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

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM125635
1b. Type of Well: ☒ Oil Well ☒ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY LP		8. Lease Name and Well No. LUSITANO 27-34 FED COM 624H 319562
3a. Address 333 West Sheridan Avenue Oklahoma City OK 73102	3b. Phone No. (include area code) (800)583-3866	9. API Well No. 30-015-45632
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NWNE / 235 FNL / 1934 FEL / LAT 32.1079088 / LONG -103.7635931 At proposed prod. zone SWSE / 20 FSL / 2310 FEL / LAT 32.0795011 / LONG -103.7648926		10. Field and Pool, or Exploratory PURPLE SAGE / WOLFCAMP 98220
11. Sec., T. R. M. or Blk. and Survey or Area SEC 27 / T25S / R31E / NMP		12. County or Parish EDDY
13. State NM		14. Distance in miles and direction from nearest town or post office*
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 11768 feet / 21904 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* 03/18/2019	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. | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan. | 5. Operator certification. |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be 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 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

RWP 1-16-19

INSTRUCTIONS

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

ITEM 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 a new 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 / 235 FNL / 1934 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.1079088 / LONG: -103.7635931 (TVD: 0 feet, MD: 0 feet)
PPP: NWNE / 405 FNL / 2310 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.10745 / LONG: -103.7648094 (TVD: 11633 feet, MD: 11706 feet)
BHL: SWSE / 20 FSL / 2310 FEL / TWSP: 25S / RANGE: 31E / SECTION: 34 / LAT: 32.0795011 / LONG: -103.7648926 (TVD: 19768 feet, MD: 21904 feet)

BLM Point of Contact

Name: Tenille Ortiz

Title: Legal Instruments Examiner

Phone: 5752342224

Email: tortiz@blm.gov

CONFIDENTIAL

Review and Appeal Rights

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

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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 624H
SURFACE HOLE FOOTAGE:	235'/N & 1934'/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 **931'** (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 12106' 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 should 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 931' (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 12106' 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 should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
2. 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 will 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 624H
SURFACE HOLE FOOTAGE:	235'/N & 1934'/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.

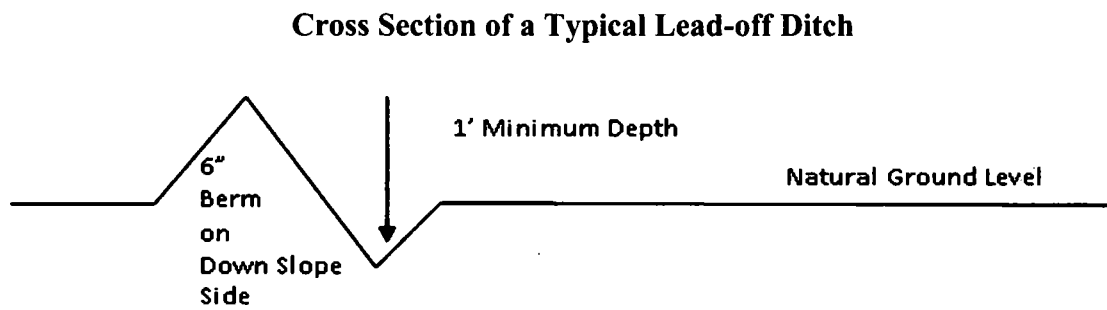
Turnouts

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.

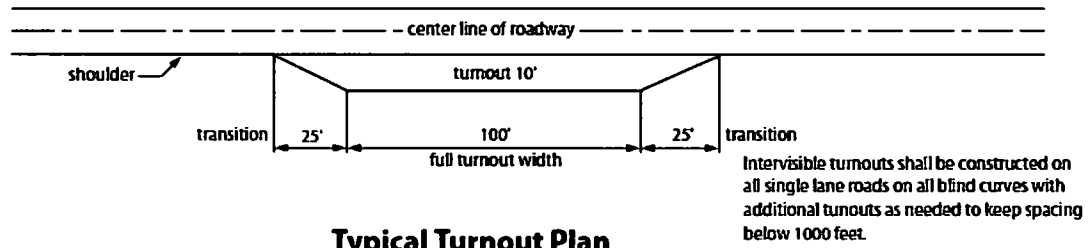
Public Access

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

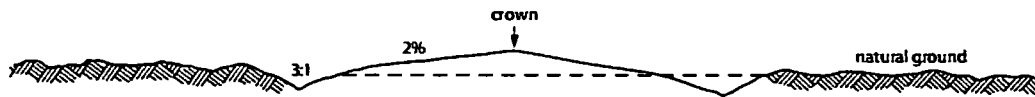
Construction Steps

1. Salvage topsoil
2. Construct road

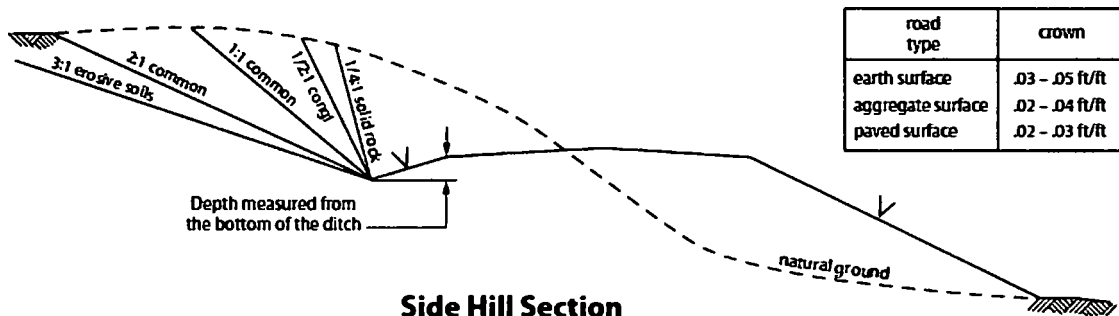
3. Redistribute topsoil
4. Revegetate slopes



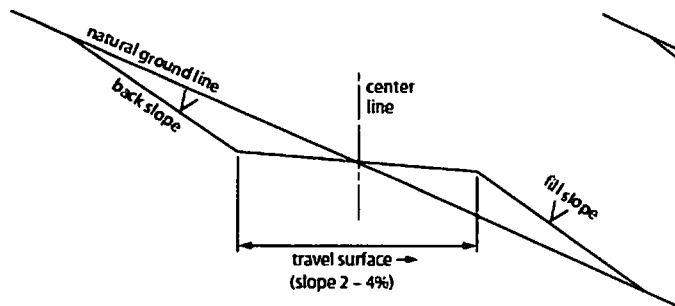
Typical Turnout Plan



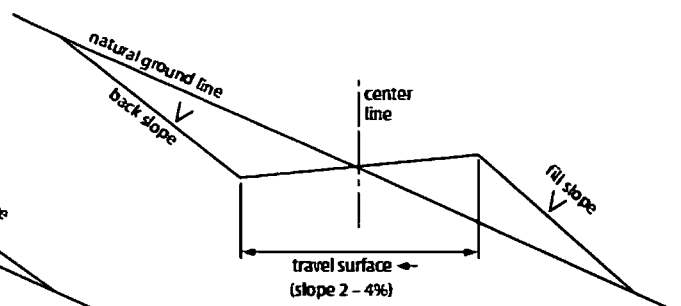
Level Ground Section



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

01/11/2019

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

APD ID: 10400033372

Submission Date: 08/29/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 624H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400033372

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

Mater Development Plan name: Cotton Draw 1 MDP

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: LUSITANO 27-34 FED COM

Well Number: 624H

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: 624H

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

Well Class: HORIZONTAL

LUSITANO 27 WELLPAD

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_624H_C_102_signed_20180827115550.pdf

Lusitano_27_34_Fed_Com_624H_Additional_points_required_20180827115602.pdf

Well work start Date: 03/18/2019

Duration: 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 6436

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	235	FNL	193 4	FEL	25S	31E	27	Aliquot NWNE	32.10790 88	- 103.7635 931	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	333 7	0	0
KOP Leg #1	200	FNL	231 0	FEL	27S	31E	27	Aliquot NWNE	32.10801	- 103.7648 07	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	- 785 8	112 06	111 95
PPP Leg #1	405	FNL	231 0	FEL	25S	31E	27	Aliquot NWNE	32.10745	- 103.7648 09	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	- 829 6	117 06	116 33

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 624H

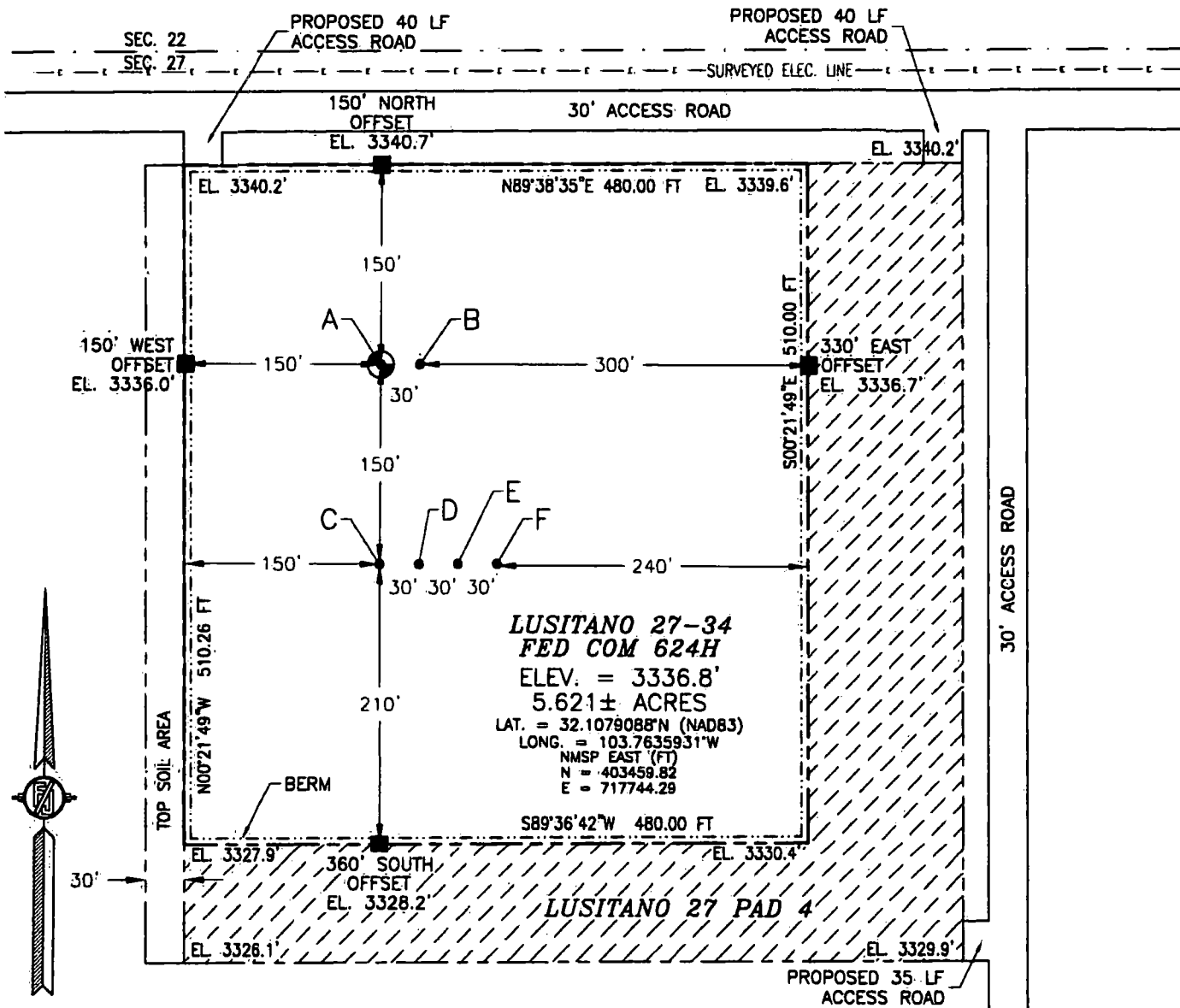
	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
EXIT Leg #1	20	FSL	231 0	FEL	25S	31E	34	Aliquot SWSE	32.07950 11	- 103.7648 926	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 125635	- 843 1	219 04	117 68
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	- 843 1	219 04	117 68

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.



DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 624H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1934 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. 6436

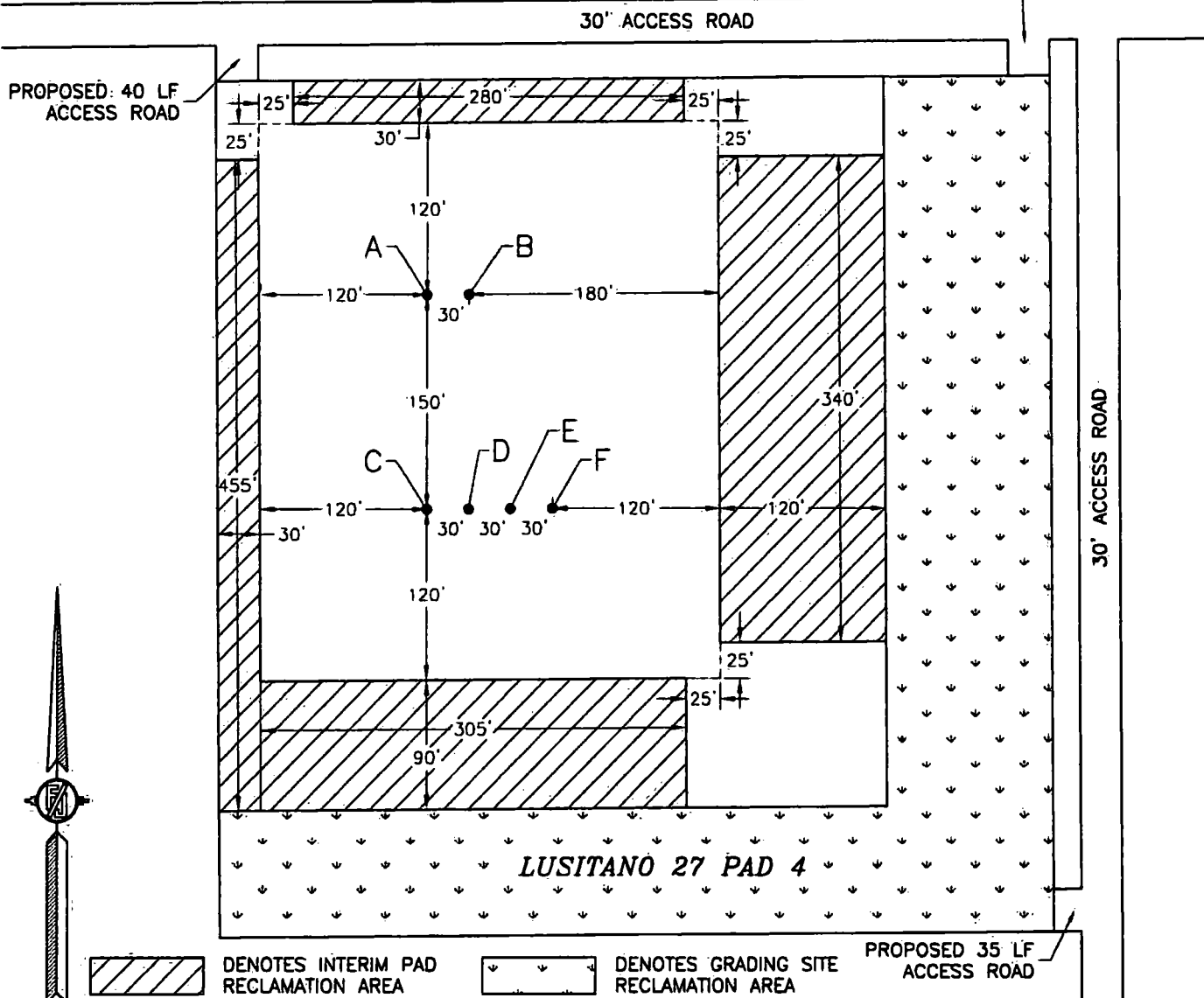
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

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

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



0 10 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

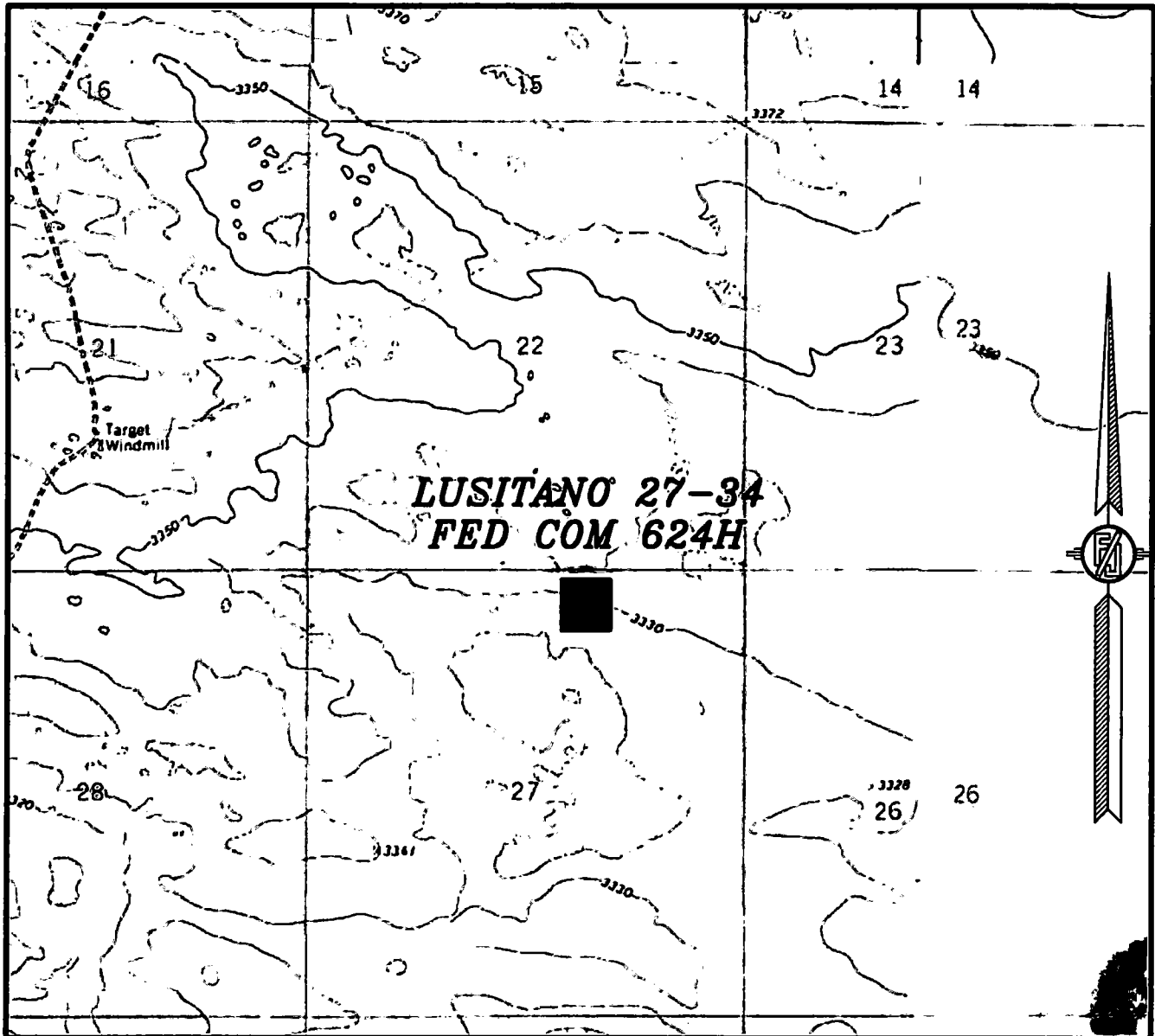
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RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM**

AUGUST 2, 2018

SURVEY NO. 6436

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

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



USGS QUAD MAP:
PHANTOM BANKS

NOT TO SCALE

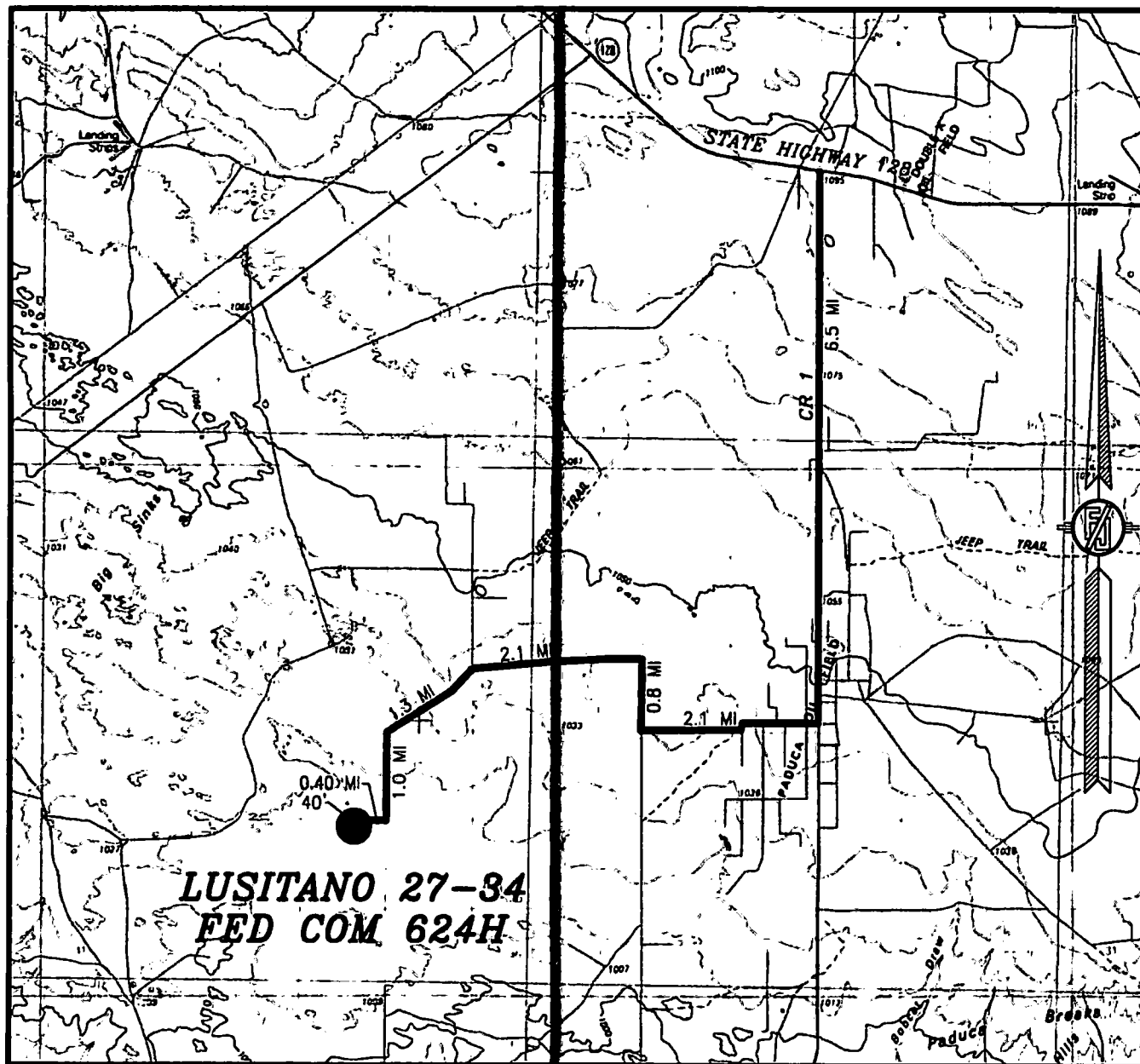
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RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 2, 2018

SURVEY NO. 6436

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 624H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1934 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.

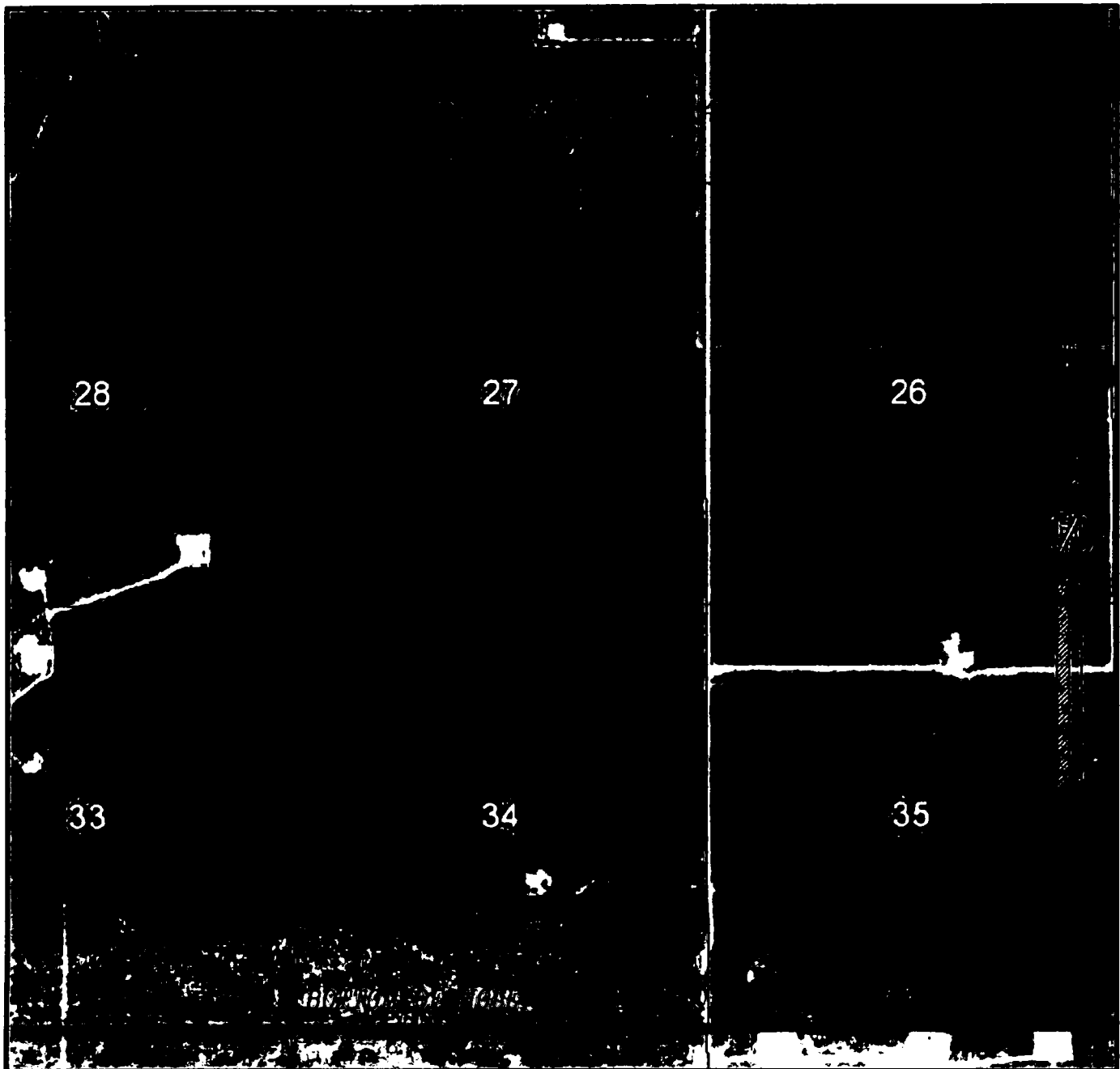
AUGUST 2, 2018

SURVEY NO. 6436

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

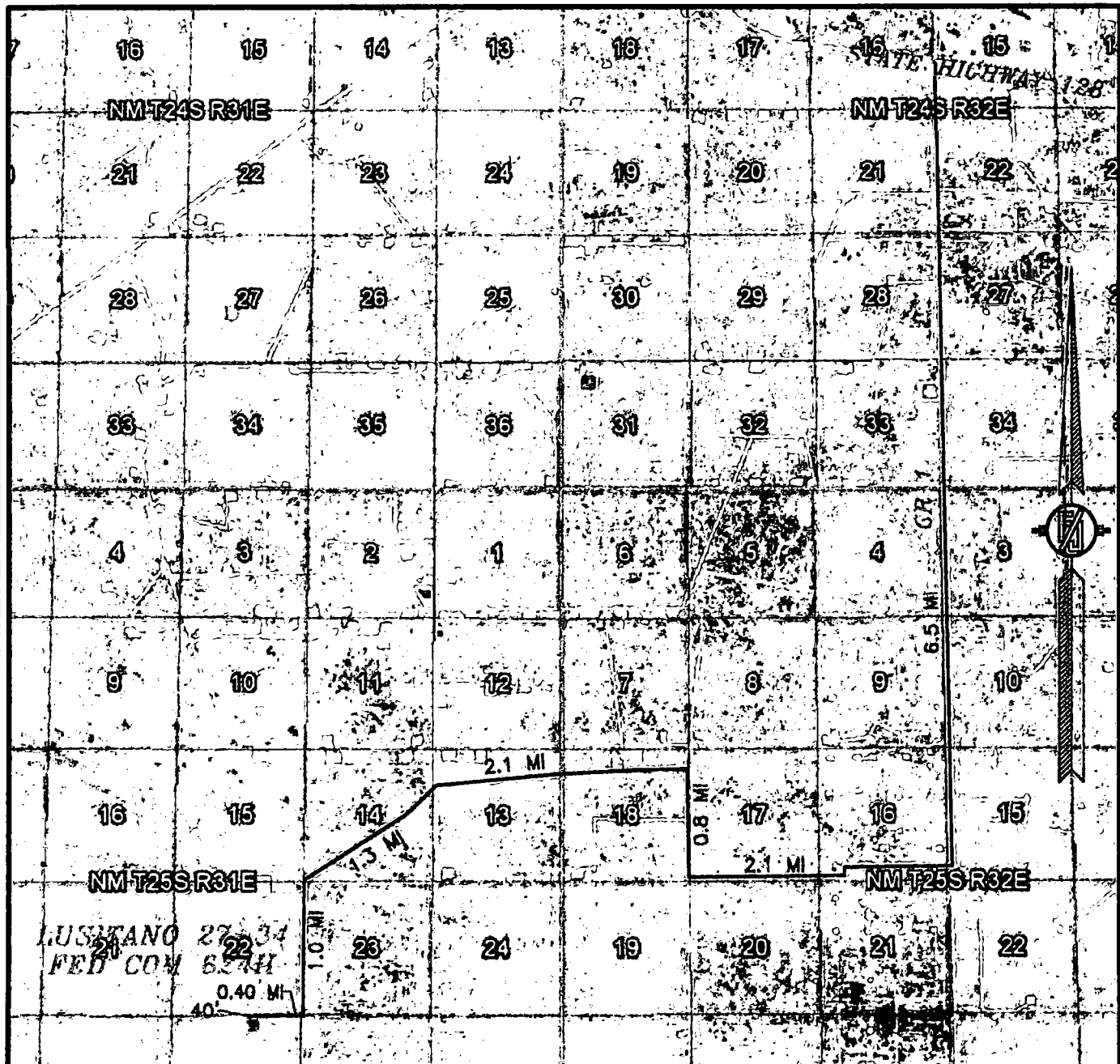
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RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 2, 2018

SURVEY NO. 6436

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

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



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

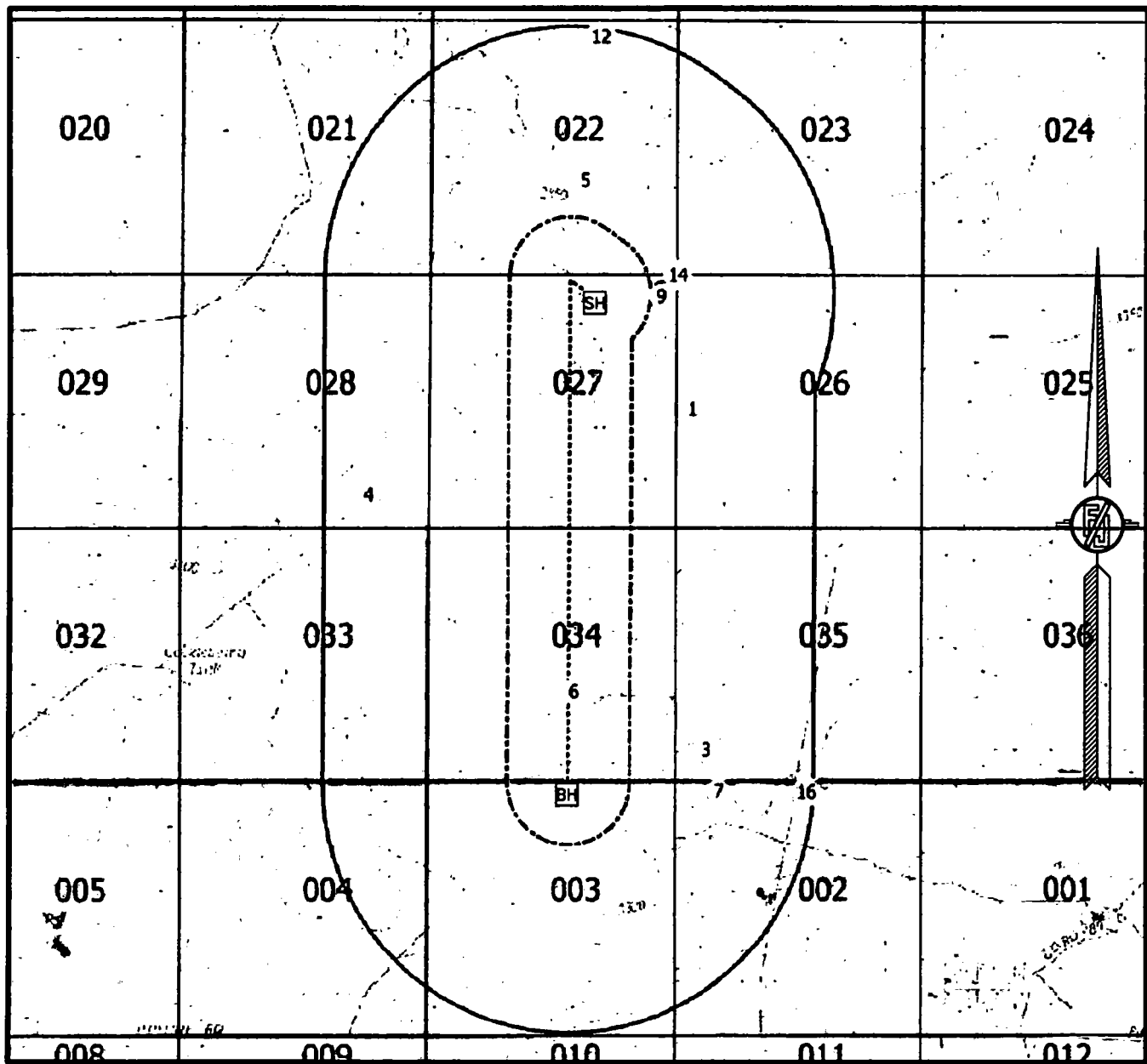
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RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 2, 2018

SURVEY NO. 6436

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

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 624H
 LOCATED 235 FT. FROM THE NORTH LINE
 AND 1934 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. 6436

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

PLAN VIEW

30' ACCESS ROAD

PROPOSED 40 LF ACCESS ROAD

PROPOSED 40 LF ACCESS ROAD

LIMITS OF EARTHWORK
3:1 SLOPE (TYP.)

- 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

300'

3335

3335

B

306'

300'

PAD CENTER POINT

DRILLING PAD

3330

300'

LUSITANO 27 PAD 4
PROPOSED PAD
EL. 3333.0

LIMITS OF EARTHWORK
3:1 SLOPE (TYP.)

BERM

600'

30' ACCESS ROAD

PROPOSED 35 LF ACCESS ROAD

012 60 120 240
SCALE 1" = 120'

DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR LUSITANO 27-34 FED COM 624H
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

AUGUST 2, 2018

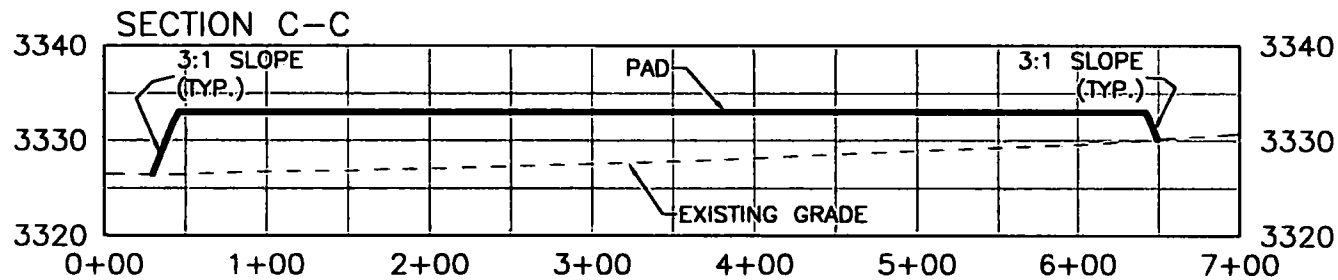
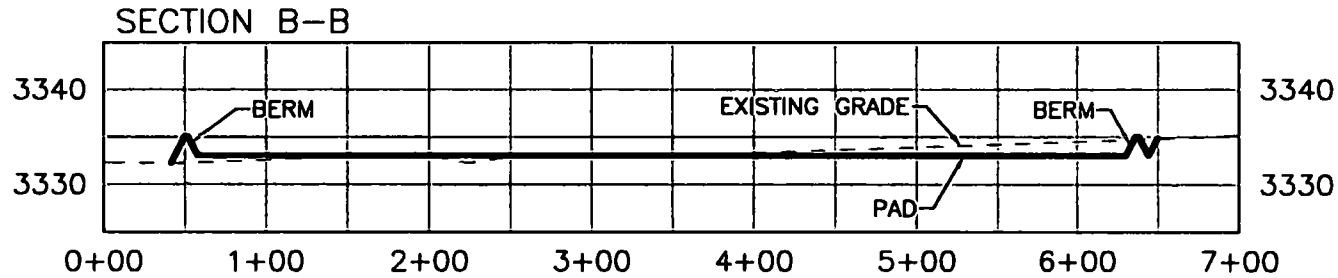
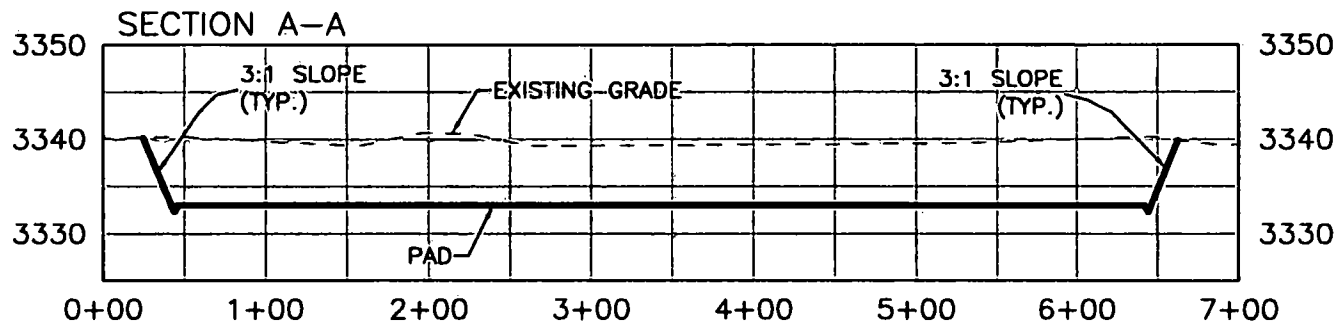
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

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

EARTHWORK QUANTITIES ARE ESTIMATED

SHEET 1-2
SURVEY NO. 6436

CROSS SECTIONS



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR LUSITANO 27-34 FED COM 624H
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

0 12 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

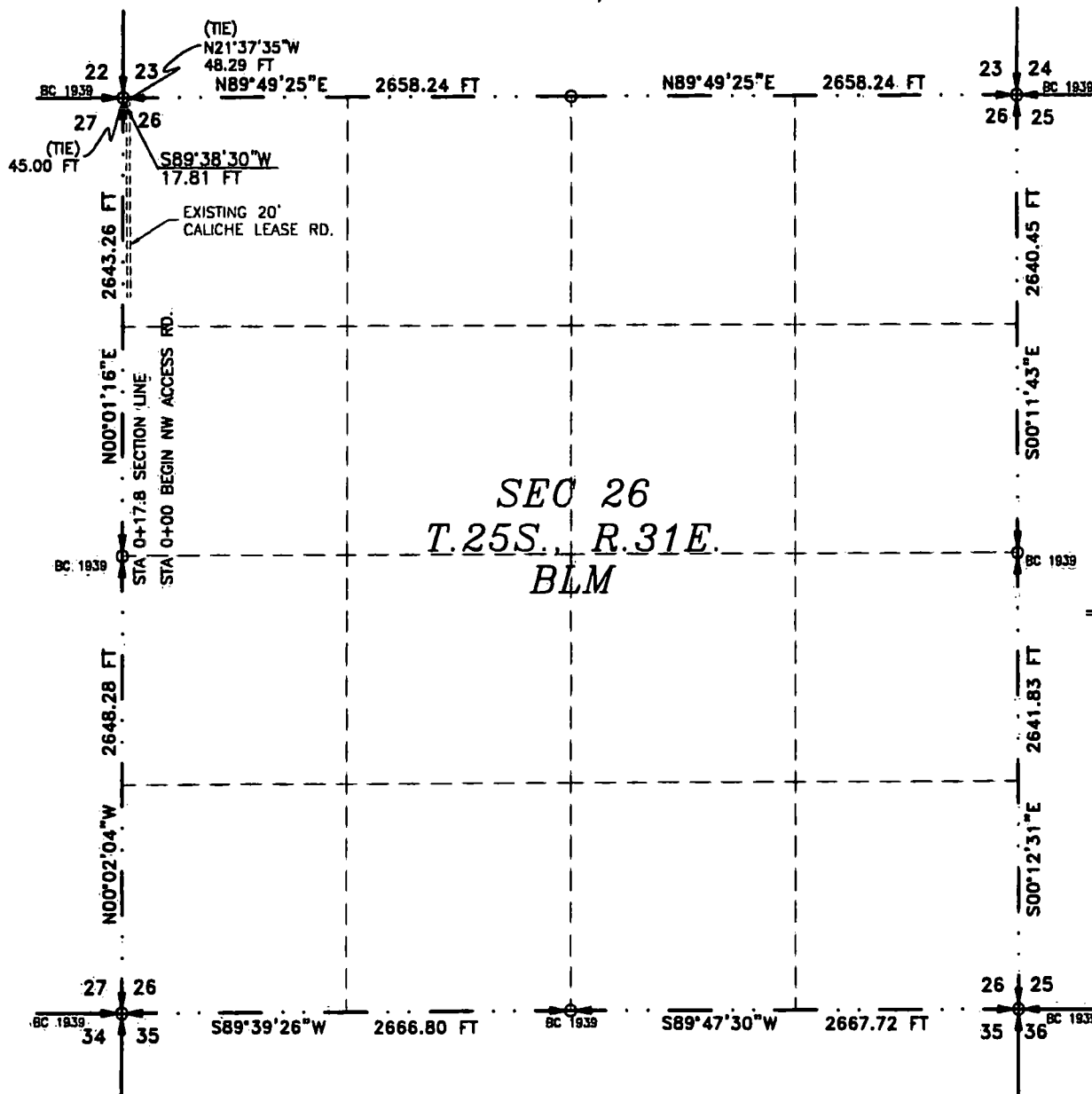
AUGUST 2, 2018
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SHEET 2-2
SURVEY NO. 6436

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 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

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.

FILMON F. JARAMILLO, SURVEYOR NO. 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: 1-4

MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO

SURVEY NO. 6436

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 2ND DAY OF AUGUST 2018


FILMON F. JARAMILLO, PLS. 12797
NEW MEXICO PROFESSIONAL SURVEYOR

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

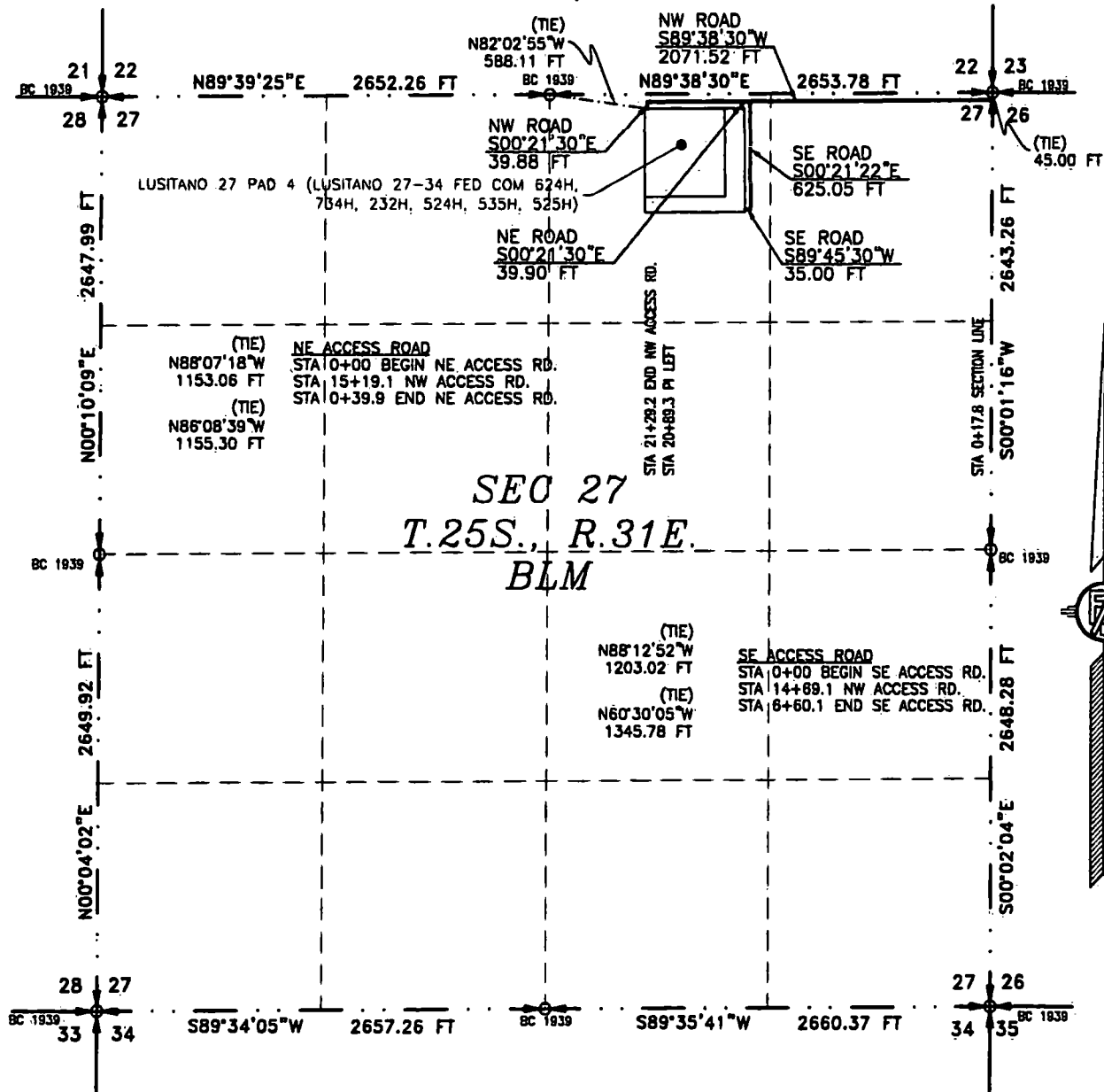
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220 (575) 234-3341

SURVEY NO. 6436

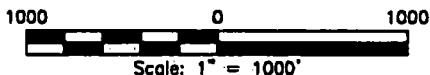
ACCESS ROAD PLAT

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.

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IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 2nd DAY OF AUGUST 2018.

FILMON F. JARAMILLO, PLS. 12797
MADRON SURVEYING, INC.
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
Phone (575) 234-3341

SHEET: 3-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEY NO. 6436

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;

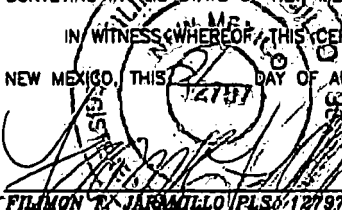
SAID STRIP OF LAND BEING 660.05 FEET OR 40.00 RODS IN LENGTH, CONTAINING 0.455 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

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 27th DAY OF AUGUST 2018.


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: 4-4

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

SURVEY NO. 6436



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

Drilling Plan Data Report

01/11/2019

APD ID: 10400033372

Submission Date: 08/29/2018

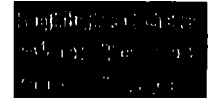
Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 624H

Well Type: OIL WELL

Well Work Type: Drill



[Show Final Text](#)

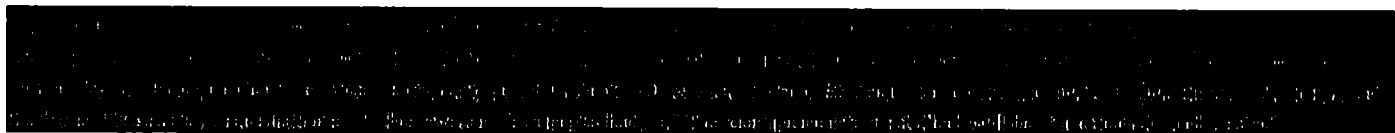
Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
1	UNKNOWN	3338	0	0	ALLUVIUM	NONE	No
2	RUSTLER	2458	880	880	SALT	NONE	No
3	BASE OF SALT	-932	4270	4270	SALT	NONE	No
4	DELAWARE	-962	4300	4300	SANDSTONE	NATURAL GAS,OIL	No
5	BONE SPRING	-4912	8250	8250	LIMESTONE,SANDSTONE	NATURAL GAS,OIL	No
6	WOLFCAMP	-8302	11640	11640	SANDSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M

Rating Depth: 11768



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_733H_WLFMP_10M_BOPE_Double_Ram_and_CLS_Schematic_Remote_Kill_Line_20181210100731.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_733H_WLFMP_10M_BOPE_Double_Ram_and_CLS_Schematic_Remote_Kill_Line_20181210100746.pdf

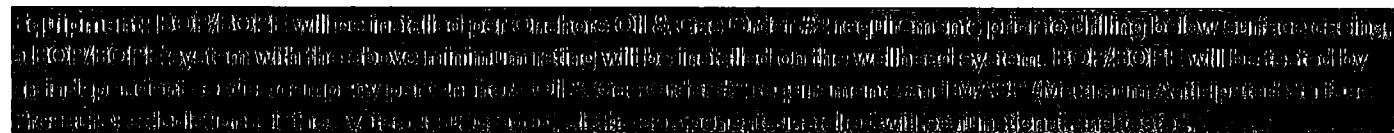
Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 624H

Pressure Rating (PSI): 5M

Rating Depth: 11768



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_624H_5M_BOPE_CK_20180827123558.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_624H_5M_BOPE_CK_20180827123610.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	931	0	931	-6993	-7781	931	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	11206	0	11195	-6993	-11343	11206	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	11206	12106	11195	11768			900	P-110	29.7	OTHER - FLUSHMAX	1.125	1.125	BUOY	1.6	BUOY	1.6
4	PRODUCTION	6.75	5.5	NEW	API	N	0	21904	0	11768	-6993	-17388	21904	P-110	20	OTHER - VAM FJL	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: 624H

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_624H_SurfCsg_Ass_20180827123819.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_624H_Int_Csg_Ass_20180827124548.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_624H_Int_Csg_Ass_20181210075206.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 624H

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_624H_ProdCasing_Ass_20180827124737.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	931	601	1.33	13.2	799	50	C	Class C + adds
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INTERMEDIATE	Lead		0	8106	1195	1.85	9	2210	30	TUNED	TUNED LIGHT
INTERMEDIATE	Tail		8106	12106	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		11606	21904	651	1.33	13.2	952	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: 624H

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
931	1210 6	OTHER : SATURATED BRINE	9	10							
0	931	WATER-BASED MUD	8.5	9							
1210 6	2190 4	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: 624H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6425

Anticipated Surface Pressure: 3836.04

Anticipated Bottom Hole Temperature(F): 177

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_624H_H2S_Plan_20180827134224.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Lusitano_27_34_Fed_Com_624H_AC_Rpt_20180827134245.pdf

Lusitano_27_34_Fed_Com_624H_Dir_Plan_20180827134256.pdf

Lusitano_27_34_Fed_Com_624H_Plot_20180827134306.pdf

Lusitano_27_34_Fed_Com_624H_Permit_Plan_2_20180827134318.pdf

Other proposed operations facets description:



Other proposed operations facets attachment:

Lusitano_27_34_Fed_Com_624H_7.625_29.70_P110_Flushmax_20180827134612.pdf

Lusitano_27_34_Fed_Com_624H_Gas_Capture_Plan_20180827134847.pdf

Lusitano_27_34_Fed_Com_624H_Clsd_Loop_20180828065723.pdf

Lusitano_27_34_Fed_Com_624H_8.625_32_P110EC_VAM_FJL_NA_7.875_SD_20181206124540.PDF

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Lusitano_27_34_Fed_Com_624H_WLFMP_Wellhead_Schematic_Contingency_13.375x8.625x5.5_20181210084149.pdf

Lusitano_27_34_Fed_Com_624H_5.5_x_20_P110_EC_VAMSG_20181212045806.pdf

Lusitano_27_34_Fed_Com_624H_MB_Verb_5M_20181212080424.pdf

Lusitano_27_34_Fed_Com_624H_WLFMP_MB_Verb_5M_Alt_Design_20181212080424.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 624H

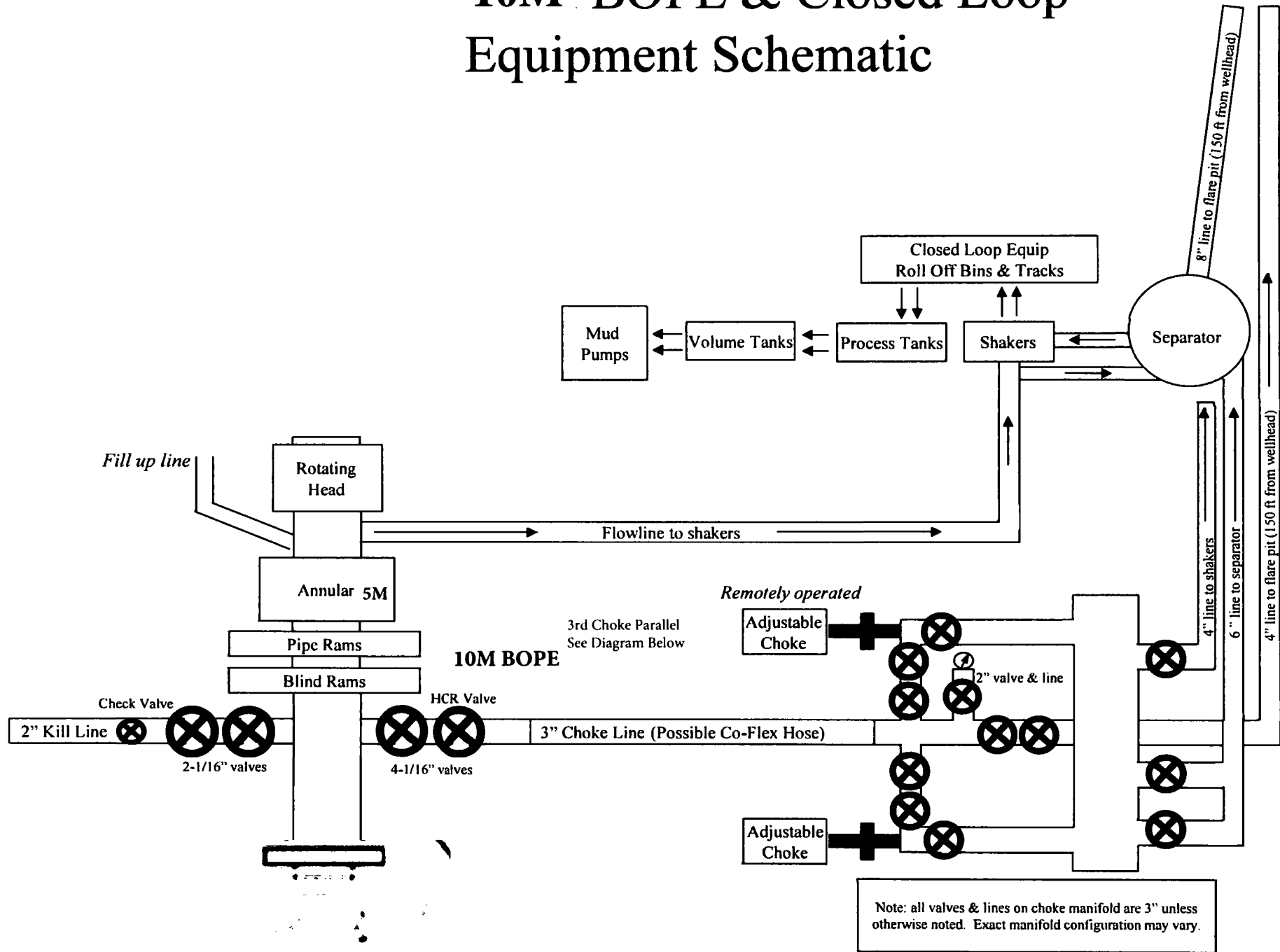
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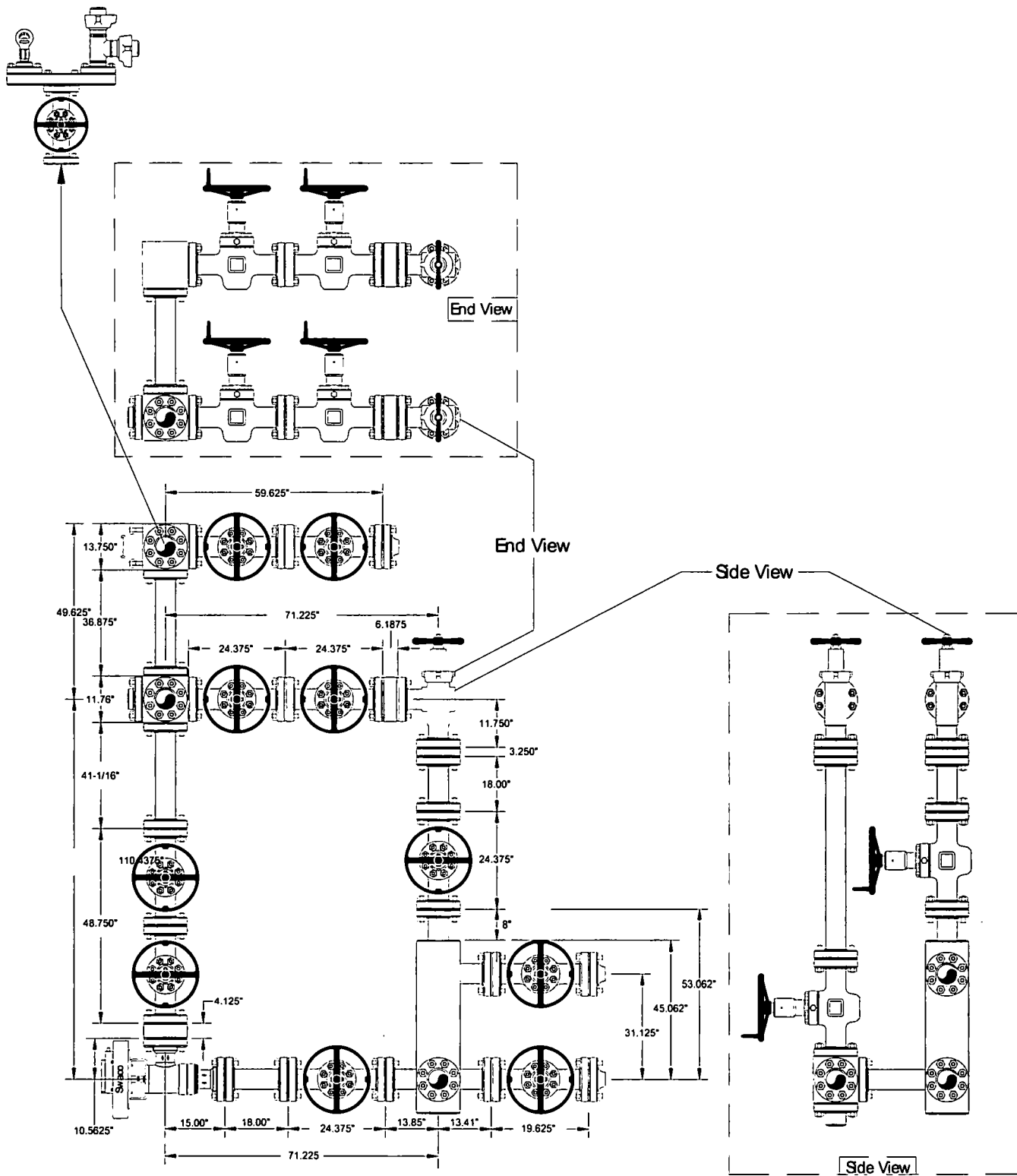
Lusitano_27_34_Fed_Com_624H_Annular_Preventer_Summary_20181212130229.pdf

