	966.12	1,184.75	1,132.24	52.51	22.560	
7,800.00	7,792.49	7,888.51	7,862.83	27.73	26.11	150.36	204.91	963.15	1,184.60	1,131.73	52.87	22.407	
7,850.00	7,842.38	7,938.13	7,912.35	27.91	26.29	150.39	205.62	960.16	1,184.46	1,131.24	53.22	22.254	
7,900.00	7,892.28	7,989.26	7,963.38	28.09	26.47	150.42	206.42	957.06	1,184.32	1,130.73	53.59	22.101	
7,950.00	7,942.17	8,040.86	8,014.88	28.27	26.66	150.44	207.28	953.86	1,184.11	1,130.16	53.95	21.949	
8,000.00	7,992.07	8,088.45	8,062.37	28.45	26.84	150.46	208.06	950.92	1,183.91	1,129.61	54.30	21.804	
8,050.00	8,041.97	8,135.89	8,109.52	28.64	27.01	150.49	208.71	948.12	1,183.83	1,129.18	54.65	21.663	
8,059.98	8,051.93	8,145.12	8,118.94	28.67	27.04	150.50	208.83	947.58	1,183.83	1,129.11	54.72	21.636 CC	
8,100.00	8,091.86	8,182.75	8,156.50	28.82	27.18	150.53	209.25	945.46	1,183.87	1,128.87	54.99	21.527	
8,150.00	8,141.76	8,229.78	8,203.47	29.00	27.35	150.57	209.65	942.92	1,184.03	1,128.69	55.34	21.395	
8,200.00	8,191.65	8,273.88	8,247.50	29.18	27.50	150.62	209.91	940.71	1,184.38	1,128.70	55.68	21.273	
8,250.00	8,241.55	8,317.59	8,291.17	29.36	27.66	150.67	210.03	938.77	1,184.99	1,128.98	56.01	21.158	
8,300.00	8,291.44	8,363.86	8,337.41	29.54	27.82	150.73	210.03	936.93	1,185.82	1,129.47	56.35	21.045	
8,350.00	8,341.34	8,411.15	8,384.66	29.73	27.99	150.80	209.94	935.17	1,186.78	1,130.09	56.69	20.934	
8,400.00	8,391.24	8,457.80	8,431.28	29.91	28.15	150.88	209.77	933.56	1,187.86	1,130.83	57.03	20.828	
8,450.00	8,441.13	8,504.18	8,477.64	30.09	28.32	150.95	209.54	932.10	1,189.10	1,131.72	57.37	20.727	
8,500.00	8,491.03	8,550.95	8,524.39	30.27	28.48	151.03	209.27	930.77	1,190.48	1,132.77	57.71	20.629	
8,550.00	8,540.92	8,597.93	8,571.35	30.45	28.64	151.11	209.03	929.54	1,191.98	1,133.93	58.05	20.534	
8,600.00	8,590.82	8,650.75	8,624.16	30.64	28.82	151.19	208.78	928.21	1,193.54	1,135.13	58.42	20.432	
8,650.00	8,640.71	8,707.24	8,680.62	30.82	29.02	151.29	208.36	926.53	1,194.86	1,136.07	58.79	20.323	
8,700.00	8,690.61	8,754.22	8,727.57	31.00	29.18	151.37	208.17	925.04	1,196.10	1,136.96	59.14	20.226	
8,750.00	8,740.51	8,800.53	8,773.87	31.18	29.34	151.41	208.53	923.67	1,197.48	1,138.01	59.48	20.134	
8,800.00	8,790.40	8,855.00	8,828.31	31.37	29.54	151.44	209.44	922.02	1,198.87	1,139.02	59.85	20.031	
8,850.00	8,840.30	8,910.58	8,883.84	31.55	29.73	151.46	210.58	920.07	1,200.03	1,139.80	60.23	19.924	
8,900.00	8,890.19	8,945.04	8,918.27	31.73	29.86	151.48	211.24	919.13	1,201.52	1,141.00	60.52	19.853	
8,950.00	8,940.09	8,983.85	8,957.07	31.91	29.99	151.50	211.91	918.37	1,203.44	1,142.61	60.82	19.786	
9,000.00	8,989.98	9,032.18	9,005.40	32.09	30.16	151.54	212.58	917.73	1,205.66	1,144.49	61.17	19.710	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
9,050.00	9,039.88	9,082.66	9,055.87	32.28	30.33	151.59	212.98	917.06	1,207.87	1,146.34	61.53	19.632	
9,100.00	9,089.78	9,135.74	9,108.94	32.46	30.52	151.64	213.64	916.27	1,210.01	1,148.11	61.90	19.549	
9,150.00	9,139.67	9,189.08	9,162.24	32.64	30.70	151.63	215.25	915.26	1,212.01	1,149.74	62.27	19.465	
9,200.00	9,189.57	9,242.71	9,215.83	32.82	30.89	151.63	216.90	914.09	1,213.87	1,151.23	62.64	19.378	
9,250.00	9,239.46	9,293.40	9,266.50	33.01	31.07	151.65	218.02	912.88	1,215.60	1,152.60	63.00	19.295	
9,300.00	9,289.36	9,338.87	9,311.95	33.19	31.23	151.68	218.65	911.93	1,217.44	1,154.10	63.33	19.222	
9,350.00	9,339.25	9,385.13	9,358.21	33.37	31.39	151.73	218.94	911.15	1,219.46	1,155.79	63.67	19.152	
9,400.00	9,389.15	9,433.36	9,406.42	33.55	31.56	151.79	219.22	910.44	1,221.59	1,157.57	64.02	19.082	
9,450.00	9,439.05	9,481.58	9,454.64	33.74	31.72	151.83	219.61	909.78	1,223.78	1,159.42	64.36	19.013	
9,500.00	9,488.94	9,527.26	9,500.32	33.92	31.88	151.88	220.08	909.23	1,226.06	1,161.36	64.70	18.951	
9,550.00	9,538.84	9,566.60	9,539.65	34.10	32.01	151.90	220.68	909.01	1,228.68	1,163.69	64.99	18.904	
9,600.00	9,588.73	9,605.90	9,578.95	34.28	32.15	151.92	221.51	909.12	1,231.73	1,166.44	65.29	18.866	
9,650.00	9,638.63	9,652.74	9,625.77	34.47	32.30	151.94	222.61	909.52	1,235.08	1,169.46	65.62	18.822	
9,700.00	9,688.52	9,700.70	9,673.72	34.65	32.45	151.96	223.58	910.02	1,238.51	1,172.56	65.95	18.779	
9,750.00	9,738.42	9,753.43	9,726.44	34.83	32.62	152.00	224.32	910.58	1,241.93	1,175.62	66.31	18.730	
9,800.00	9,788.32	9,807.23	9,780.24	35.01	32.79	152.07	224.50	911.03	1,245.21	1,178.54	66.67	18.677	
9,850.00	9,838.21	9,864.98	9,837.98	35.20	32.97	152.17	224.10	911.27	1,248.25	1,181.20	67.05	18.617	
9,900.00	9,888.11	9,916.17	9,889.16	35.38	33.13	152.28	223.31	911.25	1,251.04	1,183.65	67.40	18.563	
9,950.00	9,938.00	9,969.75	9,932.74	35.56	33.27	152.36	222.73	911.37	1,254.01	1,186.30	67.70	18.522	
10,000.00	9,987.90	10,005.10	9,978.09	35.74	33.41	152.44	222.32	911.71	1,257.21	1,189.19	68.02	18.483	
10,050.00	10,037.79	10,055.00	10,027.98	35.93	33.57	152.53	221.95	912.14	1,260.48	1,192.13	68.36	18.440	
10,100.00	10,087.69	10,107.34	10,080.32	36.11	33.73	152.62	221.56	912.57	1,263.74	1,195.03	68.71	18.393	
10,150.00	10,137.59	10,163.71	10,136.68	36.29	33.91	152.73	220.75	912.81	1,266.79	1,197.71	69.08	18.338	
10,200.00	10,187.48	10,224.61	10,197.58	36.48	34.11	152.87	219.55	912.70	1,269.53	1,200.05	69.48	18.272	
10,250.00	10,237.38	10,288.54	10,261.49	36.66	34.32	152.99	218.61	911.92	1,271.77	1,201.88	69.89	18.196	
10,300.00	10,287.27	10,356.92	10,329.85	36.84	34.55	153.12	217.72	910.19	1,273.36	1,203.03	70.32	18.107	
10,350.00	10,337.17	10,405.26	10,378.15	37.02	34.72	153.21	217.17	908.57	1,274.54	1,203.87	70.67	18.035	
10,400.00	10,387.06	10,448.40	10,421.27	37.21	34.87	153.27	216.93	907.32	1,275.97	1,204.97	71.00	17.972	
10,450.00	10,436.96	10,501.36	10,474.22	37.39	35.06	153.34	216.89	905.94	1,277.55	1,206.18	71.37	17.901	
10,500.00	10,486.86	10,561.12	10,533.94	37.57	35.27	153.42	216.75	903.99	1,278.81	1,207.05	71.76	17.820	
10,550.00	10,536.75	10,603.02	10,575.82	37.76	35.42	153.47	216.70	902.60	1,280.03	1,207.95	72.09	17.757	
10,600.00	10,586.65	10,644.96	10,617.74	37.94	35.57	153.52	216.85	901.46	1,281.57	1,209.17	72.41	17.699	
10,650.00	10,636.54	10,681.63	10,654.41	38.12	35.69	153.56	217.06	900.74	1,283.50	1,210.80	72.70	17.655	
10,700.00	10,686.44	10,716.38	10,689.16	38.30	35.81	153.60	217.12	900.47	1,286.01	1,213.04	72.97	17.624	
10,750.00	10,736.33	10,752.00	10,724.78	38.49	35.93	153.65	217.02	900.63	1,289.11	1,215.87	73.24	17.601	
10,800.00	10,786.23	10,792.79	10,765.56	38.67	36.05	153.72	216.66	901.19	1,292.67	1,219.14	73.53	17.580	
10,850.00	10,836.13	10,834.64	10,807.39	38.85	36.18	153.80	215.96	902.02	1,296.54	1,222.72	73.82	17.563	
10,900.00	10,886.02	10,892.31	10,865.04	39.04	36.36	153.92	214.87	903.26	1,300.50	1,226.29	74.21	17.525	
10,950.00	10,935.92	10,956.05	10,928.78	39.22	36.56	154.03	214.37	903.99	1,303.93	1,229.31	74.62	17.474	
11,000.00	10,985.84	11,013.03	10,985.75	39.40	36.75	154.12	214.17	904.20	1,306.57	1,231.57	75.00	17.420	
11,050.00	11,035.80	11,067.93	11,040.65	39.58	36.93	154.18	214.09	904.10	1,308.34	1,232.96	75.38	17.357	
11,100.00	11,085.78	11,120.50	11,093.22	39.76	37.11	154.21	214.16	903.87	1,309.40	1,233.65	75.74	17.287	
11,150.00	11,135.77	11,171.40	11,144.12	39.94	37.29	154.22	214.37	903.57	1,309.79	1,233.69	76.10	17.211	
11,200.00	11,185.77	11,223.50	11,196.22	40.11	37.47	88.70	214.73	903.22	1,309.60	1,233.13	76.47	17.127	
11,250.00	11,235.77	11,278.68	11,251.40	40.29	37.66	88.70	214.64	902.75	1,309.17	1,232.33	76.84	17.037	
11,300.00	11,285.77	11,372.26	11,343.89	40.46	37.96	89.26	201.79	900.76	1,308.13	1,230.79	77.35	16.913	
11,350.00	11,335.77	11,447.15	11,414.72	40.64	38.18	90.31	178.03	896.72	1,305.10	1,227.37	77.74	16.789	
11,400.00	11,385.77	11,486.97	11,451.11	40.81	38.29	91.01	162.01	894.53	1,302.35	1,224.32	78.03	16.691	
11,450.00	11,435.77	11,527.11	11,486.87	40.99	38.40	91.81	143.91	892.51	1,300.15	1,221.83	78.31	16.602	
11,500.00	11,485.77	11,569.78	11,523.61	41.17	38.50	92.77	122.33	890.39	1,298.44	1,219.85	78.59	16.521	
11,550.00	11,535.77	11,609.29	11,556.29	41.34	38.60	-86.14	100.23	888.40	1,297.31	1,218.45	78.86	16.451	
11,600.00	11,585.62	11,642.88	11,582.89	41.50	38.66	-85.38	79.79	886.75	1,296.70	1,217.64	79.07	16.400	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
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		Distance		Minimum		Separation		Warning			
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
11,636.07	11,621.30	11,666.65	11,600.96	41.61	38.71	-84.83	64.39	885.64	1,296.58	1,217.38	79.20	16.370	
11,650.00	11,634.97	11,675.74	11,607.70	41.65	38.73	-84.62	58.30	885.23	1,296.60	1,217.34	79.25	16.360	
11,700.00	11,683.43	11,705.00	11,628.71	41.80	38.79	-83.94	37.97	883.98	1,296.94	1,217.54	79.40	16.335	
11,750.00	11,730.64	11,728.09	11,644.61	41.95	38.82	-83.37	21.25	883.22	1,297.88	1,218.41	79.47	16.331	
11,800.00	11,776.24	11,749.51	11,658.90	42.08	38.86	-82.83	5.29	882.85	1,299.50	1,219.99	79.51	16.343	
11,850.00	11,819.89	11,771.20	11,672.89	42.20	38.89	-82.27	-11.27	882.82	1,301.74	1,222.21	79.53	16.368	
11,900.00	11,861.24	11,800.00	11,690.71	42.31	38.94	-81.63	-33.89	883.28	1,304.55	1,224.97	79.58	16.393	
11,950.00	11,899.89	11,817.67	11,701.24	42.40	38.96	-81.15	-48.07	883.83	1,307.72	1,228.18	79.54	16.441	
12,000.00	11,935.84	11,843.53	11,716.16	42.49	38.99	-80.60	-69.16	884.93	1,311.21	1,231.65	79.56	16.481	
12,050.00	11,968.52	11,869.49	11,730.54	42.56	39.03	-80.11	-90.73	886.38	1,314.91	1,235.33	79.58	16.523	
12,100.00	11,997.78	11,895.00	11,744.06	42.63	39.07	-79.67	-112.28	888.13	1,318.77	1,239.16	79.61	16.565	
12,150.00	12,023.39	11,936.00	11,764.11	42.69	39.12	-79.28	-147.91	891.12	1,322.47	1,242.70	79.77	16.578	
12,200.00	12,045.17	12,200.00	11,797.76	42.77	39.71	-78.77	-234.50	894.65	1,325.20	1,244.54	80.66	16.430	
12,250.00	12,062.94	12,137.38	11,822.24	42.86	39.54	-78.17	-339.25	891.06	1,324.80	1,244.10	80.71	16.415	
12,300.00	12,076.57	12,189.15	11,829.46	42.97	39.69	-78.08	-390.36	887.17	1,322.36	1,241.47	80.89	16.348	
12,350.00	12,085.96	12,221.00	11,832.83	43.07	39.79	-78.24	-421.94	884.78	1,319.37	1,238.37	81.00	16.288	
12,400.00	12,091.03	12,247.42	11,834.82	43.18	39.87	-78.50	-448.22	883.00	1,316.23	1,235.10	81.13	16.225	
12,450.00	12,092.00	12,283.00	11,836.18	43.30	39.99	-78.72	-483.73	881.17	1,313.28	1,231.97	81.31	16.151	
12,500.00	12,092.00	12,298.61	11,836.34	43.41	40.04	-78.72	-499.33	880.58	1,310.92	1,229.49	81.43	16.099	
12,550.00	12,092.00	12,324.83	11,836.09	43.55	40.13	-78.71	-525.63	879.86	1,309.53	1,227.93	81.60	16.048	
12,600.00	12,092.00	12,360.00	11,834.78	43.68	40.26	-78.65	-560.67	879.45	1,309.11	1,227.32	81.80	16.005	
12,609.42	12,092.00	12,360.00	11,834.78	43.71	40.26	-78.65	-560.67	879.45	1,309.08	1,227.27	81.81	16.001	
12,650.00	12,092.00	12,397.17	11,832.97	43.84	40.40	-78.57	-597.80	879.34	1,309.23	1,227.20	82.03	15.960	
12,700.00	12,092.00	12,452.98	11,830.95	44.00	40.61	-78.48	-653.57	879.11	1,309.26	1,226.90	82.36	15.897	
12,750.00	12,092.00	12,502.38	11,829.84	44.17	40.82	-78.43	-702.96	878.93	1,309.17	1,226.47	82.70	15.830	
12,800.00	12,092.00	12,551.55	11,829.37	44.35	41.02	-78.40	-752.13	878.92	1,309.13	1,226.08	83.05	15.763	
12,807.13	12,092.00	12,558.57	11,829.35	44.38	41.05	-78.40	-759.14	878.93	1,309.12	1,226.02	83.10	15.753	
12,850.00	12,092.00	12,577.02	11,829.35	44.55	41.14	-78.41	-777.60	879.22	1,309.58	1,226.27	83.30	15.720	
12,900.00	12,092.00	12,603.20	11,829.48	44.75	41.26	-78.42	-803.76	880.04	1,310.93	1,227.37	83.56	15.689	
12,950.00	12,092.00	12,645.00	11,829.97	44.97	41.45	-78.46	-845.49	882.42	1,313.38	1,229.44	83.94	15.647	
13,000.00	12,092.00	13,000.00	11,830.90	45.19	43.25	-78.52	-906.81	884.89	1,315.02	1,229.15	85.86	15.315	
13,050.00	12,092.00	13,050.00	11,832.46	45.43	43.61	-78.58	-1,026.30	885.01	1,314.00	1,227.36	86.64	15.166	
13,100.00	12,092.00	12,873.87	11,832.95	45.67	42.66	-78.59	-1,074.22	883.91	1,312.66	1,226.69	85.98	15.267	
13,150.00	12,092.00	12,902.04	11,833.19	45.93	42.82	-78.60	-1,102.38	883.77	1,312.21	1,225.87	86.34	15.199	
13,152.60	12,092.00	12,903.51	11,833.20	45.95	42.83	-78.60	-1,103.85	883.78	1,312.20	1,225.85	86.35	15.196	
13,200.00	12,092.00	12,930.34	11,833.41	46.19	42.98	-78.61	-1,130.68	884.11	1,312.58	1,225.89	86.69	15.141	
13,250.00	12,092.00	12,975.24	11,833.65	46.47	43.26	-78.63	-1,175.56	885.08	1,313.46	1,226.24	87.22	15.059	
13,300.00	12,092.00	13,020.13	11,833.73	46.75	43.54	-78.64	-1,220.44	886.20	1,314.53	1,226.79	87.74	14.981	
13,350.00	12,092.00	13,084.63	11,833.72	47.05	43.95	-78.65	-1,284.93	887.59	1,315.46	1,226.97	88.49	14.866	
13,400.00	12,092.00	13,208.00	11,833.82	47.35	44.79	-78.64	-1,408.25	885.65	1,314.36	1,224.57	89.79	14.638	
13,450.00	12,092.00	13,239.78	11,833.77	47.67	45.01	-78.62	-1,440.00	884.23	1,312.22	1,221.95	90.27	14.536	
13,500.00	12,092.00	13,260.84	11,833.61	47.99	45.17	-78.61	-1,461.05	883.86	1,311.30	1,220.66	90.64	14.467	
13,516.93	12,092.00	13,267.97	11,833.53	48.10	45.22	-78.61	-1,468.18	883.83	1,311.24	1,220.47	90.77	14.446	
13,550.00	12,092.00	13,303.00	11,832.96	48.32	45.47	-78.59	-1,503.20	884.46	1,311.88	1,220.65	91.23	14.380	
13,551.95	12,092.00	13,303.00	11,832.96	48.34	45.47	-78.59	-1,503.20	884.46	1,311.88	1,220.64	91.24	14.379	
13,600.00	12,092.00	13,303.00	11,832.96	48.66	45.47	-78.59	-1,503.20	884.46	1,312.76	1,221.38	91.38	14.367	
13,650.00	12,092.00	13,336.26	11,832.35	49.01	45.72	-78.58	-1,536.42	885.89	1,314.91	1,223.01	91.89	14.309	
13,700.00	12,092.00	13,369.56	11,831.92	49.36	45.97	-78.57	-1,569.66	887.78	1,317.69	1,225.28	92.41	14.259	
13,750.00	12,092.00	13,434.63	11,831.49	49.73	46.47	-78.59	-1,634.59	892.10	1,320.99	1,227.67	93.33	14.154	
13,800.00	12,092.00	13,513.04	11,831.29	50.09	47.09	-78.60	-1,712.95	894.80	1,322.35	1,227.93	94.42	14.005	
13,850.00	12,092.00	13,547.39	11,831.28	50.48	47.37	-78.61	-1,747.27	896.11	1,324.09	1,229.08	95.01	13.937	
13,900.00	12,092.00	13,581.98	11,831.32	50.86	47.65	-78.63	-1,781.82	897.86	1,326.42	1,230.83	95.59	13.876	

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at: 2.00 sigma
Database: EDM r5000.141_Prod US
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		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
13,950.00	12,092.00	13,629.55	11,831.18	51.26	48.05	-78.64	-1,829.32	900.54	1,329.08	1,232.72	96.37	13.792	
14,000.00	12,092.00	13,677.12	11,830.61	51.66	48.46	-78.64	-1,876.80	903.22	1,331.83	1,234.69	97.14	13.711	
14,050.00	12,092.00	13,719.89	11,830.32	52.07	48.83	-78.65	-1,919.49	905.83	1,334.76	1,236.89	97.88	13.637	
14,100.00	12,092.00	13,762.81	11,830.74	52.48	49.21	-78.69	-1,962.30	908.83	1,337.95	1,239.33	98.62	13.566	
14,150.00	12,092.00	13,805.24	11,831.35	52.90	49.59	-78.74	-2,004.61	912.05	1,341.41	1,242.02	99.39	13.496	
14,200.00	12,092.00	13,847.58	11,831.17	53.33	49.97	-78.76	-2,046.81	915.36	1,345.15	1,245.00	100.15	13.432	
14,250.00	12,092.00	14,250.00	11,828.42	53.77	53.72	-78.68	-2,130.88	919.98	1,347.78	1,243.35	104.43	12.906	
14,300.00	12,092.00	14,068.70	11,823.43	54.21	52.04	-78.48	-2,267.60	921.13	1,347.81	1,244.26	103.55	13.017	
14,350.00	12,092.00	14,107.96	11,822.22	54.66	52.42	-78.43	-2,306.84	920.66	1,347.40	1,243.09	104.30	12.918	
14,376.39	12,092.00	14,128.68	11,821.45	54.89	52.62	-78.39	-2,327.55	920.51	1,347.34	1,242.64	104.70	12.869	
14,400.00	12,092.00	14,147.21	11,820.69	55.11	52.80	-78.36	-2,346.06	920.44	1,347.38	1,242.33	105.05	12.826	
14,450.00	12,092.00	14,210.95	11,818.51	55.57	53.43	-78.27	-2,409.76	920.12	1,347.36	1,241.21	106.15	12.693	
14,500.00	12,092.00	14,291.84	11,817.44	56.03	54.23	-78.21	-2,490.63	918.79	1,346.61	1,239.13	107.49	12.528	
14,550.00	12,092.00	14,371.94	11,816.92	56.50	55.03	-78.16	-2,570.65	915.42	1,344.43	1,235.62	108.81	12.355	
14,600.00	12,092.00	14,434.66	11,817.14	56.97	55.66	-78.13	-2,633.28	912.01	1,341.61	1,231.68	109.92	12.205	
14,650.00	12,092.00	14,485.04	11,817.75	57.46	56.18	-78.13	-2,683.57	909.11	1,338.54	1,227.63	110.91	12.069	
14,700.00	12,092.00	14,535.35	11,818.70	57.94	56.70	-78.15	-2,733.79	906.28	1,335.45	1,223.56	111.90	11.935	
14,750.00	12,092.00	14,567.51	11,819.40	58.43	57.03	-78.16	-2,765.91	904.74	1,332.74	1,220.06	112.67	11.828	
14,800.00	12,092.00	14,601.74	11,820.15	58.93	57.39	-78.18	-2,800.11	903.50	1,330.60	1,217.13	113.47	11.726	
14,850.00	12,092.00	14,640.40	11,821.02	59.43	57.80	-78.21	-2,838.74	902.55	1,329.03	1,214.69	114.34	11.624	
14,900.00	12,092.00	14,686.25	11,822.04	59.93	58.29	-78.24	-2,884.58	901.64	1,327.69	1,212.38	115.31	11.514	
14,950.00	12,092.00	14,736.77	11,823.15	60.44	58.83	-78.28	-2,935.08	900.76	1,326.49	1,210.12	116.37	11.399	
15,000.00	12,092.00	14,797.76	11,824.47	60.96	59.49	-78.32	-2,996.04	899.34	1,325.00	1,207.42	117.58	11.269	
15,050.00	12,092.00	14,831.97	11,825.09	61.48	59.87	-78.34	-3,030.23	898.47	1,323.49	1,205.08	118.41	11.177	
15,100.00	12,092.00	14,858.04	11,825.19	62.00	60.16	-78.34	-3,056.30	898.22	1,322.85	1,203.75	119.10	11.107	
15,110.63	12,092.00	14,863.59	11,825.17	62.11	60.22	-78.34	-3,061.85	898.22	1,322.83	1,203.59	119.24	11.094	
15,150.00	12,092.00	14,884.12	11,824.95	62.53	60.44	-78.33	-3,082.38	898.37	1,323.11	1,203.34	119.77	11.047	
15,200.00	12,092.00	14,919.26	11,824.18	63.05	60.83	-78.31	-3,117.49	899.17	1,324.25	1,203.67	120.57	10.983	
15,250.00	12,092.00	15,001.93	11,825.56	63.59	61.76	-78.38	-3,200.12	900.78	1,324.90	1,202.66	122.24	10.839	
15,300.00	12,092.00	15,034.58	11,826.85	64.13	62.13	-78.44	-3,232.74	901.39	1,325.28	1,202.22	123.06	10.770	
15,350.00	12,092.00	15,067.82	11,827.54	64.67	62.51	-78.47	-3,265.86	902.31	1,326.29	1,202.42	123.88	10.707	
15,400.00	12,092.00	15,102.19	11,827.60	65.21	62.90	-78.48	-3,300.31	903.57	1,327.93	1,203.24	124.69	10.649	
15,450.00	12,092.00	15,141.69	11,827.37	65.76	63.36	-78.49	-3,339.77	905.33	1,330.05	1,204.44	125.61	10.589	
15,500.00	12,092.00	15,181.16	11,827.04	66.31	63.81	-78.49	-3,379.19	907.39	1,332.55	1,206.03	126.52	10.532	
15,550.00	12,092.00	15,226.69	11,826.61	66.87	64.34	-78.50	-3,424.63	910.03	1,335.36	1,207.80	127.56	10.469	
15,600.00	12,092.00	15,273.48	11,826.21	67.43	64.88	-78.50	-3,471.33	912.87	1,338.28	1,209.66	128.62	10.405	
15,650.00	12,092.00	15,349.89	11,825.25	67.99	65.78	-78.49	-3,547.63	916.87	1,340.88	1,210.61	130.28	10.293	
15,700.00	12,092.00	15,446.68	11,823.32	68.56	66.92	-78.43	-3,644.37	919.03	1,342.08	1,209.84	132.24	10.149	
15,750.00	12,092.00	15,513.47	11,822.53	69.13	67.71	-78.39	-3,711.16	918.80	1,341.86	1,208.21	133.65	10.040	
15,800.00	12,092.00	15,568.48	11,822.50	69.70	68.36	-78.39	-3,766.17	918.42	1,341.39	1,206.51	134.88	9.945	
15,850.00	12,092.00	15,618.60	11,822.78	70.27	68.95	-78.39	-3,816.29	918.04	1,340.84	1,204.80	136.04	9.856	
15,900.00	12,092.00	15,669.19	11,823.17	70.85	69.56	-78.41	-3,866.67	917.66	1,340.27	1,203.06	137.21	9.768	
15,950.00	12,092.00	15,720.97	11,823.57	71.43	70.18	-78.42	-3,918.65	917.23	1,339.65	1,201.24	138.41	9.679	
16,000.00	12,092.00	15,769.05	11,823.88	72.01	70.76	-78.43	-3,966.73	916.77	1,338.99	1,199.44	139.55	9.595	
16,050.00	12,092.00	15,810.62	11,823.75	72.59	71.26	-78.42	-4,008.29	916.50	1,338.56	1,197.99	140.58	9.522	
16,092.16	12,092.00	15,845.66	11,823.28	73.09	71.68	-78.40	-4,043.34	916.40	1,338.45	1,197.01	141.44	9.463	
16,100.00	12,092.00	15,853.06	11,823.13	73.18	71.77	-78.39	-4,050.73	916.39	1,338.45	1,196.84	141.61	9.452	
16,150.00	12,092.00	15,903.38	11,822.05	73.77	72.39	-78.34	-4,101.04	916.31	1,338.46	1,195.68	142.78	9.374	
16,200.00	12,092.00	15,955.59	11,820.75	74.36	73.02	-78.29	-4,153.24	916.17	1,338.45	1,194.47	143.98	9.296	
16,250.00	12,092.00	16,014.10	11,820.27	74.96	73.74	-78.26	-4,211.74	915.95	1,338.22	1,192.91	145.31	9.209	
16,300.00	12,092.00	16,069.79	11,820.87	75.55	74.43	-78.28	-4,267.42	915.63	1,337.70	1,191.09	146.61	9.124	
16,350.00	12,092.00	16,123.78	11,821.18	76.16	75.09	-78.29	-4,321.41	915.09	1,337.02	1,189.13	147.88	9.041	

CC - Min centre to center distance or convergent 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 734H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.50ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.50ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 734H	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			Distance						Warning	
Measured Depth Depth (ft)	Vertical Depth (ft)	Measured Depth Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
16,400.00	12,092.00	16,198.68	11,820.18	76.76	76.01	-78.23	-4,396.27	913.26	1,335.84	1,186.39	149.45	8.938		
16,450.00	12,092.00	16,246.20	11,818.41	77.36	76.60	-78.14	-4,443.72	911.24	1,334.01	1,183.44	150.58	8.859		
16,500.00	12,092.00	16,279.24	11,817.47	77.96	77.01	-78.09	-4,476.73	910.26	1,332.74	1,181.25	151.49	8.798		
16,550.00	12,092.00	16,318.00	11,816.85	78.57	77.49	-78.06	-4,515.48	909.77	1,332.12	1,179.62	152.50	8.735		
16,592.87	12,092.00	16,346.59	11,816.57	79.10	77.85	-78.04	-4,544.06	909.73	1,331.98	1,178.69	153.28	8.690		
16,600.00	12,092.00	16,352.53	11,816.50	79.18	77.92	-78.04	-4,550.01	909.73	1,331.98	1,178.55	153.43	8.681		
16,650.00	12,092.00	16,394.20	11,816.00	79.80	78.45	-78.02	-4,591.68	909.91	1,332.18	1,177.69	154.49	8.623		
16,700.00	12,092.00	16,441.68	11,815.45	80.41	79.05	-78.00	-4,639.15	910.36	1,332.63	1,176.97	155.66	8.561		
16,750.00	12,092.00	16,493.48	11,815.32	81.02	79.70	-78.00	-4,690.95	910.91	1,333.05	1,176.12	156.93	8.495		
16,800.00	12,092.00	16,551.01	11,815.49	81.64	80.43	-78.01	-4,748.48	911.41	1,333.32	1,175.01	158.31	8.422		
16,850.00	12,092.00	16,610.37	11,815.23	82.26	81.18	-78.00	-4,807.84	911.43	1,333.25	1,173.54	159.71	8.348		
16,857.46	12,092.00	16,619.23	11,815.15	82.35	81.29	-77.99	-4,816.69	911.38	1,333.20	1,173.29	159.92	8.337		
16,900.00	12,092.00	16,646.86	11,815.10	82.88	81.65	-77.99	-4,844.33	911.58	1,333.32	1,172.63	160.70	8.297		
16,950.00	12,092.00	16,686.76	11,815.08	83.50	82.16	-77.99	-4,884.22	912.04	1,333.77	1,172.02	161.75	8.246		
17,000.00	12,092.00	16,748.92	11,815.04	84.13	82.95	-78.00	-4,946.37	912.81	1,334.27	1,171.04	163.23	8.174		
17,043.18	12,092.00	16,807.62	11,814.55	84.67	83.70	-77.98	-5,005.07	912.73	1,334.17	1,169.59	164.58	8.106		
17,050.00	12,092.00	16,801.89	11,814.62	84.75	83.63	-77.98	-4,999.34	912.83	1,334.22	1,169.70	164.53	8.110		
17,100.00	12,092.00	16,833.29	11,814.23	85.38	84.04	-77.96	-5,030.74	913.09	1,334.64	1,169.23	165.41	8.069		
17,150.00	12,092.00	16,864.69	11,813.73	86.01	84.44	-77.95	-5,062.12	913.79	1,335.76	1,169.48	166.28	8.033		
17,200.00	12,092.00	16,907.12	11,812.89	86.64	84.99	-77.93	-5,104.53	915.24	1,337.48	1,170.12	167.36	7.992		
17,250.00	12,092.00	16,965.08	11,811.25	87.27	85.74	-77.87	-5,162.44	916.93	1,339.08	1,170.31	168.77	7.934		
17,300.00	12,092.00	17,014.36	11,809.64	87.91	86.39	-77.81	-5,211.68	918.15	1,340.50	1,170.51	169.99	7.886		
17,350.00	12,092.00	17,061.17	11,808.54	88.54	87.00	-77.78	-5,258.45	919.50	1,342.03	1,170.86	171.17	7.840		
17,400.00	12,092.00	17,113.06	11,807.58	89.18	87.68	-77.75	-5,310.31	921.11	1,343.61	1,171.14	172.47	7.790		
17,450.00	12,092.00	17,166.52	11,806.27	89.82	88.38	-77.71	-5,363.73	922.56	1,345.07	1,171.27	173.80	7.739		
17,500.00	12,092.00	17,225.61	11,804.33	90.45	89.15	-77.64	-5,422.78	923.77	1,346.29	1,171.06	175.23	7.683		
17,550.00	12,092.00	17,280.65	11,802.13	91.10	89.87	-77.55	-5,477.77	924.47	1,347.20	1,170.64	176.57	7.630		
17,600.00	12,092.00	17,329.72	11,800.77	91.74	90.52	-77.50	-5,526.81	925.19	1,348.09	1,170.29	177.80	7.582		
17,650.00	12,092.00	17,382.28	11,800.06	92.38	91.21	-77.48	-5,579.36	926.13	1,348.98	1,169.86	179.12	7.531		
17,700.00	12,092.00	17,438.86	11,798.80	93.02	91.95	-77.43	-5,635.92	926.80	1,349.67	1,169.16	180.51	7.477		
17,750.00	12,092.00	17,494.08	11,797.38	93.67	92.68	-77.37	-5,691.12	927.15	1,350.13	1,168.27	181.86	7.424		
17,800.00	12,092.00	17,549.75	11,796.81	94.32	93.41	-77.35	-5,746.79	927.49	1,350.41	1,167.16	183.25	7.369		
17,850.00	12,092.00	17,612.91	11,796.13	94.96	94.25	-77.32	-5,809.94	927.40	1,350.33	1,165.57	184.76	7.309		
17,900.00	12,092.00	17,674.78	11,794.77	95.61	95.06	-77.26	-5,871.79	926.56	1,349.77	1,163.56	186.22	7.248		
17,950.00	12,092.00	17,735.78	11,793.06	96.26	95.86	-77.17	-5,932.75	925.12	1,348.80	1,161.17	187.64	7.188		
18,000.00	12,092.00	17,780.93	11,791.62	96.91	96.46	-77.10	-5,977.86	923.93	1,347.74	1,158.94	188.80	7.138		
18,050.00	12,092.00	17,827.00	11,790.02	97.57	97.06	-77.02	-6,023.89	922.82	1,346.82	1,156.85	189.98	7.089		
18,100.00	12,092.00	17,872.65	11,788.89	98.22	97.67	-76.96	-6,069.51	921.97	1,346.06	1,154.90	191.16	7.042		
18,150.00	12,092.00	17,918.34	11,788.78	98.87	98.27	-76.95	-6,115.21	921.50	1,345.46	1,153.09	192.37	6.994		
18,200.00	12,092.00	17,965.50	11,789.13	99.53	98.90	-76.96	-6,162.36	921.25	1,344.99	1,151.37	193.62	6.946		
18,250.00	12,092.00	18,012.74	11,789.26	100.19	99.53	-76.97	-6,209.60	921.06	1,344.63	1,149.75	194.87	6.900		
18,300.00	12,092.00	18,070.72	11,789.34	100.84	100.30	-76.96	-6,267.57	920.69	1,344.18	1,147.86	196.32	6.847		
18,350.00	12,092.00	18,120.67	11,789.53	101.50	100.97	-76.97	-6,317.53	920.13	1,343.46	1,145.84	197.62	6.798		
18,396.72	12,092.00	18,151.04	11,789.44	102.12	101.37	-76.96	-6,347.89	920.00	1,343.17	1,144.64	198.53	6.765		
18,400.00	12,092.00	18,153.17	11,789.42	102.16	101.40	-76.96	-6,350.02	920.01	1,343.18	1,144.58	198.60	6.763		
18,450.00	12,092.00	18,185.66	11,789.00	102.82	101.84	-76.94	-6,382.51	920.24	1,343.54	1,144.00	199.54	6.733		
18,500.00	12,092.00	18,225.37	11,788.12	103.48	102.37	-76.91	-6,422.21	920.94	1,344.51	1,143.89	200.61	6.702		
18,550.00	12,092.00	18,274.49	11,787.01	104.14	103.03	-76.87	-6,471.31	921.92	1,345.60	1,143.72	201.88	6.665		
18,600.00	12,092.00	18,330.96	11,786.03	104.81	103.80	-76.84	-6,527.75	923.05	1,346.65	1,143.34	203.32	6.623		
18,650.00	12,092.00	18,394.17	11,786.45	105.47	104.65	-76.87	-6,590.95	924.13	1,347.28	1,142.35	204.93	6.574		
18,700.00	12,092.00	18,451.29	11,787.24	106.13	105.42	-76.91	-6,648.06	924.76	1,347.53	1,141.12	206.41	6.528		
18,750.00	12,092.00	18,503.57	11,787.49	106.80	106.13	-76.92	-6,700.33	924.98	1,347.55	1,139.76	207.78	6.485		

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1													Offset Well Error:	0.50 ft
Survey Program: 148-GYRO-NS-CT, 1020-MWD+HDGM														
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
18,800.00	12,092.00	18,548.06	11,788.08	107.46	106.73	-76.94	-6,744.83	925.36	1,347.68	1,138.67	209.01	6.448		
18,850.00	12,092.00	18,593.21	11,789.17	108.13	107.34	-77.00	-6,789.96	926.04	1,348.01	1,137.74	210.27	6.411		
18,900.00	12,092.00	18,640.11	11,789.43	108.80	107.98	-77.01	-6,836.85	926.68	1,348.49	1,136.95	211.54	6.375		
18,950.00	12,092.00	18,688.12	11,788.38	109.47	108.63	-76.97	-6,884.85	927.14	1,349.07	1,136.27	212.80	6.340		
19,000.00	12,092.00	18,739.10	11,787.34	110.14	109.33	-76.93	-6,935.81	927.65	1,349.65	1,135.54	214.12	6.303		
19,050.00	12,092.00	18,790.49	11,786.96	110.81	110.03	-76.92	-6,987.19	928.27	1,350.20	1,134.74	215.46	6.266		
19,100.00	12,092.00	18,842.40	11,787.46	111.48	110.73	-76.95	-7,039.09	929.04	1,350.68	1,133.83	216.85	6.229		
19,150.00	12,092.00	18,892.11	11,788.54	112.15	111.41	-77.00	-7,088.78	929.87	1,351.12	1,132.91	218.21	6.192		
19,200.00	12,092.00	18,940.52	11,789.00	112.82	112.07	-77.02	-7,137.19	930.59	1,351.61	1,132.08	219.53	6.157		
19,250.00	12,092.00	18,998.64	11,788.33	113.49	112.86	-77.00	-7,195.30	931.09	1,352.03	1,131.02	221.01	6.118		
19,300.00	12,092.00	19,061.19	11,785.31	114.16	113.72	-76.87	-7,257.76	930.53	1,352.01	1,129.53	222.49	6.077		
19,350.00	12,092.00	19,118.07	11,783.06	114.84	114.49	-76.76	-7,314.80	929.74	1,351.66	1,127.79	223.87	6.038		
19,400.00	12,092.00	19,166.49	11,782.26	115.51	115.15	-76.72	-7,363.01	929.14	1,351.11	1,125.97	225.14	6.001		
19,450.00	12,092.00	19,206.73	11,781.92	116.19	115.69	-76.71	-7,403.24	928.95	1,350.86	1,124.57	226.28	5.970		
19,460.71	12,092.00	19,215.35	11,781.87	116.33	115.81	-76.71	-7,411.86	928.95	1,350.85	1,124.32	226.53	5.963		
19,500.00	12,092.00	19,250.51	11,781.75	116.86	116.29	-76.70	-7,447.02	929.12	1,350.95	1,123.46	227.49	5.939		
19,550.00	12,092.00	19,308.64	11,781.67	117.54	117.09	-76.70	-7,505.16	929.25	1,350.95	1,121.97	228.98	5.900		
19,600.00	12,092.00	19,355.87	11,781.58	118.22	117.73	-76.69	-7,552.38	929.18	1,350.77	1,120.51	230.26	5.866		
19,605.80	12,092.00	19,360.43	11,781.55	118.30	117.80	-76.69	-7,556.95	929.18	1,350.76	1,120.37	230.39	5.863		
19,650.00	12,092.00	19,395.23	11,781.06	118.90	118.27	-76.67	-7,591.74	929.28	1,350.92	1,119.55	231.37	5.839		
19,700.00	12,092.00	19,438.22	11,779.95	119.57	118.86	-76.63	-7,634.71	929.61	1,351.45	1,118.92	232.53	5.812		
19,750.00	12,092.00	19,496.53	11,778.00	120.25	119.66	-76.55	-7,692.99	929.85	1,351.91	1,117.92	233.98	5.778		
19,800.00	12,092.00	19,556.95	11,775.76	120.93	120.49	-76.45	-7,753.36	929.62	1,352.03	1,116.57	235.46	5.742		
19,850.00	12,092.00	19,618.91	11,773.92	121.61	121.34	-76.37	-7,815.30	928.96	1,351.73	1,114.77	236.96	5.705		
19,900.00	12,092.00	19,669.53	11,773.19	122.29	122.03	-76.33	-7,865.91	928.38	1,351.21	1,112.93	238.28	5.671		
19,950.00	12,092.00	19,720.83	11,773.47	122.97	122.74	-76.34	-7,917.21	927.98	1,350.64	1,110.99	239.65	5.636		
20,000.00	12,092.00	19,765.69	11,773.66	123.65	123.35	-76.34	-7,962.07	927.71	1,350.16	1,109.27	240.90	5.605		
20,050.00	12,092.00	19,811.37	11,773.54	124.34	123.98	-76.33	-8,007.74	927.49	1,349.84	1,107.88	242.15	5.574		
20,100.00	12,092.00	19,855.52	11,773.80	125.02	124.59	-76.34	-8,051.89	927.55	1,349.70	1,106.30	243.40	5.545		
20,106.22	12,092.00	19,861.01	11,773.88	125.10	124.67	-76.35	-8,057.38	927.58	1,349.70	1,106.15	243.55	5.542		
20,150.00	12,092.00	19,899.64	11,774.84	125.70	125.20	-76.39	-8,095.99	927.99	1,349.78	1,105.12	244.66	5.517		
20,200.00	12,092.00	19,943.22	11,776.55	126.38	125.81	-76.47	-8,139.54	928.80	1,350.09	1,104.15	245.94	5.489		
20,250.00	12,092.00	19,986.75	11,778.87	127.07	126.41	-76.57	-8,182.99	929.97	1,350.64	1,103.40	247.24	5.463		
20,300.00	12,092.00	20,035.58	11,781.38	127.75	127.09	-76.69	-8,231.73	931.41	1,351.35	1,102.69	248.66	5.434		
20,350.00	12,092.00	20,085.26	11,782.61	128.44	127.78	-76.75	-8,281.37	932.57	1,352.08	1,102.01	250.06	5.407		
20,400.00	12,092.00	20,126.12	11,782.81	129.12	128.35	-76.76	-8,322.22	933.48	1,352.97	1,101.75	251.22	5.386		
20,450.00	12,092.00	20,166.83	11,782.50	129.81	128.92	-76.76	-8,362.92	934.55	1,354.21	1,101.85	252.36	5.366		
20,500.00	12,092.00	20,219.29	11,781.66	130.49	129.65	-76.74	-8,415.36	936.04	1,355.65	1,101.89	253.76	5.342		
20,550.00	12,092.00	20,278.05	11,781.03	131.18	130.47	-76.73	-8,474.09	937.45	1,356.81	1,101.50	255.32	5.314		
20,600.00	12,092.00	20,314.62	11,780.70	131.87	130.98	-76.72	-8,510.65	938.42	1,358.08	1,101.72	256.35	5.298		
20,650.00	12,092.00	20,352.27	11,780.27	132.56	131.51	-76.72	-8,548.27	939.75	1,359.79	1,102.40	257.40	5.283		
20,700.00	12,092.00	20,389.52	11,779.83	133.24	132.03	-76.71	-8,585.48	941.41	1,361.97	1,103.55	258.41	5.270		
20,750.00	12,092.00	20,426.44	11,779.66	133.93	132.55	-76.72	-8,622.35	943.48	1,364.62	1,105.20	259.42	5.260		
20,800.00	12,092.00	20,464.00	11,779.80	134.62	133.08	-76.75	-8,659.82	946.02	1,367.74	1,107.31	260.43	5.252		
20,850.00	12,092.00	20,516.96	11,779.97	135.31	133.83	-76.80	-8,712.64	949.79	1,371.04	1,109.10	261.93	5.234		
20,900.00	12,092.00	20,576.80	11,779.51	136.00	134.68	-76.81	-8,772.35	953.67	1,374.16	1,110.55	263.62	5.213		
20,950.00	12,092.00	20,633.44	11,776.48	136.69	135.75	-76.72	-8,848.86	956.91	1,376.54	1,110.89	265.65	5.182		
21,000.00	12,092.00	20,708.27	11,773.45	137.38	136.52	-76.61	-8,903.59	958.39	1,378.37	1,111.32	267.05	5.161		
21,050.00	12,092.00	20,766.79	11,770.57	138.07	137.34	-76.50	-8,962.02	959.78	1,379.97	1,111.43	268.54	5.139		
21,100.00	12,092.00	20,831.63	11,767.79	138.76	138.25	-76.40	-9,026.79	960.81	1,381.12	1,110.95	270.16	5.112		
21,150.00	12,092.00	20,886.02	11,766.24	139.45	139.01	-76.34	-9,081.15	961.45	1,381.89	1,110.32	271.58	5.088		
21,200.00	12,092.00	20,941.15	11,766.26	140.14	139.78	-76.35	-9,136.27	962.35	1,382.56	1,109.50	273.06	5.063		

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

Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
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			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
21,250.00	12,092.00	21,024.95	11,765.40	140.84	140.95	-76.31	-9,220.06	962.24	1,382.48	1,107.45	275.04	5.027	
21,300.00	12,092.00	21,133.18	11,757.36	141.53	142.43	-75.93	-9,327.79	956.71	1,380.76	1,103.97	276.80	4.988	Alert
21,350.00	12,092.00	21,169.65	11,753.79	142.22	142.93	-75.76	-9,363.99	954.14	1,378.36	1,100.51	277.85	4.961	Alert
21,400.00	12,092.00	21,212.49	11,750.23	142.91	143.51	-75.59	-9,406.60	951.45	1,376.21	1,097.26	278.95	4.934	Alert
21,450.00	12,092.00	21,299.36	11,745.17	143.61	144.69	-75.32	-9,493.12	945.65	1,373.61	1,093.23	280.38	4.899	Alert
21,500.00	12,092.00	21,343.41	11,743.29	144.30	145.29	-75.21	-9,536.99	942.22	1,370.26	1,088.69	281.57	4.866	Alert
21,550.00	12,092.00	21,380.50	11,741.24	145.00	145.79	-75.09	-9,573.93	939.55	1,367.36	1,084.67	282.69	4.837	Alert
21,600.00	12,092.00	21,427.90	11,738.20	145.69	146.44	-74.93	-9,621.14	936.44	1,364.87	1,081.02	283.86	4.808	Alert
21,650.00	12,092.00	21,495.60	11,735.66	146.39	147.36	-74.78	-9,688.63	931.89	1,361.98	1,076.79	285.19	4.776	Alert
21,700.00	12,092.00	21,564.53	11,735.79	147.08	148.30	-74.73	-9,757.38	927.02	1,358.43	1,071.83	286.60	4.740	Alert
21,750.00	12,092.00	21,624.02	11,737.86	147.78	149.12	-74.76	-9,816.67	922.63	1,354.27	1,066.26	288.01	4.702	Alert
21,800.00	12,092.00	21,676.87	11,739.87	148.47	149.84	-74.80	-9,869.33	918.59	1,349.95	1,060.55	289.40	4.665	Alert
21,850.00	12,092.00	21,728.63	11,741.21	149.17	150.54	-74.80	-9,920.90	914.35	1,345.53	1,054.79	290.75	4.628	Alert
21,900.00	12,092.00	21,780.04	11,740.72	149.86	151.24	-74.73	-9,972.08	909.59	1,341.05	1,049.04	292.01	4.593	Alert
21,950.00	12,092.00	21,833.65	11,739.25	150.56	151.96	-74.61	-10,025.40	904.25	1,336.48	1,043.26	293.22	4.558	Alert
22,000.00	12,092.00	21,887.34	11,737.96	151.26	152.69	-74.49	-10,078.80	898.78	1,331.76	1,037.33	294.43	4.523	Alert
22,050.00	12,092.00	21,936.28	11,736.83	151.95	153.35	-74.38	-10,127.47	893.77	1,327.01	1,031.35	295.65	4.488	Alert
22,100.00	12,092.00	21,945.00	11,736.63	152.65	153.46	-74.36	-10,136.14	892.88	1,322.89	1,026.07	296.82	4.457	Alert
22,150.00	12,092.00	21,945.00	11,736.63	153.35	153.46	-74.36	-10,136.14	892.88	1,320.62	1,023.00	297.63	4.437	Alert
22,184.88	12,092.00	21,945.00	11,736.63	153.84	153.46	-74.36	-10,136.14	892.88	1,320.16	1,022.20	297.96	4.431	Alert
22,200.00	12,092.00	21,945.00	11,736.63	154.05	153.46	-74.36	-10,136.14	892.88	1,320.25	1,022.20	298.05	4.430	Alert, ES, SF
22,250.00	12,092.00	21,945.00	11,736.63	154.75	153.46	-74.36	-10,136.14	892.88	1,321.77	1,023.67	298.09	4.434	Alert
22,300.00	12,092.00	21,945.00	11,736.63	155.44	153.46	-74.36	-10,136.14	892.88	1,325.17	1,027.42	297.75	4.451	Alert
22,350.00	12,092.00	21,945.00	11,736.63	156.14	153.46	-74.36	-10,136.14	892.88	1,330.45	1,033.42	297.03	4.479	Alert
22,381.87	12,092.00	21,945.00	11,736.63	156.59	153.46	-74.36	-10,136.14	892.88	1,334.78	1,038.40	296.38	4.504	Alert

Anticollision Report

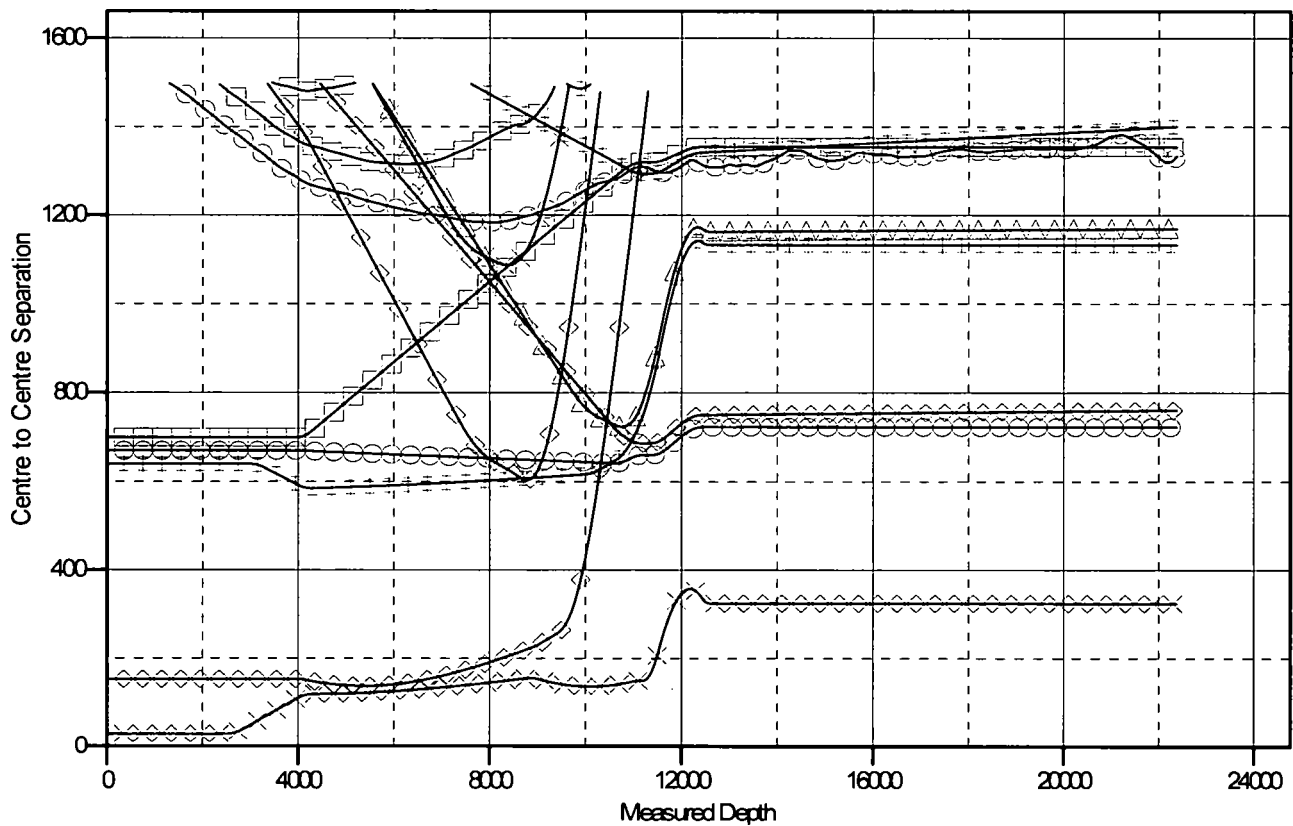
Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Output errors are at 2.00 sigma
Database: EDM r5000.141_Prod US
Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB @ 3361.50ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.333334

Coordinates are relative to: Lusitano 27-34 Fed Com 734H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.30°

Ladder Plot



LEGEND

- Lusitano 27_34 Fed Com 534H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27_34 Fed Com 622H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27_34 Fed Com 716H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27_34 Fed Com 626H, Wellbore #1, Wellbore #1 V0 - Lusitano 27_22 Fed Com 232H, Wellbore #1, Permit Plan 1 V0	- Lusitano 27-34 Fed Com 335H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 528H, Wellbore #1, Wellbore #1 V0 - Lusitano 27_34 Fed Com 736H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27_34 Fed Com 713H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 536H, Wellbore #1, Wellbore #1 V0	- Lusitano 27_34 Fed Com 523H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 232H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 624H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 333H, Wellbore #1, Permit Plan 1 V0
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Anticollision Report

Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 734H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

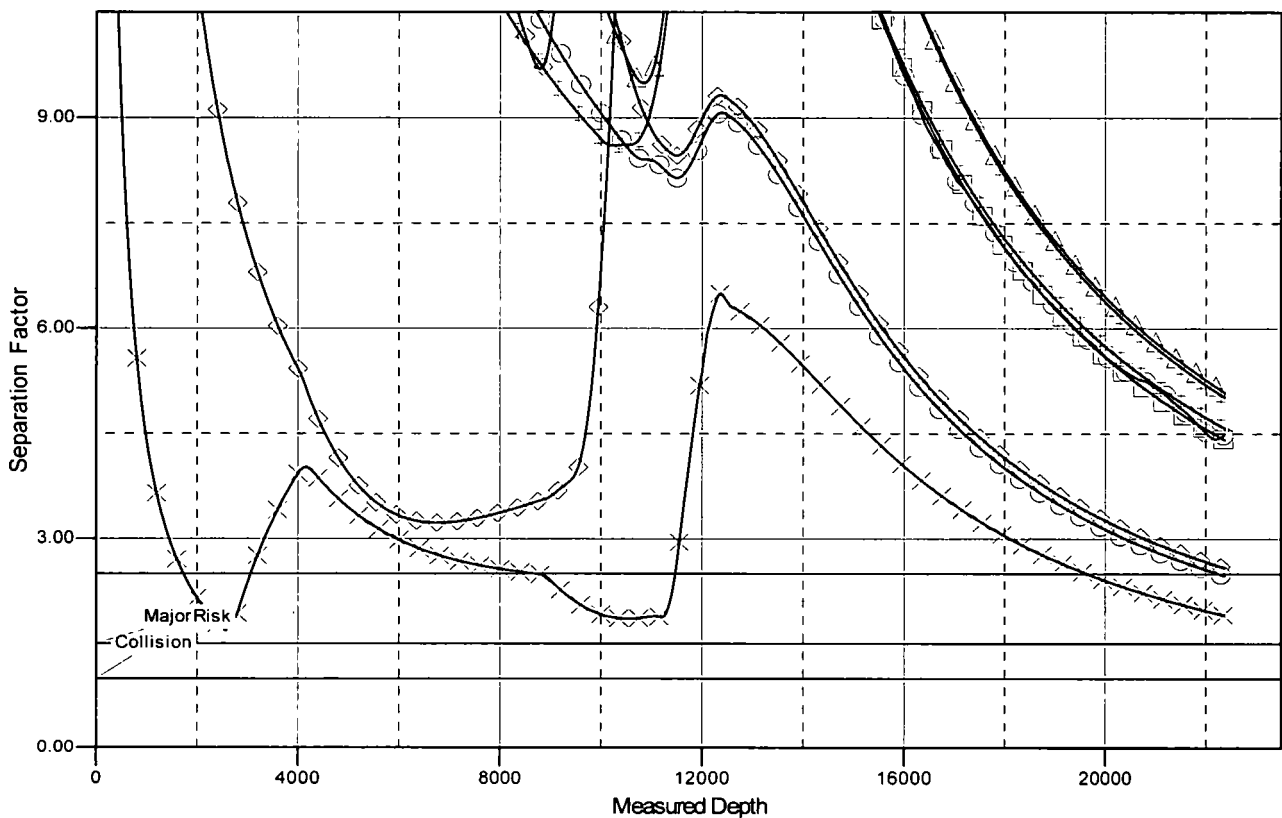
Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Output errors are at
Database:
Offset TVD Reference:

Well Lusitano 27-34 Fed Com 734H
RKB @ 3361.50ft
RKB @ 3361.50ft
Grid
Minimum Curvature
2.00 sigma
EDM r5000.141_Prod US
Offset Datum

Reference Depths are relative to RKB @ 3361.50ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.333334

Coordinates are relative to: Lusitano 27-34 Fed Com 734H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.30°

Separation Factor Plot



LEGEND

- Lusitano 27-34 Fed Com 534H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 822H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 718H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 626H, Wellbore #1, Wellbore #1 V0 - Lusitano 27-22 Fed Com 232H, Wellbore #1, Permit Plan 1 V0	- Lusitano 27-34 Fed Com 335H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 528H, Wellbore #1, Wellbore #1 V0 - Lusitano 27-34 Fed Com 736H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 713H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 536H, Wellbore #1, Wellbore #1 V0	- Lusitano 27-34 Fed Com 523H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 232H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 624H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27-34 Fed Com 333H, Wellbore #1, Permit Plan 1 V0
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WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Lusitano 27-34 Fed Com 734H

Wellbore #1

Plan: Permit Plan 1

Standard Planning Report - Geographic

24 August, 2018

Planning Report - Geographic

Database: EDM r5000.141_Prod US
Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Site: Sec 27-T25S-R31E
Well: Lusitano 27-34 Fed Com 734H
Wellbore: Wellbore #1
Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
TVD Reference: RKB @ 3361.50ft
MD Reference: RKB @ 3361.50ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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 734H

Well Position	+N/-S	0.00 ft	Northing:	403,460.04 usft	Latitude:	32.107909
	+E/-W	0.00 ft	Easting:	717,774.28 usft	Longitude:	-103.763497
Position Uncertainty		0.50 ft	Wellhead Elevation:		Ground Level:	3,336.50 ft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/24/2018	6.91	59.91	47,727.74895724

Design Permit Plan 1

Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
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Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	182.09

Plan Survey Tool Program Date 8/24/2018

	Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,381.87	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	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,296.08	3.70	294.50	4,295.88	3.96	-8.70	1.25	1.25	0.00	294.50	
10,936.49	3.70	294.50	10,922.44	181.70	-398.75	0.00	0.00	0.00	0.00	
11,183.23	0.00	0.00	11,169.00	185.00	-406.00	1.50	-1.50	0.00	180.00	
11,533.27	0.00	0.00	11,519.04	185.00	-406.00	0.00	0.00	0.00	0.00	
12,433.27	90.00	179.85	12,092.00	-387.96	-404.47	10.00	10.00	0.00	179.85	PBHL - Lusitano 27-3
22,381.87	90.00	179.85	12,092.00	-10,336.52	-377.88	0.00	0.00	0.00	0.00	PBHL - Lusitano 27-3

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3361.50ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3361.50ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27-34 Fed Com 734H	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	403,460.04	717,774.28	32.107909	-103.763497
100.00	0.00	0.00	100.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
200.00	0.00	0.00	200.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
300.00	0.00	0.00	300.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
400.00	0.00	0.00	400.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
500.00	0.00	0.00	500.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
600.00	0.00	0.00	600.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
700.00	0.00	0.00	700.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
800.00	0.00	0.00	800.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
900.00	0.00	0.00	900.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,000.00	0.00	0.00	1,000.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,100.00	0.00	0.00	1,100.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,200.00	0.00	0.00	1,200.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,300.00	0.00	0.00	1,300.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,400.00	0.00	0.00	1,400.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,500.00	0.00	0.00	1,500.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,600.00	0.00	0.00	1,600.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,700.00	0.00	0.00	1,700.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,800.00	0.00	0.00	1,800.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
1,900.00	0.00	0.00	1,900.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,000.00	0.00	0.00	2,000.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,100.00	0.00	0.00	2,100.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,200.00	0.00	0.00	2,200.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,300.00	0.00	0.00	2,300.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,400.00	0.00	0.00	2,400.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,500.00	0.00	0.00	2,500.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,600.00	0.00	0.00	2,600.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,700.00	0.00	0.00	2,700.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,800.00	0.00	0.00	2,800.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
2,900.00	0.00	0.00	2,900.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,000.00	0.00	0.00	3,000.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,100.00	0.00	0.00	3,100.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,200.00	0.00	0.00	3,200.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,300.00	0.00	0.00	3,300.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,400.00	0.00	0.00	3,400.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,500.00	0.00	0.00	3,500.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,600.00	0.00	0.00	3,600.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,700.00	0.00	0.00	3,700.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,800.00	0.00	0.00	3,800.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
3,900.00	0.00	0.00	3,900.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
4,000.00	0.00	0.00	4,000.00	0.00	0.00	403,460.04	717,774.28	32.107909	-103.763497
4,100.00	1.25	294.50	4,099.99	0.45	-0.99	403,460.49	717,773.28	32.107910	-103.763500
4,200.00	2.50	294.50	4,199.94	1.81	-3.97	403,461.85	717,770.31	32.107914	-103.763509
4,296.08	3.70	294.50	4,295.88	3.96	-8.70	403,464.00	717,765.58	32.107920	-103.763525
4,300.00	3.70	294.50	4,299.79	4.07	-8.93	403,464.11	717,765.35	32.107920	-103.763525
4,400.00	3.70	294.50	4,399.58	6.75	-14.80	403,466.78	717,759.47	32.107928	-103.763544
4,500.00	3.70	294.50	4,499.37	9.42	-20.68	403,469.46	717,753.60	32.107935	-103.763563
4,600.00	3.70	294.50	4,599.16	12.10	-26.55	403,472.14	717,747.73	32.107943	-103.763582
4,700.00	3.70	294.50	4,698.95	14.77	-32.42	403,474.81	717,741.85	32.107950	-103.763601
4,800.00	3.70	294.50	4,798.74	17.45	-38.30	403,477.49	717,735.98	32.107958	-103.763620
4,900.00	3.70	294.50	4,898.53	20.13	-44.17	403,480.17	717,730.10	32.107965	-103.763639
5,000.00	3.70	294.50	4,998.33	22.80	-50.05	403,482.84	717,724.23	32.107972	-103.763658
5,100.00	3.70	294.50	5,098.12	25.48	-55.92	403,485.52	717,718.36	32.107980	-103.763677
5,200.00	3.70	294.50	5,197.91	28.16	-61.79	403,488.20	717,712.48	32.107987	-103.763696
5,300.00	3.70	294.50	5,297.70	30.83	-67.67	403,490.87	717,706.61	32.107995	-103.763715

Planning Report - Geographic

Database: EDM r5000.141_Prod US
 Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 27-T25S-R31E
 Well: Lusitano 27-34 Fed Com 734H
 Wellbore: Wellbore #1
 Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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	3.70	294.50	5,397.49	33.51	-73.54	403,493.55	717,700.73	32.108002	-103.763733
5,500.00	3.70	294.50	5,497.28	36.19	-79.42	403,496.23	717,694.86	32.108010	-103.763752
5,600.00	3.70	294.50	5,597.07	38.86	-85.29	403,498.90	717,688.99	32.108017	-103.763771
5,700.00	3.70	294.50	5,696.87	41.54	-91.16	403,501.58	717,683.11	32.108025	-103.763790
5,800.00	3.70	294.50	5,796.66	44.22	-97.04	403,504.26	717,677.24	32.108032	-103.763809
5,900.00	3.70	294.50	5,896.45	46.89	-102.91	403,506.93	717,671.36	32.108039	-103.763828
6,000.00	3.70	294.50	5,996.24	49.57	-108.79	403,509.61	717,665.49	32.108047	-103.763847
6,100.00	3.70	294.50	6,096.03	52.25	-114.66	403,512.29	717,659.62	32.108054	-103.763866
6,200.00	3.70	294.50	6,195.82	54.92	-120.53	403,514.96	717,653.74	32.108062	-103.763885
6,300.00	3.70	294.50	6,295.62	57.60	-126.41	403,517.64	717,647.87	32.108069	-103.763904
6,400.00	3.70	294.50	6,395.41	60.28	-132.28	403,520.31	717,642.00	32.108077	-103.763923
6,500.00	3.70	294.50	6,495.20	62.95	-138.16	403,522.99	717,636.12	32.108084	-103.763942
6,600.00	3.70	294.50	6,594.99	65.63	-144.03	403,525.67	717,630.25	32.108092	-103.763961
6,700.00	3.70	294.50	6,694.78	68.31	-149.90	403,528.34	717,624.37	32.108099	-103.763979
6,800.00	3.70	294.50	6,794.57	70.98	-155.78	403,531.02	717,618.50	32.108106	-103.763998
6,900.00	3.70	294.50	6,894.36	73.66	-161.65	403,533.70	717,612.63	32.108114	-103.764017
7,000.00	3.70	294.50	6,994.16	76.34	-167.52	403,536.37	717,606.75	32.108121	-103.764036
7,100.00	3.70	294.50	7,093.95	79.01	-173.40	403,539.05	717,600.88	32.108129	-103.764055
7,200.00	3.70	294.50	7,193.74	81.69	-179.27	403,541.73	717,595.00	32.108136	-103.764074
7,300.00	3.70	294.50	7,293.53	84.36	-185.15	403,544.40	717,589.13	32.108144	-103.764093
7,400.00	3.70	294.50	7,393.32	87.04	-191.02	403,547.08	717,583.26	32.108151	-103.764112
7,500.00	3.70	294.50	7,493.11	89.72	-196.89	403,549.76	717,577.38	32.108158	-103.764131
7,600.00	3.70	294.50	7,592.90	92.39	-202.77	403,552.43	717,571.51	32.108166	-103.764150
7,700.00	3.70	294.50	7,692.70	95.07	-208.64	403,555.11	717,565.63	32.108173	-103.764169
7,800.00	3.70	294.50	7,792.49	97.75	-214.52	403,557.79	717,559.76	32.108181	-103.764188
7,900.00	3.70	294.50	7,892.28	100.42	-220.39	403,560.46	717,553.89	32.108188	-103.764207
8,000.00	3.70	294.50	7,992.07	103.10	-226.26	403,563.14	717,548.01	32.108196	-103.764225
8,100.00	3.70	294.50	8,091.86	105.78	-232.14	403,565.82	717,542.14	32.108203	-103.764244
8,200.00	3.70	294.50	8,191.65	108.45	-238.01	403,568.49	717,536.26	32.108211	-103.764263
8,300.00	3.70	294.50	8,291.44	111.13	-243.89	403,571.17	717,530.39	32.108218	-103.764282
8,400.00	3.70	294.50	8,391.24	113.81	-249.76	403,573.85	717,524.52	32.108225	-103.764301
8,500.00	3.70	294.50	8,491.03	116.48	-255.63	403,576.52	717,518.64	32.108233	-103.764320
8,600.00	3.70	294.50	8,590.82	119.16	-261.51	403,579.20	717,512.77	32.108240	-103.764339
8,700.00	3.70	294.50	8,690.61	121.84	-267.38	403,581.88	717,506.90	32.108248	-103.764358
8,800.00	3.70	294.50	8,790.40	124.51	-273.26	403,584.55	717,501.02	32.108255	-103.764377
8,900.00	3.70	294.50	8,890.19	127.19	-279.13	403,587.23	717,495.15	32.108263	-103.764396
9,000.00	3.70	294.50	8,989.98	129.87	-285.00	403,589.90	717,489.27	32.108270	-103.764415
9,100.00	3.70	294.50	9,089.78	132.54	-290.88	403,592.58	717,483.40	32.108278	-103.764434
9,200.00	3.70	294.50	9,189.57	135.22	-296.75	403,595.26	717,477.53	32.108285	-103.764453
9,300.00	3.70	294.50	9,289.36	137.90	-302.62	403,597.93	717,471.65	32.108292	-103.764471
9,400.00	3.70	294.50	9,389.15	140.57	-308.50	403,600.61	717,465.78	32.108300	-103.764490
9,500.00	3.70	294.50	9,488.94	143.25	-314.37	403,603.29	717,459.90	32.108307	-103.764509
9,600.00	3.70	294.50	9,588.73	145.93	-320.25	403,605.96	717,454.03	32.108315	-103.764528
9,700.00	3.70	294.50	9,688.52	148.60	-326.12	403,608.64	717,448.16	32.108322	-103.764547
9,800.00	3.70	294.50	9,788.32	151.28	-331.99	403,611.32	717,442.28	32.108330	-103.764566
9,900.00	3.70	294.50	9,888.11	153.95	-337.87	403,613.99	717,436.41	32.108337	-103.764585
10,000.00	3.70	294.50	9,987.90	156.63	-343.74	403,616.67	717,430.53	32.108345	-103.764604
10,100.00	3.70	294.50	10,087.69	159.31	-349.62	403,619.35	717,424.66	32.108352	-103.764623
10,200.00	3.70	294.50	10,187.48	161.98	-355.49	403,622.02	717,418.79	32.108359	-103.764642
10,300.00	3.70	294.50	10,287.27	164.66	-361.36	403,624.70	717,412.91	32.108367	-103.764661
10,400.00	3.70	294.50	10,387.06	167.34	-367.24	403,627.38	717,407.04	32.108374	-103.764680
10,500.00	3.70	294.50	10,486.86	170.01	-373.11	403,630.05	717,401.16	32.108382	-103.764699
10,600.00	3.70	294.50	10,586.65	172.69	-378.99	403,632.73	717,395.29	32.108389	-103.764718
10,700.00	3.70	294.50	10,686.44	175.37	-384.86	403,635.41	717,389.42	32.108397	-103.764736
10,800.00	3.70	294.50	10,786.23	178.04	-390.73	403,638.08	717,383.54	32.108404	-103.764755

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3361.50ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3361.50ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27-34 Fed Com 734H	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
10,900.00	3.70	294.50	10,886.02	180.72	-396.61	403,640.76	717,377.67	32.108412	-103.764774
10,936.49	3.70	294.50	10,922.44	181.70	-398.75	403,641.74	717,375.53	32.108414	-103.764781
11,000.00	2.75	294.50	10,985.84	183.18	-402.00	403,643.22	717,372.28	32.108418	-103.764792
11,100.00	1.25	294.50	11,085.78	184.62	-405.17	403,644.66	717,369.10	32.108422	-103.764802
11,183.23	0.00	0.00	11,169.00	185.00	-406.00	403,645.04	717,368.28	32.108423	-103.764805
11,200.00	0.00	0.00	11,185.77	185.00	-406.00	403,645.04	717,368.28	32.108423	-103.764805
11,300.00	0.00	0.00	11,285.77	185.00	-406.00	403,645.04	717,368.28	32.108423	-103.764805
11,400.00	0.00	0.00	11,385.77	185.00	-406.00	403,645.04	717,368.28	32.108423	-103.764805
11,500.00	0.00	0.00	11,485.77	185.00	-406.00	403,645.04	717,368.28	32.108423	-103.764805
11,533.27	0.00	0.00	11,519.04	185.00	-406.00	403,645.04	717,368.28	32.108423	-103.764805
KOP @ 11533' MD, 50' FNL, 2310' FEL									
11,600.00	6.67	179.85	11,585.62	181.12	-405.99	403,641.16	717,368.29	32.108413	-103.764805
11,700.00	16.67	179.85	11,683.43	160.91	-405.94	403,620.95	717,368.34	32.108357	-103.764805
11,774.41	24.11	179.85	11,753.13	135.00	-405.87	403,595.04	717,368.41	32.108286	-103.764805
FTP @ 11774' MD, 100' FNL, 2310' FEL									
11,800.00	26.67	179.85	11,776.24	124.03	-405.84	403,584.06	717,368.44	32.108256	-103.764805
11,900.00	36.67	179.85	11,861.24	71.59	-405.70	403,531.62	717,368.58	32.108112	-103.764806
12,000.00	46.67	179.85	11,935.84	5.18	-405.52	403,465.22	717,368.76	32.107929	-103.764806
12,100.00	56.67	179.85	11,997.78	-73.17	-405.31	403,386.87	717,368.97	32.107714	-103.764807
12,200.00	66.67	179.85	12,045.17	-161.08	-405.08	403,298.96	717,369.20	32.107472	-103.764807
12,300.00	76.67	179.85	12,076.57	-255.89	-404.82	403,204.15	717,369.46	32.107212	-103.764808
12,400.00	86.67	179.85	12,091.03	-354.71	-404.56	403,105.33	717,369.72	32.106940	-103.764809
12,433.27	90.00	179.85	12,092.00	-387.96	-404.47	403,072.08	717,369.81	32.106848	-103.764809
12,500.00	90.00	179.85	12,092.00	-454.69	-404.29	403,005.35	717,369.99	32.106665	-103.764810
12,600.00	90.00	179.85	12,092.00	-554.69	-404.02	402,905.35	717,370.25	32.106390	-103.764811
12,700.00	90.00	179.85	12,092.00	-654.69	-403.76	402,805.35	717,370.52	32.106115	-103.764812
12,800.00	90.00	179.85	12,092.00	-754.69	-403.49	402,705.35	717,370.79	32.105840	-103.764812
12,900.00	90.00	179.85	12,092.00	-854.69	-403.22	402,605.35	717,371.06	32.105565	-103.764813
13,000.00	90.00	179.85	12,092.00	-954.69	-402.95	402,505.35	717,371.32	32.105291	-103.764814
13,100.00	90.00	179.85	12,092.00	-1,054.69	-402.69	402,405.35	717,371.59	32.105016	-103.764815
13,200.00	90.00	179.85	12,092.00	-1,154.69	-402.42	402,305.36	717,371.86	32.104741	-103.764816
13,300.00	90.00	179.85	12,092.00	-1,254.69	-402.15	402,205.36	717,372.12	32.104466	-103.764817
13,400.00	90.00	179.85	12,092.00	-1,354.69	-401.89	402,105.36	717,372.39	32.104191	-103.764817
13,500.00	90.00	179.85	12,092.00	-1,454.69	-401.62	402,005.36	717,372.66	32.103916	-103.764818
13,600.00	90.00	179.85	12,092.00	-1,554.68	-401.35	401,905.36	717,372.93	32.103641	-103.764819
13,700.00	90.00	179.85	12,092.00	-1,654.68	-401.08	401,805.36	717,373.19	32.103366	-103.764820
13,800.00	90.00	179.85	12,092.00	-1,754.68	-400.82	401,705.36	717,373.46	32.103092	-103.764821
13,900.00	90.00	179.85	12,092.00	-1,854.68	-400.55	401,605.36	717,373.73	32.102817	-103.764822
14,000.00	90.00	179.85	12,092.00	-1,954.68	-400.28	401,505.36	717,374.00	32.102542	-103.764823
14,100.00	90.00	179.85	12,092.00	-2,054.68	-400.01	401,405.36	717,374.26	32.102267	-103.764823
14,200.00	90.00	179.85	12,092.00	-2,154.68	-399.75	401,305.36	717,374.53	32.101992	-103.764824
14,300.00	90.00	179.85	12,092.00	-2,254.68	-399.48	401,205.36	717,374.80	32.101717	-103.764825
14,400.00	90.00	179.85	12,092.00	-2,354.68	-399.21	401,105.36	717,375.06	32.101442	-103.764826
14,500.00	90.00	179.85	12,092.00	-2,454.68	-398.95	401,005.36	717,375.33	32.101167	-103.764827
14,600.00	90.00	179.85	12,092.00	-2,554.68	-398.68	400,905.36	717,375.60	32.100892	-103.764828
14,700.00	90.00	179.85	12,092.00	-2,654.68	-398.41	400,805.36	717,375.87	32.100618	-103.764828
14,800.00	90.00	179.85	12,092.00	-2,754.68	-398.14	400,705.36	717,376.13	32.100343	-103.764829
14,900.00	90.00	179.85	12,092.00	-2,854.68	-397.88	400,605.36	717,376.40	32.100068	-103.764830
15,000.00	90.00	179.85	12,092.00	-2,954.68	-397.61	400,505.37	717,376.67	32.099793	-103.764831
15,100.00	90.00	179.85	12,092.00	-3,054.68	-397.34	400,405.37	717,376.94	32.099518	-103.764832
15,200.00	90.00	179.85	12,092.00	-3,154.68	-397.07	400,305.37	717,377.20	32.099243	-103.764833
15,300.00	90.00	179.85	12,092.00	-3,254.68	-396.81	400,205.37	717,377.47	32.098968	-103.764833
15,400.00	90.00	179.85	12,092.00	-3,354.68	-396.54	400,105.37	717,377.74	32.098693	-103.764834
15,500.00	90.00	179.85	12,092.00	-3,454.68	-396.27	400,005.37	717,378.00	32.098418	-103.764835

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 734H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3361.50ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3361.50ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27-34 Fed Com 734H	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	179.85	12,092.00	-3,554.68	-396.01	399,905.37	717,378.27	32.098144	-103.764836
15,700.00	90.00	179.85	12,092.00	-3,654.68	-395.74	399,805.37	717,378.54	32.097869	-103.764837
15,800.00	90.00	179.85	12,092.00	-3,754.68	-395.47	399,705.37	717,378.81	32.097594	-103.764838
15,900.00	90.00	179.85	12,092.00	-3,854.68	-395.20	399,605.37	717,379.07	32.097319	-103.764838
16,000.00	90.00	179.85	12,092.00	-3,954.68	-394.94	399,505.37	717,379.34	32.097044	-103.764839
16,100.00	90.00	179.85	12,092.00	-4,054.68	-394.67	399,405.37	717,379.61	32.096769	-103.764840
16,200.00	90.00	179.85	12,092.00	-4,154.68	-394.40	399,305.37	717,379.87	32.096494	-103.764841
16,300.00	90.00	179.85	12,092.00	-4,254.68	-394.13	399,205.37	717,380.14	32.096219	-103.764842
16,400.00	90.00	179.85	12,092.00	-4,354.67	-393.87	399,105.37	717,380.41	32.095945	-103.764843
16,500.00	90.00	179.85	12,092.00	-4,454.67	-393.60	399,005.37	717,380.68	32.095670	-103.764844
16,600.00	90.00	179.85	12,092.00	-4,554.67	-393.33	398,905.37	717,380.94	32.095395	-103.764844
16,700.00	90.00	179.85	12,092.00	-4,654.67	-393.07	398,805.37	717,381.21	32.095120	-103.764845
16,800.00	90.00	179.85	12,092.00	-4,754.67	-392.80	398,705.38	717,381.48	32.094845	-103.764846
16,900.00	90.00	179.85	12,092.00	-4,854.67	-392.53	398,605.38	717,381.75	32.094570	-103.764847
17,000.00	90.00	179.85	12,092.00	-4,954.67	-392.26	398,505.38	717,382.01	32.094295	-103.764848
17,100.00	90.00	179.85	12,092.00	-5,054.67	-392.00	398,405.38	717,382.28	32.094020	-103.764849
17,200.00	90.00	179.85	12,092.00	-5,154.67	-391.73	398,305.38	717,382.55	32.093745	-103.764849
17,300.00	90.00	179.85	12,092.00	-5,254.67	-391.46	398,205.38	717,382.81	32.093471	-103.764850
17,400.00	90.00	179.85	12,092.00	-5,354.67	-391.19	398,105.38	717,383.08	32.093196	-103.764851
17,500.00	90.00	179.85	12,092.00	-5,454.67	-390.93	398,005.38	717,383.35	32.092921	-103.764852
17,600.00	90.00	179.85	12,092.00	-5,554.67	-390.66	397,905.38	717,383.62	32.092646	-103.764853
17,700.00	90.00	179.85	12,092.00	-5,654.67	-390.39	397,805.38	717,383.88	32.092371	-103.764854
17,800.00	90.00	179.85	12,092.00	-5,754.67	-390.13	397,705.38	717,384.15	32.092096	-103.764854
17,900.00	90.00	179.85	12,092.00	-5,854.67	-389.86	397,605.38	717,384.42	32.091821	-103.764855
18,000.00	90.00	179.85	12,092.00	-5,954.67	-389.59	397,505.38	717,384.69	32.091546	-103.764856
18,100.00	90.00	179.85	12,092.00	-6,054.67	-389.32	397,405.38	717,384.95	32.091271	-103.764857
18,200.00	90.00	179.85	12,092.00	-6,154.67	-389.06	397,305.38	717,385.22	32.090997	-103.764858
18,300.00	90.00	179.85	12,092.00	-6,254.67	-388.79	397,205.38	717,385.49	32.090722	-103.764859
18,400.00	90.00	179.85	12,092.00	-6,354.67	-388.52	397,105.38	717,385.75	32.090447	-103.764859
18,500.00	90.00	179.85	12,092.00	-6,454.67	-388.26	397,005.38	717,386.02	32.090172	-103.764860
18,600.00	90.00	179.85	12,092.00	-6,554.67	-387.99	396,905.38	717,386.29	32.089897	-103.764861
18,700.00	90.00	179.85	12,092.00	-6,654.67	-387.72	396,805.39	717,386.56	32.089622	-103.764862
18,800.00	90.00	179.85	12,092.00	-6,754.67	-387.45	396,705.39	717,386.82	32.089347	-103.764863
18,900.00	90.00	179.85	12,092.00	-6,854.67	-387.19	396,605.39	717,387.09	32.089072	-103.764864
19,000.00	90.00	179.85	12,092.00	-6,954.67	-386.92	396,505.39	717,387.36	32.088798	-103.764864
19,100.00	90.00	179.85	12,092.00	-7,054.67	-386.65	396,405.39	717,387.63	32.088523	-103.764865
19,200.00	90.00	179.85	12,092.00	-7,154.67	-386.38	396,305.39	717,387.89	32.088248	-103.764866
19,300.00	90.00	179.85	12,092.00	-7,254.66	-386.12	396,205.39	717,388.16	32.087973	-103.764867
19,400.00	90.00	179.85	12,092.00	-7,354.66	-385.85	396,105.39	717,388.43	32.087698	-103.764868
19,500.00	90.00	179.85	12,092.00	-7,454.66	-385.58	396,005.39	717,388.69	32.087423	-103.764869
19,600.00	90.00	179.85	12,092.00	-7,554.66	-385.32	395,905.39	717,388.96	32.087148	-103.764870
19,700.00	90.00	179.85	12,092.00	-7,654.66	-385.05	395,805.39	717,389.23	32.086873	-103.764870
19,800.00	90.00	179.85	12,092.00	-7,754.66	-384.78	395,705.39	717,389.50	32.086598	-103.764871
19,900.00	90.00	179.85	12,092.00	-7,854.66	-384.51	395,605.39	717,389.76	32.086324	-103.764872
20,000.00	90.00	179.85	12,092.00	-7,954.66	-384.25	395,505.39	717,390.03	32.086049	-103.764873
20,100.00	90.00	179.85	12,092.00	-8,054.66	-383.98	395,405.39	717,390.30	32.085774	-103.764874
20,200.00	90.00	179.85	12,092.00	-8,154.66	-383.71	395,305.39	717,390.56	32.085499	-103.764875
20,300.00	90.00	179.85	12,092.00	-8,254.66	-383.44	395,205.39	717,390.83	32.085224	-103.764875
20,400.00	90.00	179.85	12,092.00	-8,354.66	-383.18	395,105.39	717,391.10	32.084949	-103.764876
20,500.00	90.00	179.85	12,092.00	-8,454.66	-382.91	395,005.40	717,391.37	32.084674	-103.764877
20,600.00	90.00	179.85	12,092.00	-8,554.66	-382.64	394,905.40	717,391.63	32.084399	-103.764878
20,700.00	90.00	179.85	12,092.00	-8,654.66	-382.38	394,805.40	717,391.90	32.084124	-103.764879
20,800.00	90.00	179.85	12,092.00	-8,754.66	-382.11	394,705.40	717,392.17	32.083850	-103.764880
20,900.00	90.00	179.85	12,092.00	-8,854.66	-381.84	394,605.40	717,392.44	32.083575	-103.764880
21,000.00	90.00	179.85	12,092.00	-8,954.66	-381.57	394,505.40	717,392.70	32.083300	-103.764881