Other Variance attachment:

Lusitano_27_34_Fed_Com_624H_Co_flex_20180827134857.pdf

10M BOPE & Closed Loop Equipment Schematic



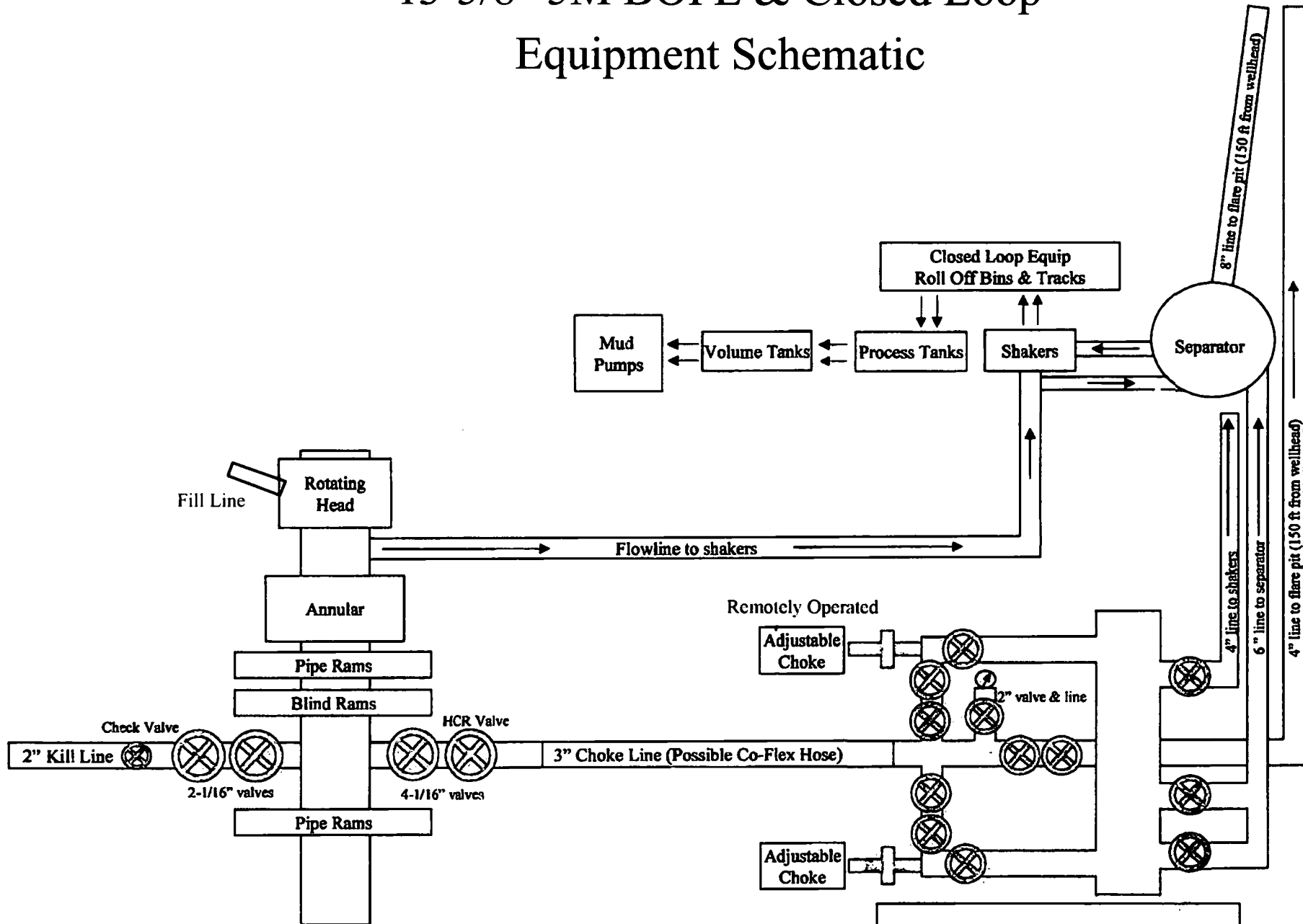


Helmerich & Payne
Fig 282

CAMERON

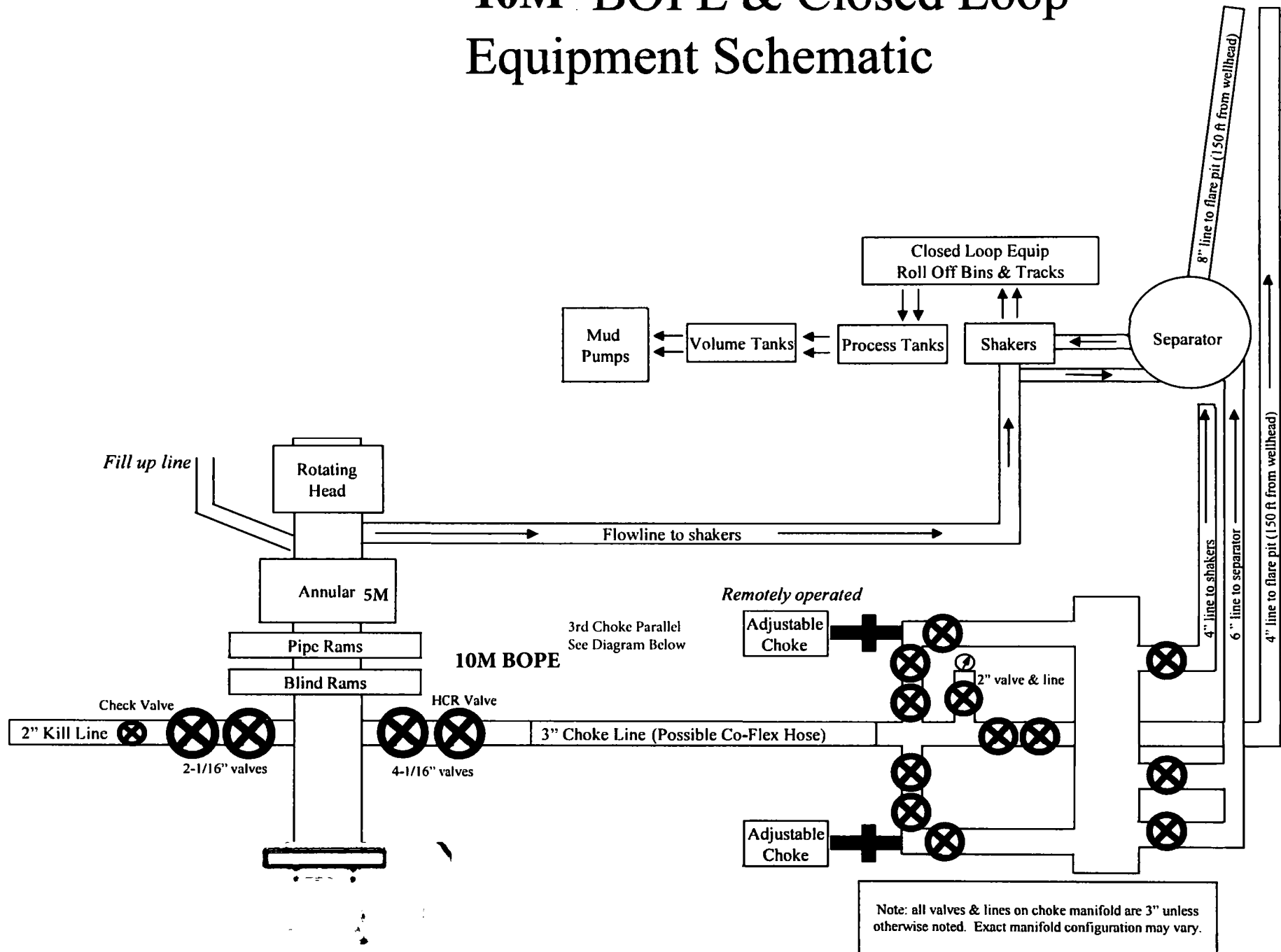
Name	Jeanette	Date	7-19-06	Working Pressure	#	J-5132-E
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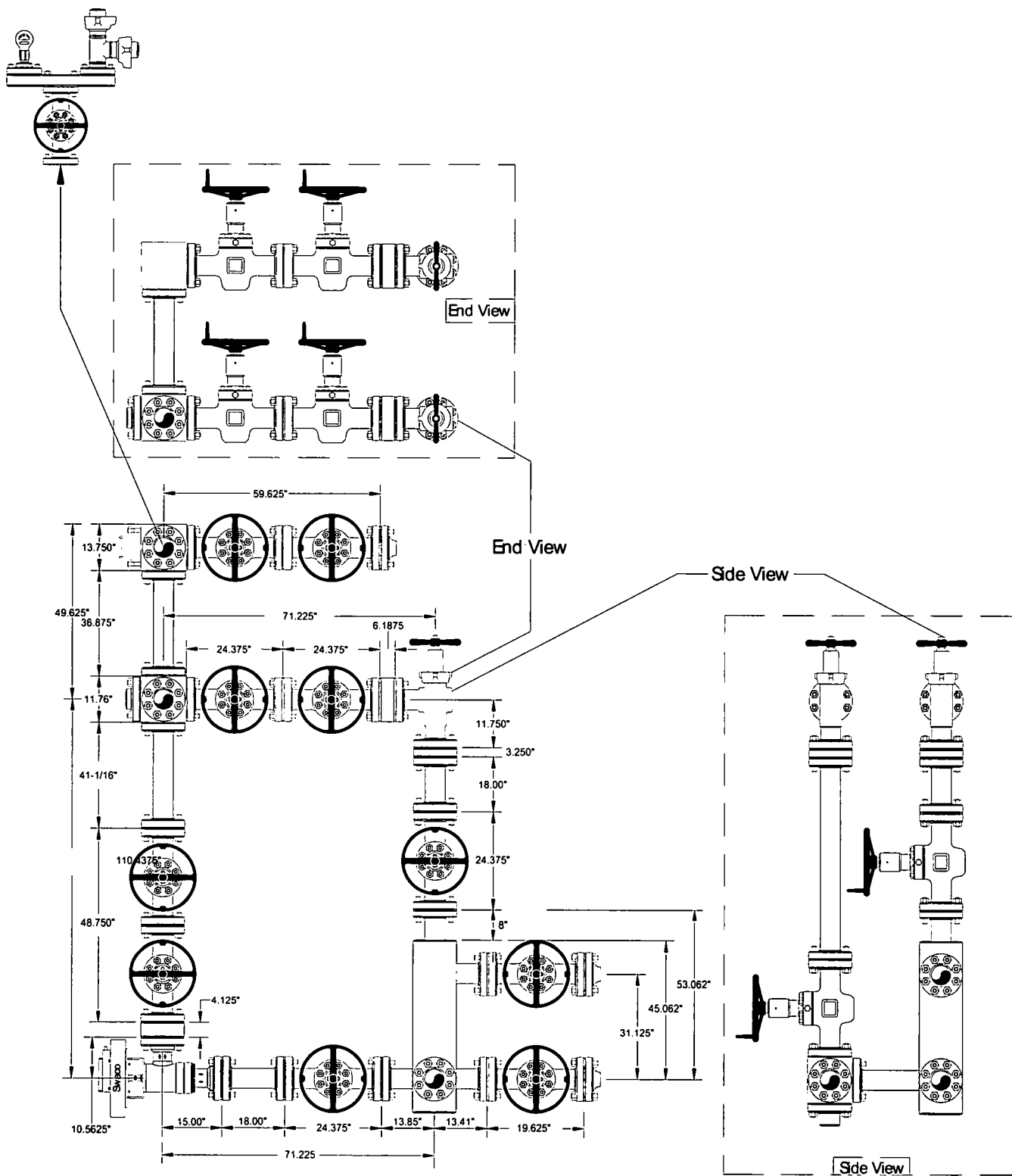
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



Note: all valves & lines on choke manifold are 3" unless otherwise noted. Exact manifold configuration may vary

10M BOPE & Closed Loop Equipment Schematic



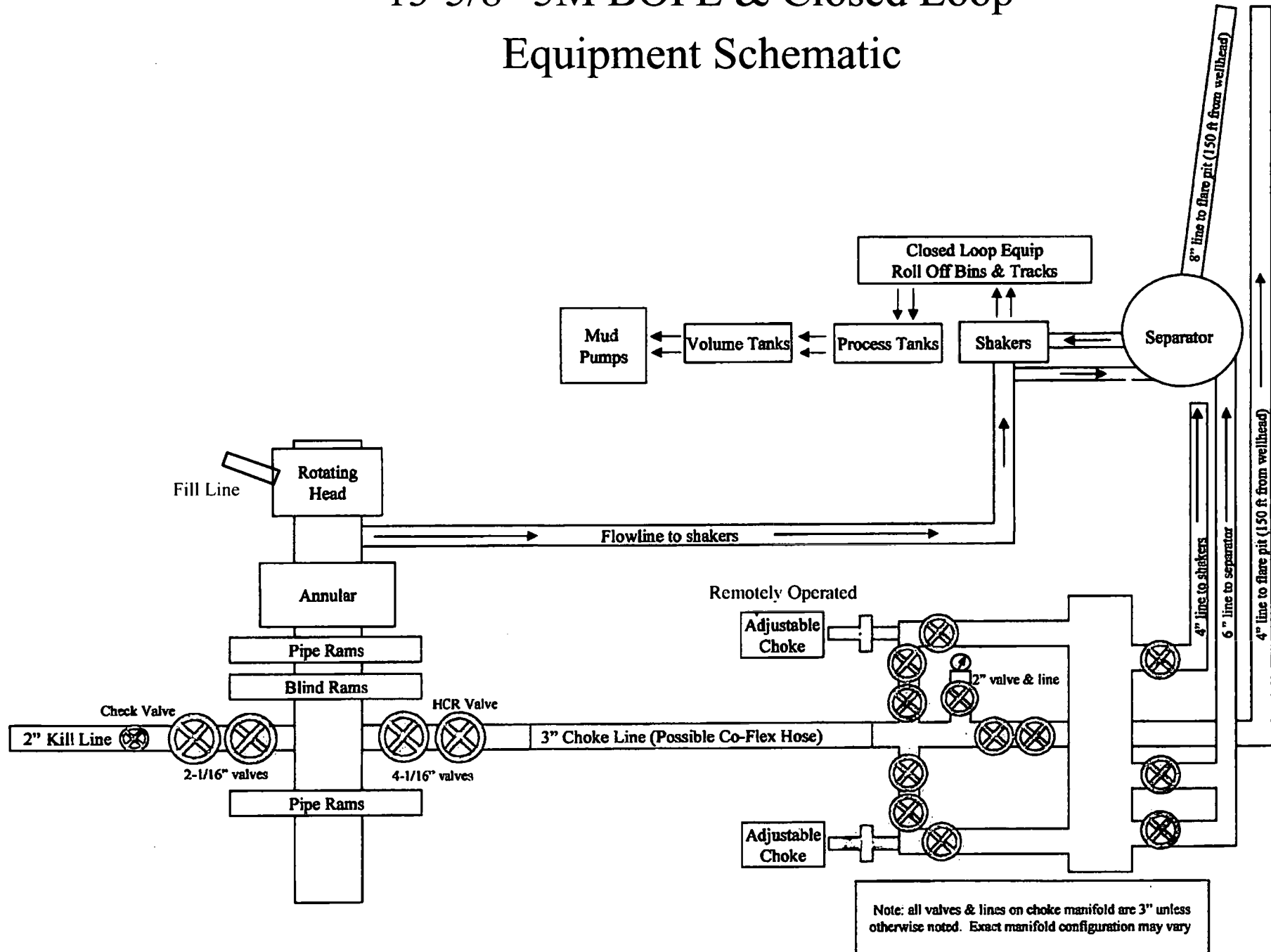


Helmerich & Payne
Fig 282

CAMERON

Name: Jeanette	Date: 7-19-06	Working Pressure:	#	J5132-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

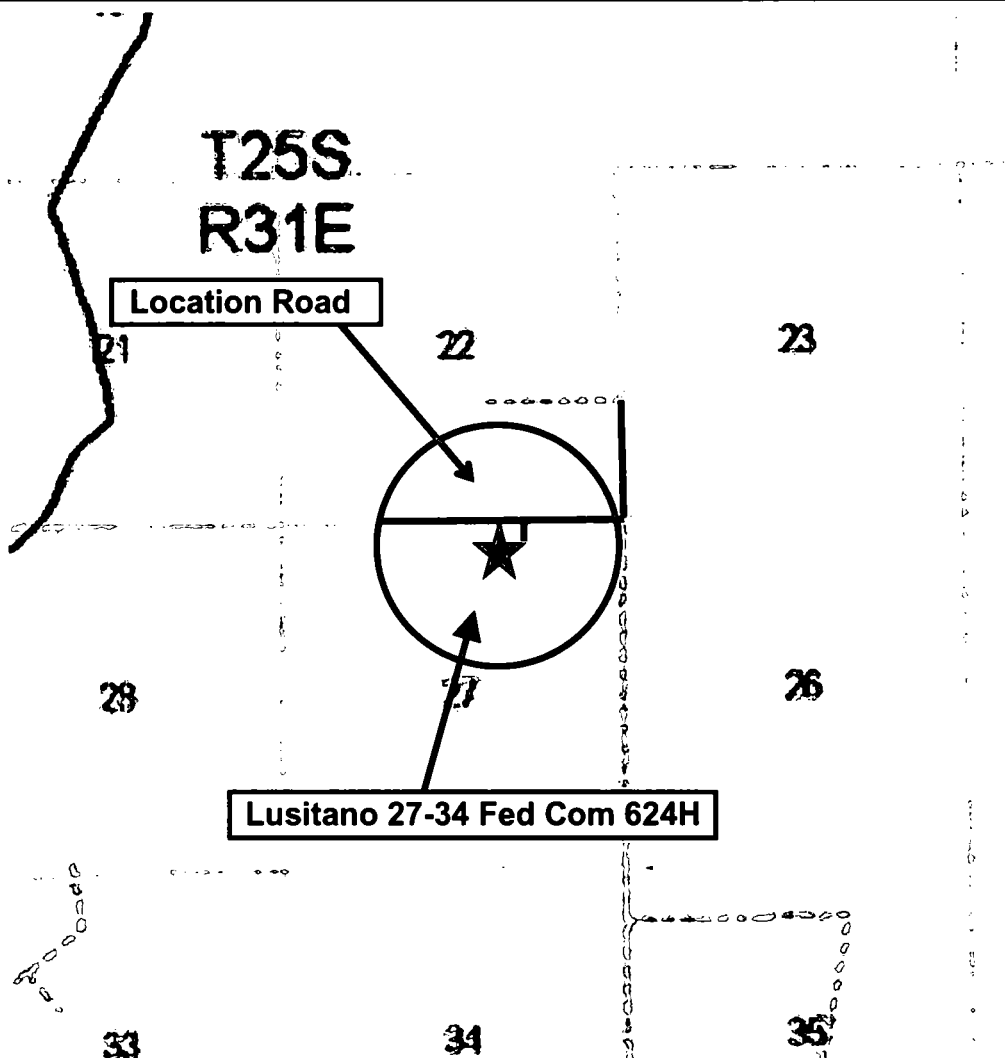
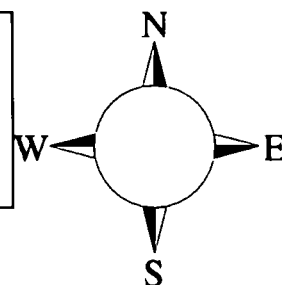
Lusitano 27-34 Fed Com 624H

**Sec-27 T-25S R-31E
235' FNL & 1934' FEL
LAT. = 32.1079088' N (NAD83)
LONG = 103.7635931' W**

Eddy County NM

Lusitano 27-34 Fed Com 624H

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
	Native Air – Emergency Helicopter – Hobbs	(575) 392-6429
	Flight For Life - Lubbock, TX	(806) 743-9911
<u>Give GPS position:</u>	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



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DISTRICT II-ARTESIA O.C.D.

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Lusitano 27-34 Fed Com 624H

Wellbore #1

Permit Plan 2

Anticollision Report

24 August, 2018

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

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

Survey Tool Program		Date	8/24/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	21,904.71	Permit Plan 2 (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	8,970.68	8,944.36	1,414.50	1,350.96	22.263	CC
Lusitano 27_22 Fed Com 232H - Wellbore #1 - Permit PI	9,500.00	9,478.33	1,415.18	1,347.89	21.031	ES
Lusitano 27_22 Fed Com 232H - Wellbore #1 - Permit PI	9,850.00	9,742.14	1,428.12	1,358.74	20.586	SF
Lusitano 27_34 Fed Com 523H - Wellbore #1 - Permit PI	8,417.32	8,375.22	948.78	889.72	16.063	CC, ES
Lusitano 27_34 Fed Com 523H - Wellbore #1 - Permit PI	8,550.00	8,465.47	952.16	892.55	15.973	SF
Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit PI	8,841.12	8,910.31	471.03	408.35	7.515	CC, ES, SF
Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit PI	11,835.70	11,943.81	1,296.81	1,213.67	15.598	CC
Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit PI	21,904.71	22,010.80	1,358.53	1,047.32	4.365	Alert, ES, SF
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit PI	12,084.60	12,255.01	686.91	602.35	8.123	CC
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit PI	21,904.71	22,075.11	698.95	387.25	2.242	Minor Risk, ES, SF
Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit PI	21,904.71	22,091.52	660.48	348.65	2.118	Minor Risk, CC, ES, SF
Lusitano 27_34 Fed Com 736H - Wellbore #1 - Permit PI	2,500.00	2,501.00	729.89	712.38	41.690	CC
Lusitano 27_34 Fed Com 736H - Wellbore #1 - Permit PI	2,550.00	2,551.00	730.10	712.24	40.876	ES
Lusitano 27_34 Fed Com 736H - Wellbore #1 - Permit PI	21,903.25	22,068.96	1,319.84	1,008.08	4.233	Alert, SF
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	2,500.00	2,503.60	149.96	132.44	8.561	CC
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	2,800.00	2,803.74	150.89	131.26	7.687	ES
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla	6,400.00	6,403.55	220.04	174.79	4.863	Alert, SF
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore						Out of range
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	10,555.60	10,573.76	686.12	611.56	9.203	CC
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	10,700.00	10,715.35	686.31	610.78	9.086	ES
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	21,904.71	21,300.52	929.68	671.97	3.607	Alert, SF
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	10,662.48	10,663.37	659.89	584.61	8.766	CC
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	10,750.00	10,748.68	660.05	584.20	8.701	ES
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	21,904.71	21,311.45	889.50	634.94	3.494	Alert, SF
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore						Out of range
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore						Out of range
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	6,014.68	6,122.19	1,440.52	1,397.23	33.273	CC
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	6,350.00	6,448.57	1,441.87	1,396.15	31.532	ES
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	7,800.00	7,821.87	1,497.38	1,441.66	26.874	SF
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore	21,707.78	21,945.00	1,271.69	965.73	4.156	Alert, CC, ES, SF
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore						Out of range
Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Pla	2,500.00	2,500.30	29.99	12.49	1.713	Minor Risk, CC
Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Pla	2,550.00	2,549.70	30.21	12.35	1.692	Minor Risk, ES, SF

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 624H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
 TVD Reference: RKB @ 3361.80ft
 MD Reference: RKB @ 3361.80ft
 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_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
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
7,200.00	7,191.76	7,176.07	7,174.85	25.62	25.50	-3.05	84.85	-1,771.02	1,498.73	1,447.89	50.84	29.477	
7,250.00	7,241.67	7,226.00	7,224.77	25.80	25.68	-3.02	85.93	-1,771.48	1,496.21	1,445.00	51.20	29.221	
7,300.00	7,291.58	7,275.92	7,274.68	25.98	25.86	-2.98	87.01	-1,771.94	1,493.68	1,442.12	51.56	28.970	
7,350.00	7,341.49	7,325.85	7,324.60	26.17	26.04	-2.95	88.09	-1,772.41	1,491.16	1,439.24	51.92	28.721	
7,400.00	7,391.39	7,375.78	7,374.51	26.35	26.22	-2.91	89.17	-1,772.87	1,488.64	1,436.36	52.28	28.476	
7,450.00	7,441.30	7,425.71	7,424.42	26.53	26.39	-2.88	90.25	-1,773.34	1,486.12	1,433.48	52.64	28.234	
7,500.00	7,491.21	7,475.64	7,474.34	26.71	26.57	-2.84	91.33	-1,773.80	1,483.60	1,430.60	52.99	27.996	
7,550.00	7,541.12	7,525.57	7,524.25	26.90	26.75	-2.81	92.41	-1,774.26	1,481.08	1,427.72	53.35	27.761	
7,600.00	7,591.02	7,575.49	7,574.17	27.08	26.93	-2.77	93.49	-1,774.73	1,478.56	1,424.85	53.71	27.529	
7,650.00	7,640.93	7,625.42	7,624.08	27.26	27.11	-2.74	94.57	-1,775.19	1,476.04	1,421.97	54.07	27.300	
7,700.00	7,690.84	7,675.35	7,674.00	27.44	27.29	-2.70	95.65	-1,775.66	1,473.52	1,419.09	54.43	27.074	
7,750.00	7,740.75	7,725.28	7,723.91	27.63	27.47	-2.66	96.73	-1,776.12	1,471.00	1,416.22	54.78	26.851	
7,800.00	7,790.66	7,775.21	7,773.82	27.81	27.65	-2.63	97.81	-1,776.59	1,468.48	1,413.34	55.14	26.630	
7,850.00	7,840.56	7,825.13	7,823.74	27.99	27.83	-2.59	98.89	-1,777.05	1,465.97	1,410.46	55.50	26.413	
7,900.00	7,890.47	7,875.06	7,873.65	28.17	28.01	-2.56	99.97	-1,777.51	1,463.45	1,407.59	55.86	26.199	
7,950.00	7,940.38	7,924.99	7,923.57	28.36	28.19	-2.52	101.05	-1,777.98	1,460.93	1,404.71	56.22	25.987	
8,000.00	7,990.29	7,974.92	7,973.48	28.54	28.37	-2.48	102.13	-1,778.44	1,458.42	1,401.84	56.58	25.778	
8,050.00	8,040.19	8,024.85	8,023.40	28.72	28.55	-2.45	103.21	-1,778.91	1,455.90	1,398.97	56.94	25.571	
8,100.00	8,090.10	8,074.78	8,073.31	28.91	28.72	-2.41	104.29	-1,779.37	1,453.39	1,396.10	57.29	25.367	
8,150.00	8,140.01	8,124.70	8,123.22	29.09	28.90	-2.37	105.38	-1,779.83	1,450.88	1,393.22	57.65	25.166	
8,200.00	8,189.92	8,174.63	8,173.14	29.27	29.08	-2.34	106.46	-1,780.30	1,448.36	1,390.35	58.01	24.967	
8,250.00	8,239.83	8,224.56	8,223.05	29.45	29.26	-2.30	107.54	-1,780.76	1,445.85	1,387.48	58.37	24.771	
8,300.00	8,289.73	8,274.49	8,272.97	29.64	29.44	-2.26	108.62	-1,781.23	1,443.34	1,384.61	58.73	24.577	
8,350.00	8,339.64	8,324.42	8,322.88	29.82	29.62	-2.23	109.70	-1,781.69	1,440.83	1,381.74	59.09	24.385	
8,400.00	8,389.55	8,374.34	8,372.80	30.00	29.80	-2.19	110.78	-1,782.15	1,438.32	1,378.87	59.44	24.196	
8,450.00	8,439.46	8,424.27	8,422.71	30.19	29.98	-2.15	111.86	-1,782.62	1,435.81	1,376.00	59.80	24.009	
8,500.00	8,489.37	8,474.20	8,472.62	30.37	30.16	-2.11	112.94	-1,783.08	1,433.30	1,373.14	60.16	23.824	
8,550.00	8,539.27	8,524.13	8,522.54	30.55	30.34	-2.08	114.02	-1,783.55	1,430.79	1,370.27	60.52	23.641	
8,600.00	8,589.18	8,574.06	8,572.45	30.73	30.52	-2.04	115.10	-1,784.01	1,428.28	1,367.40	60.88	23.461	
8,650.00	8,639.09	8,623.98	8,622.37	30.92	30.70	-2.00	116.18	-1,784.48	1,425.77	1,364.54	61.24	23.283	
8,700.00	8,689.00	8,673.91	8,672.28	31.10	30.88	-1.96	117.26	-1,784.94	1,423.27	1,361.67	61.60	23.106	
8,750.00	8,738.90	8,723.84	8,722.20	31.28	31.05	-1.92	118.34	-1,785.40	1,420.76	1,358.81	61.95	22.932	
8,800.00	8,788.82	8,773.77	8,772.11	31.47	31.23	-1.89	119.42	-1,785.87	1,418.31	1,356.00	62.31	22.761	
8,850.00	8,838.76	8,823.73	8,822.05	31.65	31.41	-1.85	120.50	-1,786.33	1,416.40	1,353.73	62.67	22.600	
8,900.00	8,888.72	8,873.70	8,872.01	31.83	31.59	-1.80	121.58	-1,786.80	1,415.15	1,352.12	63.03	22.452	
8,950.00	8,938.71	8,923.69	8,921.98	32.01	31.77	-1.76	122.66	-1,787.26	1,414.55	1,351.17	63.39	22.316	
8,970.68	8,959.38	8,944.36	8,942.65	32.08	31.85	-1.75	123.11	-1,787.45	1,414.50	1,350.96	63.54	22.263 CC	
9,000.00	8,988.71	8,976.07	8,974.35	32.18	31.96	-1.72	123.77	-1,787.74	1,414.60	1,350.85	63.75	22.189	
9,050.00	9,038.71	9,036.11	9,034.39	32.36	32.18	-86.38	124.43	-1,788.02	1,414.85	1,350.72	64.14	22.060	
9,100.00	9,088.71	9,088.73	9,087.01	32.53	32.36	-86.37	124.46	-1,788.03	1,414.86	1,350.37	64.50	21.937	
9,150.00	9,138.71	9,138.73	9,137.01	32.70	32.54	-86.37	124.46	-1,788.03	1,414.86	1,350.02	64.85	21.818	
9,200.00	9,188.71	9,188.73	9,187.01	32.88	32.72	-86.37	124.46	-1,788.03	1,414.86	1,349.66	65.20	21.700	
9,250.00	9,238.71	9,238.73	9,237.01	33.05	32.90	-86.37	124.46	-1,788.03	1,414.86	1,349.31	65.55	21.583	
9,300.00	9,288.71	9,288.73	9,287.01	33.22	33.08	-86.37	124.46	-1,788.03	1,414.86	1,348.96	65.91	21.468	
9,350.00	9,338.71	9,338.73	9,337.01	33.40	33.26	-86.37	124.46	-1,788.03	1,414.86	1,348.60	66.26	21.353	
9,400.00	9,388.71	9,388.73	9,387.01	33.57	33.43	-86.37	124.46	-1,788.03	1,414.86	1,348.25	66.61	21.240	
9,450.00	9,438.71	9,434.47	9,432.73	33.74	33.60	-86.34	125.39	-1,788.02	1,414.92	1,347.97	66.95	21.133	
9,500.00	9,488.71	9,478.33	9,476.38	33.92	33.76	-86.17	129.57	-1,787.98	1,415.18	1,347.89	67.29	21.031 ES	
9,550.00	9,538.71	9,521.30	9,518.72	34.09	33.91	-85.87	136.88	-1,787.90	1,415.69	1,348.06	67.62	20.935	
9,600.00	9,588.71	9,562.96	9,559.12	34.26	34.06	-85.46	146.99	-1,787.79	1,416.50	1,348.55	67.95	20.846	
9,650.00	9,638.71	9,602.94	9,597.11	34.44	34.20	-84.96	159.42	-1,787.65	1,417.68	1,349.42	68.27	20.767	
9,700.00	9,688.71	9,640.98	9,632.37	34.61	34.33	-84.39	173.67	-1,787.49	1,419.34	1,350.77	68.57	20.699	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_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 (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
							+N/-S (ft)	+E/-W (ft)						
9,750.00	9,738.71	9,676.90	9,664.73	34.78	34.45	-83.76	189.26	-1,787.32	1,421.57	1,352.71	68.86	20.644		
9,800.00	9,788.71	9,710.63	9,694.16	34.96	34.57	-83.10	205.71	-1,787.14	1,424.46	1,355.33	69.13	20.606		
9,850.00	9,838.71	9,742.14	9,720.75	35.13	34.68	-82.43	222.62	-1,786.96	1,428.12	1,358.74	69.37	20.586 SF		
9,900.00	9,888.71	9,771.47	9,744.62	35.31	34.78	-81.75	239.65	-1,786.77	1,432.63	1,363.04	69.59	20.587		
9,950.00	9,938.71	9,800.00	9,766.98	35.48	34.88	-81.04	257.37	-1,786.57	1,438.08	1,368.30	69.78	20.608		
10,000.00	9,988.71	9,823.94	9,785.04	35.65	34.96	-80.42	273.08	-1,786.40	1,444.54	1,374.62	69.92	20.659		
10,050.00	10,038.71	9,850.00	9,803.94	35.83	35.05	-79.71	291.02	-1,786.21	1,452.08	1,382.03	70.06	20.728		
10,100.00	10,088.71	9,868.96	9,817.16	36.00	35.12	-79.18	304.61	-1,786.06	1,460.74	1,390.63	70.11	20.835		
10,150.00	10,138.71	9,888.99	9,830.64	36.18	35.19	-78.59	319.43	-1,785.89	1,470.57	1,400.42	70.14	20.965		
10,200.00	10,188.71	9,900.00	9,837.82	36.35	35.23	-78.27	327.77	-1,785.80	1,481.62	1,411.54	70.07	21.144		
10,250.00	10,238.71	9,924.75	9,853.37	36.52	35.31	-77.52	347.01	-1,785.59	1,493.81	1,423.73	70.08	21.314		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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							
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	
4,900.00	4,896.00	5,030.96	5,030.20	17.26	17.76	-11.84	-154.60	-1,616.49	1,497.70	1,462.95	34.75	43.101		
4,950.00	4,945.91	5,097.62	5,096.54	17.44	17.99	-11.84	-153.17	-1,610.09	1,489.86	1,454.75	35.12	42.425		
5,000.00	4,995.82	5,164.03	5,162.55	17.82	18.23	-11.85	-151.58	-1,602.97	1,481.46	1,445.98	35.48	41.752		
5,050.00	5,045.73	5,230.18	5,228.20	17.80	18.46	-11.84	-149.83	-1,595.14	1,472.49	1,436.64	35.84	41.083		
5,100.00	5,095.63	5,296.03	5,293.47	17.98	18.69	-11.84	-147.92	-1,586.60	1,462.95	1,426.75	36.20	40.417		
5,150.00	5,145.54	5,344.33	5,341.31	18.16	18.87	-11.84	-146.47	-1,580.10	1,453.16	1,416.62	36.54	39.768		
5,200.00	5,195.45	5,406.64	5,389.87	18.34	19.09	-11.83	-144.99	-1,573.50	1,443.37	1,406.44	36.93	39.081		
5,250.00	5,245.36	5,442.39	5,438.44	18.53	19.22	-11.83	-143.52	-1,566.89	1,433.58	1,396.35	37.23	38.504		
5,300.00	5,295.27	5,508.57	5,487.00	18.71	19.45	-11.82	-142.04	-1,560.29	1,423.79	1,386.15	37.64	37.829		
5,350.00	5,345.17	5,540.46	5,535.56	18.89	19.57	-11.82	-140.56	-1,553.69	1,414.00	1,376.07	37.92	37.285		
5,400.00	5,395.08	5,589.49	5,584.12	19.07	19.75	-11.81	-139.09	-1,547.09	1,404.21	1,365.94	38.27	36.691		
5,450.00	5,444.99	5,638.52	5,632.69	19.25	19.92	-11.81	-137.61	-1,540.48	1,394.42	1,355.80	38.62	36.108		
5,500.00	5,494.90	5,687.55	5,681.25	19.43	20.10	-11.80	-136.14	-1,533.88	1,384.63	1,345.66	38.96	35.536		
5,550.00	5,544.80	5,736.59	5,729.81	19.61	20.28	-11.80	-134.66	-1,527.28	1,374.84	1,335.52	39.31	34.973		
5,600.00	5,594.71	5,785.62	5,778.38	19.79	20.46	-11.79	-133.19	-1,520.67	1,365.04	1,325.39	39.66	34.419		
5,650.00	5,644.62	5,834.65	5,826.94	19.98	20.63	-11.79	-131.71	-1,514.07	1,355.25	1,315.25	40.01	33.875		
5,700.00	5,694.53	5,883.68	5,875.50	20.16	20.81	-11.78	-130.24	-1,507.47	1,345.46	1,305.11	40.35	33.341		
5,750.00	5,744.44	5,932.71	5,924.06	20.34	20.99	-11.78	-128.76	-1,500.86	1,335.67	1,294.97	40.70	32.815		
5,800.00	5,794.34	5,981.75	5,972.63	20.52	21.17	-11.77	-127.29	-1,494.26	1,325.88	1,284.83	41.05	32.298		
5,850.00	5,844.25	6,030.78	6,021.19	20.70	21.35	-11.76	-125.81	-1,487.66	1,316.09	1,274.69	41.40	31.790		
5,900.00	5,894.16	6,079.81	6,069.75	20.88	21.53	-11.76	-124.33	-1,481.06	1,306.30	1,264.55	41.75	31.290		
5,950.00	5,944.07	6,128.84	6,118.32	21.06	21.71	-11.75	-122.86	-1,474.45	1,296.51	1,254.41	42.10	30.798		
6,000.00	5,993.97	6,177.87	6,166.88	21.25	21.89	-11.75	-121.38	-1,467.85	1,286.72	1,244.27	42.45	30.314		
6,050.00	6,043.88	6,226.90	6,215.44	21.43	22.08	-11.74	-119.91	-1,461.25	1,276.93	1,234.13	42.80	29.837		
6,100.00	6,093.79	6,275.94	6,264.00	21.61	22.26	-11.74	-118.43	-1,454.64	1,267.14	1,223.99	43.15	29.369		
6,150.00	6,143.70	6,324.97	6,312.57	21.79	22.44	-11.73	-116.96	-1,448.04	1,257.35	1,213.85	43.50	28.907		
6,200.00	6,193.61	6,374.00	6,361.13	21.97	22.62	-11.72	-115.48	-1,441.44	1,247.56	1,203.71	43.85	28.454		
6,250.00	6,243.51	6,423.03	6,409.69	22.16	22.80	-11.72	-114.01	-1,434.83	1,237.77	1,193.57	44.20	28.007		
6,300.00	6,293.42	6,472.06	6,458.26	22.34	22.99	-11.71	-112.53	-1,428.23	1,227.98	1,183.43	44.55	27.567		
6,350.00	6,343.33	6,521.10	6,506.82	22.52	23.17	-11.70	-111.05	-1,421.63	1,218.19	1,173.29	44.90	27.133		
6,400.00	6,393.24	6,570.13	6,555.38	22.70	23.35	-11.70	-109.58	-1,415.03	1,208.40	1,163.15	45.25	26.707		
6,450.00	6,443.14	6,619.16	6,603.94	22.88	23.54	-11.69	-108.10	-1,408.42	1,198.61	1,153.01	45.60	26.287		
6,500.00	6,493.05	6,668.19	6,652.51	23.07	23.72	-11.68	-106.63	-1,401.82	1,188.82	1,142.87	45.95	25.873		
6,550.00	6,542.96	6,717.22	6,701.07	23.25	23.91	-11.68	-105.15	-1,395.22	1,179.02	1,132.73	46.30	25.465		
6,600.00	6,592.87	6,766.26	6,749.63	23.43	24.09	-11.67	-103.68	-1,388.61	1,169.23	1,122.58	46.65	25.064		
6,650.00	6,642.78	6,815.29	6,798.20	23.61	24.27	-11.66	-102.20	-1,382.01	1,159.44	1,112.44	47.00	24.668		
6,700.00	6,692.68	6,864.32	6,846.76	23.79	24.46	-11.66	-100.73	-1,375.41	1,149.65	1,102.30	47.35	24.278		
6,750.00	6,742.59	6,913.35	6,895.32	23.98	24.64	-11.65	-99.25	-1,368.81	1,139.86	1,092.16	47.71	23.894		
6,800.00	6,792.50	6,962.38	6,943.88	24.16	24.83	-11.64	-97.77	-1,362.20	1,130.07	1,082.02	48.06	23.515		
6,850.00	6,842.41	7,011.42	6,992.45	24.34	25.01	-11.63	-96.30	-1,355.60	1,120.28	1,071.87	48.41	23.142		
6,900.00	6,892.32	7,060.45	7,041.01	24.52	25.20	-11.63	-94.82	-1,349.00	1,110.49	1,061.73	48.76	22.774		
6,950.00	6,942.22	7,109.48	7,089.57	24.71	25.39	-11.62	-93.35	-1,342.39	1,100.70	1,051.59	49.11	22.411		
7,000.00	6,992.13	7,158.51	7,138.14	24.89	25.57	-11.61	-91.87	-1,335.79	1,090.91	1,041.45	49.47	22.054		
7,050.00	7,042.04	7,207.54	7,186.70	25.07	25.76	-11.60	-90.40	-1,329.19	1,081.12	1,031.30	49.82	21.701		
7,100.00	7,091.95	7,256.58	7,235.26	25.25	25.94	-11.59	-88.92	-1,322.58	1,071.33	1,021.16	50.17	21.354		
7,150.00	7,141.85	7,305.61	7,284.27	25.44	26.11	-11.59	-87.45	-1,316.75	1,061.57	1,011.04	50.53	21.008		
7,200.00	7,191.76	7,354.65	7,338.58	25.62	26.28	-11.58	-86.47	-1,311.59	1,052.18	1,001.29	50.89	20.674		
7,250.00	7,241.67	7,379.32	7,356.97	25.80	26.41	-11.58	-85.46	-1,307.08	1,043.29	992.04	51.26	20.354		
7,300.00	7,291.58	7,418.12	7,395.53	25.98	26.55	-11.58	-84.53	-1,302.92	1,034.90	983.28	51.62	20.049		
7,350.00	7,341.49	7,457.05	7,434.27	26.17	26.70	-11.58	-83.68	-1,299.14	1,027.00	975.03	51.97	19.760		
7,400.00	7,391.39	7,496.10	7,473.17	26.35	26.84	-11.59	-82.92	-1,295.74	1,019.61	967.28	52.33	19.485		
7,450.00	7,441.30	7,535.27	7,512.21	26.53	26.99	-11.59	-82.25	-1,292.71	1,012.72	960.04	52.68	19.225		

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 624H
Well Error: 0.50 ft
Interface Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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		
7,500.00	7,491.21	7,574.54	7,551.39	26.71	27.13	-11.60	-81.66	-1,290.07	1,006.34	953.31	53.02	18.979		
7,550.00	7,541.12	7,613.92	7,590.70	26.90	27.27	-11.62	-81.15	-1,287.82	1,000.46	947.09	53.36	18.748		
7,600.00	7,591.02	7,653.38	7,630.12	27.08	27.41	-11.63	-80.74	-1,285.96	995.09	941.39	53.70	18.530		
7,650.00	7,640.93	7,692.93	7,669.64	27.26	27.55	-11.65	-80.41	-1,284.49	990.24	936.20	54.04	18.325		
7,700.00	7,690.84	7,732.55	7,709.24	27.44	27.69	-11.67	-80.17	-1,283.42	985.89	931.53	54.37	18.134		
7,750.00	7,740.75	7,772.24	7,748.92	27.63	27.83	-11.70	-80.02	-1,282.75	982.07	927.38	54.69	17.957		
7,800.00	7,790.66	7,826.26	7,787.06	27.81	28.02	-11.72	-79.96	-1,282.48	978.75	923.69	55.06	17.775		
7,850.00	7,840.56	7,860.28	7,838.96	27.99	28.14	-11.76	-79.96	-1,282.48	975.78	920.41	55.36	17.625		
7,900.00	7,890.47	7,910.19	7,886.87	28.17	28.32	-11.79	-79.96	-1,282.48	972.80	917.09	55.72	17.460		
7,950.00	7,940.38	7,960.09	7,936.78	28.36	28.49	-11.83	-79.96	-1,282.48	969.83	913.76	56.07	17.296		
8,000.00	7,990.29	8,010.00	7,986.69	28.54	28.67	-11.87	-79.96	-1,282.48	966.86	910.43	56.43	17.134		
8,050.00	8,040.19	8,059.91	8,036.59	28.72	28.84	-11.90	-79.96	-1,282.48	963.89	907.11	56.79	16.974		
8,100.00	8,090.10	8,109.82	8,086.50	28.91	29.02	-11.94	-79.96	-1,282.48	960.92	903.78	57.14	16.817		
8,150.00	8,140.01	8,159.73	8,136.41	29.09	29.19	-11.98	-79.96	-1,282.48	957.95	900.46	57.50	16.661		
8,200.00	8,189.92	8,202.97	8,179.63	29.27	29.34	-12.07	-81.01	-1,282.48	955.13	897.31	57.82	16.518		
8,250.00	8,239.83	8,244.42	8,220.88	29.45	29.47	-12.34	-85.00	-1,282.48	952.74	894.60	58.13	16.389		
8,300.00	8,289.73	8,285.06	8,260.94	29.64	29.60	-12.78	-91.80	-1,282.46	950.83	892.40	58.43	16.273		
8,350.00	8,339.64	8,324.51	8,299.27	29.82	29.72	-13.37	-101.11	-1,282.45	949.49	890.78	58.71	16.172		
8,400.00	8,389.55	8,362.47	8,335.46	30.00	29.83	-14.09	-112.53	-1,282.43	948.83	889.85	58.98	16.087		
8,417.32	8,406.83	8,375.22	8,347.44	30.07	29.87	-14.36	-116.90	-1,282.43	948.78	889.72	59.07	16.063 CC, ES		
8,450.00	8,439.46	8,400.00	8,370.43	30.19	29.94	-14.93	-126.15	-1,282.41	948.97	889.74	59.23	16.021		
8,500.00	8,489.37	8,433.07	8,400.44	30.37	30.03	-15.78	-140.03	-1,282.39	950.04	890.60	59.44	15.984		
8,550.00	8,539.27	8,465.47	8,429.02	30.55	30.11	-16.72	-155.29	-1,282.37	952.16	892.55	59.61	15.973 SF		
8,600.00	8,589.18	8,495.89	8,455.02	30.73	30.19	-17.67	-171.06	-1,282.34	955.48	895.74	59.74	15.994		
8,650.00	8,639.09	8,524.34	8,478.56	30.92	30.26	-18.64	-187.03	-1,282.32	960.11	900.30	59.82	16.051		
8,700.00	8,689.00	8,550.00	8,499.08	31.10	30.32	-19.56	-202.44	-1,282.29	966.16	906.33	59.83	16.147		
8,750.00	8,738.90	8,575.59	8,518.85	31.28	30.37	-20.52	-218.69	-1,282.27	973.71	913.91	59.80	16.282		
8,800.00	8,788.82	8,600.00	8,537.00	31.47	30.42	-21.50	-235.01	-1,282.24	982.89	923.17	59.72	16.459		
8,850.00	8,838.76	8,619.99	8,551.34	31.65	30.46	-22.38	-248.94	-1,282.22	994.17	934.64	59.53	16.699		
8,900.00	8,888.72	8,639.93	8,565.15	31.83	30.50	-23.29	-263.31	-1,282.20	1,007.67	948.37	59.31	16.991		
8,950.00	8,938.71	8,650.00	8,571.93	32.01	30.52	-23.81	-270.76	-1,282.19	1,023.43	964.54	58.90	17.376		
9,000.00	8,988.71	8,675.80	8,588.70	32.18	30.57	-25.04	-290.36	-1,282.15	1,041.22	982.54	58.68	17.743		
9,050.00	9,038.71	8,700.00	8,603.61	32.36	30.62	-110.81	-309.42	-1,282.12	1,061.07	1,002.65	58.42	18.163		
9,100.00	9,088.71	8,700.00	8,603.61	32.53	30.62	-110.81	-309.42	-1,282.12	1,082.37	1,024.61	57.76	18.738		
9,150.00	9,138.71	8,720.99	8,615.88	32.70	30.66	-111.75	-326.44	-1,282.10	1,105.10	1,047.70	57.40	19.251		
9,200.00	9,188.71	8,734.09	8,623.22	32.88	30.68	-112.34	-337.29	-1,282.08	1,129.29	1,072.38	56.91	19.843		
9,250.00	9,238.71	8,750.00	8,631.81	33.05	30.72	-113.06	-350.69	-1,282.06	1,154.85	1,098.39	56.46	20.456		
9,300.00	9,288.71	8,750.00	8,631.81	33.22	30.72	-113.06	-350.69	-1,282.06	1,181.74	1,126.00	55.74	21.200		
9,350.00	9,338.71	8,768.57	8,641.34	33.40	30.75	-113.91	-366.62	-1,282.04	1,209.76	1,154.43	55.33	21.866		
9,400.00	9,388.71	8,778.67	8,646.31	33.57	30.77	-114.37	-375.41	-1,282.02	1,239.01	1,184.22	54.78	22.617		
9,450.00	9,438.71	8,800.00	8,656.29	33.74	30.82	-115.35	-394.27	-1,281.99	1,269.50	1,215.08	54.42	23.327		
9,500.00	9,488.71	8,800.00	8,656.29	33.92	30.82	-115.35	-394.27	-1,281.99	1,300.78	1,247.04	53.74	24.205		
9,550.00	9,538.71	8,800.00	8,656.29	34.09	30.82	-115.35	-394.27	-1,281.99	1,333.19	1,280.12	53.08	25.119		
9,600.00	9,588.71	8,800.00	8,656.29	34.26	30.82	-115.35	-394.27	-1,281.99	1,366.67	1,314.24	52.43	26.066		
9,650.00	9,638.71	8,820.99	8,665.43	34.44	30.87	-116.32	-413.17	-1,281.96	1,400.68	1,348.55	52.13	26.870		
9,700.00	9,688.71	8,828.10	8,668.36	34.61	30.89	-116.65	-419.64	-1,281.95	1,435.70	1,384.06	51.63	27.805		
9,750.00	9,738.71	8,834.84	8,671.07	34.78	30.91	-116.96	-425.81	-1,281.94	1,471.48	1,420.33	51.16	28.765		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
3,050.00	3,049.41	3,273.21	3,264.94	10.66	11.56	-9.72	-108.30	-1,492.52	1,490.22	1,468.30	21.92	67.979	
3,100.00	3,099.32	3,322.09	3,313.22	10.83	11.75	-9.64	-105.25	-1,485.53	1,479.90	1,457.63	22.27	66.459	
3,150.00	3,149.23	3,370.97	3,361.51	11.01	11.94	-9.56	-102.20	-1,478.54	1,469.59	1,446.97	22.61	64.983	
3,200.00	3,199.14	3,419.85	3,409.79	11.19	12.12	-9.48	-99.16	-1,471.55	1,459.28	1,436.31	22.96	63.552	
3,250.00	3,249.04	3,468.74	3,458.08	11.36	12.31	-9.39	-96.11	-1,464.56	1,448.97	1,425.66	23.31	62.161	
3,300.00	3,298.95	3,517.62	3,506.36	11.54	12.50	-9.31	-93.06	-1,457.57	1,438.66	1,415.00	23.66	60.810	
3,350.00	3,348.86	3,566.50	3,554.64	11.71	12.69	-9.22	-90.01	-1,450.58	1,428.36	1,404.35	24.01	59.497	
3,400.00	3,398.77	3,615.38	3,602.93	11.89	12.88	-9.14	-86.96	-1,443.59	1,418.06	1,393.70	24.36	58.222	
3,450.00	3,448.68	3,664.26	3,651.21	12.07	13.07	-9.05	-83.91	-1,436.60	1,407.76	1,383.06	24.71	56.981	
3,500.00	3,498.58	3,713.15	3,699.50	12.24	13.26	-8.96	-80.86	-1,429.61	1,397.47	1,372.41	25.06	55.774	
3,550.00	3,548.49	3,762.03	3,747.78	12.42	13.45	-8.87	-77.81	-1,422.62	1,387.18	1,361.77	25.41	54.600	
3,600.00	3,598.40	3,810.91	3,796.06	12.60	13.64	-8.78	-74.77	-1,415.63	1,376.89	1,351.14	25.76	53.457	
3,650.00	3,648.31	3,859.79	3,844.35	12.78	13.83	-8.69	-71.72	-1,408.64	1,366.61	1,340.50	26.11	52.344	
3,700.00	3,698.22	3,908.68	3,892.63	12.95	14.03	-8.59	-68.67	-1,401.66	1,356.33	1,329.87	26.46	51.260	
3,750.00	3,748.12	3,957.56	3,940.92	13.13	14.22	-8.50	-65.62	-1,394.67	1,346.06	1,319.24	26.81	50.204	
3,800.00	3,798.03	4,006.44	3,989.20	13.31	14.41	-8.40	-62.57	-1,387.68	1,335.78	1,308.62	27.16	49.175	
3,850.00	3,847.94	4,055.32	4,037.48	13.49	14.60	-8.30	-59.52	-1,380.69	1,325.52	1,298.00	27.52	48.171	
3,900.00	3,897.85	4,104.21	4,085.77	13.67	14.80	-8.20	-56.47	-1,373.70	1,315.25	1,287.38	27.87	47.193	
3,950.00	3,947.75	4,153.09	4,134.05	13.84	14.99	-8.10	-53.42	-1,366.71	1,304.99	1,276.77	28.22	46.239	
4,000.00	3,997.66	4,201.97	4,182.34	14.02	15.19	-7.99	-50.38	-1,359.72	1,294.73	1,266.16	28.58	45.308	
4,050.00	4,047.57	4,250.85	4,230.62	14.20	15.38	-7.89	-47.33	-1,352.73	1,284.48	1,255.55	28.93	44.399	
4,100.00	4,097.48	4,299.74	4,278.90	14.38	15.57	-7.78	-44.28	-1,345.74	1,274.23	1,244.95	29.28	43.513	
4,150.00	4,147.39	4,348.62	4,327.19	14.56	15.77	-7.67	-41.23	-1,338.75	1,263.99	1,234.35	29.64	42.647	
4,200.00	4,197.29	4,402.50	4,375.47	14.74	15.98	-7.56	-38.18	-1,331.76	1,253.75	1,223.74	30.01	41.775	
4,250.00	4,247.20	4,446.38	4,423.76	14.92	16.16	-7.45	-35.13	-1,324.77	1,243.52	1,213.17	30.35	40.975	
4,300.00	4,297.11	4,504.74	4,472.04	15.10	16.39	-7.33	-32.08	-1,317.79	1,233.29	1,202.55	30.74	40.122	
4,350.00	4,347.02	4,544.15	4,520.32	15.28	16.55	-7.22	-29.04	-1,310.80	1,223.06	1,192.00	31.06	39.379	
4,400.00	4,396.92	4,606.97	4,568.61	15.46	16.80	-7.10	-25.99	-1,303.81	1,212.84	1,181.37	31.47	38.544	
4,450.00	4,446.83	4,641.91	4,616.89	15.64	16.94	-6.98	-22.94	-1,296.82	1,202.63	1,170.86	31.77	37.853	
4,500.00	4,496.74	4,709.21	4,665.18	15.82	17.21	-6.86	-19.89	-1,289.83	1,192.42	1,160.22	32.20	37.037	
4,550.00	4,546.65	4,739.68	4,713.46	16.00	17.33	-6.73	-16.84	-1,282.84	1,182.21	1,149.73	32.48	36.394	
4,600.00	4,596.56	4,788.56	4,761.74	16.18	17.53	-6.61	-13.79	-1,275.85	1,172.01	1,139.17	32.84	35.688	
4,650.00	4,646.46	4,837.44	4,810.03	16.36	17.73	-6.48	-10.74	-1,268.86	1,161.82	1,128.62	33.20	34.997	
4,700.00	4,696.37	4,886.32	4,858.31	16.54	17.92	-6.35	-7.69	-1,261.87	1,151.63	1,118.08	33.55	34.321	
4,750.00	4,746.28	4,935.21	4,906.60	16.72	18.12	-6.21	-4.65	-1,254.88	1,141.45	1,107.54	33.91	33.659	
4,800.00	4,796.19	4,984.09	4,954.88	16.90	18.32	-6.08	-1.60	-1,247.89	1,131.27	1,097.00	34.27	33.011	
4,850.00	4,846.09	5,032.97	5,003.16	17.08	18.51	-5.94	1.45	-1,240.90	1,121.10	1,086.47	34.63	32.376	
4,900.00	4,896.00	5,081.85	5,051.45	17.26	18.71	-5.80	4.50	-1,233.91	1,110.94	1,075.95	34.99	31.754	
4,950.00	4,945.91	5,130.73	5,099.73	17.44	18.91	-5.65	7.55	-1,226.93	1,100.78	1,065.44	35.34	31.144	
5,000.00	4,995.82	5,179.62	5,148.01	17.62	19.11	-5.51	10.60	-1,219.94	1,090.63	1,054.93	35.70	30.547	
5,050.00	5,045.73	5,228.50	5,196.30	17.80	19.31	-5.36	13.65	-1,212.95	1,080.49	1,044.43	36.06	29.962	
5,100.00	5,095.63	5,277.38	5,244.58	17.98	19.50	-5.21	16.69	-1,205.96	1,070.35	1,033.93	36.42	29.388	
5,150.00	5,145.54	5,326.26	5,292.87	18.16	19.70	-5.05	19.74	-1,198.97	1,060.22	1,023.44	36.78	28.825	
5,200.00	5,195.45	5,375.15	5,341.15	18.34	19.90	-4.90	22.79	-1,191.98	1,050.10	1,012.96	37.14	28.273	
5,250.00	5,245.36	5,424.03	5,389.43	18.53	20.10	-4.74	25.84	-1,184.99	1,039.99	1,002.49	37.50	27.732	
5,300.00	5,295.27	5,472.91	5,437.72	18.71	20.30	-4.57	28.89	-1,178.00	1,029.88	992.02	37.86	27.202	
5,350.00	5,345.17	5,521.79	5,486.00	18.89	20.50	-4.41	31.94	-1,171.01	1,019.79	981.56	38.22	26.681	
5,400.00	5,395.08	5,570.68	5,534.29	19.07	20.69	-4.24	34.99	-1,164.02	1,009.70	971.11	38.58	26.170	
5,450.00	5,444.99	5,619.56	5,582.57	19.25	20.89	-4.06	38.04	-1,157.03	999.62	960.67	38.94	25.668	
5,500.00	5,494.90	5,668.44	5,630.85	19.43	21.09	-3.89	41.08	-1,150.04	989.55	950.24	39.30	25.176	
5,550.00	5,544.80	5,717.32	5,679.14	19.61	21.29	-3.71	44.13	-1,143.05	979.48	939.82	39.67	24.693	
5,600.00	5,594.71	5,766.21	5,727.42	19.79	21.49	-3.52	47.18	-1,136.07	969.43	929.40	40.03	24.219	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
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
5,650.00	5,644.62	5,815.09	5,775.71	19.98	21.69	-3.33	50.23	-1,129.08	959.39	919.00	40.39	23.753	
5,700.00	5,694.53	5,863.97	5,823.99	20.16	21.89	-3.14	53.28	-1,122.09	949.36	908.61	40.75	23.296	
5,750.00	5,744.44	5,912.85	5,872.27	20.34	22.09	-2.94	56.33	-1,115.10	939.34	898.22	41.12	22.846	
5,800.00	5,794.34	5,961.73	5,920.56	20.52	22.29	-2.74	59.38	-1,108.11	929.33	887.85	41.48	22.405	
5,850.00	5,844.25	6,010.62	5,968.84	20.70	22.49	-2.54	62.42	-1,101.12	919.33	877.48	41.84	21.972	
5,900.00	5,894.16	6,059.50	6,017.13	20.88	22.69	-2.33	65.47	-1,094.13	909.34	867.13	42.21	21.546	
5,950.00	5,944.07	6,108.38	6,065.41	21.06	22.89	-2.12	68.52	-1,087.14	899.36	856.79	42.57	21.127	
6,000.00	5,993.97	6,157.26	6,113.69	21.25	23.09	-1.90	71.57	-1,080.15	889.40	846.47	42.93	20.716	
6,050.00	6,043.88	6,206.15	6,161.98	21.43	23.29	-1.67	74.62	-1,073.16	879.45	836.15	43.30	20.312	
6,100.00	6,093.79	6,255.03	6,210.26	21.61	23.49	-1.44	77.67	-1,066.17	869.51	825.85	43.66	19.914	
6,150.00	6,143.70	6,303.91	6,258.55	21.79	23.69	-1.21	80.72	-1,059.18	859.59	815.56	44.03	19.524	
6,200.00	6,193.61	6,352.79	6,306.83	21.97	23.89	-0.97	83.77	-1,052.19	849.68	805.28	44.39	19.140	
6,250.00	6,243.51	6,401.68	6,355.11	22.16	24.09	-0.73	86.81	-1,045.21	839.78	795.02	44.76	18.762	
6,300.00	6,293.42	6,450.56	6,403.40	22.34	24.29	-0.48	89.86	-1,038.22	829.90	784.78	45.13	18.391	
6,350.00	6,343.33	6,500.56	6,451.68	22.52	24.49	-0.22	92.91	-1,031.23	820.04	774.54	45.50	18.024	
6,400.00	6,393.24	6,548.32	6,499.97	22.70	24.69	0.04	95.96	-1,024.24	810.19	764.33	45.88	17.666	
6,450.00	6,443.14	6,602.80	6,548.25	22.88	24.91	0.31	99.01	-1,017.25	800.36	754.11	46.25	17.305	
6,500.00	6,493.05	6,646.09	6,596.53	23.07	25.09	0.59	102.06	-1,010.26	790.54	743.95	46.60	16.966	
6,550.00	6,542.96	6,705.03	6,644.82	23.25	25.33	0.87	105.11	-1,003.27	780.75	733.75	47.00	16.611	
6,600.00	6,592.87	6,743.85	6,693.10	23.43	25.49	1.16	108.16	-996.28	770.87	723.64	47.33	16.288	
6,650.00	6,642.78	6,807.27	6,741.39	23.61	25.75	1.46	111.20	-989.29	761.22	713.46	47.76	15.939	
6,700.00	6,692.68	6,841.62	6,789.67	23.79	25.89	1.77	114.25	-982.30	751.48	703.41	48.07	15.632	
6,750.00	6,742.59	6,890.50	6,837.95	23.98	26.09	2.08	117.30	-975.31	741.77	693.32	48.44	15.312	
6,800.00	6,792.50	6,939.38	6,886.24	24.16	26.29	2.40	120.35	-968.32	732.07	683.26	48.82	14.997	
6,850.00	6,842.41	6,988.26	6,934.52	24.34	26.49	2.73	123.40	-961.33	722.40	673.22	49.19	14.687	
6,900.00	6,892.32	7,037.15	6,982.81	24.52	26.69	3.07	126.45	-954.35	712.76	663.20	49.56	14.382	
6,950.00	6,942.22	7,086.03	7,031.09	24.71	26.89	3.42	129.50	-947.36	703.13	653.20	49.93	14.082	
7,000.00	6,992.13	7,134.91	7,079.37	24.89	27.10	3.78	132.54	-940.37	693.54	643.23	50.31	13.786	
7,050.00	7,042.04	7,183.79	7,127.68	25.07	27.30	4.14	135.59	-933.38	683.97	633.29	50.68	13.496	
7,100.00	7,091.95	7,232.68	7,175.94	25.25	27.50	4.52	138.64	-926.39	674.43	623.37	51.06	13.210	
7,150.00	7,141.85	7,281.56	7,224.22	25.44	27.70	4.91	141.69	-919.40	664.92	613.49	51.43	12.928	
7,200.00	7,191.76	7,330.44	7,272.51	25.62	27.90	5.31	144.74	-912.41	655.44	603.63	51.81	12.651	
7,250.00	7,241.67	7,379.32	7,320.79	25.80	28.10	5.72	147.79	-905.42	645.99	593.80	52.19	12.379	
7,300.00	7,291.58	7,428.21	7,369.08	25.98	28.30	6.14	150.84	-898.43	636.57	584.01	52.56	12.111	
7,350.00	7,341.49	7,477.09	7,417.36	26.17	28.50	6.56	153.89	-891.44	627.19	574.25	52.94	11.847	
7,400.00	7,391.39	7,525.21	7,464.89	26.35	28.70	7.02	156.88	-884.57	617.85	564.53	53.33	11.586	
7,450.00	7,441.30	7,568.52	7,507.72	26.53	28.88	7.41	159.46	-878.66	608.83	555.11	53.72	11.333	
7,500.00	7,491.21	7,612.02	7,550.81	26.71	29.05	7.79	161.86	-873.17	600.30	546.19	54.11	11.094	
7,550.00	7,541.12	7,655.72	7,594.16	26.90	29.22	8.15	164.06	-868.11	592.24	537.75	54.50	10.868	
7,600.00	7,591.02	7,699.59	7,637.74	27.08	29.40	8.48	166.08	-863.49	584.67	529.79	54.88	10.654	
7,650.00	7,640.93	7,743.63	7,681.54	27.26	29.56	8.80	167.90	-859.31	577.57	522.31	55.25	10.453	
7,700.00	7,690.84	7,787.82	7,725.54	27.44	29.73	9.09	169.53	-855.58	570.94	515.32	55.63	10.264	
7,750.00	7,740.75	7,832.15	7,769.73	27.63	29.90	9.36	170.95	-852.31	564.79	508.79	55.99	10.087	
7,800.00	7,790.66	7,876.62	7,814.10	27.81	30.06	9.60	172.18	-849.50	559.10	502.74	56.35	9.922	
7,850.00	7,840.56	7,921.21	7,858.61	27.99	30.22	9.81	173.20	-847.16	553.87	497.17	56.71	9.767	
7,900.00	7,890.47	7,965.91	7,903.27	28.17	30.37	10.00	174.01	-845.30	549.11	492.05	57.06	9.624	
7,950.00	7,940.38	8,010.71	7,948.04	28.36	30.53	10.15	174.62	-843.91	544.81	487.41	57.40	9.492	
8,000.00	7,990.29	8,055.59	7,992.91	28.54	30.68	10.26	175.02	-843.00	540.96	483.23	57.74	9.370	
8,050.00	8,040.19	8,100.55	8,037.86	28.72	30.83	10.35	175.20	-842.57	537.57	479.51	58.07	9.258	
8,100.00	8,090.10	8,148.59	8,085.90	28.91	30.99	10.41	175.22	-842.53	534.56	476.15	58.41	9.152	
8,150.00	8,140.01	8,201.50	8,135.81	29.09	31.16	10.46	175.22	-842.53	531.57	472.80	58.77	9.045	
8,200.00	8,189.92	8,248.41	8,185.72	29.27	31.32	10.52	175.22	-842.53	528.58	469.48	59.11	8.943	