Planning Report - Geographic

Database: EDM r5000.141_Prod US
 Company: WCDSC Permian NM
 Project: Eddy County (NAD 83 NM Eastern)
 Site: Sec 27-T25S-R31E
 Well: Lusitano 27-34 Fed Com 734H
 Wellbore: Wellbore #1
 Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 734H
 TVD Reference: RKB @ 3361.50ft
 MD Reference: RKB @ 3361.50ft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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	179.85	12,092.00	-9,054.66	-381.31	394,405.40	717,392.97	32.083025	-103.764882
21,200.00	90.00	179.85	12,092.00	-9,154.66	-381.04	394,305.40	717,393.24	32.082750	-103.764883
21,300.00	90.00	179.85	12,092.00	-9,254.66	-380.77	394,205.40	717,393.50	32.082475	-103.764884
21,400.00	90.00	179.85	12,092.00	-9,354.66	-380.50	394,105.40	717,393.77	32.082200	-103.764885
21,500.00	90.00	179.85	12,092.00	-9,454.66	-380.24	394,005.40	717,394.04	32.081925	-103.764885
21,600.00	90.00	179.85	12,092.00	-9,554.66	-379.97	393,905.40	717,394.31	32.081650	-103.764886
21,700.00	90.00	179.85	12,092.00	-9,654.66	-379.70	393,805.40	717,394.57	32.081376	-103.764887
21,800.00	90.00	179.85	12,092.00	-9,754.66	-379.44	393,705.40	717,394.84	32.081101	-103.764888
21,900.00	90.00	179.85	12,092.00	-9,854.66	-379.17	393,605.40	717,395.11	32.080826	-103.764889
22,000.00	90.00	179.85	12,092.00	-9,954.66	-378.90	393,505.40	717,395.38	32.080551	-103.764890
22,100.00	90.00	179.85	12,092.00	-10,054.65	-378.63	393,405.40	717,395.64	32.080276	-103.764890
22,200.00	90.00	179.85	12,092.00	-10,154.65	-378.37	393,305.40	717,395.91	32.080001	-103.764891
22,300.00	90.00	179.85	12,092.00	-10,254.65	-378.10	393,205.41	717,396.18	32.079726	-103.764892
22,301.87	90.00	179.85	12,092.00	-10,256.52	-378.09	393,203.54	717,396.18	32.079721	-103.764892
LTP @ 22302' MD, 100' FSL, 2310' FEL									
22,381.87	90.00	179.85	12,092.00	-10,336.52	-377.88	393,123.54	717,396.40	32.079501	-103.764893
PBHL; 20' FSL, 2310' FEL									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL - Lusitano 27-34 F	0.00	0.00	0.00	-10,336.52	-377.88	393,123.54	717,396.40	32.079501	-103.764893
- plan misses target center by 10343.43ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
11,533.27	11,519.04	185.00	-406.00	KOP @ 11533' MD, 50' FNL, 2310' FEL
11,774.41	11,753.13	135.00	-405.87	FTP @ 11774' MD, 100' FNL, 2310' FEL
22,301.87	12,092.00	-10,256.52	-378.09	LTP @ 22302' MD, 100' FSL, 2310' FEL
22,381.87	12,092.00	-10,336.52	-377.88	PBHL; 20' FSL, 2310' FEL

Devon Energy

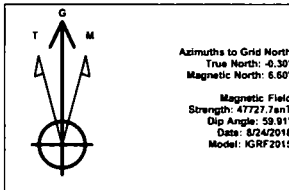
WELL DETAILS: Lusitano 27-34 Fed Com 734H

RKB @ 3361.50'
3336.50'
Northing 403460.04 Easting 717774.28 Latitude 32.107909 Longitude -103.763496

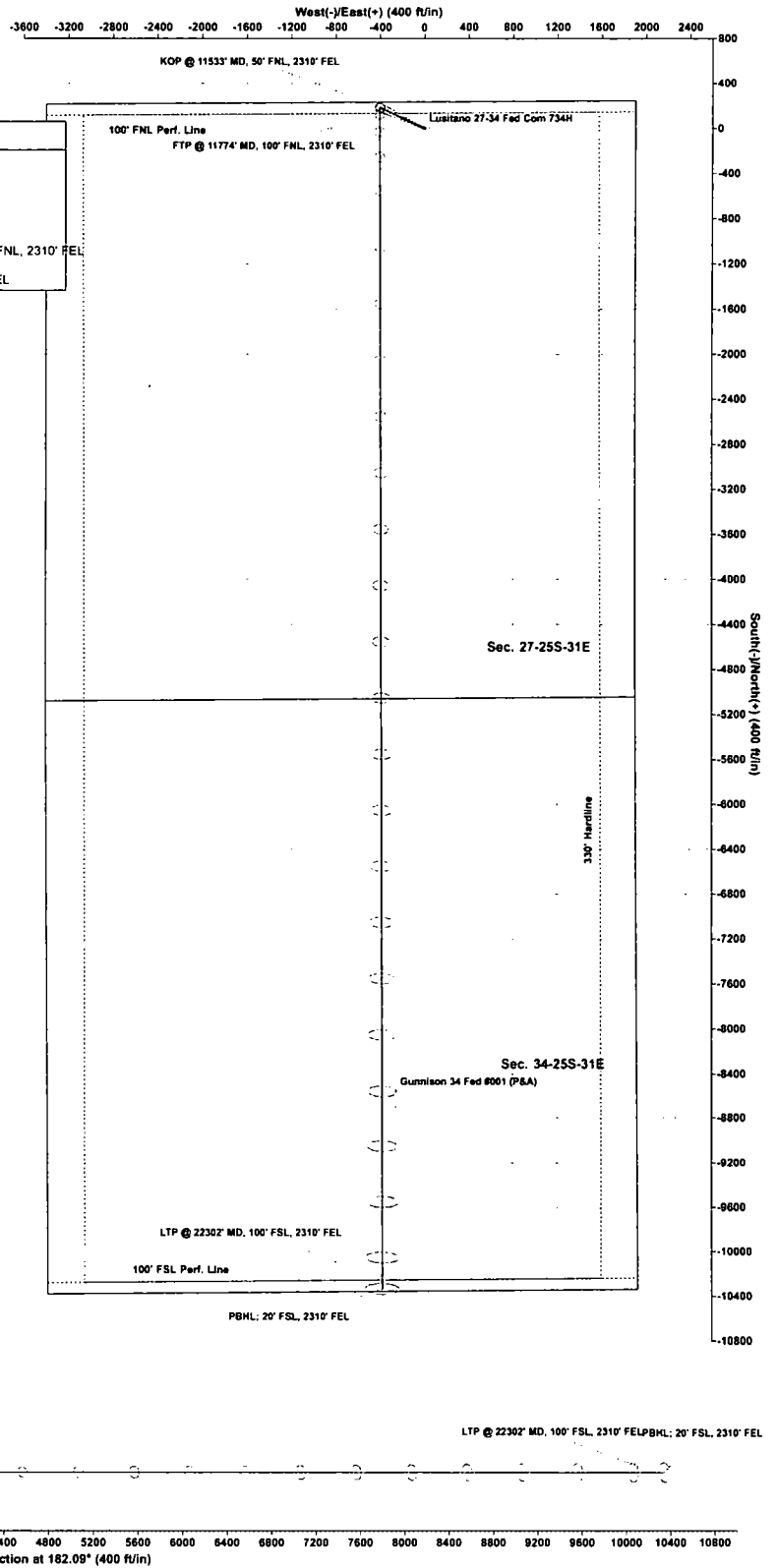
SECTION DETAILS Permit Plan 1

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	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	
4298.08	3.70	294.50	4295.88	3.96	-8.70	1.25	-3.64	
10936.49	3.70	294.50	10922.44	181.70	-398.75	0.00	-167.01	
11183.23	0.00	0.00	11189.00	185.00	-406.00	1.50	-170.04	
11533.27	0.00	0.00	11519.04	185.00	-406.00	0.00	-170.04	KOP @ 11533' MD, 50' FNL, 2310' FEL
12433.27	90.00	179.85	12092.00	-387.96	-404.47	10.00	402.47	
22381.87	90.00	179.85	12092.00	-10336.52	-377.88	0.00	10343.43	PBHL: 20' FSL, 2310' FEL

devon



KOP @ 11533' MD, 50' FNL, 2310' FEL
FTP @ 11774' MD, 100' FNL, 2310' FEL



WCDSC Permian NM
Lusitano 27-34 Fed Com 734H - 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
100		0	0	100	0	0	0
200		0	0	200	0	0	0
300		0	0	300	0	0	0
400		0	0	400	0	0	0
500		0	0	500	0	0	0
600		0	0	600	0	0	0
700		0	0	700	0	0	0
800		0	0	800	0	0	0
900		0	0	900	0	0	0
1000		0	0	1000	0	0	0
1100		0	0	1100	0	0	0
1200		0	0	1200	0	0	0
1300		0	0	1300	0	0	0
1400		0	0	1400	0	0	0
1500		0	0	1500	0	0	0
1600		0	0	1600	0	0	0
1700		0	0	1700	0	0	0
1800		0	0	1800	0	0	0
1900		0	0	1900	0	0	0
2000		0	0	2000	0	0	0
2100		0	0	2100	0	0	0
2200		0	0	2200	0	0	0
2300		0	0	2300	0	0	0
2400		0	0	2400	0	0	0
2500		0	0	2500	0	0	0
2600		0	0	2600	0	0	0
2700		0	0	2700	0	0	0
2800		0	0	2800	0	0	0
2900		0	0	2900	0	0	0
3000		0	0	3000	0	0	0
3100		0	0	3100	0	0	0

3200	0	0	3200	0	0	0	0
3300	0	0	3300	0	0	0	0
3400	0	0	3400	0	0	0	0
3500	0	0	3500	0	0	0	0
3600	0	0	3600	0	0	0	0
3700	0	0	3700	0	0	0	0
3800	0	0	3800	0	0	0	0
3900	0	0	3900	0	0	0	0
4000	0	0	4000	0	0	0	0
4100	1.25	294.497	4099.99	0.45	-0.99	-0.42	1.25
4200	2.5	294.497	4199.94	1.81	-3.97	-1.66	1.25
4300	3.701	294.497	4299.79	4.07	-8.93	-3.74	1.2
4400	3.701	294.497	4399.58	6.75	-14.8	-6.2	0
4500	3.701	294.497	4499.37	9.42	-20.68	-8.66	0
4600	3.701	294.497	4599.16	12.1	-26.55	-11.12	0
4700	3.701	294.497	4698.95	14.77	-32.42	-13.58	0
4800	3.701	294.497	4798.74	17.45	-38.3	-16.04	0
4900	3.701	294.497	4898.53	20.13	-44.17	-18.5	0
5000	3.701	294.497	4998.33	22.8	-50.05	-20.96	0
5100	3.701	294.497	5098.12	25.48	-55.92	-23.42	0
5200	3.701	294.497	5197.91	28.16	-61.79	-25.88	0
5300	3.701	294.497	5297.7	30.83	-67.67	-28.34	0
5400	3.701	294.497	5397.49	33.51	-73.54	-30.8	0
5500	3.701	294.497	5497.28	36.19	-79.42	-33.26	0
5600	3.701	294.497	5597.07	38.86	-85.29	-35.72	0
5700	3.701	294.497	5696.87	41.54	-91.16	-38.18	0
5800	3.701	294.497	5796.66	44.22	-97.04	-40.64	0
5900	3.701	294.497	5896.45	46.89	-102.91	-43.1	0
6000	3.701	294.497	5996.24	49.57	-108.79	-45.56	0
6100	3.701	294.497	6096.03	52.25	-114.66	-48.02	0
6200	3.701	294.497	6195.82	54.92	-120.53	-50.48	0
6300	3.701	294.497	6295.61	57.6	-126.41	-52.94	0
6400	3.701	294.497	6395.41	60.28	-132.28	-55.4	0
6500	3.701	294.497	6495.2	62.95	-138.16	-57.86	0
6600	3.701	294.497	6594.99	65.63	-144.03	-60.32	0
6700	3.701	294.497	6694.78	68.31	-149.9	-62.78	0
6800	3.701	294.497	6794.57	70.98	-155.78	-65.24	0
6900	3.701	294.497	6894.36	73.66	-161.65	-67.7	0
7000	3.701	294.497	6994.16	76.34	-167.52	-70.16	0
7100	3.701	294.497	7093.95	79.01	-173.4	-72.62	0
7200	3.701	294.497	7193.74	81.69	-179.27	-75.08	0
7300	3.701	294.497	7293.53	84.36	-185.15	-77.54	0
7400	3.701	294.497	7393.32	87.04	-191.02	-80	0
7500	3.701	294.497	7493.11	89.72	-196.89	-82.46	0
7600	3.701	294.497	7592.9	92.39	-202.77	-84.92	0
7700	3.701	294.497	7692.7	95.07	-208.64	-87.39	0
7800	3.701	294.497	7792.49	97.75	-214.52	-89.85	0

7900	3.701	294.497	7892.28	100.42	-220.39	-92.31	0
8000	3.701	294.497	7992.07	103.1	-226.26	-94.77	0
8100	3.701	294.497	8091.86	105.78	-232.14	-97.23	0
8200	3.701	294.497	8191.65	108.45	-238.01	-99.69	0
8300	3.701	294.497	8291.44	111.13	-243.89	-102.15	0
8400	3.701	294.497	8391.24	113.81	-249.76	-104.61	0
8500	3.701	294.497	8491.03	116.48	-255.63	-107.07	0
8600	3.701	294.497	8590.82	119.16	-261.51	-109.53	0
8700	3.701	294.497	8690.61	121.84	-267.38	-111.99	0
8800	3.701	294.497	8790.4	124.51	-273.26	-114.45	0
8900	3.701	294.497	8890.19	127.19	-279.13	-116.91	0
9000	3.701	294.497	8989.98	129.87	-285	-119.37	0
9100	3.701	294.497	9089.78	132.54	-290.88	-121.83	0
9200	3.701	294.497	9189.57	135.22	-296.75	-124.29	0
9300	3.701	294.497	9289.36	137.9	-302.62	-126.75	0
9400	3.701	294.497	9389.15	140.57	-308.5	-129.21	0
9500	3.701	294.497	9488.94	143.25	-314.37	-131.67	0
9600	3.701	294.497	9588.73	145.93	-320.25	-134.13	0
9700	3.701	294.497	9688.52	148.6	-326.12	-136.59	0
9800	3.701	294.497	9788.32	151.28	-331.99	-139.05	0
9900	3.701	294.497	9888.11	153.95	-337.87	-141.51	0
10000	3.701	294.497	9987.9	156.63	-343.74	-143.97	0
10100	3.701	294.497	10087.69	159.31	-349.62	-146.43	0
10200	3.701	294.497	10187.48	161.98	-355.49	-148.89	0
10300	3.701	294.497	10287.27	164.66	-361.36	-151.35	0
10400	3.701	294.497	10387.06	167.34	-367.24	-153.81	0
10500	3.701	294.497	10486.86	170.01	-373.11	-156.27	0
10600	3.701	294.497	10586.65	172.69	-378.99	-158.73	0
10700	3.701	294.497	10686.44	175.37	-384.86	-161.19	0
10800	3.701	294.497	10786.23	178.04	-390.73	-163.65	0
10900	3.701	294.497	10886.02	180.72	-396.61	-166.11	0
11000	2.748	294.497	10985.84	183.18	-402	-168.37	0.95
11100	1.248	294.497	11085.78	184.62	-405.17	-169.7	1.5
11200	0	0	11185.77	185	-406	-170.04	1.25
11300	0	0	11285.77	185	-406	-170.04	0
11400	0	0	11385.77	185	-406	-170.04	0
11500	0	0	11485.77	185	-406	-170.04	0
11600	6.673	179.847	11585.62	181.12	-405.99	-166.16	6.67
11700	16.673	179.847	11683.43	160.91	-405.94	-145.97	10
11800	26.673	179.847	11776.24	124.03	-405.84	-109.12	10
11900	36.673	179.847	11861.24	71.59	-405.7	-56.72	10
12000	46.673	179.847	11935.84	5.18	-405.52	9.64	10
12100	56.673	179.847	11997.78	-73.17	-405.31	87.93	10
12200	66.673	179.847	12045.17	-161.08	-405.08	175.77	10
12300	76.673	179.847	12076.57	-255.89	-404.82	270.51	10
12400	86.673	179.847	12091.03	-354.71	-404.56	369.25	10
12500	90	179.847	12092	-454.69	-404.29	469.16	3.33

12600	90	179.847	12092	-554.69	-404.02	569.08	0
12700	90	179.847	12092	-654.69	-403.76	669	0
12800	90	179.847	12092	-754.69	-403.49	768.92	0
12900	90	179.847	12092	-854.69	-403.22	868.85	0
13000	90	179.847	12092	-954.69	-402.95	968.77	0
13100	90	179.847	12092	-1054.69	-402.69	1068.69	0
13200	90	179.847	12092	-1154.69	-402.42	1168.62	0
13300	90	179.847	12092	-1254.69	-402.15	1268.54	0
13400	90	179.847	12092	-1354.69	-401.89	1368.46	0
13500	90	179.847	12092	-1454.69	-401.62	1468.39	0
13600	90	179.847	12092	-1554.68	-401.35	1568.31	0
13700	90	179.847	12092	-1654.68	-401.08	1668.23	0
13800	90	179.847	12092	-1754.68	-400.82	1768.16	0
13900	90	179.847	12092	-1854.68	-400.55	1868.08	0
14000	90	179.847	12092	-1954.68	-400.28	1968	0
14100	90	179.847	12092	-2054.68	-400.01	2067.93	0
14200	90	179.847	12092	-2154.68	-399.75	2167.85	0
14300	90	179.847	12092	-2254.68	-399.48	2267.77	0
14400	90	179.847	12092	-2354.68	-399.21	2367.69	0
14500	90	179.847	12092	-2454.68	-398.95	2467.62	0
14600	90	179.847	12092	-2554.68	-398.68	2567.54	0
14700	90	179.847	12092	-2654.68	-398.41	2667.46	0
14800	90	179.847	12092	-2754.68	-398.14	2767.39	0
14900	90	179.847	12092	-2854.68	-397.88	2867.31	0
15000	90	179.847	12092	-2954.68	-397.61	2967.23	0
15100	90	179.847	12092	-3054.68	-397.34	3067.16	0
15200	90	179.847	12092	-3154.68	-397.07	3167.08	0
15300	90	179.847	12092	-3254.68	-396.81	3267	0
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15500	90	179.847	12092	-3454.68	-396.27	3466.85	0
15600	90	179.847	12092	-3554.68	-396.01	3566.77	0
15700	90	179.847	12092	-3654.68	-395.74	3666.7	0
15800	90	179.847	12092	-3754.68	-395.47	3766.62	0
15900	90	179.847	12092	-3854.68	-395.2	3866.54	0
16000	90	179.847	12092	-3954.68	-394.94	3966.46	0
16100	90	179.847	12092	-4054.68	-394.67	4066.39	0
16200	90	179.847	12092	-4154.68	-394.4	4166.31	0
16300	90	179.847	12092	-4254.68	-394.13	4266.23	0
16400	90	179.847	12092	-4354.67	-393.87	4366.16	0
16500	90	179.847	12092	-4454.67	-393.6	4466.08	0
16600	90	179.847	12092	-4554.67	-393.33	4566	0
16700	90	179.847	12092	-4654.67	-393.07	4665.93	0
16800	90	179.847	12092	-4754.67	-392.8	4765.85	0
16900	90	179.847	12092	-4854.67	-392.53	4865.77	0
17000	90	179.847	12092	-4954.67	-392.26	4965.7	0
17100	90	179.847	12092	-5054.67	-392	5065.62	0
17200	90	179.847	12092	-5154.67	-391.73	5165.54	0

17300	90	179.847	12092	-5254.67	-391.46	5265.47	0
17400	90	179.847	12092	-5354.67	-391.19	5365.39	0
17500	90	179.847	12092	-5454.67	-390.93	5465.31	0
17600	90	179.847	12092	-5554.67	-390.66	5565.23	0
17700	90	179.847	12092	-5654.67	-390.39	5665.16	0
17800	90	179.847	12092	-5754.67	-390.13	5765.08	0
17900	90	179.847	12092	-5854.67	-389.86	5865	0
18000	90	179.847	12092	-5954.67	-389.59	5964.93	0
18100	90	179.847	12092	-6054.67	-389.32	6064.85	0
18200	90	179.847	12092	-6154.67	-389.06	6164.77	0
18300	90	179.847	12092	-6254.67	-388.79	6264.7	0
18400	90	179.847	12092	-6354.67	-388.52	6364.62	0
18500	90	179.847	12092	-6454.67	-388.26	6464.54	0
18600	90	179.847	12092	-6554.67	-387.99	6564.47	0
18700	90	179.847	12092	-6654.67	-387.72	6664.39	0
18800	90	179.847	12092	-6754.67	-387.45	6764.31	0
18900	90	179.847	12092	-6854.67	-387.19	6864.24	0
19000	90	179.847	12092	-6954.67	-386.92	6964.16	0
19100	90	179.847	12092	-7054.67	-386.65	7064.08	0
19200	90	179.847	12092	-7154.66	-386.38	7164	0
19300	90	179.847	12092	-7254.66	-386.12	7263.93	0
19400	90	179.847	12092	-7354.66	-385.85	7363.85	0
19500	90	179.847	12092	-7454.66	-385.58	7463.77	0
19600	90	179.847	12092	-7554.66	-385.32	7563.7	0
19700	90	179.847	12092	-7654.66	-385.05	7663.62	0
19800	90	179.847	12092	-7754.66	-384.78	7763.54	0
19900	90	179.847	12092	-7854.66	-384.51	7863.47	0
20000	90	179.847	12092	-7954.66	-384.25	7963.39	0
20100	90	179.847	12092	-8054.66	-383.98	8063.31	0
20200	90	179.847	12092	-8154.66	-383.71	8163.24	0
20300	90	179.847	12092	-8254.66	-383.44	8263.16	0
20400	90	179.847	12092	-8354.66	-383.18	8363.08	0
20500	90	179.847	12092	-8454.66	-382.91	8463.01	0
20600	90	179.847	12092	-8554.66	-382.64	8562.93	0
20700	90	179.847	12092	-8654.66	-382.38	8662.85	0
20800	90	179.847	12092	-8754.66	-382.11	8762.77	0
20900	90	179.847	12092	-8854.66	-381.84	8862.7	0
21000	90	179.847	12092	-8954.66	-381.57	8962.62	0
21100	90	179.847	12092	-9054.66	-381.31	9062.54	0
21200	90	179.847	12092	-9154.66	-381.04	9162.47	0
21300	90	179.847	12092	-9254.66	-380.77	9262.39	0
21400	90	179.847	12092	-9354.66	-380.5	9362.31	0
21500	90	179.847	12092	-9454.66	-380.24	9462.24	0
21600	90	179.847	12092	-9554.66	-379.97	9562.16	0
21700	90	179.847	12092	-9654.66	-379.7	9662.08	0
21800	90	179.847	12092	-9754.66	-379.44	9762.01	0
21900	90	179.847	12092	-9854.66	-379.17	9861.93	0

22000	90	179.847	12092	-9954.65	-378.9	9961.85	0
22100	90	179.847	12092	-10054.7	-378.63	10061.78	0
22200	90	179.847	12092	-10154.7	-378.37	10161.7	0
22300	90	179.847	12092	-10254.7	-378.1	10261.62	0
22381.87	90	179.847	12092	-10336.5	-377.88	10343.43	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 182.094° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.

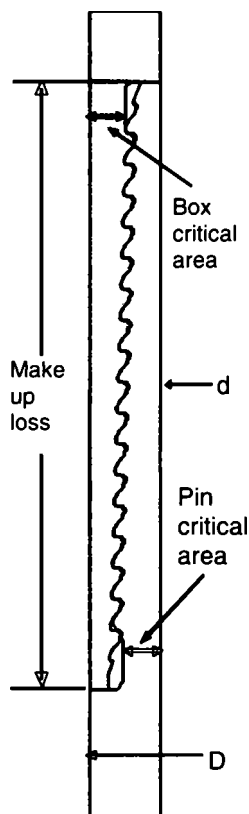
Central meridian is -104.333°.

Grid Convergence at Surface is 0.303°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 22381.87ft.,
the Bottom Hole Displacement is 10343.43ft., in the Direction of 182.094° (Grid).

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FLUSHMAX-III



Geometry

Imperial

S.I.

Pipe Body

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

Connection

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

Performance Properties for Pipe Body

M.I.Y.P.	9,470	psi	65.31	MPa
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Note S.M.Y.S.= Specified Minimum YIELD Strength of Pipe body
M.I.Y.P. = Minimum Internal Yield Pressure of Pipe body

Performance Properties for Connection

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

Recommended Torque

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

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

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Statements regarding the suitability of products for certain types of applications are based on Metal One's knowledge of typical requirements that are often placed on Metal One products in standard well configurations. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application.

The products described in this Connection Data Sheet are not recommended for use in deep water offshore applications. For more information, please refer to http://www.m1o.co.jp/mo-con/images/top/WebsiteTerms_Active_20333287_1.pdf the contents of which are incorporated by reference into this Connection Data Sheet.



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.

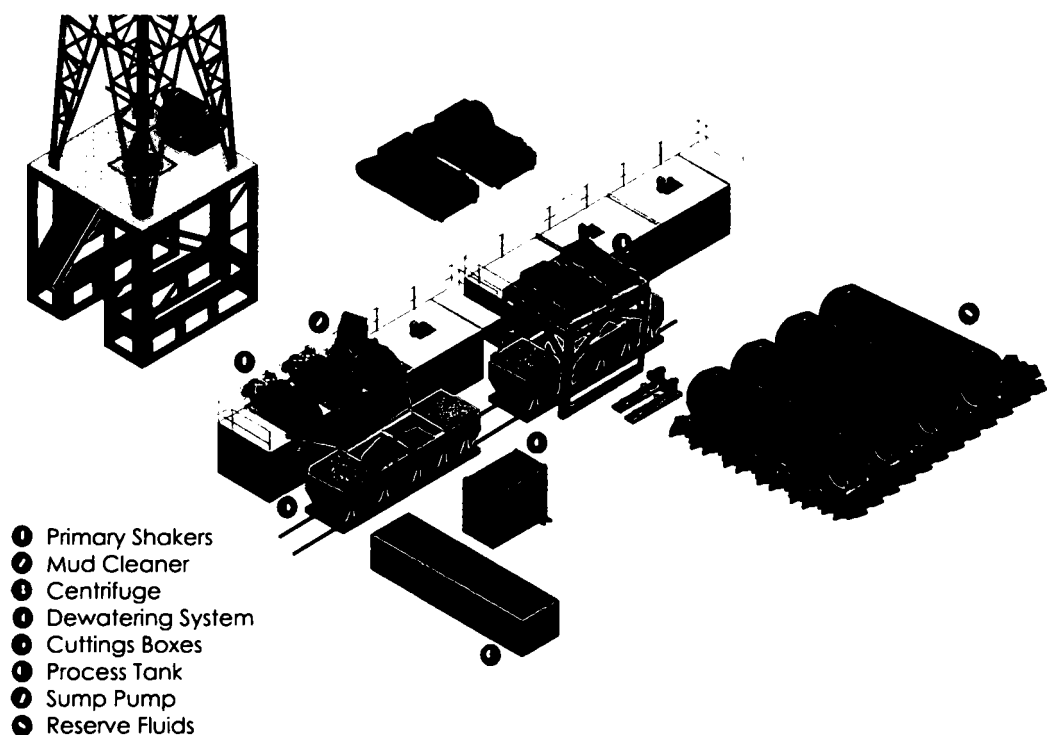
II. Operations and Maintenance Plan

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.



Closed Loop Schematic



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

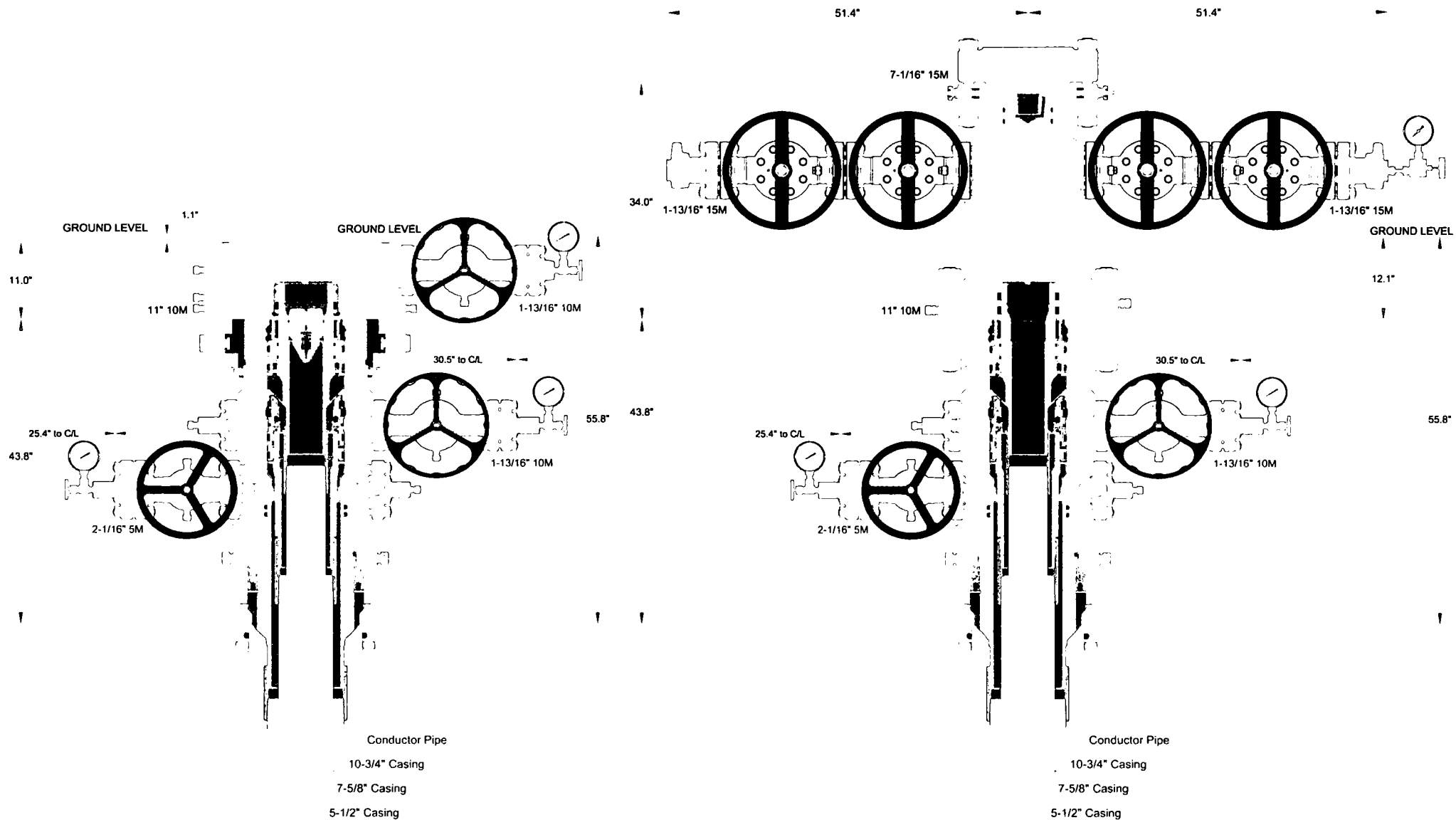
dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

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.



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ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC

DEVON ENERGY CORPORATION

10-3/4" x 7-5/8" x 5-1/2" 5M MBU-T-CFL-R-DBLO Wellhead System
 With 7-5/8" & 5-1/2" Pin Down Rotating Mandrel Hangers,
 13-5/8" 5M x 11" 10M DSPA & 11" 10M x 7-1/16" 15M Tubing Head

DLE 20NOV18

ODE0001804



Quotation

Quote Number : ODE0001804

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

Date: 10/19/2018

Valid For 30 Days

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Bill To: 7323

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

Ship To: 0

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

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

DELAWARE BASIN

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

QUOTATION SUMMARY:

- MBU-T ASSEMBLY - \$24,148.80
- MANDREL HANGERS & PACKOFFS - \$18,231.00
- TUBING HEAD ASSEMBLY - \$28,243.20
- RENTAL TOOLS = \$4,075.00 PER WELL FOR THE FIRST 45 DAYS; \$220.00 PER DAY THEREAFTER

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

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



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



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

CASING HANGERS & PACKOFFS

24	120272 CSGHGR,CW,MBU-LR2-TP6,FLUTED,11 X 7-5/8 (29.7#) BC PIN BTM X 7.750-4 STUB ACME-2G RIGHT HAND BOX TOP,6A-U-AA-1-1	1.00	5,955.00	5,955.00
25	108908T PACKOFF,CW,MBU-LR,MANDREL,11 10M NOM,W/7.500-4 STUB ACME-2G LH BOX TOP,A/F LANDING HGR NECK,6A-U-AA-1-1	1.00	3,600.00	3,600.00
26	121451 CSGHGR,CW,MBU-LR-UPR-TP8,SN,FLUTED,7-5/8,11 X 5-1/2 (20#) VAM TOP HT PIN BTM X 6.125 4 STUB ACME-2G RIGHT HAND BOX TOP,W/5 HBPV THD,SPEC FOR ROTATING CASING STRING,,6A-U-AA-1-2	1.00	6,876.00	6,876.00
27	120079 PACKOFF,CW,CTF-MBU-3T,11,A/F 7.75 SEAL PREP,W/8.750-4 STUB ACME-2G LH BOX TOP,10000 PSI MAX WP,A/F LANDING ON 45 DEG SHOULDER ON HANGER,6A-U-AA-2-2	1.00	1,800.00	1,800.00
28	BPV5T BPV,H,5 ONE WAY,4130,HYDRO TESTED & API 6A MONOGRAM	0.00	2,950.00	0.00

NOTE:
OPTIONAL SALE ITEM; PRICE NOT INCLUDED IN TOTAL
OPTIONAL RENTAL RATE = \$90.00 PER DAY

18,231.00

RENTAL TOOLS

29	RNM MBU-T RENTAL TOOLS = \$4,075.00 PER WELL FOR THE FIRST 45 DAYS; \$220.00 PER DAY THEREAFTER.	1.00	4,075.00	4,075.00
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RENTAL TOOLS INCLUDE THE FOLLOWING ITEMS:

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

PN 120868: RUN TOOL,CW,CSGHGR,MBU-T-CFL-10-7/8,11.250-4 STUB ACME-2G LH BOX BTM X 10-3/4 BC BOX



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	Quantity	Price	Ext Price
TOP,W/10.00 MIN BORE,MAX LOAD CAPACITY 1500K (\$200.00; \$10.00)			
PN 117695: TORQUE COLLAR,CW,CSGHGR,CFL,F/13-3/8 NECK,4140 110K (\$100.00; \$5.00)			
PN 800001: COMB TEST PLUG/RET TOOL,CW,11 X 4-1/2 IF (NC50) BOX BTM & TOP,W/1-1/4 LP BYPASS & SPRING LOADED DOGS (\$250.00; \$15.00)			
PN 102332: WBUSH,CW,MBU-LR,LWR,11 X 10.00 ID X 25.00 LG (\$250.00; \$15.00)			
PN 120274: RUN TOOL,CW,CSGHGR,TP6,7.750-4 STUB ACME-2G RIGHT HAND PIN BTM X 7-5/8 BC BOX TOP,W/6.535 MIN BORE & MAXIMUM TORQUE 25000 LBS-FT SPEC FOR ROTATING CASING STRING (\$575.00;\$30.00)			
PN 117945: TORQUE COLLAR,CW,F/USE W RUN TOOL,TP,7.750-4 STUB ACME-2G RIGHT HAND PIN BTM AND A/F 9.00 OD X 5.00 LG BOX CSGHGR NECK,MAXIMUM TORQUE 25000 LBF-FT (\$200.00; \$10.00)			
PN 103066: WASH TOOL,CW,CSGHGR,MBU-LR/MBS(2),FLUTED,11 X 4-1/2 IF (NC50) BOX TOP THDS,FAB (\$400.00; \$20.00)			
PN 102479: RUN TOOL,CW,PACKOFF,MBU-LR-LWR,11 X 4-1/2 IF (NC50) BTM & TOP,W/7.500-4 STUB ACME-2G LH PIN BTM (\$300.00; \$15.00)			
PN 102172: WBUSH,CW,CTH/MBS2-UPR,11 X 7.0 ID X 13.5 LG (\$250.00; \$15.00)			
PN 118739: RUN TOOL,CW,CSGHGR,TP8,6.125-4 STUB ACME-2G RIGHT HAND PIN BTM X 5-1/2 (20#) VAM TOP HT BOX TOP,W/4.696 MIN BORE & MAX LOAD CAPACITY 500K,MAX TORQUE 23000 FT-LBS,SPEC FOR ROTATING CASING STRING,4140 110K (\$550.00; \$30.00)			
PN 103164: WASH TOOL,CW,CSGHGR,MBU-2LR/MBS2-R (3T),FLUTED,11 X 4-1/2 IF (NC50) BOX TOP THDS,FAB (\$250.00; \$15.00)			
PN 115167: RUN TOOL,CW,PACKOFF,CTF-SN,7-5/8,W/8.750-4 STUB ACME-2G LEFT HAND PIN BTM X 4-1/2 IF (NC50) BOX TOP,W/BALL BEARINGS (\$275.00; \$15.00)			
PN 102045: RUN TOOL,PACKOFF,CW,CTF,11 X 4-1/2 IF (NC50),W/5 HBPV MALE THD (\$275.00; \$15.00)			
NOTE: CUSTOMER RESPONSIBLE FOR REPAIRS AND LOST, DAMAGED, OR BEYOND REPAIR TOOLS. RENTAL CHARGES MAY NOT BE APPLIED TO THE PURCHASE PRICE OF EQUIPMENT.			
30	RNM	Rental Charge Minimum	0.00 1,500.00 0.00
11 10M TA CAP RENTAL = \$1,500.00 PER WELL FOR THE FIRST 45 DAYS; \$65.00 PER DAY THEREAFTER.			