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 624H
Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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		
8,250.00	8,239.83	8,301.69	8,235.63	29.45	31.49	10.58	175.22	-842.53	525.60	466.13	59.47	8.838		
8,300.00	8,289.73	8,348.22	8,285.53	29.64	31.64	10.65	175.22	-842.53	522.62	462.81	59.81	8.738		
8,350.00	8,339.64	8,401.87	8,335.44	29.82	31.82	10.71	175.22	-842.53	519.64	459.47	60.17	8.638		
8,400.00	8,389.55	8,448.04	8,385.35	30.00	31.97	10.77	175.22	-842.53	516.66	456.15	60.51	8.539		
8,450.00	8,439.46	8,507.97	8,445.25	30.19	32.16	10.69	173.81	-842.53	513.38	452.49	60.89	8.432		
8,500.00	8,489.37	8,573.34	8,510.05	30.37	32.35	9.87	165.51	-842.52	508.67	447.46	61.20	8.311		
8,550.00	8,539.27	8,635.96	8,570.87	30.55	32.51	8.30	150.70	-842.50	502.64	441.18	61.46	8.179		
8,600.00	8,589.18	8,694.64	8,626.07	30.73	32.65	6.11	130.87	-842.47	495.74	434.06	61.69	8.037		
8,650.00	8,639.09	8,748.64	8,674.83	30.92	32.77	3.46	107.72	-842.43	488.57	428.65	61.92	7.890		
8,700.00	8,689.00	8,797.65	8,717.03	31.10	32.86	0.53	82.83	-842.39	481.77	419.60	62.17	7.749		
8,750.00	8,738.90	8,841.72	8,753.03	31.28	32.93	-2.53	57.43	-842.35	476.06	413.64	62.42	7.627		
8,800.00	8,788.82	8,881.11	8,783.48	31.47	32.98	-5.57	32.45	-842.32	472.14	409.53	62.61	7.541		
8,841.12	8,829.88	8,910.31	8,804.90	31.62	33.02	-7.99	12.61	-842.29	471.03	408.35	62.68	7.515 CC, ES, SF		
8,850.00	8,838.76	8,916.27	8,809.15	31.65	33.02	-8.51	8.44	-842.28	471.09	408.40	62.69	7.515		
8,900.00	8,888.72	8,947.63	8,830.77	31.83	33.06	-11.28	-14.28	-842.25	473.49	410.91	62.58	7.566		
8,950.00	8,938.71	8,975.63	8,848.99	32.01	33.08	-13.87	-35.53	-842.21	479.68	417.42	62.26	7.705		
9,000.00	8,988.71	9,000.00	8,863.99	32.18	33.10	-16.20	-54.74	-842.18	489.82	428.13	61.68	7.941		
9,050.00	9,038.71	9,023.09	8,877.44	32.36	33.12	-103.10	-73.51	-842.16	503.73	442.83	60.91	8.271		
9,100.00	9,088.71	9,043.23	8,888.54	32.53	33.13	-105.05	-90.31	-842.13	520.95	461.03	59.92	8.694		
9,150.00	9,138.71	9,061.37	8,898.02	32.70	33.14	-106.80	-105.77	-842.11	541.29	482.51	58.78	9.209		
9,200.00	9,188.71	9,077.75	8,906.17	32.88	33.14	-108.39	-119.98	-842.08	564.56	507.02	57.54	9.811		
9,250.00	9,238.71	9,092.60	8,913.20	33.05	33.15	-109.83	-133.06	-842.06	590.51	534.26	56.25	10.498		
9,300.00	9,288.71	9,100.00	8,916.58	33.22	33.16	-110.54	-139.65	-842.05	618.94	564.15	54.78	11.298		
9,350.00	9,338.71	9,118.43	8,924.61	33.40	33.16	-112.31	-156.23	-842.03	649.44	595.76	53.67	12.100		
9,400.00	9,388.71	9,129.71	8,929.27	33.57	33.16	-113.38	-166.51	-842.01	681.92	629.48	52.44	13.004		
9,450.00	9,438.71	9,140.07	8,933.36	33.74	33.17	-114.36	-176.02	-842.00	716.12	664.85	51.27	13.967		
9,500.00	9,488.71	9,150.00	8,937.12	33.92	33.17	-115.29	-185.21	-841.99	751.84	701.65	50.19	14.980		
9,550.00	9,538.71	9,150.00	8,937.12	34.09	33.17	-115.29	-185.21	-841.99	788.99	740.03	48.96	16.115		
9,600.00	9,588.71	9,166.56	8,943.04	34.26	33.18	-116.83	-200.67	-841.96	827.13	778.89	48.24	17.145		
9,650.00	9,638.71	9,174.12	8,945.60	34.44	33.18	-117.52	-207.79	-841.95	866.40	819.01	47.39	18.282		
9,700.00	9,688.71	9,181.15	8,947.89	34.61	33.18	-118.16	-214.44	-841.94	906.60	859.98	46.62	19.447		
9,750.00	9,738.71	9,200.00	8,953.62	34.78	33.19	-119.85	-232.39	-841.91	947.82	901.64	46.18	20.524		
9,800.00	9,788.71	9,200.00	8,953.62	34.96	33.19	-119.85	-232.39	-841.91	989.42	944.00	45.41	21.787		
9,850.00	9,838.71	9,200.00	8,953.62	35.13	33.19	-119.85	-232.39	-841.91	1,031.76	987.03	44.73	23.067		
9,900.00	9,888.71	9,200.00	8,953.62	35.31	33.19	-119.85	-232.39	-841.91	1,074.77	1,030.65	44.12	24.360		
9,950.00	9,938.71	9,200.00	8,953.62	35.48	33.19	-119.85	-232.39	-841.91	1,118.35	1,074.77	43.58	25.661		
10,000.00	9,988.71	9,214.75	8,957.70	35.65	33.19	-121.15	-246.57	-841.89	1,162.19	1,118.83	43.35	26.808		
10,050.00	10,038.71	9,219.23	8,958.86	35.83	33.19	-121.54	-250.90	-841.89	1,206.56	1,163.57	42.99	28.064		
10,100.00	10,088.71	9,223.47	8,959.93	36.00	33.19	-121.90	-255.00	-841.88	1,251.32	1,208.65	42.68	29.321		
10,150.00	10,138.71	9,227.47	8,960.92	36.18	33.19	-122.24	-258.88	-841.87	1,296.42	1,254.03	42.40	30.577		
10,200.00	10,188.71	9,231.26	8,961.82	36.35	33.20	-122.57	-262.56	-841.87	1,341.84	1,299.68	42.15	31.831		
10,250.00	10,238.71	9,250.00	8,965.95	36.52	33.20	-124.14	-280.84	-841.84	1,387.81	1,345.64	42.16	32.916		
10,300.00	10,288.71	9,250.00	8,965.95	36.70	33.20	-124.14	-280.84	-841.84	1,433.65	1,391.73	41.92	34.196		
10,350.00	10,338.71	9,250.00	8,965.95	36.87	33.20	-124.14	-280.84	-841.84	1,479.77	1,438.05	41.72	35.469		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
5,500.00	5,494.90	5,507.08	5,492.23	19.43	19.52	-4.10	47.98	-1,670.06	1,499.61	1,460.81	38.80	38.647	
5,550.00	5,544.80	5,542.82	5,542.11	19.61	19.65	-4.06	49.17	-1,670.06	1,496.61	1,457.50	39.11	38.267	
5,600.00	5,594.71	5,607.28	5,592.00	19.79	19.88	-4.02	50.37	-1,670.06	1,493.61	1,454.09	39.52	37.795	
5,650.00	5,644.62	5,642.62	5,641.88	19.98	20.01	-3.99	51.57	-1,670.06	1,490.61	1,450.78	39.82	37.431	
5,700.00	5,694.53	5,707.48	5,691.77	20.16	20.24	-3.95	52.77	-1,670.06	1,487.61	1,447.37	40.23	36.974	
5,750.00	5,744.44	5,742.42	5,741.66	20.34	20.37	-3.91	53.96	-1,670.06	1,484.61	1,444.07	40.54	36.623	
5,800.00	5,794.34	5,807.68	5,791.54	20.52	20.60	-3.87	55.16	-1,670.06	1,481.61	1,440.66	40.95	36.181	
5,850.00	5,844.25	5,842.22	5,841.43	20.70	20.73	-3.83	56.36	-1,670.06	1,478.61	1,437.36	41.25	35.843	
5,900.00	5,894.16	5,907.88	5,891.31	20.88	20.96	-3.79	57.55	-1,670.06	1,475.62	1,433.95	41.67	35.415	
5,950.00	5,944.07	5,942.02	5,941.20	21.06	21.08	-3.76	58.75	-1,670.06	1,472.62	1,430.65	41.97	35.090	
6,000.00	5,993.97	6,008.08	5,991.09	21.25	21.32	-3.72	59.95	-1,670.06	1,469.63	1,427.24	42.38	34.676	
6,050.00	6,043.88	6,041.82	6,040.97	21.43	21.44	-3.68	61.14	-1,670.06	1,466.63	1,423.95	42.68	34.362	
6,100.00	6,093.79	6,108.28	6,090.86	21.61	21.68	-3.64	62.34	-1,670.06	1,463.64	1,420.54	43.10	33.960	
6,150.00	6,143.70	6,141.62	6,140.74	21.79	21.80	-3.60	63.54	-1,670.06	1,460.64	1,417.25	43.40	33.658	
6,200.00	6,193.61	6,208.48	6,190.63	21.97	22.04	-3.56	64.74	-1,670.06	1,457.65	1,413.84	43.81	33.268	
6,250.00	6,243.51	6,241.42	6,240.51	22.16	22.16	-3.52	65.93	-1,670.06	1,454.66	1,410.55	44.11	32.977	
6,300.00	6,293.42	6,308.68	6,290.40	22.34	22.40	-3.48	67.13	-1,670.06	1,451.67	1,407.14	44.53	32.599	
6,350.00	6,343.33	6,341.22	6,340.29	22.52	22.52	-3.44	68.33	-1,670.06	1,448.68	1,403.85	44.83	32.317	
6,400.00	6,393.24	6,408.88	6,390.17	22.70	22.76	-3.40	69.52	-1,670.06	1,445.69	1,400.44	45.25	31.950	
6,450.00	6,443.14	6,441.02	6,440.06	22.88	22.87	-3.36	70.72	-1,670.06	1,442.70	1,397.16	45.54	31.678	
6,500.00	6,493.05	6,509.08	6,489.94	23.07	23.12	-3.32	71.92	-1,670.06	1,439.71	1,393.75	45.97	31.322	
6,550.00	6,542.96	6,540.82	6,539.83	23.25	23.23	-3.28	73.11	-1,670.06	1,436.72	1,390.47	46.26	31.059	
6,600.00	6,592.87	6,609.28	6,589.72	23.43	23.48	-3.24	74.31	-1,670.06	1,433.74	1,387.06	46.68	30.713	
6,650.00	6,642.78	6,640.62	6,639.60	23.61	23.59	-3.20	75.51	-1,670.06	1,430.75	1,383.78	46.97	30.459	
6,700.00	6,692.68	6,709.48	6,689.49	23.79	23.84	-3.15	76.70	-1,670.06	1,427.77	1,380.37	47.40	30.122	
6,750.00	6,742.59	6,740.42	6,739.37	23.98	23.95	-3.11	77.90	-1,670.06	1,424.78	1,377.09	47.69	29.876	
6,800.00	6,792.50	6,809.68	6,789.26	24.16	24.20	-3.07	79.10	-1,670.06	1,421.80	1,373.68	48.12	29.549	
6,850.00	6,842.41	6,840.22	6,839.14	24.34	24.31	-3.03	80.30	-1,670.06	1,418.81	1,370.41	48.40	29.311	
6,900.00	6,892.32	6,909.88	6,889.03	24.52	24.56	-2.99	81.49	-1,670.06	1,415.83	1,367.00	48.83	28.993	
6,950.00	6,942.22	6,940.02	6,938.92	24.71	24.66	-2.94	82.69	-1,670.06	1,412.85	1,363.73	49.12	28.763	
7,000.00	6,992.13	6,989.92	6,988.80	24.89	24.84	-2.90	83.89	-1,670.06	1,409.87	1,360.39	49.48	28.494	
7,050.00	7,042.04	7,039.82	7,038.69	25.07	25.02	-2.86	85.08	-1,670.06	1,406.89	1,357.05	49.84	28.230	
7,100.00	7,091.95	7,089.72	7,088.57	25.25	25.20	-2.82	86.28	-1,670.06	1,403.91	1,353.72	50.19	27.969	
7,150.00	7,141.85	7,139.62	7,138.46	25.44	25.38	-2.77	87.48	-1,670.06	1,400.93	1,350.38	50.55	27.712	
7,200.00	7,191.76	7,189.52	7,188.35	25.62	25.56	-2.73	88.67	-1,670.06	1,397.95	1,347.04	50.91	27.459	
7,250.00	7,241.67	7,239.42	7,238.23	25.80	25.74	-2.69	89.87	-1,670.06	1,394.98	1,343.71	51.27	27.209	
7,300.00	7,291.58	7,289.32	7,288.12	25.98	25.92	-2.64	91.07	-1,670.06	1,392.00	1,340.37	51.63	26.962	
7,350.00	7,341.49	7,339.22	7,338.00	26.17	26.10	-2.60	92.26	-1,670.06	1,389.03	1,337.04	51.99	26.719	
7,400.00	7,391.39	7,389.13	7,387.89	26.35	26.27	-2.56	93.46	-1,670.06	1,386.05	1,333.71	52.34	26.480	
7,450.00	7,441.30	7,439.03	7,437.77	26.53	26.45	-2.51	94.66	-1,670.06	1,383.08	1,330.38	52.70	26.243	
7,500.00	7,491.21	7,488.93	7,487.66	26.71	26.63	-2.47	95.86	-1,670.06	1,380.10	1,327.04	53.06	26.010	
7,550.00	7,541.12	7,538.83	7,537.55	26.90	26.81	-2.42	97.05	-1,670.06	1,377.13	1,323.71	53.42	25.780	
7,600.00	7,591.02	7,588.73	7,587.43	27.08	26.99	-2.38	98.25	-1,670.06	1,374.16	1,320.38	53.78	25.553	
7,650.00	7,640.93	7,638.63	7,637.32	27.26	27.17	-2.34	99.45	-1,670.06	1,371.19	1,317.06	54.13	25.329	
7,700.00	7,690.84	7,688.53	7,687.20	27.44	27.35	-2.29	100.64	-1,670.06	1,368.22	1,313.73	54.49	25.108	
7,750.00	7,740.75	7,738.43	7,737.09	27.63	27.53	-2.25	101.84	-1,670.06	1,365.25	1,310.40	54.85	24.890	
7,800.00	7,790.66	7,788.33	7,786.98	27.81	27.71	-2.20	103.04	-1,670.06	1,362.28	1,307.08	55.21	24.675	
7,850.00	7,840.56	7,838.23	7,836.86	27.99	27.89	-2.15	104.23	-1,670.06	1,359.32	1,303.75	55.57	24.462	
7,900.00	7,890.47	7,888.13	7,886.75	28.17	28.06	-2.11	105.43	-1,670.06	1,356.35	1,300.43	55.93	24.252	
7,950.00	7,940.38	7,938.03	7,936.63	28.36	28.24	-2.06	106.63	-1,670.06	1,353.39	1,297.10	56.29	24.045	
8,000.00	7,990.29	7,987.93	7,986.52	28.54	28.42	-2.02	107.82	-1,670.06	1,350.42	1,293.78	56.64	23.841	
8,050.00	8,040.19	8,037.83	8,036.40	28.72	28.60	-1.97	109.02	-1,670.06	1,347.46	1,290.46	57.00	23.639	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
8,100.00	8,090.10	8,087.73	8,086.29	28.91	28.78	-1.92	110.22	-1,670.06	1,344.50	1,287.14	57.36	23.439	
8,150.00	8,140.01	8,137.63	8,136.18	29.09	28.96	-1.88	111.42	-1,670.06	1,341.53	1,283.82	57.72	23.243	
8,200.00	8,189.92	8,187.53	8,186.06	29.27	29.14	-1.83	112.61	-1,670.06	1,338.57	1,280.50	58.08	23.048	
8,250.00	8,239.83	8,237.43	8,235.95	29.45	29.32	-1.78	113.81	-1,670.06	1,335.61	1,277.18	58.44	22.856	
8,300.00	8,289.73	8,287.33	8,285.83	29.64	29.50	-1.73	115.01	-1,670.06	1,332.65	1,273.86	58.79	22.666	
8,350.00	8,339.64	8,337.23	8,335.72	29.82	29.68	-1.69	116.20	-1,670.06	1,329.70	1,270.54	59.15	22.479	
8,400.00	8,389.55	8,387.13	8,385.61	30.00	29.86	-1.64	117.40	-1,670.06	1,326.74	1,267.23	59.51	22.294	
8,450.00	8,439.46	8,437.03	8,435.49	30.19	30.03	-1.59	118.60	-1,670.06	1,323.78	1,263.91	59.87	22.111	
8,500.00	8,489.37	8,486.93	8,485.38	30.37	30.21	-1.54	119.79	-1,670.06	1,320.83	1,260.60	60.23	21.930	
8,550.00	8,539.27	8,536.83	8,535.26	30.55	30.39	-1.49	120.99	-1,670.06	1,317.87	1,257.29	60.59	21.752	
8,600.00	8,589.18	8,586.73	8,585.15	30.73	30.57	-1.45	122.19	-1,670.06	1,314.92	1,253.97	60.95	21.575	
8,650.00	8,639.09	8,636.63	8,635.03	30.92	30.75	-1.40	123.38	-1,670.06	1,311.97	1,250.66	61.30	21.401	
8,700.00	8,689.00	8,686.53	8,684.92	31.10	30.93	-1.35	124.58	-1,670.06	1,309.02	1,247.35	61.66	21.228	
8,750.00	8,738.90	8,736.43	8,734.81	31.28	31.11	-1.30	125.78	-1,670.06	1,306.06	1,244.04	62.02	21.058	
8,800.00	8,788.82	8,786.33	8,784.70	31.47	31.29	-1.25	126.98	-1,670.06	1,303.17	1,240.79	62.38	20.891	
8,850.00	8,838.76	8,836.27	8,834.61	31.65	31.47	-1.20	128.17	-1,670.06	1,300.82	1,238.08	62.74	20.734	
8,900.00	8,888.72	8,886.22	8,884.56	31.83	31.65	-1.15	129.37	-1,670.06	1,299.12	1,236.03	63.10	20.589	
8,950.00	8,938.71	8,936.20	8,934.52	32.01	31.83	-1.09	130.57	-1,670.06	1,298.08	1,234.63	63.46	20.457	
9,000.00	8,988.71	8,986.18	8,984.49	32.18	32.01	-1.04	131.77	-1,670.06	1,297.70	1,233.88	63.81	20.336	
9,019.59	9,008.30	9,005.77	9,004.06	32.25	32.08	-1.02	132.24	-1,670.06	1,297.68	1,233.73	63.95	20.292	
9,050.00	9,038.71	9,036.17	9,034.46	32.36	32.18	-85.67	132.97	-1,670.06	1,297.77	1,233.60	64.17	20.225	
9,100.00	9,088.71	9,086.15	9,084.43	32.53	32.36	-85.62	134.17	-1,670.06	1,297.86	1,233.34	64.52	20.116	
9,150.00	9,138.71	9,136.14	9,134.40	32.70	32.54	-85.57	135.37	-1,670.06	1,297.95	1,233.08	64.87	20.007	
9,200.00	9,188.71	9,186.12	9,184.37	32.88	32.72	-85.51	136.57	-1,670.06	1,298.05	1,232.82	65.23	19.900	
9,250.00	9,238.71	9,236.11	9,234.34	33.05	32.90	-85.46	137.76	-1,670.06	1,298.14	1,232.56	65.58	19.794	
9,300.00	9,288.71	9,286.10	9,284.31	33.22	33.08	-85.41	138.96	-1,670.06	1,298.24	1,232.30	65.94	19.690	
9,350.00	9,338.71	9,336.08	9,334.28	33.40	33.26	-85.35	140.16	-1,670.06	1,298.33	1,232.04	66.29	19.586	
9,400.00	9,388.71	9,386.07	9,384.26	33.57	33.44	-85.30	141.36	-1,670.06	1,298.43	1,231.79	66.64	19.483	
9,450.00	9,438.71	9,436.05	9,434.23	33.74	33.62	-85.25	142.56	-1,670.06	1,298.53	1,231.53	67.00	19.382	
9,500.00	9,488.71	9,486.04	9,484.20	33.92	33.80	-85.20	143.76	-1,670.06	1,298.63	1,231.28	67.35	19.282	
9,550.00	9,538.71	9,536.02	9,534.17	34.09	33.98	-85.14	144.96	-1,670.06	1,298.73	1,231.02	67.70	19.182	
9,600.00	9,588.71	9,586.01	9,584.14	34.26	34.16	-85.09	146.16	-1,670.06	1,298.83	1,230.77	68.06	19.084	
9,650.00	9,638.71	9,635.99	9,634.11	34.44	34.34	-85.04	147.36	-1,670.06	1,298.93	1,230.52	68.41	18.987	
9,700.00	9,688.71	9,685.98	9,684.08	34.61	34.52	-84.99	148.55	-1,670.06	1,299.04	1,230.27	68.77	18.890	
9,750.00	9,738.71	9,735.97	9,734.05	34.78	34.70	-84.93	149.75	-1,670.06	1,299.14	1,230.02	69.12	18.795	
9,800.00	9,788.71	9,785.95	9,784.03	34.96	34.88	-84.88	150.95	-1,670.06	1,299.25	1,229.78	69.48	18.701	
9,850.00	9,838.71	9,835.94	9,834.00	35.13	35.06	-84.83	152.15	-1,670.06	1,299.36	1,229.53	69.83	18.607	
9,900.00	9,888.71	9,885.92	9,883.97	35.31	35.24	-84.77	153.35	-1,670.06	1,299.47	1,229.28	70.18	18.515	
9,950.00	9,938.71	9,935.91	9,933.94	35.48	35.41	-84.72	154.55	-1,670.06	1,299.58	1,229.04	70.54	18.424	
10,000.00	9,988.71	9,985.89	9,983.91	35.65	35.59	-84.67	155.75	-1,670.06	1,299.69	1,228.79	70.89	18.333	
10,050.00	10,038.71	10,035.88	10,033.88	35.83	35.77	-84.62	156.95	-1,670.06	1,299.80	1,228.55	71.25	18.243	
10,100.00	10,088.71	10,085.87	10,083.85	36.00	35.95	-84.56	158.15	-1,670.06	1,299.91	1,228.31	71.60	18.155	
10,150.00	10,138.71	10,135.85	10,133.82	36.18	36.13	-84.51	159.35	-1,670.06	1,300.03	1,228.07	71.96	18.067	
10,200.00	10,188.71	10,185.84	10,183.80	36.35	36.31	-84.46	160.54	-1,670.06	1,300.14	1,227.83	72.31	17.980	
10,250.00	10,238.71	10,235.82	10,233.77	36.52	36.49	-84.41	161.74	-1,670.06	1,300.26	1,227.59	72.67	17.894	
10,300.00	10,288.71	10,285.81	10,283.74	36.70	36.67	-84.35	162.94	-1,670.06	1,300.38	1,227.36	73.02	17.808	
10,350.00	10,338.71	10,335.79	10,333.71	36.87	36.85	-84.30	164.14	-1,670.06	1,300.49	1,227.12	73.38	17.724	
10,400.00	10,388.71	10,385.78	10,383.68	37.05	37.03	-84.25	165.34	-1,670.06	1,300.61	1,226.88	73.73	17.640	
10,450.00	10,438.71	10,435.76	10,433.65	37.22	37.21	-84.20	166.54	-1,670.06	1,300.74	1,226.65	74.09	17.557	
10,500.00	10,488.71	10,485.75	10,483.62	37.40	37.39	-84.14	167.74	-1,670.06	1,300.86	1,226.42	74.44	17.475	
10,550.00	10,538.71	10,535.74	10,533.59	37.57	37.57	-84.09	168.94	-1,670.06	1,300.98	1,226.18	74.80	17.394	
10,600.00	10,588.71	10,585.72	10,583.57	37.75	37.75	-84.04	170.14	-1,670.06	1,301.10	1,225.95	75.15	17.313	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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		
10,650.00	10,638.71	10,635.71	10,633.54	37.92	37.93	-83.99	171.34	-1,670.06	1,301.23	1,225.72	75.51	17.234		
10,700.00	10,688.71	10,685.69	10,683.51	38.09	38.11	-83.93	172.53	-1,670.06	1,301.36	1,225.50	75.86	17.155		
10,750.00	10,738.71	10,735.68	10,733.48	38.27	38.29	-83.88	173.73	-1,670.06	1,301.48	1,225.27	76.22	17.076		
10,800.00	10,788.71	10,787.57	10,785.36	38.44	38.47	-83.84	174.62	-1,670.06	1,301.57	1,225.00	76.58	16.997		
10,850.00	10,838.71	10,839.02	10,836.81	38.62	38.66	-83.83	174.83	-1,670.06	1,301.60	1,224.66	76.93	16.918		
10,900.00	10,888.71	10,889.02	10,886.81	38.79	38.83	-83.83	174.83	-1,670.06	1,301.60	1,224.31	77.29	16.841		
10,950.00	10,938.71	10,939.02	10,936.81	38.97	39.01	-83.83	174.83	-1,670.06	1,301.60	1,223.95	77.64	16.764		
11,000.00	10,988.71	10,989.02	10,986.81	39.14	39.19	-83.83	174.83	-1,670.06	1,301.60	1,223.60	78.00	16.688		
11,050.00	11,038.71	11,039.02	11,036.81	39.32	39.37	-83.83	174.83	-1,670.06	1,301.60	1,223.24	78.35	16.612		
11,100.00	11,088.71	11,089.02	11,086.81	39.49	39.55	-83.83	174.83	-1,670.06	1,301.60	1,222.89	78.71	16.537		
11,150.00	11,138.71	11,139.02	11,136.81	39.67	39.73	-83.83	174.83	-1,670.06	1,301.60	1,222.53	79.06	16.463		
11,200.00	11,188.71	11,192.65	11,190.44	39.84	39.92	-83.84	174.62	-1,670.06	1,301.58	1,222.16	79.42	16.388		
11,250.00	11,238.67	11,257.84	11,255.37	40.01	40.12	96.19	169.17	-1,670.08	1,301.33	1,221.55	79.78	16.311		
11,300.00	11,288.29	11,322.45	11,318.69	40.18	40.32	96.01	156.53	-1,670.13	1,300.98	1,220.86	80.12	16.238		
11,350.00	11,337.21	11,386.26	11,379.45	40.34	40.51	95.77	137.13	-1,670.19	1,300.55	1,220.11	80.44	16.168		
11,400.00	11,385.04	11,449.10	11,438.81	40.49	40.67	95.47	111.54	-1,670.28	1,300.06	1,219.31	80.75	16.100		
11,450.00	11,431.43	11,510.84	11,490.10	40.64	40.83	95.12	80.43	-1,670.39	1,299.53	1,218.49	81.04	16.035		
11,500.00	11,476.02	11,571.35	11,538.80	40.78	40.97	94.74	44.55	-1,670.51	1,298.99	1,217.67	81.33	15.973		
11,550.00	11,518.47	11,630.58	11,582.53	40.91	41.11	94.31	4.65	-1,670.65	1,298.47	1,216.86	81.61	15.911		
11,600.00	11,558.46	11,688.48	11,621.09	41.03	41.24	93.86	-38.51	-1,670.80	1,297.99	1,216.11	81.88	15.852		
11,650.00	11,595.68	11,745.04	11,654.36	41.15	41.36	93.38	-84.22	-1,670.96	1,297.57	1,215.41	82.15	15.794		
11,700.00	11,629.85	11,800.28	11,682.35	41.26	41.48	92.88	-131.82	-1,671.12	1,297.22	1,214.80	82.42	15.738		
11,750.00	11,660.72	11,854.22	11,705.14	41.37	41.59	92.36	-180.69	-1,671.29	1,296.98	1,214.29	82.69	15.684		
11,800.00	11,688.04	11,906.92	11,722.87	41.48	41.70	91.83	-230.29	-1,671.46	1,296.84	1,213.88	82.96	15.633		
11,835.70	11,705.26	11,943.81	11,732.53	41.56	41.78	91.45	-265.89	-1,671.58	1,296.81	1,213.67	83.14	15.598 CC		
11,850.00	11,711.61	11,958.42	11,735.72	41.60	41.81	91.29	-280.15	-1,671.63	1,296.81	1,213.60	83.21	15.584		
11,900.00	11,731.24	12,008.80	11,743.91	41.72	41.91	90.75	-329.84	-1,671.80	1,296.91	1,213.44	83.47	15.538		
11,950.00	11,746.80	12,058.11	11,747.68	41.85	42.01	90.21	-378.99	-1,671.97	1,297.12	1,213.40	83.71	15.495		
12,000.00	11,758.16	12,106.89	11,748.00	41.98	42.11	89.71	-427.76	-1,672.14	1,297.44	1,213.48	83.96	15.454		
12,050.00	11,765.23	12,156.37	11,748.00	42.12	42.23	89.36	-477.24	-1,672.31	1,297.81	1,213.60	84.21	15.411		
12,100.00	11,767.96	12,206.27	11,748.00	42.25	42.35	89.21	-527.15	-1,672.48	1,298.15	1,213.69	84.46	15.369		
12,150.00	11,768.00	12,256.27	11,748.00	42.40	42.49	89.20	-577.15	-1,672.66	1,298.46	1,213.71	84.75	15.322		
12,200.00	11,768.00	12,306.27	11,748.00	42.54	42.64	89.20	-627.15	-1,672.83	1,298.77	1,213.74	85.03	15.274		
12,250.00	11,768.00	12,356.27	11,748.00	42.71	42.80	89.20	-677.14	-1,673.00	1,299.08	1,213.71	85.36	15.218		
12,300.00	11,768.00	12,406.27	11,748.00	42.88	42.97	89.20	-727.14	-1,673.17	1,299.38	1,213.69	85.70	15.163		
12,350.00	11,768.00	12,456.27	11,748.00	43.07	43.16	89.20	-777.14	-1,673.35	1,299.69	1,213.62	86.07	15.100		
12,400.00	11,768.00	12,506.27	11,748.00	43.26	43.35	89.20	-827.14	-1,673.52	1,300.00	1,213.55	86.45	15.037		
12,450.00	11,768.00	12,556.27	11,748.00	43.47	43.56	89.20	-877.14	-1,673.69	1,300.31	1,213.43	86.87	14.968		
12,500.00	11,768.00	12,606.27	11,748.00	43.68	43.78	89.20	-927.14	-1,673.86	1,300.62	1,213.32	87.30	14.898		
12,550.00	11,768.00	12,656.27	11,748.00	43.91	44.01	89.20	-977.14	-1,674.04	1,300.92	1,213.16	87.76	14.823		
12,600.00	11,768.00	12,706.26	11,748.00	44.15	44.25	89.20	-1,027.14	-1,674.21	1,301.23	1,213.00	88.23	14.748		
12,650.00	11,768.00	12,756.26	11,748.00	44.40	44.50	89.20	-1,077.14	-1,674.38	1,301.54	1,212.80	88.74	14.667		
12,700.00	11,768.00	12,806.26	11,748.00	44.66	44.76	89.20	-1,127.13	-1,674.55	1,301.85	1,212.60	89.25	14.586		
12,750.00	11,768.00	12,856.26	11,748.00	44.93	45.03	89.20	-1,177.13	-1,674.73	1,302.16	1,212.36	89.80	14.501		
12,800.00	11,768.00	12,906.26	11,748.00	45.20	45.31	89.20	-1,227.13	-1,674.90	1,302.46	1,212.11	90.35	14.415		
12,850.00	11,768.00	12,956.26	11,748.00	45.50	45.60	89.20	-1,277.13	-1,675.07	1,302.77	1,211.83	90.94	14.326		
12,900.00	11,768.00	13,006.26	11,748.00	45.79	45.90	89.20	-1,327.13	-1,675.24	1,303.08	1,211.55	91.53	14.236		
12,950.00	11,768.00	13,056.26	11,748.00	46.10	46.21	89.20	-1,377.13	-1,675.41	1,303.39	1,211.23	92.16	14.143		
13,000.00	11,768.00	13,106.26	11,748.00	46.42	46.53	89.20	-1,427.13	-1,675.59	1,303.70	1,210.91	92.79	14.050		
13,050.00	11,768.00	13,156.26	11,748.00	46.75	46.86	89.20	-1,477.13	-1,675.76	1,304.00	1,210.55	93.45	13.954		
13,100.00	11,768.00	13,206.26	11,748.00	47.08	47.19	89.20	-1,527.12	-1,675.93	1,304.31	1,210.20	94.12	13.859		
13,150.00	11,768.00	13,256.25	11,748.00	47.43	47.54	89.21	-1,577.12	-1,676.10	1,304.62	1,209.81	94.81	13.760		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	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
13,200.00	11,768.00	13,306.25	11,748.00	47.78	47.89	89.21	-1,627.12	-1,676.28	1,304.93	1,209.41	95.51	13.682	
13,250.00	11,768.00	13,356.25	11,748.00	48.14	48.25	89.21	-1,677.12	-1,676.45	1,305.23	1,208.99	96.24	13.562	
13,300.00	11,768.00	13,406.25	11,748.00	48.51	48.62	89.21	-1,727.12	-1,676.62	1,305.54	1,208.56	96.98	13.462	
13,350.00	11,768.00	13,456.25	11,748.00	48.89	49.00	89.21	-1,777.12	-1,676.79	1,305.85	1,208.11	97.74	13.360	
13,400.00	11,768.00	13,506.25	11,748.00	49.27	49.39	89.21	-1,827.12	-1,676.97	1,306.16	1,207.65	98.51	13.260	
13,450.00	11,768.00	13,556.25	11,748.00	49.66	49.78	89.21	-1,877.12	-1,677.14	1,306.47	1,207.17	99.30	13.157	
13,500.00	11,768.00	13,606.25	11,748.00	50.06	50.18	89.21	-1,927.11	-1,677.31	1,306.77	1,206.68	100.10	13.055	
13,550.00	11,768.00	13,656.25	11,748.00	50.47	50.59	89.21	-1,977.11	-1,677.48	1,307.08	1,206.16	100.92	12.952	
13,600.00	11,768.00	13,706.25	11,748.00	50.88	51.00	89.21	-2,027.11	-1,677.66	1,307.39	1,205.65	101.74	12.850	
13,650.00	11,768.00	13,756.24	11,748.00	51.31	51.43	89.21	-2,077.11	-1,677.83	1,307.70	1,205.10	102.60	12.746	
13,700.00	11,768.00	13,806.24	11,748.00	51.73	51.86	89.21	-2,127.11	-1,678.00	1,308.01	1,204.56	103.45	12.644	
13,750.00	11,768.00	13,856.24	11,748.00	52.17	52.29	89.21	-2,177.11	-1,678.17	1,308.31	1,203.99	104.33	12.541	
13,800.00	11,768.00	13,906.24	11,748.00	52.61	52.73	89.21	-2,227.11	-1,678.35	1,308.62	1,203.42	105.20	12.439	
13,850.00	11,768.00	13,956.24	11,748.00	53.06	53.18	89.21	-2,277.11	-1,678.52	1,308.93	1,202.82	106.11	12.336	
13,900.00	11,768.00	14,006.24	11,748.00	53.51	53.63	89.21	-2,327.10	-1,678.69	1,309.24	1,202.23	107.01	12.235	
13,950.00	11,768.00	14,056.24	11,748.00	53.97	54.10	89.21	-2,377.10	-1,678.86	1,309.55	1,201.61	107.94	12.133	
14,000.00	11,768.00	14,106.24	11,748.00	54.43	54.56	89.21	-2,427.10	-1,679.04	1,309.85	1,200.99	108.86	12.032	
14,050.00	11,768.00	14,156.24	11,748.00	54.91	55.03	89.21	-2,477.10	-1,679.21	1,310.16	1,200.35	109.81	11.931	
14,100.00	11,768.00	14,206.24	11,748.00	55.38	55.51	89.21	-2,527.10	-1,679.38	1,310.47	1,199.71	110.76	11.831	
14,150.00	11,768.00	14,256.24	11,748.00	55.87	55.99	89.21	-2,577.10	-1,679.55	1,310.78	1,199.04	111.73	11.731	
14,200.00	11,768.00	14,306.23	11,748.00	56.35	56.48	89.21	-2,627.10	-1,679.72	1,311.08	1,198.38	112.70	11.633	
14,250.00	11,768.00	14,356.23	11,748.00	56.85	56.97	89.21	-2,677.10	-1,679.90	1,311.39	1,197.70	113.69	11.534	
14,300.00	11,768.00	14,406.23	11,748.00	57.34	57.47	89.21	-2,727.09	-1,680.07	1,311.70	1,197.02	114.69	11.437	
14,350.00	11,768.00	14,456.23	11,748.00	57.84	57.97	89.21	-2,777.09	-1,680.24	1,312.01	1,196.31	115.70	11.340	
14,400.00	11,768.00	14,506.23	11,748.00	58.35	58.48	89.21	-2,827.09	-1,680.41	1,312.32	1,195.61	116.71	11.245	
14,450.00	11,768.00	14,556.23	11,748.00	58.86	58.99	89.21	-2,877.09	-1,680.59	1,312.62	1,194.89	117.73	11.149	
14,500.00	11,768.00	14,606.23	11,748.00	59.38	59.50	89.21	-2,927.09	-1,680.76	1,312.93	1,194.17	118.76	11.055	
14,550.00	11,768.00	14,656.23	11,748.00	59.90	60.03	89.21	-2,977.09	-1,680.93	1,313.24	1,193.43	119.81	10.961	
14,600.00	11,768.00	14,706.23	11,748.00	60.42	60.55	89.21	-3,027.09	-1,681.10	1,313.55	1,192.69	120.86	10.869	
14,650.00	11,768.00	14,756.23	11,748.00	60.95	61.08	89.21	-3,077.09	-1,681.28	1,313.86	1,191.94	121.92	10.777	
14,700.00	11,768.00	14,806.22	11,748.00	61.48	61.61	89.21	-3,127.08	-1,681.45	1,314.16	1,191.18	122.98	10.686	
14,750.00	11,768.00	14,856.22	11,748.00	62.02	62.15	89.21	-3,177.08	-1,681.62	1,314.47	1,190.41	124.06	10.596	
14,800.00	11,768.00	14,906.22	11,748.00	62.56	62.69	89.21	-3,227.08	-1,681.79	1,314.78	1,189.64	125.14	10.507	
14,850.00	11,768.00	14,956.22	11,748.00	63.11	63.23	89.21	-3,277.08	-1,681.97	1,315.09	1,188.86	126.23	10.418	
14,900.00	11,768.00	15,006.22	11,748.00	63.65	63.78	89.21	-3,327.08	-1,682.14	1,315.40	1,188.07	127.32	10.331	
14,950.00	11,768.00	15,056.22	11,748.00	64.21	64.33	89.21	-3,377.08	-1,682.31	1,315.70	1,187.27	128.43	10.244	
15,000.00	11,768.00	15,106.22	11,748.00	64.76	64.88	89.21	-3,427.08	-1,682.48	1,316.01	1,186.47	129.54	10.159	
15,050.00	11,768.00	15,156.22	11,748.00	65.32	65.44	89.21	-3,477.08	-1,682.66	1,316.32	1,185.66	130.66	10.075	
15,100.00	11,768.00	15,206.22	11,748.00	65.88	66.00	89.21	-3,527.07	-1,682.83	1,316.63	1,184.85	131.78	9.991	
15,150.00	11,768.00	15,256.22	11,748.00	66.45	66.57	89.21	-3,577.07	-1,683.00	1,316.93	1,184.02	132.91	9.908	
15,200.00	11,768.00	15,306.22	11,748.00	67.01	67.13	89.21	-3,627.07	-1,683.17	1,317.24	1,183.20	134.05	9.827	
15,250.00	11,768.00	15,356.21	11,748.00	67.58	67.71	89.21	-3,677.07	-1,683.35	1,317.55	1,182.36	135.19	9.746	
15,300.00	11,768.00	15,406.21	11,748.00	68.16	68.28	89.21	-3,727.07	-1,683.52	1,317.86	1,181.52	136.34	9.666	
15,350.00	11,768.00	15,456.21	11,748.00	68.73	68.86	89.21	-3,777.07	-1,683.69	1,318.17	1,180.67	137.49	9.587	
15,400.00	11,768.00	15,506.21	11,748.00	69.31	69.43	89.21	-3,827.07	-1,683.86	1,318.47	1,179.82	138.65	9.509	
15,450.00	11,768.00	15,556.21	11,748.00	69.90	70.02	89.21	-3,877.07	-1,684.03	1,318.78	1,178.96	139.82	9.432	
15,500.00	11,768.00	15,606.21	11,748.00	70.48	70.60	89.21	-3,927.06	-1,684.21	1,319.09	1,178.10	140.99	9.356	
15,550.00	11,768.00	15,656.21	11,748.00	71.07	71.19	89.21	-3,977.06	-1,684.38	1,319.40	1,177.23	142.16	9.281	
15,600.00	11,768.00	15,706.21	11,748.00	71.66	71.78	89.21	-4,027.06	-1,684.55	1,319.71	1,176.36	143.34	9.207	
15,650.00	11,768.00	15,756.21	11,748.00	72.25	72.37	89.21	-4,077.06	-1,684.72	1,320.01	1,175.48	144.53	9.133	
15,700.00	11,768.00	15,806.21	11,748.00	72.85	72.96	89.21	-4,127.06	-1,684.90	1,320.32	1,174.60	145.72	9.061	
15,750.00	11,768.00	15,856.20	11,748.00	73.45	73.56	89.21	-4,177.06	-1,685.07	1,320.63	1,173.71	146.92	8.989	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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 (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
15,800.00	11,768.00	15,906.20	11,748.00	74.04	74.16	89.21	-4,227.06	-1,685.24	1,320.94	1,172.82	148.11	8.918	
15,850.00	11,768.00	15,956.20	11,748.00	74.65	74.76	89.22	-4,277.06	-1,685.41	1,321.24	1,171.92	149.32	8.848	
15,900.00	11,768.00	16,006.20	11,748.00	75.25	75.36	89.22	-4,327.05	-1,685.59	1,321.55	1,171.03	150.53	8.779	
15,950.00	11,768.00	16,056.20	11,748.00	75.86	75.97	89.22	-4,377.05	-1,685.76	1,321.86	1,170.12	151.74	8.711	
16,000.00	11,768.00	16,106.20	11,748.00	76.47	76.58	89.22	-4,427.05	-1,685.93	1,322.17	1,169.21	152.96	8.644	
16,050.00	11,768.00	16,156.20	11,748.00	77.08	77.19	89.22	-4,477.05	-1,686.10	1,322.48	1,168.30	154.18	8.577	
16,100.00	11,768.00	16,206.20	11,748.00	77.69	77.80	89.22	-4,527.05	-1,686.28	1,322.78	1,167.38	155.40	8.512	
16,150.00	11,768.00	16,256.20	11,748.00	78.30	78.41	89.22	-4,577.05	-1,686.45	1,323.09	1,166.46	156.63	8.447	
16,200.00	11,768.00	16,306.20	11,748.00	78.92	79.03	89.22	-4,627.05	-1,686.62	1,323.40	1,165.53	157.87	8.383	
16,250.00	11,768.00	16,356.20	11,748.00	79.54	79.64	89.22	-4,677.05	-1,686.79	1,323.71	1,164.60	159.10	8.320	
16,300.00	11,768.00	16,406.19	11,748.00	80.16	80.26	89.22	-4,727.04	-1,686.97	1,324.02	1,163.67	160.34	8.257	
16,350.00	11,768.00	16,456.19	11,748.00	80.78	80.89	89.22	-4,777.04	-1,687.14	1,324.32	1,162.74	161.59	8.196	
16,400.00	11,768.00	16,506.19	11,748.00	81.40	81.51	89.22	-4,827.04	-1,687.31	1,324.63	1,161.80	162.83	8.135	
16,450.00	11,768.00	16,556.19	11,748.00	82.03	82.13	89.22	-4,877.04	-1,687.48	1,324.94	1,160.85	164.09	8.075	
16,500.00	11,768.00	16,606.19	11,748.00	82.66	82.76	89.22	-4,927.04	-1,687.66	1,325.25	1,159.91	165.34	8.015	
16,550.00	11,768.00	16,656.19	11,748.00	83.29	83.39	89.22	-4,977.04	-1,687.83	1,325.56	1,158.96	166.60	7.957	
16,600.00	11,768.00	16,706.19	11,748.00	83.92	84.01	89.22	-5,027.04	-1,688.00	1,325.86	1,158.01	167.86	7.899	
16,650.00	11,768.00	16,756.19	11,748.00	84.55	84.65	89.22	-5,077.04	-1,688.17	1,326.17	1,157.05	169.12	7.842	
16,700.00	11,768.00	16,806.19	11,748.00	85.18	85.28	89.22	-5,127.03	-1,688.34	1,326.48	1,156.09	170.38	7.785	
16,750.00	11,768.00	16,856.19	11,748.00	85.82	85.91	89.22	-5,177.03	-1,688.52	1,326.79	1,155.13	171.66	7.729	
16,800.00	11,768.00	16,906.19	11,748.00	86.45	86.55	89.22	-5,227.03	-1,688.69	1,327.09	1,154.17	172.93	7.674	
16,850.00	11,768.00	16,956.18	11,748.00	87.09	87.18	89.22	-5,277.03	-1,688.86	1,327.40	1,153.20	174.20	7.620	
16,900.00	11,768.00	17,006.18	11,748.00	87.73	87.82	89.22	-5,327.03	-1,689.03	1,327.71	1,152.23	175.48	7.566	
16,950.00	11,768.00	17,056.18	11,748.00	88.37	88.46	89.22	-5,377.03	-1,689.21	1,328.02	1,151.26	176.76	7.513	
17,000.00	11,768.00	17,106.18	11,748.00	89.01	89.10	89.22	-5,427.03	-1,689.38	1,328.33	1,150.28	178.04	7.461	
17,050.00	11,768.00	17,156.18	11,748.00	89.65	89.74	89.22	-5,477.03	-1,689.55	1,328.63	1,149.31	179.33	7.409	
17,100.00	11,768.00	17,206.18	11,748.00	90.30	90.39	89.22	-5,527.02	-1,689.72	1,328.94	1,148.33	180.62	7.358	
17,150.00	11,768.00	17,256.18	11,748.00	90.94	91.03	89.22	-5,577.02	-1,689.90	1,329.25	1,147.34	181.91	7.307	
17,200.00	11,768.00	17,306.18	11,748.00	91.59	91.68	89.22	-5,627.02	-1,690.07	1,329.56	1,146.36	183.20	7.257	
17,250.00	11,768.00	17,356.18	11,748.00	92.24	92.32	89.22	-5,677.02	-1,690.24	1,329.87	1,145.37	184.50	7.208	
17,300.00	11,768.00	17,406.18	11,748.00	92.89	92.97	89.22	-5,727.02	-1,690.41	1,330.17	1,144.38	185.79	7.159	
17,350.00	11,768.00	17,456.17	11,748.00	93.54	93.62	89.22	-5,777.02	-1,690.59	1,330.48	1,143.39	187.09	7.111	
17,400.00	11,768.00	17,506.17	11,748.00	94.19	94.27	89.22	-5,827.02	-1,690.76	1,330.79	1,142.39	188.39	7.064	
17,450.00	11,768.00	17,556.17	11,748.00	94.84	94.92	89.22	-5,877.02	-1,690.93	1,331.10	1,141.40	189.70	7.017	
17,500.00	11,768.00	17,606.17	11,748.00	95.50	95.57	89.22	-5,927.01	-1,691.10	1,331.41	1,140.40	191.01	6.971	
17,550.00	11,768.00	17,656.17	11,748.00	96.15	96.23	89.22	-5,977.01	-1,691.28	1,331.71	1,139.40	192.32	6.925	
17,600.00	11,768.00	17,706.17	11,748.00	96.81	96.88	89.22	-6,027.01	-1,691.45	1,332.02	1,138.40	193.62	6.879	
17,650.00	11,768.00	17,756.17	11,748.00	97.46	97.54	89.22	-6,077.01	-1,691.62	1,332.33	1,137.39	194.94	6.835	
17,700.00	11,768.00	17,806.17	11,748.00	98.12	98.19	89.22	-6,127.01	-1,691.79	1,332.64	1,136.38	196.25	6.790	
17,750.00	11,768.00	17,856.17	11,748.00	98.78	98.85	89.22	-6,177.01	-1,691.97	1,332.94	1,135.38	197.57	6.747	
17,800.00	11,768.00	17,906.17	11,748.00	99.44	99.51	89.22	-6,227.01	-1,692.14	1,333.25	1,134.37	198.89	6.704	
17,850.00	11,768.00	17,956.17	11,748.00	100.10	100.17	89.22	-6,277.01	-1,692.31	1,333.56	1,133.35	200.21	6.661	
17,900.00	11,768.00	18,006.16	11,748.00	100.76	100.83	89.22	-6,327.00	-1,692.48	1,333.87	1,132.34	201.53	6.619	
17,950.00	11,768.00	18,056.16	11,748.00	101.42	101.49	89.22	-6,377.00	-1,692.65	1,334.18	1,131.32	202.85	6.577	
18,000.00	11,768.00	18,106.16	11,748.00	102.09	102.15	89.22	-6,427.00	-1,692.83	1,334.48	1,130.31	204.18	6.536	
18,050.00	11,768.00	18,156.16	11,748.00	102.75	102.81	89.22	-6,477.00	-1,693.00	1,334.79	1,129.28	205.51	6.495	
18,100.00	11,768.00	18,206.16	11,748.00	103.41	103.48	89.22	-6,527.00	-1,693.17	1,335.10	1,128.26	206.84	6.455	
18,150.00	11,768.00	18,256.16	11,748.00	104.08	104.14	89.22	-6,577.00	-1,693.34	1,335.41	1,127.24	208.17	6.415	
18,200.00	11,768.00	18,306.16	11,748.00	104.75	104.81	89.22	-6,627.00	-1,693.52	1,335.72	1,126.22	209.50	6.376	
18,250.00	11,768.00	18,356.16	11,748.00	105.41	105.47	89.22	-6,677.00	-1,693.69	1,336.02	1,125.19	210.83	6.337	
18,300.00	11,768.00	18,406.16	11,748.00	106.08	106.14	89.22	-6,726.99	-1,693.86	1,336.33	1,124.16	212.17	6.298	
18,350.00	11,768.00	18,456.16	11,748.00	106.75	106.81	89.22	-6,776.99	-1,694.03	1,336.64	1,123.13	213.51	6.260	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
18,400.00	11,768.00	18,506.15	11,748.00	107.42	107.48	89.22	-8,826.99	-1,694.21	1,336.95	1,122.10	214.84	6.223	
18,450.00	11,768.00	18,556.15	11,748.00	108.09	108.15	89.22	-8,876.99	-1,694.38	1,337.26	1,121.07	216.18	6.186	
18,500.00	11,768.00	18,606.15	11,748.00	108.76	108.81	89.22	-8,926.99	-1,694.55	1,337.56	1,120.04	217.52	6.149	
18,550.00	11,768.00	18,656.15	11,748.00	109.43	109.49	89.22	-8,976.99	-1,694.72	1,337.87	1,119.00	218.87	6.113	
18,600.00	11,768.00	18,706.15	11,748.00	110.11	110.16	89.23	-9,026.99	-1,694.90	1,338.18	1,117.97	220.21	6.077	
18,650.00	11,768.00	18,756.15	11,748.00	110.78	110.83	89.23	-9,076.99	-1,695.07	1,338.49	1,116.93	221.56	6.041	
18,700.00	11,768.00	18,806.15	11,748.00	111.45	111.50	89.23	-9,126.98	-1,695.24	1,338.79	1,115.89	222.90	6.006	
18,750.00	11,768.00	18,856.15	11,748.00	112.13	112.17	89.23	-9,176.98	-1,695.41	1,339.10	1,114.85	224.25	5.971	
18,800.00	11,768.00	18,906.15	11,748.00	112.80	112.85	89.23	-9,226.98	-1,695.59	1,339.41	1,113.81	225.60	5.937	
18,850.00	11,768.00	18,956.15	11,748.00	113.48	113.52	89.23	-9,276.98	-1,695.76	1,339.72	1,112.77	226.95	5.903	
18,900.00	11,768.00	19,006.15	11,748.00	114.16	114.20	89.23	-9,326.98	-1,695.93	1,340.03	1,111.72	228.30	5.869	
18,950.00	11,768.00	19,056.14	11,748.00	114.83	114.87	89.23	-9,376.98	-1,696.10	1,340.33	1,110.68	229.66	5.836	
19,000.00	11,768.00	19,106.14	11,748.00	115.51	115.55	89.23	-9,426.98	-1,696.28	1,340.64	1,109.63	231.01	5.803	
19,050.00	11,768.00	19,156.14	11,748.00	116.19	116.23	89.23	-9,476.98	-1,696.45	1,340.95	1,108.58	232.37	5.771	
19,100.00	11,768.00	19,206.14	11,748.00	116.87	116.90	89.23	-9,526.97	-1,696.62	1,341.26	1,107.53	233.72	5.739	
19,150.00	11,768.00	19,256.14	11,748.00	117.55	117.58	89.23	-9,576.97	-1,696.79	1,341.57	1,106.48	235.08	5.707	
19,200.00	11,768.00	19,306.14	11,748.00	118.23	118.26	89.23	-9,626.97	-1,696.96	1,341.87	1,105.43	236.44	5.675	
19,250.00	11,768.00	19,356.14	11,748.00	118.91	118.94	89.23	-9,676.97	-1,697.14	1,342.18	1,104.38	237.80	5.644	
19,300.00	11,768.00	19,406.14	11,748.00	119.59	119.62	89.23	-9,726.97	-1,697.31	1,342.49	1,103.33	239.16	5.613	
19,350.00	11,768.00	19,456.14	11,748.00	120.27	120.30	89.23	-9,776.97	-1,697.48	1,342.80	1,102.27	240.52	5.583	
19,400.00	11,768.00	19,506.14	11,748.00	120.95	120.98	89.23	-9,826.97	-1,697.65	1,343.10	1,101.22	241.89	5.553	
19,450.00	11,768.00	19,556.13	11,748.00	121.64	121.66	89.23	-9,876.97	-1,697.83	1,343.41	1,100.16	243.25	5.523	
19,500.00	11,768.00	19,606.13	11,748.00	122.32	122.34	89.23	-9,926.96	-1,698.00	1,343.72	1,099.10	244.62	5.493	
19,550.00	11,768.00	19,656.13	11,748.00	123.00	123.03	89.23	-9,976.96	-1,698.17	1,344.03	1,098.04	245.98	5.464	
19,600.00	11,768.00	19,706.13	11,748.00	123.69	123.71	89.23	-10,026.96	-1,698.34	1,344.34	1,096.99	247.35	5.435	
19,650.00	11,768.00	19,756.13	11,748.00	124.37	124.39	89.23	-10,076.96	-1,698.52	1,344.64	1,095.93	248.72	5.406	
19,700.00	11,768.00	19,806.13	11,748.00	125.06	125.08	89.23	-10,126.96	-1,698.69	1,344.95	1,094.86	250.09	5.378	
19,750.00	11,768.00	19,856.13	11,748.00	125.74	125.76	89.23	-10,176.96	-1,698.86	1,345.26	1,093.80	251.46	5.350	
19,800.00	11,768.00	19,906.13	11,748.00	126.43	126.44	89.23	-10,226.96	-1,699.03	1,345.57	1,092.74	252.83	5.322	
19,850.00	11,768.00	19,956.13	11,748.00	127.12	127.13	89.23	-10,276.96	-1,699.21	1,345.88	1,091.67	254.20	5.295	
19,900.00	11,768.00	20,006.13	11,748.00	127.80	127.82	89.23	-10,326.95	-1,699.38	1,346.18	1,090.61	255.57	5.267	
19,950.00	11,768.00	20,056.13	11,748.00	128.49	128.50	89.23	-10,376.95	-1,699.55	1,346.49	1,089.54	256.95	5.240	
20,000.00	11,768.00	20,106.12	11,748.00	129.18	129.19	89.23	-10,426.95	-1,699.72	1,346.80	1,088.48	258.32	5.214	
20,050.00	11,768.00	20,156.12	11,748.00	129.87	129.87	89.23	-10,476.95	-1,699.90	1,347.11	1,087.41	259.70	5.187	
20,100.00	11,768.00	20,206.12	11,748.00	130.55	130.56	89.23	-10,526.95	-1,700.07	1,347.42	1,086.34	261.07	5.161	
20,150.00	11,768.00	20,256.12	11,748.00	131.24	131.25	89.23	-10,576.95	-1,700.24	1,347.72	1,085.27	262.45	5.135	
20,200.00	11,768.00	20,306.12	11,748.00	131.93	131.94	89.23	-10,626.95	-1,700.41	1,348.03	1,084.20	263.83	5.109	
20,250.00	11,768.00	20,356.12	11,748.00	132.62	132.63	89.23	-10,676.95	-1,700.59	1,348.34	1,083.13	265.21	5.084	
20,300.00	11,768.00	20,406.12	11,748.00	133.31	133.31	89.23	-10,726.94	-1,700.76	1,348.65	1,082.08	266.59	5.059	
20,350.00	11,768.00	20,456.12	11,748.00	134.00	134.00	89.23	-10,776.94	-1,700.93	1,348.95	1,080.99	267.97	5.034	
20,400.00	11,768.00	20,506.12	11,748.00	134.70	134.69	89.23	-10,826.94	-1,701.10	1,349.26	1,079.91	269.35	5.009	
20,450.00	11,768.00	20,556.12	11,748.00	135.39	135.38	89.23	-10,876.94	-1,701.27	1,349.57	1,078.84	270.73	4.985 Alert	
20,500.00	11,768.00	20,606.11	11,748.00	136.08	136.07	89.23	-10,926.94	-1,701.45	1,349.88	1,077.77	272.11	4.961 Alert	
20,550.00	11,768.00	20,656.11	11,748.00	136.77	136.77	89.23	-10,976.94	-1,701.62	1,350.19	1,076.69	273.50	4.937 Alert	
20,600.00	11,768.00	20,706.11	11,748.00	137.46	137.46	89.23	-11,026.94	-1,701.79	1,350.49	1,075.61	274.88	4.913 Alert	
20,650.00	11,768.00	20,756.11	11,748.00	138.16	138.15	89.23	-11,076.94	-1,701.96	1,350.80	1,074.54	276.26	4.890 Alert	
20,700.00	11,768.00	20,806.11	11,748.00	138.85	138.84	89.23	-11,126.93	-1,702.14	1,351.11	1,073.46	277.65	4.866 Alert	
20,750.00	11,768.00	20,856.11	11,748.00	139.54	139.53	89.23	-11,176.93	-1,702.31	1,351.42	1,072.38	279.04	4.843 Alert	
20,800.00	11,768.00	20,906.11	11,748.00	140.24	140.22	89.23	-11,226.93	-1,702.48	1,351.73	1,071.30	280.42	4.820 Alert	
20,850.00	11,768.00	20,956.11	11,748.00	140.93	140.92	89.23	-11,276.93	-1,702.65	1,352.03	1,070.22	281.81	4.798 Alert	
20,900.00	11,768.00	21,006.11	11,748.00	141.63	141.61	89.23	-11,326.93	-1,702.83	1,352.34	1,069.14	283.20	4.775 Alert	
20,950.00	11,768.00	21,056.11	11,748.00	142.32	142.30	89.23	-11,376.93	-1,703.00	1,352.65	1,068.06	284.59	4.753 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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 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		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)			
21,000.00	11,768.00	21,106.11	11,748.00	143.02	143.00	89.23	-9,426.93	-1,703.17	1,352.96	1,066.98	285.98	4.731	Alert
21,050.00	11,768.00	21,156.10	11,748.00	143.71	143.69	89.23	-9,476.93	-1,703.34	1,353.27	1,065.90	287.37	4.709	Alert
21,100.00	11,768.00	21,206.10	11,748.00	144.41	144.39	89.23	-9,526.92	-1,703.52	1,353.57	1,064.82	288.76	4.688	Alert
21,150.00	11,768.00	21,256.10	11,748.00	145.10	145.08	89.23	-9,576.92	-1,703.69	1,353.88	1,063.73	290.15	4.666	Alert
21,200.00	11,768.00	21,306.10	11,748.00	145.80	145.78	89.23	-9,626.92	-1,703.86	1,354.19	1,062.65	291.54	4.645	Alert
21,250.00	11,768.00	21,356.10	11,748.00	146.50	146.47	89.23	-9,676.92	-1,704.03	1,354.50	1,061.57	292.93	4.624	Alert
21,300.00	11,768.00	21,406.10	11,748.00	147.19	147.17	89.23	-9,726.92	-1,704.21	1,354.80	1,060.48	294.32	4.603	Alert
21,350.00	11,768.00	21,456.10	11,748.00	147.89	147.86	89.23	-9,776.92	-1,704.38	1,355.11	1,059.40	295.72	4.582	Alert
21,400.00	11,768.00	21,506.10	11,748.00	148.59	148.56	89.23	-9,826.92	-1,704.55	1,355.42	1,058.31	297.11	4.562	Alert
21,450.00	11,768.00	21,556.10	11,748.00	149.29	149.25	89.24	-9,876.92	-1,704.72	1,355.73	1,057.22	298.51	4.542	Alert
21,500.00	11,768.00	21,606.10	11,748.00	149.99	149.95	89.24	-9,926.91	-1,704.90	1,356.04	1,056.14	299.90	4.522	Alert
21,550.00	11,768.00	21,656.10	11,748.00	150.68	150.65	89.24	-9,976.91	-1,705.07	1,356.34	1,055.05	301.30	4.502	Alert
21,600.00	11,768.00	21,706.09	11,748.00	151.38	151.35	89.24	-10,026.91	-1,705.24	1,356.65	1,053.96	302.69	4.482	Alert
21,650.00	11,768.00	21,756.09	11,748.00	152.08	152.04	89.24	-10,076.91	-1,705.41	1,356.96	1,052.87	304.09	4.462	Alert
21,700.00	11,768.00	21,806.09	11,748.00	152.78	152.74	89.24	-10,126.91	-1,705.58	1,357.27	1,051.78	305.49	4.443	Alert
21,750.00	11,768.00	21,856.09	11,748.00	153.48	153.44	89.24	-10,176.91	-1,705.76	1,357.58	1,050.69	306.88	4.424	Alert
21,800.00	11,768.00	21,906.09	11,748.00	154.18	154.14	89.24	-10,226.91	-1,705.93	1,357.88	1,049.60	308.28	4.405	Alert
21,850.00	11,768.00	21,956.09	11,748.00	154.88	154.84	89.24	-10,276.91	-1,706.10	1,358.19	1,048.51	309.68	4.386	Alert
21,900.00	11,768.00	22,006.09	11,748.00	155.58	155.53	89.24	-10,326.90	-1,706.27	1,358.50	1,047.42	311.08	4.367	Alert
21,904.71	11,768.00	22,010.80	11,748.00	155.65	155.60	89.24	-10,331.62	-1,706.29	1,358.53	1,047.32	311.21	4.365	Alert, ES, 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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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		
3,550.00	3,548.49	3,650.17	3,647.79	12.42	12.81	-5.05	12.79	-1,543.24	1,493.74	1,468.63	25.11	59.480		
3,600.00	3,598.40	3,700.25	3,697.24	12.60	12.99	-5.01	13.92	-1,539.88	1,487.35	1,461.88	25.46	58.410		
3,650.00	3,648.31	3,749.34	3,746.70	12.78	13.17	-4.98	15.05	-1,536.52	1,480.95	1,455.14	25.81	57.375		
3,700.00	3,698.22	3,801.08	3,796.15	12.95	13.36	-4.94	16.19	-1,533.16	1,474.56	1,448.39	26.17	56.348		
3,750.00	3,748.12	3,848.50	3,845.60	13.13	13.53	-4.91	17.32	-1,529.80	1,468.17	1,441.66	26.51	55.379		
3,800.00	3,798.03	3,901.92	3,895.06	13.31	13.72	-4.87	18.46	-1,526.44	1,461.78	1,434.90	26.88	54.391		
3,850.00	3,847.94	3,947.66	3,944.51	13.49	13.88	-4.83	19.59	-1,523.08	1,455.39	1,428.17	27.21	53.483		
3,900.00	3,897.85	4,002.76	3,993.97	13.67	14.08	-4.80	20.73	-1,519.72	1,448.99	1,421.41	27.58	52.534		
3,950.00	3,947.75	4,046.83	4,043.42	13.84	14.24	-4.76	21.86	-1,516.35	1,442.61	1,414.69	27.91	51.681		
4,000.00	3,997.66	4,103.59	4,092.88	14.02	14.45	-4.72	23.00	-1,512.99	1,436.22	1,407.93	28.29	50.768		
4,050.00	4,047.57	4,145.99	4,142.33	14.20	14.60	-4.69	24.13	-1,509.63	1,429.83	1,401.21	28.62	49.966		
4,100.00	4,097.48	4,204.43	4,191.79	14.38	14.81	-4.65	25.27	-1,506.27	1,423.44	1,394.44	29.00	49.086		
4,150.00	4,147.39	4,245.15	4,241.24	14.56	14.96	-4.61	26.40	-1,502.91	1,417.05	1,387.73	29.32	48.332		
4,200.00	4,197.29	4,305.27	4,290.69	14.74	15.18	-4.57	27.53	-1,499.55	1,410.66	1,380.96	29.71	47.484		
4,250.00	4,247.20	4,344.31	4,340.15	14.92	15.32	-4.54	28.67	-1,496.19	1,404.28	1,374.26	30.02	46.774		
4,300.00	4,297.11	4,406.10	4,389.60	15.10	15.54	-4.50	29.80	-1,492.83	1,397.89	1,367.47	30.42	45.956		
4,350.00	4,347.02	4,443.48	4,439.06	15.28	15.68	-4.46	30.94	-1,489.47	1,391.51	1,360.78	30.73	45.286		
4,400.00	4,396.92	4,506.94	4,488.51	15.46	15.91	-4.42	32.07	-1,486.11	1,385.12	1,353.99	31.13	44.496		
4,450.00	4,446.83	4,542.64	4,537.97	15.64	16.04	-4.38	33.21	-1,482.75	1,378.74	1,347.31	31.43	43.864		
4,500.00	4,496.74	4,607.78	4,587.42	15.82	16.27	-4.34	34.34	-1,479.39	1,372.36	1,340.52	31.84	43.101		
4,550.00	4,546.65	4,641.80	4,636.88	16.00	16.40	-4.30	35.48	-1,476.03	1,365.97	1,333.84	32.14	42.503		
4,600.00	4,596.56	4,708.62	4,686.33	16.18	16.64	-4.25	36.61	-1,472.66	1,359.59	1,327.04	32.55	41.766		
4,650.00	4,646.46	4,740.97	4,735.79	16.36	16.76	-4.21	37.75	-1,469.30	1,353.21	1,320.37	32.84	41.201		
4,700.00	4,696.37	4,809.45	4,785.24	16.54	17.01	-4.17	38.88	-1,465.94	1,346.83	1,313.57	33.27	40.488		
4,750.00	4,746.28	4,840.13	4,834.69	16.72	17.12	-4.13	40.01	-1,462.58	1,340.45	1,306.90	33.55	39.952		
4,800.00	4,796.19	4,889.71	4,884.15	16.90	17.30	-4.09	41.15	-1,459.22	1,334.07	1,300.17	33.90	39.347		
4,850.00	4,846.09	4,939.29	4,933.60	17.08	17.48	-4.04	42.28	-1,455.86	1,327.70	1,293.44	34.26	38.755		
4,900.00	4,896.00	4,988.87	4,983.06	17.26	17.66	-4.00	43.42	-1,452.50	1,321.32	1,286.71	34.61	38.175		
4,950.00	4,945.91	5,038.46	5,032.51	17.44	17.84	-3.95	44.55	-1,449.14	1,314.94	1,279.98	34.97	37.606		
5,000.00	4,995.82	5,088.04	5,081.97	17.62	18.02	-3.91	45.69	-1,445.78	1,308.57	1,273.25	35.32	37.048		
5,050.00	5,045.73	5,137.62	5,131.42	17.80	18.20	-3.87	46.82	-1,442.42	1,302.19	1,266.52	35.67	36.502		
5,100.00	5,095.63	5,187.20	5,180.88	17.98	18.38	-3.82	47.96	-1,439.06	1,295.82	1,259.79	36.03	35.966		
5,150.00	5,145.54	5,236.78	5,230.33	18.16	18.56	-3.77	49.09	-1,435.70	1,289.44	1,253.06	36.38	35.440		
5,200.00	5,195.45	5,286.36	5,279.78	18.34	18.74	-3.73	50.23	-1,432.34	1,283.07	1,246.33	36.74	34.925		
5,250.00	5,245.36	5,335.95	5,329.24	18.53	18.92	-3.68	51.36	-1,428.98	1,276.70	1,239.61	37.09	34.419		
5,300.00	5,295.27	5,385.53	5,378.69	18.71	19.11	-3.63	52.49	-1,425.61	1,270.33	1,232.88	37.45	33.923		
5,350.00	5,345.17	5,435.11	5,428.15	18.89	19.29	-3.59	53.63	-1,422.25	1,263.96	1,226.16	37.80	33.436		
5,400.00	5,395.08	5,484.69	5,477.60	19.07	19.47	-3.54	54.76	-1,418.89	1,257.59	1,219.43	38.16	32.958		
5,450.00	5,444.99	5,534.27	5,527.06	19.25	19.65	-3.49	55.90	-1,415.53	1,251.22	1,212.71	38.51	32.489		
5,500.00	5,494.90	5,583.85	5,576.51	19.43	19.83	-3.44	57.03	-1,412.17	1,244.85	1,205.99	38.87	32.029		
5,550.00	5,544.80	5,633.43	5,625.97	19.61	20.01	-3.39	58.17	-1,408.81	1,238.49	1,199.26	39.22	31.576		
5,600.00	5,594.71	5,683.02	5,675.42	19.79	20.19	-3.34	59.30	-1,405.45	1,232.12	1,192.54	39.58	31.132		
5,650.00	5,644.62	5,732.60	5,724.88	19.98	20.37	-3.29	60.44	-1,402.09	1,225.76	1,185.82	39.93	30.696		
5,700.00	5,694.53	5,782.18	5,774.33	20.16	20.56	-3.24	61.57	-1,398.73	1,219.39	1,179.11	40.29	30.267		
5,750.00	5,744.44	5,831.76	5,823.78	20.34	20.74	-3.19	62.71	-1,395.37	1,213.03	1,172.39	40.64	29.846		
5,800.00	5,794.34	5,881.34	5,873.24	20.52	20.92	-3.13	63.84	-1,392.01	1,206.67	1,165.67	41.00	29.432		
5,850.00	5,844.25	5,930.92	5,922.69	20.70	21.10	-3.08	64.98	-1,388.65	1,200.31	1,158.95	41.35	29.025		
5,900.00	5,894.16	5,980.51	5,972.15	20.88	21.28	-3.03	66.11	-1,385.29	1,193.95	1,152.24	41.71	28.625		
5,950.00	5,944.07	6,030.09	6,021.60	21.06	21.46	-2.97	67.24	-1,381.93	1,187.59	1,145.52	42.07	28.232		
6,000.00	5,993.97	6,079.67	6,071.06	21.25	21.65	-2.92	68.38	-1,378.56	1,181.23	1,138.81	42.42	27.845		
6,050.00	6,043.88	6,129.25	6,120.51	21.43	21.83	-2.86	69.51	-1,375.20	1,174.88	1,132.10	42.78	27.465		
6,100.00	6,093.79	6,178.83	6,169.97	21.61	22.01	-2.81	70.65	-1,371.84	1,168.52	1,125.39	43.13	27.091		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 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		
6,150.00	6,143.70	6,228.41	6,219.42	21.79	22.19	-2.75	71.78	-1,368.48	1,162.17	1,118.68	43.49	26.723		
6,200.00	6,193.61	6,277.99	6,268.87	21.97	22.37	-2.70	72.92	-1,365.12	1,155.81	1,111.97	43.85	26.361		
6,250.00	6,243.51	6,327.58	6,318.33	22.16	22.55	-2.64	74.05	-1,361.76	1,149.46	1,105.26	44.20	26.005		
6,300.00	6,293.42	6,377.16	6,367.78	22.34	22.74	-2.58	75.19	-1,358.40	1,143.11	1,098.55	44.56	25.654		
6,350.00	6,343.33	6,426.74	6,417.24	22.52	22.92	-2.52	76.32	-1,355.04	1,136.76	1,091.85	44.91	25.309		
6,400.00	6,393.24	6,476.32	6,466.69	22.70	23.10	-2.46	77.46	-1,351.68	1,130.41	1,085.14	45.27	24.970		
6,450.00	6,443.14	6,525.90	6,516.15	22.88	23.28	-2.40	78.59	-1,348.32	1,124.06	1,078.44	45.63	24.636		
6,500.00	6,493.05	6,575.48	6,565.60	23.07	23.46	-2.34	79.72	-1,344.96	1,117.72	1,071.73	45.98	24.307		
6,550.00	6,542.96	6,625.07	6,615.06	23.25	23.65	-2.28	80.86	-1,341.60	1,111.37	1,065.03	46.34	23.983		
6,600.00	6,592.87	6,674.65	6,664.51	23.43	23.83	-2.22	81.99	-1,338.24	1,105.03	1,058.33	46.70	23.664		
6,650.00	6,642.78	6,724.23	6,713.97	23.61	24.01	-2.15	83.13	-1,334.87	1,098.69	1,051.63	47.05	23.350		
6,700.00	6,692.68	6,773.81	6,763.42	23.79	24.19	-2.09	84.26	-1,331.51	1,092.35	1,044.94	47.41	23.040		
6,750.00	6,742.59	6,823.39	6,812.87	23.98	24.37	-2.03	85.40	-1,328.15	1,086.01	1,038.24	47.77	22.736		
6,800.00	6,792.50	6,872.97	6,862.33	24.16	24.56	-1.96	86.53	-1,324.79	1,079.67	1,031.54	48.12	22.435		
6,850.00	6,842.41	6,922.55	6,911.78	24.34	24.74	-1.89	87.67	-1,321.43	1,073.33	1,024.85	48.48	22.139		
6,900.00	6,892.32	6,972.14	6,961.24	24.52	24.92	-1.83	88.80	-1,318.07	1,067.00	1,018.16	48.84	21.848		
6,950.00	6,942.22	7,021.72	7,010.69	24.71	25.10	-1.76	89.94	-1,314.71	1,060.66	1,011.47	49.19	21.561		
7,000.00	6,992.13	7,071.30	7,060.15	24.89	25.29	-1.69	91.07	-1,311.35	1,054.33	1,004.78	49.55	21.277		
7,050.00	7,042.04	7,120.88	7,109.60	25.07	25.47	-1.62	92.20	-1,307.99	1,048.00	998.09	49.91	20.998		
7,100.00	7,091.95	7,170.46	7,159.06	25.25	25.65	-1.55	93.34	-1,304.63	1,041.67	991.40	50.27	20.723		
7,150.00	7,141.85	7,220.04	7,208.51	25.44	25.83	-1.48	94.47	-1,301.27	1,035.34	984.72	50.62	20.452		
7,200.00	7,191.76	7,269.63	7,257.96	25.62	26.01	-1.41	95.61	-1,297.91	1,029.02	978.03	50.98	20.185		
7,250.00	7,241.67	7,319.21	7,307.42	25.80	26.20	-1.34	96.74	-1,294.55	1,022.69	971.35	51.34	19.921		
7,300.00	7,291.58	7,368.79	7,356.87	25.98	26.38	-1.26	97.88	-1,291.19	1,016.37	964.67	51.70	19.661		
7,350.00	7,341.49	7,418.37	7,406.33	26.17	26.56	-1.19	99.01	-1,287.82	1,010.05	957.99	52.05	19.404		
7,400.00	7,391.39	7,467.95	7,455.78	26.35	26.74	-1.11	100.15	-1,284.46	1,003.73	951.32	52.41	19.151		
7,450.00	7,441.30	7,517.53	7,505.24	26.53	26.93	-1.04	101.28	-1,281.10	997.41	944.64	52.77	18.902		
7,500.00	7,491.21	7,567.11	7,554.69	26.71	27.11	-0.96	102.42	-1,277.74	991.09	937.97	53.13	18.656		
7,550.00	7,541.12	7,616.70	7,604.15	26.90	27.29	-0.88	103.55	-1,274.38	984.78	931.29	53.48	18.413		
7,600.00	7,591.02	7,666.28	7,653.60	27.08	27.47	-0.80	104.68	-1,271.02	978.47	924.62	53.84	18.173		
7,650.00	7,640.93	7,715.86	7,703.06	27.26	27.66	-0.72	105.82	-1,267.66	972.15	917.96	54.20	17.937		
7,700.00	7,690.84	7,765.44	7,752.51	27.44	27.84	-0.64	106.95	-1,264.30	965.85	911.29	54.56	17.704		
7,750.00	7,740.75	7,815.02	7,801.96	27.63	28.02	-0.56	108.09	-1,260.94	959.54	904.62	54.91	17.474		
7,800.00	7,790.66	7,864.60	7,851.42	27.81	28.20	-0.47	109.22	-1,257.58	953.23	897.96	55.27	17.246		
7,850.00	7,840.56	7,914.19	7,900.87	27.99	28.39	-0.39	110.36	-1,254.22	946.93	891.30	55.63	17.022		
7,900.00	7,890.47	7,963.77	7,950.33	28.17	28.57	-0.30	111.49	-1,250.86	940.63	884.64	55.99	16.801		
7,950.00	7,940.38	8,013.35	7,999.78	28.36	28.75	-0.22	112.63	-1,247.50	934.33	877.99	56.35	16.582		
8,000.00	7,990.29	8,062.93	8,049.24	28.54	28.93	-0.13	113.76	-1,244.13	928.04	871.33	56.70	16.366		
8,050.00	8,040.19	8,112.51	8,098.69	28.72	29.12	-0.04	114.90	-1,240.77	921.74	864.68	57.06	16.153		
8,100.00	8,090.10	8,162.09	8,148.15	28.91	29.30	0.05	116.03	-1,237.41	915.45	858.03	57.42	15.943		
8,150.00	8,140.01	8,211.67	8,197.60	29.09	29.48	0.15	117.16	-1,234.05	909.16	851.38	57.78	15.735		
8,200.00	8,189.92	8,261.26	8,247.05	29.27	29.67	0.24	118.30	-1,230.69	902.87	844.74	58.14	15.530		
8,250.00	8,239.83	8,310.84	8,296.51	29.45	29.85	0.33	119.43	-1,227.33	896.59	838.09	58.50	15.328		
8,300.00	8,289.73	8,360.42	8,345.96	29.64	30.03	0.43	120.57	-1,223.97	890.30	831.45	58.85	15.127		
8,350.00	8,339.64	8,410.00	8,395.42	29.82	30.21	0.53	121.70	-1,220.61	884.02	824.81	59.21	14.930		
8,400.00	8,389.55	8,459.58	8,444.87	30.00	30.40	0.62	122.84	-1,217.25	877.75	818.18	59.57	14.735		
8,450.00	8,439.46	8,509.16	8,494.33	30.19	30.58	0.72	123.97	-1,213.89	871.47	811.54	59.93	14.542		
8,500.00	8,489.37	8,558.75	8,543.78	30.37	30.76	0.83	125.11	-1,210.53	865.20	804.91	60.29	14.351		
8,550.00	8,539.27	8,608.33	8,593.24	30.55	30.94	0.93	126.24	-1,207.17	858.93	798.28	60.65	14.163		
8,600.00	8,589.18	8,657.91	8,642.69	30.73	31.13	1.03	127.38	-1,203.81	852.66	791.66	61.01	13.977		
8,650.00	8,639.09	8,707.49	8,692.15	30.92	31.31	1.14	128.51	-1,200.45	846.40	785.04	61.36	13.793		
8,700.00	8,689.00	8,757.07	8,741.60	31.10	31.49	1.25	129.64	-1,197.08	840.14	778.42	61.72	13.611		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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		
8,750.00	8,738.90	8,806.65	8,791.05	31.28	31.68	1.36	130.78	-1,193.72	833.88	771.80	62.08	13.432		
8,800.00	8,788.82	8,856.24	8,840.52	31.47	31.86	1.47	131.91	-1,190.36	827.68	765.24	62.44	13.255		
8,850.00	8,838.76	8,905.89	8,890.04	31.65	32.04	1.57	133.05	-1,187.00	822.02	759.22	62.80	13.090		
8,900.00	8,888.72	8,955.62	8,939.64	31.83	32.22	1.68	134.19	-1,183.63	817.02	753.86	63.16	12.936		
8,950.00	8,938.71	9,005.40	8,989.29	32.01	32.41	1.79	135.33	-1,180.25	812.67	749.15	63.52	12.794		
9,000.00	8,988.71	9,055.24	9,039.00	32.18	32.59	1.90	136.47	-1,176.87	808.97	745.10	63.88	12.665		
9,050.00	9,038.71	9,105.11	9,088.75	32.36	32.78	-82.67	137.61	-1,173.49	805.74	741.51	64.23	12.544		
9,100.00	9,088.71	9,154.98	9,138.49	32.53	32.96	-82.56	138.75	-1,170.11	802.52	737.93	64.59	12.425		
9,150.00	9,138.71	9,204.86	9,188.24	32.70	33.14	-82.44	139.89	-1,166.73	799.31	734.37	64.94	12.308		
9,200.00	9,188.71	9,254.73	9,237.98	32.88	33.33	-82.33	141.03	-1,163.35	796.10	730.80	65.30	12.192		
9,250.00	9,238.71	9,304.60	9,287.72	33.05	33.51	-82.22	142.17	-1,159.97	792.89	727.24	65.65	12.077		
9,300.00	9,288.71	9,354.47	9,337.47	33.22	33.70	-82.10	143.31	-1,156.59	789.69	723.68	66.01	11.964		
9,350.00	9,338.71	9,404.34	9,387.21	33.40	33.88	-81.98	144.46	-1,153.21	786.49	720.13	66.36	11.851		
9,400.00	9,388.71	9,454.21	9,436.96	33.57	34.06	-81.87	145.60	-1,149.83	783.29	716.58	66.72	11.740		
9,450.00	9,438.71	9,504.09	9,486.70	33.74	34.25	-81.75	146.74	-1,146.45	780.10	713.03	67.08	11.630		
9,500.00	9,488.71	9,553.96	9,536.44	33.92	34.43	-81.63	147.88	-1,143.07	776.91	709.48	67.43	11.522		
9,550.00	9,538.71	9,603.83	9,586.19	34.09	34.62	-81.51	149.02	-1,139.69	773.73	705.94	67.79	11.414		
9,600.00	9,588.71	9,653.70	9,635.93	34.26	34.80	-81.39	150.16	-1,136.31	770.54	702.40	68.14	11.308		
9,650.00	9,638.71	9,703.57	9,685.68	34.44	34.98	-81.26	151.30	-1,132.93	767.36	698.86	68.50	11.202		
9,700.00	9,688.71	9,753.45	9,735.42	34.61	35.17	-81.14	152.44	-1,129.55	764.19	695.33	68.86	11.098		
9,750.00	9,738.71	9,803.32	9,785.17	34.78	35.35	-81.02	153.59	-1,126.17	761.01	691.80	69.21	10.995		
9,800.00	9,788.71	9,853.19	9,834.91	34.96	35.54	-80.89	154.73	-1,122.79	757.85	688.28	69.57	10.894		
9,850.00	9,838.71	9,903.06	9,884.65	35.13	35.72	-80.77	155.87	-1,119.41	754.68	684.76	69.92	10.793		
9,900.00	9,888.71	9,952.93	9,934.40	35.31	35.91	-80.64	157.01	-1,116.03	751.52	681.24	70.28	10.693		
9,950.00	9,938.71	10,002.81	9,984.14	35.48	36.09	-80.51	158.15	-1,112.65	748.36	677.72	70.64	10.594		
10,000.00	9,988.71	10,052.68	10,033.89	35.65	36.27	-80.38	159.29	-1,109.27	745.21	674.21	70.99	10.497		
10,050.00	10,038.71	10,102.55	10,083.63	35.83	36.46	-80.25	160.43	-1,105.89	742.06	670.71	71.35	10.400		
10,100.00	10,088.71	10,152.42	10,133.37	36.00	36.64	-80.12	161.57	-1,102.50	738.91	667.20	71.71	10.304		
10,150.00	10,138.71	10,202.29	10,183.12	36.18	36.83	-79.98	162.72	-1,099.12	735.77	663.70	72.07	10.210		
10,200.00	10,188.71	10,252.17	10,232.86	36.35	37.01	-79.85	163.86	-1,095.74	732.63	660.21	72.42	10.116		
10,250.00	10,238.71	10,302.04	10,282.61	36.52	37.19	-79.71	165.00	-1,092.36	729.50	656.72	72.78	10.023		
10,300.00	10,288.71	10,351.91	10,332.35	36.70	37.38	-79.58	166.14	-1,088.98	726.37	653.23	73.14	9.932		
10,350.00	10,338.71	10,401.78	10,382.09	36.87	37.56	-79.44	167.28	-1,085.60	723.24	649.75	73.49	9.841		
10,400.00	10,388.71	10,451.65	10,431.84	37.05	37.75	-79.30	168.42	-1,082.22	720.12	646.27	73.85	9.751		
10,450.00	10,438.71	10,501.52	10,481.58	37.22	37.93	-79.16	169.56	-1,078.84	717.00	642.79	74.21	9.662		
10,500.00	10,488.71	10,551.40	10,531.33	37.40	38.12	-79.02	170.70	-1,075.46	713.89	639.32	74.57	9.574		
10,550.00	10,538.71	10,601.27	10,581.07	37.57	38.30	-78.88	171.84	-1,072.08	710.78	635.85	74.92	9.487		
10,600.00	10,588.71	10,651.14	10,625.41	37.75	38.46	-78.76	172.98	-1,068.70	707.65	632.37	75.28	9.402		
10,650.00	10,638.71	10,701.01	10,675.18	37.92	38.62	-78.66	174.12	-1,065.32	704.52	628.89	75.64	9.325		
10,700.00	10,688.71	10,750.88	10,724.95	38.09	38.78	-78.58	175.26	-1,061.94	701.40	625.41	76.00	9.250		
10,750.00	10,738.71	10,800.75	10,774.82	38.27	38.93	-78.51	176.40	-1,058.56	700.27	622.93	76.36	9.175		
10,800.00	10,788.71	10,850.62	10,824.69	38.44	39.08	-78.47	177.54	-1,055.18	700.00	620.45	76.72	9.100		
10,850.00	10,838.71	10,900.50	10,874.57	38.62	39.24	-78.45	178.68	-1,051.80	700.00	617.97	77.08	9.025		
10,900.00	10,888.71	10,950.37	10,924.64	38.79	39.40	-78.45	179.82	-1,048.42	700.00	615.49	77.44	8.950		
10,950.00	10,938.71	10,100.25	10,074.71	38.97	39.57	-78.45	180.96	-1,045.04	700.00	613.01	77.80	8.875		
11,000.00	10,988.71	11,050.12	11,024.19	39.14	39.74	-78.45	182.10	-1,041.66	700.00	610.53	78.16	8.800		
11,050.00	11,038.71	11,100.00	11,074.26	39.32	39.91	-78.45	183.24	-1,038.28	700.00	608.05	78.52	8.725		
11,100.00	11,088.71	11,149.87	11,123.93	39.49	40.09	-78.45	184.38	-1,034.90	700.00	605.57	78.88	8.650		
11,150.00	11,138.71	11,199.75	11,173.80	39.67	40.26	-78.45	185.52	-1,031.52	700.00	603.09	79.24	8.575		
11,200.00	11,188.71	11,249.62	11,223.67	39.84	40.43	-78.45	186.66	-1,028.14	700.00	600.61	79.60	8.500		
11,250.00	11,238.67	11,299.50	11,273.55	40.01	40.62	-78.45	187.80	-1,024.76	700.00	598.13	80.00	8.425		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
11,300.00	11,288.29	11,331.13	11,310.23	40.18	40.83	101.84	167.26	-1,062.07	700.61	620.46	80.15	8.741	
11,350.00	11,337.21	11,397.68	11,375.07	40.34	41.04	101.76	152.42	-1,062.05	700.44	619.98	80.46	8.705	
11,400.00	11,385.04	11,463.93	11,437.46	40.49	41.22	101.56	130.29	-1,062.02	699.99	619.26	80.73	8.670	
11,450.00	11,431.43	11,529.59	11,496.39	40.64	41.39	101.23	101.38	-1,061.97	699.28	618.30	80.98	8.635	
11,500.00	11,476.02	11,594.46	11,550.97	40.78	41.54	100.80	66.41	-1,061.92	698.35	617.13	81.22	8.599	
11,550.00	11,518.47	11,658.31	11,600.51	40.91	41.66	100.26	26.17	-1,061.86	697.22	615.77	81.45	8.560	
11,600.00	11,558.46	11,720.99	11,644.48	41.03	41.77	99.63	-18.45	-1,061.80	695.97	614.27	81.70	8.519	
11,650.00	11,595.68	11,782.37	11,682.58	41.15	41.86	98.91	-66.55	-1,061.72	694.63	612.67	81.97	8.475	
11,700.00	11,629.85	11,842.38	11,714.64	41.26	41.95	98.12	-117.24	-1,061.65	693.27	611.02	82.25	8.428	
11,750.00	11,660.72	11,900.98	11,740.67	41.37	42.03	97.28	-169.71	-1,061.57	691.93	609.37	82.56	8.381	
11,800.00	11,688.04	11,958.14	11,760.77	41.48	42.13	96.38	-223.19	-1,061.49	690.67	607.79	82.88	8.333	
11,850.00	11,711.61	12,013.88	11,775.14	41.60	42.23	95.44	-277.03	-1,061.41	689.52	606.32	83.20	8.287	
11,900.00	11,731.24	12,068.24	11,784.06	41.72	42.35	94.47	-330.63	-1,061.33	688.53	605.01	83.52	8.244	
11,950.00	11,746.80	12,121.27	11,787.82	41.85	42.47	93.48	-383.51	-1,061.25	687.72	603.90	83.82	8.204	
12,000.00	11,758.16	12,171.01	11,788.00	41.98	42.58	92.61	-433.25	-1,061.18	687.18	603.07	84.11	8.170	
12,050.00	11,765.23	12,220.50	11,788.00	42.12	42.71	92.05	-482.73	-1,061.11	686.95	602.57	84.38	8.142	
12,084.60	11,767.58	12,255.01	11,788.00	42.21	42.81	91.85	-517.25	-1,061.06	686.91	602.35	84.56	8.123 CC	
12,100.00	11,767.96	12,270.40	11,788.00	42.25	42.85	91.82	-532.64	-1,061.03	686.92	602.27	84.64	8.115	
12,150.00	11,768.00	12,320.40	11,788.00	42.40	43.00	91.82	-582.64	-1,060.96	686.98	602.05	84.92	8.089	
12,200.00	11,768.00	12,370.40	11,788.00	42.54	43.16	91.82	-632.64	-1,060.89	687.04	601.82	85.22	8.062	
12,250.00	11,768.00	12,420.40	11,788.00	42.71	43.33	91.82	-682.64	-1,060.81	687.10	601.55	85.55	8.031	
12,300.00	11,768.00	12,470.40	11,788.00	42.88	43.51	91.82	-732.64	-1,060.74	687.16	601.27	85.89	8.000	
12,350.00	11,768.00	12,520.40	11,788.00	43.07	43.71	91.82	-782.64	-1,060.66	687.22	600.95	86.27	7.966	
12,400.00	11,768.00	12,570.40	11,788.00	43.26	43.91	91.82	-832.64	-1,060.59	687.28	600.63	86.66	7.931	
12,450.00	11,768.00	12,620.40	11,788.00	43.47	44.13	91.82	-882.64	-1,060.52	687.35	600.27	87.08	7.893	
12,500.00	11,768.00	12,670.40	11,788.00	43.68	44.35	91.82	-932.64	-1,060.44	687.41	599.89	87.51	7.855	
12,550.00	11,768.00	12,720.40	11,788.00	43.91	44.59	91.82	-982.64	-1,060.37	687.47	599.49	87.98	7.814	
12,600.00	11,768.00	12,770.40	11,788.00	44.15	44.83	91.82	-1,032.64	-1,060.29	687.53	599.07	88.46	7.773	
12,650.00	11,768.00	12,820.40	11,788.00	44.40	45.09	91.82	-1,082.64	-1,060.22	687.59	598.63	88.96	7.729	
12,700.00	11,768.00	12,870.40	11,788.00	44.66	45.35	91.82	-1,132.64	-1,060.14	687.65	598.17	89.48	7.685	
12,750.00	11,768.00	12,920.40	11,788.00	44.93	45.63	91.82	-1,182.64	-1,060.07	687.71	597.68	90.03	7.639	
12,800.00	11,768.00	12,970.40	11,788.00	45.20	45.91	91.82	-1,232.64	-1,060.00	687.78	597.18	90.59	7.592	
12,850.00	11,768.00	13,020.40	11,788.00	45.50	46.21	91.82	-1,282.64	-1,059.92	687.84	596.66	91.18	7.544	
12,900.00	11,768.00	13,070.40	11,788.00	45.79	46.51	91.82	-1,332.64	-1,059.85	687.90	596.12	91.78	7.495	
12,950.00	11,768.00	13,120.40	11,788.00	46.10	46.82	91.82	-1,382.64	-1,059.77	687.96	595.56	92.40	7.445	
13,000.00	11,768.00	13,170.40	11,788.00	46.42	47.15	91.82	-1,432.64	-1,059.70	688.02	594.98	93.04	7.395	
13,050.00	11,768.00	13,220.40	11,788.00	46.75	47.48	91.82	-1,482.64	-1,059.63	688.08	594.38	93.70	7.343	
13,100.00	11,768.00	13,270.40	11,788.00	47.08	47.82	91.82	-1,532.64	-1,059.55	688.14	593.77	94.38	7.292	
13,150.00	11,768.00	13,320.40	11,788.00	47.43	48.16	91.82	-1,582.64	-1,059.48	688.21	593.13	95.07	7.239	
13,200.00	11,768.00	13,370.40	11,788.00	47.78	48.52	91.82	-1,632.64	-1,059.40	688.27	592.49	95.78	7.186	
13,250.00	11,768.00	13,420.40	11,788.00	48.14	48.88	91.82	-1,682.64	-1,059.33	688.33	591.82	96.51	7.132	
13,300.00	11,768.00	13,470.40	11,788.00	48.51	49.26	91.81	-1,732.64	-1,059.25	688.39	591.14	97.25	7.078	
13,350.00	11,768.00	13,520.40	11,788.00	48.89	49.64	91.81	-1,782.64	-1,059.18	688.45	590.44	98.01	7.024	
13,400.00	11,768.00	13,570.40	11,788.00	49.27	50.03	91.81	-1,832.64	-1,059.11	688.51	589.73	98.79	6.970	
13,450.00	11,768.00	13,620.40	11,788.00	49.66	50.42	91.81	-1,882.64	-1,059.03	688.57	588.99	99.58	6.915	
13,500.00	11,768.00	13,670.40	11,788.00	50.06	50.82	91.81	-1,932.64	-1,058.96	688.63	588.25	100.38	6.860	
13,550.00	11,768.00	13,720.40	11,788.00	50.47	51.23	91.81	-1,982.64	-1,058.88	688.70	587.49	101.20	6.805	
13,600.00	11,768.00	13,770.40	11,788.00	50.88	51.65	91.81	-2,032.64	-1,058.81	688.76	586.72	102.04	6.750	
13,650.00	11,768.00	13,820.40	11,788.00	51.31	52.07	91.81	-2,082.64	-1,058.74	688.82	585.93	102.89	6.695	
13,700.00	11,768.00	13,870.40	11,788.00	51.73	52.50	91.81	-2,132.64	-1,058.66	688.88	585.14	103.74	6.640	
13,750.00	11,768.00	13,920.40	11,788.00	52.17	52.94	91.81	-2,182.64	-1,058.59	688.94	584.32	104.62	6.585	
13,800.00	11,768.00	13,970.40	11,788.00	52.61	53.38	91.81	-2,232.64	-1,058.51	689.00	583.50	105.50	6.531	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
13,850.00	11,768.00	14,020.40	11,788.00	53.06	53.83	91.81	-2,282.64	-1,058.44	689.06	582.66	106.41	6.476	
13,900.00	11,768.00	14,070.40	11,788.00	53.51	54.29	91.81	-2,332.64	-1,058.37	689.13	581.81	107.32	6.421	
13,950.00	11,768.00	14,120.40	11,788.00	53.97	54.75	91.81	-2,382.64	-1,058.29	689.19	580.95	108.24	6.367	
14,000.00	11,768.00	14,170.40	11,788.00	54.43	55.21	91.81	-2,432.64	-1,058.22	689.25	580.07	109.17	6.313	
14,050.00	11,768.00	14,220.40	11,788.00	54.91	55.68	91.81	-2,482.64	-1,058.14	689.31	579.19	110.12	6.260	
14,100.00	11,768.00	14,270.40	11,788.00	55.38	56.16	91.81	-2,532.64	-1,058.07	689.37	578.29	111.08	6.206	
14,150.00	11,768.00	14,320.40	11,788.00	55.87	56.64	91.81	-2,582.64	-1,057.99	689.43	577.39	112.05	6.153	
14,200.00	11,768.00	14,370.40	11,788.00	56.35	57.13	91.81	-2,632.64	-1,057.92	689.49	576.47	113.02	6.101	
14,250.00	11,768.00	14,420.40	11,788.00	56.85	57.62	91.81	-2,682.64	-1,057.85	689.55	575.54	114.01	6.048	
14,300.00	11,768.00	14,470.40	11,788.00	57.34	58.12	91.81	-2,732.64	-1,057.77	689.62	574.61	115.01	5.996	
14,350.00	11,768.00	14,520.40	11,788.00	57.84	58.62	91.81	-2,782.64	-1,057.70	689.68	573.66	116.02	5.945	
14,400.00	11,768.00	14,570.40	11,788.00	58.35	59.13	91.81	-2,832.64	-1,057.62	689.74	572.71	117.03	5.894	
14,450.00	11,768.00	14,620.40	11,788.00	58.86	59.64	91.81	-2,882.64	-1,057.55	689.80	571.74	118.06	5.843	
14,500.00	11,768.00	14,670.40	11,788.00	59.38	60.16	91.81	-2,932.64	-1,057.48	689.86	570.77	119.09	5.793	
14,550.00	11,768.00	14,720.40	11,788.00	59.90	60.68	91.81	-2,982.64	-1,057.40	689.92	569.78	120.14	5.743	
14,600.00	11,768.00	14,770.40	11,788.00	60.42	61.20	91.81	-3,032.64	-1,057.33	689.98	568.79	121.19	5.693	
14,650.00	11,768.00	14,820.40	11,788.00	60.95	61.73	91.81	-3,082.64	-1,057.25	690.05	567.79	122.25	5.644	
14,700.00	11,768.00	14,870.40	11,788.00	61.48	62.27	91.81	-3,132.64	-1,057.18	690.11	566.79	123.32	5.596	
14,750.00	11,768.00	14,920.40	11,788.00	62.02	62.80	91.81	-3,182.64	-1,057.11	690.17	565.77	124.40	5.548	
14,800.00	11,768.00	14,970.40	11,788.00	62.56	63.34	91.81	-3,232.64	-1,057.03	690.23	564.75	125.48	5.501	
14,850.00	11,768.00	15,020.40	11,788.00	63.11	63.89	91.81	-3,282.64	-1,056.96	690.29	563.72	126.57	5.454	
14,900.00	11,768.00	15,070.40	11,788.00	63.65	64.43	91.81	-3,332.64	-1,056.88	690.35	562.68	127.67	5.407	
14,950.00	11,768.00	15,120.40	11,788.00	64.21	64.98	91.81	-3,382.64	-1,056.81	690.41	561.64	128.78	5.361	
15,000.00	11,768.00	15,170.40	11,788.00	64.76	65.54	91.81	-3,432.64	-1,056.73	690.48	560.59	129.89	5.316	
15,050.00	11,768.00	15,220.40	11,788.00	65.32	66.10	91.81	-3,482.64	-1,056.66	690.54	559.53	131.01	5.271	
15,100.00	11,768.00	15,270.40	11,788.00	65.88	66.66	91.81	-3,532.64	-1,056.59	690.60	558.47	132.13	5.227	
15,150.00	11,768.00	15,320.40	11,788.00	66.45	67.22	91.81	-3,582.64	-1,056.51	690.66	557.40	133.26	5.183	
15,200.00	11,768.00	15,370.40	11,788.00	67.01	67.79	91.81	-3,632.64	-1,056.44	690.72	556.32	134.40	5.139	
15,250.00	11,768.00	15,420.40	11,788.00	67.58	68.36	91.81	-3,682.64	-1,056.36	690.78	555.24	135.55	5.096	
15,300.00	11,768.00	15,470.40	11,788.00	68.16	68.93	91.81	-3,732.64	-1,056.29	690.84	554.15	136.69	5.054	
15,350.00	11,768.00	15,520.40	11,788.00	68.73	69.51	91.81	-3,782.64	-1,056.22	690.90	553.05	137.85	5.012	
15,400.00	11,768.00	15,570.40	11,788.00	69.31	70.09	91.81	-3,832.64	-1,056.14	690.97	551.96	139.01	4.971 Alert	
15,450.00	11,768.00	15,620.40	11,788.00	69.90	70.67	91.81	-3,882.64	-1,056.07	691.03	550.85	140.18	4.930 Alert	
15,500.00	11,768.00	15,670.40	11,788.00	70.48	71.25	91.81	-3,932.64	-1,055.99	691.09	549.74	141.35	4.889 Alert	
15,550.00	11,768.00	15,720.40	11,788.00	71.07	71.84	91.81	-3,982.64	-1,055.92	691.15	548.62	142.53	4.849 Alert	
15,600.00	11,768.00	15,770.40	11,788.00	71.66	72.43	91.81	-4,032.64	-1,055.85	691.21	547.50	143.71	4.810 Alert	
15,650.00	11,768.00	15,820.40	11,788.00	72.25	73.02	91.81	-4,082.64	-1,055.77	691.27	546.38	144.90	4.771 Alert	
15,700.00	11,768.00	15,870.40	11,788.00	72.85	73.62	91.81	-4,132.64	-1,055.70	691.33	545.25	146.09	4.732 Alert	
15,750.00	11,768.00	15,920.40	11,788.00	73.45	74.21	91.81	-4,182.64	-1,055.62	691.40	544.11	147.29	4.694 Alert	
15,800.00	11,768.00	15,970.40	11,788.00	74.04	74.81	91.81	-4,232.64	-1,055.55	691.46	542.97	148.49	4.657 Alert	
15,850.00	11,768.00	16,020.40	11,788.00	74.65	75.41	91.81	-4,282.64	-1,055.47	691.52	541.83	149.69	4.620 Alert	
15,900.00	11,768.00	16,070.40	11,788.00	75.25	76.02	91.81	-4,332.64	-1,055.40	691.58	540.68	150.90	4.583 Alert	
15,950.00	11,768.00	16,120.40	11,788.00	75.86	76.62	91.81	-4,382.64	-1,055.33	691.64	539.52	152.12	4.547 Alert	
16,000.00	11,768.00	16,170.40	11,788.00	76.47	77.23	91.81	-4,432.64	-1,055.25	691.70	538.37	153.33	4.511 Alert	
16,050.00	11,768.00	16,220.40	11,788.00	77.08	77.84	91.81	-4,482.63	-1,055.18	691.76	537.21	154.56	4.476 Alert	
16,100.00	11,768.00	16,270.40	11,788.00	77.69	78.45	91.81	-4,532.63	-1,055.10	691.83	536.04	155.78	4.441 Alert	
16,150.00	11,768.00	16,320.40	11,788.00	78.30	79.06	91.81	-4,582.63	-1,055.03	691.89	534.87	157.01	4.407 Alert	
16,200.00	11,768.00	16,370.40	11,788.00	78.92	79.68	91.81	-4,632.63	-1,054.96	691.95	533.70	158.25	4.373 Alert	
16,250.00	11,768.00	16,420.40	11,788.00	79.54	80.30	91.81	-4,682.63	-1,054.88	692.01	532.52	159.49	4.339 Alert	
16,300.00	11,768.00	16,470.40	11,788.00	80.16	80.92	91.81	-4,732.63	-1,054.81	692.07	531.34	160.73	4.306 Alert	
16,350.00	11,768.00	16,520.40	11,788.00	80.78	81.54	91.81	-4,782.63	-1,054.73	692.13	530.16	161.97	4.273 Alert	
16,400.00	11,768.00	16,570.40	11,788.00	81.40	82.16	91.80	-4,832.63	-1,054.66	692.19	528.97	163.22	4.241 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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 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							
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	Warning	
16,450.00	11,768.00	16,820.40	11,788.00	82.03	82.78	91.80	-4,882.63	-1,054.59	692.25	527.78	164.47	4.209	Alert	
16,500.00	11,768.00	16,870.40	11,788.00	82.66	83.41	91.80	-4,932.63	-1,054.51	692.32	526.59	165.73	4.177	Alert	
16,550.00	11,768.00	16,720.40	11,788.00	83.29	84.04	91.80	-4,982.63	-1,054.44	692.38	525.39	166.99	4.146	Alert	
16,600.00	11,768.00	16,770.40	11,788.00	83.92	84.67	91.80	-5,032.63	-1,054.36	692.44	524.19	168.25	4.116	Alert	
16,650.00	11,768.00	16,820.40	11,788.00	84.55	85.30	91.80	-5,082.63	-1,054.29	692.50	522.99	169.51	4.085	Alert	
16,700.00	11,768.00	16,870.40	11,788.00	85.18	85.93	91.80	-5,132.63	-1,054.21	692.56	521.78	170.78	4.055	Alert	
16,750.00	11,768.00	16,920.40	11,788.00	85.82	86.56	91.80	-5,182.63	-1,054.14	692.62	520.57	172.05	4.026	Alert	
16,800.00	11,768.00	16,970.40	11,788.00	86.45	87.20	91.80	-5,232.63	-1,054.07	692.68	519.36	173.32	3.997	Alert	
16,850.00	11,768.00	17,020.40	11,788.00	87.09	87.84	91.80	-5,282.63	-1,053.99	692.75	518.15	174.60	3.968	Alert	
16,900.00	11,768.00	17,070.40	11,788.00	87.73	88.47	91.80	-5,332.63	-1,053.92	692.81	516.93	175.88	3.939	Alert	
16,950.00	11,768.00	17,120.40	11,788.00	88.37	89.11	91.80	-5,382.63	-1,053.84	692.87	515.71	177.16	3.911	Alert	
17,000.00	11,768.00	17,170.40	11,788.00	89.01	89.75	91.80	-5,432.63	-1,053.77	692.93	514.49	178.44	3.883	Alert	
17,050.00	11,768.00	17,220.40	11,788.00	89.65	90.40	91.80	-5,482.63	-1,053.70	692.99	513.26	179.73	3.856	Alert	
17,100.00	11,768.00	17,270.40	11,788.00	90.30	91.04	91.80	-5,532.63	-1,053.62	693.05	512.04	181.02	3.829	Alert	
17,150.00	11,768.00	17,320.40	11,788.00	90.94	91.68	91.80	-5,582.63	-1,053.55	693.11	510.80	182.31	3.802	Alert	
17,200.00	11,768.00	17,370.40	11,788.00	91.59	92.33	91.80	-5,632.63	-1,053.47	693.18	509.57	183.60	3.775	Alert	
17,250.00	11,768.00	17,420.40	11,788.00	92.24	92.98	91.80	-5,682.63	-1,053.40	693.24	508.34	184.90	3.749	Alert	
17,300.00	11,768.00	17,470.40	11,788.00	92.89	93.62	91.80	-5,732.63	-1,053.33	693.30	507.10	186.20	3.723	Alert	
17,350.00	11,768.00	17,520.40	11,788.00	93.54	94.27	91.80	-5,782.63	-1,053.25	693.36	505.86	187.50	3.698	Alert	
17,400.00	11,768.00	17,570.40	11,788.00	94.19	94.92	91.80	-5,832.63	-1,053.18	693.42	504.62	188.80	3.673	Alert	
17,450.00	11,768.00	17,620.40	11,788.00	94.84	95.58	91.80	-5,882.63	-1,053.10	693.48	503.37	190.11	3.648	Alert	
17,500.00	11,768.00	17,670.40	11,788.00	95.50	96.23	91.80	-5,932.63	-1,053.03	693.54	502.13	191.42	3.623	Alert	
17,550.00	11,768.00	17,720.40	11,788.00	96.15	96.88	91.80	-5,982.63	-1,052.95	693.60	500.88	192.73	3.599	Alert	
17,600.00	11,768.00	17,770.40	11,788.00	96.81	97.54	91.80	-6,032.63	-1,052.88	693.67	499.63	194.04	3.575	Alert	
17,650.00	11,768.00	17,820.40	11,788.00	97.46	98.19	91.80	-6,082.63	-1,052.81	693.73	498.38	195.35	3.551	Alert	
17,700.00	11,768.00	17,870.40	11,788.00	98.12	98.85	91.80	-6,132.63	-1,052.73	693.79	497.12	196.67	3.528	Alert	
17,750.00	11,768.00	17,920.40	11,788.00	98.78	99.51	91.80	-6,182.63	-1,052.66	693.85	495.87	197.98	3.505	Alert	
17,800.00	11,768.00	17,970.40	11,788.00	99.44	100.16	91.80	-6,232.63	-1,052.58	693.91	494.61	199.30	3.482	Alert	
17,850.00	11,768.00	18,020.40	11,788.00	100.10	100.82	91.80	-6,282.63	-1,052.51	693.97	493.35	200.62	3.459	Alert	
17,900.00	11,768.00	18,070.40	11,788.00	100.76	101.48	91.80	-6,332.63	-1,052.44	694.03	492.09	201.95	3.437	Alert	
17,950.00	11,768.00	18,120.40	11,788.00	101.42	102.15	91.80	-6,382.63	-1,052.36	694.10	490.82	203.27	3.415	Alert	
18,000.00	11,768.00	18,170.40	11,788.00	102.09	102.81	91.80	-6,432.63	-1,052.29	694.16	489.56	204.60	3.393	Alert	
18,050.00	11,768.00	18,220.40	11,788.00	102.75	103.47	91.80	-6,482.63	-1,052.21	694.22	488.29	205.93	3.371	Alert	
18,100.00	11,768.00	18,270.40	11,788.00	103.41	104.13	91.80	-6,532.63	-1,052.14	694.28	487.02	207.26	3.350	Alert	
18,150.00	11,768.00	18,320.40	11,788.00	104.08	104.80	91.80	-6,582.63	-1,052.07	694.34	485.75	208.59	3.329	Alert	
18,200.00	11,768.00	18,370.40	11,788.00	104.75	105.46	91.80	-6,632.63	-1,051.99	694.40	484.48	209.92	3.308	Alert	
18,250.00	11,768.00	18,420.40	11,788.00	105.41	106.13	91.80	-6,682.63	-1,051.92	694.46	483.21	211.26	3.287	Alert	
18,300.00	11,768.00	18,470.40	11,788.00	106.08	106.80	91.80	-6,732.63	-1,051.84	694.53	481.93	212.59	3.267	Alert	
18,350.00	11,768.00	18,520.40	11,788.00	106.75	107.47	91.80	-6,782.63	-1,051.77	694.59	480.66	213.93	3.247	Alert	
18,400.00	11,768.00	18,570.40	11,788.00	107.42	108.13	91.80	-6,832.63	-1,051.69	694.65	479.38	215.27	3.227	Alert	
18,450.00	11,768.00	18,620.40	11,788.00	108.09	108.80	91.80	-6,882.63	-1,051.62	694.71	478.10	216.61	3.207	Alert	
18,500.00	11,768.00	18,670.40	11,788.00	108.76	109.47	91.80	-6,932.63	-1,051.55	694.77	476.82	217.95	3.188	Alert	
18,550.00	11,768.00	18,720.40	11,788.00	109.43	110.15	91.80	-6,982.63	-1,051.47	694.83	475.53	219.30	3.168	Alert	
18,600.00	11,768.00	18,770.40	11,788.00	110.11	110.82	91.80	-7,032.63	-1,051.40	694.89	474.25	220.64	3.149	Alert	
18,650.00	11,768.00	18,820.40	11,788.00	110.78	111.49	91.80	-7,082.63	-1,051.32	694.95	472.97	221.99	3.131	Alert	
18,700.00	11,768.00	18,870.40	11,788.00	111.45	112.16	91.80	-7,132.63	-1,051.25	695.02	471.68	223.34	3.112	Alert	
18,750.00	11,768.00	18,920.40	11,788.00	112.13	112.84	91.80	-7,182.63	-1,051.18	695.08	470.39	224.69	3.094	Alert	
18,800.00	11,768.00	18,970.40	11,788.00	112.80	113.51	91.80	-7,232.63	-1,051.10	695.14	469.10	226.04	3.075	Alert	
18,850.00	11,768.00	19,020.40	11,788.00	113.48	114.18	91.80	-7,282.63	-1,051.03	695.20	467.81	227.39	3.057	Alert	
18,900.00	11,768.00	19,070.40	11,788.00	114.16	114.86	91.80	-7,332.63	-1,050.95	695.26	466.52	228.74	3.040	Alert	
18,950.00	11,768.00	19,120.40	11,788.00	114.83	115.54	91.80	-7,382.63	-1,050.88	695.32	465.23	230.09	3.022	Alert	
19,000.00	11,768.00	19,170.40	11,788.00	115.51	116.21	91.80	-7,432.63	-1,050.81	695.38	463.93	231.45	3.004	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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Tooface (")	Offset Wellbore Centre +N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
19,050.00	11,768.00	19,220.40	11,788.00	116.19	116.89	91.80	-7,482.63	-1,050.73	695.45	462.64	232.81	2.987	Alert
19,100.00	11,768.00	19,270.40	11,788.00	116.87	117.57	91.80	-7,532.63	-1,050.66	695.51	461.34	234.16	2.970	Alert
19,150.00	11,768.00	19,320.40	11,788.00	117.55	118.25	91.80	-7,582.63	-1,050.58	695.57	460.05	235.52	2.953	Alert
19,200.00	11,768.00	19,370.40	11,788.00	118.23	118.93	91.80	-7,632.63	-1,050.51	695.63	458.75	236.88	2.937	Alert
19,250.00	11,768.00	19,420.40	11,788.00	118.91	119.61	91.80	-7,682.63	-1,050.43	695.69	457.45	238.24	2.920	Alert
19,300.00	11,768.00	19,470.40	11,788.00	119.59	120.29	91.80	-7,732.63	-1,050.36	695.75	456.15	239.61	2.904	Alert
19,350.00	11,768.00	19,520.40	11,788.00	120.27	120.97	91.80	-7,782.63	-1,050.29	695.81	454.84	240.97	2.888	Alert
19,400.00	11,768.00	19,570.40	11,788.00	120.95	121.65	91.80	-7,832.63	-1,050.21	695.88	453.54	242.33	2.872	Alert
19,450.00	11,768.00	19,620.40	11,788.00	121.64	122.33	91.80	-7,882.63	-1,050.14	695.94	452.24	243.70	2.856	Alert
19,500.00	11,768.00	19,670.40	11,788.00	122.32	123.01	91.80	-7,932.63	-1,050.06	696.00	450.93	245.06	2.840	Alert
19,550.00	11,768.00	19,720.40	11,788.00	123.00	123.69	91.79	-7,982.63	-1,049.99	696.06	449.63	246.43	2.825	Alert
19,600.00	11,768.00	19,770.40	11,788.00	123.69	124.38	91.79	-8,032.63	-1,049.92	696.12	448.32	247.80	2.809	Alert
19,650.00	11,768.00	19,820.40	11,788.00	124.37	125.06	91.79	-8,082.63	-1,049.84	696.18	447.01	249.17	2.794	Alert
19,700.00	11,768.00	19,870.40	11,788.00	125.06	125.75	91.79	-8,132.63	-1,049.77	696.24	445.70	250.54	2.779	Alert
19,750.00	11,768.00	19,920.40	11,788.00	125.74	126.43	91.79	-8,182.63	-1,049.69	696.30	444.39	251.91	2.764	Alert
19,800.00	11,768.00	19,970.40	11,788.00	126.43	127.12	91.79	-8,232.63	-1,049.62	696.37	443.08	253.28	2.749	Alert
19,850.00	11,768.00	20,020.40	11,788.00	127.12	127.80	91.79	-8,282.63	-1,049.54	696.43	441.77	254.66	2.735	Alert
19,900.00	11,768.00	20,070.40	11,788.00	127.80	128.49	91.79	-8,332.63	-1,049.47	696.49	440.46	256.03	2.720	Alert
19,950.00	11,768.00	20,120.40	11,788.00	128.49	129.17	91.79	-8,382.63	-1,049.40	696.55	439.15	257.40	2.706	Alert
20,000.00	11,768.00	20,170.40	11,788.00	129.18	129.86	91.79	-8,432.63	-1,049.32	696.61	437.83	258.78	2.692	Alert
20,050.00	11,768.00	20,220.40	11,788.00	129.87	130.55	91.79	-8,482.63	-1,049.25	696.67	436.52	260.16	2.678	Alert
20,100.00	11,768.00	20,270.40	11,788.00	130.55	131.24	91.79	-8,532.63	-1,049.17	696.73	435.20	261.53	2.664	Alert
20,150.00	11,768.00	20,320.40	11,788.00	131.24	131.92	91.79	-8,582.63	-1,049.10	696.80	433.89	262.91	2.650	Alert
20,200.00	11,768.00	20,370.40	11,788.00	131.93	132.61	91.79	-8,632.63	-1,049.03	696.86	432.57	264.29	2.637	Alert
20,250.00	11,768.00	20,420.40	11,788.00	132.62	133.30	91.79	-8,682.63	-1,048.95	696.92	431.25	265.67	2.623	Alert
20,300.00	11,768.00	20,470.40	11,788.00	133.31	133.99	91.79	-8,732.63	-1,048.88	696.98	429.93	267.05	2.610	Alert
20,350.00	11,768.00	20,520.40	11,788.00	134.00	134.68	91.79	-8,782.63	-1,048.80	697.04	428.61	268.43	2.597	Alert
20,400.00	11,768.00	20,570.40	11,788.00	134.70	135.37	91.79	-8,832.63	-1,048.73	697.10	427.29	269.81	2.584	Alert
20,450.00	11,768.00	20,620.40	11,788.00	135.39	136.06	91.79	-8,882.63	-1,048.66	697.16	425.97	271.19	2.571	Alert
20,500.00	11,768.00	20,670.40	11,788.00	136.08	136.75	91.79	-8,932.63	-1,048.58	697.23	424.65	272.58	2.558	Alert
20,550.00	11,768.00	20,720.40	11,788.00	136.77	137.44	91.79	-8,982.63	-1,048.51	697.29	423.32	273.96	2.545	Alert
20,600.00	11,768.00	20,770.40	11,788.00	137.46	138.14	91.79	-9,032.63	-1,048.43	697.35	422.00	275.35	2.533	Alert
20,650.00	11,768.00	20,820.40	11,788.00	138.16	138.83	91.79	-9,082.63	-1,048.36	697.41	420.68	276.73	2.520	Alert
20,700.00	11,768.00	20,870.40	11,788.00	138.85	139.52	91.79	-9,132.63	-1,048.28	697.47	419.35	278.12	2.508	Alert
20,750.00	11,768.00	20,920.40	11,788.00	139.54	140.21	91.79	-9,182.63	-1,048.21	697.53	418.03	279.51	2.496	Minor Risk
20,800.00	11,768.00	20,970.40	11,788.00	140.24	140.91	91.79	-9,232.63	-1,048.14	697.59	416.70	280.89	2.483	Minor Risk
20,850.00	11,768.00	21,020.40	11,788.00	140.93	141.60	91.79	-9,282.63	-1,048.06	697.65	415.37	282.28	2.471	Minor Risk
20,900.00	11,768.00	21,070.40	11,788.00	141.63	142.29	91.79	-9,332.63	-1,047.99	697.72	414.05	283.67	2.460	Minor Risk
20,950.00	11,768.00	21,120.40	11,788.00	142.32	142.99	91.79	-9,382.63	-1,047.91	697.78	412.72	285.06	2.448	Minor Risk
21,000.00	11,768.00	21,170.40	11,788.00	143.02	143.68	91.79	-9,432.63	-1,047.84	697.84	411.39	286.45	2.436	Minor Risk
21,050.00	11,768.00	21,220.40	11,788.00	143.71	144.38	91.79	-9,482.63	-1,047.77	697.90	410.06	287.84	2.425	Minor Risk
21,100.00	11,768.00	21,270.40	11,788.00	144.41	145.07	91.79	-9,532.63	-1,047.69	697.96	408.73	289.23	2.413	Minor Risk
21,150.00	11,768.00	21,320.40	11,788.00	145.10	145.77	91.79	-9,582.63	-1,047.62	698.02	407.40	290.62	2.402	Minor Risk
21,200.00	11,768.00	21,370.40	11,788.00	145.80	146.46	91.79	-9,632.63	-1,047.54	698.08	406.07	292.02	2.391	Minor Risk
21,250.00	11,768.00	21,420.40	11,788.00	146.50	147.16	91.79	-9,682.63	-1,047.47	698.15	404.74	293.41	2.379	Minor Risk
21,300.00	11,768.00	21,470.40	11,788.00	147.19	147.85	91.79	-9,732.63	-1,047.40	698.21	403.40	294.80	2.368	Minor Risk
21,350.00	11,768.00	21,520.40	11,788.00	147.89	148.55	91.79	-9,782.63	-1,047.32	698.27	402.07	296.20	2.357	Minor Risk
21,400.00	11,768.00	21,570.40	11,788.00	148.59	149.25	91.79	-9,832.63	-1,047.25	698.33	400.74	297.59	2.347	Minor Risk
21,450.00	11,768.00	21,620.40	11,788.00	149.29	149.95	91.79	-9,882.63	-1,047.17	698.39	399.40	298.99	2.336	Minor Risk
21,500.00	11,768.00	21,670.40	11,788.00	149.99	150.64	91.79	-9,932.62	-1,047.10	698.45	398.07	300.38	2.325	Minor Risk
21,550.00	11,768.00	21,720.40	11,788.00	150.68	151.34	91.79	-9,982.62	-1,047.02	698.51	396.73	301.78	2.315	Minor Risk
21,600.00	11,768.00	21,770.40	11,788.00	151.38	152.04	91.79	-10,032.62	-1,046.95	698.58	395.40	303.18	2.304	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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Plan 1												Offset Well Error:	0.50 ft
Survey Program: 0-MWD+HDGM													
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)			
21,650.00	11,768.00	21,820.40	11,788.00	152.08	152.74	91.79	-10,082.62	-1,046.88	698.64	394.06	304.57	2.294	Minor Risk
21,700.00	11,768.00	21,870.40	11,788.00	152.78	153.43	91.79	-10,132.62	-1,046.80	698.70	392.73	305.97	2.284	Minor Risk
21,750.00	11,768.00	21,920.40	11,788.00	153.48	154.13	91.79	-10,182.62	-1,046.73	698.76	391.39	307.37	2.273	Minor Risk
21,800.00	11,768.00	21,970.40	11,788.00	154.18	154.83	91.79	-10,232.62	-1,046.65	698.82	390.05	308.77	2.263	Minor Risk
21,850.00	11,768.00	22,020.40	11,788.00	154.88	155.53	91.79	-10,282.62	-1,046.58	698.88	388.71	310.17	2.253	Minor Risk
21,900.00	11,768.00	22,070.40	11,788.00	155.58	156.23	91.79	-10,332.62	-1,046.51	698.94	387.37	311.57	2.243	Minor Risk
21,904.71	11,768.00	22,075.11	11,788.00	155.65	156.30	91.79	-10,337.34	-1,046.50	698.95	387.25	311.70	2.242	Minor Risk, ES, SF

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
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
0.00	0.00	1.30	1.30	0.50	0.50	89.64	4.37	699.85	699.87				
50.00	50.00	51.30	51.30	0.50	0.50	89.64	4.37	699.85	699.87	698.86	1.01	695.182	
100.00	100.00	101.30	101.30	0.52	0.52	89.64	4.37	699.85	699.87	698.83	1.04	675.063	
150.00	150.00	151.30	151.30	0.59	0.59	89.64	4.37	699.85	699.87	698.68	1.18	591.616	
200.00	200.00	201.30	201.30	0.70	0.71	89.64	4.37	699.85	699.87	698.46	1.41	497.245	
250.00	250.00	251.30	251.30	0.84	0.84	89.64	4.37	699.85	699.87	698.19	1.68	416.792	
300.00	300.00	301.30	301.30	0.99	0.99	89.64	4.37	699.85	699.87	697.89	1.88	353.701	
350.00	350.00	351.30	351.30	1.15	1.15	89.64	4.37	699.85	699.87	697.57	2.30	304.929	
400.00	400.00	401.30	401.30	1.31	1.31	89.64	4.37	699.85	699.87	697.24	2.62	266.871	
450.00	450.00	451.30	451.30	1.48	1.48	89.64	4.37	699.85	699.87	696.91	2.96	236.678	
500.00	500.00	501.30	501.30	1.65	1.65	89.64	4.37	699.85	699.87	696.57	3.30	212.298	
550.00	550.00	551.30	551.30	1.82	1.82	89.64	4.37	699.85	699.87	696.23	3.64	192.280	
600.00	600.00	601.30	601.30	1.99	2.00	89.64	4.37	699.85	699.87	695.88	3.99	175.593	
650.00	650.00	651.30	651.30	2.16	2.17	89.64	4.37	699.85	699.87	695.53	4.33	161.495	
700.00	700.00	701.30	701.30	2.34	2.34	89.64	4.37	699.85	699.87	695.18	4.68	149.442	
750.00	750.00	751.30	751.30	2.51	2.52	89.64	4.37	699.85	699.87	694.83	5.03	139.028	
800.00	800.00	801.30	801.30	2.69	2.70	89.64	4.37	699.85	699.87	694.48	5.39	129.947	
850.00	850.00	851.30	851.30	2.87	2.87	89.64	4.37	699.85	699.87	694.13	5.74	121.962	
900.00	900.00	901.30	901.30	3.04	3.05	89.64	4.37	699.85	699.87	693.77	6.09	114.888	
950.00	950.00	951.30	951.30	3.22	3.23	89.64	4.37	699.85	699.87	693.42	6.45	108.581	
1,000.00	1,000.00	1,001.30	1,001.30	3.40	3.40	89.64	4.37	699.85	699.87	693.07	6.80	102.922	
1,050.00	1,050.00	1,051.30	1,051.30	3.58	3.58	89.64	4.37	699.85	699.87	692.71	7.15	97.819	
1,100.00	1,100.00	1,101.30	1,101.30	3.75	3.76	89.64	4.37	699.85	699.87	692.36	7.51	93.193	
1,150.00	1,150.00	1,151.30	1,151.30	3.93	3.93	89.64	4.37	699.85	699.87	692.00	7.87	88.982	
1,200.00	1,200.00	1,201.30	1,201.30	4.11	4.11	89.64	4.37	699.85	699.87	691.64	8.22	85.132	
1,250.00	1,250.00	1,251.30	1,251.30	4.29	4.29	89.64	4.37	699.85	699.87	691.29	8.58	81.599	
1,300.00	1,300.00	1,301.30	1,301.30	4.46	4.47	89.64	4.37	699.85	699.87	690.93	8.93	78.346	
1,350.00	1,350.00	1,351.30	1,351.30	4.64	4.65	89.64	4.37	699.85	699.87	690.58	9.29	75.341	
1,400.00	1,400.00	1,401.30	1,401.30	4.82	4.83	89.64	4.37	699.85	699.87	690.22	9.65	72.557	
1,450.00	1,450.00	1,451.30	1,451.30	5.00	5.00	89.64	4.37	699.85	699.87	689.86	10.00	69.970	
1,500.00	1,500.00	1,501.30	1,501.30	5.18	5.18	89.64	4.37	699.85	699.87	689.51	10.36	67.560	
1,550.00	1,550.00	1,551.30	1,551.30	5.36	5.36	89.64	4.37	699.85	699.87	689.15	10.72	65.311	
1,600.00	1,600.00	1,601.30	1,601.30	5.53	5.54	89.64	4.37	699.85	699.87	688.79	11.07	63.205	
1,650.00	1,650.00	1,651.30	1,651.30	5.71	5.72	89.64	4.37	699.85	699.87	688.44	11.43	61.231	
1,700.00	1,700.00	1,701.30	1,701.30	5.89	5.90	89.64	4.37	699.85	699.87	688.08	11.79	59.376	
1,750.00	1,750.00	1,751.30	1,751.30	6.07	6.07	89.64	4.37	699.85	699.87	687.72	12.14	57.629	
1,800.00	1,800.00	1,801.30	1,801.30	6.25	6.25	89.64	4.37	699.85	699.87	687.36	12.50	55.982	
1,850.00	1,850.00	1,851.30	1,851.30	6.43	6.43	89.64	4.37	699.85	699.87	687.01	12.86	54.426	
1,900.00	1,900.00	1,901.30	1,901.30	6.61	6.61	89.64	4.37	699.85	699.87	686.65	13.22	52.954	
1,950.00	1,950.00	1,951.30	1,951.30	6.78	6.79	89.64	4.37	699.85	699.87	686.29	13.57	51.560	
2,000.00	2,000.00	2,001.30	2,001.30	6.96	6.97	89.64	4.37	699.85	699.87	685.93	13.93	50.237	
2,050.00	2,050.00	2,051.30	2,051.30	7.14	7.15	89.64	4.37	699.85	699.87	685.58	14.29	48.979	
2,100.00	2,100.00	2,101.30	2,101.30	7.32	7.33	89.64	4.37	699.85	699.87	685.22	14.65	47.784	
2,150.00	2,150.00	2,151.30	2,151.30	7.50	7.50	89.64	4.37	699.85	699.87	684.86	15.00	46.645	
2,200.00	2,200.00	2,201.30	2,201.30	7.68	7.68	89.64	4.37	699.85	699.87	684.50	15.36	45.558	
2,250.00	2,250.00	2,251.30	2,251.30	7.86	7.86	89.64	4.37	699.85	699.87	684.15	15.72	44.522	
2,300.00	2,300.00	2,301.30	2,301.30	8.04	8.04	89.64	4.37	699.85	699.87	683.79	16.08	43.531	
2,350.00	2,350.00	2,351.30	2,351.30	8.22	8.22	89.64	4.37	699.85	699.87	683.43	16.44	42.583	
2,400.00	2,400.00	2,401.30	2,401.30	8.39	8.40	89.64	4.37	699.85	699.87	683.07	16.79	41.676	
2,450.00	2,450.00	2,451.30	2,451.30	8.57	8.58	89.64	4.37	699.85	699.87	682.71	17.15	40.806	
2,500.00	2,500.00	2,501.30	2,501.30	8.75	8.76	89.64	4.37	699.85	699.87	682.36	17.51	39.972	
2,550.00	2,550.00	2,551.30	2,551.30	8.93	8.94	174.33	4.37	699.85	700.08	682.22	17.86	39.193	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: O-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		
2,600.00	2,599.99	2,601.29	2,601.29	9.10	9.11	174.33	4.37	699.85	700.73	682.52	18.22	38.467		
2,650.00	2,649.98	2,651.28	2,651.28	9.27	9.29	174.34	4.37	699.85	701.82	683.25	18.57	37.800		
2,700.00	2,699.96	2,701.26	2,701.26	9.45	9.47	174.35	4.37	699.85	703.34	684.42	18.92	37.181		
2,750.00	2,749.92	2,751.22	2,751.22	9.62	9.65	174.36	4.37	699.85	705.29	686.02	19.27	36.606		
2,800.00	2,799.86	2,801.16	2,801.16	9.79	9.83	174.38	4.37	699.85	707.68	688.06	19.62	36.074		
2,850.00	2,849.78	2,851.08	2,851.08	9.96	10.01	174.40	4.37	699.85	710.50	690.53	19.97	35.581		
2,900.00	2,899.69	2,900.99	2,900.99	10.14	10.19	174.42	4.37	699.85	713.52	693.20	20.32	35.116		
2,950.00	2,949.60	2,950.90	2,950.90	10.31	10.37	174.45	4.37	699.85	716.54	695.87	20.67	34.665		
3,000.00	2,999.51	3,000.81	3,000.81	10.49	10.54	174.47	4.37	699.85	719.56	698.54	21.02	34.230		
3,050.00	3,049.41	3,050.71	3,050.71	10.66	10.72	174.49	4.37	699.85	722.58	701.21	21.37	33.808		
3,100.00	3,099.32	3,100.62	3,100.62	10.83	10.90	174.52	4.37	699.85	725.60	703.88	21.72	33.400		
3,150.00	3,149.23	3,150.53	3,150.53	11.01	11.08	174.54	4.37	699.85	728.62	706.55	22.08	33.004		
3,200.00	3,199.14	3,200.44	3,200.44	11.19	11.26	174.56	4.37	699.85	731.65	709.22	22.43	32.621		
3,250.00	3,249.04	3,250.34	3,250.34	11.36	11.44	174.58	4.37	699.85	734.67	711.89	22.78	32.249		
3,300.00	3,298.95	3,300.25	3,300.25	11.54	11.62	174.61	4.37	699.85	737.69	714.56	23.13	31.888		
3,350.00	3,348.86	3,350.16	3,350.16	11.71	11.80	174.63	4.37	699.85	740.71	717.22	23.49	31.538		
3,400.00	3,398.77	3,400.07	3,400.07	11.89	11.97	174.65	4.37	699.85	743.73	719.89	23.84	31.197		
3,450.00	3,448.68	3,449.98	3,449.98	12.07	12.15	174.67	4.37	699.85	746.75	722.56	24.19	30.867		
3,500.00	3,498.58	3,500.12	3,499.88	12.24	12.33	174.69	4.37	699.85	749.78	725.23	24.55	30.545		
3,550.00	3,548.49	3,549.79	3,549.79	12.42	12.51	174.71	4.37	699.85	752.80	727.90	24.90	30.233		
3,600.00	3,598.40	3,600.30	3,599.70	12.60	12.69	174.74	4.37	699.85	755.82	730.56	25.26	29.927		
3,650.00	3,648.31	3,649.61	3,649.61	12.78	12.87	174.76	4.37	699.85	758.84	733.23	25.61	29.634		
3,700.00	3,698.22	3,700.48	3,699.52	12.95	13.05	174.78	4.37	699.85	761.86	735.90	25.96	29.342		
3,750.00	3,748.12	3,749.42	3,749.42	13.13	13.23	174.80	4.37	699.85	764.89	738.57	26.32	29.066		
3,800.00	3,798.03	3,800.67	3,799.33	13.31	13.41	174.82	4.37	699.85	767.91	741.23	26.67	28.788		
3,850.00	3,847.94	3,849.24	3,849.24	13.49	13.58	174.84	4.37	699.85	770.93	743.91	27.02	28.528		
3,900.00	3,897.85	3,900.85	3,899.15	13.67	13.77	174.86	4.37	699.85	773.95	746.57	27.38	28.263		
3,950.00	3,947.75	3,949.05	3,949.05	13.84	13.94	174.88	4.37	699.85	776.98	749.24	27.73	28.016		
4,000.00	3,997.66	3,998.96	3,998.96	14.02	14.12	174.90	4.37	699.85	780.00	751.91	28.09	27.770		
4,050.00	4,047.57	4,057.93	4,057.92	14.20	14.33	174.91	4.52	699.52	782.74	754.27	28.47	27.491		
4,100.00	4,097.48	4,117.15	4,117.14	14.38	14.54	174.90	4.98	698.48	784.89	756.03	28.86	27.201		
4,150.00	4,147.39	4,176.42	4,176.38	14.56	14.74	174.87	5.75	696.75	786.45	757.22	29.23	26.904		
4,200.00	4,197.29	4,235.73	4,235.62	14.74	14.95	174.81	6.83	694.31	787.42	757.81	29.61	26.597		
4,250.00	4,247.20	4,295.04	4,294.83	14.92	15.16	174.74	8.23	691.18	787.79	757.82	29.98	26.281		
4,300.00	4,297.11	4,348.39	4,348.06	15.10	15.34	174.65	9.70	687.86	787.70	757.37	30.33	25.969		
4,350.00	4,347.02	4,398.37	4,397.93	15.28	15.52	174.57	11.10	684.71	787.57	756.89	30.68	25.668		
4,400.00	4,396.92	4,448.36	4,447.79	15.46	15.70	174.49	12.50	681.56	787.44	756.41	31.03	25.373		
4,450.00	4,446.83	4,501.65	4,497.66	15.64	15.88	174.41	13.91	678.41	787.32	755.92	31.40	25.076		
4,500.00	4,496.74	4,548.33	4,547.53	15.82	16.05	174.33	15.31	675.26	787.19	755.46	31.74	24.803		
4,550.00	4,546.65	4,601.68	4,597.40	16.00	16.24	174.24	16.71	672.11	787.07	754.97	32.10	24.518		
4,600.00	4,596.56	4,648.31	4,647.27	16.18	16.40	174.16	18.11	668.96	786.95	754.51	32.44	24.257		
4,650.00	4,646.46	4,701.70	4,697.14	16.36	16.59	174.08	19.51	665.81	786.83	754.02	32.81	23.984		
4,700.00	4,696.37	4,748.28	4,747.00	16.54	16.75	174.00	20.91	662.66	786.71	753.57	33.15	23.734		
4,750.00	4,746.28	4,801.73	4,796.87	16.72	16.94	173.92	22.31	659.51	786.60	753.08	33.51	23.472		
4,800.00	4,796.19	4,848.26	4,846.74	16.90	17.11	173.84	23.71	656.36	786.48	752.63	33.85	23.233		
4,850.00	4,846.09	4,901.75	4,896.61	17.08	17.30	173.75	25.11	653.21	786.37	752.15	34.22	22.981		
4,900.00	4,896.00	4,948.23	4,946.48	17.26	17.46	173.67	26.51	650.06	786.26	751.70	34.56	22.751		
4,950.00	4,945.91	5,001.78	4,996.34	17.44	17.65	173.59	27.92	646.91	786.15	751.22	34.92	22.510		
5,000.00	4,995.82	5,048.21	5,046.21	17.62	17.82	173.51	29.32	643.76	786.04	750.77	35.27	22.289		
5,050.00	5,045.73	5,101.81	5,096.08	17.80	18.01	173.43	30.72	640.60	785.93	750.30	35.63	22.057		
5,100.00	5,095.63	5,148.18	5,145.95	17.98	18.17	173.35	32.12	637.45	785.82	749.85	35.97	21.845		
5,150.00	5,145.54	5,201.83	5,195.82	18.16	18.36	173.26	33.52	634.30	785.72	749.38	36.34	21.621		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		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	5,195.45	5,248.16	5,245.69	18.34	18.53	173.18	34.92	631.15	785.62	748.94	36.68	21.417		
5,250.00	5,245.38	5,301.86	5,295.55	18.53	18.72	173.10	36.32	628.00	785.52	748.47	37.05	21.202		
5,300.00	5,295.27	5,348.13	5,345.42	18.71	18.89	173.02	37.72	624.85	785.42	748.03	37.39	21.006		
5,350.00	5,345.17	5,401.88	5,395.29	18.89	19.08	172.94	39.12	621.70	785.32	747.56	37.76	20.798		
5,400.00	5,395.08	5,448.11	5,445.16	19.07	19.24	172.85	40.52	618.55	785.23	747.13	38.10	20.609		
5,450.00	5,444.99	5,501.91	5,495.03	19.25	19.44	172.77	41.93	615.40	785.13	746.66	38.47	20.410		
5,500.00	5,494.90	5,548.08	5,544.90	19.43	19.60	172.69	43.33	612.25	785.04	746.23	38.81	20.228		
5,550.00	5,544.80	5,601.93	5,594.76	19.61	19.80	172.61	44.73	609.10	784.95	745.77	39.18	20.035		
5,600.00	5,594.71	5,648.05	5,644.63	19.79	19.96	172.53	46.13	605.95	784.86	745.34	39.52	19.859		
5,650.00	5,644.62	5,698.04	5,694.50	19.98	20.14	172.44	47.53	602.80	784.77	744.90	39.88	19.680		
5,700.00	5,694.53	5,748.03	5,744.37	20.16	20.32	172.36	48.93	599.65	784.69	744.45	40.23	19.504		
5,750.00	5,744.44	5,801.98	5,794.24	20.34	20.51	172.28	50.33	596.50	784.60	744.00	40.60	19.324		
5,800.00	5,794.34	5,848.00	5,844.10	20.52	20.68	172.20	51.73	593.35	784.52	743.58	40.94	19.161		
5,850.00	5,844.25	5,902.01	5,893.97	20.70	20.87	172.12	53.13	590.20	784.44	743.12	41.31	18.987		
5,900.00	5,894.16	5,947.98	5,943.84	20.88	21.04	172.03	54.54	587.05	784.36	742.70	41.66	18.830		
5,950.00	5,944.07	5,997.97	5,993.71	21.06	21.22	171.95	55.94	583.90	784.28	742.27	42.01	18.668		
6,000.00	5,993.97	6,047.95	6,043.58	21.25	21.40	171.87	57.34	580.75	784.20	741.84	42.37	18.509		
6,050.00	6,043.88	6,097.94	6,093.45	21.43	21.58	171.79	58.74	577.60	784.13	741.41	42.72	18.353		
6,100.00	6,093.79	6,147.93	6,143.31	21.61	21.76	171.70	60.14	574.45	784.06	740.98	43.08	18.200		
6,150.00	6,143.70	6,202.09	6,193.18	21.79	21.95	171.62	61.54	571.29	783.99	740.53	43.45	18.043		
6,200.00	6,193.61	6,247.90	6,243.05	21.97	22.12	171.54	62.94	568.14	783.92	740.12	43.79	17.900		
6,250.00	6,243.51	6,297.89	6,292.92	22.16	22.30	171.46	64.34	564.99	783.85	739.70	44.15	17.754		
6,300.00	6,293.42	6,347.88	6,342.79	22.34	22.48	171.38	65.74	561.84	783.78	739.27	44.51	17.610		
6,350.00	6,343.33	6,402.14	6,392.66	22.52	22.68	171.29	67.14	558.69	783.72	738.84	44.88	17.463		
6,400.00	6,393.24	6,447.85	6,442.52	22.70	22.84	171.21	68.55	555.54	783.65	738.43	45.22	17.329		
6,450.00	6,443.14	6,502.16	6,492.39	22.88	23.04	171.13	69.95	552.39	783.59	738.00	45.59	17.186		
6,500.00	6,493.05	6,547.83	6,542.26	23.07	23.20	171.05	71.35	549.24	783.53	737.60	45.94	17.057		
6,550.00	6,542.96	6,602.19	6,592.13	23.25	23.40	170.96	72.75	546.09	783.47	737.16	46.31	16.919		
6,600.00	6,592.87	6,647.80	6,642.00	23.43	23.56	170.88	74.15	542.94	783.42	736.77	46.65	16.794		
6,650.00	6,642.78	6,702.21	6,691.86	23.61	23.76	170.80	75.55	539.79	783.36	736.34	47.02	16.659		
6,700.00	6,692.68	6,747.77	6,741.73	23.79	23.93	170.72	76.95	536.64	783.31	735.94	47.36	16.538		
6,750.00	6,742.59	6,802.24	6,791.60	23.98	24.12	170.63	78.35	533.49	783.25	735.52	47.74	16.407		
6,800.00	6,792.50	6,847.75	6,841.47	24.16	24.29	170.55	79.75	530.34	783.20	735.12	48.08	16.290		
6,850.00	6,842.41	6,897.74	6,891.34	24.34	24.47	170.47	81.16	527.19	783.16	734.72	48.44	16.168		
6,900.00	6,892.32	6,947.72	6,941.21	24.52	24.65	170.39	82.56	524.04	783.11	734.31	48.80	16.049		
6,950.00	6,942.22	7,002.29	6,991.07	24.71	24.85	170.30	83.96	520.89	783.06	733.89	49.17	15.926		
7,000.00	6,992.13	7,047.70	7,040.94	24.89	25.01	170.22	85.36	517.74	783.02	733.51	49.51	15.815		
7,050.00	7,042.04	7,102.31	7,090.81	25.07	25.21	170.14	86.76	514.59	782.98	733.09	49.89	15.695		
7,100.00	7,091.95	7,147.67	7,140.68	25.25	25.38	170.06	88.16	511.44	782.94	732.71	50.23	15.588		
7,150.00	7,141.85	7,202.34	7,190.55	25.44	25.58	169.97	89.56	508.29	782.90	732.29	50.60	15.472		
7,200.00	7,191.76	7,247.65	7,240.41	25.62	25.74	169.89	90.96	505.14	782.86	731.92	50.94	15.367		
7,250.00	7,241.67	7,302.37	7,290.28	25.80	25.94	169.81	92.36	501.99	782.82	731.50	51.32	15.254		
7,300.00	7,291.58	7,347.62	7,340.15	25.98	26.10	169.73	93.76	498.83	782.79	731.13	51.66	15.153		
7,350.00	7,341.49	7,402.39	7,390.02	26.17	26.30	169.64	95.17	495.68	782.76	730.72	52.04	15.043		
7,400.00	7,391.39	7,447.60	7,439.89	26.35	26.47	169.56	96.57	492.53	782.73	730.35	52.38	14.944		
7,450.00	7,441.30	7,502.42	7,489.76	26.53	26.67	169.48	97.97	489.38	782.70	729.94	52.75	14.837		
7,500.00	7,491.21	7,547.57	7,539.62	26.71	26.83	169.40	99.37	486.23	782.67	729.57	53.09	14.741		
7,550.00	7,541.12	7,602.44	7,589.49	26.90	27.03	169.31	100.77	483.08	782.64	729.17	53.47	14.637		
7,600.00	7,591.02	7,647.55	7,639.36	27.08	27.19	169.23	102.17	479.93	782.62	728.81	53.81	14.544		
7,650.00	7,640.93	7,702.47	7,689.23	27.26	27.39	169.15	103.57	476.78	782.59	728.41	54.19	14.442		
7,700.00	7,690.84	7,747.52	7,739.10	27.44	27.56	169.07	104.97	473.63	782.57	728.05	54.53	14.352		
7,750.00	7,740.75	7,802.49	7,788.97	27.63	27.76	168.98	106.37	470.48	782.55	727.65	54.90	14.253		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
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
7,800.00	7,790.66	7,847.49	7,838.83	27.81	27.92	168.90	107.77	467.33	782.54	727.29	55.25	14.165	
7,850.00	7,840.56	7,902.52	7,888.70	27.99	28.12	168.82	109.18	464.18	782.52	726.90	55.62	14.068	
7,900.00	7,890.47	7,947.47	7,938.57	28.17	28.29	168.74	110.58	461.03	782.51	726.54	55.96	13.982	
7,950.00	7,940.38	8,002.54	7,988.44	28.36	28.49	168.65	111.98	457.88	782.49	726.15	56.34	13.889	
8,000.00	7,990.29	8,047.44	8,038.31	28.54	28.65	168.57	113.38	454.73	782.48	725.80	56.68	13.805	
8,050.00	8,040.19	8,102.57	8,088.17	28.72	28.85	168.49	114.78	451.58	782.47	725.41	57.06	13.713	
8,100.00	8,090.10	8,147.42	8,138.04	28.91	29.02	168.41	116.18	448.43	782.46	725.06	57.40	13.632	
8,150.00	8,140.01	8,202.59	8,187.91	29.09	29.22	168.32	117.58	445.28	782.46	724.68	57.78	13.543	
8,200.00	8,189.92	8,247.39	8,237.78	29.27	29.38	168.24	118.98	442.13	782.45	724.33	58.12	13.463	
8,250.00	8,239.83	8,297.38	8,287.85	29.45	29.56	168.16	120.38	438.98	782.45	723.97	58.48	13.380	
8,300.00	8,289.73	8,347.37	8,337.52	29.64	29.75	168.08	121.79	435.83	782.45	723.61	58.84	13.299	
8,327.41	8,317.09	8,374.77	8,364.85	29.74	29.85	168.03	122.55	434.10	782.45	723.41	59.03	13.254	
8,350.00	8,339.64	8,402.65	8,387.38	29.82	29.95	167.99	123.19	432.68	782.45	723.23	59.22	13.214	
8,400.00	8,389.55	8,447.34	8,437.25	30.00	30.11	167.91	124.59	429.52	782.45	722.89	59.56	13.138	
8,450.00	8,439.46	8,502.67	8,487.12	30.19	30.31	167.83	125.99	426.37	782.45	722.52	59.93	13.055	
8,500.00	8,489.37	8,547.32	8,536.99	30.37	30.48	167.75	127.39	423.22	782.46	722.18	60.27	12.981	
8,550.00	8,539.27	8,602.70	8,586.86	30.55	30.68	167.66	128.79	420.07	782.46	721.81	60.65	12.900	
8,600.00	8,589.18	8,647.29	8,636.73	30.73	30.84	167.58	130.19	416.92	782.47	721.48	60.99	12.829	
8,650.00	8,639.09	8,702.72	8,686.59	30.92	31.04	167.50	131.59	413.77	782.48	721.11	61.37	12.750	
8,700.00	8,689.00	8,747.27	8,736.46	31.10	31.21	167.42	132.99	410.62	782.49	720.78	61.71	12.679	
8,750.00	8,738.90	8,802.75	8,786.33	31.28	31.41	167.33	134.39	407.47	782.50	720.41	62.09	12.602	
8,800.00	8,788.82	8,847.24	8,836.20	31.47	31.57	167.25	135.80	404.32	782.46	720.03	62.43	12.533	
8,850.00	8,838.76	8,897.22	8,886.06	31.65	31.75	167.16	137.20	401.17	781.90	719.10	62.79	12.452	
8,900.00	8,888.72	8,947.19	8,935.91	31.83	31.94	167.05	138.60	398.02	780.69	717.54	63.15	12.362	
8,950.00	8,938.71	8,997.13	8,985.73	32.01	32.12	166.93	140.00	394.87	778.86	715.35	63.51	12.264	
9,000.00	8,988.71	9,047.04	9,035.52	32.18	32.30	166.79	141.40	391.73	776.39	712.52	63.87	12.156	
9,050.00	9,038.71	9,103.08	9,085.28	32.36	32.51	81.98	142.79	388.59	773.47	709.23	64.25	12.039	
9,100.00	9,088.71	9,146.80	9,135.04	32.53	32.67	81.84	144.19	385.44	770.55	705.97	64.58	11.932	
9,150.00	9,138.71	9,203.32	9,184.81	32.70	32.87	81.70	145.59	382.30	767.63	702.67	64.96	11.818	
9,200.00	9,188.71	9,246.56	9,234.57	32.88	33.03	81.56	146.99	379.15	764.71	699.43	65.29	11.713	
9,250.00	9,238.71	9,303.56	9,284.33	33.05	33.24	81.43	148.39	376.01	761.80	696.14	65.67	11.601	
9,300.00	9,288.71	9,346.32	9,334.09	33.22	33.40	81.29	149.78	372.87	758.89	692.90	65.99	11.499	
9,350.00	9,338.71	9,403.80	9,383.85	33.40	33.61	81.14	151.18	369.72	755.99	689.62	66.38	11.389	
9,400.00	9,388.71	9,446.09	9,433.62	33.57	33.76	81.00	152.58	366.58	753.09	686.39	66.70	11.290	
9,450.00	9,438.71	9,504.03	9,483.38	33.74	33.98	80.86	153.98	363.44	750.20	683.11	67.09	11.182	
9,500.00	9,488.71	9,545.85	9,533.14	33.92	34.13	80.71	155.38	360.29	747.31	679.90	67.41	11.086	
9,550.00	9,538.71	9,604.27	9,582.90	34.09	34.34	80.57	156.77	357.15	744.43	676.63	67.80	10.980	
9,600.00	9,588.71	9,645.61	9,632.67	34.26	34.49	80.42	158.17	354.00	741.55	673.43	68.12	10.885	
9,650.00	9,638.71	9,704.51	9,682.43	34.44	34.71	80.28	159.57	350.86	738.68	670.17	68.51	10.782	
9,700.00	9,688.71	9,745.37	9,732.19	34.61	34.86	80.13	160.97	347.72	735.81	666.97	68.83	10.690	
9,750.00	9,738.71	9,804.75	9,781.95	34.78	35.08	79.98	162.37	344.57	732.94	663.72	69.22	10.588	
9,800.00	9,788.71	9,845.13	9,831.71	34.96	35.23	79.82	163.76	341.43	730.09	660.54	69.54	10.498	
9,850.00	9,838.71	9,904.99	9,881.48	35.13	35.44	79.67	165.16	338.29	727.23	657.30	69.94	10.398	
9,900.00	9,888.71	9,944.89	9,931.24	35.31	35.59	79.52	166.56	335.14	724.38	654.13	70.26	10.311	
9,950.00	9,938.71	10,005.23	9,981.00	35.48	35.81	79.36	167.96	332.00	721.54	650.89	70.65	10.213	
10,000.00	9,988.71	10,044.66	10,030.76	35.65	35.96	79.21	169.36	328.85	718.70	647.73	70.97	10.127	
10,050.00	10,038.71	10,105.46	10,080.52	35.83	36.18	79.05	170.75	325.71	715.87	644.51	71.36	10.031	
10,100.00	10,088.71	10,144.42	10,130.29	36.00	36.32	78.89	172.15	322.57	713.04	641.36	71.68	9.948	
10,150.00	10,138.71	10,205.70	10,180.05	36.18	36.55	78.73	173.55	319.42	710.22	638.14	72.08	9.854	
10,200.00	10,188.71	10,244.18	10,229.81	36.35	36.69	78.57	174.95	316.28	707.40	635.01	72.39	9.772	
10,250.00	10,238.71	10,305.94	10,279.57	36.52	36.91	78.41	176.35	313.14	704.59	631.80	72.79	9.680	
10,300.00	10,288.71	10,343.94	10,329.33	36.70	37.05	78.25	177.75	309.99	701.79	628.68	73.10	9.600	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		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	10,338.71	10,406.18	10,379.10	36.87	37.28	78.08	179.14	306.85	698.99	625.48	73.51	9.509	
10,400.00	10,388.71	10,443.70	10,428.86	37.05	37.42	77.91	180.54	303.70	696.20	622.38	73.82	9.431	
10,450.00	10,438.71	10,493.58	10,478.62	37.22	37.60	77.75	181.94	300.56	693.41	619.23	74.17	9.348	
10,500.00	10,488.71	10,543.47	10,528.38	37.40	37.79	77.58	183.34	297.42	690.63	616.10	74.53	9.266	
10,550.00	10,538.71	10,593.35	10,578.15	37.57	37.97	77.41	184.74	294.27	687.85	612.96	74.89	9.185	
10,600.00	10,588.71	10,641.16	10,625.85	37.75	38.14	77.24	186.06	291.28	685.11	609.87	75.24	9.106	
10,650.00	10,638.71	10,684.81	10,669.42	37.92	38.30	77.11	187.12	288.91	682.72	607.14	75.58	9.033	
10,700.00	10,688.71	10,728.52	10,713.07	38.09	38.46	77.01	187.97	286.99	680.80	604.88	75.92	8.967	
10,750.00	10,738.71	10,772.26	10,756.79	38.27	38.62	76.93	188.63	285.52	679.33	603.08	76.25	8.909	
10,800.00	10,788.71	10,816.04	10,800.55	38.44	38.78	76.87	189.08	284.51	678.33	601.75	76.58	8.858	
10,850.00	10,838.71	10,859.83	10,844.34	38.62	38.93	76.84	189.32	283.96	677.78	600.88	76.90	8.814	
10,900.00	10,888.71	10,905.50	10,890.01	38.79	39.09	76.83	189.37	283.85	677.67	600.44	77.23	8.775	
10,950.00	10,938.71	10,955.50	10,940.01	38.97	39.27	76.83	189.37	283.85	677.67	600.09	77.58	8.735	
11,000.00	10,988.71	11,005.50	10,990.01	39.14	39.44	76.83	189.37	283.85	677.67	599.74	77.93	8.696	
11,050.00	11,038.71	11,055.50	11,040.01	39.32	39.62	76.83	189.37	283.85	677.67	599.39	78.28	8.657	
11,100.00	11,088.71	11,105.50	11,090.01	39.49	39.79	76.83	189.37	283.85	677.67	599.03	78.63	8.618	
11,150.00	11,138.71	11,155.50	11,140.01	39.67	39.97	76.83	189.37	283.85	677.67	598.68	78.99	8.580	
11,200.00	11,188.71	11,205.50	11,190.01	39.84	40.14	76.83	189.37	283.85	677.67	598.33	79.34	8.542	
11,250.00	11,238.67	11,260.95	11,245.45	40.01	40.33	-103.12	189.01	283.85	677.98	598.27	79.71	8.506	
11,300.00	11,288.29	11,329.42	11,313.58	40.18	40.55	-103.23	182.49	283.87	678.26	598.16	80.10	8.468	
11,350.00	11,337.21	11,397.99	11,380.52	40.34	40.76	-103.19	167.87	283.91	678.17	597.73	80.44	8.431	
11,400.00	11,385.04	11,466.30	11,445.02	40.49	40.95	-103.01	145.46	283.97	677.72	596.99	80.72	8.395	
11,450.00	11,431.43	11,534.05	11,505.89	40.64	41.12	-102.69	115.82	284.05	676.92	595.94	80.97	8.360	
11,500.00	11,476.02	11,600.93	11,562.14	40.78	41.27	-102.23	79.71	284.14	675.81	594.61	81.20	8.322	
11,550.00	11,518.47	11,666.69	11,612.98	40.91	41.40	-101.66	38.06	284.26	674.46	593.02	81.43	8.282	
11,600.00	11,558.46	11,731.13	11,657.85	41.03	41.50	-100.97	-8.15	284.38	672.91	591.23	81.68	8.239	
11,650.00	11,595.68	11,794.11	11,696.42	41.15	41.59	-100.19	-57.89	284.51	671.23	589.29	81.94	8.191	
11,700.00	11,629.85	11,855.52	11,728.56	41.26	41.67	-99.32	-110.19	284.65	669.49	587.26	82.23	8.141	
11,750.00	11,660.72	11,915.32	11,754.30	41.37	41.75	-98.38	-164.13	284.80	667.77	585.22	82.55	8.090	
11,800.00	11,688.04	11,973.48	11,773.82	41.48	41.86	-97.39	-218.90	284.94	666.12	583.24	82.87	8.038	
11,850.00	11,711.61	12,030.05	11,787.38	41.60	41.98	-96.35	-273.79	285.09	664.59	581.39	83.21	7.987	
11,900.00	11,731.24	12,085.05	11,795.32	41.72	42.10	-95.27	-328.20	285.23	663.25	579.72	83.53	7.940	
11,950.00	11,746.80	12,138.57	11,798.00	41.85	42.23	-94.17	-381.62	285.38	662.13	578.30	83.83	7.898	
12,000.00	11,758.16	12,187.42	11,798.00	41.98	42.34	-93.28	-430.47	285.51	661.37	577.27	84.10	7.864	
12,050.00	11,765.23	12,236.90	11,798.00	42.12	42.47	-92.72	-479.95	285.64	660.99	576.63	84.36	7.835	
12,100.00	11,767.98	12,286.81	11,798.00	42.25	42.61	-92.49	-529.86	285.77	660.86	576.24	84.63	7.809	
12,147.10	11,768.24	12,333.91	11,798.00	42.39	42.75	-92.47	-576.96	285.90	660.85	575.95	84.90	7.784	
12,150.00	11,768.00	12,336.81	11,798.00	42.40	42.76	-92.49	-579.86	285.91	660.86	575.94	84.92	7.783	
12,200.00	11,768.00	12,386.81	11,798.00	42.54	42.92	-92.49	-629.86	286.04	660.86	575.65	85.21	7.755	
12,250.00	11,768.00	12,436.81	11,798.00	42.71	43.10	-92.49	-679.86	286.17	660.86	575.31	85.55	7.725	
12,300.00	11,768.00	12,486.81	11,798.00	42.88	43.28	-92.49	-729.86	286.31	660.85	574.96	85.89	7.694	
12,350.00	11,768.00	12,536.81	11,798.00	43.07	43.47	-92.49	-779.86	286.44	660.85	574.58	86.27	7.660	
12,400.00	11,768.00	12,586.81	11,798.00	43.26	43.68	-92.49	-829.86	286.57	660.85	574.19	86.66	7.626	
12,450.00	11,768.00	12,636.81	11,798.00	43.47	43.89	-92.49	-879.86	286.71	660.85	573.76	87.09	7.588	
12,500.00	11,768.00	12,686.81	11,798.00	43.68	44.12	-92.49	-929.86	286.84	660.85	573.32	87.52	7.550	
12,550.00	11,768.00	12,736.81	11,798.00	43.91	44.36	-92.49	-979.86	286.97	660.85	572.85	88.00	7.510	
12,600.00	11,768.00	12,786.81	11,798.00	44.15	44.60	-92.49	-1,029.86	287.11	660.84	572.37	88.47	7.470	
12,650.00	11,768.00	12,836.81	11,798.00	44.40	44.86	-92.49	-1,079.86	287.24	660.84	571.86	88.99	7.426	
12,700.00	11,768.00	12,886.81	11,798.00	44.66	45.13	-92.49	-1,129.86	287.38	660.84	571.33	89.50	7.383	
12,750.00	11,768.00	12,936.81	11,798.00	44.93	45.41	-92.49	-1,179.86	287.51	660.84	570.78	90.06	7.338	
12,800.00	11,768.00	12,986.81	11,798.00	45.20	45.69	-92.49	-1,229.86	287.64	660.84	570.22	90.62	7.293	
12,850.00	11,768.00	13,036.81	11,798.00	45.50	45.99	-92.49	-1,279.86	287.78	660.83	569.62	91.21	7.245	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		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)				
12,900.00	11,768.00	13,086.81	11,798.00	45.79	46.30	-92.49	-1,329.86	287.91	660.83	569.02	91.81	7.198		
12,950.00	11,768.00	13,136.81	11,798.00	46.10	46.61	-92.49	-1,379.86	288.04	660.83	568.39	92.44	7.149		
13,000.00	11,768.00	13,186.81	11,798.00	46.42	46.94	-92.49	-1,429.86	288.18	660.83	567.75	93.08	7.100		
13,050.00	11,768.00	13,236.81	11,798.00	46.75	47.27	-92.49	-1,479.86	288.31	660.83	567.08	93.75	7.049		
13,100.00	11,768.00	13,286.81	11,798.00	47.08	47.61	-92.49	-1,529.86	288.44	660.82	566.40	94.42	6.999		
13,150.00	11,768.00	13,336.81	11,798.00	47.43	47.96	-92.49	-1,579.86	288.58	660.82	565.70	95.12	6.947		
13,200.00	11,768.00	13,386.81	11,798.00	47.78	48.32	-92.49	-1,629.86	288.71	660.82	564.99	95.83	6.896		
13,250.00	11,768.00	13,436.81	11,798.00	48.14	48.69	-92.49	-1,679.86	288.84	660.82	564.25	96.56	6.843		
13,300.00	11,768.00	13,486.81	11,798.00	48.51	49.06	-92.49	-1,729.86	288.98	660.82	563.51	97.30	6.791		
13,350.00	11,768.00	13,536.81	11,798.00	48.89	49.45	-92.49	-1,779.86	289.11	660.81	562.74	98.07	6.738		
13,400.00	11,768.00	13,586.81	11,798.00	49.27	49.84	-92.49	-1,829.86	289.24	660.81	561.97	98.84	6.685		
13,450.00	11,768.00	13,636.81	11,798.00	49.66	50.24	-92.49	-1,879.86	289.38	660.81	561.17	99.64	6.632		
13,500.00	11,768.00	13,686.81	11,798.00	50.06	50.64	-92.49	-1,929.86	289.51	660.81	560.36	100.44	6.579		
13,550.00	11,768.00	13,736.81	11,798.00	50.47	51.05	-92.49	-1,979.86	289.65	660.81	559.53	101.27	6.525		
13,600.00	11,768.00	13,786.81	11,798.00	50.88	51.47	-92.49	-2,029.86	289.78	660.80	558.70	102.10	6.472		
13,650.00	11,768.00	13,836.81	11,798.00	51.31	51.90	-92.49	-2,079.86	289.91	660.80	557.85	102.96	6.418		
13,700.00	11,768.00	13,886.81	11,798.00	51.73	52.33	-92.49	-2,129.86	290.05	660.80	556.99	103.81	6.365		
13,750.00	11,768.00	13,936.81	11,798.00	52.17	52.77	-92.49	-2,179.86	290.18	660.80	556.10	104.69	6.312		
13,800.00	11,768.00	13,986.81	11,798.00	52.61	53.22	-92.49	-2,229.85	290.31	660.80	555.22	105.58	6.259		
13,850.00	11,768.00	14,036.81	11,798.00	53.06	53.67	-92.49	-2,279.85	290.45	660.79	554.31	106.48	6.206		
13,900.00	11,768.00	14,086.81	11,798.00	53.51	54.12	-92.49	-2,329.85	290.58	660.79	553.40	107.39	6.153		
13,950.00	11,768.00	14,136.81	11,798.00	53.97	54.59	-92.49	-2,379.85	290.71	660.79	552.47	108.32	6.100		
14,000.00	11,768.00	14,186.81	11,798.00	54.43	55.06	-92.49	-2,429.85	290.85	660.79	551.53	109.25	6.048		
14,050.00	11,768.00	14,236.81	11,798.00	54.91	55.53	-92.49	-2,479.85	290.98	660.79	550.58	110.21	5.996		
14,100.00	11,768.00	14,286.81	11,798.00	55.38	56.01	-92.49	-2,529.85	291.11	660.78	549.62	111.16	5.944		
14,150.00	11,768.00	14,336.81	11,798.00	55.87	56.50	-92.49	-2,579.85	291.25	660.78	548.65	112.13	5.893		
14,200.00	11,768.00	14,386.81	11,798.00	56.35	56.99	-92.49	-2,629.85	291.38	660.78	547.67	113.11	5.842		
14,250.00	11,768.00	14,436.81	11,798.00	56.85	57.48	-92.49	-2,679.85	291.52	660.78	546.68	114.10	5.791		
14,300.00	11,768.00	14,486.81	11,798.00	57.34	57.98	-92.49	-2,729.85	291.65	660.78	545.68	115.10	5.741		
14,350.00	11,768.00	14,536.81	11,798.00	57.84	58.49	-92.49	-2,779.85	291.78	660.77	544.66	116.11	5.691		
14,400.00	11,768.00	14,586.81	11,798.00	58.35	59.00	-92.49	-2,829.85	291.92	660.77	543.65	117.13	5.642		
14,450.00	11,768.00	14,636.81	11,798.00	58.86	59.51	-92.49	-2,879.85	292.05	660.77	542.61	118.16	5.592		
14,500.00	11,768.00	14,686.81	11,798.00	59.38	60.03	-92.49	-2,929.85	292.18	660.77	541.58	119.19	5.544		
14,550.00	11,768.00	14,736.81	11,798.00	59.90	60.55	-92.49	-2,979.85	292.32	660.77	540.53	120.24	5.496		
14,600.00	11,768.00	14,786.81	11,798.00	60.42	61.08	-92.49	-3,029.85	292.45	660.76	539.48	121.29	5.448		
14,650.00	11,768.00	14,836.81	11,798.00	60.95	61.61	-92.49	-3,079.85	292.58	660.76	538.41	122.35	5.400		
14,700.00	11,768.00	14,886.81	11,798.00	61.48	62.15	-92.49	-3,129.85	292.72	660.76	537.34	123.42	5.354		
14,750.00	11,768.00	14,936.81	11,798.00	62.02	62.69	-92.49	-3,179.85	292.85	660.76	536.26	124.50	5.307		
14,800.00	11,768.00	14,986.81	11,798.00	62.56	63.23	-92.49	-3,229.85	292.98	660.76	535.18	125.58	5.262		
14,850.00	11,768.00	15,036.81	11,798.00	63.11	63.77	-92.49	-3,279.85	293.12	660.75	534.08	126.68	5.216		
14,900.00	11,768.00	15,086.81	11,798.00	63.65	64.32	-92.49	-3,329.85	293.25	660.75	532.98	127.77	5.171		
14,950.00	11,768.00	15,136.81	11,798.00	64.21	64.88	-92.49	-3,379.85	293.38	660.75	531.87	128.88	5.127		
15,000.00	11,768.00	15,186.81	11,798.00	64.76	65.43	-92.49	-3,429.85	293.52	660.75	530.76	129.99	5.083		
15,050.00	11,768.00	15,236.81	11,798.00	65.32	65.99	-92.49	-3,479.85	293.65	660.75	529.63	131.11	5.039		
15,100.00	11,768.00	15,286.81	11,798.00	65.88	66.56	-92.49	-3,529.85	293.79	660.74	528.51	132.24	4.997 Alert		
15,150.00	11,768.00	15,336.81	11,798.00	66.45	67.12	-92.49	-3,579.85	293.92	660.74	527.37	133.37	4.954 Alert		
15,200.00	11,768.00	15,386.81	11,798.00	67.01	67.69	-92.49	-3,629.85	294.05	660.74	526.23	134.51	4.912 Alert		
15,250.00	11,768.00	15,436.81	11,798.00	67.58	68.27	-92.49	-3,679.85	294.19	660.74	525.08	135.66	4.871 Alert		
15,300.00	11,768.00	15,486.81	11,798.00	68.16	68.84	-92.49	-3,729.85	294.32	660.74	523.93	136.81	4.830 Alert		
15,350.00	11,768.00	15,536.81	11,798.00	68.73	69.42	-92.49	-3,779.85	294.45	660.74	522.77	137.96	4.789 Alert		
15,400.00	11,768.00	15,586.81	11,798.00	69.31	70.00	-92.49	-3,829.85	294.59	660.73	521.61	139.12	4.749 Alert		
15,450.00	11,768.00	15,636.81	11,798.00	69.90	70.58	-92.49	-3,879.85	294.72	660.73	520.44	140.29	4.710 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 624H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
 TVD Reference: RKB @ 3361.80ft
 MD Reference: RKB @ 3361.80ft
 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		
15,500.00	11,768.00	15,686.81	11,798.00	70.48	71.17	-92.49	-3,929.85	294.85	660.73	519.27	141.46	4.671	Alert	
15,550.00	11,768.00	15,736.81	11,798.00	71.07	71.76	-92.49	-3,979.85	294.99	660.73	518.08	142.64	4.632	Alert	
15,600.00	11,768.00	15,786.81	11,798.00	71.66	72.35	-92.49	-4,029.85	295.12	660.73	516.90	143.82	4.594	Alert	
15,650.00	11,768.00	15,836.81	11,798.00	72.25	72.94	-92.49	-4,079.85	295.25	660.72	515.71	145.01	4.556	Alert	
15,700.00	11,768.00	15,886.81	11,798.00	72.85	73.54	-92.49	-4,129.85	295.39	660.72	514.52	146.20	4.519	Alert	
15,750.00	11,768.00	15,936.81	11,798.00	73.45	74.14	-92.49	-4,179.85	295.52	660.72	513.32	147.40	4.482	Alert	
15,800.00	11,768.00	15,986.81	11,798.00	74.04	74.74	-92.49	-4,229.85	295.66	660.72	512.11	148.60	4.446	Alert	
15,850.00	11,768.00	16,036.81	11,798.00	74.65	75.34	-92.49	-4,279.85	295.79	660.72	510.90	149.81	4.410	Alert	
15,900.00	11,768.00	16,086.81	11,798.00	75.25	75.95	-92.49	-4,329.85	295.92	660.71	509.69	151.02	4.375	Alert	
15,950.00	11,768.00	16,136.81	11,798.00	75.86	76.55	-92.49	-4,379.85	296.06	660.71	508.48	152.24	4.340	Alert	
16,000.00	11,768.00	16,186.81	11,798.00	76.47	77.16	-92.49	-4,429.85	296.19	660.71	507.26	153.45	4.306	Alert	
16,050.00	11,768.00	16,236.81	11,798.00	77.08	77.78	-92.49	-4,479.85	296.32	660.71	506.03	154.68	4.271	Alert	
16,100.00	11,768.00	16,286.81	11,798.00	77.69	78.39	-92.49	-4,529.85	296.46	660.71	504.80	155.90	4.238	Alert	
16,150.00	11,768.00	16,336.81	11,798.00	78.30	79.00	-92.49	-4,579.85	296.59	660.70	503.57	157.14	4.205	Alert	
16,200.00	11,768.00	16,386.81	11,798.00	78.92	79.62	-92.49	-4,629.85	296.72	660.70	502.33	158.37	4.172	Alert	
16,250.00	11,768.00	16,436.81	11,798.00	79.54	80.24	-92.49	-4,679.85	296.86	660.70	501.09	159.61	4.140	Alert	
16,300.00	11,768.00	16,486.81	11,798.00	80.16	80.86	-92.49	-4,729.85	296.99	660.70	499.85	160.85	4.108	Alert	
16,350.00	11,768.00	16,536.81	11,798.00	80.78	81.48	-92.49	-4,779.85	297.12	660.70	498.60	162.10	4.076	Alert	
16,400.00	11,768.00	16,586.81	11,798.00	81.40	82.11	-92.49	-4,829.85	297.26	660.69	497.35	163.34	4.045	Alert	
16,450.00	11,768.00	16,636.81	11,798.00	82.03	82.73	-92.49	-4,879.85	297.39	660.69	496.10	164.60	4.014	Alert	
16,500.00	11,768.00	16,686.81	11,798.00	82.66	83.36	-92.49	-4,929.85	297.52	660.69	494.84	165.85	3.984	Alert	
16,550.00	11,768.00	16,736.81	11,798.00	83.29	83.99	-92.49	-4,979.85	297.66	660.69	493.58	167.11	3.954	Alert	
16,600.00	11,768.00	16,786.81	11,798.00	83.92	84.62	-92.49	-5,029.84	297.79	660.69	492.32	168.37	3.924	Alert	
16,650.00	11,768.00	16,836.81	11,798.00	84.55	85.25	-92.49	-5,079.84	297.93	660.68	491.05	169.64	3.895	Alert	
16,700.00	11,768.00	16,886.81	11,798.00	85.18	85.89	-92.49	-5,129.84	298.06	660.68	489.78	170.90	3.866	Alert	
16,750.00	11,768.00	16,936.81	11,798.00	85.82	86.52	-92.49	-5,179.84	298.19	660.68	488.51	172.17	3.837	Alert	
16,800.00	11,768.00	16,986.81	11,798.00	86.45	87.16	-92.49	-5,229.84	298.33	660.68	487.23	173.45	3.809	Alert	
16,850.00	11,768.00	17,036.81	11,798.00	87.09	87.80	-92.49	-5,279.84	298.46	660.68	485.95	174.72	3.781	Alert	
16,900.00	11,768.00	17,086.81	11,798.00	87.73	88.44	-92.49	-5,329.84	298.59	660.67	484.67	176.00	3.754	Alert	
16,950.00	11,768.00	17,136.81	11,798.00	88.37	89.08	-92.49	-5,379.84	298.73	660.67	483.39	177.29	3.727	Alert	
17,000.00	11,768.00	17,186.81	11,798.00	89.01	89.72	-92.49	-5,429.84	298.86	660.67	482.10	178.57	3.700	Alert	
17,050.00	11,768.00	17,236.81	11,798.00	89.65	90.36	-92.49	-5,479.84	298.99	660.67	480.81	179.86	3.673	Alert	
17,100.00	11,768.00	17,286.81	11,798.00	90.30	91.01	-92.49	-5,529.84	299.13	660.67	479.52	181.15	3.647	Alert	
17,150.00	11,768.00	17,336.81	11,798.00	90.94	91.65	-92.49	-5,579.84	299.26	660.66	478.23	182.44	3.621	Alert	
17,200.00	11,768.00	17,386.81	11,798.00	91.59	92.30	-92.49	-5,629.84	299.39	660.66	476.93	183.73	3.596	Alert	
17,250.00	11,768.00	17,436.81	11,798.00	92.24	92.95	-92.49	-5,679.84	299.53	660.66	475.63	185.03	3.571	Alert	
17,300.00	11,768.00	17,486.81	11,798.00	92.89	93.60	-92.49	-5,729.84	299.66	660.66	474.33	186.33	3.546	Alert	
17,350.00	11,768.00	17,536.81	11,798.00	93.54	94.25	-92.49	-5,779.84	299.80	660.66	473.03	187.63	3.521	Alert	
17,400.00	11,768.00	17,586.81	11,798.00	94.19	94.90	-92.49	-5,829.84	299.93	660.65	471.72	188.93	3.497	Alert	
17,450.00	11,768.00	17,636.81	11,798.00	94.84	95.55	-92.49	-5,879.84	300.06	660.65	470.41	190.24	3.473	Alert	
17,500.00	11,768.00	17,686.81	11,798.00	95.50	96.21	-92.49	-5,929.84	300.20	660.65	469.11	191.54	3.449	Alert	
17,550.00	11,768.00	17,736.81	11,798.00	96.15	96.86	-92.49	-5,979.84	300.33	660.65	467.79	192.86	3.426	Alert	
17,600.00	11,768.00	17,786.81	11,798.00	96.81	97.52	-92.49	-6,029.84	300.46	660.65	466.48	194.17	3.402	Alert	
17,650.00	11,768.00	17,836.81	11,798.00	97.46	98.17	-92.49	-6,079.84	300.60	660.64	465.16	195.48	3.380	Alert	
17,700.00	11,768.00	17,886.81	11,798.00	98.12	98.83	-92.49	-6,129.84	300.73	660.64	463.85	196.80	3.357	Alert	
17,750.00	11,768.00	17,936.81	11,798.00	98.78	99.49	-92.49	-6,179.84	300.86	660.64	462.53	198.11	3.335	Alert	
17,800.00	11,768.00	17,986.81	11,798.00	99.44	100.15	-92.49	-6,229.84	301.00	660.64	461.21	199.43	3.313	Alert	
17,850.00	11,768.00	18,036.81	11,798.00	100.10	100.81	-92.49	-6,279.84	301.13	660.64	459.88	200.76	3.291	Alert	
17,900.00	11,768.00	18,086.81	11,798.00	100.76	101.47	-92.49	-6,329.84	301.26	660.64	458.56	202.08	3.269	Alert	
17,950.00	11,768.00	18,136.81	11,798.00	101.42	102.13	-92.49	-6,379.84	301.40	660.63	457.23	203.40	3.248	Alert	
18,000.00	11,768.00	18,186.81	11,798.00	102.09	102.80	-92.49	-6,429.84	301.53	660.63	455.90	204.73	3.227	Alert	
18,050.00	11,768.00	18,236.81	11,798.00	102.75	103.46	-92.49	-6,479.84	301.66	660.63	454.57	206.06	3.206	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 624H
Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	11,768.00	18,286.81	11,798.00	103.41	104.13	-92.49	-6,529.84	301.80	660.63	453.24	207.39	3.185 Alert	
18,150.00	11,768.00	18,336.81	11,798.00	104.08	104.79	-92.49	-6,579.84	301.93	660.63	451.91	208.72	3.165 Alert	
18,200.00	11,768.00	18,386.81	11,798.00	104.75	105.46	-92.49	-6,629.84	302.07	660.62	450.57	210.05	3.145 Alert	
18,250.00	11,768.00	18,436.81	11,798.00	105.41	106.13	-92.49	-6,679.84	302.20	660.62	449.23	211.39	3.125 Alert	
18,300.00	11,768.00	18,486.81	11,798.00	106.08	106.80	-92.49	-6,729.84	302.33	660.62	447.90	212.72	3.106 Alert	
18,350.00	11,768.00	18,536.81	11,798.00	106.75	107.46	-92.49	-6,779.84	302.47	660.62	446.55	214.06	3.086 Alert	
18,400.00	11,768.00	18,586.81	11,798.00	107.42	108.13	-92.49	-6,829.84	302.60	660.62	445.21	215.40	3.067 Alert	
18,450.00	11,768.00	18,636.81	11,798.00	108.09	108.80	-92.49	-6,879.84	302.73	660.61	443.87	216.74	3.048 Alert	
18,500.00	11,768.00	18,686.81	11,798.00	108.76	109.48	-92.49	-6,929.84	302.87	660.61	442.53	218.08	3.029 Alert	
18,550.00	11,768.00	18,736.81	11,798.00	109.43	110.15	-92.49	-6,979.84	303.00	660.61	441.18	219.43	3.011 Alert	
18,600.00	11,768.00	18,786.81	11,798.00	110.11	110.82	-92.49	-7,029.84	303.13	660.61	439.83	220.77	2.992 Alert	
18,650.00	11,768.00	18,836.81	11,798.00	110.78	111.49	-92.49	-7,079.84	303.27	660.61	438.49	222.12	2.974 Alert	
18,700.00	11,768.00	18,886.81	11,798.00	111.45	112.17	-92.49	-7,129.84	303.40	660.60	437.14	223.47	2.956 Alert	
18,750.00	11,768.00	18,936.81	11,798.00	112.13	112.84	-92.49	-7,179.84	303.53	660.60	435.78	224.82	2.938 Alert	
18,800.00	11,768.00	18,986.81	11,798.00	112.80	113.52	-92.49	-7,229.84	303.67	660.60	434.43	226.17	2.921 Alert	
18,850.00	11,768.00	19,036.81	11,798.00	113.48	114.19	-92.49	-7,279.84	303.80	660.60	433.08	227.52	2.903 Alert	
18,900.00	11,768.00	19,086.81	11,798.00	114.16	114.87	-92.49	-7,329.84	303.94	660.60	431.72	228.87	2.886 Alert	
18,950.00	11,768.00	19,136.81	11,798.00	114.83	115.55	-92.49	-7,379.84	304.07	660.59	430.37	230.23	2.869 Alert	
19,000.00	11,768.00	19,186.81	11,798.00	115.51	116.22	-92.49	-7,429.84	304.20	660.59	429.01	231.58	2.853 Alert	
19,050.00	11,768.00	19,236.81	11,798.00	116.19	116.90	-92.49	-7,479.84	304.34	660.59	427.65	232.94	2.836 Alert	
19,100.00	11,768.00	19,286.81	11,798.00	116.87	117.58	-92.49	-7,529.84	304.47	660.59	426.29	234.30	2.819 Alert	
19,150.00	11,768.00	19,336.81	11,798.00	117.55	118.26	-92.49	-7,579.84	304.60	660.59	424.93	235.65	2.803 Alert	
19,200.00	11,768.00	19,386.81	11,798.00	118.23	118.94	-92.49	-7,629.84	304.74	660.58	423.57	237.01	2.787 Alert	
19,250.00	11,768.00	19,436.81	11,798.00	118.91	119.62	-92.49	-7,679.84	304.87	660.58	422.21	238.38	2.771 Alert	
19,300.00	11,768.00	19,486.81	11,798.00	119.59	120.30	-92.49	-7,729.84	305.00	660.58	420.84	239.74	2.755 Alert	
19,350.00	11,768.00	19,536.81	11,798.00	120.27	120.98	-92.49	-7,779.84	305.14	660.58	419.48	241.10	2.740 Alert	
19,400.00	11,768.00	19,586.81	11,798.00	120.95	121.67	-92.49	-7,829.83	305.27	660.58	418.11	242.46	2.724 Alert	
19,450.00	11,768.00	19,636.81	11,798.00	121.64	122.35	-92.49	-7,879.83	305.40	660.57	416.74	243.83	2.709 Alert	
19,500.00	11,768.00	19,686.81	11,798.00	122.32	123.03	-92.49	-7,929.83	305.54	660.57	415.38	245.20	2.694 Alert	
19,550.00	11,768.00	19,736.81	11,798.00	123.00	123.72	-92.49	-7,979.83	305.67	660.57	414.01	246.56	2.679 Alert	
19,600.00	11,768.00	19,786.81	11,798.00	123.69	124.40	-92.49	-8,029.83	305.81	660.57	412.64	247.93	2.664 Alert	
19,650.00	11,768.00	19,836.81	11,798.00	124.37	125.08	-92.49	-8,079.83	305.94	660.57	411.27	249.30	2.650 Alert	
19,700.00	11,768.00	19,886.81	11,798.00	125.06	125.77	-92.49	-8,129.83	306.07	660.56	409.89	250.67	2.635 Alert	
19,750.00	11,768.00	19,936.81	11,798.00	125.74	126.46	-92.49	-8,179.83	306.21	660.56	408.52	252.04	2.621 Alert	
19,800.00	11,768.00	19,986.81	11,798.00	126.43	127.14	-92.49	-8,229.83	306.34	660.56	407.15	253.41	2.607 Alert	
19,850.00	11,768.00	20,036.81	11,798.00	127.12	127.83	-92.49	-8,279.83	306.47	660.56	405.77	254.79	2.593 Alert	
19,900.00	11,768.00	20,086.81	11,798.00	127.80	128.51	-92.49	-8,329.83	306.61	660.56	404.40	256.16	2.579 Alert	
19,950.00	11,768.00	20,136.81	11,798.00	128.49	129.20	-92.49	-8,379.83	306.74	660.55	403.02	257.53	2.565 Alert	
20,000.00	11,768.00	20,186.81	11,798.00	129.18	129.89	-92.49	-8,429.83	306.87	660.55	401.64	258.91	2.551 Alert	
20,050.00	11,768.00	20,236.81	11,798.00	129.87	130.58	-92.49	-8,479.83	307.01	660.55	400.26	260.29	2.538 Alert	
20,100.00	11,768.00	20,286.81	11,798.00	130.55	131.27	-92.49	-8,529.83	307.14	660.55	398.89	261.66	2.524 Alert	
20,150.00	11,768.00	20,336.81	11,798.00	131.24	131.96	-92.49	-8,579.83	307.27	660.55	397.51	263.04	2.511 Alert	
20,200.00	11,768.00	20,386.81	11,798.00	131.93	132.65	-92.49	-8,629.83	307.41	660.54	396.13	264.42	2.498 Minor Risk	
20,250.00	11,768.00	20,436.81	11,798.00	132.62	133.34	-92.49	-8,679.83	307.54	660.54	394.74	265.80	2.485 Minor Risk	
20,300.00	11,768.00	20,486.81	11,798.00	133.31	134.03	-92.49	-8,729.83	307.67	660.54	393.36	267.18	2.472 Minor Risk	
20,350.00	11,768.00	20,536.81	11,798.00	134.00	134.72	-92.49	-8,779.83	307.81	660.54	391.98	268.56	2.460 Minor Risk	
20,400.00	11,768.00	20,586.81	11,798.00	134.70	135.41	-92.49	-8,829.83	307.94	660.54	390.59	269.94	2.447 Minor Risk	
20,450.00	11,768.00	20,636.81	11,798.00	135.39	136.10	-92.49	-8,879.83	308.08	660.54	389.21	271.33	2.434 Minor Risk	
20,500.00	11,768.00	20,686.81	11,798.00	136.08	136.79	-92.49	-8,929.83	308.21	660.53	387.82	272.71	2.422 Minor Risk	
20,550.00	11,768.00	20,736.81	11,798.00	136.77	137.48	-92.49	-8,979.83	308.34	660.53	386.44	274.09	2.410 Minor Risk	
20,600.00	11,768.00	20,786.81	11,798.00	137.46	138.18	-92.49	-9,029.83	308.48	660.53	385.05	275.48	2.398 Minor Risk	
20,650.00	11,768.00	20,836.81	11,798.00	138.16	138.87	-92.49	-9,079.83	308.61	660.53	383.66	276.86	2.386 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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 716H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		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	
20,700.00	11,768.00	20,886.81	11,798.00	138.85	139.56	-92.49	-9,129.83	308.74	660.53	382.28	278.25	2.374	Minor Risk
20,750.00	11,768.00	20,936.81	11,798.00	139.54	140.25	-92.49	-9,179.83	308.88	660.52	380.89	279.64	2.362	Minor Risk
20,800.00	11,768.00	20,986.81	11,798.00	140.24	140.95	-92.49	-9,229.83	309.01	660.52	379.50	281.02	2.350	Minor Risk
20,850.00	11,768.00	21,036.81	11,798.00	140.93	141.64	-92.49	-9,279.83	309.14	660.52	378.11	282.41	2.339	Minor Risk
20,900.00	11,768.00	21,086.81	11,798.00	141.63	142.34	-92.49	-9,329.83	309.28	660.52	376.72	283.80	2.327	Minor Risk
20,950.00	11,768.00	21,136.81	11,798.00	142.32	143.03	-92.49	-9,379.83	309.41	660.52	375.33	285.19	2.316	Minor Risk
21,000.00	11,768.00	21,186.81	11,798.00	143.02	143.73	-92.49	-9,429.83	309.54	660.51	373.93	286.58	2.305	Minor Risk
21,050.00	11,768.00	21,236.81	11,798.00	143.71	144.42	-92.49	-9,479.83	309.68	660.51	372.54	287.97	2.294	Minor Risk
21,100.00	11,768.00	21,286.81	11,798.00	144.41	145.12	-92.49	-9,529.83	309.81	660.51	371.15	289.36	2.283	Minor Risk
21,150.00	11,768.00	21,336.81	11,798.00	145.10	145.81	-92.49	-9,579.83	309.95	660.51	369.76	290.75	2.272	Minor Risk
21,200.00	11,768.00	21,386.81	11,798.00	145.80	146.51	-92.49	-9,629.83	310.08	660.51	368.36	292.14	2.261	Minor Risk
21,250.00	11,768.00	21,436.81	11,798.00	146.50	147.21	-92.49	-9,679.83	310.21	660.50	366.97	293.54	2.250	Minor Risk
21,300.00	11,768.00	21,486.81	11,798.00	147.19	147.90	-92.49	-9,729.83	310.35	660.50	365.57	294.93	2.240	Minor Risk
21,350.00	11,768.00	21,536.81	11,798.00	147.89	148.60	-92.49	-9,779.83	310.48	660.50	364.17	296.33	2.229	Minor Risk
21,400.00	11,768.00	21,586.81	11,798.00	148.59	149.30	-92.49	-9,829.83	310.61	660.50	362.78	297.72	2.219	Minor Risk
21,450.00	11,768.00	21,636.81	11,798.00	149.29	150.00	-92.49	-9,879.83	310.75	660.50	361.38	299.12	2.208	Minor Risk
21,500.00	11,768.00	21,686.81	11,798.00	149.99	150.70	-92.49	-9,929.83	310.88	660.49	359.98	300.51	2.198	Minor Risk
21,550.00	11,768.00	21,736.81	11,798.00	150.68	151.39	-92.49	-9,979.83	311.01	660.49	358.58	301.91	2.188	Minor Risk
21,600.00	11,768.00	21,786.81	11,798.00	151.38	152.09	-92.49	-10,029.83	311.15	660.49	357.19	303.30	2.178	Minor Risk
21,650.00	11,768.00	21,836.81	11,798.00	152.08	152.79	-92.49	-10,079.83	311.28	660.49	355.79	304.70	2.168	Minor Risk
21,700.00	11,768.00	21,886.81	11,798.00	152.78	153.49	-92.49	-10,129.83	311.41	660.49	354.39	306.10	2.158	Minor Risk
21,750.00	11,768.00	21,936.81	11,798.00	153.48	154.19	-92.49	-10,179.83	311.55	660.48	352.99	307.50	2.148	Minor Risk
21,800.00	11,768.00	21,986.81	11,798.00	154.18	154.89	-92.49	-10,229.83	311.68	660.48	351.59	308.90	2.138	Minor Risk
21,850.00	11,768.00	22,036.81	11,798.00	154.88	155.59	-92.49	-10,279.83	311.81	660.48	350.18	310.30	2.129	Minor Risk
21,900.00	11,768.00	22,086.81	11,798.00	155.58	156.29	-92.49	-10,329.83	311.95	660.48	348.78	311.70	2.119	Minor Risk
21,904.71	11,768.00	22,091.52	11,798.00	155.65	156.36	-92.49	-10,334.54	311.96	660.48	348.65	311.83	2.118	Minor Risk, CC, ES, SF