RENTAL CONSISTS OF THE FOLLOWING ITEMS:

PN 121517: TA CAP,CW,DBLHPS,7-5/8,11 10M FLG,W/2 LP OUTLET,F/5.75 CUTOFF,5000 PSI MAX WP,6A-PU-EE-NL-1-I

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



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		Quantity	Price	Ext Price
				4,075.00
	TUBING HEAD ASSEMBLY			
31	123779	1.00	13,374.00	13,374.00
	TBGHD,CW,CTH-DBLHPS-SB,7-5/8,11 10M X 7-1/16 15M,W/2 1-13/16 15M FP,ACME VR THD,5.13 MIN BORE & 17-4PH LDS,34.0 LG,RND BAR,6A-PU-EE-0,5-1-2			
32	104700	4.00	3,015.00	12,060.00
	VLV,DSG-22,1-13/16 15M FE EE-0,5 (6A PU EE-0,5 PSL3 PR1),QPQ TRIM			
33	100203	2.00	550.00	1,100.00
	ADPT,TS,FH,1-13/16 15M X 2 FIG 1502 X 9/16 AUTOCLAVE,NON-NACE (INCLUDES SEAL RING) FH25099462-3			
34	100048	1.00	34.55	34.55
	FTG,GRS,VENTED CAP,1/2 NPT,4140 -50F W/ELECTROLESS NICKEL COATING NACE,K-MONEL BALL,INCONEL X-750 SPRING			
35	BX151	6.00	6.26	37.56
	RING GASKET,BX151,1-13/16 10/15/20M			
36	105477	32.00	3.99	127.68
	STUD,ALL-THD W/2 NUTS,BLK,7/8-9UNC X 6,A193 GR B7/A194 GR 2H,NO PLATING			
37	BX158	1.00	91.35	91.35
	RING GASKET,BX158,11 10/15/20M			
38	780083	16.00	42.00	672.00
	STUD,ALL-THD W/2 NUTS,BLK,1-3/4-8UN X 15-1/4,A193 GR B7/A194 GR 2H,NO PLATING			
39	810023	1.00	422.53	422.53
	NEEDLE VALVE,2 WAY ANGLE,9/16,20KSI,SOUR SERVICE,W/O COLLARS & GLANDS			
40	106012	1.00	93.49	93.49
	ADPT,AUTOCLAVE,HIGH PRESSURE, 9/16 MALE TO 9/16 MALE,316SS			
41	PG15M	1.00	230.04	230.04
	PRESSURE GAUGE,15M,9/16 AUTOCLAVE,LIQUID FILLED			
				28,243.20
	CONTINGENCY EQUIPMENT			
	EMERGENCY EQUIPMENT; INVOICED AS REQUIRED			
42	102470	0.00	3,325.00	0.00
	CSGHGR,CW,MBU-LR,11 X 7-5/8,6A-PU-DD-3-1			
43	102472	0.00	6,170.00	0.00
	PACKOFF,CW,MBU-LR,EMERG,11 10M X 7-5/8,W/7.500-4 STUB ACME-2G LH BOX TOP,6A-U-AA-1-1			
44	102474	0.00	6,135.00	0.00
	CSGHGR,CW,MBU-LR,UPR,11 X 5-1/2,6A-PU-DD-3-1			
45	115873	0.00	5,550.00	0.00
	PACKOFF,CW,CTF-SN,7-5/8,11 X 5-1/2,EMERG,W/5 HBPV BOX THD & 4.93 MIN BORE,10000 PSI MAX WP,4140 80K,6A-U-DD-NL-2-2 (REF115873)			



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Quantity	Price	Ext Price
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NOTE: MUST USE RX RING GASKET

0.00

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For Acceptance of this Quotation
Please Contact Ph: 713-626-8800
sales@cactuswellhead.com

Matl:	70,623.00
Labor:	0.00
Misc:	4,075.00
Sales Tax:	0.00
Total:	74,698.00



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CACTUS WELLHEAD, LLC PURCHASE TERMS AND CONDITIONS

1. **ACCEPTANCE:** Acceptance of Cactus Wellhead, LLC (herein: Company) Purchase Terms and Conditions (herein: CACTUS Purchase Terms) shall be deemed effective upon shipment of the goods and/or rendering of services which are the subject of an order by Customer (defined as the party purchasing CACTUS goods and/or services referred on the invoice). Any proposal made by Customer for additional or different terms and conditions or any attempt by Purchaser to vary in any degree any of the terms and conditions of CACTUS Purchase Terms is hereby rejected. **TO THE EXTENT A PART OF A PROVISION EXCLUSIVELY APPLIES TO GOODS OR SERVICES AND THESE TERMS DOES NOT REQUEST OR CONTEMPLATE SUCH, THE PROVISION DOES NOT APPLY.**
2. **Pricing:** Each Product and Service shall be invoiced at (and Customer shall pay) the respective price shown on the reverse side hereof, or if no price is shown on the reverse side hereof, at the price shown in the current price list of Company. In addition, Customer shall pay any and all additional charges for mileage, transportation, freight, packing and other related charges, as well as any federal, state or local tax, excise, or charge applicable on the sale, transportation, or use of Products and Services, unless otherwise specified.
3. **Terms of Payment:** Customer agrees to pay Company any and all payments due on or before thirty (30) days from invoice date at the designated address of Company. Amounts unpaid after such thirty (30) day period shall bear interest at the lesser of (i) one and one-half percent (1½%) per month or (ii) the maximum rate allowed by law. Customer shall also pay any and all of Company's attorney's fees and court costs if any amounts hereunder are collected by an attorney or through legal proceedings. Company reserves the right, among other remedies, either to terminate this agreement or to suspend further deliveries upon failure of Customer to make any payment as provided herein.
4. **Limited Warranty.** COMPANY MAKES NO WARRANTY, EXPRESSED OR IMPLIED, AS TO THE MERCHANTABILITY, FITNESS FOR PURPOSE, DESCRIPTION, QUALITY, PRODUCTIVENESS, ACCURACY OR ANY OTHER MATTER WITH RESPECT TO PRODUCTS OR SERVICES. ALL SUCH WARRANTIES BEING HEREBY SPECIFICALLY AND EXPRESSLY DISCLAIMED BY COMPANY. COMPANY MAY OFFER TECHNICAL ADVICE OR ASSISTANCE WITH REGARD TO THE PRODUCTS AND SERVICES BASED ON LABORATORY AND/OR FIELD EXPERIENCE AND CUSTOMER UNDERSTANDS AND AGREES THAT SUCH ADVICE REPRESENTS ONLY GOOD FAITH OPINIONS AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE. THE SOLE AND EXPRESS WARRANTY PROVIDED BY COMPANY IS TO WARRANT THAT THE PRODUCTS SOLD AS LISTED ON THE REVERSE SIDE HEREOF COMPLIES WITH COMPANY'S SOLE SPECIFICATION AT THE DATE AND TIME OF MANUFACTURE. COMPANY MAKES NO WARRANTY THAT SUCH PRODUCTS SHALL MEET SUCH SPECIFICATION AT ANY TIME AFTER SHIPMENT OF PRODUCTS. USE OF SUCH PRODUCTS IS SPECIFICALLY NOT WARRANTED.
5. **Remedy.** The exclusive remedy for this warranty for products shall be limited to, in Company's sole discretion and judgment, the replacement of defective part(s), F.O.B. Company's plant (transportation, redesign, dismantling, disposal of material and installation are not included and shall be borne and paid for by Customer), or repair of defective part(s). The exclusive remedy for this warranty for service shall be limited to, in Company's sole discretion and judgment, the repeat of services performed. F.O.B. Company's plant (transportation, redesign, dismantling, disposal of material and installation are not included and shall be borne and paid for by Customer). Any such repeat of services or replacement or repair of goods shall not include any materials not sold by Company hereunder, and specifically excludes any obligation by Company related to other property of the Customer or any property of third parties. Provided, however, Company may in its sole discretion, decide to instead give Customer credit memorandum for the amounts already paid by Customer to Company for such product or service. **IN ANY EVENT AND NOTWITHSTANDING THE LANGUAGE TO THE CONTRARY HEREIN, CUSTOMER ACKNOWLEDGES THAT ANY CLAIM IT MAY HAVE ARISING OUT OF OR IN CONNECTION WITH ANY ORIGINAL PRODUCTS AND SERVICES, ANY REPLACEMENT PRODUCTS OR REPEAT OF SERVICES AND THESE TERMS AND CONDITIONS SHALL BE LIMITED TO AND NOT EXCEED THE AMOUNT CUSTOMER HAS ACTUALLY PAID TO COMPANY FOR SUCH PRODUCTS AND/OR SERVICES PURSUANT HERETO.** If Customer fails to make any such claim within thirty (30) days after completion of Service or delivery of Product, Customer hereby waives (to the extent permitted by applicable law) any and all claims it may or does have with respect to such Products and Services. Unless Customer is an authorized reseller of Company, Company's liability in connection with Products and Services shall extend only to Customer. CUSTOMER HEREBY INDEMNIFIES AND HOLDS COMPANY (AND ITS AGENTS, REPRESENTATIVES, OFFICERS DIRECTORS AND EMPLOYEES) HARMLESS FOR ANY LOSS, EXPENSE OR DAMAGE (WHETHER OF CUSTOMER OR OF ANY THIRD PARTY) ARISING FROM OR IN CONNECTION WITH PRODUCTS AND SERVICES, INCLUDING WITHOUT LIMITATION ANY FAILURE OF SUCH PRODUCTS AND SERVICES TO CONFORM TO CUSTOMER'S ORDER OR SPECIFICATION OR ANY OTHER STANDARD, OR ANY NEGLIGENCE OR BREACH OF WARRANTY BY COMPANY WITH RESPECT TO ANYTHING DONE OR FAILED TO HAVE BEEN DONE BY COMPANY, IF AND TO THE EXTENT THAT SUCH LOSS, EXPENSE OR DAMAGE EXCEEDS THE AMOUNT CUSTOMER HAS ACTUALLY PAID COMPANY PURSUANT HERETO FOR SUCH PRODUCTS OR SERVICES.
6. **Inspection.** The results of any inspection or testing reported by the Company to Customer represents only good faith opinions and are not to be construed as warranties or guarantees of the quality, classification, merchantability, fitness for purpose, condition, or liability of any equipment or material that has been inspected or tested by the Company.
7. **Insurance.** Each party agrees to maintain comprehensive general liability insurance in the amount of \$1,000,000 each occurrence, \$2,000,000 general aggregate, and Workers Compensation insurance per statutory requirements providing coverage for the indemnity obligations in this agreement. The Company (and such of its affiliates as it shall designate) including their officers, directors, members, shareholders, partners, joint ventures, employees, agents and representatives shall be named as additional insureds under the policies of Customer on a primary basis to the extent of its indemnification obligations set forth in these Terms and Conditions, and the policies shall also provide a waiver of subrogation rights in favor of the Company (and such of its affiliates as it shall designate) and their officers, directors, members, shareholders, employees, agents and representatives. The provisions of this Section 6 shall apply and the obligation to maintain insurance of each party in the coverages and amounts set forth herein shall remain in force regardless and independent of the validity or enforceability of the indemnity provisions of Section 7, below; the obligation to obtain insurance is a separate and independent obligation. If the insurance required herein is more or less than allowed by prevailing law, the indemnity obligations in Section 7 below shall be effective only to the maximum extent permitted under applicable law.
8. **Indemnification.** The following indemnifications and releases of liability will apply to any goods or Services provided under this contract. **COMPANY AND CUSTOMER EXPRESSLY AGREE THAT, TO THE EXTENT REQUIRED BY APPLICABLE LAW TO BE EFFECTIVE, THE INDEMNITIES AND DISCLAIMERS OF WARRANTIES CONTAINED HEREIN ARE "CONSPICUOUS."**
 - A. **Customer Indemnity Obligations.** Customer hereby releases Company from any liability for, and shall protect, defend, indemnify, and hold harmless Company, its parents, affiliates, subsidiaries, partners, joint owners, joint ventures, and its contractors and subcontractors of any tier, and the officers, directors, agents, representatives, employees, insurers, and consultants (specifically excluding any member of Customer Group) of all of the foregoing, and its and their respective successors, heirs and assigns ("Company Group") from and against all costs (including the payment of reasonable attorneys' fees), losses, liabilities, demands, causes of action, damages, or claims of every type and character ("Claims"), arising out of or resulting from or related, directly or indirectly, to (i) injury to, illness or death of Customer its parents, affiliates, subsidiaries, partners, joint owners, joint ventures, and its contractors and subcontractors of any tier, and the officers, directors, agents, representatives, employees, customers, insurers, invitees and consultants of all of the foregoing, and its and their respective successors, heirs and assigns ("Customer Group"), or (ii) loss of or damage to any property of any member of Customer Group, REGARDLESS OF THE CAUSE OF SUCH CLAIMS, INCLUDING THE NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.
 - B. **Company Indemnity Obligations.** Company hereby releases Customer from any liability for, and shall protect, defend, indemnify, and hold harmless Customer from and against all Claims arising out of or resulting from or related, directly or indirectly, to (i) injury to, illness or death of any member of Company Group, or (ii) loss of or damage to any property of any member of Company Group, REGARDLESS OF THE CAUSE OF SUCH CLAIMS, INCLUDING THE NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF CUSTOMER GROUP.
 - C. **Third Party Claims.** Notwithstanding the foregoing, to the extent of its negligence, Company and Customer shall each indemnify, defend and hold harmless Claims, of every type and character, which are asserted by third parties for bodily injury, death or loss or destruction of property or interests in property in any manner caused by, directly or indirectly resulting from, incident to, connected with or arising out of the work to be performed, Services to be rendered or materials to be furnished by Customer. When personal injury, death or loss of or damage to property is the result of joint or concurrent negligence of Customer or Company, the indemnitor's duty of indemnification shall be in proportion to its allocable share of such negligence.
 - D. **Pollution.** Company agrees that it shall be totally responsible for, and shall protect, defend and indemnify, Customer for all losses, damages, claims, demands, costs, charges, and other expenses, including attorneys' fees, for any and all waste and/or hazardous substances which are in Company Group's exclusive possession and control and directly associated with Company Group's equipment and facilities, **EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF CUSTOMER GROUP.** Customer shall assume all responsibility for, including control and removal of, and shall protect, defend and indemnify Company Group from and against all Claims arising directly or indirectly from all other pollution or contamination which may occur during the conduct of operations hereunder, including, but not limited to, that which may result from fire, blowout, cratering, seepage or any other uncontrolled flow of oil, gas, water or other substance, **EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF COMPANY GROUP.**
 - E. **Wild Well.** Customer shall release Company Group of any liability for, and shall protect, defend and indemnify Company Group for any damages, expenses, losses, fines, penalties, costs, expert fees and attorneys' fees arising out of a fire, blow out, cratering, seepage or wild well, including regaining control thereof, debris removal and property restoration and remediation. **THIS INDEMNITY APPLIES EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.**
 - F. **Underground Damage.** Customer shall release Company Group of any liability for, and shall protect, defend and indemnify Company Group from and against any and all claims, liability and expenses resulting from operations related to the work under this agreement on account of injury to, destruction of, or loss or impairment of any property right in or to oil, gas or other mineral substance or water, if at the time of the act or omission causing such injury, destruction, loss or impairment said substance and not been reduced to physical possession above the surface of the earth, and for any loss or damage to any formation, strata, or reservoir beneath the surface of the earth. **THIS INDEMNITY APPLIES EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.**
 - G. **Compliance With Laws, Rules And Regulations.** Customer expressly agrees to comply with and abide by all of the laws of the United States and of the state in which goods are delivered or services are performed, including, but not limited to, OSHA, EPA and all rules and regulations now existing or that may be hereafter promulgated under and in accordance with any such law or laws, and Customer hereby agrees to indemnify and hold Company Group harmless from any and all claims, demands, or damages incurred by Company Group arising from Customer Group's failure to comply with all laws and governmental regulations.
 - H. The foregoing indemnities set forth in these Terms and Conditions are intended to be enforceable against the parties hereto in accordance with the express terms and scope hereof notwithstanding Texas' Express Negligence Rule or any similar directive that would prohibit or otherwise limit indemnities because of the negligence (whether sole, concurrent, active or passive, ordinary or gross) or other fault or strict liability of Company or Customer.
 - I. If a claim is asserted against one of the parties to this agreement which may give rise to a claim for indemnity against the other party hereto, the party against whom the claim is first asserted must notify the potential indemnitor in writing and give the potential indemnitor the right to defend or assist in the defense of the claim.
 7. **Risk Of Loss.** a. Title and risk of loss shall pass to Customer upon delivery as specified in Article 9. Customer's receipt of any material delivered hereunder shall be an unqualified acceptance of, and a waiver by Customer of any and all claims with respect to, such material unless Customer gives Company written notice of claim within thirty (30) days after such receipt. Notwithstanding the foregoing, installation or use of materials or equipment shall unequivocally constitute irrevocable acceptance of said materials. Customer assumes all risk and liability for the results obtained by the use of any material or products delivered



Quotation

Quote Number : ODE0001804

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

Date: 10/19/2018

Valid For 30 Days

Page 8 of 8

hereunder in work performed by on behalf of Customer or in combination with other substances or products. No claim of any kind, whether as to material delivered or for non-delivery of material, and whether or not based on negligence, shall be greater in amount than the purchase price of the material in respect of which such claim is made. In no event shall Company be liable for special, indirect or consequential damages, whether or not caused by or resulting from the negligence of Company. b. For services, Company shall not be liable for loss or deterioration of any equipment and material of Customer under Company's control or stored on Company's premises after Company has completed its work if such loss or deterioration results from atmospheric condition, Act of God or other occurrence not within the reasonable control of Company.

8. **Termination.** Company reserves the right to terminate the order at issue, or any part hereof, solely for its convenience at any time without cause with notice to Customer. Company shall have the right to cancel any unfiled order without notice to Customer in the event that Customer becomes insolvent, adjudicated bankrupt, petitions for or consents to any relief under any bankruptcy reorganization statute, violates a term of these Terms and Conditions, or is unable to meet its financial obligations in the normal course of business. In the event of such termination, Company shall immediately stop all work hereunder. Prior to delivery, Customer may terminate this order without cause upon thirty (30) day notice in writing to Company. In the event of such termination, Company at its sole option shall cease work up to thirty (30) days after such notice. Upon the cessation of work, Customer agrees to pay Company a reasonable termination charge consisting of a percentage of the invoice price, such percentage to reflect the value of the goods, services or work in progress completed upon the cessation of work. Customer shall also pay promptly to Company any costs incurred due to paying and settling claims of Company's vendors or subcontractors arising out of the termination of the order by Customer.

9. **Delivery.** Unless different terms are provided on the face of this order, all items are sold FOB Company's manufacturing facility in Bossier City, LA., and Customer shall bear the cost of transportation to any other named destination. Upon notification of Company of delivery, Customer shall become liable and shall bear all risk of loss associated with the goods at issues regardless of whether the goods are at a location controlled by Company and whether or not caused by the negligence of Company. In the case of Customer pick-up, the truck furnished by Customer is the destination and Company's obligations regarding shipments are fulfilled when the goods are loaded on the truck. Items to be shipped to any other destination outside of the United States are sold FOB port of shipment (Customer will deliver and bear the cost of transportation to the named port and will bear the cost of transportation thereafter to the final destination). The means of shipment and carrier to the point at which Company's liability for transportation costs ceases shall be chosen by Company. Excess packing, marking, shipping, and transportation charges resulting from compliance with Customer's request shall be for Customer's account. Unless otherwise agreed in writing, delivery time is not of the essence.

10. **Returns/Refund.** Within ninety (90) days of delivery, Customer has the option to return any non-defective goods (any goods found to be defective will be subject to the warranty and remedies expressed in paragraphs three (3) and four (4) above). Customer shall bear all costs of shipment and/or transportation for such return and risk of loss for the returned goods shall remain with Customer until re-delivered to Company's Yard. Customer shall receive a full refund for any returns, less a twenty percent (20%) restocking fee. Company at all times reserves the right to designate certain goods as non-refundable in Company's Sales Quote or Sales Order. In addition, any made-to-order, special order, and/or product manufactured to Customer specifications goods are NOT returnable.

11. **Delays.** If a specific shipping date is either not given or is estimated only, and is not promised on the face of this order or in a separate writing signed by Company, Company will not be responsible for delays in filling this order nor liable for any loss or damages resulting from such delays. If a specific shipping date is promised, Company will not be liable for delays resulting from causes beyond Company's control, including without limitation accidents to machinery, fire, flood, act of God or other casualty, vendor delays, labor disputes, labor shortages, lack of transportation facilities, priorities required by, requested by, or granted for the benefit of any governmental agency, or restrictions imposed by law or governmental regulation.

12. **Limitation Of Damages.** Notwithstanding any other provision contained herein, Company shall not be liable to Customer Group of any third party for consequential (whether direct or indirect damages), indirect, incidental, special or punitive damages, howsoever arising, including, but not limited to loss of profits (whether direct or indirect damages), revenues, production or business opportunities, WHETHER OR NOT SUCH LOSSES ARE THE RESULT IN WHOLE OR IN PART FROM THE NEGLIGENCE (WHETHER SOLE, JOINT, CONCURRENT OR COMPARATIVE, ACTIVE OR PASSIVE, ORDINARY OR GROSS) OF COMPANY GROUP, OR ANY DEFECT IN THE PREMISES, PRE-EXISTING CONDITIONS, PATENT OR LATENT, BREACH OF STATUTORY DUTY, STRICT LIABILITY OR ANY OTHER THEORY OF LEGAL LIABILITY OF COMPANY GROUP (EXCLUDING ONLY LOSSES CAUSED BY THE WILLFUL MISCONDUCT OF COMPANY GROUP).

13. **Security Interest.** Customer grants Company, and Company reserves, a security interest, covering all Customer's obligations under these terms (including any liability for breach of Customer's obligations), and applying to all of Customer's right, title, and interest in the Leased Equipment, together with all accessions thereto and any proceeds that may arise in connection with the sale or disposition thereof. Customer shall cooperate with Company in the filing of Financing Statements to perfect such security interest. Furthermore, Customer authorizes Company to execute and file Financing Statements without Customer's signature in any jurisdiction in which such procedure is authorized. Customer warrants, covenants and agrees that it will not, without prior written consent of Company, sell, contract to sell, lease, encumber, or dispose of the Leased Equipment or any interest in it until all obligations secured by this security interest have been fully satisfied.

14. **Patent And Intellectual Property.** Company Retains its Intellectual Property: The sale of any products hereunder does not convey any license by implication, estoppel or otherwise covering combinations of the products with other equipment data or programs. Company retains the copyright in all documents, catalogs and plans supplied to Customer pursuant to or ancillary to the contract. Unless otherwise agreed in writing, Customer shall obtain no interest in any tooling used in the production of any Company product.

15. **Taxes.** Unless otherwise specifically provided for herein, Customer shall be liable for all federal, state, or local taxes or import duties assessed by any governmental entity of any jurisdiction in connection with the goods or services furnished hereunder.

16. **Deceptive Trade Practices.** Customer acknowledges the application of Section 17.45(4) of the Texas Deceptive Trade Practices Act (Texas Business Commission Code §17.41 et. seq.) (the "Act") to any transaction contemplated hereby and represents that it is not a "consumer" for the purposes of the Act.

17. **No Waiver.** Failure to enforce any or all of the provisions in these Terms and Conditions in any particular instance shall not constitute or be deemed to constitute a waiver of or preclude subsequent enforcement of the same provision or any other provision of these Terms and Conditions. Should any provision of these Terms and Conditions be declared invalid or unenforceable all other provisions of these Terms and Conditions shall remain in full force and effect.

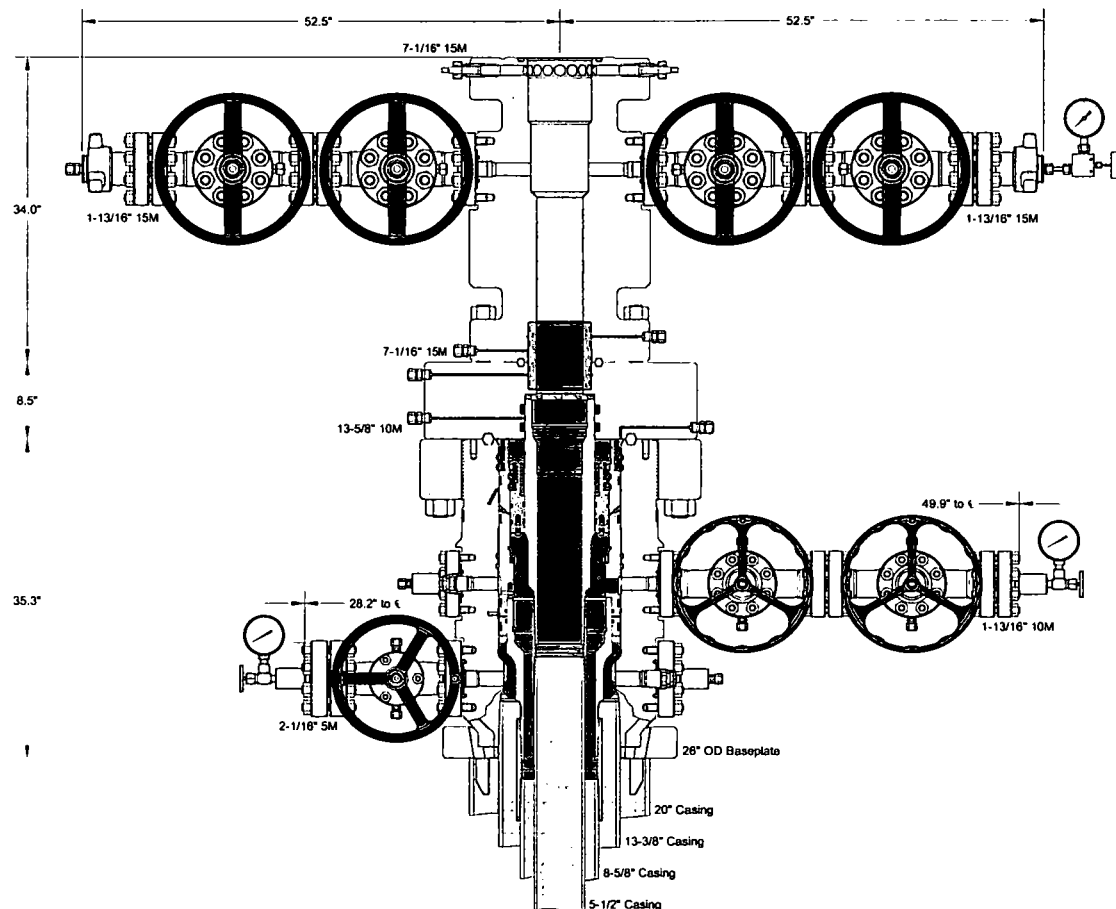
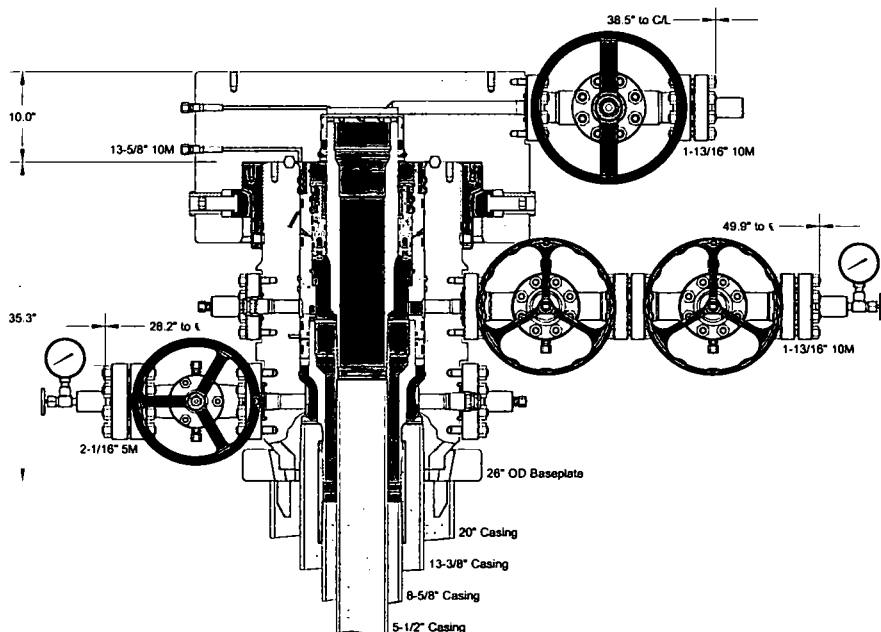
18. **Choice Of Law.** THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND SHALL BE PERFORMABLE IN HARRIS COUNTY, TEXAS, WITHOUT REGARD TO CONFLICTS OF LAW PRINCIPALS AND WAIVER OF SAME, EACH PARTY HERETO SUBMITS TO THE JURISDICTION OF THE COURTS OF THE STATE OF TEXAS IN HARRIS COUNTY, TEXAS AND THE FEDERAL COURTS IN AND FOR THE SOUTHERN DISTRICT OF TEXAS SITTING IN HOUSTON, TEXAS IN CONNECTION WITH ANY DISPUTE ARISING UNDER THIS AGREEMENT OR ANY DOCUMENT OR INSTRUMENT ENTERED INTO IN CONNECTION HERewith.

19. **Authority.** Customer warrants and represents that the individual receiving this order at issue on behalf of Customer has the authority to enter into these Terms and Conditions on behalf of Customer, and that upon receipt these Terms and Conditions shall be binding upon Customer.

20. **Force Majeure.** If Company is unable to carry out its obligations hereunder by reason of force majeure, then upon Company's giving of notice and reasonably full particulars of such force majeure in writing to Customer, Company's obligations that are affected by force majeure shall be suspended during the continuance of the force majeure and Company shall not be liable to Customer for any damages incurred by the Customer as a result thereof.

21. **Confidentiality.** Customer acknowledges the highly secret and valuable nature of all proprietary inventions, methods, processes, designs, know-how, and trade secrets embodied in the Company's equipment, products and services and its components (hereinafter referred to as "Confidential Data"). Accordingly, Customer agrees not to disclose or use any Confidential Data. Customer further agrees to take any and all necessary precautions to prevent disclosure of the Confidential Data associated with the Company's equipment, products and services and components thereof to persons other than those employees of Customer for whom such disclosure is necessary for performance of the work hereunder.

22. **Compliance.** Customer expressly agrees to comply with and abide by, all of the laws of the United States and of the State of Texas, including, but not limited to, OSHA, EPA and all rules and regulations now existing or that may be hereafter promulgated under and in accordance with any such law or laws, and hereby agrees to indemnify and hold Company harmless from any and all claims, demands, or damages incurred by Company arising from Customer's failure to comply with all laws and governmental regulations. The indemnities in this paragraph shall be in addition to any other indemnity obligations between Customer and Company, including any other indemnity obligations contained herein.



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ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC

DEVON ENERGY CORPORATION
DELAWARE BASIN

13-3/8" x 8-5/8" x 5-1/2" 10M MBU-3T Wellhead System
With 8-5/8" And 5-1/2" Mandrel Casing Hangers
And 7-1/16" 15M x 7-1/16" 15M CTH-EN Tubing Head

DRAWN

DLE

01NOV18

APPRV

DRAWING NO.

HBE0000013

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

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

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

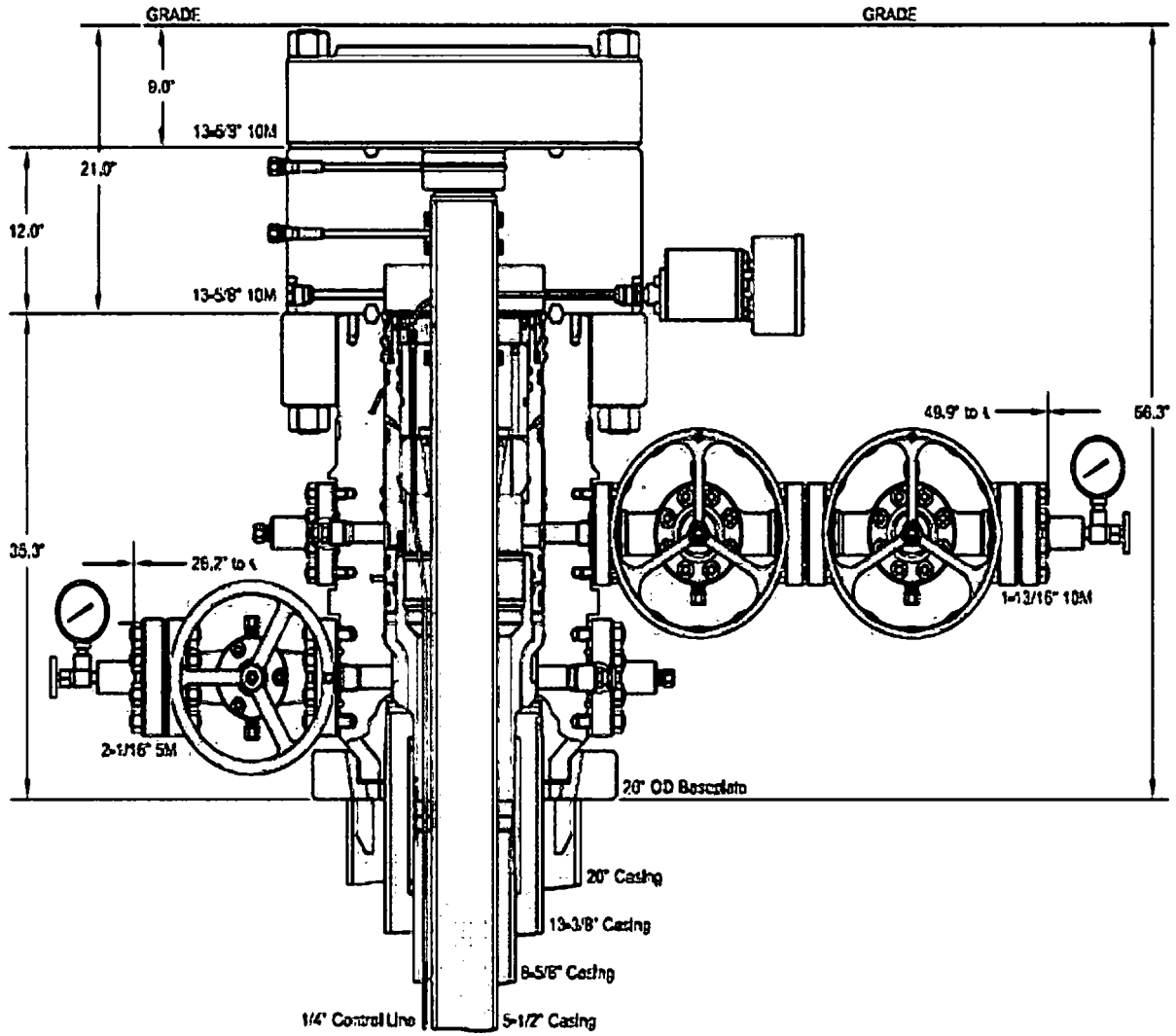
After running the surface casing, a BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days,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

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

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

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

MB Verb 5M WLFMP Alt Design



Geologic Formations

TVD of target	11964	Pilot hole depth	N/A
MD at TD:	22241	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	840		
Base of Salt	4210		
Delaware	4265		
Bone Spring	8200		
Wolfcamp	11640		

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

1. Casing Program (Primary Design)

Hole Size	Casing Interval		Csg. Size	Wt. (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
	From	To							
14.75"	0	928	10.75"	40.5	J-55	STC	1.125	1.25	1.6
9.875"	0	11393	7.625"	29.7	P110	BTC	1.125	1.25	1.6
8.75"	11393	12293				Flushmax III			
6.75"	0	TD	5.5"	20	P110	Vam SG	1.125	1.25	1.6
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Must have table for contingency casing
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int casing shoe will be selected based on drilling data / gamma, setting depth with be revised accordingly if needed.
- A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.

Casing Program (Alternate Design)

Hole Size	Casing Interval		Csg. Size	Wt. (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
	From	To							
17.5"	0	928	13.375"	48	H-40	STC	1.125	1.25	1.6
10.625"	0	5000	8.625"	32	P110EC	BTC	1.125	1.25	1.6
9.875"	5000	12293				VAM FJL			
7.875"	0	TD	5.5"	20	P110	BTC	1.125	1.25	1.6

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BLM Minimum Safety Factor	1.125	1.00	1.6 Dry 1.8 Wet
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- All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h Must have table for contingency casing
- Rustler top will be validated via drilling parameters (i.e. reduction in ROP) and surface casing setting depth revised accordingly if needed.
- Int 1 casing shoe will be selected based on drilling data / gamma, setting depth will be revised accordingly if needed.
- A variance is requested to wave the centralizer requirement for the Intermediate casing and production casing.
- Variance is requested for collapse rating on intermediate casing. Operator will keep pipe full while running casing. No losses are expected in subsequent hole section.

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3 rd 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 2 nd 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?	

2. Cementing Program (Primary Design)

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft ³ /sack)	Slurry Description
Surface	599	Surf	13.2	1.33	Lead: Class C Cement + additives

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Int 1	1223	Surf	9	3.31	Lead: Class C Cement + additives
	747	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Int 1 Two Stage w DV @ ~4500	633	Surf	9	3.31	1 st stage Lead: Class C Cement + additives
	55	500' above shoe	13.2	1.33	1 st stage Tail: Class H / C + additives
	600	Surf	9	3.31	2 st stage Lead: Class C Cement + additives
	55	500' above DV	13.2	1.33	2 st stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	13.2	1.33	Squeeze Lead: Class C Cement + additives
	1223	Surf	9	3.31	Lead: Class C Cement + additives
	747	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	661	500' tieback	13.2	1.33	Lead: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

Cementing Program (Alternate Design)

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	768	Surf	13.2	1.33	Lead: Class C Cement + additives
Int 1	1318	Surf	9	3.31	Lead: Class C Cement + additives
	834	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Int 1 Two Stage w DV @ ~4500	660	Surf	9	3.31	1 st stage Lead: Class C Cement + additives
	55	500' above shoe	13.2	1.33	1 st stage Tail: Class H / C + additives

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	625	Surf	9	3.31	2 st stage Lead: Class C Cement + additives
	55	500' above DV	13.2	1.33	2 st stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	13.2	1.33	Squeeze Lead: Class C Cement + additives
	1318	Surf	9	3.31	Lead: Class C Cement + additives
	834	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	1208	500' tieback	13.2	1.33	Lead: Class H / C + additives

If a DV tool is ran the depth(s) will be adjusted based on hole conditions and cement volumes will be adjusted proportionally. Slurry weights will be adjusted based on estimated fracture gradient of the formation. DV tool will be set a minimum of 50 feet below previous casing and a minimum of 200 feet above current shoe. If cement is not returned to surface during the primary cement job on the surface casing string, a planned top job will be conducted immediately after completion of the primary job.

Casing String	% Excess
Surface	50%
Intermediate 1	30%
Intermediate 1 (Two Stage)	25%
Prod	10%

3. Pressure Control Equipment (Three String Design)

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-5/8"	5M	Annular	X	50% of rated working pressure
			Blind Ram	X	5M
			Pipe Ram		
			Double Ram	X	
			Other*		
Production	13-5/8"	10M	Annular (5M)	X	100% of rated working pressure
			Blind Ram	X	10M
			Pipe Ram		
			Double Ram	X	
			Other *		
			Annular		
			Blind Ram		
			Pipe Ram		

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			Double Ram		
			Other *		
N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.				
Y	A variance is requested to run a 5M annular on a 10M system.				

4. Mud Program (3 String Design)

Depth		Type	Weight (ppg)	Vis	Water Loss
From	To				
0	928	FW Gel	8.5 - 9	28-34	N/C
928	12293	DBE / Cut Brine	9 - 10	28-34	N/C
12293	TD	OBM	10-10.5	28-34	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing.	
X	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No Logs are planned based on well control or offset log information.
	Drill stem test? If yes, explain
	Coring? If yes, explain

Additional logs planned	Interval
Resistivity	Int. shoe to KOP
Density	Int. shoe to KOP
X CBL	Production casing
X Mud log	Intermediate shoe to TD
PEX	

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6532 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

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Y	H2S Plan attached
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8. Other facets of operation

Is this a walking operation? Potentially

1. If operator elects, drilling rig will batch drill the surface holes and run/cement surface casing; walking the rig to next wells on the pad.
2. The drilling rig will then batch drill the intermediate sections and run/cement intermediate casing; the wellbore will be isolated with a blind flange and pressure gauge installed for monitoring the well before walking to the next well.
3. The drilling rig will then batch drill the production hole sections on the wells with OBM, run/cement production casing, and install TA caps or tubing heads for completions.

NOTE: During batch operations the drilling rig will be moved from well to well however, it will not be removed from the pad until all wells have production casing run/cemented.

Will be pre-setting casing? Potentially

1. Spudder rig will move in and drill surface hole.
 - a. Rig will utilize fresh water based mud to drill surface hole to TD. Solids control will be handled entirely on a closed loop basis.
2. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
3. The wellhead will be installed and tested once the surface casing is cut off and the WOC time has been reached.
4. A blind flange with the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with a pressure gauge installed on the wellhead.
5. Spudder rig operations is expected to take 4-5 days per well on a multi well pad.
6. The NMOCD will be contacted and notified 24 hours prior to commencing spudder rig operations.
7. Drilling operations will be performed with the drilling rig. At that time an approved BOP stack will be nipped 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

☒ Directional Plan

☐ Other, describe

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

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

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

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

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

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

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

Devon Energy Annular Preventer Summary

1. Component and Preventer Compatibility Table

The table below, which covers the drilling and casing of the 10M MASP portion of the well, outlines the tubulars and the compatible preventers in use. This table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

6-3/4" Production hole section, 10M requirement

Component	OD	Preventer	RWP
Drillpipe	4.5"	Fixed lower 4.5" Upper 4.5-7" VBR	10M
HWDP	4.5"	Fixed lower 4.5" Upper 4.5-7" VBR	10M
Drill collars and MWD tools	4.75"	Upper 4.5-7" VBR	10M
Mud Motor	4.75"	Upper 4.5-7" VBR	10M
Production casing	5.5"	Upper 4.5-7" VBR	10M
ALL	0-13-5/8"	Annular	5M
Open-hole	-	Blind Rams	10M

VBR = Variable Bore Ram. Compatible range listed in chart.

2. Well Control Procedures

Well control procedures are specific to the rig equipment and the operation at the time the kick occurs. Below are the minimal high-level tasks prescribed to assure a proper shut-in while drilling, tripping, running casing, pipe out of the hole (open hole), and moving the BHA through the BOPs. The pressure at which control is swapped from the annular to another compatible ram is variable, but the operator will document in the submission their operating pressure limit. The operator may chose an operating pressure less than or equal to RWP, but in no case will it exceed the RWP of the annular preventer.

General Procedure While Drilling

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

Devon Energy Annular Preventer Summary

General Procedure While Tripping

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

General Procedure While Running Casing

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

General Procedure With No Pipe In Hole (Open Hole)

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

Devon Energy Annular Preventer Summary

General Procedures While Pulling BHA thru Stack

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



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.

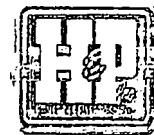
Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

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



QUALITY DOCUMENT

PHOENIX RUBBER
INDUSTRIAL LTD.

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Phone: (361) 456-4200 • Fax: (361) 217-2872, 456-4273 • www.takusermerge.hu

QUALITY CONTROL INSPECTION AND TEST CERTIFICATE				CERT. N°: 552	
PURCHASER: Phoenix Beattie Co.			P.O. N°: 1519FA-871		
PHOENIX RUBBER order N°: 170466		HOSE TYPE: 3" ID Choke and Kill Hose			
HOSE SERIAL N°: 34128		NOMINAL / ACTUAL LENGTH: 11,43 m			
W.P. 68,96 MPa 10000 psi		T.P. 103,4 MPa 15000 psi		Duration: 60 min.	
Pressure test with water at ambient temperature See attachment. (1 page)					
↑ 10 mm = 10 Min. → 10 mm = 25 MPa					
COUPLINGS					
Type	Serial N°		Quality	Heat N°	
3" coupling with 4 1/16" Flange end	720	719	AISI 4130	C7626	
			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 Verification PHOENIX RUBBER Q.C.		

40920-0-00015 NB0006

8	GN↓ +0.000 PC	14:00	
	RD↓ +0.000 PC	14:00	
	BL ↓1041.000	13:00	
7	GN↓ +0.000 PC	13:40	
	RD↓ +0.000 PC	13:40	
	BL ↓1042.000	13:10	
6	GN↓ +0.000 PC	13:20	
	RD↓ +0.000 PC	13:20	
	BL ↓1050.000	13:20	
5	GN↓ +0.000 PC	13:00	
	RD↓ +0.000 PC	13:00	
	BL ↓1055.000	13:00	
4			
3			
2			

CENEX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

VERIFIED TRUE CO.
PHOENIX RUBBER CO.



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

SUPO Data Report

01/14/2019

APD ID: 10400033536

Submission Date: 08/29/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

Well Type: OIL WELL

Well Work Type: Drill

Highlighted data
reflects the most
recent changes

[Show Final Text](#)

Section 1 - Existing Roads

Will existing roads be used? YES

Existing Road Map:

Lusitano_27_34_Fed_Com_734H_Ex_Access_Rd_20180828133331.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_734H_Access_Rds_20180828133410.pdf

New road type: COLLECTOR,RESOURCE

Length: 1222 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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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_734H_1mile_Map_20180828070752.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 4 (also know as Cotton Draw Unit 27-34 CTB 4).

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: 734H

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_734H_Wtr_Xfr_Map_20180829070753.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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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_734H_Caliche_Pit_20180828072126.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: DRILL CUTTINGS

Amount of waste: 1269 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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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_734H_Rig_Layout_20180828072325.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: 4

Recontouring attachment:

Lusitano_27_34_Fed_Com_734H_Reclamation_20180828133538.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): 5.62	Well pad interim reclamation (acres): 2.074	Well pad long term disturbance (acres): 3.546
Road proposed disturbance (acres): 0.842	Road interim reclamation (acres): 0	Road long term disturbance (acres): 0.842
Powerline proposed disturbance (acres): 1.847	Powerline interim reclamation (acres): 0	Powerline long term disturbance (acres): 1.847
Pipeline proposed disturbance (acres): 0.041	Pipeline interim reclamation (acres): 0	Pipeline long term disturbance (acres): 0.041
Other proposed disturbance (acres): 4.22	Other interim reclamation (acres): 0	Other long term disturbance (acres): 4.22
Total proposed disturbance: 12.57	Total interim reclamation: 2.074	Total long term disturbance: 10.496

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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source name:

Source address:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary

Total pounds/Acre:

Seed Type	Pounds/Acre
-----------	-------------

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

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

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 734H

SUPO Additional Information: BATTERY CONNECT CTB ELECTRIC FLOWLINE

Use a previously conducted onsite? YES

Previous Onsite information: August 2016 / Cotton Draw Unit MDP 1

Other SUPO Attachment

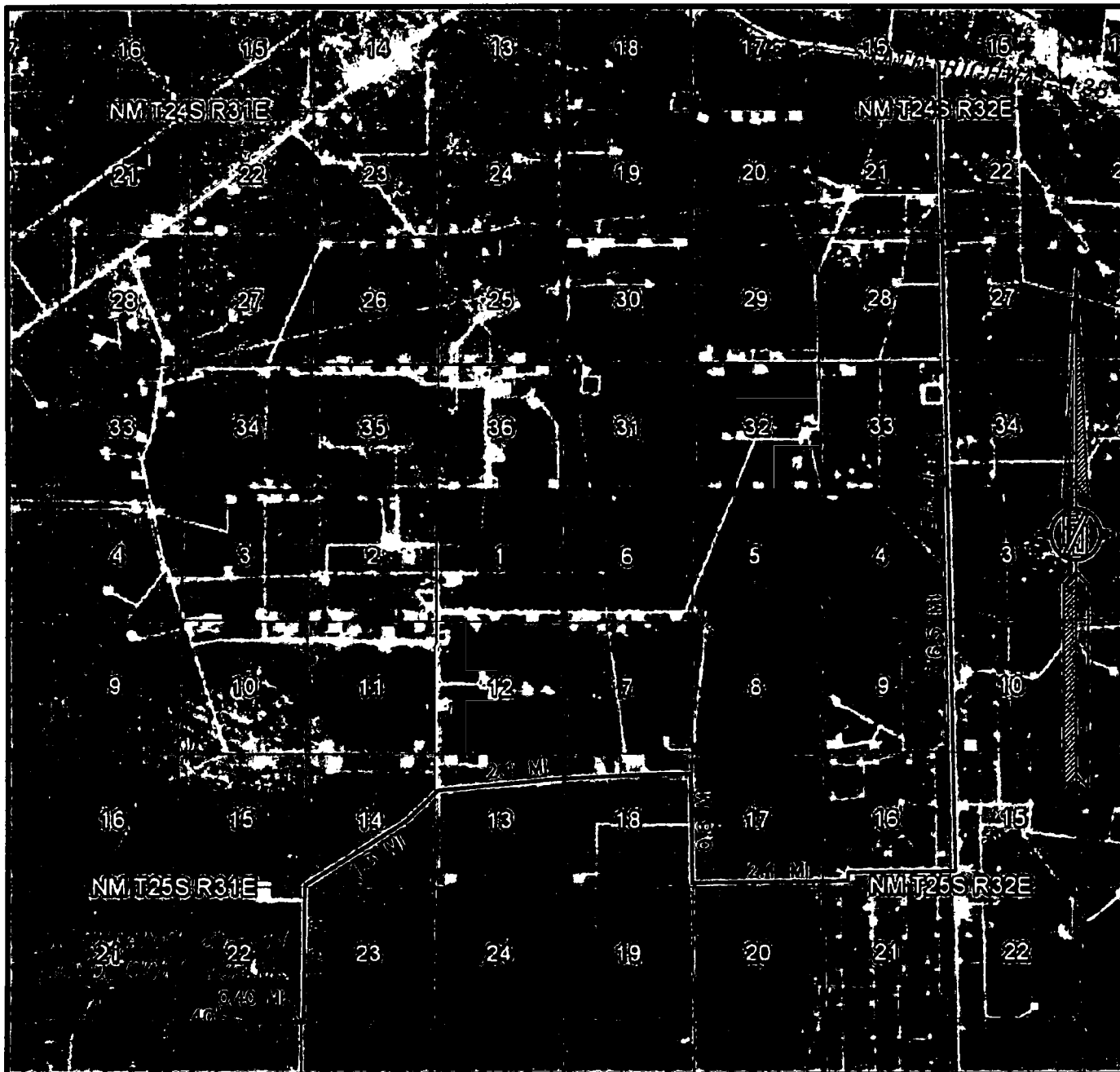
Lusitano_27_34_Fed_Com_734H_Battery_Connect_20180828133810.pdf

Lusitano_27_34_Fed_Com_734H_CTB_20180828133812.pdf

Lusitano_27_34_Fed_Com_734H_Electric_20180828133814.pdf

Lusitano_27_34_Fed_Com_734H_Flowline_20180828133820.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 734H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1904 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 2, 2018

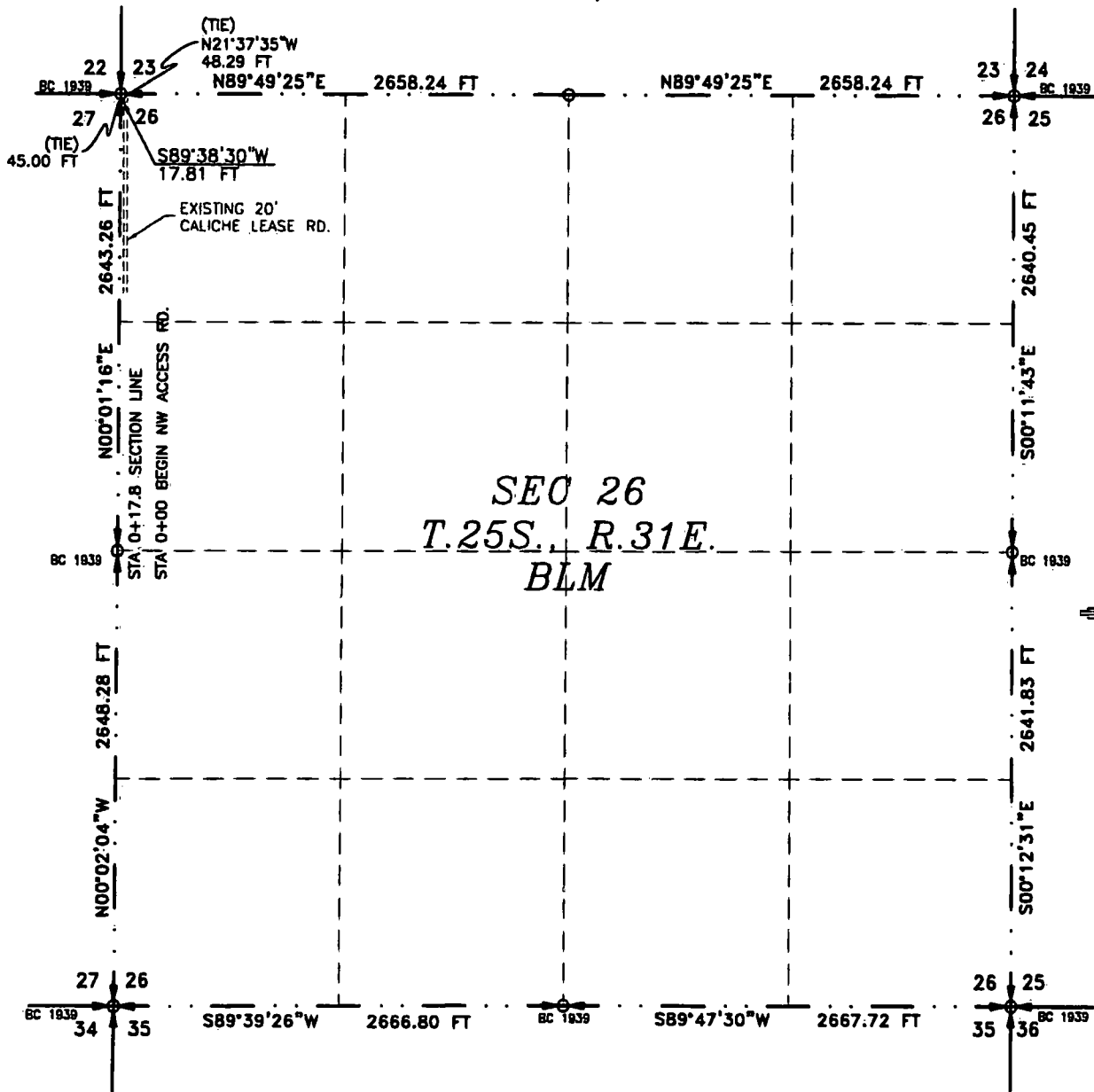
SURVEY NO. 6437

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

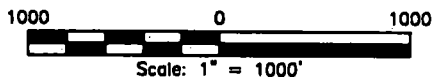
ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 526H)

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 2, 2018



SEE NEXT SHEET (2-4) FOR DESCRIPTION



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, FILMON 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

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

SHEET: 1-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEY NO. 6437

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 525H)

**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 2, 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, FILMON 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

[Signature]
FILMON 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.

SHEET: 2-4

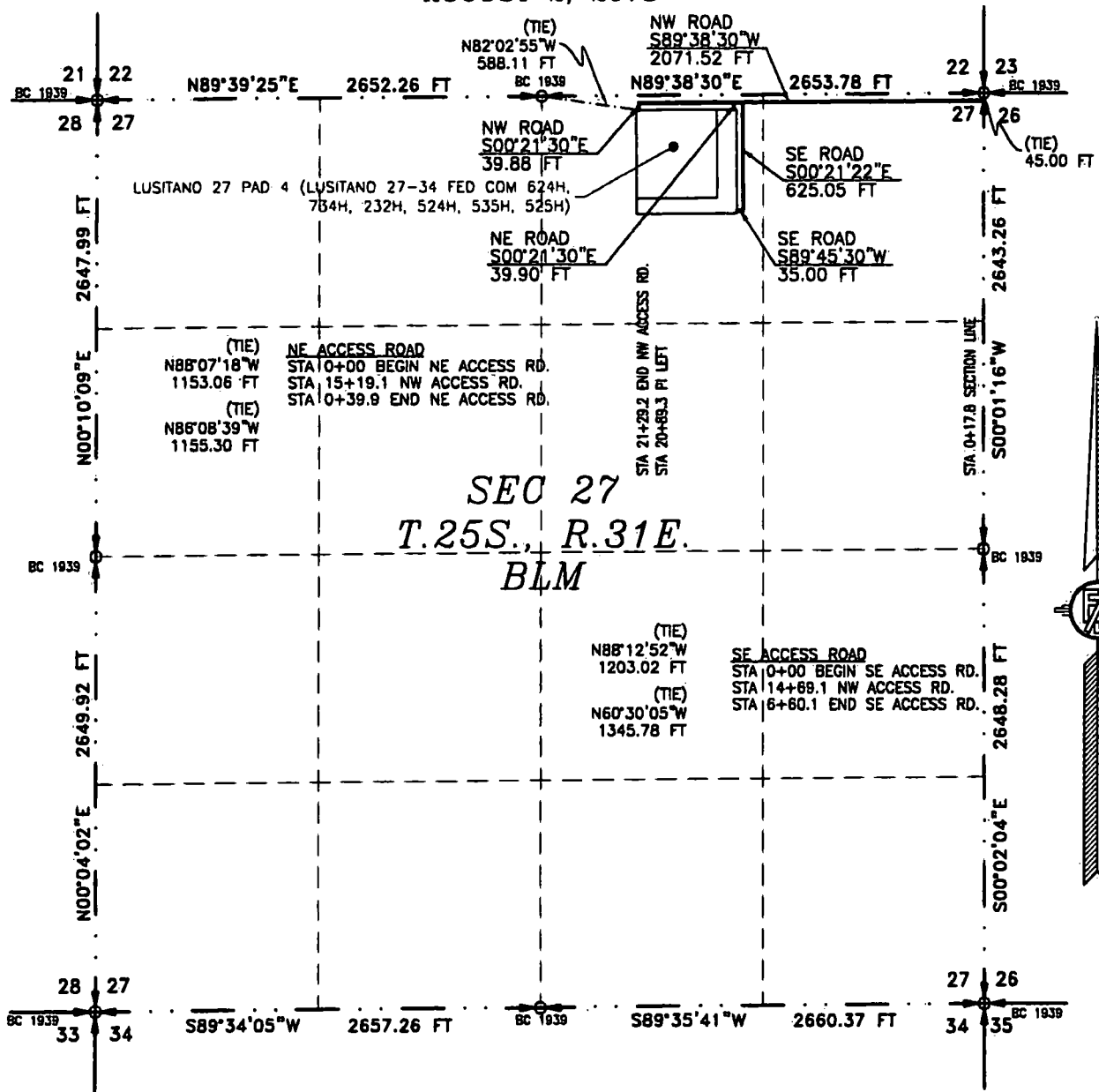
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SURVEY NO. 6437

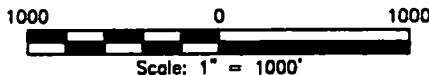
ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 525H)

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 2, 2018



SEE NEXT SHEET (4-4) FOR DESCRIPTION



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, FILMON 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 27 DAY OF AUGUST 2018.

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

SURVEY NO. 6437
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220 Phone (575) 234-3341

SHEET: 3-4

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 624H, 535H, 525H)

**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 2, 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 2071.52 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S00°21'30"E A DISTANCE OF 39.88 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 N82°02'55"W, A DISTANCE OF 588.11 FEET;

SAID STRIP OF LAND BEING 2111.40 FEET OR 127.97 RODS IN LENGTH, CONTAINING 1.454 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/4 784.50 L.F. 47.55 RODS 0.540 ACRES

NORTHEAST 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°07'18"W, A DISTANCE OF 1153.06 FEET;

THENCE S00°21'30"E A DISTANCE OF 39.90 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°08'39"W, A DISTANCE OF 1155.30 FEET;

SAID STRIP OF LAND BEING 39.90 FEET OR 2.42 RODS IN LENGTH, CONTAINING 0.027 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 39.90 L.F. 2.42 RODS 0.027 ACRES

SOUTHEAST 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°12'52"W, A DISTANCE OF 1203.02 FEET;

THENCE S00°21'22"E A DISTANCE OF 625.05 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S89°45'30"W A DISTANCE OF 35.00 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 N60°30'05"W, A DISTANCE OF 1345.78 FEET;

SAID STRIP OF LAND BEING 660.05 FEET OR 40.00 RODS IN LENGTH, CONTAINING 0.455 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 660.05 L.F. 40.00 RODS 0.455 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 27 DAY OF AUGUST 2018


FILIMON F. JARAMILLO, P.E.S. 12797
301 SOUTH CANAL
(575) 234-3341

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.

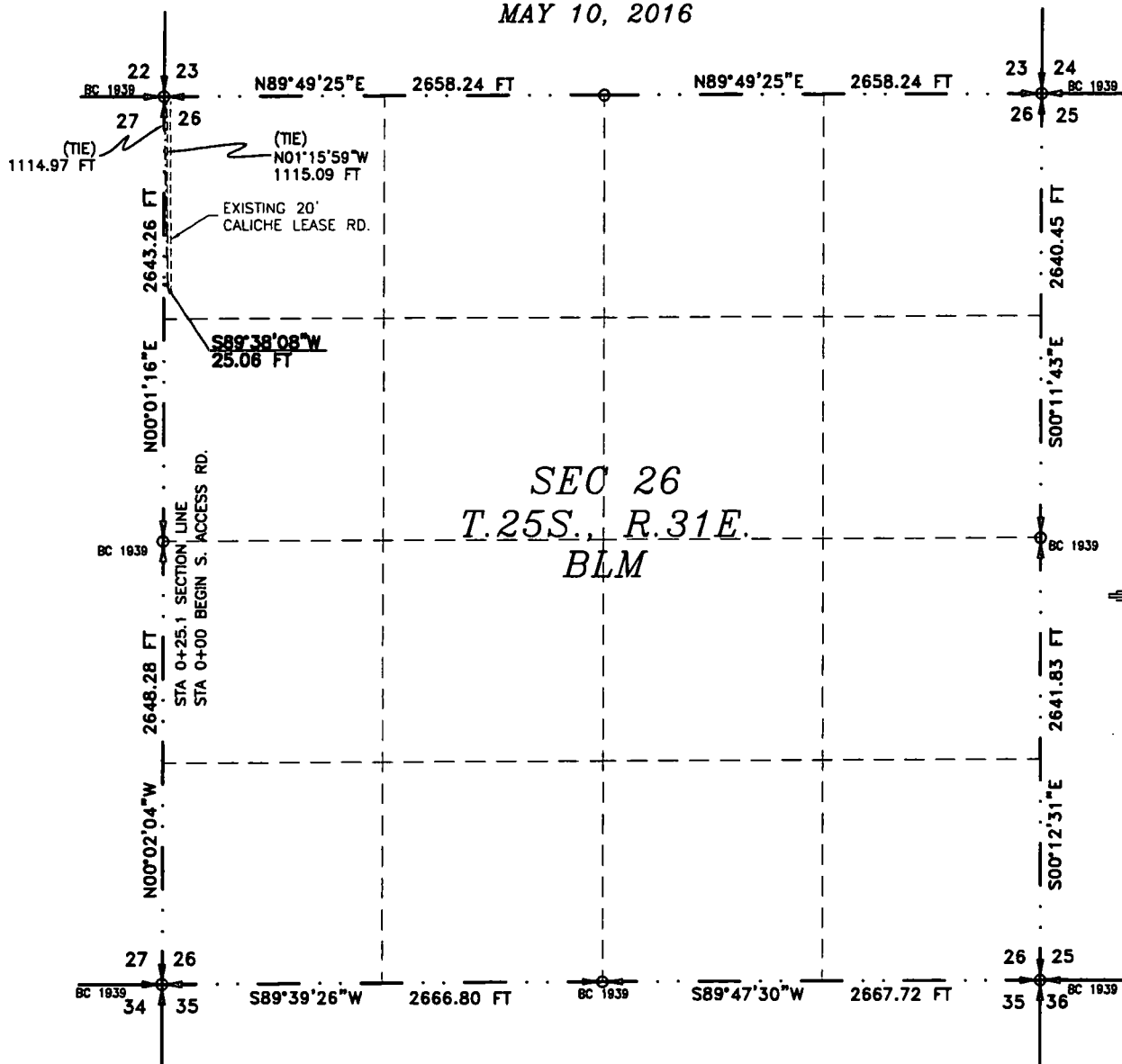
SHEET: 4-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

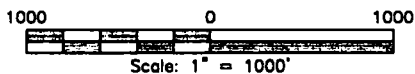
SURVEY NO. 6437

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



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, FILMON 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 10 DAY OF MAY 2016

Filmon F. Jaramillo
FILMON F. JARAMILLO, P.S. 12797

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

SHEET: 1-6

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

SURVEY NO. 4666

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

SURVEYOR CERTIFICATE

I, FILMON 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 10 DAY OF MAY 2016.

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.

SHEET: 2-6

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

FILMON F. JARAMILLO
301 SOUTH CANAL
(575) 234-3341

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

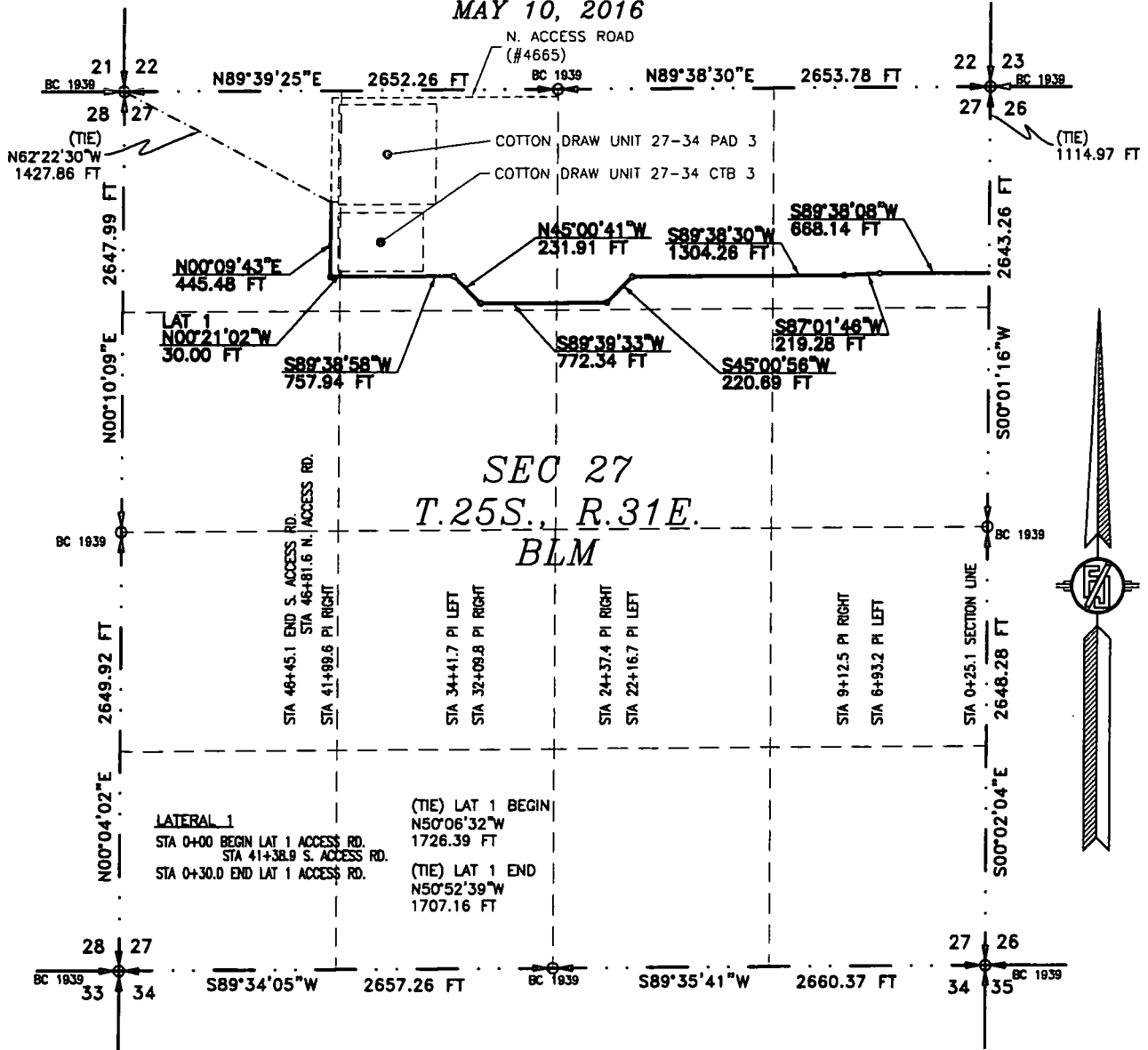
SURVEY NO. 4666

ACCESS ROAD PLAT (AA000055110)

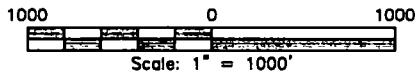
SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE
COTTON DRAW UNIT 27-34 CTB 3

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



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, FILMON 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 10 DAY OF MAY 2016

[Signature]
FILMON F. JARAMILLO, P.E. 12797
301 SOUTH CANAL
(575) 234-3341

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

SURVEY NO. 4666

SHEET: 3-6

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
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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 10 DAY OF MAY 2016

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.

SHEET: 4-6

MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

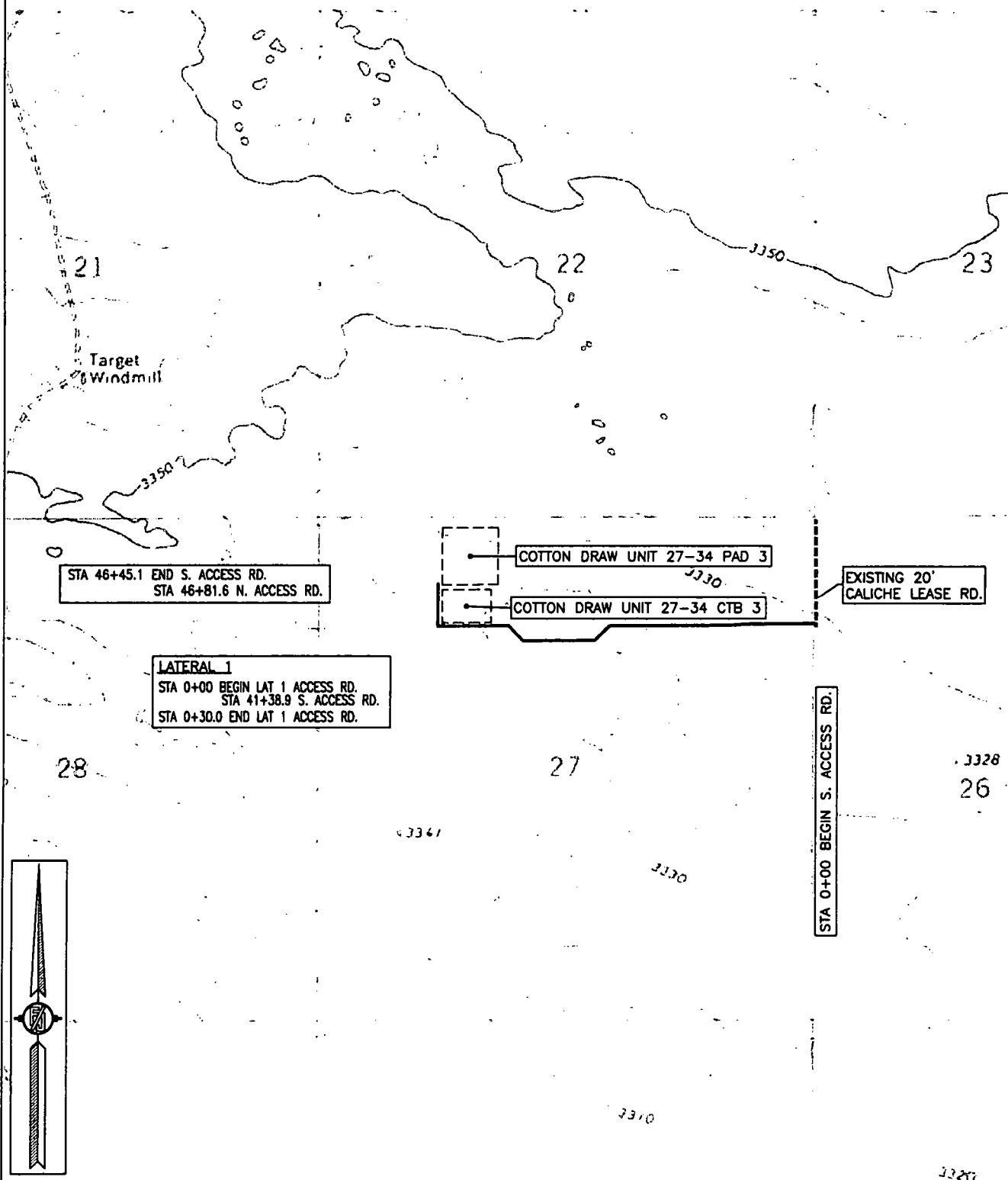
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SURVEY NO. 4666

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**



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**

NM T26S R31E

21

22

2

STA 46+45.1 END S. ACCESS RD.
STA 46+81.6 N. ACCESS RD.

COTTON DRAW UNIT 27-34 PAD 3

COTTON DRAW UNIT 27-34 CTB 3

EXISTING 20'
CALICHE LEASE RD.

LATERAL 1

STA 0+00 BEGIN LAT 1 ACCESS RD.
STA 41+38.9 S. ACCESS RD.
STA 0+30.0 END LAT 1 ACCESS RD.

23

27

STA 0+00 BEGIN S. ACCESS RD.



SHEET: 6-6

MADRON SURVEYING, INC.

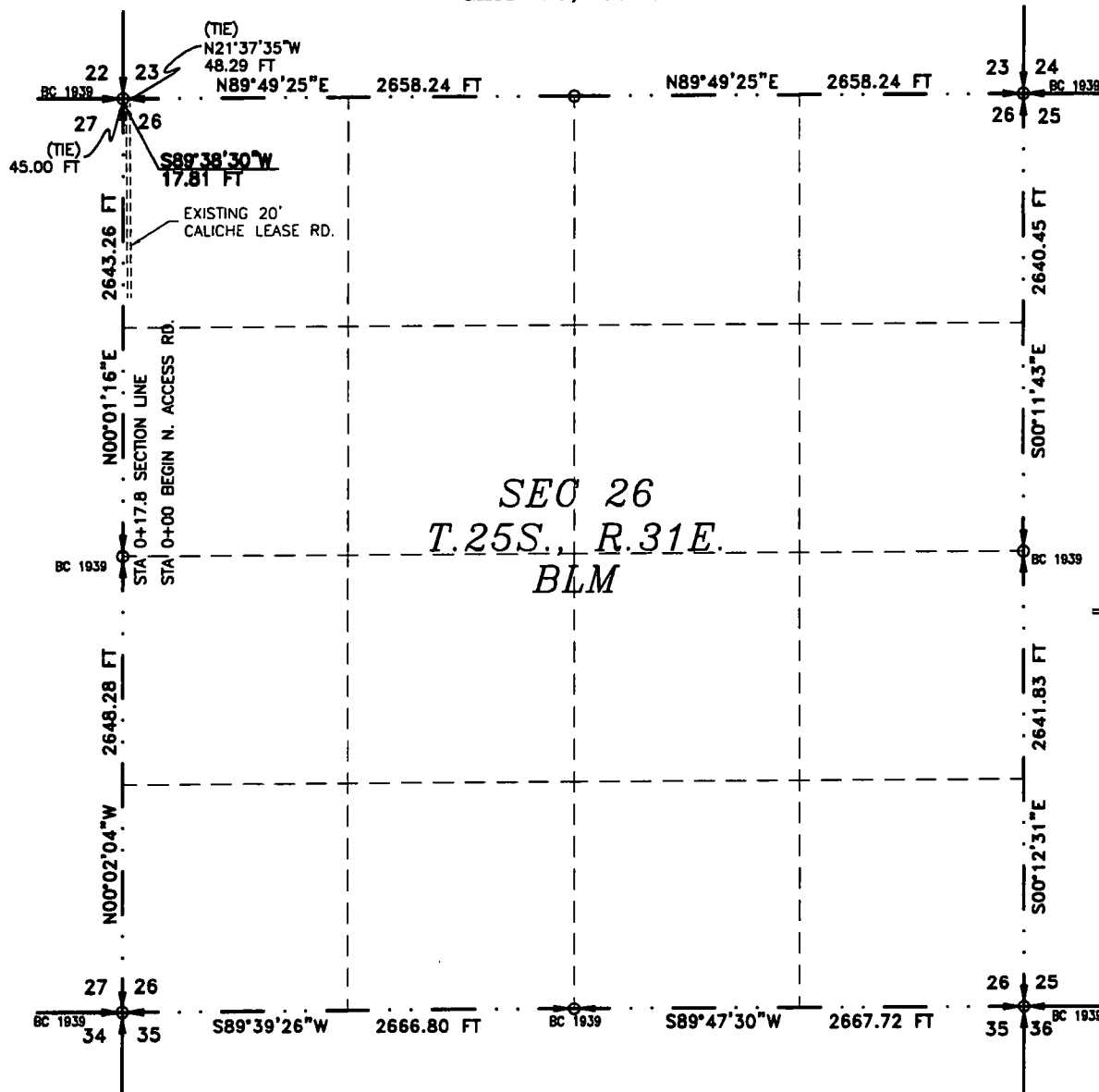
301 SOUTH CANAL
(575) 234-3341

CARLSBAD, NEW MEXICO

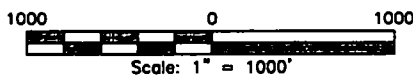
SURVEY NO. 4666

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



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, FILMON 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

FILMON F. JARAMILLO
 301 SOUTH CANAL
 (575) 234-3341

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

SURVEY NO. 4665

SHEET: 1-6

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
RECEIVED
MAY 12 2016
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 2-6

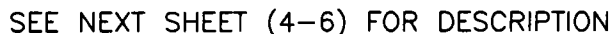
MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

SURVEY NO. 4665

CARLSBAD, NEW MEXICO

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



- 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 10 DAY OF MAY 2018

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

SHEET: 3-6

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

SURVEY NO. 4665

ACCESS ROAD PLAT (AA000055110)
NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016

DESCRIPTION

A STRIP OF LAND 30 FEET WIDE CROSSING BUREAU OF LAND MANAGEMENT LAND IN SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, STATE OF NEW MEXICO AND BEING 15 FEET EACH SIDE OF THE FOLLOWING DESCRIBED CENTERLINE SURVEY:

NORTH ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 45.00 FEET;

THENCE S89°38'30"W A DISTANCE OF 2653.49 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S89°39'25"W A DISTANCE OF 1385.67 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S00°09'43"W A DISTANCE OF 624.66 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S89°50'17"E A DISTANCE OF 45.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N63°11'06"W, A DISTANCE OF 1467.94 FEET;

SAID STRIP OF LAND BEING 4708.82 FEET OR 285.38 RODS IN LENGTH, CONTAINING 3.243 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	1326.91 L.F.	80.42 RODS	0.914 ACRES
NW/4 NE/4	1326.91 L.F.	80.42 RODS	0.914 ACRES
NE/4 NW/4	1326.17 L.F.	80.37 RODS	0.913 ACRES
NW/4 NW/4	728.83 L.F.	44.17 RODS	0.502 ACRES

LATERAL 1 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NW/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°15'00"E, A DISTANCE OF 757.26 FEET;

THENCE S00°20'41"E A DISTANCE OF 39.96 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N83°14'38"E, A DISTANCE OF 760.68 FEET;

SAID STRIP OF LAND BEING 39.96 FEET OR 2.42 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NW/4	39.96 L.F.	2.42 RODS	0.028 ACRES
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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
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SURVEYOR CERTIFICATE

I, FILMON 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 10 DAY OF MAY 2016

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

SURVEY NO. 4665

GENERAL NOTES

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

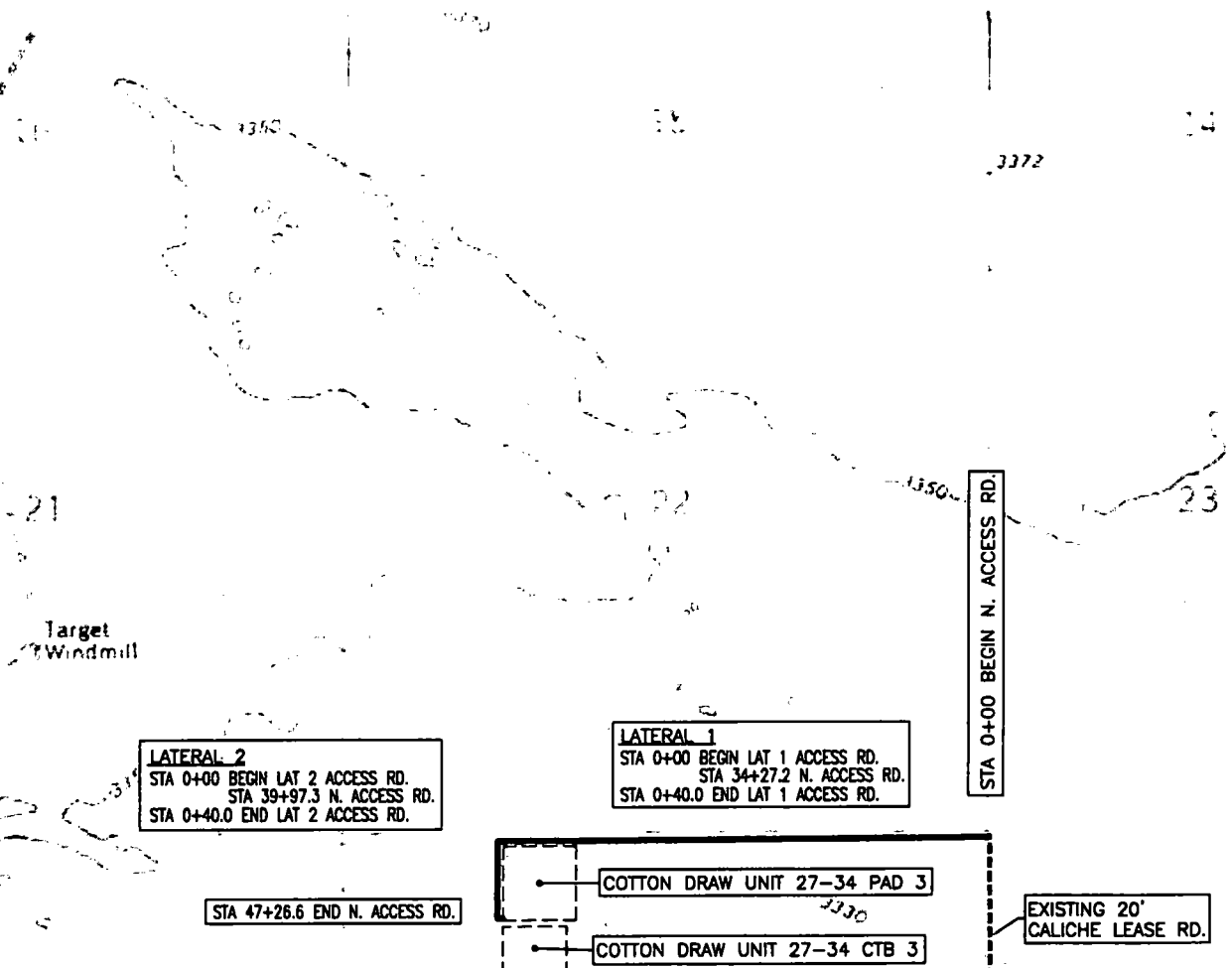
2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 4-6

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: 5-6

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

SURVEY NO. 4665

ACCESS ROAD PLAT (AA000055110)
NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTIONS 26, 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
MAY 10, 2016

NM T25S R31E

21

22

LATERAL 2
STA 0+00 BEGIN LAT 2 ACCESS RD.
STA 39+97.3 N. ACCESS RD.
STA 0+40.0 END LAT 2 ACCESS RD.

LATERAL 1
STA 0+00 BEGIN LAT 1 ACCESS RD.
STA 34+27.2 N. ACCESS RD.
STA 0+40.0 END LAT 1 ACCESS RD.

STA 0+00 BEGIN N. ACCESS RD.

STA 47+28.6 END N. ACCESS RD.

COTTON DRAW UNIT 27-34 PAD 3

COTTON DRAW UNIT 27-34 CTB 3

EXISTING 20'
CALICHE LEASE RD.