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 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
0.00	0.00	1.00	1.00	0.50	0.50	89.64	4.58	729.87	729.89				
50.00	50.00	51.00	51.00	0.50	0.50	89.64	4.58	729.87	729.89	728.88	1.01	725.041	
100.00	100.00	101.00	101.00	0.52	0.52	89.64	4.58	729.87	729.89	728.85	1.04	704.215	
150.00	150.00	151.00	151.00	0.59	0.59	89.64	4.58	729.87	729.89	728.70	1.18	617.295	
200.00	200.00	201.00	201.00	0.70	0.70	89.64	4.58	729.87	729.89	728.48	1.41	518.854	
250.00	250.00	251.00	251.00	0.84	0.84	89.64	4.58	729.87	729.89	728.21	1.68	434.894	
300.00	300.00	301.00	301.00	0.99	0.99	89.64	4.58	729.87	729.89	727.91	1.98	369.046	
350.00	350.00	351.00	351.00	1.15	1.15	89.64	4.58	729.87	729.89	727.59	2.29	318.143	
400.00	400.00	401.00	401.00	1.31	1.31	89.64	4.58	729.87	729.89	727.26	2.62	278.424	
450.00	450.00	451.00	451.00	1.48	1.48	89.64	4.58	729.87	729.89	726.93	2.96	246.915	
500.00	500.00	501.00	501.00	1.65	1.65	89.64	4.58	729.87	729.89	726.59	3.30	221.473	
550.00	550.00	551.00	551.00	1.82	1.82	89.64	4.58	729.87	729.89	726.25	3.64	200.585	
600.00	600.00	601.00	601.00	1.99	1.99	89.64	4.58	729.87	729.89	725.90	3.98	183.173	
650.00	650.00	651.00	651.00	2.16	2.17	89.64	4.58	729.87	729.89	725.55	4.33	168.463	
700.00	700.00	701.00	701.00	2.34	2.34	89.64	4.58	729.87	729.89	725.20	4.68	155.887	
750.00	750.00	751.00	751.00	2.51	2.52	89.64	4.58	729.87	729.89	724.85	5.03	145.022	
800.00	800.00	801.00	801.00	2.69	2.69	89.64	4.58	729.87	729.89	724.50	5.38	135.548	
850.00	850.00	851.00	851.00	2.87	2.87	89.64	4.58	729.87	729.89	724.15	5.74	127.217	
900.00	900.00	901.00	901.00	3.04	3.05	89.64	4.58	729.87	729.89	723.80	6.09	119.837	
950.00	950.00	951.00	951.00	3.22	3.22	89.64	4.58	729.87	729.89	723.44	6.44	113.257	
1,000.00	1,000.00	1,001.00	1,001.00	3.40	3.40	89.64	4.58	729.87	729.89	723.09	6.80	107.354	
1,050.00	1,050.00	1,051.00	1,051.00	3.58	3.58	89.64	4.58	729.87	729.89	722.73	7.15	102.030	
1,100.00	1,100.00	1,101.00	1,101.00	3.75	3.76	89.64	4.58	729.87	729.89	722.38	7.51	97.205	
1,150.00	1,150.00	1,151.00	1,151.00	3.93	3.93	89.64	4.58	729.87	729.89	722.02	7.86	92.811	
1,200.00	1,200.00	1,201.00	1,201.00	4.11	4.11	89.64	4.58	729.87	729.89	721.67	8.22	88.795	
1,250.00	1,250.00	1,251.00	1,251.00	4.29	4.29	89.64	4.58	729.87	729.89	721.31	8.58	85.110	
1,300.00	1,300.00	1,301.00	1,301.00	4.46	4.47	89.64	4.58	729.87	729.89	720.95	8.93	81.717	
1,350.00	1,350.00	1,351.00	1,351.00	4.64	4.65	89.64	4.58	729.87	729.89	720.60	9.29	78.582	
1,400.00	1,400.00	1,401.00	1,401.00	4.82	4.82	89.64	4.58	729.87	729.89	720.24	9.64	75.678	
1,450.00	1,450.00	1,451.00	1,451.00	5.00	5.00	89.64	4.58	729.87	729.89	719.88	10.00	72.979	
1,500.00	1,500.00	1,501.00	1,501.00	5.18	5.18	89.64	4.58	729.87	729.89	719.53	10.36	70.466	
1,550.00	1,550.00	1,551.00	1,551.00	5.36	5.36	89.64	4.58	729.87	729.89	719.17	10.71	68.119	
1,600.00	1,600.00	1,601.00	1,601.00	5.53	5.54	89.64	4.58	729.87	729.89	718.81	11.07	65.923	
1,650.00	1,650.00	1,651.00	1,651.00	5.71	5.72	89.64	4.58	729.87	729.89	718.46	11.43	63.863	
1,700.00	1,700.00	1,701.00	1,701.00	5.89	5.89	89.64	4.58	729.87	729.89	718.10	11.79	61.928	
1,750.00	1,750.00	1,751.00	1,751.00	6.07	6.07	89.64	4.58	729.87	729.89	717.74	12.14	60.106	
1,800.00	1,800.00	1,801.00	1,801.00	6.25	6.25	89.64	4.58	729.87	729.89	717.39	12.50	58.388	
1,850.00	1,850.00	1,851.00	1,851.00	6.43	6.43	89.64	4.58	729.87	729.89	717.03	12.86	56.766	
1,900.00	1,900.00	1,901.00	1,901.00	6.61	6.61	89.64	4.58	729.87	729.89	716.67	13.22	55.230	
1,950.00	1,950.00	1,951.00	1,951.00	6.78	6.79	89.64	4.58	729.87	729.89	716.31	13.57	53.776	
2,000.00	2,000.00	2,001.00	2,001.00	6.96	6.97	89.64	4.58	729.87	729.89	715.96	13.93	52.396	
2,050.00	2,050.00	2,051.00	2,051.00	7.14	7.15	89.64	4.58	729.87	729.89	715.60	14.29	51.084	
2,100.00	2,100.00	2,101.00	2,101.00	7.32	7.32	89.64	4.58	729.87	729.89	715.24	14.65	49.837	
2,150.00	2,150.00	2,151.00	2,151.00	7.50	7.50	89.64	4.58	729.87	729.89	714.88	15.00	48.649	
2,200.00	2,200.00	2,201.00	2,201.00	7.68	7.68	89.64	4.58	729.87	729.89	714.53	15.36	47.516	
2,250.00	2,250.00	2,251.00	2,251.00	7.86	7.86	89.64	4.58	729.87	729.89	714.17	15.72	46.435	
2,300.00	2,300.00	2,301.00	2,301.00	8.04	8.04	89.64	4.58	729.87	729.89	713.81	16.08	45.401	
2,350.00	2,350.00	2,351.00	2,351.00	8.22	8.22	89.64	4.58	729.87	729.89	713.45	16.43	44.413	
2,400.00	2,400.00	2,401.00	2,401.00	8.39	8.40	89.64	4.58	729.87	729.89	713.09	16.79	43.466	
2,450.00	2,450.00	2,451.00	2,451.00	8.57	8.58	89.64	4.58	729.87	729.89	712.74	17.15	42.559	
2,500.00	2,500.00	2,501.00	2,501.00	8.75	8.76	89.64	4.58	729.87	729.89	712.38	17.51	41.690 CC	
2,550.00	2,550.00	2,551.00	2,551.00	8.93	8.93	174.32	4.58	729.87	730.10	712.24	17.86	40.876 ES	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
2,600.00	2,599.99	2,600.99	2,600.99	9.10	9.11	174.33	4.58	729.87	730.75	712.54	18.22	40.118	
2,650.00	2,649.98	2,650.98	2,650.98	9.27	9.29	174.34	4.58	729.87	731.84	713.27	18.57	39.420	
2,700.00	2,699.96	2,700.96	2,700.96	9.45	9.47	174.35	4.58	729.87	733.36	714.44	18.92	38.770	
2,750.00	2,749.92	2,750.92	2,750.92	9.62	9.65	174.36	4.58	729.87	735.31	716.05	19.27	38.166	
2,800.00	2,799.86	2,800.86	2,800.86	9.79	9.83	174.38	4.58	729.87	737.70	718.08	19.62	37.606	
2,850.00	2,849.78	2,850.78	2,850.78	9.96	10.01	174.39	4.58	729.87	740.52	720.55	19.97	37.087	
2,900.00	2,899.69	2,900.69	2,900.69	10.14	10.19	174.42	4.58	729.87	743.54	723.22	20.32	36.595	
2,950.00	2,949.60	2,950.60	2,950.60	10.31	10.37	174.44	4.58	729.87	746.56	725.89	20.67	36.120	
3,000.00	2,999.51	3,000.51	3,000.51	10.49	10.54	174.46	4.58	729.87	749.58	728.56	21.02	35.660	
3,050.00	3,049.41	3,050.41	3,050.41	10.66	10.72	174.48	4.58	729.87	752.60	731.23	21.37	35.215	
3,100.00	3,099.32	3,100.32	3,100.32	10.83	10.90	174.51	4.58	729.87	755.62	733.90	21.72	34.784	
3,150.00	3,149.23	3,150.23	3,150.23	11.01	11.08	174.53	4.58	729.87	758.65	736.57	22.08	34.366	
3,200.00	3,199.14	3,200.14	3,200.14	11.19	11.26	174.55	4.58	729.87	761.67	739.24	22.43	33.961	
3,250.00	3,249.04	3,250.04	3,250.04	11.36	11.44	174.57	4.58	729.87	764.69	741.91	22.78	33.568	
3,300.00	3,298.95	3,300.05	3,299.95	11.54	11.62	174.59	4.58	729.87	767.71	744.58	23.13	33.187	
3,350.00	3,348.86	3,349.86	3,349.86	11.71	11.79	174.61	4.58	729.87	770.73	747.25	23.49	32.817	
3,400.00	3,398.77	3,400.23	3,399.77	11.89	11.98	174.64	4.58	729.87	773.75	749.91	23.84	32.456	
3,450.00	3,448.68	3,449.68	3,449.68	12.07	12.15	174.66	4.58	729.87	776.77	752.58	24.19	32.109	
3,500.00	3,498.58	3,500.42	3,499.58	12.24	12.33	174.68	4.58	729.87	779.80	755.25	24.55	31.766	
3,550.00	3,548.49	3,549.49	3,549.49	12.42	12.51	174.70	4.58	729.87	782.82	757.92	24.90	31.440	
3,600.00	3,598.40	3,600.60	3,599.40	12.60	12.69	174.72	4.58	729.87	785.84	760.58	25.26	31.114	
3,650.00	3,648.31	3,649.31	3,649.31	12.78	12.87	174.74	4.58	729.87	788.86	763.26	25.61	30.808	
3,700.00	3,698.22	3,700.78	3,699.22	12.95	13.05	174.76	4.58	729.87	791.88	765.92	25.97	30.497	
3,750.00	3,748.12	3,749.12	3,749.12	13.13	13.22	174.78	4.58	729.87	794.91	768.59	26.31	30.208	
3,800.00	3,798.03	3,800.97	3,799.03	13.31	13.41	174.80	4.58	729.87	797.93	771.25	26.68	29.913	
3,850.00	3,847.94	3,848.94	3,848.94	13.49	13.58	174.82	4.58	729.87	800.95	773.93	27.02	29.640	
3,900.00	3,897.85	3,901.15	3,898.85	13.67	13.77	174.84	4.58	729.87	803.97	776.59	27.39	29.358	
3,950.00	3,947.75	3,948.75	3,948.75	13.84	13.94	174.86	4.58	729.87	807.00	779.26	27.73	29.100	
4,000.00	3,997.66	3,998.66	3,998.66	14.02	14.12	174.88	4.58	729.87	810.02	781.93	28.09	28.840	
4,050.00	4,047.57	4,042.84	4,042.84	14.20	14.28	174.88	4.71	730.02	813.21	784.80	28.42	28.617	
4,100.00	4,097.48	4,088.82	4,086.81	14.38	14.43	174.87	5.12	730.49	816.77	788.02	28.75	28.413	
4,150.00	4,147.39	4,130.74	4,130.72	14.56	14.59	174.84	5.80	731.28	820.68	791.61	29.07	28.229	
4,200.00	4,197.29	4,174.61	4,174.56	14.74	14.74	174.79	6.75	732.39	824.96	795.56	29.40	28.064	
4,250.00	4,247.20	4,221.77	4,221.69	14.92	14.91	174.72	8.03	733.86	829.54	799.81	29.73	27.898	
4,300.00	4,297.11	4,271.55	4,271.42	15.10	15.08	174.64	9.41	735.46	834.16	804.07	30.09	27.726	
4,350.00	4,347.02	4,321.32	4,321.15	15.28	15.26	174.57	10.78	737.05	838.77	808.34	30.44	27.558	
4,400.00	4,396.92	4,371.10	4,370.88	15.46	15.44	174.49	12.16	738.64	843.39	812.60	30.79	27.393	
4,450.00	4,446.83	4,420.87	4,420.61	15.64	15.61	174.42	13.54	740.23	848.01	816.87	31.14	27.232	
4,500.00	4,496.74	4,470.65	4,470.34	15.82	15.79	174.35	14.91	741.82	852.64	821.14	31.49	27.075	
4,550.00	4,546.65	4,520.42	4,520.07	16.00	15.96	174.28	16.29	743.41	857.26	825.41	31.84	26.920	
4,600.00	4,596.56	4,570.20	4,569.80	16.18	16.14	174.21	17.66	745.00	861.88	829.69	32.20	26.770	
4,650.00	4,646.46	4,619.97	4,619.53	16.36	16.32	174.14	19.04	746.60	866.51	833.96	32.55	26.622	
4,700.00	4,696.37	4,669.74	4,669.26	16.54	16.49	174.07	20.41	748.19	871.14	838.23	32.90	26.477	
4,750.00	4,746.28	4,719.52	4,718.99	16.72	16.67	174.00	21.79	749.78	875.76	842.51	33.25	26.336	
4,800.00	4,796.19	4,769.29	4,768.72	16.90	16.85	173.93	23.17	751.37	880.39	846.79	33.61	26.197	
4,850.00	4,846.09	4,819.07	4,818.45	17.08	17.02	173.86	24.54	752.96	885.02	851.07	33.96	26.061	
4,900.00	4,896.00	4,868.84	4,868.18	17.26	17.20	173.80	25.92	754.55	889.66	855.34	34.31	25.928	
4,950.00	4,945.91	4,918.62	4,917.91	17.44	17.38	173.73	27.29	756.14	894.29	859.62	34.67	25.798	
5,000.00	4,995.82	4,968.39	4,967.64	17.62	17.55	173.66	28.67	757.74	898.92	863.90	35.02	25.670	
5,050.00	5,045.73	5,018.16	5,017.37	17.80	17.73	173.60	30.04	759.33	903.56	868.19	35.37	25.544	
5,100.00	5,095.63	5,067.94	5,067.10	17.98	17.91	173.54	31.42	760.92	908.20	872.47	35.73	25.421	
5,150.00	5,145.54	5,117.71	5,116.83	18.16	18.08	173.47	32.80	762.51	912.83	876.75	36.08	25.301	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
5,200.00	5,195.45	5,167.49	5,166.56	18.34	18.26	173.41	34.17	764.10	917.47	881.04	36.43	25.182	
5,250.00	5,245.36	5,217.26	5,216.29	18.53	18.44	173.35	35.55	765.69	922.11	885.32	36.79	25.066	
5,300.00	5,295.27	5,267.04	5,266.02	18.71	18.61	173.29	36.92	767.28	926.75	889.61	37.14	24.952	
5,350.00	5,345.17	5,316.81	5,315.75	18.89	18.79	173.23	38.30	768.88	931.39	893.90	37.49	24.841	
5,400.00	5,395.08	5,366.59	5,365.48	19.07	18.97	173.17	39.67	770.47	936.04	898.19	37.85	24.731	
5,450.00	5,444.99	5,416.36	5,415.21	19.25	19.15	173.11	41.05	772.06	940.68	902.48	38.20	24.623	
5,500.00	5,494.90	5,466.13	5,464.94	19.43	19.32	173.05	42.43	773.65	945.33	906.77	38.56	24.517	
5,550.00	5,544.80	5,515.91	5,514.67	19.61	19.50	172.99	43.80	775.24	949.97	911.06	38.91	24.413	
5,600.00	5,594.71	5,565.68	5,564.40	19.79	19.68	172.93	45.18	776.83	954.62	915.35	39.27	24.311	
5,650.00	5,644.62	5,615.46	5,614.13	19.98	19.86	172.87	46.55	778.42	959.27	919.65	39.62	24.211	
5,700.00	5,694.53	5,665.23	5,663.86	20.16	20.03	172.82	47.93	780.02	963.92	923.94	39.98	24.112	
5,750.00	5,744.44	5,715.01	5,713.59	20.34	20.21	172.76	49.30	781.61	968.57	928.24	40.33	24.016	
5,800.00	5,794.34	5,764.78	5,763.32	20.52	20.39	172.70	50.68	783.20	973.22	932.53	40.69	23.921	
5,850.00	5,844.25	5,814.55	5,813.05	20.70	20.57	172.65	52.06	784.79	977.87	936.83	41.04	23.827	
5,900.00	5,894.16	5,864.33	5,862.78	20.88	20.74	172.59	53.43	786.38	982.52	941.13	41.40	23.735	
5,950.00	5,944.07	5,914.10	5,912.51	21.06	20.92	172.54	54.81	787.97	987.17	945.42	41.75	23.645	
6,000.00	5,993.97	5,963.88	5,962.24	21.25	21.10	172.49	56.18	789.56	991.83	949.72	42.11	23.556	
6,050.00	6,043.88	6,013.65	6,011.97	21.43	21.28	172.43	57.56	791.15	996.48	954.02	42.46	23.468	
6,100.00	6,093.79	6,063.43	6,061.70	21.61	21.46	172.38	58.93	792.75	1,001.14	958.32	42.82	23.382	
6,150.00	6,143.70	6,113.20	6,111.43	21.79	21.63	172.33	60.31	794.34	1,005.80	962.62	43.17	23.298	
6,200.00	6,193.61	6,162.98	6,161.16	21.97	21.81	172.28	61.69	795.93	1,010.45	966.93	43.53	23.215	
6,250.00	6,243.51	6,212.75	6,210.89	22.16	21.99	172.23	63.06	797.52	1,015.11	971.23	43.88	23.133	
6,300.00	6,293.42	6,262.52	6,260.62	22.34	22.17	172.18	64.44	799.11	1,019.77	975.53	44.24	23.052	
6,350.00	6,343.33	6,312.30	6,310.35	22.52	22.35	172.13	65.81	800.70	1,024.43	979.84	44.59	22.973	
6,400.00	6,393.24	6,362.07	6,360.08	22.70	22.52	172.08	67.19	802.29	1,029.09	984.14	44.95	22.895	
6,450.00	6,443.14	6,411.85	6,409.81	22.88	22.70	172.03	68.56	803.89	1,033.75	988.45	45.30	22.818	
6,500.00	6,493.05	6,461.62	6,459.54	23.07	22.88	171.98	69.94	805.48	1,038.42	992.76	45.66	22.742	
6,550.00	6,542.96	6,511.40	6,509.27	23.25	23.06	171.93	71.32	807.07	1,043.08	997.06	46.02	22.668	
6,600.00	6,592.87	6,561.17	6,559.00	23.43	23.24	171.88	72.69	808.66	1,047.74	1,001.37	46.37	22.594	
6,650.00	6,642.78	6,610.94	6,608.73	23.61	23.42	171.83	74.07	810.25	1,052.41	1,005.68	46.73	22.522	
6,700.00	6,692.68	6,660.72	6,658.46	23.79	23.59	171.79	75.44	811.84	1,057.07	1,009.99	47.08	22.451	
6,750.00	6,742.59	6,710.49	6,708.19	23.98	23.77	171.74	76.82	813.43	1,061.74	1,014.30	47.44	22.381	
6,800.00	6,792.50	6,760.27	6,757.92	24.16	23.95	171.69	78.19	815.03	1,066.40	1,018.61	47.80	22.312	
6,850.00	6,842.41	6,810.04	6,807.65	24.34	24.13	171.65	79.57	816.62	1,071.07	1,022.92	48.15	22.244	
6,900.00	6,892.32	6,859.82	6,857.38	24.52	24.31	171.60	80.95	818.21	1,075.74	1,027.23	48.51	22.176	
6,950.00	6,942.22	6,909.59	6,907.11	24.71	24.49	171.56	82.32	819.80	1,080.41	1,031.54	48.86	22.110	
7,000.00	6,992.13	6,959.37	6,956.84	24.89	24.66	171.51	83.70	821.39	1,085.08	1,035.86	49.22	22.045	
7,050.00	7,042.04	7,009.14	7,006.57	25.07	24.84	171.47	85.07	822.98	1,089.75	1,040.17	49.58	21.981	
7,100.00	7,091.95	7,058.91	7,056.30	25.25	25.02	171.42	86.45	824.57	1,094.42	1,044.48	49.93	21.918	
7,150.00	7,141.85	7,108.69	7,106.03	25.44	25.20	171.38	87.82	826.17	1,099.09	1,048.80	50.29	21.855	
7,200.00	7,191.76	7,158.46	7,155.76	25.62	25.38	171.34	89.20	827.76	1,103.76	1,053.11	50.65	21.794	
7,250.00	7,241.67	7,208.24	7,205.49	25.80	25.56	171.29	90.58	829.35	1,108.43	1,057.43	51.00	21.733	
7,300.00	7,291.58	7,258.01	7,255.22	25.98	25.74	171.25	91.95	830.94	1,113.11	1,061.75	51.36	21.673	
7,350.00	7,341.49	7,307.79	7,304.95	26.17	25.91	171.21	93.33	832.53	1,117.78	1,066.06	51.72	21.614	
7,400.00	7,391.39	7,357.56	7,354.68	26.35	26.09	171.17	94.70	834.12	1,122.45	1,070.38	52.07	21.556	
7,450.00	7,441.30	7,407.33	7,404.41	26.53	26.27	171.13	96.08	835.71	1,127.13	1,074.70	52.43	21.498	
7,500.00	7,491.21	7,457.11	7,454.14	26.71	26.45	171.08	97.46	837.31	1,131.80	1,079.02	52.79	21.442	
7,550.00	7,541.12	7,506.88	7,503.87	26.90	26.63	171.04	98.83	838.90	1,136.48	1,083.34	53.14	21.386	
7,600.00	7,591.02	7,556.66	7,553.60	27.08	26.81	171.00	100.21	840.49	1,141.16	1,087.66	53.50	21.330	
7,650.00	7,640.93	7,606.43	7,603.33	27.26	26.99	170.96	101.58	842.08	1,145.83	1,091.98	53.86	21.276	
7,700.00	7,690.84	7,656.21	7,653.06	27.44	27.17	170.92	102.96	843.67	1,150.51	1,096.30	54.21	21.222	
7,750.00	7,740.75	7,705.98	7,702.79	27.63	27.34	170.88	104.33	845.26	1,155.19	1,100.62	54.57	21.169	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
7,800.00	7,790.66	7,755.76	7,752.52	27.81	27.52	170.84	105.71	846.85	1,159.87	1,104.94	54.93	21.117	
7,850.00	7,840.56	7,805.53	7,802.25	27.99	27.70	170.81	107.09	848.45	1,164.55	1,109.26	55.28	21.065	
7,900.00	7,890.47	7,855.30	7,851.98	28.17	27.88	170.77	108.46	850.04	1,169.23	1,113.59	55.64	21.014	
7,950.00	7,940.38	7,905.08	7,901.70	28.36	28.06	170.73	109.84	851.63	1,173.91	1,117.91	56.00	20.964	
8,000.00	7,990.29	7,954.85	7,951.43	28.54	28.24	170.69	111.21	853.22	1,178.59	1,122.23	56.35	20.914	
8,050.00	8,040.19	8,004.63	8,001.16	28.72	28.42	170.65	112.59	854.81	1,183.27	1,126.56	56.71	20.865	
8,100.00	8,090.10	8,054.40	8,050.89	28.91	28.60	170.62	113.96	856.40	1,187.95	1,130.88	57.07	20.816	
8,150.00	8,140.01	8,104.18	8,100.62	29.09	28.78	170.58	115.34	857.99	1,192.63	1,135.21	57.43	20.768	
8,200.00	8,189.92	8,153.95	8,150.35	29.27	28.96	170.54	116.72	859.58	1,197.32	1,139.53	57.78	20.721	
8,250.00	8,239.83	8,203.72	8,200.08	29.45	29.13	170.51	118.09	861.18	1,202.00	1,143.86	58.14	20.674	
8,300.00	8,289.73	8,253.50	8,249.81	29.64	29.31	170.47	119.47	862.77	1,206.68	1,148.19	58.50	20.628	
8,350.00	8,339.64	8,303.27	8,299.54	29.82	29.49	170.43	120.84	864.36	1,211.37	1,152.51	58.85	20.583	
8,400.00	8,389.55	8,353.05	8,349.27	30.00	29.67	170.40	122.22	865.95	1,216.05	1,156.84	59.21	20.537	
8,450.00	8,439.46	8,402.82	8,399.00	30.19	29.85	170.36	123.59	867.54	1,220.74	1,161.17	59.57	20.493	
8,500.00	8,489.37	8,452.60	8,448.73	30.37	30.03	170.33	124.97	869.13	1,225.42	1,165.50	59.93	20.449	
8,550.00	8,539.27	8,502.37	8,498.46	30.55	30.21	170.29	126.35	870.72	1,230.11	1,169.83	60.28	20.406	
8,600.00	8,589.18	8,552.15	8,548.19	30.73	30.39	170.26	127.72	872.32	1,234.80	1,174.16	60.64	20.363	
8,650.00	8,639.09	8,601.92	8,597.92	30.92	30.57	170.22	129.10	873.91	1,239.48	1,178.48	61.00	20.320	
8,700.00	8,689.00	8,651.69	8,647.65	31.10	30.75	170.19	130.47	875.50	1,244.17	1,182.81	61.36	20.278	
8,750.00	8,738.90	8,701.47	8,697.38	31.28	30.92	170.16	131.85	877.09	1,248.86	1,187.15	61.71	20.237	
8,800.00	8,788.82	8,751.25	8,747.12	31.47	31.10	170.13	133.22	878.68	1,253.49	1,191.42	62.07	20.195	
8,850.00	8,838.76	8,801.07	8,796.90	31.65	31.28	170.10	134.60	880.27	1,257.59	1,195.17	62.43	20.145	
8,900.00	8,888.72	8,850.94	8,846.72	31.83	31.46	170.07	135.98	881.87	1,261.05	1,198.27	62.78	20.085	
8,950.00	8,938.71	8,900.85	8,896.59	32.01	31.64	170.03	137.36	883.46	1,263.87	1,200.73	63.14	20.016	
9,000.00	8,988.71	8,950.79	8,946.48	32.18	31.82	169.98	138.74	885.06	1,266.04	1,202.54	63.50	19.938	
9,050.00	9,038.71	9,000.75	8,996.39	32.36	32.00	85.24	140.12	886.66	1,267.77	1,203.92	63.85	19.855	
9,100.00	9,088.71	9,050.70	9,046.30	32.53	32.18	85.18	141.50	888.26	1,269.48	1,205.27	64.20	19.772	
9,150.00	9,138.71	9,100.66	9,096.21	32.70	32.36	85.13	142.88	889.85	1,271.19	1,206.63	64.56	19.691	
9,200.00	9,188.71	9,150.61	9,146.13	32.88	32.54	85.07	144.26	891.45	1,272.90	1,207.99	64.91	19.610	
9,250.00	9,238.71	9,200.57	9,196.04	33.05	32.72	85.02	145.64	893.05	1,274.61	1,209.35	65.26	19.530	
9,300.00	9,288.71	9,250.52	9,245.95	33.22	32.90	84.96	147.02	894.64	1,276.32	1,210.71	65.62	19.451	
9,350.00	9,338.71	9,300.48	9,295.86	33.40	33.08	84.91	148.40	896.24	1,278.04	1,212.07	65.97	19.373	
9,400.00	9,388.71	9,350.43	9,345.77	33.57	33.26	84.85	149.79	897.84	1,279.75	1,213.43	66.32	19.295	
9,450.00	9,438.71	9,400.39	9,395.68	33.74	33.44	84.80	151.17	899.44	1,281.47	1,214.79	66.68	19.219	
9,500.00	9,488.71	9,450.34	9,445.59	33.92	33.62	84.74	152.55	901.03	1,283.19	1,216.16	67.03	19.143	
9,550.00	9,538.71	9,500.30	9,495.50	34.09	33.80	84.69	153.93	902.63	1,284.91	1,217.53	67.38	19.068	
9,600.00	9,588.71	9,550.25	9,545.41	34.26	33.98	84.63	155.31	904.23	1,286.63	1,218.89	67.74	18.994	
9,650.00	9,638.71	9,600.21	9,595.32	34.44	34.16	84.58	156.69	905.82	1,288.35	1,220.26	68.09	18.921	
9,700.00	9,688.71	9,650.17	9,645.23	34.61	34.34	84.52	158.07	907.42	1,290.08	1,221.63	68.45	18.848	
9,750.00	9,738.71	9,700.12	9,695.14	34.78	34.52	84.47	159.45	909.02	1,291.80	1,223.00	68.80	18.776	
9,800.00	9,788.71	9,750.08	9,745.05	34.96	34.70	84.41	160.83	910.62	1,293.53	1,224.37	69.15	18.705	
9,850.00	9,838.71	9,800.03	9,794.96	35.13	34.88	84.36	162.21	912.21	1,295.25	1,225.75	69.51	18.635	
9,900.00	9,888.71	9,849.99	9,844.88	35.31	35.06	84.31	163.59	913.81	1,296.98	1,227.12	69.86	18.565	
9,950.00	9,938.71	9,900.06	9,894.79	35.48	35.24	84.25	164.97	915.41	1,298.71	1,228.49	70.22	18.496	
10,000.00	9,988.71	9,949.90	9,944.70	35.65	35.42	84.20	166.35	917.01	1,300.44	1,229.87	70.57	18.428	
10,050.00	10,038.71	10,000.15	9,994.61	35.83	35.60	84.15	167.74	918.60	1,302.17	1,231.25	70.92	18.360	
10,100.00	10,088.71	10,049.81	10,044.52	36.00	35.78	84.09	169.12	920.20	1,303.90	1,232.63	71.28	18.293	
10,150.00	10,138.71	10,100.24	10,094.43	36.18	35.96	84.04	170.50	921.80	1,305.64	1,234.00	71.63	18.227	
10,200.00	10,188.71	10,149.72	10,144.34	36.35	36.14	83.99	171.88	923.39	1,307.37	1,235.38	71.99	18.161	
10,250.00	10,238.71	10,200.33	10,194.25	36.52	36.32	83.93	173.26	924.99	1,309.11	1,236.76	72.34	18.096	
10,300.00	10,288.71	10,249.63	10,244.16	36.70	36.50	83.88	174.64	926.59	1,310.84	1,238.15	72.69	18.032	
10,350.00	10,338.71	10,300.42	10,294.07	36.87	36.69	83.83	176.02	928.19	1,312.58	1,239.53	73.05	17.968	