28

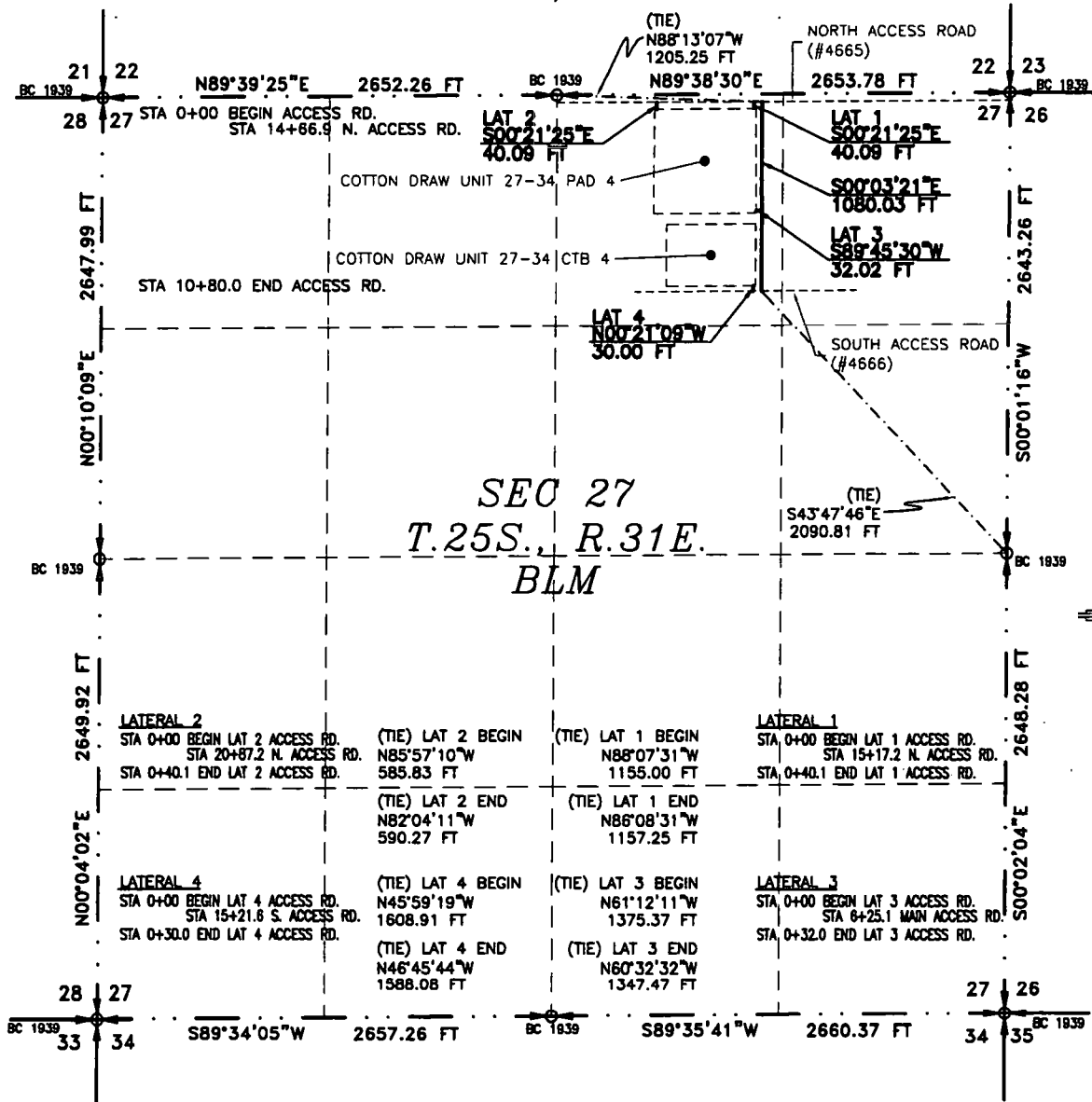
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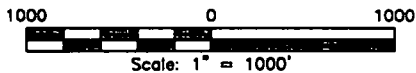
ACCESS ROAD PLAT (AA000055106)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 4 & TO THE COTTON DRAW UNIT 27-34 CTB 4

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



SURVEYOR CERTIFICATE

I, FILMON 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.

FILMON F. JARAMILLO, P.E.S. 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 IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 1-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEY NO. 4667

ACCESS ROAD PLAT (AA000055106)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 4 & TO THE COTTON DRAW UNIT 27-34 CTB 4

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:

MAIN 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°13'07"W, A DISTANCE OF 1205.25 FEET;
 THENCE S00°03'21"E A DISTANCE OF 1080.03 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE EAST QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS S43°47'46"E, A DISTANCE OF 2090.81 FEET;

SAID STRIP OF LAND BEING 1080.03 FEET OR 65.46 RODS IN LENGTH, CONTAINING 0.744 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 1080.03 L.F. 65.46 RODS 0.744 ACRES

LATERAL 1 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°07'31"W, A DISTANCE OF 1155.00 FEET;
 THENCE S00°21'25"E A DISTANCE OF 40.09 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°08'31"W, A DISTANCE OF 1157.25 FEET;

SAID STRIP OF LAND BEING 40.09 FEET OR 2.43 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 40.09 L.F. 2.43 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 N85°57'10"W, A DISTANCE OF 585.83 FEET;
 THENCE S00°21'25"E A DISTANCE OF 40.09 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 N82°04'11"W, A DISTANCE OF 590.27 FEET;

SAID STRIP OF LAND BEING 40.09 FEET OR 2.43 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 40.09 L.F. 2.43 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°12'11"W, A DISTANCE OF 1375.37 FEET;
 THENCE S89°45'30"W A DISTANCE OF 32.02 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 N60°32'32"W, A DISTANCE OF 1347.47 FEET;

SAID STRIP OF LAND BEING 32.02 FEET OR 1.94 RODS IN LENGTH, CONTAINING 0.022 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 32.02 L.F. 1.94 RODS 0.022 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 N45°59'19"W, A DISTANCE OF 1608.91 FEET;
 THENCE N00°21'09"W A DISTANCE OF 30.00 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 N46°45'44"W, A DISTANCE OF 1588.08 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 NE/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, FILMON 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 10 DAY OF MAY 2016

[Signature]
 REG. 12797
 FILMON 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: 2-4

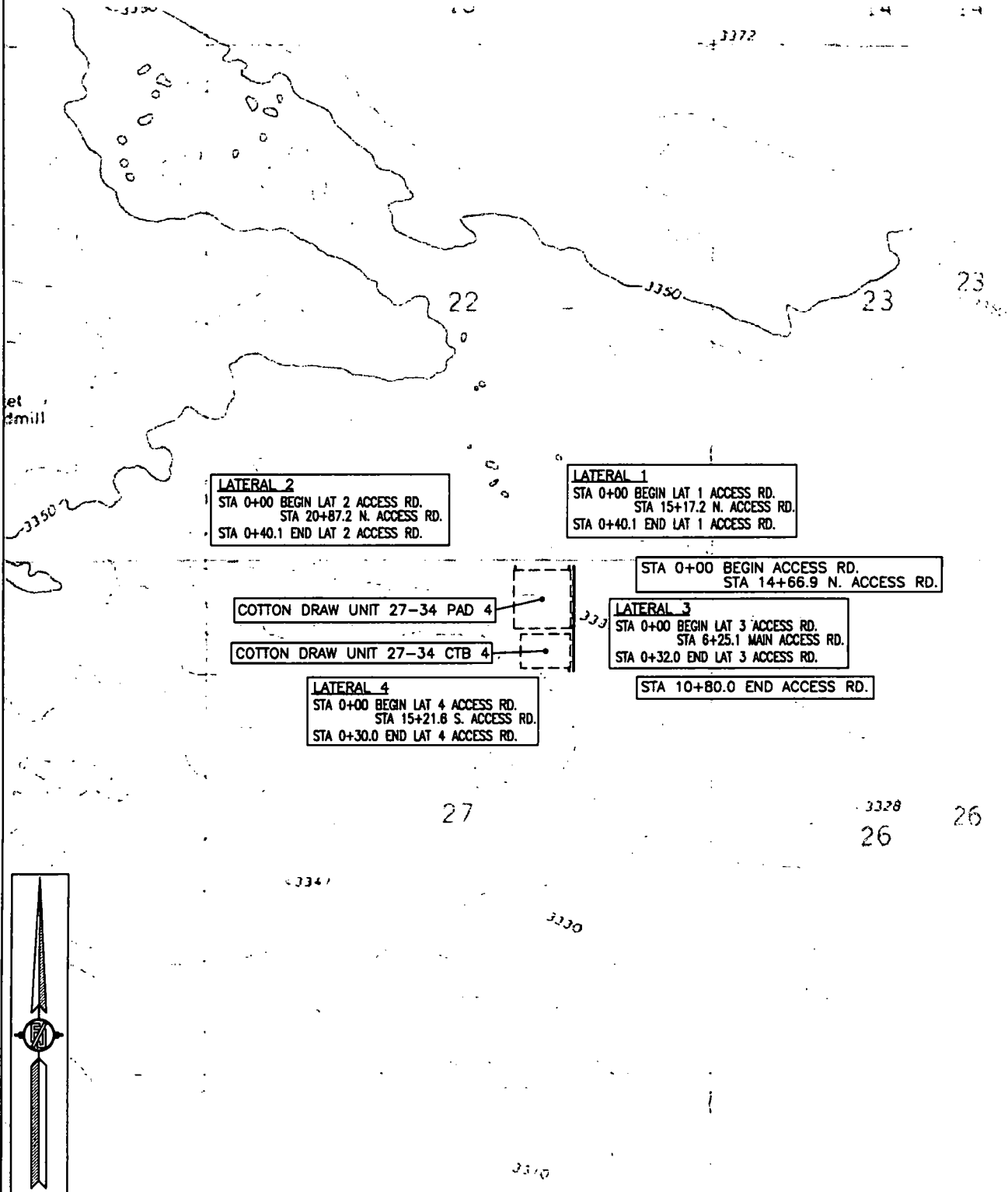
SURVEY NO. 4667

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055106)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 4 & TO THE COTTON DRAW UNIT 27-34 CTB 4

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



ACCESS ROAD PLAT (AA000055106)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 4 & TO THE COTTON DRAW UNIT 27-34 CTB 4

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

22

23

LATERAL 2

STA 0+00 BEGIN LAT 2 ACCESS RD.
STA 20+87.2 N. ACCESS RD.
STA 0+40.1 END LAT 2 ACCESS RD.

LATERAL 1

STA 0+00 BEGIN LAT 1 ACCESS RD.
STA 15+17.2 N. ACCESS RD.
STA 0+40.1 END LAT 1 ACCESS RD.

COTTON DRAW UNIT 27-34 PAD 4

COTTON DRAW UNIT 27-34 CTB 4

LATERAL 4

STA 0+00 BEGIN LAT 4 ACCESS RD.
STA 15+21.6 S. ACCESS RD.
STA 0+30.0 END LAT 4 ACCESS RD.

STA 0+00 BEGIN ACCESS RD.
STA 14+66.9 N. ACCESS RD.

LATERAL 3

STA 0+00 BEGIN LAT 3 ACCESS RD.
STA 6+25.1 MAIN ACCESS RD.
STA 0+32.0 END LAT 3 ACCESS RD.

STA 10+80.0 END ACCESS RD.

27

26



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



0 0.255 Miles 1 inch = 0.33 miles

LUSITANO 27-34 FED COM 734H WA017318125

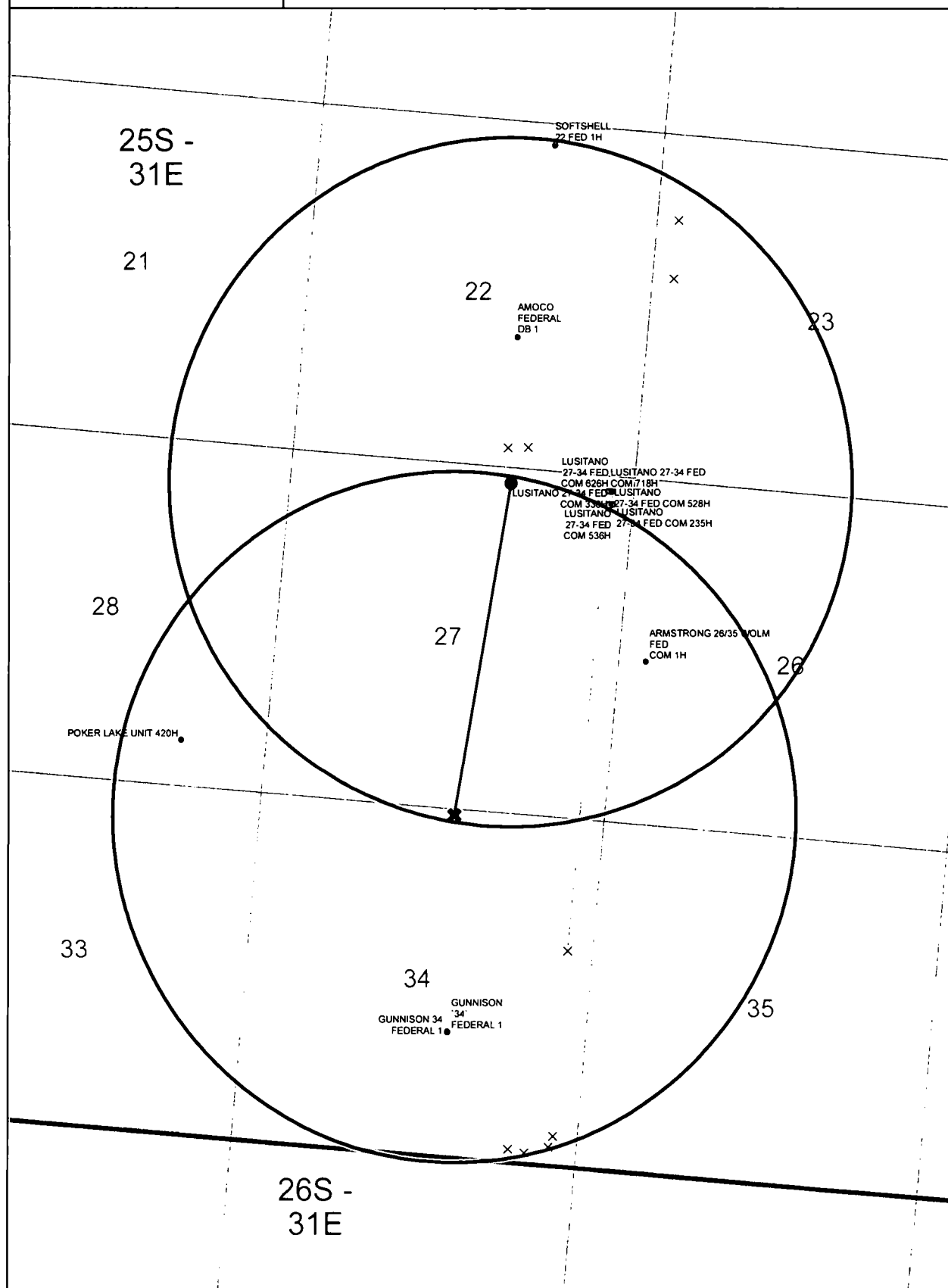
SHIRE 22 FED 1H

Nearest wellbore to SHL: 545 ft.

LUSITANO 27-34 FED COM 626H

Nearest wellbore to BHL: 1301 ft.

- Unknown SHL
- Active SHL
- Inactive SHL
- × BHL



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: 29-Aug-2018

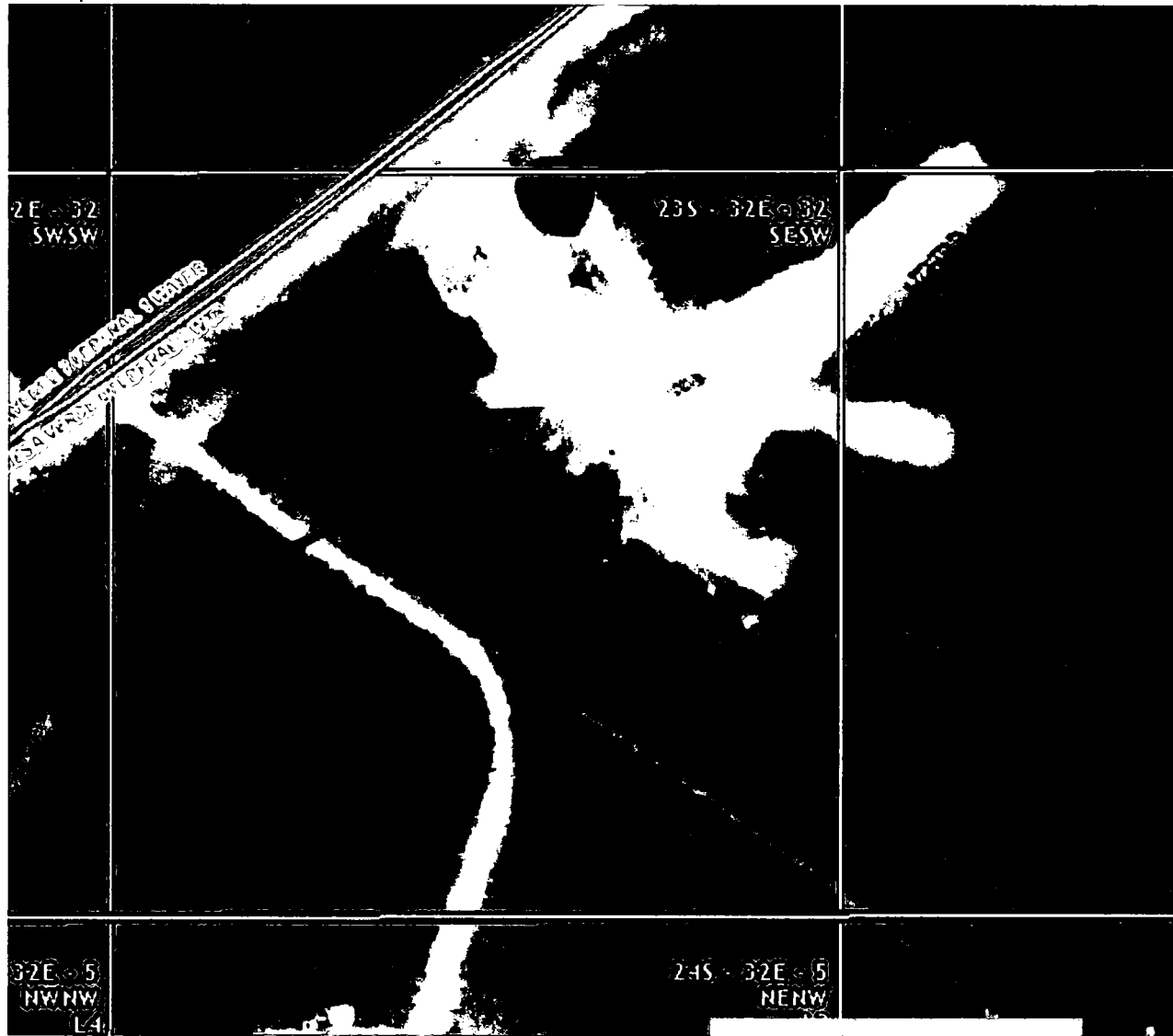


Miles

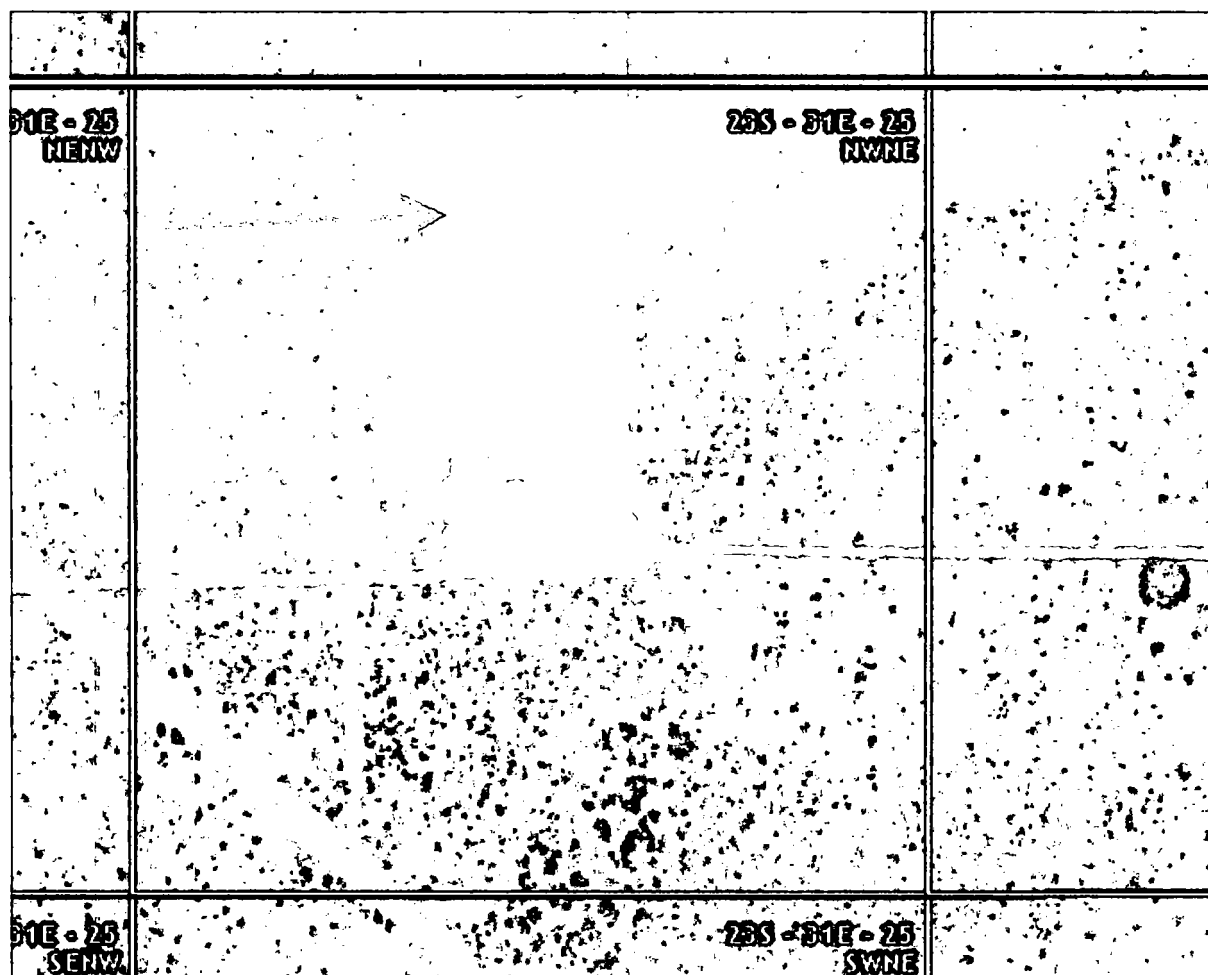
0 0.14 0.28 0.56 1:28,457



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



- Fed pit 25- 23S- 31E



- Private pit 26- 23S- 31E

26

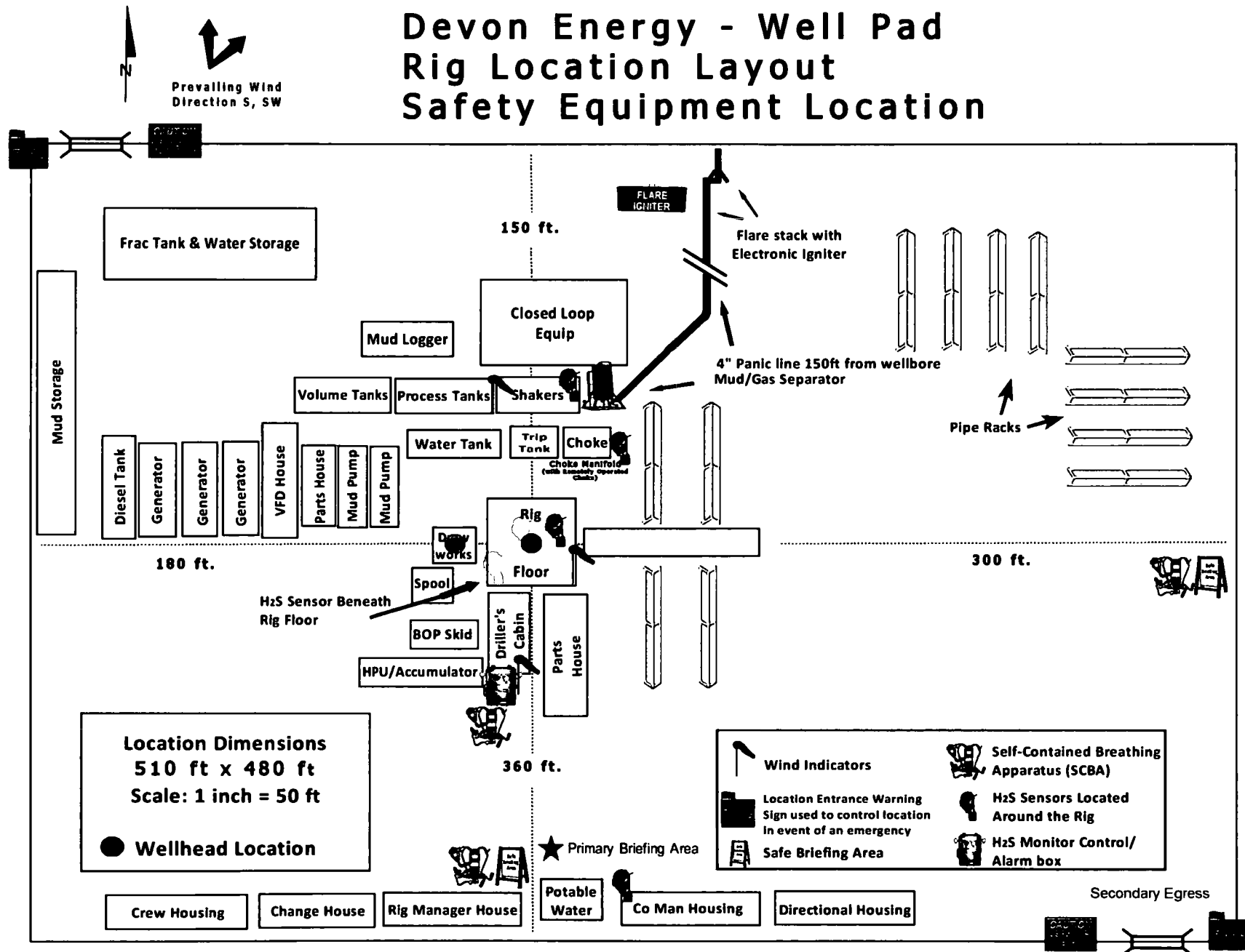
286 - 81E - 26

26

286 - 81E - 26

286 - 81E - 26

Devon Energy - Well Pad Rig Location Layout Safety Equipment Location

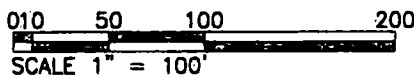
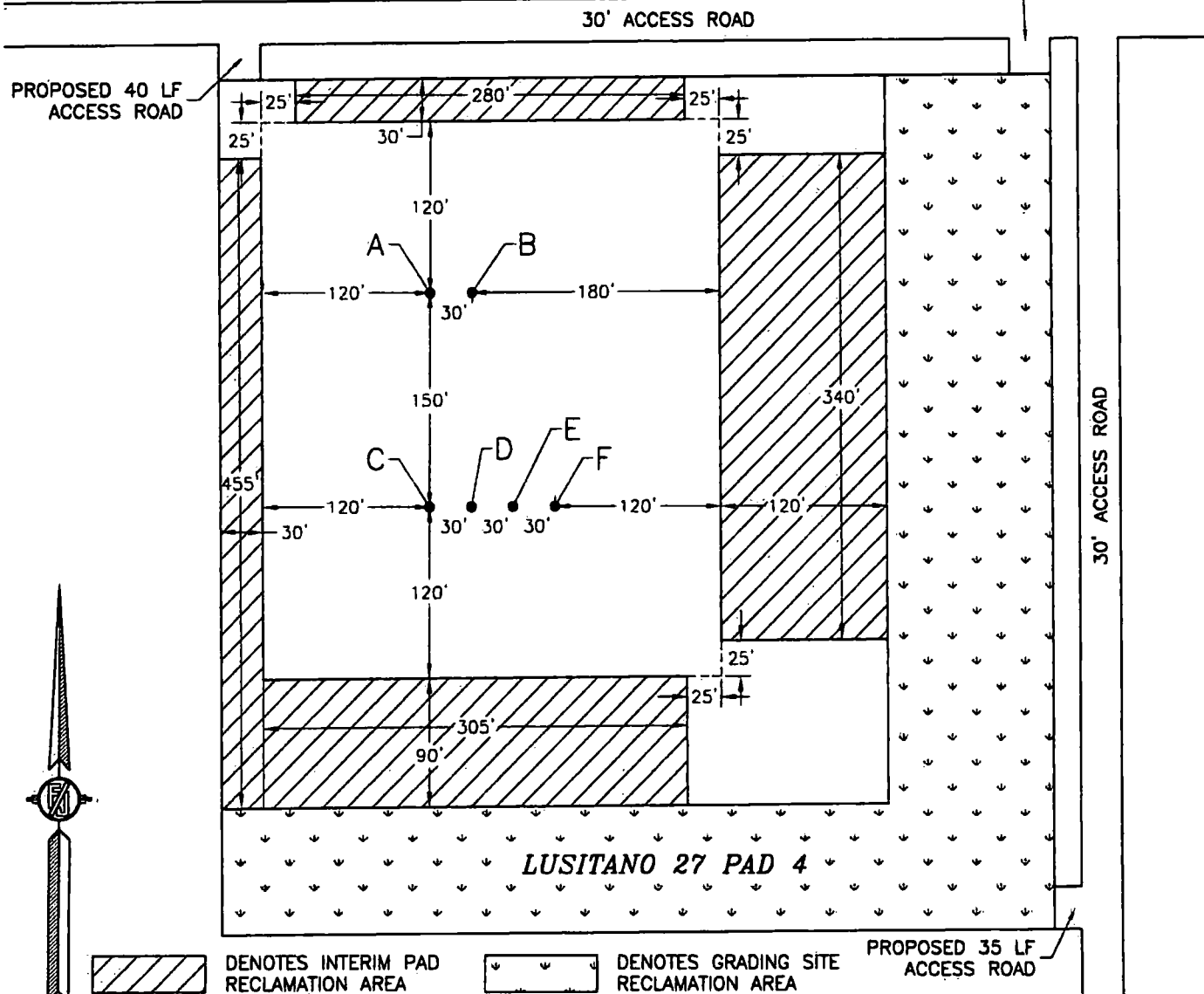


**SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
INTERIM SITE BUILD PLAN**

A - LUSITANO 27-34 FED COM 624H D - LUSITANO 27-34 FED COM 524H
B - LUSITANO 27-34 FED COM 734H E - LUSITANO 27-34 FED COM 535H
C - LUSITANO 27-34 FED COM 232H F - LUSITANO 27-34 FED COM 525H

SEC. 22
SEC. 27

PROPOSED 40 LF
ACCESS ROAD



2.074± ACRES INTERIM PAD RECLAMATION AREA
2.647± ACRES GRADING SITE RECLAMATION AREA
3.548± ACRES NON-RECLAIMED AREA
8.269± ACRES LUSITANO 27 PAD 4

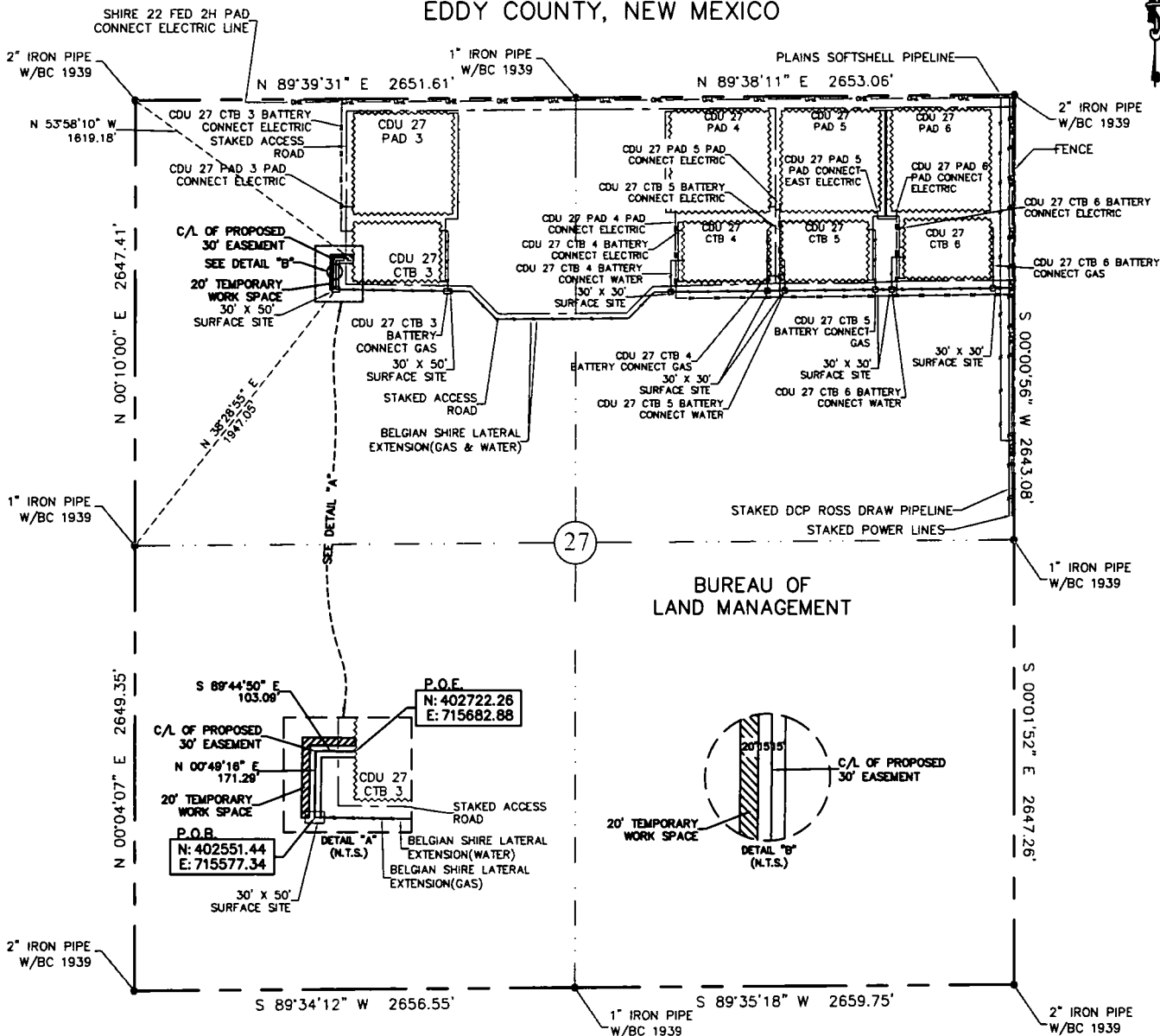
**DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 734H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1904 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM**

AUGUST 2, 2018

SURVEY NO. 6437

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

EXHIBIT "A"
PAGE 1 of 18
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.189 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.149 ACRE(S)
274.38 FEET OR 16.63 RODS

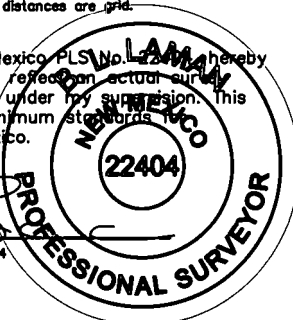
0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (WATER)
0+16.0 EXIT 30' X 50' SURFACE SITE
2+29.7 C/L STAKED ACCESS ROAD
2+74.4 P.O.E./CDU 27 CTB 3

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX
(409) 202-5111 75851
Employee of Horizonrow, LLC



HORIZON ROW LLC

Drawn for:

devon

Drawn by:
CHRIS MAAS

Date: 05/03/2016

0 1000 2000

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 3 BATTERY
CONNECT (WATER)

PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 27, T25S-R31E, N.M.P.M.

LINE NUMBER:
7600672

WBS NUMBER:
CC-110133.03

SCALE:
1" = 1000'

REVISIONS:

SHEET:
1 OF 18

**SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO**

**LEGAL DESCRIPTION
FOR
DEVON ENERGY PRODUCTION COMPANY, L.P.**

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northwest quarter (NW ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the west quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 38°28'55" E, a distance of 1947.05' to the **Point of Beginning** of this easement having coordinates of Northing=402551.44 feet, Easting=715577.34 feet, being in the northwest quarter (NW ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°49'16" E, a distance of 171.29' to an angle point;

Thence S 89°44'50" E, a distance of 103.09' to the **Point of Ending** having coordinates of Northing=402722.26 feet, Easting=715682.88 feet, from said point a 2" iron pipe w/ BC1939 found for the northwest corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 53°58'10" W a distance of 1619.18', covering **274.38' or 16.63 rods** and having an area of **0.189 acres**.

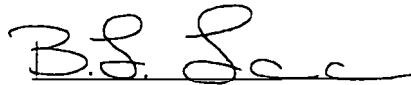
20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the left side and adjoining the left side of the above described thirty (30) feet easement, having a total area of **0.149 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

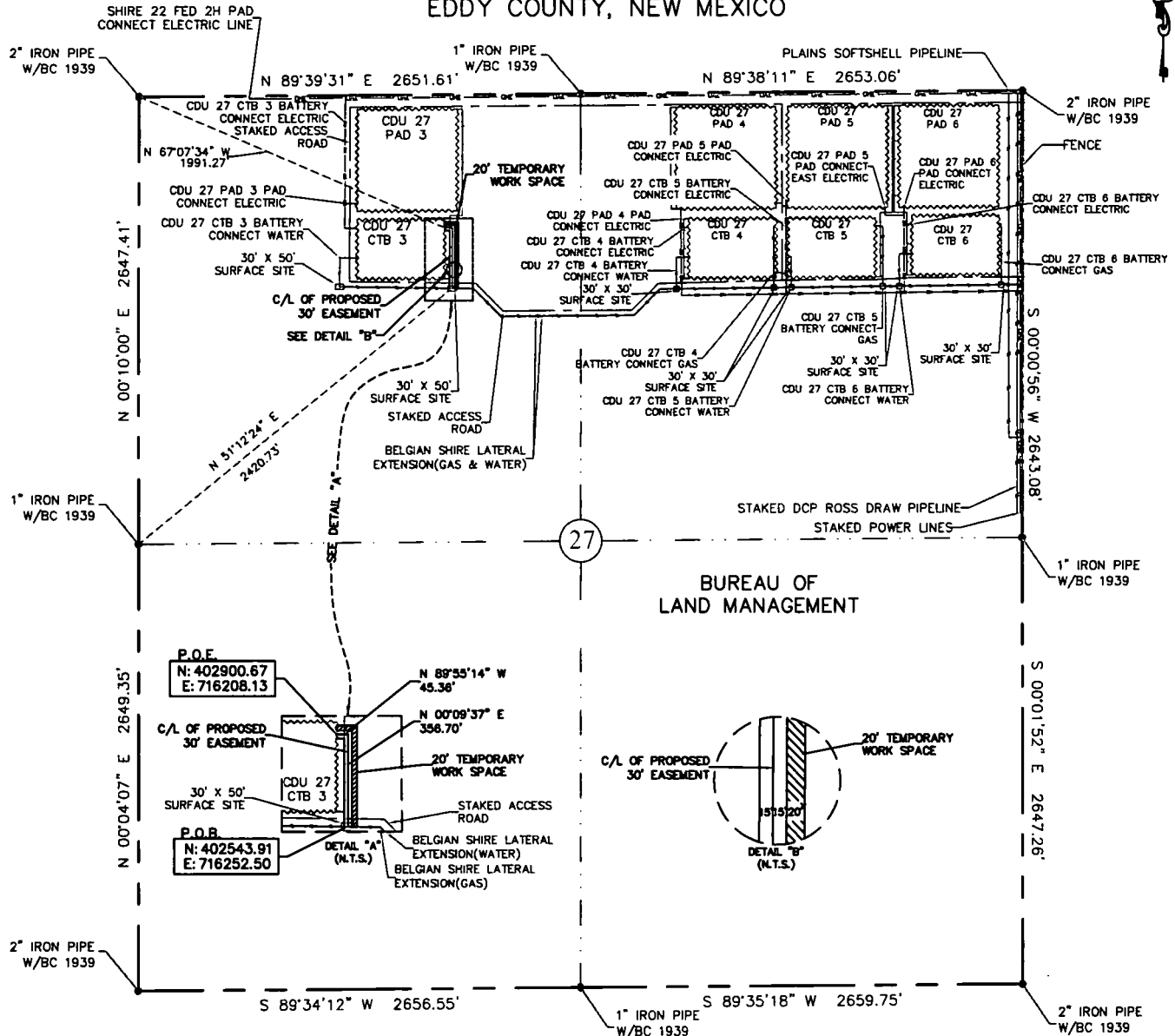
571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 3 of 18
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



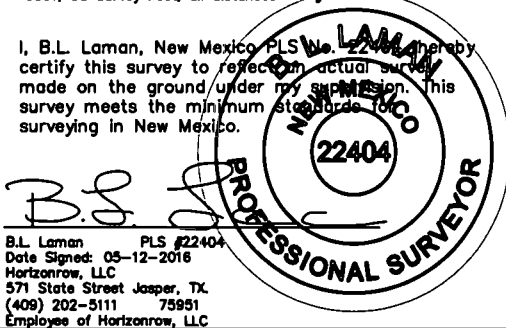
30' EASEMENT AREA = 0.277 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.208 ACRE(S)
402.06 FEET OR 24.37 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+13.0 EXIT 30' X 50' SURFACE SITE
0+30.0 C/L STAKED ACCESS ROAD
4+02.1 P.O.E./CDU 27 CTB 3

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



HORIZON ROW LLC

Drawn for:



Drawn by:
CHRIS MAAS

Date: 05/03/2018

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 3 BATTERY
CONNECT (GAS)

PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 27, T25S-R31E, N.M.P.M.

LINE NUMBER:
780067X
WBS NUMBER:
CC-110133.01
SCALE:
1" = 1000'
REVISIONS:
SHEET:
3 OF 18

0 1000 2000



**SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO**

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northwest quarter (NW ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the west quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 51°12'24" E, a distance of 2420.73' to the **Point of Beginning** of this easement having coordinates of Northing=402543.91 feet, Easting=716252.50 feet, being in the northwest quarter (NW ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°09'37" E, a distance of 356.70' to an angle point;

Thence N 89°55'14" W, a distance of 45.36' to the **Point of Ending** having coordinates of Northing=402900.67 feet, Easting=716208.13 feet, from said point a 2" iron pipe w/ BC1939 found for the northwest corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 67°07'34" W a distance of 1991.27', covering **402.06' or 24.37 rods** and having an area of **0.277 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the right side and adjoining the right side of the above described thirty (30) feet easement, having a total area of **0.208 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

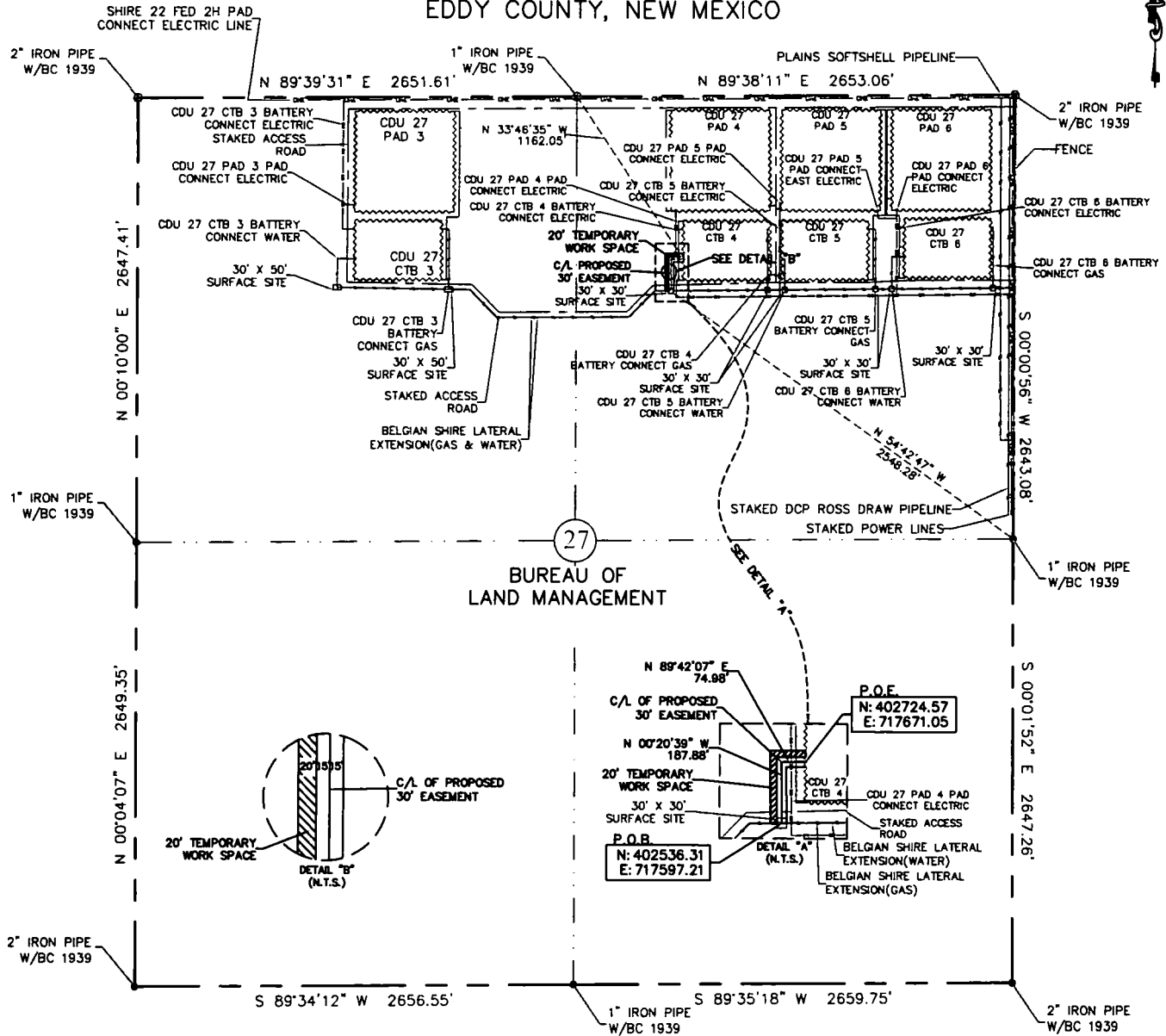
I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 5 of 18
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.181 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.144 ACRE(S)
262.86 FEET OR 15.93 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (WATER)
0+02.0 BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+16.0 EXIT 30' X 30' SURFACE SITE
0+35.2 C/L STAKED ACCESS ROAD
2+17.9 CDU 27 PAD 4 PAD CONNECT ELECTRIC LINE
2+62.9 P.O.E./CDU 27 CTB 4

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS #22404 hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC



HORIZON ROW LLC

Drawn for:

devon

Drawn by:
CHRIS MAAS

Date: 05/03/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 4 BATTERY
CONNECT (WATER)

PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 27, T25S-R31E, N.M.P.M.

LINE NUMBER:
7800682

WBS NUMBER:
CC-110133.03

SCALE:
1" = 1000'

REVISIONS:

SHEET:
5 OF 18

0 1000 2000



**SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO**

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 54°42'47" W, a distance of 2548.28' to the **Point of Beginning** of this easement having coordinates of Northing=402536.31 feet, Easting=717597.21 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°20'39" W, a distance of 187.88' to an angle point;

Thence N 89°42'07" E, a distance of 74.98' to the **Point of Ending** having coordinates of Northing=402724.57 feet, Easting=717671.05 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 33°46'35" W a distance of 1162.05', covering **262.86' or 15.93 rods** and having an area of **0.181 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the left side and adjoining the left side of the above described thirty (30) feet easement, having a total area of **0.144 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

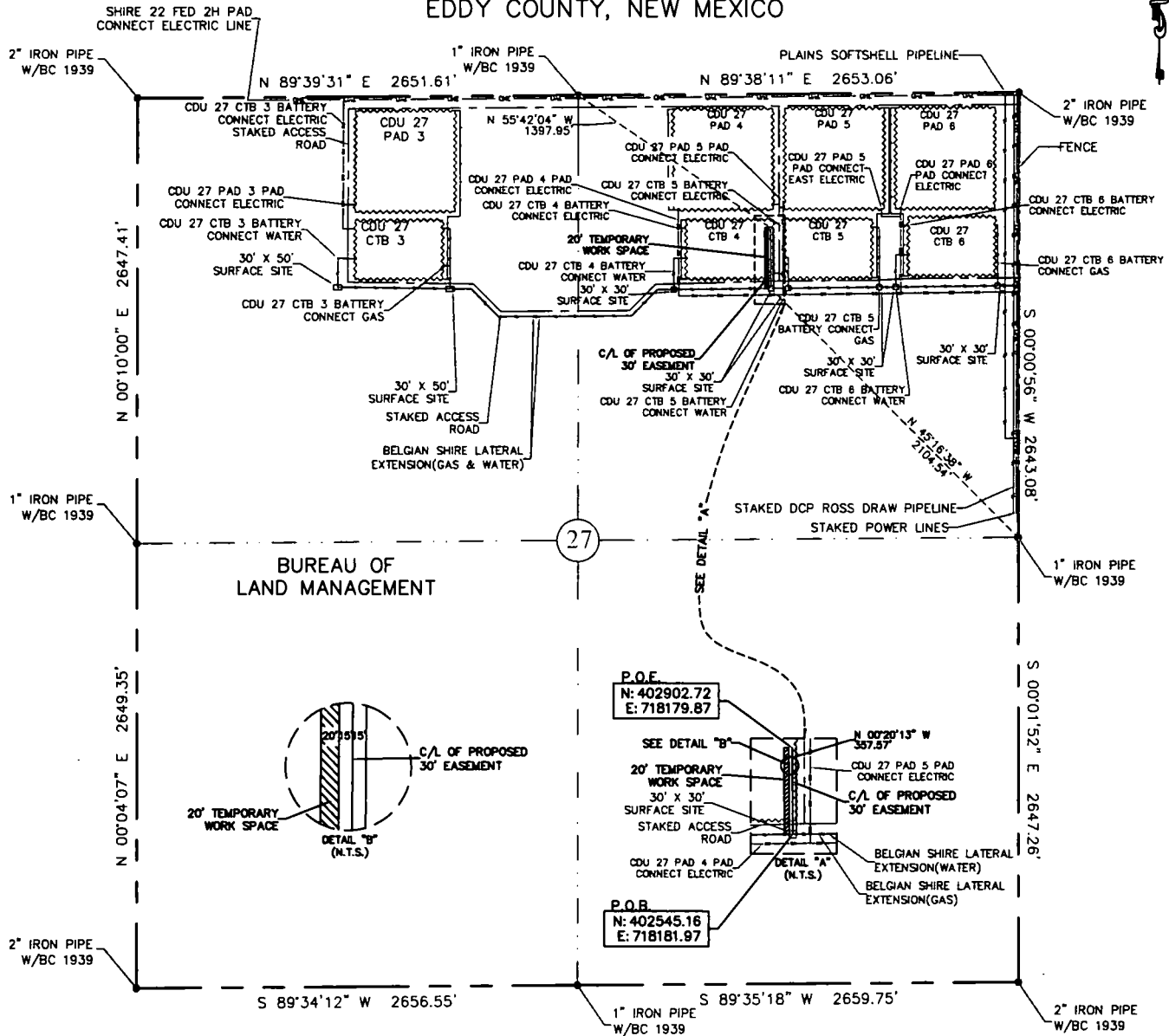
571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 7 of 18
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.246 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.164 ACRE(S)
357.57 FEET OR 21.67 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+14.0 EXIT 30' X 30' SURFACE SITE
0+41.9 C/L STAKED ACCESS ROAD
0+57.7 ENTER CDU 27 CTB 4
3+57.6 P.O.E.

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX.
(409) 202-5111 75951
Employee of Horizonrow, LLC



HORIZON ROW LLC

Drawn for:

devon

Drawn by:
CHRIS MAAS

Date: 05/03/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 4 BATTERY
CONNECT (GAS)

PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 27, T25S-R31E, N.M.P.M.

LINE NUMBER:
760068X

WBS NUMBER:
CC-110133.01

SCALE:
1" = 1000'

REVISIONS:

SHEET:
7 OF 18

0 1000 2000



SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 45°16'38" W, a distance of 2104.54' to the **Point of Beginning** of this easement having coordinates of Northing=402545.16 feet, Easting=718181.97 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following course;

Thence N 00°20'13" W, a distance of 357.57' to the **Point of Ending** having coordinates of Northing=402902.72 feet, Easting=718179.87 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 55°42'04" W a distance of 1397.95', covering **357.57' or 21.67 rods** and having an area of **0.246 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the left side and adjoining the left side of the above described thirty (30) feet easement, having a total area of **0.164 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC





SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

LEGAL DESCRIPTION
FOR
DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 43°14'14" W, a distance of 2031.71' to the **Point of Beginning** of this easement having coordinates of Northing=402544.39 feet, Easting=718285.53 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°01'15" E, a distance of 184.27' to the **Point of Ending** having coordinates of Northing=402728.66 feet, Easting=718285.60 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 52°39'24" W a distance of 1585.62', covering **184.27' or 11.17 rods** and having an area of **0.127 acres**.

20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the right side and adjoining the right side of the above described thirty (30) feet easement, having a total area of **0.085 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC





**SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO**

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 29°29'28" W, a distance of 1710.27' to the **Point of Beginning** of this easement having coordinates of Northing=402552.92 feet, Easting=718835.35 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°02'54" E, a distance of 353.80' to an angle point;

Thence N 89°55'44" W, a distance of 45.06' to the **Point of Ending** having coordinates of Northing=402906.77 feet, Easting=718790.59 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 47°56'46" E a distance of 1195.16', covering **398.86' or 24.17 rods** and having an area of **0.275 acres**.

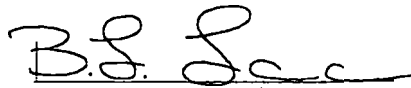
20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the right side and adjoining the right side of the above described thirty (30) feet easement, having a total area of **0.206 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

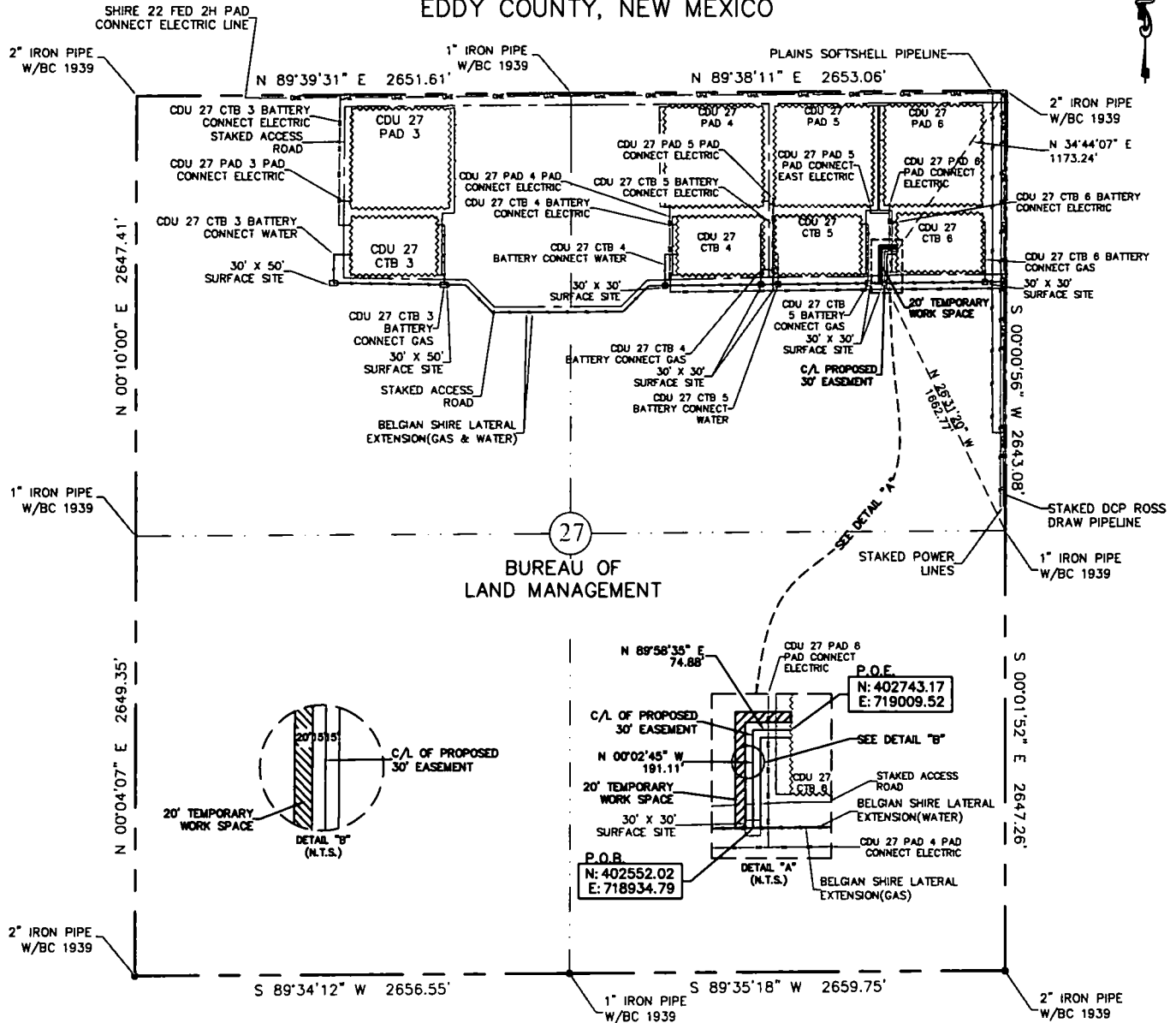
571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 13 of 18
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



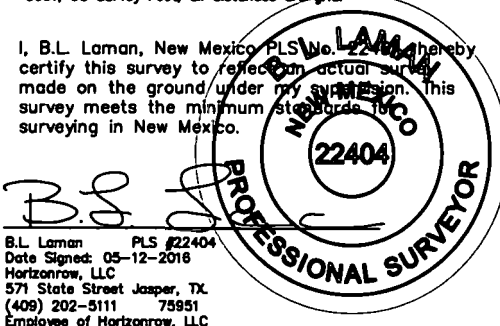
30' EASEMENT AREA = 0.183 ACRE(S)
 20' TEMPORARY WORK SPACE AREA = 0.145 ACRE(S)
 265.99 FEET OR 16.12 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (WATER)
 0+02.0 BELGIAN SHIRE LATERAL EXTENSION (GAS)
 0+16.0 EXIT 30' X 30' SURFACE SITE
 0+47.1 C/L STAKED ACCESS ROAD
 2+21.1 CDU 27 PAD 6 PAD CONNECT ELECTRIC LINE
 2+66.0 P.O.E./CDU 27 CTB 6

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS #22404
 Date Signed: 05-12-2018
 Horizonrow, LLC
 571 State Street Jasper, TX
 (409) 202-5111 75951
 Employee of Horizonrow, LLC

HORIZON ROW LLC

Drawn for:

devon

Drawn by:
 CHRIS MAAS

Date: 05/04/2018

0 1000 2000



DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 6 BATTERY
 CONNECT (WATER)

PROPOSED 30' EASEMENT
 ON THE PROPERTY OF
 BUREAU OF LAND MANAGEMENT
 SECTION 27, T25S-R31E, N.M.P.M.

LINE NUMBER:
 7600702

WBS NUMBER:
 CC-110133.03

SCALE:
 1" = 1000'

REVISIONS:

SHEET:
 13 OF 18

**SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO**

**LEGAL DESCRIPTION
FOR
DEVON ENERGY PRODUCTION COMPANY, L.P.**

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 26°31'20" W, a distance of 1662.77' to the **Point of Beginning** of this easement having coordinates of Northing=402552.02 feet, Easting=718934.79 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°02'45" W, a distance of 191.11' to an angle point;

Thence N 89°58'35" E, a distance of 74.88' to the **Point of Ending** having coordinates of Northing=402743.17 feet, Easting=719009.52 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 34°44'07" E a distance of 1173.24', covering **265.99' or 16.12 rods** and having an area of **0.183 acres**.

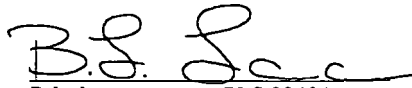
20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the left side and adjoining the left side of the above described thirty (30) feet easement, having a total area of **0.145 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

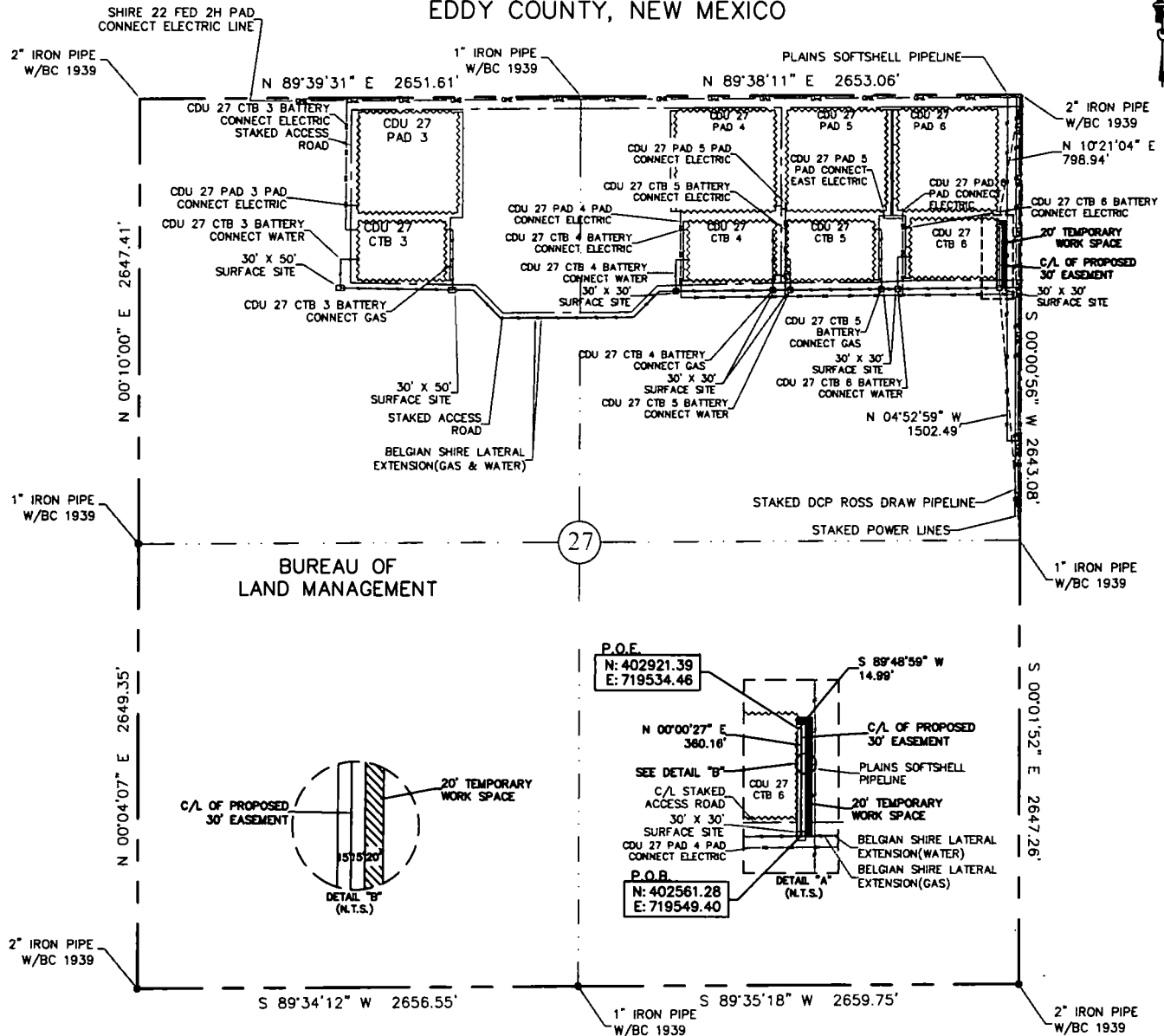
I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404
Date Signed: 05/12/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 15 of 18
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.258 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.195 ACRE(S)
375.15 FEET OR 22.74 RODS

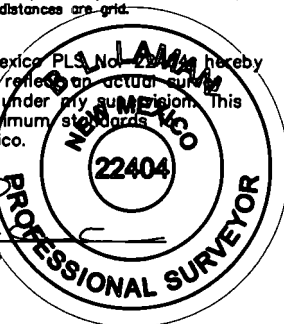
0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+14.0 EXIT 30' X 30' SURFACE SITE
0+45.1 C/L STAKED ACCESS ROAD
3+75.2 P.O.E./CDU 27 CTB 6

SEE THE ATTACHED LEGAL DESCRIPTION

Note: All bearings recited herein are based on the New Mexico State Plane Coordinate System, NAD 83, New Mexico East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS #22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS #22404
Date Signed: 05-12-2016
Horizonrow, LLC
571 State Street Jasper, TX
(409) 202-5111 75951
Employee of Horizonrow, LLC



HORIZON ROW LLC

Drawn for:

devon

Drawn by:
CHRIS MAAS

Date: 05/04/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 6 BATTERY
CONNECT (GAS)

PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 27, T25S-R31E, N.M.P.M.

LINE NUMBER:
760070X

WBS NUMBER:
CC-110133.01

SCALE:
1" = 1000'

REVISIONS:

SHEET:
15 OF 18

0 1000 2000



**SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO**

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 04°52'59" W, a distance of 1502.49' to the **Point of Beginning** of this easement having coordinates of Northing=402561.28 feet, Easting=719549.40 feet, being in the northeast quarter (NE ¼) of Section 27, T25S-R31E, and continuing the following courses;

Thence N 00°00'27" E, a distance of 360.16' to an angle point;

Thence S 89°48'59" W, a distance of 14.99' to the **Point of Ending** having coordinates of Northing=402921.39 feet, Easting=719534.46 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 10°21'04" E a distance of 798.94', covering **375.15' or 22.74 rods** and having an area of **0.258 acres**.

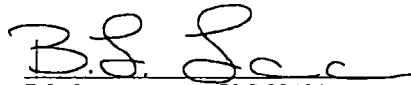
20' TEMPORARY WORK SPACE DESCRIPTION:

Being a temporary work space twenty (20) feet in width lying on the right side and adjoining the right side of the above described thirty (30) feet easement, having a total area of **0.195 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

571 State Street, Jasper, TX

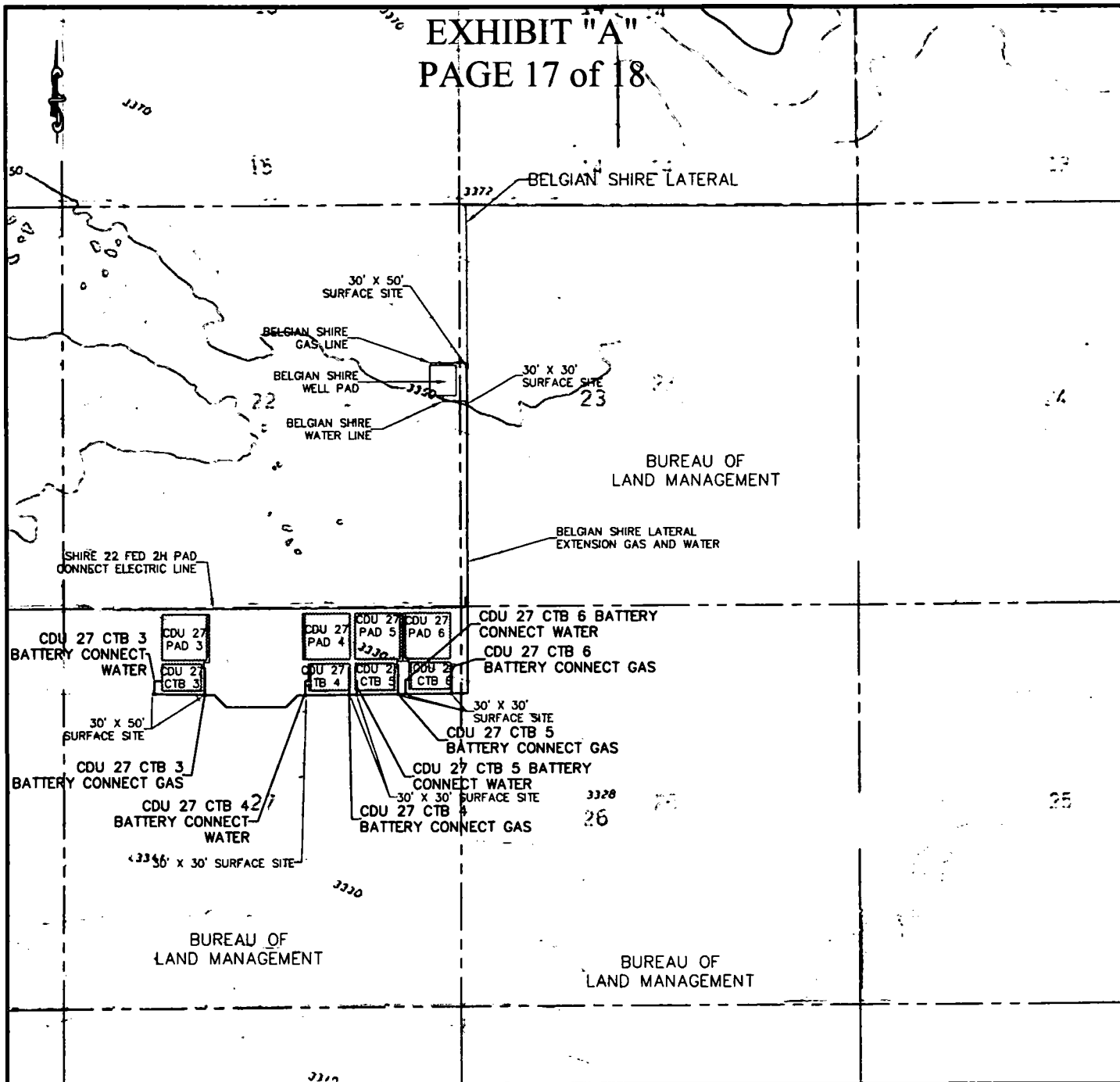
(409) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"

PAGE 17 of 18



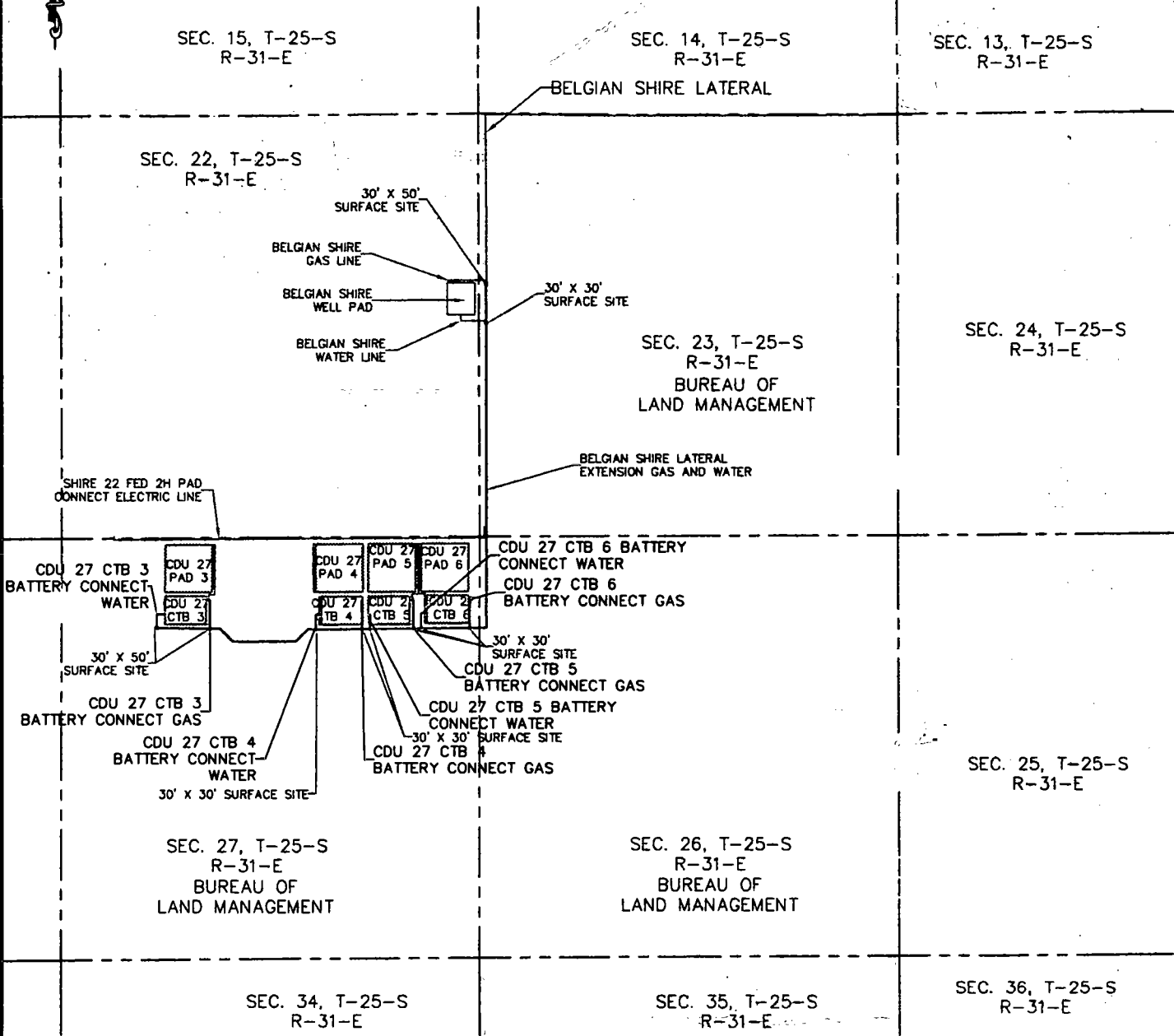
QUAD MAP

SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

HORIZON ROW LLC		WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)		CC-110133.01	760087X.2
CDU 27 CTB 4 BATTERY CONNECT (GAS & WATER)		CC-110133.01	760088X.2
CDU 27 CTB 5 BATTERY CONNECT (GAS & WATER)		CC-110133.01	760089X.2
CDU 27 CTB 6 BATTERY CONNECT (GAS & WATER)		CC-110133.01	760070X.2
Drawn for:		DEVON ENERGY PRODUCTION COMPANY, L.P.	
 Drawn by: CHRIS MAAS		PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT	
		SCALE: 1" = 2000'	
		REVISIONS:	
Date: 05/04/2016		SHEET: 17 OF 18	

EXHIBIT "A"

PAGE 18 of 18



AERIAL MAP

SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

HORIZON ROW LLC		WES NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)		CC-110133.01	760067X.2
CDU 27 CTB 4 BATTERY CONNECT (GAS & WATER)		CC-110133.01	760068X.2
CDU 27 CTB 5 BATTERY CONNECT (GAS & WATER)		CC-110133.01	760069X.2
CDU 27 CTB 6 BATTERY CONNECT (GAS & WATER)		CC-110133.01	760070X.2
Drawn for:		DEVON ENERGY PRODUCTION COMPANY, L.P.	
 devon		PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT	
Drawn by: CHRIS MAAS	Date: 05/04/2016	SCALE: 1" = 2000' REVISIONS: SHEET: 18 OF 18	

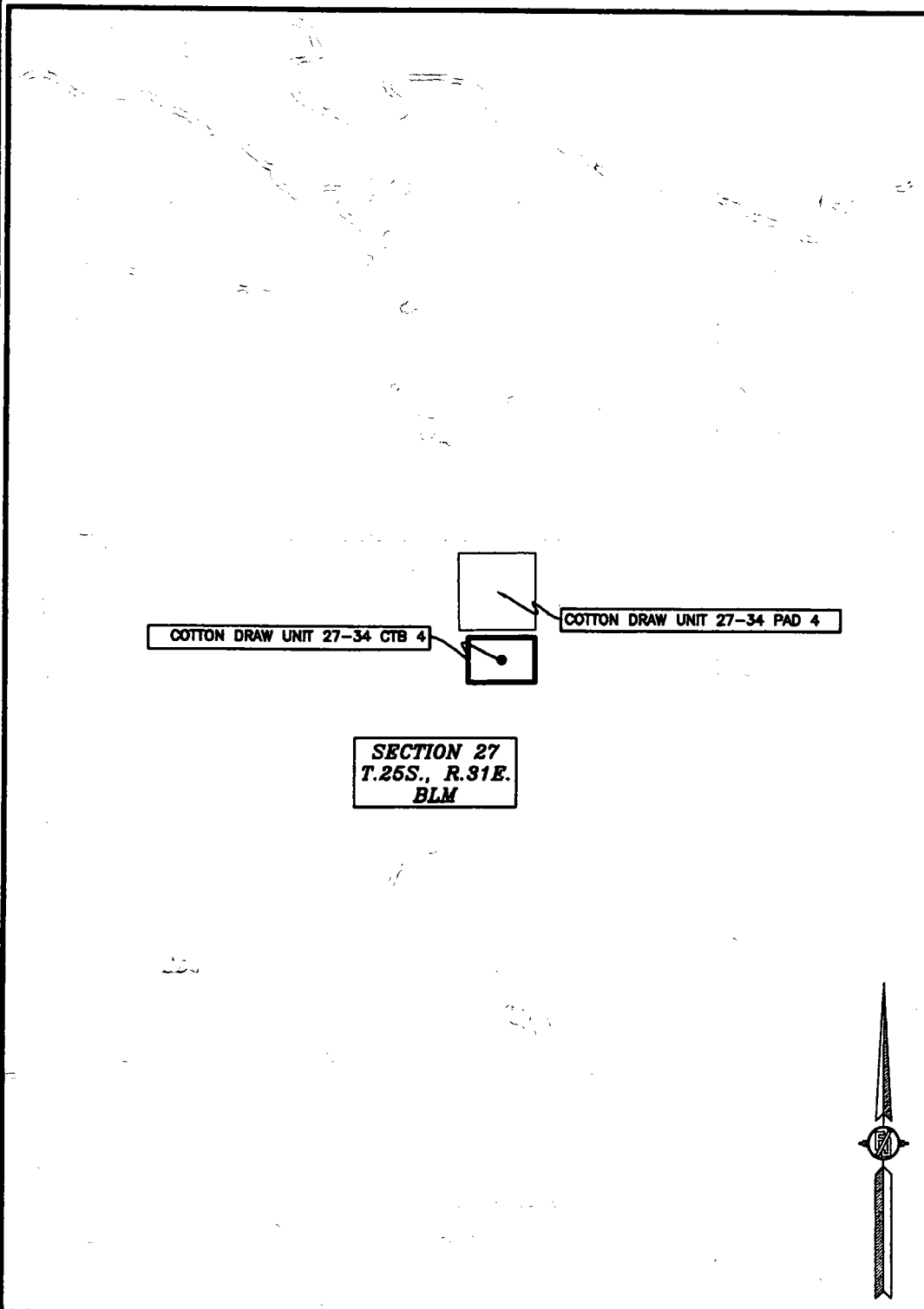
SURVEY NO. 4495B

COTTON DRAW UNIT 27-34 CTB 4 (AA000056009)

DEVON ENERGY PRODUCTION COMPANY, L.P.
IN THE NW/4 NE/4 OF
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

JUNE 17, 2016

QUAD MAP



SHEET: 2-3

MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

CARLSBAD, NEW MEXICO

SURVEY NO. 4495B

COTTON DRAW UNIT 27-34 CTB 4 (AA000056009)

DEVON ENERGY PRODUCTION COMPANY, L.P.
IN THE NW/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

22

COTTON DRAW UNIT 27-34 CTB 4

COTTON DRAW UNIT 27-34 PAD 4

SECTION 27
T.25S., R.31E.
BLM

27

SHEET: 3-3

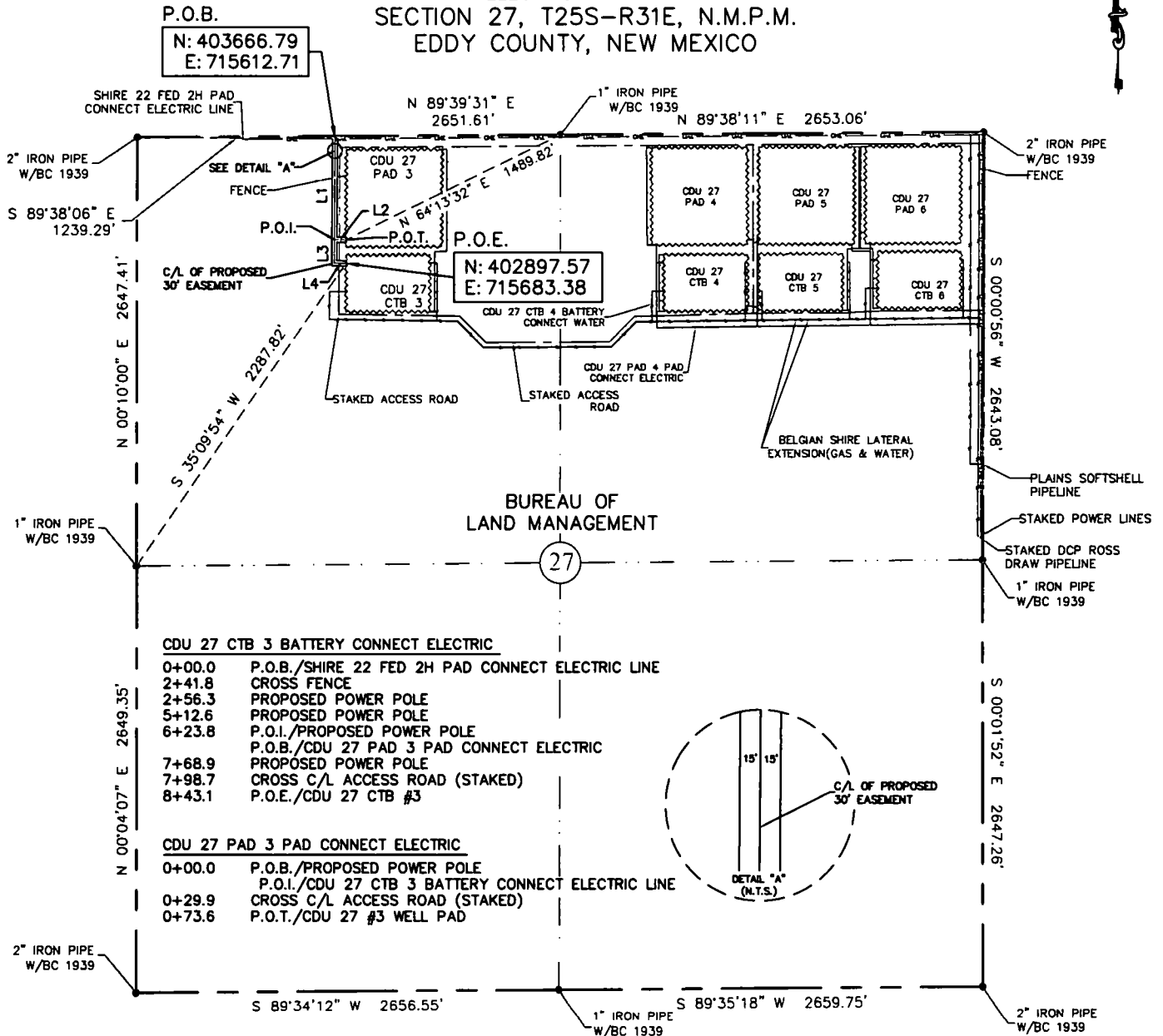
SURVEY NO. 4495B

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



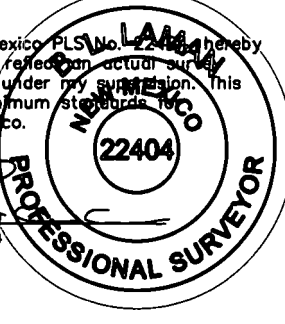
30' EASEMENT AREA = 0.621 ACRE(S)
916.72 FEET OR 55.56 RODS

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.