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 624H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
 TVD Reference: RKB @ 3361.80ft
 MD Reference: RKB @ 3361.80ft
 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	
10,400.00	10,388.71	10,349.54	10,343.98	37.05	36.86	83.78	177.40	929.78	1,314.32	1,240.92	73.40	17.905	
10,450.00	10,438.71	10,400.51	10,393.89	37.22	37.05	83.72	178.78	931.38	1,316.06	1,242.30	73.76	17.842	
10,500.00	10,488.71	10,449.45	10,443.80	37.40	37.22	83.67	180.16	932.98	1,317.80	1,243.69	74.11	17.781	
10,550.00	10,538.71	10,500.59	10,493.71	37.57	37.41	83.62	181.54	934.57	1,319.54	1,245.07	74.47	17.719	
10,600.00	10,588.71	10,549.36	10,543.62	37.75	37.58	83.57	182.92	936.17	1,321.29	1,246.46	74.82	17.659	
10,650.00	10,638.71	10,600.68	10,593.54	37.92	37.77	83.52	184.30	937.77	1,323.03	1,247.85	75.18	17.598	
10,700.00	10,688.71	10,649.27	10,643.45	38.09	37.94	83.46	185.68	939.37	1,324.78	1,249.25	75.53	17.539	
10,750.00	10,738.71	10,699.23	10,693.36	38.27	38.12	83.41	187.07	940.96	1,326.52	1,250.64	75.89	17.480	
10,800.00	10,788.71	10,765.23	10,759.31	38.44	38.36	83.36	188.62	942.77	1,328.03	1,251.71	76.32	17.401	
10,850.00	10,838.71	10,835.41	10,829.48	38.62	38.61	83.32	189.47	943.75	1,328.80	1,252.03	76.77	17.310	
10,900.00	10,888.71	10,904.37	10,889.71	38.79	38.86	83.32	189.58	943.87	1,328.89	1,251.70	77.19	17.216	
10,950.00	10,938.71	10,945.63	10,939.71	38.97	39.00	83.32	189.58	943.87	1,328.89	1,251.38	77.51	17.144	
11,000.00	10,988.71	11,004.37	10,989.71	39.14	39.21	83.32	189.58	943.87	1,328.89	1,251.00	77.90	17.060	
11,050.00	11,038.71	11,045.63	11,039.71	39.32	39.36	83.32	189.58	943.87	1,328.89	1,250.67	78.22	16.989	
11,100.00	11,088.71	11,104.37	11,089.71	39.49	39.57	83.32	189.58	943.87	1,328.89	1,250.29	78.60	16.906	
11,150.00	11,138.71	11,145.63	11,139.71	39.67	39.71	83.32	189.58	943.87	1,328.89	1,249.97	78.93	16.837	
11,200.00	11,188.71	11,195.63	11,189.71	39.84	39.89	83.32	189.58	943.87	1,328.89	1,249.61	79.28	16.762	
11,250.00	11,238.67	11,254.50	11,248.56	40.01	40.09	-96.56	188.60	943.87	1,329.00	1,249.35	79.65	16.685	
11,300.00	11,288.29	11,322.59	11,316.13	40.18	40.31	-96.57	180.59	943.90	1,329.01	1,248.98	80.03	16.607	
11,350.00	11,337.21	11,390.53	11,382.14	40.34	40.51	-96.50	164.67	943.94	1,328.84	1,248.46	80.38	16.532	
11,400.00	11,385.04	11,458.02	11,445.38	40.49	40.70	-96.36	141.24	944.00	1,328.50	1,247.79	80.71	16.460	
11,450.00	11,431.43	11,524.75	11,504.79	40.64	40.87	-96.15	110.91	944.08	1,328.01	1,246.99	81.02	16.391	
11,500.00	11,476.02	11,590.49	11,559.47	40.78	41.01	-95.88	74.49	944.18	1,327.38	1,246.06	81.32	16.324	
11,550.00	11,518.47	11,655.02	11,608.75	40.91	41.14	-95.55	32.89	944.29	1,326.65	1,245.05	81.60	16.257	
11,600.00	11,558.46	11,718.17	11,652.15	41.03	41.25	-95.17	-12.95	944.41	1,325.85	1,243.96	81.88	16.192	
11,650.00	11,595.68	11,779.83	11,689.41	41.15	41.39	-94.75	-62.04	944.54	1,325.01	1,242.85	82.16	16.126	
11,700.00	11,629.85	11,839.95	11,720.45	41.26	41.52	-94.29	-113.49	944.68	1,324.17	1,241.73	82.44	16.062	
11,750.00	11,660.72	11,898.48	11,745.34	41.37	41.65	-93.81	-166.44	944.82	1,323.35	1,240.63	82.72	15.998	
11,800.00	11,688.04	11,955.45	11,764.26	41.48	41.78	-93.30	-220.15	944.96	1,322.59	1,239.60	83.00	15.936	
11,850.00	11,711.61	12,010.89	11,777.46	41.60	41.90	-92.77	-273.97	945.10	1,321.91	1,238.64	83.27	15.876	
11,900.00	11,731.24	12,064.84	11,785.25	41.72	42.02	-92.23	-327.34	945.24	1,321.33	1,237.80	83.53	15.818	
11,950.00	11,748.80	12,117.39	11,787.99	41.85	42.13	-91.68	-379.80	945.38	1,320.87	1,237.08	83.79	15.764	
12,000.00	11,758.16	12,166.32	11,788.00	41.98	42.24	-91.23	-428.73	945.51	1,320.57	1,236.53	84.04	15.713	
12,050.00	11,765.23	12,215.80	11,788.00	42.12	42.36	-90.94	-478.21	945.64	1,320.43	1,236.13	84.29	15.665	
12,100.00	11,767.96	12,265.71	11,788.00	42.25	42.50	-90.83	-528.12	945.78	1,320.38	1,235.82	84.56	15.615	
12,150.00	11,768.00	12,315.71	11,788.00	42.40	42.64	-90.82	-578.12	945.91	1,320.38	1,235.54	84.84	15.563	
12,200.00	11,768.00	12,365.71	11,788.00	42.54	42.80	-90.82	-628.12	946.04	1,320.38	1,235.24	85.14	15.509	
12,250.00	11,768.00	12,415.71	11,788.00	42.71	42.97	-90.82	-678.12	946.18	1,320.37	1,234.91	85.47	15.449	
12,300.00	11,768.00	12,465.71	11,788.00	42.88	43.15	-90.82	-728.12	946.31	1,320.37	1,234.56	85.81	15.387	
12,350.00	11,768.00	12,515.71	11,788.00	43.07	43.34	-90.82	-778.12	946.44	1,320.37	1,234.18	86.19	15.320	
12,400.00	11,768.00	12,565.71	11,788.00	43.26	43.54	-90.82	-828.12	946.57	1,320.37	1,233.79	86.58	15.250	
12,450.00	11,768.00	12,615.71	11,788.00	43.47	43.75	-90.82	-878.12	946.71	1,320.36	1,233.36	87.00	15.177	
12,500.00	11,768.00	12,665.71	11,788.00	43.68	43.98	-90.82	-928.12	946.84	1,320.36	1,232.93	87.44	15.101	
12,550.00	11,768.00	12,715.71	11,788.00	43.91	44.21	-90.82	-978.12	946.97	1,320.36	1,232.46	87.90	15.021	
12,600.00	11,768.00	12,765.71	11,788.00	44.15	44.46	-90.82	-1,028.12	947.10	1,320.36	1,231.98	88.38	14.940	
12,650.00	11,768.00	12,815.71	11,788.00	44.40	44.71	-90.82	-1,078.12	947.24	1,320.35	1,231.47	88.89	14.854	
12,700.00	11,768.00	12,865.71	11,788.00	44.66	44.98	-90.82	-1,128.12	947.37	1,320.35	1,230.94	89.41	14.768	
12,750.00	11,768.00	12,915.71	11,788.00	44.93	45.26	-90.82	-1,178.12	947.50	1,320.35	1,230.39	89.96	14.678	
12,800.00	11,768.00	12,965.71	11,788.00	45.20	45.54	-90.82	-1,228.12	947.64	1,320.34	1,229.83	90.52	14.587	
12,850.00	11,768.00	13,015.71	11,788.00	45.50	45.84	-90.82	-1,278.12	947.77	1,320.34	1,229.24	91.10	14.493	
12,900.00	11,768.00	13,065.71	11,788.00	45.79	46.15	-90.82	-1,328.12	947.90	1,320.34	1,228.63	91.71	14.398	
12,950.00	11,768.00	13,115.71	11,788.00	46.10	46.46	-90.82	-1,378.12	948.03	1,320.34	1,228.00	92.33	14.300	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design												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	
13,000.00	11,768.00	13,165.71	11,788.00	46.42	46.78	-90.82	-1,428.12	948.17	1,320.33	1,227.36	92.97	14.202	
13,050.00	11,768.00	13,215.71	11,788.00	46.75	47.11	-90.82	-1,478.12	948.30	1,320.33	1,226.70	93.63	14.101	
13,100.00	11,768.00	13,265.71	11,788.00	47.08	47.46	-90.82	-1,528.12	948.43	1,320.33	1,226.02	94.31	14.000	
13,150.00	11,768.00	13,315.71	11,788.00	47.43	47.81	-90.82	-1,578.11	948.57	1,320.33	1,225.32	95.01	13.897	
13,200.00	11,768.00	13,365.71	11,788.00	47.78	48.17	-90.82	-1,628.11	948.70	1,320.32	1,224.61	95.71	13.794	
13,250.00	11,768.00	13,415.71	11,788.00	48.14	48.53	-90.82	-1,678.11	948.83	1,320.32	1,223.87	96.45	13.690	
13,300.00	11,768.00	13,465.71	11,788.00	48.51	48.91	-90.82	-1,728.11	948.96	1,320.32	1,223.13	97.19	13.585	
13,350.00	11,768.00	13,515.71	11,788.00	48.89	49.29	-90.82	-1,778.11	949.10	1,320.31	1,222.36	97.95	13.479	
13,400.00	11,768.00	13,565.71	11,788.00	49.27	49.68	-90.82	-1,828.11	949.23	1,320.31	1,221.59	98.73	13.374	
13,450.00	11,768.00	13,615.71	11,788.00	49.66	50.08	-90.82	-1,878.11	949.36	1,320.31	1,220.79	99.52	13.267	
13,500.00	11,768.00	13,665.71	11,788.00	50.06	50.48	-90.82	-1,928.11	949.49	1,320.31	1,219.98	100.32	13.160	
13,550.00	11,768.00	13,715.71	11,788.00	50.47	50.89	-90.82	-1,978.11	949.63	1,320.30	1,219.16	101.15	13.053	
13,600.00	11,768.00	13,765.71	11,788.00	50.88	51.31	-90.82	-2,028.11	949.76	1,320.30	1,218.32	101.98	12.947	
13,650.00	11,768.00	13,815.71	11,788.00	51.31	51.74	-90.82	-2,078.11	949.89	1,320.30	1,217.47	102.83	12.840	
13,700.00	11,768.00	13,865.71	11,788.00	51.73	52.17	-90.82	-2,128.11	950.03	1,320.30	1,216.60	103.69	12.733	
13,750.00	11,768.00	13,915.71	11,788.00	52.17	52.61	-90.82	-2,178.11	950.16	1,320.29	1,215.72	104.57	12.626	
13,800.00	11,768.00	13,965.71	11,788.00	52.61	53.06	-90.82	-2,228.11	950.29	1,320.29	1,214.84	105.45	12.520	
13,850.00	11,768.00	14,015.71	11,788.00	53.06	53.51	-90.82	-2,278.11	950.42	1,320.29	1,213.93	106.36	12.414	
13,900.00	11,768.00	14,065.71	11,788.00	53.51	53.97	-90.82	-2,328.11	950.56	1,320.28	1,213.02	107.27	12.308	
13,950.00	11,768.00	14,115.71	11,788.00	53.97	54.43	-90.82	-2,378.11	950.69	1,320.28	1,212.09	108.19	12.203	
14,000.00	11,768.00	14,165.71	11,788.00	54.43	54.90	-90.82	-2,428.11	950.82	1,320.28	1,211.15	109.13	12.099	
14,050.00	11,768.00	14,215.71	11,788.00	54.91	55.37	-90.82	-2,478.11	950.96	1,320.28	1,210.20	110.08	11.994	
14,100.00	11,768.00	14,265.71	11,788.00	55.38	55.85	-90.82	-2,528.11	951.09	1,320.27	1,209.24	111.03	11.891	
14,150.00	11,768.00	14,315.71	11,788.00	55.87	56.34	-90.82	-2,578.11	951.22	1,320.27	1,208.27	112.00	11.788	
14,200.00	11,768.00	14,365.71	11,788.00	56.35	56.83	-90.82	-2,628.11	951.35	1,320.27	1,207.29	112.98	11.686	
14,250.00	11,768.00	14,415.71	11,788.00	56.85	57.33	-90.82	-2,678.11	951.49	1,320.26	1,206.29	113.97	11.584	
14,300.00	11,768.00	14,465.71	11,788.00	57.34	57.83	-90.82	-2,728.11	951.62	1,320.26	1,205.29	114.97	11.484	
14,350.00	11,768.00	14,515.71	11,788.00	57.84	58.33	-90.82	-2,778.11	951.75	1,320.26	1,204.28	115.98	11.384	
14,400.00	11,768.00	14,565.71	11,788.00	58.35	58.84	-90.82	-2,828.11	951.88	1,320.26	1,203.26	117.00	11.285	
14,450.00	11,768.00	14,615.71	11,788.00	58.86	59.36	-90.82	-2,878.11	952.02	1,320.25	1,202.23	118.03	11.186	
14,500.00	11,768.00	14,665.71	11,788.00	59.38	59.88	-90.82	-2,928.11	952.15	1,320.25	1,201.19	119.06	11.089	
14,550.00	11,768.00	14,715.71	11,788.00	59.90	60.40	-90.82	-2,978.11	952.28	1,320.25	1,200.14	120.11	10.992	
14,600.00	11,768.00	14,765.71	11,788.00	60.42	60.93	-90.82	-3,028.11	952.42	1,320.25	1,199.09	121.16	10.897	
14,650.00	11,768.00	14,815.71	11,788.00	60.95	61.46	-90.82	-3,078.11	952.55	1,320.24	1,198.02	122.22	10.802	
14,700.00	11,768.00	14,865.71	11,788.00	61.48	61.99	-90.82	-3,128.11	952.68	1,320.24	1,196.95	123.29	10.708	
14,750.00	11,768.00	14,915.71	11,788.00	62.02	62.53	-90.82	-3,178.11	952.81	1,320.24	1,195.87	124.37	10.616	
14,800.00	11,768.00	14,965.71	11,788.00	62.56	63.08	-90.82	-3,228.11	952.95	1,320.23	1,194.78	125.45	10.524	
14,850.00	11,768.00	15,015.71	11,788.00	63.11	63.62	-90.82	-3,278.11	953.08	1,320.23	1,193.69	126.55	10.433	
14,900.00	11,768.00	15,065.71	11,788.00	63.65	64.17	-90.82	-3,328.11	953.21	1,320.23	1,192.59	127.64	10.343	
14,950.00	11,768.00	15,115.71	11,788.00	64.21	64.73	-90.82	-3,378.11	953.35	1,320.23	1,191.47	128.75	10.254	
15,000.00	11,768.00	15,165.71	11,788.00	64.76	65.28	-90.82	-3,428.11	953.48	1,320.22	1,190.36	129.86	10.166	
15,050.00	11,768.00	15,215.71	11,788.00	65.32	65.84	-90.82	-3,478.11	953.61	1,320.22	1,189.24	130.99	10.079	
15,100.00	11,768.00	15,265.71	11,788.00	65.88	66.41	-90.82	-3,528.11	953.74	1,320.22	1,188.11	132.11	9.993	
15,150.00	11,768.00	15,315.71	11,788.00	66.45	66.97	-90.82	-3,578.11	953.88	1,320.22	1,186.97	133.24	9.908	
15,200.00	11,768.00	15,365.71	11,788.00	67.01	67.54	-90.82	-3,628.11	954.01	1,320.21	1,185.83	134.38	9.824	
15,250.00	11,768.00	15,415.71	11,788.00	67.58	68.12	-90.82	-3,678.11	954.14	1,320.21	1,184.68	135.53	9.741	
15,300.00	11,768.00	15,465.71	11,788.00	68.16	68.69	-90.82	-3,728.11	954.27	1,320.21	1,183.53	136.68	9.659	
15,350.00	11,768.00	15,515.71	11,788.00	68.73	69.27	-90.82	-3,778.11	954.41	1,320.20	1,182.37	137.84	9.578	
15,400.00	11,768.00	15,565.71	11,788.00	69.31	69.85	-90.82	-3,828.11	954.54	1,320.20	1,181.20	139.00	9.498	
15,450.00	11,768.00	15,615.71	11,788.00	69.90	70.44	-90.82	-3,878.11	954.67	1,320.20	1,180.03	140.17	9.419	
15,500.00	11,768.00	15,665.71	11,788.00	70.48	71.02	-90.82	-3,928.11	954.81	1,320.20	1,178.86	141.34	9.341	
15,550.00	11,768.00	15,715.71	11,788.00	71.07	71.61	-90.82	-3,978.11	954.94	1,320.19	1,177.68	142.52	9.263	

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 624H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
 TVD Reference: RKB @ 3361.80ft
 MD Reference: RKB @ 3361.80ft
 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	
15,600.00	11,768.00	15,765.71	11,788.00	71.66	72.20	-90.82	-4,028.11	955.07	1,320.19	1,176.49	143.70	9.187	
15,650.00	11,768.00	15,815.71	11,788.00	72.25	72.80	-90.82	-4,078.11	955.20	1,320.19	1,175.30	144.89	9.112	
15,700.00	11,768.00	15,865.71	11,788.00	72.85	73.40	-90.82	-4,128.11	955.34	1,320.19	1,174.10	146.08	9.037	
15,750.00	11,768.00	15,915.71	11,788.00	73.45	73.99	-90.82	-4,178.11	955.47	1,320.18	1,172.90	147.28	8.964	
15,800.00	11,768.00	15,965.71	11,788.00	74.04	74.60	-90.82	-4,228.11	955.60	1,320.18	1,171.70	148.48	8.891	
15,850.00	11,768.00	16,015.71	11,788.00	74.65	75.20	-90.82	-4,278.11	955.73	1,320.18	1,170.49	149.69	8.819	
15,900.00	11,768.00	16,065.71	11,788.00	75.25	75.80	-90.82	-4,328.11	955.87	1,320.17	1,169.28	150.90	8.749	
15,950.00	11,768.00	16,115.71	11,788.00	75.86	76.41	-90.82	-4,378.11	956.00	1,320.17	1,168.06	152.12	8.679	
16,000.00	11,768.00	16,165.71	11,788.00	76.47	77.02	-90.82	-4,428.10	956.13	1,320.17	1,166.83	153.33	8.610	
16,050.00	11,768.00	16,215.71	11,788.00	77.08	77.63	-90.82	-4,478.10	956.27	1,320.17	1,165.61	154.56	8.542	
16,100.00	11,768.00	16,265.71	11,788.00	77.69	78.25	-90.82	-4,528.10	956.40	1,320.16	1,164.38	155.78	8.474	
16,150.00	11,768.00	16,315.71	11,788.00	78.30	78.86	-90.82	-4,578.10	956.53	1,320.16	1,163.14	157.02	8.408	
16,200.00	11,768.00	16,365.71	11,788.00	78.92	79.48	-90.82	-4,628.10	956.66	1,320.16	1,161.91	158.25	8.342	
16,250.00	11,768.00	16,415.71	11,788.00	79.54	80.10	-90.82	-4,678.10	956.80	1,320.16	1,160.66	159.49	8.277	
16,300.00	11,768.00	16,465.71	11,788.00	80.16	80.72	-90.82	-4,728.10	956.93	1,320.15	1,159.42	160.73	8.213	
16,350.00	11,768.00	16,515.71	11,788.00	80.78	81.34	-90.82	-4,778.10	957.06	1,320.15	1,158.17	161.98	8.150	
16,400.00	11,768.00	16,565.71	11,788.00	81.40	81.97	-90.82	-4,828.10	957.20	1,320.15	1,156.92	163.23	8.088	
16,450.00	11,768.00	16,615.71	11,788.00	82.03	82.60	-90.82	-4,878.10	957.33	1,320.14	1,155.66	164.48	8.026	
16,500.00	11,768.00	16,665.71	11,788.00	82.66	83.22	-90.82	-4,928.10	957.46	1,320.14	1,154.40	165.74	7.965	
16,550.00	11,768.00	16,715.71	11,788.00	83.29	83.85	-90.82	-4,978.10	957.59	1,320.14	1,153.14	167.00	7.905	
16,600.00	11,768.00	16,765.71	11,788.00	83.92	84.48	-90.82	-5,028.10	957.73	1,320.14	1,151.88	168.26	7.846	
16,650.00	11,768.00	16,815.71	11,788.00	84.55	85.12	-90.82	-5,078.10	957.86	1,320.13	1,150.61	169.52	7.787	
16,700.00	11,768.00	16,865.71	11,788.00	85.18	85.75	-90.82	-5,128.10	957.99	1,320.13	1,149.34	170.79	7.729	
16,750.00	11,768.00	16,915.71	11,788.00	85.82	86.39	-90.82	-5,178.10	958.12	1,320.13	1,148.06	172.06	7.672	
16,800.00	11,768.00	16,965.71	11,788.00	86.45	87.02	-90.82	-5,228.10	958.26	1,320.12	1,146.79	173.34	7.616	
16,850.00	11,768.00	17,015.71	11,788.00	87.09	87.66	-90.82	-5,278.10	958.39	1,320.12	1,145.51	174.61	7.560	
16,900.00	11,768.00	17,065.71	11,788.00	87.73	88.30	-90.82	-5,328.10	958.52	1,320.12	1,144.23	175.89	7.505	
16,950.00	11,768.00	17,115.71	11,788.00	88.37	88.94	-90.82	-5,378.10	958.66	1,320.12	1,142.94	177.18	7.451	
17,000.00	11,768.00	17,165.71	11,788.00	89.01	89.59	-90.82	-5,428.10	958.79	1,320.11	1,141.65	178.46	7.397	
17,050.00	11,768.00	17,215.71	11,788.00	89.65	90.23	-90.82	-5,478.10	958.92	1,320.11	1,140.36	179.75	7.344	
17,100.00	11,768.00	17,265.71	11,788.00	90.30	90.87	-90.82	-5,528.10	959.05	1,320.11	1,139.07	181.04	7.292	
17,150.00	11,768.00	17,315.71	11,788.00	90.94	91.52	-90.82	-5,578.10	959.19	1,320.11	1,137.77	182.33	7.240	
17,200.00	11,768.00	17,365.71	11,788.00	91.59	92.17	-90.82	-5,628.10	959.32	1,320.10	1,136.48	183.63	7.189	
17,250.00	11,768.00	17,415.71	11,788.00	92.24	92.82	-90.82	-5,678.10	959.45	1,320.10	1,135.18	184.92	7.139	
17,300.00	11,768.00	17,465.71	11,788.00	92.89	93.47	-90.82	-5,728.10	959.59	1,320.10	1,133.87	186.22	7.089	
17,350.00	11,768.00	17,515.71	11,788.00	93.54	94.12	-90.82	-5,778.10	959.72	1,320.09	1,132.57	187.53	7.040	
17,400.00	11,768.00	17,565.71	11,788.00	94.19	94.77	-90.82	-5,828.10	959.85	1,320.09	1,131.26	188.83	6.991	
17,450.00	11,768.00	17,615.71	11,788.00	94.84	95.42	-90.82	-5,878.10	959.98	1,320.09	1,129.95	190.14	6.943	
17,500.00	11,768.00	17,665.71	11,788.00	95.50	96.08	-90.82	-5,928.10	960.12	1,320.09	1,128.64	191.45	6.895	
17,550.00	11,768.00	17,715.71	11,788.00	96.15	96.73	-90.82	-5,978.10	960.25	1,320.08	1,127.33	192.76	6.848	
17,600.00	11,768.00	17,765.71	11,788.00	96.81	97.39	-90.82	-6,028.10	960.38	1,320.08	1,126.01	194.07	6.802	
17,650.00	11,768.00	17,815.71	11,788.00	97.46	98.05	-90.82	-6,078.10	960.51	1,320.08	1,124.70	195.38	6.756	
17,700.00	11,768.00	17,865.71	11,788.00	98.12	98.70	-90.82	-6,128.10	960.65	1,320.08	1,123.38	196.70	6.711	
17,750.00	11,768.00	17,915.71	11,788.00	98.78	99.36	-90.82	-6,178.10	960.78	1,320.07	1,122.05	198.02	6.666	
17,800.00	11,768.00	17,965.71	11,788.00	99.44	100.02	-90.82	-6,228.10	960.91	1,320.07	1,120.73	199.34	6.622	
17,850.00	11,768.00	18,015.71	11,788.00	100.10	100.68	-90.82	-6,278.10	961.05	1,320.07	1,119.41	200.66	6.579	
17,900.00	11,768.00	18,065.71	11,788.00	100.76	101.35	-90.82	-6,328.10	961.18	1,320.06	1,118.08	201.98	6.535	
17,950.00	11,768.00	18,115.71	11,788.00	101.42	102.01	-90.82	-6,378.10	961.31	1,320.06	1,116.75	203.31	6.493	
18,000.00	11,768.00	18,165.71	11,788.00	102.09	102.67	-90.82	-6,428.10	961.44	1,320.06	1,115.42	204.64	6.451	
18,050.00	11,768.00	18,215.71	11,788.00	102.75	103.34	-90.82	-6,478.10	961.58	1,320.06	1,114.09	205.97	6.409	
18,100.00	11,768.00	18,265.71	11,788.00	103.41	104.00	-90.82	-6,528.10	961.71	1,320.05	1,112.76	207.30	6.368	
18,150.00	11,768.00	18,315.71	11,788.00	104.08	104.67	-90.82	-6,578.10	961.84	1,320.05	1,111.42	208.63	6.327	

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 624H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
 TVD Reference: RKB @ 3361.80ft
 MD Reference: RKB @ 3361.80ft
 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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
18,200.00	11,768.00	18,365.71	11,788.00	104.75	105.34	-90.82	-6,628.10	961.98	1,320.05	1,110.08	209.96	6.287	
18,250.00	11,768.00	18,415.71	11,788.00	105.41	106.00	-90.82	-6,678.10	962.11	1,320.05	1,108.75	211.30	6.247	
18,300.00	11,768.00	18,465.71	11,788.00	106.08	106.67	-90.82	-6,728.10	962.24	1,320.04	1,107.41	212.64	6.208	
18,350.00	11,768.00	18,515.71	11,788.00	106.75	107.34	-90.82	-6,778.10	962.37	1,320.04	1,106.06	213.98	6.169	
18,400.00	11,768.00	18,565.71	11,788.00	107.42	108.01	-90.82	-6,828.10	962.51	1,320.04	1,104.72	215.32	6.131	
18,450.00	11,768.00	18,615.71	11,788.00	108.09	108.68	-90.82	-6,878.10	962.64	1,320.03	1,103.38	216.66	6.093	
18,500.00	11,768.00	18,665.71	11,788.00	108.76	109.35	-90.82	-6,928.10	962.77	1,320.03	1,102.03	218.00	6.055	
18,550.00	11,768.00	18,715.71	11,788.00	109.43	110.03	-90.82	-6,978.10	962.90	1,320.03	1,100.68	219.35	6.018	
18,600.00	11,768.00	18,765.71	11,788.00	110.11	110.70	-90.82	-7,028.10	963.04	1,320.03	1,099.33	220.69	5.981	
18,650.00	11,768.00	18,815.71	11,788.00	110.78	111.37	-90.82	-7,078.10	963.17	1,320.02	1,097.98	222.04	5.945	
18,700.00	11,768.00	18,865.71	11,788.00	111.45	112.05	-90.82	-7,128.10	963.30	1,320.02	1,096.63	223.39	5.909	
18,750.00	11,768.00	18,915.71	11,788.00	112.13	112.72	-90.82	-7,178.10	963.44	1,320.02	1,095.28	224.74	5.874	
18,800.00	11,768.00	18,965.71	11,788.00	112.80	113.40	-90.82	-7,228.10	963.57	1,320.02	1,093.93	226.09	5.838	
18,850.00	11,768.00	19,015.71	11,788.00	113.48	114.07	-90.82	-7,278.09	963.70	1,320.01	1,092.57	227.44	5.804	
18,900.00	11,768.00	19,065.71	11,788.00	114.16	114.75	-90.82	-7,328.09	963.83	1,320.01	1,091.21	228.79	5.769	
18,950.00	11,768.00	19,115.71	11,788.00	114.83	115.43	-90.82	-7,378.09	963.97	1,320.01	1,089.86	230.15	5.735	
19,000.00	11,768.00	19,165.71	11,788.00	115.51	116.10	-90.82	-7,428.09	964.10	1,320.00	1,088.50	231.51	5.702	
19,050.00	11,768.00	19,215.71	11,788.00	116.19	116.78	-90.82	-7,478.09	964.23	1,320.00	1,087.14	232.86	5.669	
19,100.00	11,768.00	19,265.71	11,788.00	116.87	117.46	-90.82	-7,528.09	964.36	1,320.00	1,085.78	234.22	5.636	
19,150.00	11,768.00	19,315.71	11,788.00	117.55	118.14	-90.82	-7,578.09	964.50	1,320.00	1,084.41	235.58	5.603	
19,200.00	11,768.00	19,365.71	11,788.00	118.23	118.82	-90.82	-7,628.09	964.63	1,319.99	1,083.05	236.94	5.571	
19,250.00	11,768.00	19,415.71	11,788.00	118.91	119.50	-90.82	-7,678.09	964.76	1,319.99	1,081.69	238.30	5.539	
19,300.00	11,768.00	19,465.71	11,788.00	119.59	120.18	-90.82	-7,728.09	964.90	1,319.99	1,080.32	239.67	5.508	
19,350.00	11,768.00	19,515.71	11,788.00	120.27	120.87	-90.82	-7,778.09	965.03	1,319.98	1,078.95	241.03	5.476	
19,400.00	11,768.00	19,565.71	11,788.00	120.95	121.55	-90.82	-7,828.09	965.16	1,319.98	1,077.59	242.40	5.446	
19,450.00	11,768.00	19,615.71	11,788.00	121.64	122.23	-90.82	-7,878.09	965.29	1,319.98	1,076.22	243.76	5.415	
19,500.00	11,768.00	19,665.71	11,788.00	122.32	122.92	-90.82	-7,928.09	965.43	1,319.98	1,074.85	245.13	5.385	
19,550.00	11,768.00	19,715.71	11,788.00	123.00	123.60	-90.82	-7,978.09	965.56	1,319.97	1,073.48	246.50	5.355	
19,600.00	11,768.00	19,765.71	11,788.00	123.69	124.28	-90.82	-8,028.09	965.69	1,319.97	1,072.10	247.87	5.325	
19,650.00	11,768.00	19,815.71	11,788.00	124.37	124.97	-90.82	-8,078.09	965.83	1,319.97	1,070.73	249.24	5.296	
19,700.00	11,768.00	19,865.71	11,788.00	125.06	125.65	-90.82	-8,128.09	965.96	1,319.97	1,069.36	250.61	5.267	
19,750.00	11,768.00	19,915.71	11,788.00	125.74	126.34	-90.82	-8,178.09	966.09	1,319.96	1,067.98	251.98	5.238	
19,800.00	11,768.00	19,965.71	11,788.00	126.43	127.03	-90.82	-8,228.09	966.22	1,319.96	1,066.61	253.35	5.210	
19,850.00	11,768.00	20,015.71	11,788.00	127.12	127.71	-90.82	-8,278.09	966.36	1,319.96	1,065.23	254.73	5.182	
19,900.00	11,768.00	20,065.71	11,788.00	127.80	128.40	-90.82	-8,328.09	966.49	1,319.95	1,063.85	256.10	5.154	
19,950.00	11,768.00	20,115.71	11,788.00	128.49	129.09	-90.82	-8,378.09	966.62	1,319.95	1,062.48	257.48	5.127	
20,000.00	11,768.00	20,165.71	11,788.00	129.18	129.78	-90.82	-8,428.09	966.75	1,319.95	1,061.10	258.85	5.099	
20,050.00	11,768.00	20,215.71	11,788.00	129.87	130.46	-90.82	-8,478.09	966.89	1,319.95	1,059.72	260.23	5.072	
20,100.00	11,768.00	20,265.71	11,788.00	130.55	131.15	-90.82	-8,528.09	967.02	1,319.94	1,058.34	261.61	5.046	
20,150.00	11,768.00	20,315.71	11,788.00	131.24	131.84	-90.82	-8,578.09	967.15	1,319.94	1,056.96	262.99	5.019	
20,200.00	11,768.00	20,365.71	11,788.00	131.93	132.53	-90.82	-8,628.09	967.29	1,319.94	1,055.57	264.37	4.993 Alert	
20,250.00	11,768.00	20,415.71	11,788.00	132.62	133.22	-90.82	-8,678.09	967.42	1,319.94	1,054.19	265.75	4.967 Alert	
20,300.00	11,768.00	20,465.71	11,788.00	133.31	133.91	-90.82	-8,728.09	967.55	1,319.93	1,052.81	267.13	4.941 Alert	
20,350.00	11,768.00	20,515.71	11,788.00	134.00	134.60	-90.82	-8,778.09	967.68	1,319.93	1,051.42	268.51	4.916 Alert	
20,400.00	11,768.00	20,565.71	11,788.00	134.70	135.29	-90.82	-8,828.09	967.82	1,319.93	1,050.04	269.89	4.891 Alert	
20,450.00	11,768.00	20,615.71	11,788.00	135.39	135.99	-90.82	-8,878.09	967.95	1,319.92	1,048.65	271.27	4.866 Alert	
20,500.00	11,768.00	20,665.71	11,788.00	136.08	136.68	-90.82	-8,928.09	968.08	1,319.92	1,047.26	272.66	4.841 Alert	
20,550.00	11,768.00	20,715.71	11,788.00	136.77	137.37	-90.82	-8,978.09	968.22	1,319.92	1,045.88	274.04	4.816 Alert	
20,600.00	11,768.00	20,765.71	11,788.00	137.46	138.06	-90.82	-9,028.09	968.35	1,319.92	1,044.49	275.43	4.792 Alert	
20,650.00	11,768.00	20,815.71	11,788.00	138.16	138.76	-90.82	-9,078.09	968.48	1,319.91	1,043.10	276.82	4.768 Alert	
20,700.00	11,768.00	20,865.71	11,788.00	138.85	139.45	-90.82	-9,128.09	968.61	1,319.91	1,041.71	278.20	4.744 Alert	
20,750.00	11,768.00	20,915.71	11,788.00	139.54	140.14	-90.82	-9,178.09	968.75	1,319.91	1,040.32	279.59	4.721 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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 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 +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
20,800.00	11,768.00	20,965.71	11,788.00	140.24	140.84	-90.82	-9,228.09	968.88	1,319.91	1,038.93	280.98	4.698	Alert	
20,850.00	11,768.00	21,015.71	11,788.00	140.93	141.53	-90.82	-9,278.09	969.01	1,319.90	1,037.54	282.37	4.674	Alert	
20,900.00	11,768.00	21,065.71	11,788.00	141.63	142.23	-90.82	-9,328.09	969.14	1,319.90	1,036.14	283.76	4.652	Alert	
20,950.00	11,768.00	21,115.71	11,788.00	142.32	142.92	-90.82	-9,378.09	969.28	1,319.90	1,034.75	285.15	4.629	Alert	
21,000.00	11,768.00	21,165.71	11,788.00	143.02	143.62	-90.82	-9,428.09	969.41	1,319.89	1,033.36	286.54	4.606	Alert	
21,050.00	11,768.00	21,215.71	11,788.00	143.71	144.31	-90.82	-9,478.09	969.54	1,319.89	1,031.96	287.93	4.584	Alert	
21,100.00	11,768.00	21,265.71	11,788.00	144.41	145.01	-90.82	-9,528.09	969.68	1,319.89	1,030.57	289.32	4.562	Alert	
21,150.00	11,768.00	21,315.71	11,788.00	145.10	145.71	-90.82	-9,578.09	969.81	1,319.89	1,029.17	290.71	4.540	Alert	
21,200.00	11,768.00	21,365.71	11,788.00	145.80	146.40	-90.82	-9,628.09	969.94	1,319.88	1,027.78	292.11	4.518	Alert	
21,250.00	11,768.00	21,415.71	11,788.00	146.50	147.10	-90.82	-9,678.09	970.07	1,319.88	1,026.38	293.50	4.497	Alert	
21,300.00	11,768.00	21,465.71	11,788.00	147.19	147.80	-90.82	-9,728.09	970.21	1,319.88	1,024.98	294.90	4.476	Alert	
21,350.00	11,768.00	21,515.71	11,788.00	147.89	148.49	-90.82	-9,778.09	970.34	1,319.88	1,023.58	296.29	4.455	Alert	
21,400.00	11,768.00	21,565.71	11,788.00	148.59	149.19	-90.82	-9,828.09	970.47	1,319.87	1,022.19	297.69	4.434	Alert	
21,450.00	11,768.00	21,615.71	11,788.00	149.29	149.89	-90.82	-9,878.09	970.61	1,319.87	1,020.79	299.08	4.413	Alert	
21,500.00	11,768.00	21,665.71	11,788.00	149.99	150.59	-90.82	-9,928.09	970.74	1,319.87	1,019.39	300.48	4.393	Alert	
21,550.00	11,768.00	21,715.71	11,788.00	150.68	151.29	-90.82	-9,978.09	970.87	1,319.86	1,017.99	301.88	4.372	Alert	
21,600.00	11,768.00	21,765.71	11,788.00	151.38	151.98	-90.82	-10,028.09	971.00	1,319.86	1,016.59	303.27	4.352	Alert	
21,650.00	11,768.00	21,815.71	11,788.00	152.08	152.68	-90.82	-10,078.09	971.14	1,319.86	1,015.19	304.67	4.332	Alert	
21,700.00	11,768.00	21,865.71	11,788.00	152.78	153.38	-90.82	-10,128.08	971.27	1,319.86	1,013.78	306.07	4.312	Alert	
21,750.00	11,768.00	21,915.71	11,788.00	153.48	154.08	-90.82	-10,178.08	971.40	1,319.85	1,012.38	307.47	4.293	Alert	
21,800.00	11,768.00	21,965.71	11,788.00	154.18	154.78	-90.82	-10,228.08	971.53	1,319.85	1,010.98	308.87	4.273	Alert	
21,850.00	11,768.00	22,015.71	11,788.00	154.88	155.48	-90.82	-10,278.08	971.67	1,319.85	1,009.58	310.27	4.254	Alert	
21,900.00	11,768.00	22,065.71	11,788.00	155.58	156.18	-90.82	-10,328.08	971.80	1,319.84	1,008.17	311.67	4.235	Alert	
21,903.25	11,768.00	22,068.96	11,788.00	155.63	156.23	-90.82	-10,331.33	971.81	1,319.84	1,008.08	311.76	4.233	Alert, SF	
21,904.71	11,768.00	22,062.69	11,788.00	155.65	156.14	-90.82	-10,325.08	971.79	1,319.87	1,008.19	311.68	4.235	Alert	

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+IFR1													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Highside Toolface	Offset Wellbore Centre		Distance		Minimum Separation	Separation Factor	Warning	
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset		+N/-S	+E/-W	Between Centres	Between Ellipses				
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
0.00	0.00	3.60	-3.60	0.50	0.50	-179.99	-149.96	-0.03	149.96					
50.00	50.00	46.40	46.40	0.50	0.50	-179.99	-149.96	-0.03	149.96	148.95	1.01	149.084		
100.00	100.00	103.60	96.40	0.52	0.52	-179.99	-149.96	-0.03	149.96	148.92	1.04	144.330		
150.00	150.00	146.40	146.40	0.59	0.58	-179.99	-149.96	-0.03	149.96	148.79	1.17	127.764		
200.00	200.00	203.60	196.40	0.70	0.71	-179.99	-149.96	-0.03	149.96	148.55	1.41	106.105		
250.00	250.00	246.40	246.40	0.84	0.83	-179.99	-149.96	-0.03	149.96	148.30	1.67	90.060		
300.00	300.00	303.60	296.40	0.99	1.00	-179.99	-149.96	-0.03	149.96	147.97	1.99	75.516		
350.00	350.00	346.40	346.40	1.15	1.13	-179.99	-149.96	-0.03	149.96	147.68	2.28	65.790		
400.00	400.00	403.60	396.40	1.31	1.32	-179.99	-149.96	-0.03	149.96	147.33	2.63	57.017		
450.00	450.00	446.40	446.40	1.48	1.46	-179.99	-149.96	-0.03	149.96	147.02	2.94	50.998		
500.00	500.00	503.60	496.40	1.65	1.66	-179.99	-149.96	-0.03	149.96	146.66	3.30	45.381		
550.00	550.00	546.40	546.40	1.82	1.81	-179.99	-149.96	-0.03	149.96	146.34	3.62	41.392		
600.00	600.00	603.60	596.40	1.99	2.00	-179.99	-149.96	-0.03	149.96	145.97	3.99	37.549		
650.00	650.00	646.40	646.40	2.16	2.15	-179.99	-149.96	-0.03	149.96	145.64	4.32	34.741		
700.00	700.00	703.60	696.40	2.34	2.35	-179.99	-149.96	-0.03	149.96	145.27	4.69	31.966		
750.00	750.00	746.40	746.40	2.51	2.50	-179.99	-149.96	-0.03	149.96	144.94	5.02	29.892		
800.00	800.00	803.60	796.40	2.69	2.70	-179.99	-149.96	-0.03	149.96	144.57	5.39	27.802		
850.00	850.00	846.40	846.40	2.87	2.85	-179.99	-149.96	-0.03	149.96	144.24	5.72	26.212		
900.00	900.00	903.60	896.40	3.04	3.06	-179.99	-149.96	-0.03	149.96	143.86	6.10	24.584		
950.00	950.00	948.40	946.40	3.22	3.21	-179.99	-149.96	-0.03	149.96	143.53	6.43	23.328		
1,000.00	1,000.00	1,003.60	996.40	3.40	3.41	-179.99	-149.96	-0.03	149.96	143.15	6.81	22.027		
1,050.00	1,050.00	1,046.40	1,046.40	3.58	3.56	-179.99	-149.96	-0.03	149.96	142.82	7.14	21.011		
1,100.00	1,100.00	1,103.60	1,096.40	3.75	3.77	-179.99	-149.96	-0.03	149.96	142.44	7.52	19.947		
1,150.00	1,150.00	1,146.40	1,146.40	3.93	3.92	-179.99	-149.96	-0.03	149.96	142.11	7.85	19.109		
1,200.00	1,200.00	1,203.60	1,196.40	4.11	4.12	-179.99	-149.96	-0.03	149.96	141.73	8.23	18.223		
1,250.00	1,250.00	1,246.40	1,246.40	4.29	4.27	-179.99	-149.96	-0.03	149.96	141.40	8.56	17.520		
1,300.00	1,300.00	1,303.60	1,296.40	4.46	4.48	-179.99	-149.96	-0.03	149.96	141.02	8.94	16.772		
1,350.00	1,350.00	1,346.40	1,346.40	4.64	4.63	-179.99	-149.96	-0.03	149.96	140.69	9.27	16.174		
1,400.00	1,400.00	1,403.60	1,396.40	4.82	4.83	-179.99	-149.96	-0.03	149.96	140.31	9.65	15.534		
1,450.00	1,450.00	1,446.40	1,446.40	5.00	4.99	-179.99	-149.96	-0.03	149.96	139.98	9.98	15.019		
1,500.00	1,500.00	1,503.60	1,496.40	5.18	5.19	-179.99	-149.96	-0.03	149.96	139.59	10.37	14.465		
1,550.00	1,550.00	1,546.40	1,546.40	5.36	5.34	-179.99	-149.96	-0.03	149.96	139.26	10.70	14.017		
1,600.00	1,600.00	1,603.60	1,596.40	5.53	5.55	-179.99	-149.96	-0.03	149.96	138.88	11.08	13.533		
1,650.00	1,650.00	1,646.40	1,646.40	5.71	5.70	-179.99	-149.96	-0.03	149.96	138.55	11.41	13.140		
1,700.00	1,700.00	1,703.60	1,696.40	5.89	5.90	-179.99	-149.96	-0.03	149.96	138.16	11.80	12.714		
1,750.00	1,750.00	1,746.40	1,746.40	6.07	6.06	-179.99	-149.96	-0.03	149.96	137.83	12.13	12.366		
1,800.00	1,800.00	1,803.60	1,796.40	6.25	6.26	-179.99	-149.96	-0.03	149.96	137.45	12.51	11.987		
1,850.00	1,850.00	1,846.40	1,846.40	6.43	6.41	-179.99	-149.96	-0.03	149.96	137.12	12.84	11.678		
1,900.00	1,900.00	1,903.60	1,896.40	6.61	6.62	-179.99	-149.96	-0.03	149.96	136.74	13.22	11.339		
1,950.00	1,950.00	1,946.40	1,946.40	6.78	6.77	-179.99	-149.96	-0.03	149.96	136.40	13.56	11.062		
2,000.00	2,000.00	2,003.60	1,996.40	6.96	6.98	-179.99	-149.96	-0.03	149.96	136.02	13.94	10.758		
2,050.00	2,050.00	2,046.40	2,046.40	7.14	7.13	-179.99	-149.96	-0.03	149.96	135.69	14.27	10.508		
2,100.00	2,100.00	2,103.60	2,096.40	7.32	7.33	-179.99	-149.96	-0.03	149.96	135.31	14.65	10.233		
2,150.00	2,150.00	2,146.40	2,146.40	7.50	7.49	-179.99	-149.96	-0.03	149.96	134.97	14.99	10.006		
2,200.00	2,200.00	2,203.60	2,196.40	7.68	7.69	-179.99	-149.96	-0.03	149.96	134.59	15.37	9.757		
2,250.00	2,250.00	2,246.40	2,246.40	7.86	7.84	-179.99	-149.96	-0.03	149.96	134.26	15.70	9.550		
2,300.00	2,300.00	2,303.60	2,296.40	8.04	8.05	-179.99	-149.96	-0.03	149.96	133.87	16.09	9.323		
2,350.00	2,350.00	2,346.40	2,346.40	8.22	8.20	-179.99	-149.96	-0.03	149.96	133.54	16.42	9.134		
2,400.00	2,400.00	2,403.60	2,396.40	8.39	8.41	-179.99	-149.96	-0.03	149.96	133.16	16.80	8.926		
2,450.00	2,450.00	2,446.40	2,446.40	8.57	8.56	-179.99	-149.96	-0.03	149.96	132.83	17.13	8.753		
2,500.00	2,500.00	2,503.60	2,496.40	8.75	8.76	-179.99	-149.96	-0.03	149.96	132.44	17.52	8.561 CC		
2,550.00	2,550.00	2,546.40	2,546.40	8.93	8.92	-95.39	-149.96	-0.03	149.98	132.14	17.85	8.405		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 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 (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	2,599.99	2,603.61	2,596.39	9.10	9.12	-95.64	-149.96	-0.03	150.04	131.82	18.22	8.233		
2,650.00	2,649.98	2,646.38	2,646.38	9.27	9.28	-96.05	-149.96	-0.03	150.15	131.61	18.55	8.095		
2,700.00	2,699.96	2,703.64	2,696.36	9.45	9.48	-96.63	-149.96	-0.03	150.32	131.40	18.93	7.943		
2,750.00	2,749.92	2,746.32	2,746.32	9.62	9.63	-97.37	-149.96	-0.03	150.56	131.31	19.25	7.821		
2,800.00	2,799.86	2,803.74	2,796.26	9.79	9.84	-98.27	-149.96	-0.03	150.89	131.26	19.63	7.687 ES		
2,850.00	2,849.78	2,846.18	2,846.18	9.96	9.99	-99.32	-149.96	-0.03	151.32	131.37	19.95	7.583		
2,900.00	2,899.69	2,903.91	2,896.09	10.14	10.20	-100.45	-149.96	-0.03	151.85	131.51	20.33	7.467		
2,950.00	2,949.60	2,946.00	2,946.00	10.31	10.35	-101.57	-149.96	-0.03	152.43	131.77	20.66	7.378		
3,000.00	2,999.51	3,004.09	2,995.91	10.49	10.56	-102.68	-149.96	-0.03	153.06	132.02	21.04	7.274		
3,050.00	3,049.41	3,045.81	3,045.81	10.66	10.71	-103.78	-149.96	-0.03	153.76	132.39	21.37	7.197		
3,100.00	3,099.32	3,104.28	3,095.72	10.83	10.92	-104.87	-149.96	-0.03	154.51	132.76	21.75	7.104		
3,150.00	3,149.23	3,145.63	3,145.63	11.01	11.06	-105.95	-149.96	-0.03	155.32	133.25	22.07	7.037		
3,200.00	3,199.14	3,204.46	3,195.54	11.19	11.27	-107.02	-149.96	-0.03	156.18	133.72	22.46	6.954		
3,250.00	3,249.04	3,245.44	3,245.44	11.36	11.42	-108.08	-149.96	-0.03	157.10	134.32	22.78	6.896		
3,300.00	3,298.95	3,304.65	3,295.35	11.54	11.63	-109.12	-149.96	-0.03	158.07	134.90	23.17	6.823		
3,350.00	3,348.86	3,345.26	3,345.26	11.71	11.78	-110.15	-149.96	-0.03	159.09	135.60	23.49	6.773		
3,400.00	3,398.77	3,404.83	3,395.17	11.89	11.99	-111.17	-149.96	-0.03	160.16	136.28	23.88	6.707		
3,450.00	3,448.68	3,445.08	3,445.08	12.07	12.14	-112.18	-149.96	-0.03	161.29	137.09	24.20	6.665		
3,500.00	3,498.58	3,505.02	3,494.98	12.24	12.35	-113.17	-149.96	-0.03	162.46	137.87	24.59	6.606		
3,550.00	3,548.49	3,544.89	3,544.89	12.42	12.49	-114.14	-149.96	-0.03	163.68	138.77	24.91	6.571		
3,600.00	3,598.40	3,605.20	3,594.80	12.60	12.71	-115.10	-149.96	-0.03	164.94	139.64	25.30	6.519		
3,650.00	3,648.31	3,644.71	3,644.71	12.78	12.85	-116.05	-149.96	-0.03	166.26	140.63	25.62	6.489		
3,700.00	3,698.22	3,705.38	3,694.62	12.95	13.07	-116.98	-149.96	-0.03	167.61	141.60	26.02	6.443		
3,750.00	3,748.12	3,744.52	3,744.52	13.13	13.21	-117.89	-149.96	-0.03	169.01	142.68	26.33	6.418		
3,800.00	3,798.03	3,805.57	3,794.43	13.31	13.43	-118.79	-149.96	-0.03	170.46	143.73	26.73	6.377		
3,850.00	3,847.94	3,844.34	3,844.34	13.49	13.57	-119.68	-149.96	-0.03	171.94	144.90	27.05	6.357		
3,900.00	3,897.85	3,905.75	3,894.25	13.67	13.79	-120.55	-149.96	-0.03	173.47	146.02	27.44	6.321		
3,950.00	3,947.75	3,944.15	3,944.15	13.84	13.92	-121.40	-149.96	-0.03	175.03	147.27	27.76	6.306		
4,000.00	3,997.66	3,994.06	3,994.06	14.02	14.10	-122.24	-149.96	-0.03	176.63	148.52	28.11	6.283		
4,050.00	4,047.57	4,045.69	4,045.69	14.20	14.29	-123.11	-149.74	-0.08	178.06	149.58	28.48	6.253		
4,100.00	4,097.48	4,097.57	4,097.56	14.38	14.47	-124.02	-148.95	-0.28	178.98	150.14	28.84	6.206		
4,150.00	4,147.39	4,149.44	4,149.42	14.56	14.66	-124.97	-147.60	-0.62	179.40	150.21	29.20	6.145		
4,200.00	4,197.29	4,200.46	4,200.40	14.74	14.84	-125.94	-145.76	-1.08	179.38	149.82	29.55	6.070		
4,250.00	4,247.20	4,250.37	4,250.27	14.92	15.02	-126.90	-143.87	-1.54	179.31	149.41	29.91	5.996		
4,285.78	4,282.92	4,286.08	4,285.96	15.05	15.15	-127.59	-142.52	-1.88	179.30	149.14	30.16	5.944		
4,300.00	4,297.11	4,300.27	4,300.14	15.10	15.20	-127.86	-141.98	-2.01	179.30	149.04	30.26	5.925		
4,350.00	4,347.02	4,350.18	4,350.01	15.28	15.38	-128.83	-140.09	-2.48	179.34	148.72	30.62	5.857		
4,400.00	4,396.92	4,400.09	4,399.88	15.46	15.55	-129.79	-138.20	-2.95	179.43	148.46	30.98	5.793		
4,450.00	4,446.83	4,450.00	4,449.75	15.64	15.73	-130.75	-136.32	-3.42	179.57	148.24	31.33	5.731		
4,500.00	4,496.74	4,500.09	4,499.62	15.82	15.91	-131.70	-134.43	-3.89	179.77	148.08	31.69	5.673		
4,550.00	4,546.65	4,549.82	4,549.49	16.00	16.09	-132.66	-132.54	-4.36	180.01	147.96	32.05	5.617		
4,600.00	4,596.56	4,600.27	4,599.36	16.18	16.27	-133.61	-130.65	-4.83	180.30	147.90	32.40	5.564		
4,650.00	4,646.46	4,649.64	4,649.23	16.36	16.45	-134.56	-128.78	-5.30	180.64	147.88	32.76	5.514		
4,700.00	4,696.37	4,700.45	4,699.11	16.54	16.63	-135.51	-126.87	-5.77	181.03	147.92	33.12	5.466		
4,750.00	4,746.28	4,749.46	4,748.98	16.72	16.80	-136.45	-124.99	-6.24	181.47	148.00	33.47	5.422		
4,800.00	4,796.19	4,800.64	4,798.85	16.90	16.99	-137.39	-123.10	-6.71	181.96	148.13	33.83	5.379		
4,850.00	4,846.09	4,849.27	4,848.72	17.08	17.16	-138.32	-121.21	-7.18	182.50	148.32	34.18	5.339		
4,900.00	4,896.00	4,900.82	4,898.59	17.26	17.35	-139.24	-119.32	-7.65	183.09	148.54	34.55	5.300		
4,950.00	4,945.91	4,949.09	4,948.46	17.44	17.52	-140.16	-117.43	-8.12	183.72	148.83	34.90	5.265		
5,000.00	4,995.82	5,001.00	4,998.33	17.62	17.70	-141.08	-115.55	-8.59	184.41	149.15	35.26	5.230		
5,050.00	5,045.73	5,048.91	5,048.20	17.80	17.88	-141.98	-113.66	-9.06	185.13	149.53	35.61	5.199		
5,100.00	5,095.63	5,101.18	5,098.07	17.98	18.06	-142.88	-111.77	-9.53	185.91	149.93	35.97	5.168		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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						
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
5,150.00	5,145.54	5,148.73	5,147.94	18.16	18.23	-143.77	-109.88	-10.00	186.73	150.41	36.32	5.141	
5,200.00	5,195.45	5,201.36	5,197.82	18.34	18.42	-144.66	-107.99	-10.47	187.59	150.91	36.69	5.113	
5,250.00	5,245.36	5,248.54	5,247.69	18.53	18.59	-145.53	-106.10	-10.93	188.50	151.47	37.03	5.090	
5,300.00	5,295.27	5,301.55	5,297.56	18.71	18.78	-146.40	-104.22	-11.40	189.45	152.05	37.40	5.066	
5,350.00	5,345.17	5,348.36	5,347.43	18.89	18.95	-147.26	-102.33	-11.87	190.45	152.70	37.74	5.046	
5,400.00	5,395.08	5,401.73	5,397.30	19.07	19.14	-148.11	-100.44	-12.34	191.49	153.37	38.11	5.024	
5,450.00	5,444.99	5,448.18	5,447.17	19.25	19.31	-148.94	-98.55	-12.81	192.57	154.11	38.46	5.007	
5,500.00	5,494.90	5,501.91	5,497.04	19.43	19.50	-149.77	-96.66	-13.28	193.69	154.86	38.83	4.989 Alert	
5,550.00	5,544.80	5,548.00	5,546.91	19.61	19.66	-150.59	-94.77	-13.75	194.85	155.68	39.17	4.975 Alert	
5,600.00	5,594.71	5,602.09	5,596.78	19.79	19.86	-151.40	-92.89	-14.22	196.05	156.51	39.54	4.958 Alert	
5,650.00	5,644.62	5,647.82	5,646.65	19.98	20.02	-152.20	-91.00	-14.69	197.29	157.41	39.88	4.947 Alert	
5,700.00	5,694.53	5,697.73	5,696.53	20.16	20.20	-152.99	-89.11	-15.16	198.56	158.33	40.24	4.935 Alert	
5,750.00	5,744.44	5,747.63	5,746.40	20.34	20.38	-153.77	-87.22	-15.63	199.88	159.29	40.59	4.924 Alert	
5,800.00	5,794.34	5,802.46	5,796.27	20.52	20.58	-154.54	-85.33	-16.10	201.23	160.26	40.96	4.912 Alert	
5,850.00	5,844.25	5,847.45	5,846.14	20.70	20.74	-155.30	-83.45	-16.57	202.62	161.31	41.30	4.906 Alert	
5,900.00	5,894.16	5,902.64	5,896.01	20.88	20.93	-156.05	-81.56	-17.04	204.04	162.36	41.68	4.896 Alert	
5,950.00	5,944.07	5,947.27	5,945.88	21.06	21.09	-156.79	-79.67	-17.51	205.49	163.48	42.01	4.891 Alert	
6,000.00	5,993.97	6,002.82	5,995.75	21.25	21.29	-157.52	-77.78	-17.98	206.99	164.59	42.39	4.883 Alert	
6,050.00	6,043.88	6,047.09	6,045.82	21.43	21.45	-158.24	-75.89	-18.45	208.51	165.78	42.73	4.880 Alert	
6,100.00	6,093.79	6,103.00	6,095.49	21.61	21.65	-158.94	-74.00	-18.92	210.06	166.96	43.10	4.873 Alert	
6,150.00	6,143.70	6,146.91	6,145.36	21.79	21.81	-159.64	-72.12	-19.39	211.65	168.21	43.44	4.872 Alert	
6,200.00	6,193.61	6,203.19	6,195.24	21.97	22.01	-160.33	-70.23	-19.86	213.27	169.45	43.82	4.867 Alert	
6,250.00	6,243.51	6,246.72	6,245.11	22.16	22.17	-161.00	-68.34	-20.32	214.92	170.77	44.15	4.868 Alert	
6,300.00	6,293.42	6,303.37	6,294.98	22.34	22.37	-161.67	-66.45	-20.79	216.59	172.06	44.53	4.864 Alert	
6,350.00	6,343.33	6,346.54	6,344.85	22.52	22.53	-162.32	-64.56	-21.26	218.30	173.44	44.86	4.866 Alert	
6,400.00	6,393.24	6,403.55	6,394.72	22.70	22.73	-162.97	-62.68	-21.73	220.04	174.79	45.24	4.863 Alert, SF	
6,450.00	6,443.14	6,446.36	6,444.59	22.88	22.88	-163.60	-60.79	-22.20	221.80	176.22	45.58	4.867 Alert	
6,500.00	6,493.05	6,503.73	6,494.46	23.07	23.09	-164.22	-58.90	-22.67	223.59	177.63	45.96	4.865 Alert	
6,550.00	6,542.96	6,546.18	6,544.33	23.25	23.24	-164.84	-57.01	-23.14	225.40	179.11	46.29	4.870 Alert	
6,600.00	6,592.87	6,603.91	6,594.20	23.43	23.45	-165.44	-55.12	-23.61	227.24	180.57	46.67	4.869 Alert	
6,650.00	6,642.78	6,646.00	6,644.07	23.61	23.60	-166.04	-53.23	-24.08	229.11	182.11	47.00	4.875 Alert	
6,700.00	6,692.68	6,704.10	6,693.95	23.79	23.81	-166.62	-51.35	-24.55	231.00	183.61	47.39	4.875 Alert	
6,750.00	6,742.59	6,745.81	6,743.82	23.98	23.96	-167.20	-49.46	-25.02	232.91	185.20	47.71	4.881 Alert	
6,800.00	6,792.50	6,804.28	6,793.69	24.16	24.17	-167.77	-47.57	-25.49	234.85	186.75	48.10	4.882 Alert	
6,850.00	6,842.41	6,845.63	6,843.56	24.34	24.32	-168.32	-45.68	-25.96	236.81	188.38	48.43	4.890 Alert	
6,900.00	6,892.32	6,904.46	6,893.43	24.52	24.53	-168.87	-43.79	-26.43	238.79	189.97	48.81	4.892 Alert	
6,950.00	6,942.22	6,945.45	6,943.30	24.71	24.67	-169.41	-41.90	-26.90	240.79	191.65	49.14	4.900 Alert	
7,000.00	6,992.13	6,995.36	6,993.17	24.89	24.85	-169.94	-40.02	-27.37	242.81	193.32	49.50	4.906 Alert	
7,050.00	7,042.04	7,045.27	7,043.04	25.07	25.03	-170.46	-38.13	-27.84	244.86	195.01	49.85	4.912 Alert	
7,100.00	7,091.95	7,104.82	7,092.91	25.25	25.25	-170.97	-36.24	-28.31	246.92	196.68	50.24	4.915 Alert	
7,150.00	7,141.85	7,145.08	7,142.78	25.44	25.39	-171.48	-34.35	-28.78	249.01	198.44	50.57	4.924 Alert	
7,200.00	7,191.76	7,205.01	7,192.66	25.62	25.61	-171.97	-32.46	-29.25	251.11	200.15	50.96	4.928 Alert	
7,250.00	7,241.67	7,244.90	7,242.53	25.80	25.75	-172.46	-30.58	-29.71	253.23	201.95	51.28	4.938 Alert	
7,300.00	7,291.58	7,305.19	7,292.40	25.98	25.96	-172.94	-28.69	-30.18	255.37	203.70	51.67	4.942 Alert	
7,350.00	7,341.49	7,344.72	7,342.27	26.17	26.11	-173.41	-26.80	-30.65	257.52	205.53	51.99	4.953 Alert	
7,400.00	7,391.39	7,405.37	7,392.14	26.35	26.32	-173.87	-24.91	-31.12	259.70	207.31	52.39	4.957 Alert	
7,450.00	7,441.30	7,444.54	7,442.01	26.53	26.46	-174.33	-23.02	-31.59	261.89	209.18	52.71	4.969 Alert	
7,500.00	7,491.21	7,505.55	7,491.88	26.71	26.68	-174.78	-21.13	-32.06	264.09	210.99	53.10	4.973 Alert	
7,550.00	7,541.12	7,544.36	7,541.75	26.90	26.82	-175.22	-19.25	-32.53	266.32	212.90	53.42	4.985 Alert	
7,600.00	7,591.02	7,605.74	7,591.62	27.08	27.04	-175.65	-17.36	-33.00	268.56	214.74	53.82	4.990 Alert	
7,650.00	7,640.93	7,644.17	7,641.49	27.26	27.18	-176.08	-15.47	-33.47	270.81	216.67	54.13	5.002	
7,700.00	7,690.84	7,705.92	7,691.36	27.44	27.40	-176.50	-13.58	-33.94	273.08	218.54	54.53	5.007	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+IFR1													Offset Well Error:	0.50 ft
Reference		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		
7,750.00	7,740.75	7,743.99	7,741.24	27.63	27.54	-176.91	-11.69	-34.41	275.36	220.51	54.85	5.020		
7,800.00	7,790.66	7,806.10	7,791.11	27.81	27.76	-177.31	-9.80	-34.88	277.65	222.40	55.25	5.025		
7,850.00	7,840.56	7,843.81	7,840.98	27.99	27.90	-177.71	-7.92	-35.35	279.96	224.40	55.58	5.039		
7,900.00	7,890.47	7,906.28	7,890.85	28.17	28.12	-178.11	-6.03	-35.82	282.29	226.32	55.97	5.044		
7,950.00	7,940.38	7,943.63	7,940.72	28.36	28.26	-178.49	-4.14	-36.29	284.62	228.34	56.28	5.057		
8,000.00	7,990.29	8,006.46	7,990.59	28.54	28.48	-178.87	-2.25	-36.76	286.97	230.29	56.68	5.063		
8,050.00	8,040.19	8,043.45	8,040.46	28.72	28.61	-179.24	-0.36	-37.23	289.33	232.34	56.99	5.077		
8,100.00	8,090.10	8,106.65	8,090.33	28.91	28.84	-179.61	1.52	-37.70	291.71	234.31	57.40	5.082		
8,150.00	8,140.01	8,143.26	8,140.20	29.09	28.97	-179.97	3.41	-38.17	294.09	236.38	57.71	5.096		
8,200.00	8,189.92	8,206.83	8,190.07	29.27	29.20	-179.67	5.30	-38.64	296.49	238.37	58.11	5.102		
8,250.00	8,239.83	8,243.08	8,239.95	29.45	29.33	-179.32	7.19	-39.11	298.90	240.47	58.42	5.116		
8,300.00	8,289.73	8,307.01	8,289.82	29.64	29.56	-178.98	9.08	-39.57	301.31	242.48	58.83	5.122		
8,350.00	8,339.64	8,342.90	8,339.69	29.82	29.69	-178.64	10.97	-40.04	303.74	244.61	59.14	5.136		
8,400.00	8,389.55	8,407.19	8,389.56	30.00	29.92	-178.31	12.85	-40.51	306.18	246.64	59.55	5.142		
8,450.00	8,439.46	8,442.72	8,439.43	30.19	30.05	-177.98	14.74	-40.98	308.63	248.78	59.85	5.156		
8,500.00	8,489.37	8,507.37	8,489.30	30.37	30.28	-177.65	16.63	-41.45	311.09	250.83	60.27	5.162		
8,550.00	8,539.27	8,542.53	8,539.17	30.55	30.41	-177.34	18.52	-41.92	313.56	252.99	60.57	5.177		
8,600.00	8,589.18	8,607.56	8,589.04	30.73	30.64	-177.02	20.41	-42.39	316.04	255.06	60.98	5.183		
8,650.00	8,639.09	8,642.35	8,638.91	30.92	30.76	-176.72	22.30	-42.86	318.53	257.25	61.29	5.197		
8,700.00	8,689.00	8,707.74	8,688.78	31.10	31.00	-176.41	24.18	-43.33	321.03	259.33	61.70	5.203		
8,750.00	8,738.90	8,742.17	8,738.66	31.28	31.12	-176.11	26.07	-43.80	323.54	261.53	62.00	5.218		
8,800.00	8,788.82	8,807.92	8,788.53	31.47	31.36	-175.82	27.96	-44.27	325.99	263.58	62.42	5.223		
8,850.00	8,838.76	8,842.02	8,838.43	31.65	31.48	-175.52	29.85	-44.74	327.92	265.20	62.72	5.229		
8,900.00	8,888.72	8,891.97	8,888.34	31.83	31.66	-175.22	31.74	-45.21	329.21	266.13	63.08	5.219		
8,950.00	8,938.71	8,941.16	8,937.50	32.01	31.84	-174.95	33.43	-45.63	329.89	266.46	63.43	5.201		
9,000.00	8,988.71	8,990.11	8,986.44	32.18	32.01	-174.76	34.53	-45.90	330.08	266.31	63.78	5.175		
9,050.00	9,038.71	9,039.09	9,035.41	32.36	32.19	90.00	35.01	-46.02	329.98	265.85	64.13	5.146		
9,073.74	9,062.44	9,062.52	9,058.84	32.44	32.27	89.99	35.04	-46.03	329.97	265.68	64.29	5.132		
9,100.00	9,088.71	9,088.78	9,085.11	32.53	32.37	89.99	35.04	-46.03	329.97	265.49	64.48	5.118		
9,150.00	9,138.71	9,138.78	9,135.11	32.70	32.54	89.99	35.04	-46.03	329.97	265.14	64.83	5.090		
9,200.00	9,188.71	9,188.78	9,185.11	32.88	32.72	89.99	35.04	-46.03	329.97	264.79	65.18	5.062		
9,250.00	9,238.71	9,238.78	9,235.11	33.05	32.90	89.99	35.04	-46.03	329.97	264.43	65.54	5.035		
9,300.00	9,288.71	9,288.78	9,285.11	33.22	33.08	89.99	35.04	-46.03	329.97	264.08	65.89	5.008		
9,350.00	9,338.71	9,338.78	9,335.11	33.40	33.26	89.99	35.04	-46.03	329.97	263.73	66.24	4.981 Alert		
9,400.00	9,388.71	9,388.78	9,385.11	33.57	33.44	89.99	35.04	-46.03	329.97	263.37	66.60	4.955 Alert		
9,401.22	9,389.92	9,390.00	9,386.32	33.57	33.44	89.99	35.04	-46.03	329.97	263.37	66.60	4.954 Alert		
9,450.00	9,438.71	9,438.69	9,434.99	33.74	33.61	90.18	33.97	-46.03	329.97	263.03	66.94	4.929 Alert		
9,500.00	9,488.71	9,488.04	9,484.06	33.92	33.77	91.07	28.85	-46.01	330.05	262.77	67.27	4.906 Alert		
9,550.00	9,538.71	9,536.17	9,531.32	34.09	33.92	92.64	19.80	-45.99	330.38	262.80	67.58	4.888 Alert		
9,600.00	9,588.71	9,582.47	9,575.91	34.26	34.05	94.78	7.38	-45.96	331.33	263.46	67.87	4.882 Alert		
9,650.00	9,638.71	9,626.49	9,617.24	34.44	34.18	97.38	-7.72	-45.91	333.32	265.22	68.09	4.895 Alert		
9,700.00	9,688.71	9,667.90	9,654.96	34.61	34.29	100.27	-24.79	-45.87	336.85	268.63	68.22	4.937 Alert		
9,750.00	9,738.71	9,706.54	9,688.96	34.78	34.39	103.31	-43.14	-45.82	342.43	274.22	68.21	5.020		
9,800.00	9,788.71	9,742.36	9,719.31	34.96	34.48	106.39	-62.16	-45.77	350.46	282.46	68.00	5.154		
9,850.00	9,838.71	9,775.41	9,746.21	35.13	34.56	109.41	-81.36	-45.72	361.29	293.73	67.56	5.348		
9,900.00	9,888.71	9,805.81	9,769.93	35.31	34.63	112.28	-100.35	-45.66	375.11	308.23	66.88	5.608		
9,950.00	9,938.71	9,833.71	9,790.79	35.48	34.70	114.97	-118.88	-45.61	392.00	326.01	65.99	5.940		
10,000.00	9,988.71	9,859.28	9,809.10	35.65	34.76	117.46	-136.73	-45.57	411.89	346.98	64.92	6.345		
10,050.00	10,038.71	9,882.72	9,825.17	35.83	34.81	119.74	-153.80	-45.52	434.67	370.95	63.71	6.822		
10,100.00	10,088.71	9,900.00	9,836.55	36.00	34.85	121.41	-166.79	-45.48	460.15	397.91	62.24	7.393		
10,150.00	10,138.71	9,923.95	9,851.68	36.18	34.91	123.69	-185.35	-45.43	488.02	426.88	61.14	7.983		
10,200.00	10,188.71	9,942.08	9,862.61	36.35	34.95	125.39	-199.82	-45.39	518.12	458.27	59.85	8.657		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 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 Toothface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,250.00	10,238.71	9,958.77	9,872.26	38.52	34.98	126.92	-213.43	-45.36	550.18	491.58	58.60	9.389	
10,300.00	10,288.71	9,974.15	9,880.80	36.70	35.01	128.31	-226.23	-45.32	584.00	526.58	57.42	10.171	
10,350.00	10,338.71	9,988.36	9,888.38	36.87	35.04	129.56	-238.24	-45.29	619.35	563.04	56.31	10.999	
10,400.00	10,388.71	10,000.00	9,894.37	37.05	35.07	130.58	-248.23	-45.26	656.07	600.85	55.22	11.880	
10,450.00	10,438.71	10,013.69	9,901.15	37.22	35.09	131.74	-260.12	-45.23	693.99	639.65	54.34	12.771	
10,500.00	10,488.71	10,025.01	9,906.54	37.40	35.12	132.68	-270.07	-45.20	732.96	679.49	53.48	13.706	
10,550.00	10,538.71	10,035.54	9,911.37	37.57	35.14	133.54	-279.42	-45.18	772.88	720.19	52.70	14.667	
10,600.00	10,588.71	10,050.00	9,917.74	37.75	35.16	134.70	-292.41	-45.14	813.66	761.52	52.14	15.604	
10,650.00	10,638.71	10,050.00	9,917.74	37.92	35.16	134.70	-292.41	-45.14	855.15	803.94	51.21	16.698	
10,700.00	10,688.71	10,063.10	9,923.21	38.09	35.19	135.72	-304.31	-45.11	897.27	846.49	50.78	17.669	
10,750.00	10,738.71	10,071.14	9,926.44	38.27	35.20	136.33	-311.67	-45.09	940.01	889.74	50.27	18.699	
10,800.00	10,788.71	10,078.68	9,929.37	38.44	35.22	136.90	-318.62	-45.07	983.28	933.47	49.81	19.739	
10,850.00	10,838.71	10,085.78	9,932.05	38.62	35.23	137.42	-325.19	-45.06	1,027.03	977.62	49.41	20.786	
10,900.00	10,888.71	10,100.00	9,937.16	38.79	35.25	138.45	-338.47	-45.02	1,071.27	1,022.04	49.23	21.759	
10,950.00	10,938.71	10,100.00	9,937.16	38.97	35.25	138.45	-338.47	-45.02	1,115.76	1,067.00	48.76	22.883	
11,000.00	10,988.71	10,100.00	9,937.16	39.14	35.25	138.45	-338.47	-45.02	1,160.69	1,112.35	48.35	24.007	
11,050.00	11,038.71	10,100.00	9,937.16	39.32	35.25	138.45	-338.47	-45.02	1,206.03	1,158.04	47.99	25.130	
11,100.00	11,088.71	10,115.67	9,942.41	39.49	35.28	139.55	-353.22	-44.98	1,251.41	1,203.42	47.99	26.074	
11,150.00	11,138.71	10,120.72	9,944.02	39.67	35.29	139.89	-358.01	-44.97	1,297.20	1,249.39	47.81	27.131	
11,200.00	11,188.71	10,125.52	9,945.51	39.84	35.30	140.22	-362.58	-44.95	1,343.23	1,295.57	47.66	28.186	
11,250.00	11,238.67	10,130.55	9,947.03	40.01	35.31	-33.50	-367.37	-44.94	1,388.96	1,341.45	47.50	29.238	
11,300.00	11,288.29	10,150.00	9,952.50	40.18	35.34	-27.81	-386.04	-44.89	1,433.61	1,386.05	47.56	30.142	
11,350.00	11,337.21	10,150.00	9,952.50	40.34	35.34	-24.20	-386.04	-44.89	1,476.33	1,429.07	47.26	31.238	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
4,850.00	4,846.09	4,966.42	4,965.91	17.08	17.53	-6.17	-8.83	-1,621.10	1,494.68	1,460.31	34.37	43.491	
4,900.00	4,896.00	5,033.25	5,032.48	17.26	17.78	-6.18	-8.48	-1,615.29	1,487.33	1,452.59	34.74	42.814	
4,950.00	4,945.91	5,099.84	5,098.75	17.44	17.99	-6.18	-8.08	-1,608.73	1,479.40	1,444.30	35.11	42.140	
5,000.00	4,995.82	5,158.29	5,156.85	17.62	18.19	-6.19	-7.70	-1,602.38	1,470.97	1,435.51	35.46	41.481	
5,050.00	5,045.73	5,207.56	5,205.81	17.80	18.37	-6.19	-7.37	-1,596.94	1,462.45	1,426.65	35.81	40.843	
5,100.00	5,095.63	5,256.83	5,254.78	17.98	18.54	-6.19	-7.04	-1,591.50	1,453.94	1,417.78	36.15	40.217	
5,150.00	5,145.54	5,306.10	5,303.75	18.16	18.71	-6.19	-6.71	-1,586.05	1,445.42	1,408.92	36.50	39.602	
5,200.00	5,195.45	5,355.36	5,352.71	18.34	18.89	-6.20	-6.38	-1,580.61	1,436.90	1,400.06	36.84	38.999	
5,250.00	5,245.36	5,404.63	5,401.68	18.53	19.06	-6.20	-6.05	-1,575.17	1,428.39	1,391.19	37.19	38.407	
5,300.00	5,295.27	5,453.90	5,450.64	18.71	19.23	-6.20	-5.72	-1,569.73	1,419.87	1,382.33	37.54	37.826	
5,350.00	5,345.17	5,503.17	5,499.61	18.89	19.41	-6.21	-5.39	-1,564.28	1,411.35	1,373.47	37.88	37.255	
5,400.00	5,395.08	5,552.44	5,548.58	19.07	19.58	-6.21	-5.06	-1,558.84	1,402.84	1,364.60	38.23	36.694	
5,450.00	5,444.99	5,601.71	5,597.54	19.25	19.76	-6.21	-4.73	-1,553.40	1,394.32	1,355.74	38.58	36.143	
5,500.00	5,494.90	5,650.98	5,646.51	19.43	19.94	-6.22	-4.40	-1,547.95	1,385.80	1,346.88	38.93	35.601	
5,550.00	5,544.80	5,700.25	5,695.48	19.61	20.11	-6.22	-4.07	-1,542.51	1,377.29	1,338.01	39.27	35.069	
5,600.00	5,594.71	5,749.52	5,744.44	19.79	20.29	-6.22	-3.74	-1,537.07	1,368.77	1,329.15	39.62	34.546	
5,650.00	5,644.62	5,798.79	5,793.41	19.98	20.46	-6.23	-3.41	-1,531.63	1,360.25	1,320.28	39.97	34.032	
5,700.00	5,694.53	5,848.06	5,842.38	20.16	20.64	-6.23	-3.09	-1,526.18	1,351.74	1,311.42	40.32	33.527	
5,750.00	5,744.44	5,902.67	5,891.34	20.34	20.84	-6.23	-2.76	-1,520.74	1,343.22	1,302.53	40.68	33.015	
5,800.00	5,794.34	5,946.60	5,940.31	20.52	20.99	-6.24	-2.43	-1,515.30	1,334.70	1,293.69	41.01	32.542	
5,850.00	5,844.25	5,995.86	5,989.28	20.70	21.17	-6.24	-2.10	-1,509.85	1,326.19	1,284.82	41.36	32.062	
5,900.00	5,894.16	6,045.13	6,038.24	20.88	21.35	-6.24	-1.77	-1,504.41	1,317.67	1,275.96	41.71	31.589	
5,950.00	5,944.07	6,105.60	6,097.21	21.06	21.57	-6.25	-1.44	-1,498.97	1,309.15	1,267.05	42.10	31.095	
6,000.00	5,993.97	6,143.67	6,136.18	21.25	21.71	-6.25	-1.11	-1,493.53	1,300.64	1,258.22	42.41	30.667	
6,050.00	6,043.88	6,207.06	6,185.14	21.43	21.94	-6.25	-0.78	-1,488.08	1,292.12	1,249.31	42.81	30.182	
6,100.00	6,093.79	6,242.21	6,234.11	21.61	22.06	-6.26	-0.45	-1,482.64	1,283.60	1,240.49	43.11	29.775	
6,150.00	6,143.70	6,308.52	6,283.08	21.79	22.30	-6.26	-0.12	-1,477.20	1,275.09	1,231.57	43.52	29.298	
6,200.00	6,193.61	6,340.75	6,332.04	21.97	22.42	-6.27	0.21	-1,471.75	1,266.57	1,222.76	43.81	28.910	
6,250.00	6,243.51	6,409.98	6,381.01	22.16	22.67	-6.27	0.54	-1,466.31	1,258.05	1,213.82	44.23	28.443	
6,300.00	6,293.42	6,439.29	6,429.98	22.34	22.78	-6.27	0.87	-1,460.87	1,249.54	1,205.02	44.51	28.072	
6,350.00	6,343.33	6,488.56	6,478.94	22.52	22.96	-6.28	1.20	-1,455.43	1,241.02	1,196.16	44.86	27.663	
6,400.00	6,393.24	6,537.83	6,527.91	22.70	23.14	-6.28	1.53	-1,449.98	1,232.50	1,187.29	45.21	27.260	
6,450.00	6,443.14	6,587.10	6,576.88	22.88	23.32	-6.28	1.86	-1,444.54	1,223.99	1,178.42	45.56	26.863	
6,500.00	6,493.05	6,636.37	6,625.84	23.07	23.50	-6.29	2.19	-1,439.10	1,215.47	1,169.55	45.91	26.473	
6,550.00	6,542.96	6,685.63	6,674.81	23.25	23.68	-6.29	2.52	-1,433.65	1,206.95	1,160.69	46.27	26.088	
6,600.00	6,592.87	6,734.90	6,723.78	23.43	23.86	-6.30	2.85	-1,428.21	1,198.44	1,151.82	46.62	25.708	
6,650.00	6,642.78	6,784.17	6,772.74	23.61	24.04	-6.30	3.18	-1,422.77	1,189.92	1,142.95	46.97	25.335	
6,700.00	6,692.68	6,833.44	6,821.71	23.79	24.22	-6.31	3.51	-1,417.32	1,181.40	1,134.08	47.32	24.966	
6,750.00	6,742.59	6,882.71	6,870.68	23.98	24.41	-6.31	3.84	-1,411.88	1,172.89	1,125.22	47.67	24.604	
6,800.00	6,792.50	6,931.98	6,919.64	24.16	24.59	-6.32	4.17	-1,406.44	1,164.37	1,116.35	48.02	24.246	
6,850.00	6,842.41	6,981.25	6,968.61	24.34	24.77	-6.32	4.50	-1,401.00	1,155.85	1,107.48	48.37	23.894	
6,900.00	6,892.32	7,030.52	7,017.58	24.52	24.95	-6.32	4.82	-1,395.55	1,147.34	1,098.61	48.73	23.546	
6,950.00	6,942.22	7,079.79	7,066.54	24.71	25.13	-6.33	5.15	-1,390.11	1,138.82	1,089.74	49.08	23.204	
7,000.00	6,992.13	7,129.06	7,115.51	24.89	25.31	-6.33	5.48	-1,384.67	1,130.30	1,080.87	49.43	22.866	
7,050.00	7,042.04	7,178.33	7,164.48	25.07	25.50	-6.34	5.81	-1,379.22	1,121.79	1,072.00	49.78	22.533	
7,100.00	7,091.95	7,227.60	7,213.44	25.25	25.68	-6.34	6.14	-1,373.78	1,113.27	1,063.13	50.14	22.205	
7,150.00	7,141.85	7,276.87	7,262.41	25.44	25.86	-6.35	6.47	-1,368.34	1,104.75	1,054.27	50.49	21.881	
7,200.00	7,191.76	7,326.14	7,311.38	25.62	26.04	-6.35	6.80	-1,362.90	1,096.24	1,045.40	50.84	21.562	
7,250.00	7,241.67	7,375.40	7,360.34	25.80	26.23	-6.36	7.13	-1,357.45	1,087.72	1,036.53	51.19	21.247	
7,300.00	7,291.58	7,424.67	7,409.31	25.98	26.41	-6.36	7.46	-1,352.01	1,079.20	1,027.66	51.55	20.936	
7,350.00	7,341.49	7,473.94	7,458.27	26.17	26.59	-6.37	7.79	-1,346.57	1,070.69	1,018.79	51.90	20.630	
7,400.00	7,391.39	7,523.21	7,507.24	26.35	26.78	-6.38	8.12	-1,341.12	1,062.17	1,009.92	52.25	20.327	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
7,450.00	7,441.30	7,572.48	7,556.21	26.53	26.96	-6.38	8.45	-1,335.68	1,053.66	1,001.05	52.61	20.029	
7,500.00	7,491.21	7,621.75	7,605.17	26.71	27.14	-6.39	8.78	-1,330.24	1,045.14	992.18	52.96	19.735	
7,550.00	7,541.12	7,671.02	7,654.14	26.90	27.33	-6.39	9.11	-1,324.80	1,036.62	983.31	53.31	19.444	
7,600.00	7,591.02	7,720.29	7,703.11	27.08	27.51	-6.40	9.44	-1,319.35	1,028.11	974.44	53.67	19.157	
7,650.00	7,640.93	7,769.56	7,752.07	27.26	27.69	-6.40	9.77	-1,313.91	1,019.59	965.57	54.02	18.874	
7,700.00	7,690.84	7,818.83	7,801.04	27.44	27.88	-6.41	10.10	-1,308.47	1,011.07	956.70	54.37	18.595	
7,750.00	7,740.75	7,868.10	7,850.01	27.63	28.06	-6.42	10.43	-1,303.02	1,002.56	947.83	54.73	18.319	
7,800.00	7,790.66	7,917.37	7,898.97	27.81	28.24	-6.42	10.76	-1,297.58	994.04	938.96	55.08	18.047	
7,850.00	7,840.56	7,966.64	7,947.94	27.99	28.43	-6.43	11.09	-1,292.14	985.52	930.09	55.44	17.778	
7,900.00	7,890.47	8,015.90	7,996.91	28.17	28.61	-6.43	11.42	-1,286.70	977.01	921.22	55.79	17.513	
7,950.00	7,940.38	8,065.17	8,045.87	28.36	28.80	-6.44	11.75	-1,281.25	968.49	912.35	56.14	17.250	
8,000.00	7,990.29	8,114.44	8,094.84	28.54	28.98	-6.45	12.08	-1,275.81	959.98	903.48	56.50	16.992	
8,050.00	8,040.19	8,163.71	8,143.81	28.72	29.17	-6.45	12.41	-1,270.37	951.46	894.61	56.85	16.736	
8,100.00	8,090.10	8,212.98	8,192.77	28.91	29.35	-6.46	12.73	-1,264.92	942.94	885.74	57.21	16.483	
8,150.00	8,140.01	8,262.25	8,241.74	29.09	29.53	-6.47	13.06	-1,259.48	934.43	876.87	57.56	16.234	
8,200.00	8,189.92	8,311.52	8,290.71	29.27	29.72	-6.48	13.39	-1,254.04	925.91	868.00	57.91	15.987	
8,250.00	8,239.83	8,360.79	8,339.67	29.45	29.90	-6.48	13.72	-1,248.60	917.39	859.12	58.27	15.744	
8,300.00	8,289.73	8,410.06	8,388.64	29.64	30.09	-6.49	14.05	-1,243.15	908.88	850.25	58.62	15.504	
8,350.00	8,339.64	8,459.33	8,437.61	29.82	30.27	-6.50	14.38	-1,237.71	900.36	841.38	58.98	15.266	
8,400.00	8,389.55	8,508.60	8,486.57	30.00	30.46	-6.51	14.71	-1,232.27	891.85	832.51	59.33	15.031	
8,450.00	8,439.46	8,557.87	8,535.54	30.19	30.64	-6.51	15.04	-1,226.82	883.33	823.64	59.69	14.799	
8,500.00	8,489.37	8,607.14	8,584.51	30.37	30.83	-6.52	15.37	-1,221.38	874.81	814.77	60.04	14.570	
8,550.00	8,539.27	8,656.41	8,633.47	30.55	31.02	-6.53	15.70	-1,215.94	866.30	805.90	60.40	14.343	
8,600.00	8,589.18	8,705.67	8,682.44	30.73	31.20	-6.54	16.03	-1,210.50	857.78	797.03	60.75	14.119	
8,650.00	8,639.09	8,754.94	8,731.41	30.92	31.39	-6.55	16.36	-1,205.05	849.26	788.16	61.11	13.898	
8,700.00	8,689.00	8,804.21	8,780.37	31.10	31.57	-6.55	16.69	-1,199.61	840.75	779.28	61.46	13.679	
8,750.00	8,738.90	8,853.48	8,829.34	31.28	31.76	-6.56	17.02	-1,194.17	832.23	770.41	61.82	13.462	
8,800.00	8,788.82	8,902.76	8,878.32	31.47	31.94	-6.57	17.35	-1,188.72	823.77	761.60	62.17	13.249	
8,850.00	8,838.76	8,952.13	8,927.38	31.65	32.13	-6.56	17.68	-1,183.27	815.84	753.31	62.53	13.047	
8,900.00	8,888.72	9,001.59	8,976.54	31.83	32.32	-6.54	18.01	-1,177.80	808.55	745.67	62.89	12.858	
8,950.00	8,938.71	9,051.15	9,025.79	32.01	32.50	-6.52	18.34	-1,172.33	801.91	738.67	63.24	12.680	
9,000.00	8,988.71	9,100.79	9,075.13	32.18	32.69	-6.50	18.67	-1,166.85	795.91	732.32	63.60	12.515	
9,050.00	9,038.71	9,150.48	9,124.51	32.36	32.88	-91.17	19.01	-1,161.36	790.37	726.42	63.95	12.359	
9,100.00	9,088.71	9,200.17	9,173.90	32.53	33.07	-91.15	19.34	-1,155.87	784.84	720.54	64.30	12.206	
9,150.00	9,138.71	9,249.86	9,223.29	32.70	33.25	-91.13	19.67	-1,150.38	779.31	714.65	64.65	12.053	
9,200.00	9,188.71	9,299.56	9,272.67	32.88	33.44	-91.12	20.00	-1,144.89	773.78	708.77	65.01	11.903	
9,250.00	9,238.71	9,349.25	9,322.06	33.05	33.63	-91.10	20.34	-1,139.40	768.25	702.89	65.36	11.754	
9,300.00	9,288.71	9,401.06	9,371.45	33.22	33.83	-91.08	20.67	-1,133.91	762.72	697.00	65.72	11.605	
9,350.00	9,338.71	9,448.64	9,420.84	33.40	34.01	-91.07	21.00	-1,128.42	757.19	691.13	66.07	11.461	
9,400.00	9,388.71	9,501.67	9,470.22	33.57	34.21	-91.05	21.33	-1,122.93	751.66	685.23	66.43	11.315	
9,450.00	9,438.71	9,548.02	9,519.61	33.74	34.38	-91.03	21.67	-1,117.44	746.13	679.36	66.77	11.174	
9,500.00	9,488.71	9,602.29	9,569.00	33.92	34.59	-91.01	22.00	-1,111.95	740.61	673.46	67.14	11.030	
9,550.00	9,538.71	9,647.41	9,618.39	34.09	34.76	-90.99	22.33	-1,106.46	735.08	667.60	67.48	10.893	
9,600.00	9,588.71	9,697.10	9,667.77	34.26	34.95	-90.97	22.66	-1,100.97	729.55	661.72	67.83	10.755	
9,650.00	9,638.71	9,746.79	9,717.16	34.44	35.14	-90.96	23.00	-1,095.48	724.02	655.83	68.19	10.618	
9,700.00	9,688.71	9,803.51	9,766.55	34.61	35.35	-90.94	23.33	-1,089.99	718.49	649.93	68.57	10.479	
9,750.00	9,738.71	9,844.81	9,814.57	34.78	35.51	-90.92	23.65	-1,084.66	712.97	644.07	68.90	10.348	
9,800.00	9,788.71	9,886.75	9,856.29	34.96	35.67	-90.90	23.91	-1,080.34	707.81	638.53	69.28	10.217	
9,850.00	9,838.71	9,928.78	9,898.14	35.13	35.82	-90.89	24.15	-1,076.46	703.20	633.55	69.65	10.096	
9,900.00	9,888.71	9,970.89	9,940.11	35.31	35.98	-90.88	24.35	-1,073.04	699.13	629.12	70.02	9.985	
9,950.00	9,938.71	10,013.07	9,982.19	35.48	36.13	-90.86	24.53	-1,070.08	695.62	625.24	70.38	9.884	
10,000.00	9,988.71	10,055.31	10,024.36	35.65	36.29	-90.85	24.69	-1,067.57	692.65	621.92	70.73	9.793	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
10,050.00	10,038.71	10,097.61	10,066.60	35.83	36.44	-90.85	24.81	-1,065.53	690.24	619.16	71.08	9.711	
10,100.00	10,088.71	10,139.94	10,108.91	36.00	36.59	-90.84	24.90	-1,063.96	688.38	616.96	71.42	9.638	
10,150.00	10,138.71	10,182.31	10,151.26	36.18	36.74	-90.84	24.97	-1,062.85	687.07	615.32	71.76	9.575	
10,200.00	10,188.71	10,224.69	10,193.63	36.35	36.89	-90.83	25.01	-1,062.22	686.32	614.23	72.09	9.521	
10,250.00	10,238.71	10,268.16	10,237.11	36.52	37.04	-90.83	25.02	-1,062.04	686.12	613.70	72.41	9.475	
10,300.00	10,288.71	10,318.16	10,287.11	36.70	37.21	-90.83	25.02	-1,062.04	686.12	613.35	72.76	9.429	
10,350.00	10,338.71	10,368.16	10,337.11	36.87	37.38	-90.83	25.02	-1,062.04	686.12	613.00	73.11	9.384	
10,400.00	10,388.71	10,418.16	10,387.11	37.05	37.56	-90.83	25.02	-1,062.04	686.12	612.65	73.46	9.340	
10,450.00	10,438.71	10,468.16	10,437.11	37.22	37.73	-90.83	25.02	-1,062.04	686.12	612.30	73.81	9.295	
10,500.00	10,488.71	10,518.16	10,487.11	37.40	37.90	-90.83	25.02	-1,062.04	686.12	611.95	74.16	9.251	
10,550.00	10,538.71	10,568.16	10,537.11	37.57	38.08	-90.83	25.02	-1,062.04	686.12	611.60	74.52	9.208	
10,555.60	10,544.30	10,573.76	10,542.70	37.59	38.10	-90.83	25.02	-1,062.04	686.12	611.56	74.55	9.203 CC	
10,600.00	10,588.71	10,618.05	10,587.00	37.75	38.25	-90.84	24.98	-1,062.04	686.12	611.25	74.86	9.165	
10,650.00	10,638.71	10,667.11	10,635.96	37.92	38.41	-91.06	22.28	-1,062.04	686.16	610.95	75.20	9.124	
10,700.00	10,688.71	10,715.35	10,683.72	38.09	38.56	-91.62	15.56	-1,062.03	686.31	610.78	75.54	9.086 ES	
10,750.00	10,738.71	10,762.15	10,729.35	38.27	38.71	-92.49	5.22	-1,062.01	686.70	610.84	75.86	9.052	
10,800.00	10,788.71	10,806.97	10,772.12	38.44	38.85	-93.60	-8.14	-1,061.99	687.51	611.35	76.17	9.027	
10,850.00	10,838.71	10,849.44	10,811.57	38.62	38.97	-94.90	-23.84	-1,061.97	688.96	612.51	76.45	9.012	
10,900.00	10,888.71	10,889.30	10,847.44	38.79	39.08	-96.34	-41.20	-1,061.94	691.30	614.61	76.70	9.013	
10,950.00	10,938.71	10,926.43	10,879.70	38.97	39.18	-97.85	-59.59	-1,061.92	694.78	617.89	76.89	9.036	
11,000.00	10,988.71	10,960.84	10,908.46	39.14	39.27	-99.39	-78.45	-1,061.89	699.64	622.62	77.02	9.084	
11,050.00	11,038.71	10,992.58	10,933.96	39.32	39.35	-100.92	-97.36	-1,061.86	706.09	629.03	77.06	9.163	
11,100.00	11,088.71	11,021.78	10,956.45	39.49	39.41	-102.41	-115.97	-1,061.83	714.30	637.30	77.00	9.276	
11,150.00	11,138.71	11,050.00	10,977.26	39.67	39.48	-103.92	-135.03	-1,061.80	724.42	647.57	76.86	9.426	
11,200.00	11,188.71	11,073.22	10,993.66	39.84	39.53	-105.21	-151.46	-1,061.78	736.53	659.98	76.55	9.621	
11,250.00	11,238.67	11,100.00	11,011.74	40.01	39.58	72.28	-171.22	-1,061.75	750.25	674.02	76.23	9.842	
11,300.00	11,288.29	11,120.10	11,024.69	40.18	39.62	69.84	-186.59	-1,061.73	764.64	688.94	75.69	10.102	
11,350.00	11,337.21	11,150.00	11,042.93	40.34	39.68	67.02	-210.28	-1,061.69	779.48	704.19	75.29	10.354	
11,400.00	11,385.04	11,167.39	11,052.96	40.49	39.72	64.86	-224.48	-1,061.67	794.38	719.80	74.57	10.652	
11,450.00	11,431.43	11,191.16	11,065.97	40.64	39.76	62.56	-244.37	-1,061.64	809.21	735.26	73.95	10.942	
11,500.00	11,476.02	11,215.00	11,078.18	40.78	39.81	60.41	-264.84	-1,061.61	823.72	750.41	73.31	11.236	
11,550.00	11,518.47	11,238.89	11,089.54	40.91	39.86	58.42	-285.86	-1,061.58	837.71	765.05	72.66	11.529	
11,600.00	11,558.46	11,262.83	11,100.05	41.03	39.91	56.61	-307.37	-1,061.54	851.02	778.99	72.02	11.816	
11,650.00	11,595.68	11,286.81	11,109.66	41.15	39.96	54.98	-329.34	-1,061.51	863.47	792.07	71.40	12.093	
11,700.00	11,629.85	11,310.83	11,118.35	41.26	40.01	53.53	-351.73	-1,061.48	874.96	804.13	70.82	12.354	
11,750.00	11,660.72	11,334.88	11,126.11	41.37	40.06	52.28	-374.49	-1,061.44	885.34	815.05	70.29	12.596	
11,800.00	11,688.04	11,350.00	11,130.50	41.48	40.10	51.29	-388.96	-1,061.42	894.62	824.93	69.69	12.838	
11,850.00	11,711.61	11,383.05	11,138.75	41.60	40.18	50.26	-420.96	-1,061.37	902.44	833.03	69.42	13.001	
11,900.00	11,731.24	11,400.00	11,142.26	41.72	40.22	49.58	-437.54	-1,061.35	909.07	840.05	69.02	13.171	
11,950.00	11,746.80	11,431.29	11,147.45	41.85	40.30	48.95	-468.39	-1,061.30	914.17	845.30	68.87	13.274	
12,000.00	11,758.16	11,450.00	11,149.74	41.98	40.35	48.56	-486.96	-1,061.28	917.91	849.21	68.70	13.361	
12,050.00	11,765.23	11,479.57	11,152.13	42.12	40.43	48.30	-516.43	-1,061.23	920.11	851.40	68.71	13.391	
12,100.00	11,767.96	11,503.72	11,152.95	42.25	40.50	48.23	-540.56	-1,061.19	920.84	852.05	68.79	13.387	
12,106.58	11,768.03	11,519.80	11,153.00	42.27	40.54	48.23	-539.24	-1,061.20	920.83	852.00	68.83	13.379	
12,150.00	11,768.00	11,545.81	11,153.00	42.40	40.62	48.23	-582.65	-1,061.13	920.85	851.86	68.99	13.348	
12,200.00	11,768.00	11,604.19	11,153.00	42.54	40.80	48.23	-632.65	-1,061.06	920.89	851.66	69.23	13.301	
12,250.00	11,768.00	11,645.81	11,153.00	42.71	40.94	48.24	-682.65	-1,060.98	920.94	851.46	69.48	13.255	
12,300.00	11,768.00	11,704.19	11,153.00	42.88	41.15	48.24	-732.65	-1,060.91	920.98	851.22	69.76	13.202	
12,350.00	11,768.00	11,745.81	11,153.00	43.07	41.31	48.24	-782.65	-1,060.83	921.03	850.98	70.04	13.149	
12,400.00	11,768.00	11,804.19	11,153.00	43.26	41.54	48.24	-832.65	-1,060.76	921.07	850.70	70.37	13.089	
12,450.00	11,768.00	11,845.81	11,153.00	43.47	41.72	48.25	-882.65	-1,060.68	921.12	850.43	70.69	13.031	
12,500.00	11,768.00	11,895.81	11,153.00	43.68	41.94	48.25	-932.65	-1,060.61	921.16	850.13	71.03	12.969	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
12,550.00	11,768.00	11,945.81	11,153.00	43.91	42.18	48.25	-982.65	-1,060.53	921.21	849.80	71.40	12.901	
12,600.00	11,768.00	12,004.19	11,153.00	44.15	42.47	48.25	-1,032.65	-1,060.46	921.25	849.44	71.81	12.828	
12,650.00	11,768.00	12,045.81	11,153.00	44.40	42.69	48.26	-1,082.65	-1,060.38	921.30	849.10	72.20	12.761	
12,700.00	11,768.00	12,104.19	11,153.00	44.66	43.00	48.26	-1,132.65	-1,060.31	921.34	848.70	72.65	12.683	
12,750.00	11,768.00	12,145.81	11,153.00	44.93	43.23	48.26	-1,182.65	-1,060.23	921.39	848.33	73.06	12.611	
12,800.00	11,768.00	12,204.19	11,153.00	45.20	43.57	48.26	-1,232.65	-1,060.16	921.43	847.88	73.55	12.528	
12,850.00	11,768.00	12,245.81	11,153.00	45.50	43.82	48.27	-1,282.65	-1,060.08	921.48	847.49	73.99	12.454	
12,900.00	11,768.00	12,304.19	11,153.00	45.79	44.18	48.27	-1,332.65	-1,060.01	921.52	847.01	74.52	12.367	
12,950.00	11,768.00	12,345.81	11,153.00	46.10	44.44	48.27	-1,382.65	-1,059.93	921.57	846.58	74.99	12.289	
13,000.00	11,768.00	12,404.19	11,153.00	46.42	44.82	48.27	-1,432.65	-1,059.86	921.61	846.06	75.55	12.199	
13,050.00	11,768.00	12,445.81	11,153.00	46.75	45.11	48.28	-1,482.65	-1,059.78	921.66	845.61	76.05	12.119	
13,100.00	11,768.00	12,504.19	11,153.00	47.08	45.51	48.28	-1,532.65	-1,059.71	921.70	845.06	76.64	12.026	
13,150.00	11,768.00	12,545.81	11,153.00	47.43	45.81	48.28	-1,582.65	-1,059.63	921.75	844.58	77.17	11.944	
13,200.00	11,768.00	12,604.19	11,153.00	47.78	46.23	48.28	-1,632.65	-1,059.56	921.79	843.99	77.80	11.848	
13,250.00	11,768.00	12,645.81	11,153.00	48.14	46.54	48.29	-1,682.65	-1,059.48	921.84	843.48	78.35	11.765	
13,300.00	11,768.00	12,704.19	11,153.00	48.51	46.98	48.29	-1,732.65	-1,059.41	921.88	842.87	79.01	11.668	
13,350.00	11,768.00	12,745.81	11,153.00	48.89	47.31	48.29	-1,782.65	-1,059.33	921.93	842.34	79.59	11.583	
13,400.00	11,768.00	12,804.19	11,153.00	49.27	47.77	48.29	-1,832.65	-1,059.26	921.97	841.70	80.28	11.485	
13,450.00	11,768.00	12,845.81	11,153.00	49.68	48.11	48.30	-1,882.65	-1,059.18	922.02	841.14	80.88	11.400	
13,500.00	11,768.00	12,904.19	11,153.00	50.06	48.59	48.30	-1,932.65	-1,059.11	922.06	840.47	81.59	11.301	
13,550.00	11,768.00	12,945.81	11,153.00	50.47	48.94	48.30	-1,982.65	-1,059.03	922.11	839.89	82.22	11.215	
13,600.00	11,768.00	13,004.19	11,153.00	50.88	49.43	48.30	-2,032.65	-1,058.96	922.16	839.19	82.96	11.116	
13,650.00	11,768.00	13,045.81	11,153.00	51.31	49.80	48.31	-2,082.65	-1,058.88	922.20	838.59	83.61	11.030	
13,700.00	11,768.00	13,104.19	11,153.00	51.73	50.31	48.31	-2,132.65	-1,058.81	922.25	837.87	84.37	10.930	
13,750.00	11,768.00	13,145.81	11,153.00	52.17	50.68	48.31	-2,182.65	-1,058.73	922.29	837.25	85.04	10.845	
13,800.00	11,768.00	13,204.19	11,153.00	52.61	51.21	48.31	-2,232.65	-1,058.66	922.34	836.50	85.83	10.746	
13,850.00	11,768.00	13,245.81	11,153.00	53.06	51.59	48.32	-2,282.65	-1,058.58	922.38	835.86	86.52	10.661	
13,900.00	11,768.00	13,304.19	11,153.00	53.51	52.13	48.32	-2,332.65	-1,058.51	922.43	835.09	87.33	10.562	
13,950.00	11,768.00	13,345.81	11,153.00	53.97	52.53	48.32	-2,382.65	-1,058.43	922.47	834.43	88.04	10.478	
14,000.00	11,768.00	13,404.19	11,153.00	54.43	53.08	48.32	-2,432.65	-1,058.36	922.52	833.64	88.87	10.380	
14,050.00	11,768.00	13,445.81	11,153.00	54.91	53.49	48.33	-2,482.65	-1,058.28	922.56	832.96	89.60	10.297	
14,100.00	11,768.00	13,504.19	11,153.00	55.38	54.05	48.33	-2,532.65	-1,058.21	922.61	832.15	90.45	10.200	
14,150.00	11,768.00	13,545.81	11,153.00	55.87	54.47	48.33	-2,582.65	-1,058.13	922.65	831.46	91.19	10.117	
14,200.00	11,768.00	13,604.19	11,153.00	56.35	55.05	48.33	-2,632.65	-1,058.06	922.70	830.63	92.07	10.022	
14,250.00	11,768.00	13,645.81	11,153.00	56.85	55.47	48.34	-2,682.65	-1,057.98	922.74	829.92	92.82	9.941	
14,300.00	11,768.00	13,704.19	11,153.00	57.34	56.06	48.34	-2,732.65	-1,057.91	922.79	829.07	93.72	9.846	
14,350.00	11,768.00	13,745.81	11,153.00	57.84	56.49	48.34	-2,782.65	-1,057.83	922.83	828.34	94.49	9.766	
14,400.00	11,768.00	13,804.19	11,153.00	58.35	57.09	48.34	-2,832.65	-1,057.76	922.88	827.48	95.40	9.674	
14,450.00	11,768.00	13,845.81	11,153.00	58.86	57.53	48.35	-2,882.65	-1,057.68	922.92	826.74	96.19	9.595	
14,500.00	11,768.00	13,904.19	11,153.00	59.38	58.14	48.35	-2,932.65	-1,057.61	922.97	825.85	97.12	9.504	
14,550.00	11,768.00	13,945.81	11,153.00	59.90	58.58	48.35	-2,982.65	-1,057.53	923.01	825.10	97.91	9.427	
14,600.00	11,768.00	14,004.19	11,153.00	60.42	59.21	48.35	-3,032.65	-1,057.46	923.06	824.20	98.86	9.337	
14,650.00	11,768.00	14,045.81	11,153.00	60.95	59.66	48.36	-3,082.65	-1,057.38	923.10	823.44	99.67	9.262	
14,700.00	11,768.00	14,104.19	11,153.00	61.48	60.29	48.36	-3,132.65	-1,057.31	923.15	822.52	100.63	9.174	
14,750.00	11,768.00	14,145.81	11,153.00	62.02	60.74	48.36	-3,182.65	-1,057.23	923.19	821.74	101.45	9.100	
14,800.00	11,768.00	14,204.19	11,153.00	62.56	61.39	48.36	-3,232.65	-1,057.16	923.24	820.81	102.43	9.014	
14,850.00	11,768.00	14,245.81	11,153.00	63.11	61.85	48.37	-3,282.65	-1,057.08	923.29	820.03	103.26	8.941	
14,900.00	11,768.00	14,304.19	11,153.00	63.65	62.50	48.37	-3,332.65	-1,057.01	923.33	819.08	104.25	8.857	
14,950.00	11,768.00	14,345.81	11,153.00	64.21	62.97	48.37	-3,382.65	-1,056.93	923.38	818.28	105.09	8.786	
15,000.00	11,768.00	14,404.19	11,153.00	64.76	63.62	48.37	-3,432.65	-1,056.86	923.42	817.33	106.09	8.704	
15,050.00	11,768.00	14,445.81	11,153.00	65.32	64.10	48.38	-3,482.65	-1,056.78	923.47	816.52	106.95	8.635	
15,100.00	11,768.00	14,504.19	11,153.00	65.88	64.76	48.38	-3,532.65	-1,056.71	923.51	815.55	107.96	8.554	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 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
15,150.00	11,768.00	14,545.81	11,153.00	68.45	65.24	48.38	-3,582.65	-1,056.63	923.56	814.73	108.83	8.486	
15,200.00	11,768.00	14,604.19	11,153.00	67.01	65.91	48.38	-3,632.65	-1,056.56	923.60	813.75	109.85	8.408	
15,250.00	11,768.00	14,645.81	11,153.00	67.58	66.40	48.39	-3,682.65	-1,056.48	923.65	812.92	110.73	8.342	
15,300.00	11,768.00	14,704.19	11,153.00	68.16	67.08	48.39	-3,732.65	-1,056.41	923.69	811.93	111.76	8.265	
15,350.00	11,768.00	14,745.81	11,153.00	68.73	67.57	48.39	-3,782.65	-1,056.33	923.74	811.09	112.64	8.200	
15,400.00	11,768.00	14,804.19	11,153.00	69.31	68.25	48.39	-3,832.65	-1,056.26	923.78	810.09	113.69	8.125	
15,450.00	11,768.00	14,845.81	11,153.00	69.90	68.75	48.40	-3,882.65	-1,056.18	923.83	809.25	114.58	8.063	
15,500.00	11,768.00	14,904.19	11,153.00	70.48	69.44	48.40	-3,932.65	-1,056.11	923.87	808.23	115.64	7.989	
15,550.00	11,768.00	14,945.81	11,153.00	71.07	69.93	48.40	-3,982.65	-1,056.03	923.92	807.38	116.54	7.928	
15,600.00	11,768.00	15,004.19	11,153.00	71.66	70.63	48.40	-4,032.65	-1,055.96	923.96	806.36	117.60	7.857	
15,650.00	11,768.00	15,045.81	11,153.00	72.25	71.13	48.41	-4,082.65	-1,055.88	924.01	805.50	118.51	7.797	
15,700.00	11,768.00	15,104.19	11,153.00	72.85	71.84	48.41	-4,132.65	-1,055.81	924.05	804.47	119.59	7.727	
15,750.00	11,768.00	15,145.81	11,153.00	73.45	72.34	48.41	-4,182.65	-1,055.73	924.10	803.60	120.50	7.669	
15,800.00	11,768.00	15,204.19	11,153.00	74.04	73.05	48.41	-4,232.65	-1,055.66	924.14	802.56	121.58	7.601	
15,850.00	11,768.00	15,245.81	11,153.00	74.65	73.56	48.42	-4,282.65	-1,055.58	924.19	801.69	122.50	7.544	
15,900.00	11,768.00	15,304.19	11,153.00	75.25	74.27	48.42	-4,332.65	-1,055.51	924.24	800.64	123.60	7.478	
15,950.00	11,768.00	15,345.81	11,153.00	75.86	74.78	48.42	-4,382.65	-1,055.43	924.28	799.76	124.52	7.423	
16,000.00	11,768.00	15,404.19	11,153.00	76.47	75.50	48.42	-4,432.65	-1,055.36	924.33	798.70	125.62	7.358	
16,050.00	11,768.00	15,445.81	11,153.00	77.08	76.02	48.43	-4,482.65	-1,055.28	924.37	797.81	126.56	7.304	
16,100.00	11,768.00	15,504.19	11,153.00	77.69	76.74	48.43	-4,532.65	-1,055.21	924.42	796.75	127.68	7.241	
16,150.00	11,768.00	15,545.81	11,153.00	78.30	77.26	48.43	-4,582.65	-1,055.13	924.46	795.86	128.60	7.188	
16,200.00	11,768.00	15,604.19	11,153.00	78.92	77.98	48.43	-4,632.65	-1,055.06	924.51	794.79	129.72	7.127	
16,250.00	11,768.00	15,645.81	11,153.00	79.54	78.51	48.44	-4,682.65	-1,054.98	924.55	793.89	130.66	7.076	
16,300.00	11,768.00	15,704.19	11,153.00	80.16	79.24	48.44	-4,732.65	-1,054.91	924.60	792.81	131.78	7.016	
16,350.00	11,768.00	15,745.81	11,153.00	80.78	79.76	48.44	-4,782.65	-1,054.83	924.64	791.91	132.73	6.966	
16,400.00	11,768.00	15,804.19	11,153.00	81.40	80.50	48.44	-4,832.65	-1,054.76	924.69	790.83	133.86	6.908	
16,450.00	11,768.00	15,845.81	11,153.00	82.03	81.02	48.45	-4,882.65	-1,054.68	924.73	789.92	134.82	6.859	
16,500.00	11,768.00	15,904.19	11,153.00	82.66	81.76	48.45	-4,932.65	-1,054.61	924.78	788.83	135.95	6.802	
16,550.00	11,768.00	15,945.81	11,153.00	83.29	82.29	48.45	-4,982.65	-1,054.53	924.82	787.91	136.91	6.755	
16,600.00	11,768.00	16,004.19	11,153.00	83.92	83.03	48.45	-5,032.65	-1,054.46	924.87	786.82	138.05	6.700	
16,650.00	11,768.00	16,045.81	11,153.00	84.55	83.57	48.46	-5,082.65	-1,054.38	924.91	785.90	139.02	6.653	
16,700.00	11,768.00	16,104.19	11,153.00	85.18	84.31	48.46	-5,132.65	-1,054.31	924.96	784.80	140.16	6.599	
16,750.00	11,768.00	16,145.81	11,153.00	85.82	84.85	48.46	-5,182.65	-1,054.23	925.00	783.87	141.13	6.554	
16,800.00	11,768.00	16,204.19	11,153.00	86.45	85.59	48.46	-5,232.65	-1,054.16	925.05	782.77	142.28	6.502	
16,850.00	11,768.00	16,245.81	11,153.00	87.09	86.13	48.47	-5,282.65	-1,054.08	925.10	781.84	143.26	6.458	
16,900.00	11,768.00	16,304.19	11,153.00	87.73	86.88	48.47	-5,332.65	-1,054.01	925.14	780.73	144.41	6.406	
16,950.00	11,768.00	16,345.81	11,153.00	88.37	87.42	48.47	-5,382.65	-1,053.93	925.19	779.80	145.39	6.363	
17,000.00	11,768.00	16,404.19	11,153.00	89.01	88.18	48.47	-5,432.65	-1,053.86	925.23	778.68	146.55	6.313	
17,050.00	11,768.00	16,445.81	11,153.00	89.65	88.72	48.48	-5,482.65	-1,053.78	925.28	777.74	147.53	6.272	
17,100.00	11,768.00	16,504.19	11,153.00	90.30	89.48	48.48	-5,532.65	-1,053.71	925.32	776.62	148.70	6.223	
17,150.00	11,768.00	16,545.81	11,153.00	90.94	90.02	48.48	-5,582.65	-1,053.63	925.37	775.68	149.69	6.182	
17,200.00	11,768.00	16,604.19	11,153.00	91.59	90.78	48.48	-5,632.65	-1,053.56	925.41	774.56	150.85	6.135	
17,250.00	11,768.00	16,645.81	11,153.00	92.24	91.32	48.49	-5,682.65	-1,053.48	925.46	773.61	151.84	6.095	
17,300.00	11,768.00	16,704.19	11,153.00	92.89	92.09	48.49	-5,732.64	-1,053.41	925.50	772.49	153.02	6.048	
17,350.00	11,768.00	16,745.81	11,153.00	93.54	92.63	48.49	-5,782.64	-1,053.33	925.55	771.54	154.01	6.010	
17,400.00	11,768.00	16,804.19	11,153.00	94.19	93.40	48.49	-5,832.64	-1,053.26	925.59	770.40	155.19	5.964	
17,450.00	11,768.00	16,845.81	11,153.00	94.84	93.95	48.50	-5,882.64	-1,053.18	925.64	769.45	156.19	5.926	
17,500.00	11,768.00	16,904.19	11,153.00	95.50	94.72	48.50	-5,932.64	-1,053.11	925.68	768.32	157.37	5.882	
17,550.00	11,768.00	16,945.81	11,153.00	96.15	95.26	48.50	-5,982.64	-1,053.03	925.73	767.36	158.37	5.845	
17,600.00	11,768.00	17,004.19	11,153.00	96.81	96.04	48.50	-6,032.64	-1,052.96	925.78	766.22	159.55	5.802	
17,650.00	11,768.00	17,045.81	11,153.00	97.46	96.59	48.51	-6,082.64	-1,052.88	925.82	765.26	160.56	5.766	
17,700.00	11,768.00	17,104.19	11,153.00	98.12	97.36	48.51	-6,132.64	-1,052.81	925.87	764.12	161.75	5.724	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	
17,750.00	11,768.00	17,145.81	11,153.00	98.78	97.91	48.51	-6,182.64	-1,052.73	925.91	763.16	162.75	5.689	
17,800.00	11,768.00	17,204.19	11,153.00	99.44	98.69	48.51	-6,232.64	-1,052.66	925.96	762.01	163.95	5.648	
17,850.00	11,768.00	17,245.81	11,153.00	100.10	99.24	48.52	-6,282.64	-1,052.58	926.00	761.04	164.96	5.614	
17,900.00	11,768.00	17,304.19	11,153.00	100.76	100.02	48.52	-6,332.64	-1,052.51	926.05	759.89	166.15	5.573	
17,950.00	11,768.00	17,345.81	11,153.00	101.42	100.57	48.52	-6,382.64	-1,052.43	926.09	758.93	167.17	5.540	
18,000.00	11,768.00	17,404.19	11,153.00	102.09	101.35	48.52	-6,432.64	-1,052.36	926.14	757.77	168.36	5.501	
18,050.00	11,768.00	17,445.81	11,153.00	102.75	101.91	48.53	-6,482.64	-1,052.28	926.18	756.80	169.38	5.468	
18,100.00	11,768.00	17,504.19	11,153.00	103.41	102.69	48.53	-6,532.64	-1,052.21	926.23	755.65	170.58	5.430	
18,150.00	11,768.00	17,545.81	11,153.00	104.08	103.25	48.53	-6,582.64	-1,052.13	926.27	754.67	171.60	5.398	
18,200.00	11,768.00	17,604.19	11,153.00	104.75	104.03	48.53	-6,632.64	-1,052.06	926.32	753.51	172.81	5.360	
18,250.00	11,768.00	17,645.81	11,153.00	105.41	104.59	48.54	-6,682.64	-1,051.98	926.36	752.54	173.83	5.329	
18,300.00	11,768.00	17,704.19	11,153.00	106.08	105.37	48.54	-6,732.64	-1,051.91	926.41	751.38	175.03	5.293	
18,350.00	11,768.00	17,745.81	11,153.00	106.75	105.93	48.54	-6,782.64	-1,051.83	926.46	750.40	176.06	5.262	
18,400.00	11,768.00	17,804.19	11,153.00	107.42	106.72	48.54	-6,832.64	-1,051.76	926.50	749.23	177.27	5.227	
18,450.00	11,768.00	17,845.81	11,153.00	108.09	107.28	48.55	-6,882.64	-1,051.68	926.55	748.25	178.29	5.197	
18,500.00	11,768.00	17,904.19	11,153.00	108.76	108.07	48.55	-6,932.64	-1,051.61	926.59	747.08	179.51	5.162	
18,550.00	11,768.00	17,945.81	11,153.00	109.43	108.63	48.55	-6,982.64	-1,051.53	926.64	746.10	180.53	5.133	
18,600.00	11,768.00	18,004.19	11,153.00	110.11	109.42	48.55	-7,032.64	-1,051.46	926.68	744.93	181.75	5.099	
18,650.00	11,768.00	18,045.81	11,153.00	110.78	109.99	48.56	-7,082.64	-1,051.38	926.73	743.95	182.78	5.070	
18,700.00	11,768.00	18,104.19	11,153.00	111.45	110.78	48.56	-7,132.64	-1,051.31	926.77	742.77	184.00	5.037	
18,750.00	11,768.00	18,145.81	11,153.00	112.13	111.34	48.56	-7,182.64	-1,051.23	926.82	741.79	185.03	5.009	
18,800.00	11,768.00	18,204.19	11,153.00	112.80	112.13	48.56	-7,232.64	-1,051.16	926.86	740.61	186.25	4.976 Alert	
18,850.00	11,768.00	18,245.81	11,153.00	113.48	112.70	48.57	-7,282.64	-1,051.08	926.91	739.62	187.29	4.949 Alert	
18,900.00	11,768.00	18,304.19	11,153.00	114.16	113.49	48.57	-7,332.64	-1,051.01	926.95	738.45	188.51	4.917 Alert	
18,950.00	11,768.00	18,345.81	11,153.00	114.83	114.06	48.57	-7,382.64	-1,050.93	927.00	737.45	189.54	4.891 Alert	
19,000.00	11,768.00	18,404.19	11,153.00	115.51	114.86	48.57	-7,432.64	-1,050.86	927.04	736.27	190.77	4.859 Alert	
19,050.00	11,768.00	18,445.81	11,153.00	116.19	115.42	48.58	-7,482.64	-1,050.78	927.09	735.28	191.81	4.833 Alert	
19,100.00	11,768.00	18,504.19	11,153.00	116.87	116.22	48.58	-7,532.64	-1,050.71	927.14	734.10	193.04	4.803 Alert	
19,150.00	11,768.00	18,545.81	11,153.00	117.55	116.79	48.58	-7,582.64	-1,050.63	927.18	733.11	194.08	4.777 Alert	
19,200.00	11,768.00	18,604.19	11,153.00	118.23	117.59	48.58	-7,632.64	-1,050.56	927.23	731.92	195.31	4.748 Alert	
19,250.00	11,768.00	18,645.81	11,153.00	118.91	118.15	48.58	-7,682.64	-1,050.48	927.27	730.93	196.35	4.723 Alert	
19,300.00	11,768.00	18,704.19	11,153.00	119.59	118.95	48.59	-7,732.64	-1,050.41	927.32	729.74	197.58	4.693 Alert	
19,350.00	11,768.00	18,745.81	11,153.00	120.27	119.52	48.59	-7,782.64	-1,050.33	927.36	728.74	198.62	4.669 Alert	
19,400.00	11,768.00	18,804.19	11,153.00	120.95	120.32	48.59	-7,832.64	-1,050.26	927.41	727.55	199.86	4.640 Alert	
19,450.00	11,768.00	18,845.81	11,153.00	121.64	120.89	48.59	-7,882.64	-1,050.18	927.45	726.55	200.90	4.616 Alert	
19,500.00	11,768.00	18,904.19	11,153.00	122.32	121.70	48.60	-7,932.64	-1,050.11	927.50	725.36	202.14	4.588 Alert	
19,550.00	11,768.00	18,945.81	11,153.00	123.00	122.27	48.60	-7,982.64	-1,050.03	927.54	724.36	203.18	4.565 Alert	
19,600.00	11,768.00	19,004.19	11,153.00	123.69	123.07	48.60	-8,032.64	-1,049.96	927.59	723.17	204.42	4.538 Alert	
19,650.00	11,768.00	19,045.81	11,153.00	124.37	123.64	48.60	-8,082.64	-1,049.88	927.63	722.17	205.47	4.515 Alert	
19,700.00	11,768.00	19,104.19	11,153.00	125.06	124.45	48.61	-8,132.64	-1,049.81	927.68	720.97	206.71	4.488 Alert	
19,750.00	11,768.00	19,145.81	11,153.00	125.74	125.02	48.61	-8,182.64	-1,049.73	927.73	719.97	207.76	4.465 Alert	
19,800.00	11,768.00	19,204.19	11,153.00	126.43	125.82	48.61	-8,232.64	-1,049.66	927.77	718.77	209.00	4.439 Alert	
19,850.00	11,768.00	19,245.81	11,153.00	127.12	126.40	48.61	-8,282.64	-1,049.58	927.82	717.77	210.05	4.417 Alert	
19,900.00	11,768.00	19,304.19	11,153.00	127.80	127.20	48.62	-8,332.64	-1,049.51	927.86	716.57	211.29	4.391 Alert	
19,950.00	11,768.00	19,345.81	11,153.00	128.49	127.78	48.62	-8,382.64	-1,049.43	927.91	715.56	212.34	4.370 Alert	
20,000.00	11,768.00	19,404.19	11,153.00	129.18	128.58	48.62	-8,432.64	-1,049.36	927.95	714.36	213.59	4.345 Alert	
20,050.00	11,768.00	19,445.81	11,153.00	129.87	129.16	48.62	-8,482.64	-1,049.28	928.00	713.36	214.64	4.323 Alert	
20,100.00	11,768.00	19,504.19	11,153.00	130.55	129.96	48.63	-8,532.64	-1,049.21	928.04	712.16	215.89	4.299 Alert	
20,150.00	11,768.00	19,545.81	11,153.00	131.24	130.54	48.63	-8,582.64	-1,049.13	928.09	711.15	216.94	4.278 Alert	
20,200.00	11,768.00	19,604.19	11,153.00	131.93	131.35	48.63	-8,632.64	-1,049.06	928.13	709.94	218.19	4.254 Alert	
20,250.00	11,768.00	19,645.81	11,153.00	132.62	131.93	48.63	-8,682.64	-1,048.98	928.18	708.93	219.25	4.234 Alert	
20,300.00	11,768.00	19,704.19	11,153.00	133.31	132.73	48.64	-8,732.64	-1,048.91	928.23	707.73	220.50	4.210 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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 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		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)				
20,350.00	11,768.00	19,745.81	11,153.00	134.00	133.31	48.64	-8,782.64	-1,048.83	928.27	706.72	221.55	4.190	Alert	
20,400.00	11,768.00	19,804.19	11,153.00	134.70	134.12	48.64	-8,832.64	-1,048.76	928.32	705.51	222.80	4.167	Alert	
20,450.00	11,768.00	19,845.81	11,153.00	135.39	134.70	48.64	-8,882.64	-1,048.68	928.36	704.50	223.86	4.147	Alert	
20,500.00	11,768.00	19,904.19	11,153.00	136.08	135.51	48.65	-8,932.64	-1,048.61	928.41	703.29	225.11	4.124	Alert	
20,550.00	11,768.00	19,945.81	11,153.00	136.77	136.09	48.65	-8,982.64	-1,048.53	928.45	702.28	226.17	4.105	Alert	
20,600.00	11,768.00	20,004.19	11,153.00	137.46	136.90	48.65	-9,032.64	-1,048.46	928.50	701.07	227.43	4.083	Alert	
20,650.00	11,768.00	20,045.81	11,153.00	138.16	137.48	48.65	-9,082.64	-1,048.38	928.54	700.05	228.49	4.064	Alert	
20,700.00	11,768.00	20,104.19	11,153.00	138.85	138.29	48.66	-9,132.64	-1,048.31	928.59	698.85	229.74	4.042	Alert	
20,750.00	11,768.00	20,145.81	11,153.00	139.54	138.87	48.66	-9,182.64	-1,048.23	928.63	697.83	230.81	4.023	Alert	
20,800.00	11,768.00	20,204.19	11,153.00	140.24	139.68	48.66	-9,232.64	-1,048.16	928.68	696.62	232.06	4.002	Alert	
20,850.00	11,768.00	20,245.81	11,153.00	140.93	140.26	48.66	-9,282.64	-1,048.08	928.72	695.60	233.12	3.984	Alert	
20,900.00	11,768.00	20,304.19	11,153.00	141.63	141.08	48.67	-9,332.64	-1,048.01	928.77	694.39	234.38	3.963	Alert	
20,950.00	11,768.00	20,345.81	11,153.00	142.32	141.66	48.67	-9,382.64	-1,047.93	928.82	693.37	235.45	3.945	Alert	
21,000.00	11,768.00	20,404.19	11,153.00	143.02	142.47	48.67	-9,432.64	-1,047.86	928.86	692.16	236.71	3.924	Alert	
21,050.00	11,768.00	20,445.81	11,153.00	143.71	143.05	48.67	-9,482.64	-1,047.78	928.91	691.14	237.77	3.907	Alert	
21,100.00	11,768.00	20,504.19	11,153.00	144.41	143.87	48.68	-9,532.64	-1,047.71	928.95	689.92	239.03	3.886	Alert	
21,150.00	11,768.00	20,545.81	11,153.00	145.10	144.45	48.68	-9,582.64	-1,047.63	929.00	688.90	240.10	3.869	Alert	
21,200.00	11,768.00	20,604.19	11,153.00	145.80	145.26	48.68	-9,632.64	-1,047.56	929.04	687.69	241.36	3.849	Alert	
21,250.00	11,768.00	20,645.81	11,153.00	146.50	145.84	48.68	-9,682.64	-1,047.48	929.09	686.66	242.42	3.832	Alert	
21,300.00	11,768.00	20,704.19	11,153.00	147.19	146.66	48.69	-9,732.64	-1,047.41	929.13	685.45	243.69	3.813	Alert	
21,350.00	11,768.00	20,745.81	11,153.00	147.89	147.24	48.69	-9,782.64	-1,047.33	929.18	684.42	244.75	3.796	Alert	
21,400.00	11,768.00	20,804.19	11,153.00	148.59	148.06	48.69	-9,832.64	-1,047.26	929.22	683.21	246.02	3.777	Alert	
21,450.00	11,768.00	20,845.81	11,153.00	149.29	148.64	48.69	-9,882.64	-1,047.18	929.27	682.18	247.09	3.761	Alert	
21,500.00	11,768.00	20,904.19	11,153.00	149.99	149.46	48.70	-9,932.64	-1,047.11	929.32	680.96	248.35	3.742	Alert	
21,550.00	11,768.00	20,945.81	11,153.00	150.68	150.04	48.70	-9,982.64	-1,047.03	929.36	679.94	249.42	3.726	Alert	
21,600.00	11,768.00	21,004.19	11,153.00	151.38	150.86	48.70	-10,032.64	-1,046.96	929.41	678.72	250.69	3.707	Alert	
21,650.00	11,768.00	21,045.81	11,153.00	152.08	151.44	48.70	-10,082.64	-1,046.88	929.45	677.69	251.76	3.692	Alert	
21,700.00	11,768.00	21,104.19	11,153.00	152.78	152.26	48.71	-10,132.64	-1,046.81	929.50	676.47	253.02	3.674	Alert	
21,750.00	11,768.00	21,145.81	11,153.00	153.48	152.85	48.71	-10,182.64	-1,046.73	929.54	675.45	254.10	3.658	Alert	
21,800.00	11,768.00	21,204.19	11,153.00	154.18	153.67	48.71	-10,232.64	-1,046.66	929.59	674.22	255.36	3.640	Alert	
21,850.00	11,768.00	21,245.81	11,153.00	154.88	154.25	48.71	-10,282.64	-1,046.58	929.63	673.20	256.44	3.625	Alert	
21,900.00	11,768.00	21,295.81	11,153.00	155.58	154.95	48.72	-10,332.64	-1,046.51	929.68	672.07	257.61	3.609	Alert	
21,904.71	11,768.00	21,300.52	11,153.00	155.65	155.02	48.72	-10,337.35	-1,046.50	929.68	671.97	257.72	3.607	Alert, SF	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		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	1.50	1.50	0.50	0.50	89.64	4.21	669.88	669.89				
50.00	50.00	51.50	51.50	0.50	0.50	89.64	4.21	669.88	669.89	668.89	1.01	665.387	
100.00	100.00	101.50	101.50	0.52	0.52	89.64	4.21	669.88	669.89	668.86	1.04	646.035	
150.00	150.00	151.50	151.50	0.59	0.59	89.64	4.21	669.88	669.89	668.71	1.18	566.097	
200.00	200.00	201.50	201.50	0.70	0.71	89.64	4.21	669.88	669.89	668.49	1.41	475.780	
250.00	250.00	251.50	251.50	0.84	0.84	89.64	4.21	669.88	669.89	