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
Date Signed: 05-13-2018
Horizonrow, LLC
571 State Street Jasper, TX
(409) 202-5111 75951
Employee of Horizonrow, LLC



0 1000 2000



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'

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: Drawn by: WAYNE BEETS Date: 05/09/2018 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	
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;

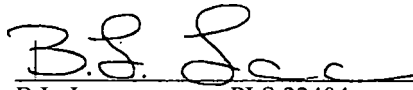
Thence S 00°16'02" W, a distance of 145.03' to an angle point;

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

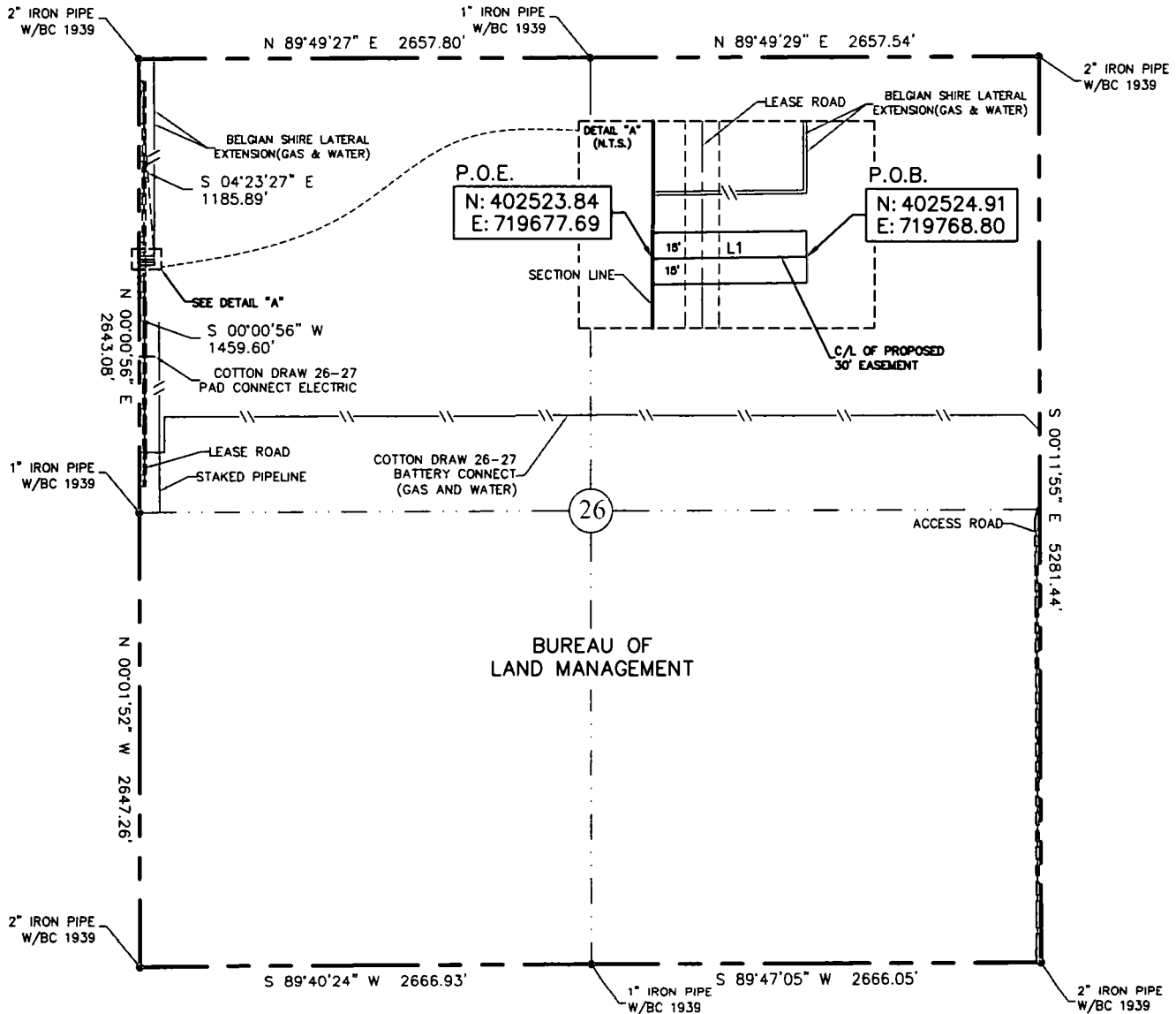
571 State Street, Jasper, TX

(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.

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.

LINE	BEARING	DISTANCE
L1	S 89°19'37" W	91.12'

0 1000 2000



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;

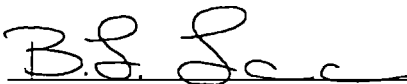
Thence S 04°23'27" E a distance of 1185.89' to the **Point of Beginning** of this easement having coordinates of Northing=402524.91 feet, Easting=719768.80 feet, and continuing the following course;

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

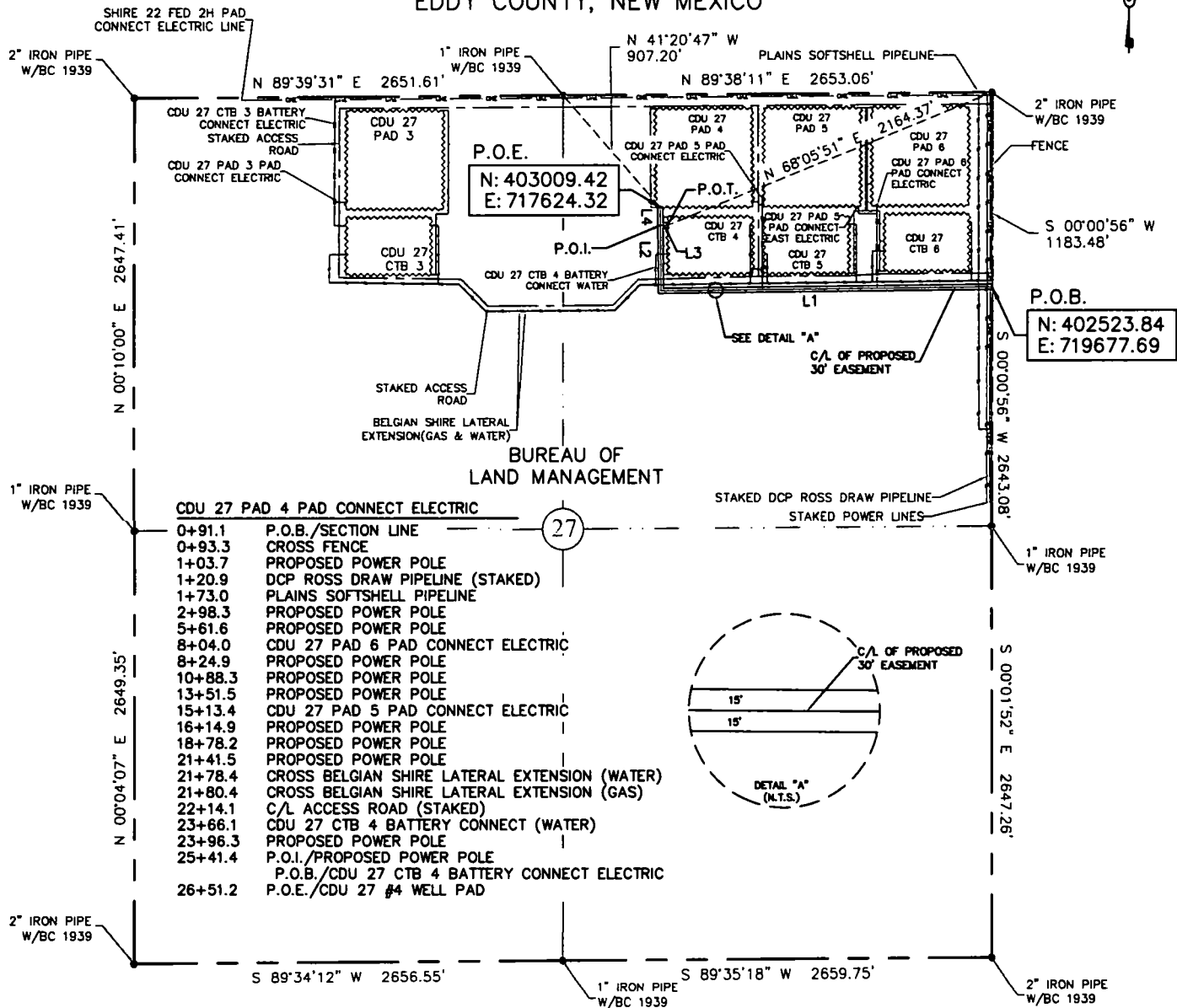
571 State Street, Jasper, TX

(402) 202-5111 75951

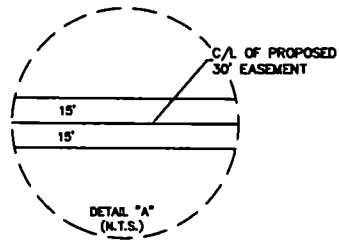
Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 6 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



- BUREAU OF LAND MANAGEMENT**
- 27
- 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

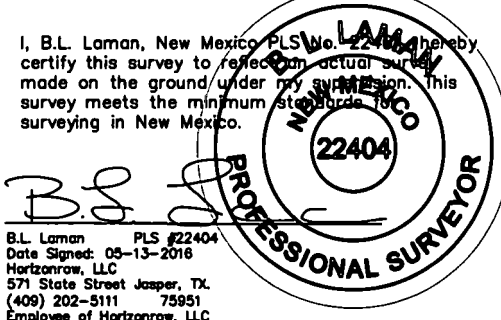
LINE	BEARING	DISTANCE
L1	S 89°19'37" W	2050.37'
L2	N 00°21'11" W	399.93'
L3	N 89°39'00" E	44.87'
L4	N 00°21'11" W	109.74'

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.

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

0 1000 2000



CDU 27 PAD 4 PAD CONNECT ELECTRIC LINE		WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 4 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL	EL7801
CDU 27 CTB 4 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL	EL7795
HORIZON ROW LLC		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.			

Drawn for:

devon

Drawn by:
 WAYNE BEETS

Date: 05/09/2016

**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:

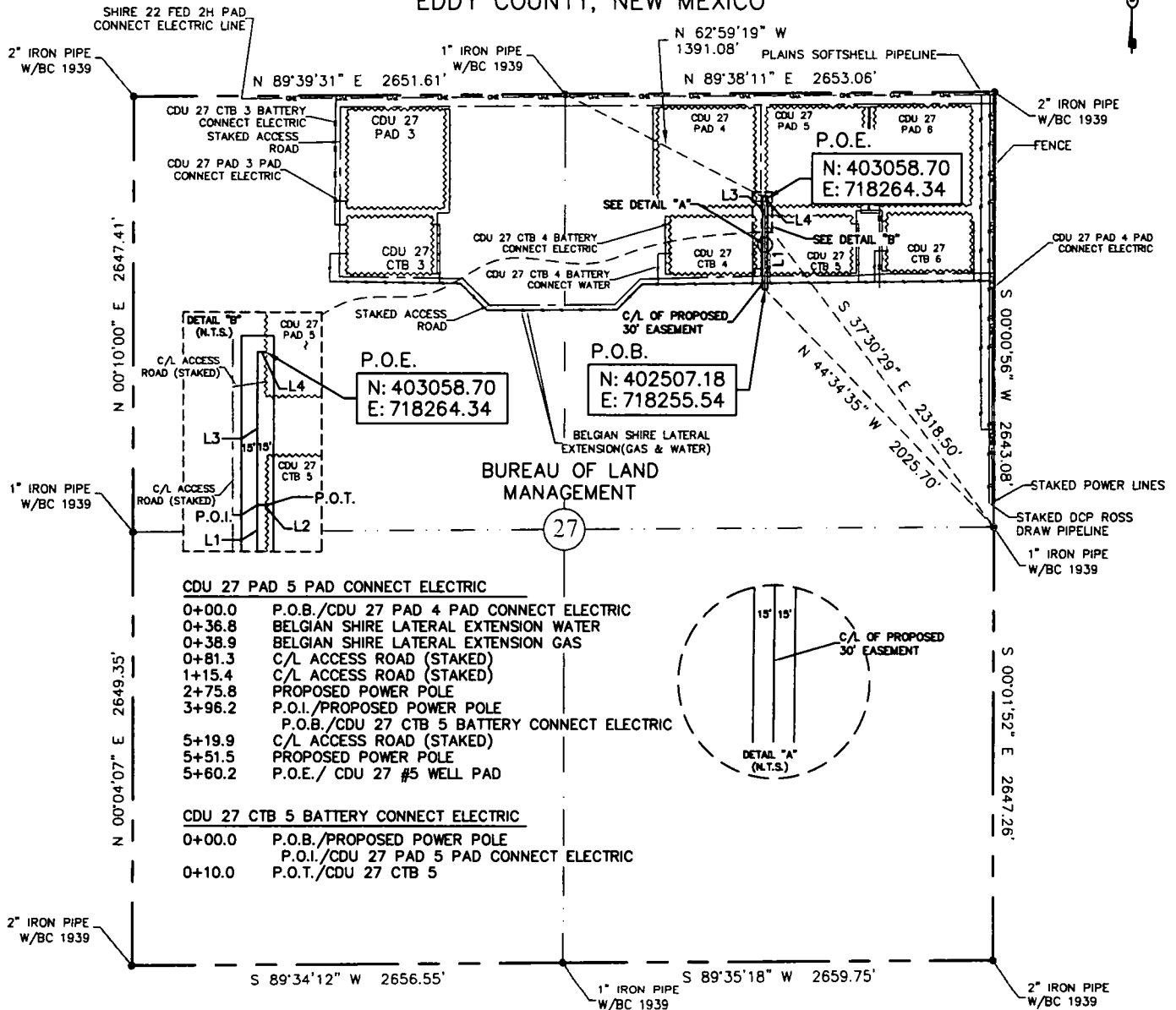
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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
5+19.9	P.O.B./CDU 27 CTB 5 BATTERY CONNECT ELECTRIC
5+51.5	C/L ACCESS ROAD (STAKED)
5+60.2	PROPOSED POWER POLE
	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

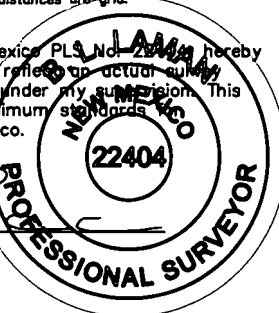
30' EASEMENT AREA = 0.390 ACRE(S)
 570.14 FEET OR 34.55 RODS

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.

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: 05-13-2018
 Horizonrow, LLC
 571 State Street Jasper, TX
 (409) 202-5111 75951
 Employee of Horizonrow, LLC



CDU 27 PAD 5 PAD CONNECT ELECTRIC LINE		CC-112971.AL	EL7802
CDU 27 CTB 5 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL	EL7796
<i>HORIZON ROW LLC</i>		DEVON ENERGY PRODUCTION COMPANY, L.P.	
Drawn for:		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

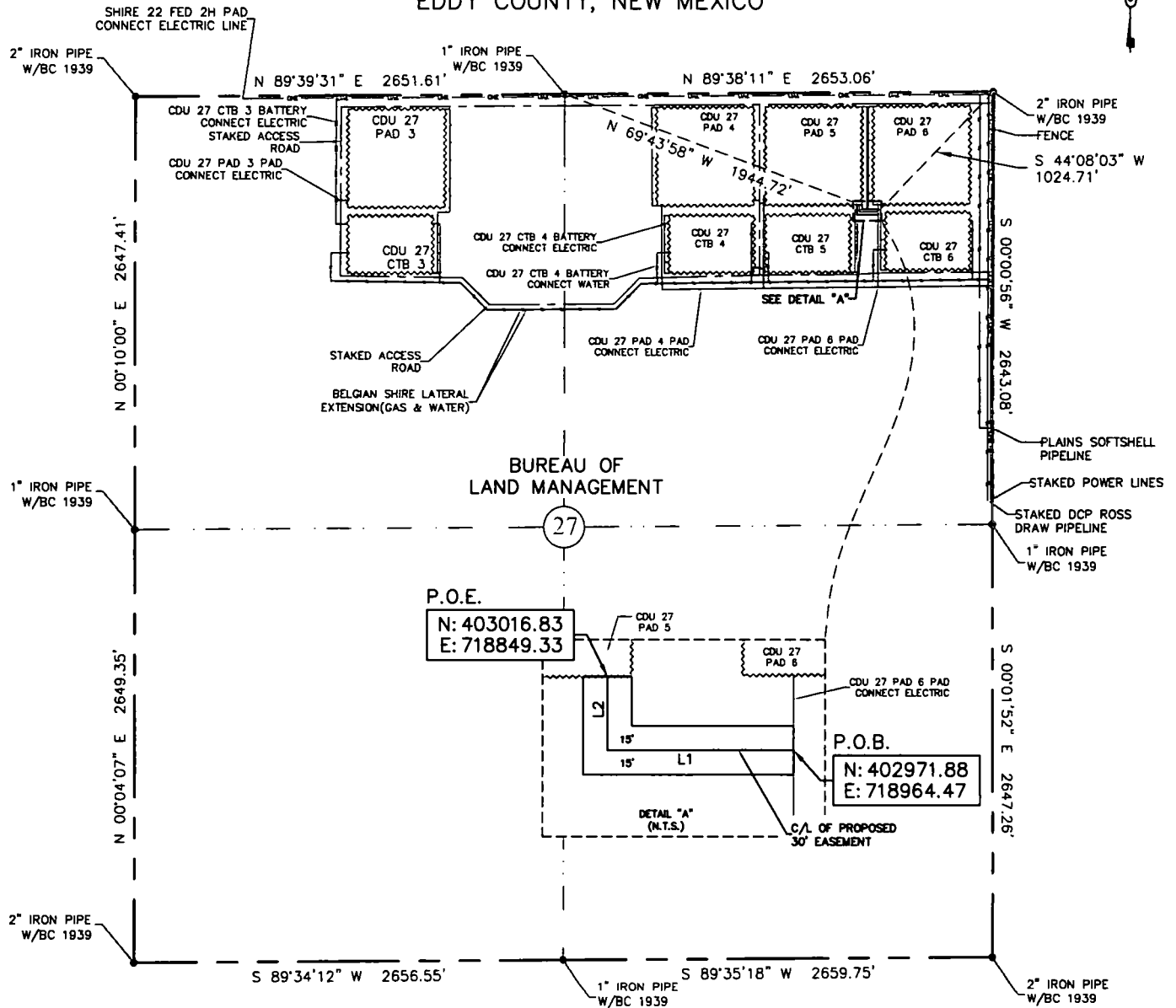
571 State Street, Jasper, TX

(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

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: 05-13-2018
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: 05/10/2018

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

LINE	BEARING	DISTANCE
L1	S 89°58'05" W	115.15'
L2	N 00°01'04" E	45.02'

0 1000 2000



**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:

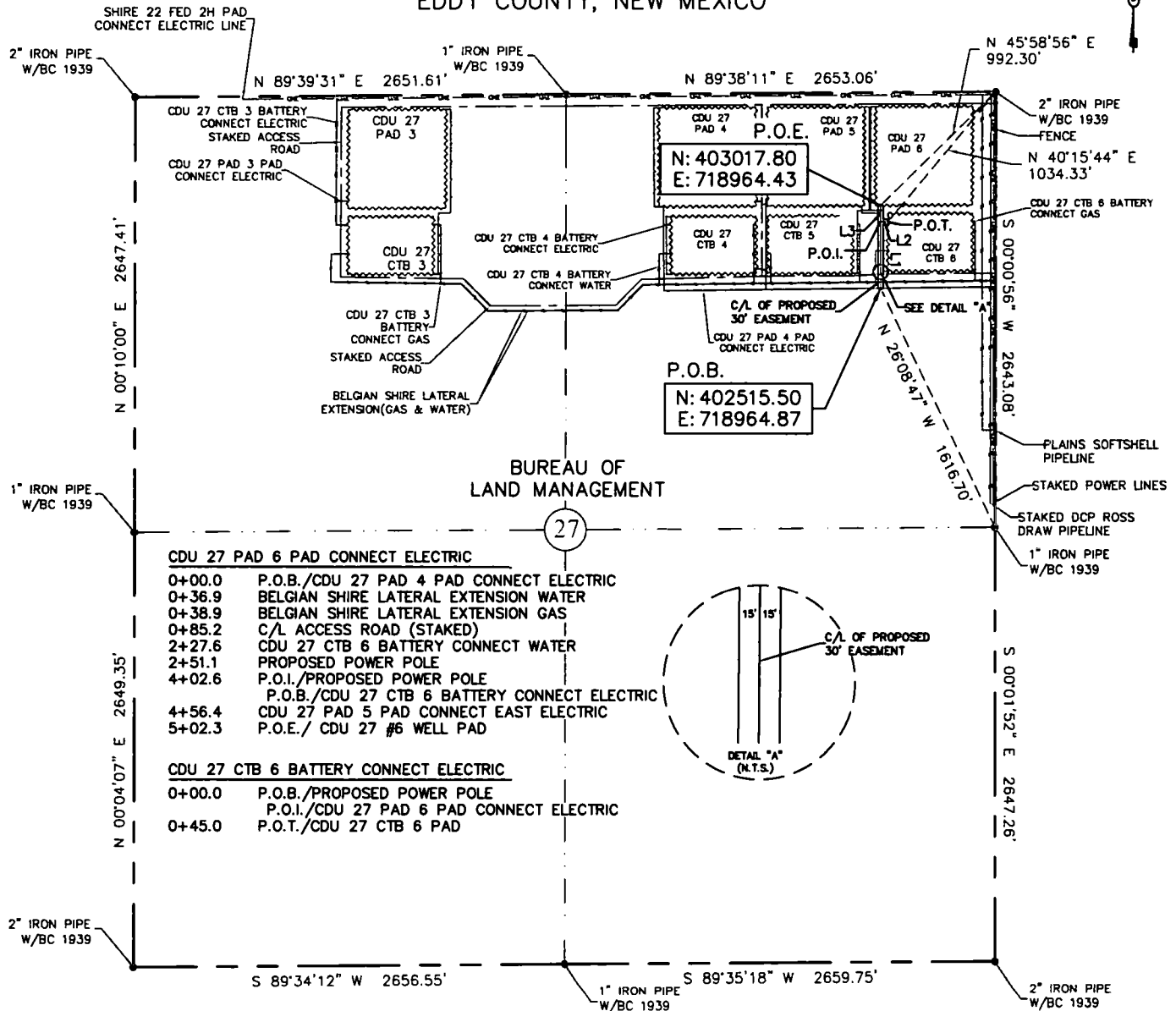
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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

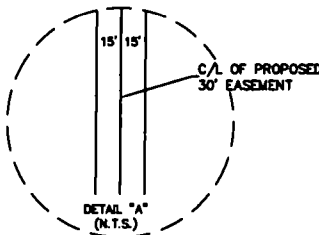


EXHIBIT "A"
PAGE 14 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



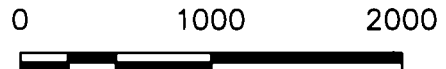
CDU 27 PAD 6 PAD CONNECT ELECTRIC
0+00.0 P.O.B./CDU 27 PAD 4 PAD CONNECT ELECTRIC
0+36.9 BELGIAN SHIRE LATERAL EXTENSION WATER
0+38.9 BELGIAN SHIRE LATERAL EXTENSION GAS
0+85.2 C/L ACCESS ROAD (STAKED)
2+27.6 CDU 27 CTB 6 BATTERY CONNECT WATER
2+51.1 PROPOSED POWER POLE
4+02.6 P.O.I./PROPOSED POWER POLE
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'

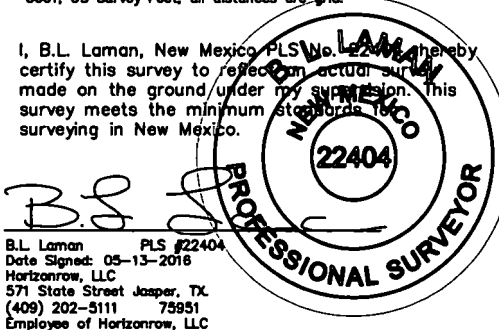
30' EASEMENT AREA = 0.367 ACRE(S)
547.32 FEET OR 33.17 RODS



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 Professional Surveyor 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: 05-13-2018
Horizonrow, LLC
571 State Street Jasper, TX
(409) 202-5111 75951
Employee of Horizonrow, LLC

CDU 27 PAD 6 PAD CONNECT ELECTRIC LINE		WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 6 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL	EL7803
CDU 27 CTB 6 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL	EL7797
HORIZON ROW LLC		DEVON ENERGY PRODUCTION COMPANY, L.P. CDU 27 PAD 6 PAD CONNECT AND CDU 27 CTB 6 BATTERY CONNECT ELECTRIC LINES	
Drawn for:		SCALE: 1" = 1000'	
devon		REVISIONS:	
Drawn by: WAYNE BEETS		SHEET: 14 OF 17	
Date: 05/09/2018		PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.	

**SECTION 27, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO**

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northeast quarter (NE ¼) of Section 27, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 1" iron pipe w/ BC 1939 for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 26°08'47" W a distance of 1616.70' to the **Point of Beginning** of this easement having coordinates of Northing=402515.50 feet, Easting=718964.87 feet, and continuing the following courses;

Thence N 00°03'00" W, a distance of 402.56' to the Point of Intersection;

Thence S 89°58'05" E, a distance of 45.02' to the point of termination of this portion of said easement, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 40°15'44" E a distance of 1034.33';

Thence continuing from said point of intersection the following course;

Thence N 00°03'00" W, a distance of 99.74' to the **Point of Ending** having coordinates of Northing=403017.80 feet, Easting=718964.43 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 45°58'56" E a distance of 992.30', covering **547.32' or 33.17 rods** and having an area of **0.367 acres**.

NOTES:

Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



B.L. Laman PLS 22404

Date Signed: 05/13/2016

Horizon Row, LLC

571 State Street, Jasper, TX

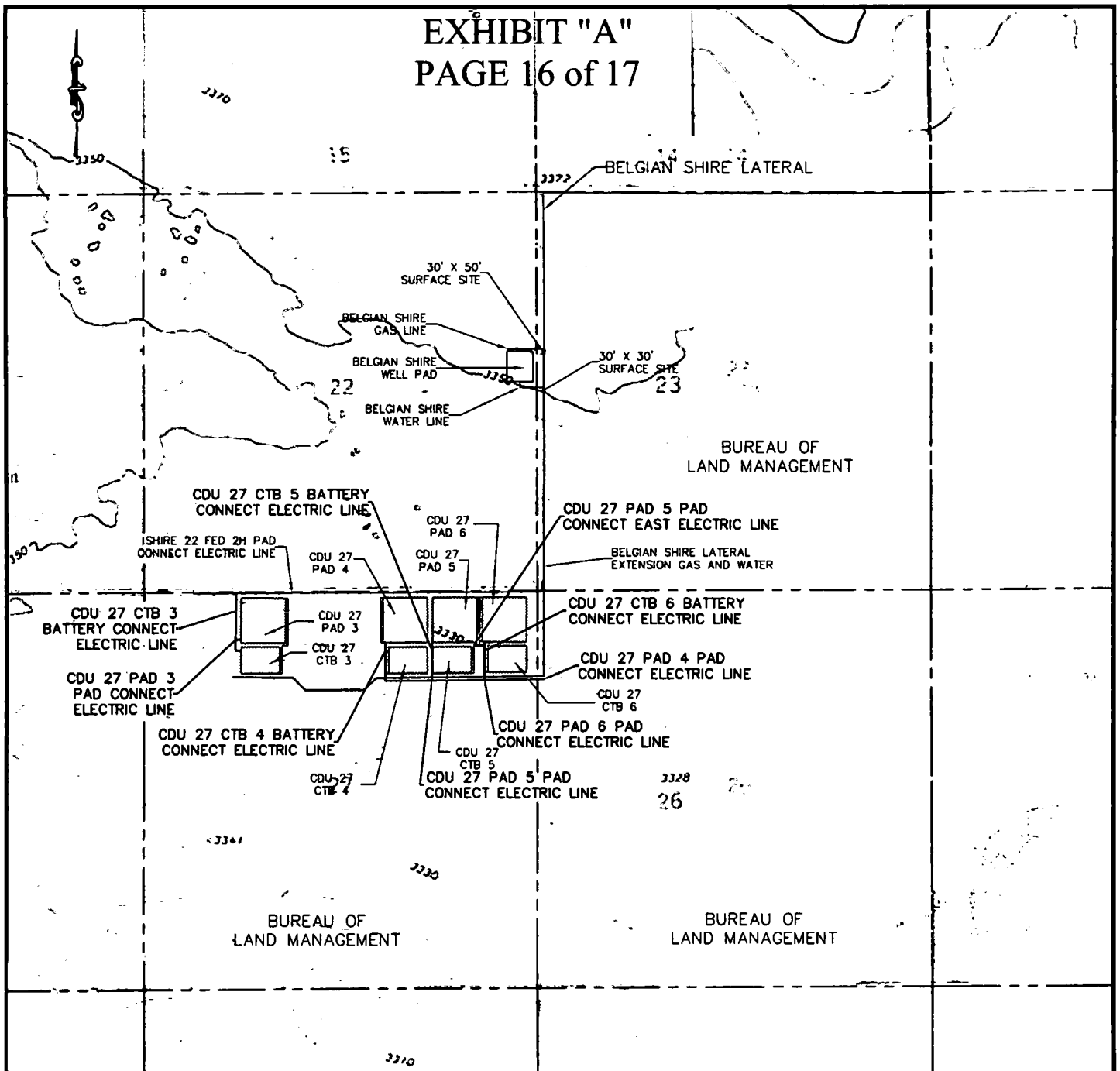
(402) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"

PAGE 16 of 17



QUAD MAP

SECTION 27, T25S-R31E, N.M.P.M.
SECTION 26, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

WBS NUMBER:	LINE NUMBER:
CC-112971.AL	EL7794
CC-112971.AL	EL7800
CC-112971.AL	EL7801
CC-112971.AL	EL7795
CC-112971.AL	EL7814
CC-112971.AL	EL7802
CC-112971.AL	EL7798
CC-112971.AL	EL7803
CC-112971.AL	EL7797
Drawn for:	
	
DEVON ENERGY PRODUCTION COMPANY, L.P. PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT	
SCALE: 1" = 2000' REVISIONS: SHEET: 16 OF 17	
Drawn by: WAYNE BEETS	Date: 05/10/2016

HORIZON ROW LLC

EXHIBIT "A"

PAGE 17 of 17

SEC. 15, T-25-S
R-31-E

SEC. 14, T-25-S
R-31-E

SEC. 13, T-25-S
R-31-E

SEC. 22, T-25-S
R-31-E

BELGIAN SHIRE LATERAL

30' x 50'
SURFACE SITE

BELGIAN SHIRE
GAS LINE

BELGIAN SHIRE
WELL PAD

BELGIAN SHIRE
WATER LINE

30' x 30'
SURFACE SITE

SEC. 23, T-25-S
R-31-E

BUREAU OF
LAND MANAGEMENT

SEC. 24, T-25-S
R-31-E

CDU 27 CTB 5 BATTERY
CONNECT ELECTRIC LINE

SHIRE 22 FED 2H PAD
CONNECT ELECTRIC LINE

CDU 27
PAD 4

CDU 27
PAD 6

CDU 27
PAD 5

CDU 27 PAD 5 PAD
CONNECT EAST ELECTRIC LINE

BELGIAN SHIRE LATERAL
EXTENSION GAS AND WATER

CDU 27 CTB 6 BATTERY
CONNECT ELECTRIC LINE

CDU 27 CTB 3
BATTERY CONNECT
ELECTRIC LINE

CDU 27
PAD 3

CDU 27
CTB 3

CDU 27 PAD 3
PAD CONNECT
ELECTRIC LINE

CDU 27 PAD 4 PAD
CONNECT ELECTRIC LINE

CDU 27
CTB 6

CDU 27 CTB 4 BATTERY
CONNECT ELECTRIC LINE

CDU 27
CTB 4

CDU 27 PAD 6 PAD
CONNECT ELECTRIC LINE

CDU 27
CTB 5

CDU 27 PAD 5 PAD
CONNECT ELECTRIC LINE

SEC. 27, T-25-S
R-31-E

BUREAU OF
LAND MANAGEMENT

SEC. 26, T-25-S
R-31-E

BUREAU OF
LAND MANAGEMENT

SEC. 25, T-25-S
R-31-E

SEC. 34, T-25-S
R-31-E

SEC. 35, T-25-S
R-31-E

SEC. 36, T-25-S
R-31-E

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	EL7798
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" = 200'

REVISIONS:

SHEET:

17 OF 17

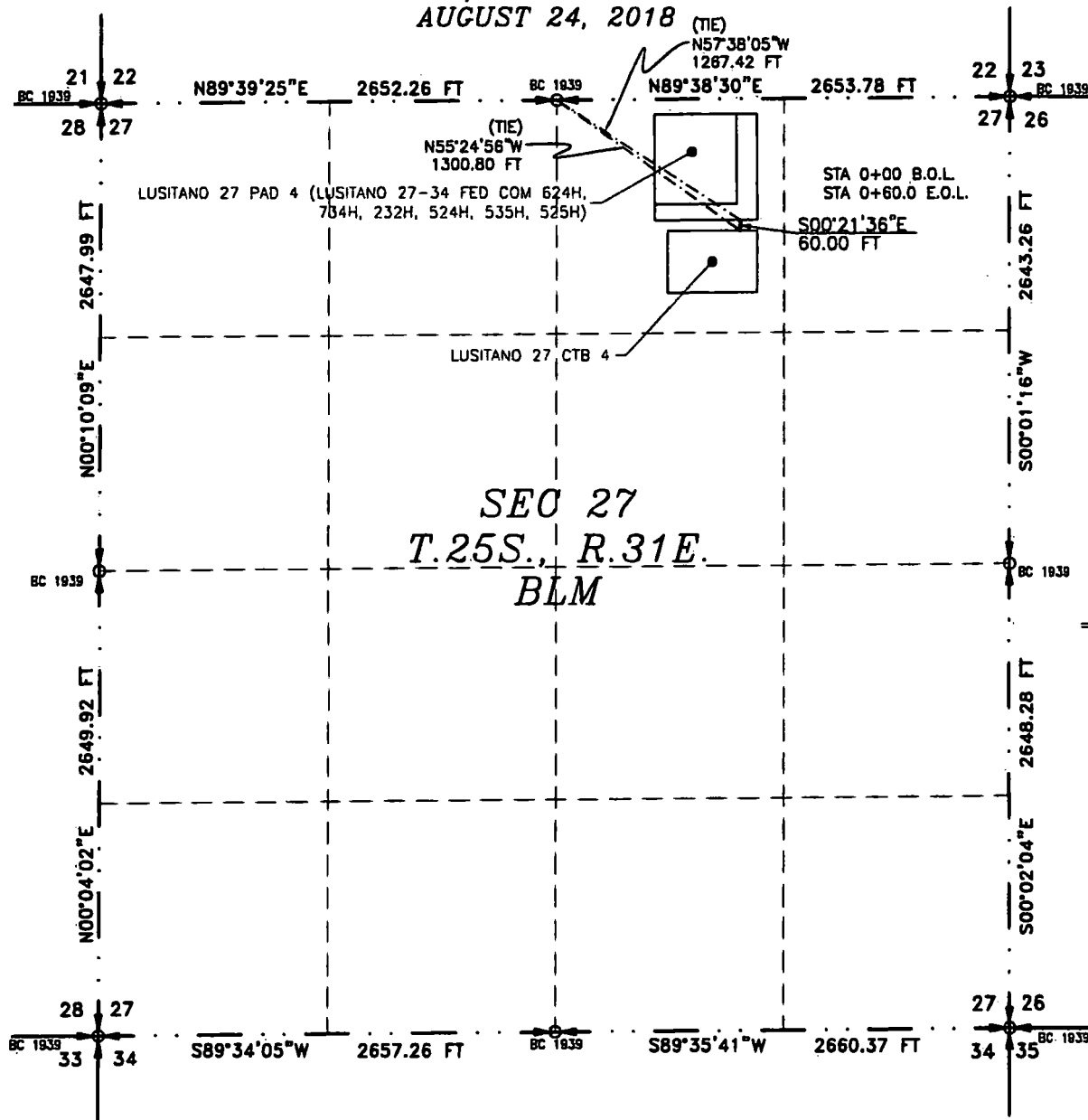
HORIZON ROW LLC

Drawn by:

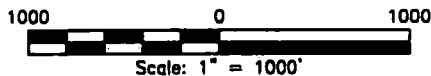
Date: 05/10/2018

FLOWLINE PLAT
 SIX 8" BURIED COMPOSITE FLOWLINES & ONE 8" GAS LIFT LINE FROM LUSITANO 27 PAD 4
 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 525H) TO THE LUSITANO 27 CTB 4

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



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.

SHEET: 1-4

MADRON SURVEYING, INC.

SURVEYOR CERTIFICATE

I, FILMON 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

FILMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, CARLSBAD, NEW MEXICO

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

SURVEY NO. 6505

CARLSBAD, NEW MEXICO

FLOWLINE PLAT

SIX 8" BURIED COMPOSITE FLOWLINES & ONE 8" GAS LIFT LINE FROM LUSITANO 27 PAD 4
(LUSITANO 27-34 FED COM 624H, 734H, 232H, 524H, 535H, 525H) TO THE LUSITANO 27 CTB 4

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 NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N57°38'05"W, A DISTANCE OF 1267.42 FEET;

THENCE S00°21'36"E A DISTANCE OF 60.00 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 N55°24'56"W, A DISTANCE OF 1300.80 FEET;

SAID STRIP OF LAND BEING 60.00 FEET OR 3.64 RODS IN LENGTH, CONTAINING 0.041 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 60.00 L.F. 3.64 RODS 0.041 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 23 DAY OF AUGUST 2018

12797

FILIMON F. JARAMILLO, P.E. 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.

SHEET: 2-4

MADRON SURVEYING, INC.

301 SOUTH CANAL, CARLSBAD, NEW MEXICO 88220
(575) 234-3341

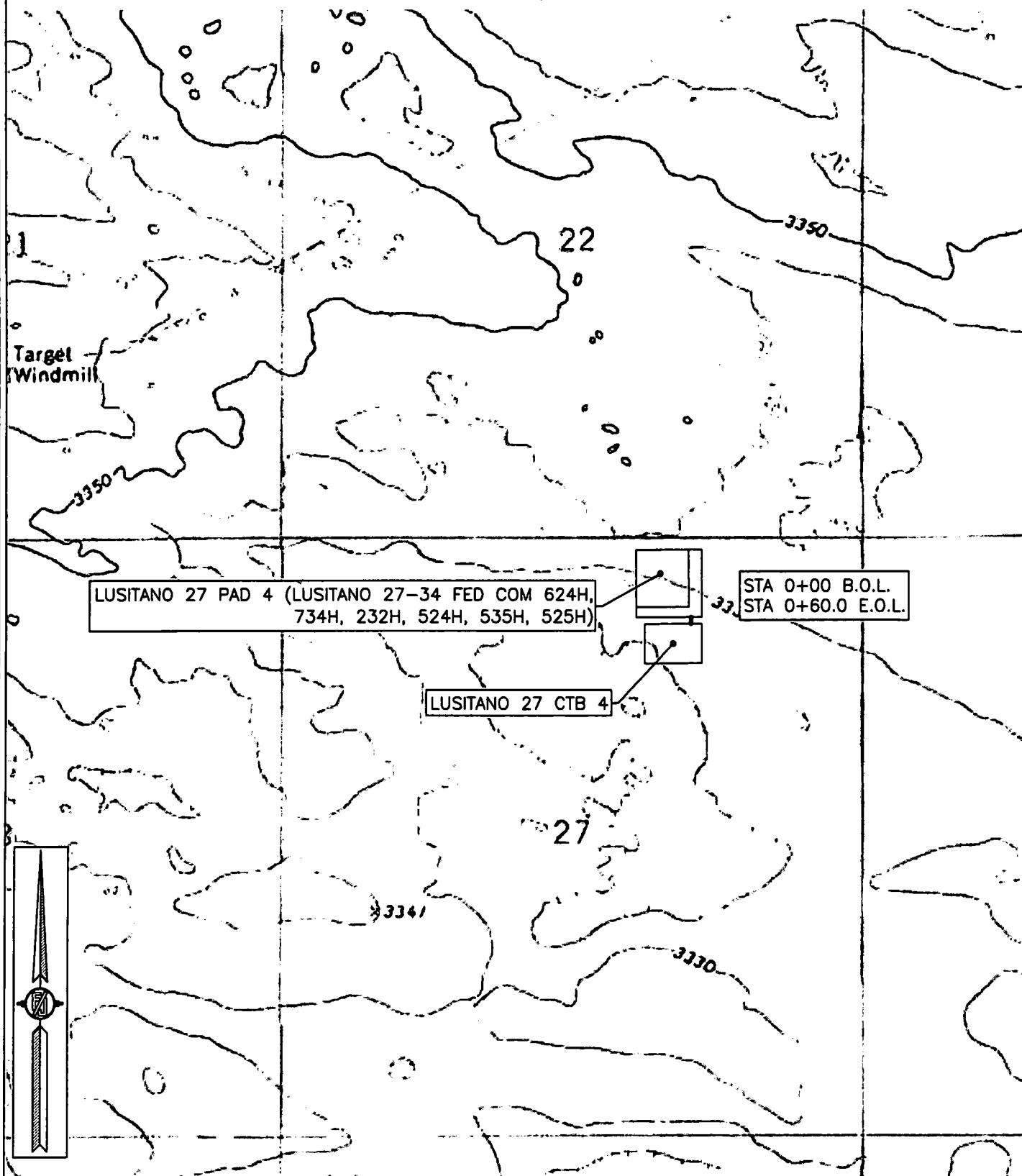
SURVEY NO. 6505

CARLSBAD, NEW MEXICO

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AUGUST 24, 2018

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LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H,
734H, 232H, 524H, 535H, 525H)

STA 0+00 B.O.L.
STA 0+60.0 E.O.L.

LUSITANO 27 CTB 4

27





Section 1 - General

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

Section 2 - Lined Pits

Would you like to utilize Lined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

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

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Unlined pit PWD on or off channel:

Unlined pit PWD discharge volume (bbl/day):

Unlined pit specifications:

Precipitated solids disposal:

Describe precipitated solids disposal:

Precipitated solids disposal permit:

Unlined pit precipitated solids disposal schedule:

Unlined pit precipitated solids disposal schedule attachment:

Unlined pit reclamation description:

Unlined pit reclamation attachment:

Unlined pit Monitor description:

Unlined pit Monitor attachment:

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

Beneficial use user confirmation:

Estimated depth of the shallowest aquifer (feet):

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

TDS lab results:

Geologic and hydrologic evidence:

State authorization:

Unlined Produced Water Pit Estimated percolation:

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

Is the reclamation bond a rider under the BLM bond?

Unlined pit bond number:

Unlined pit bond amount:

Additional bond information attachment:

Section 4 - Injection

Would you like to utilize Injection PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Injection PWD discharge volume (bbl/day):

Injection well mineral owner:

Injection well type:

Injection well number:

Assigned injection well API number?

Injection well name:

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:



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

Bond Info Data Report

01/14/2019

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: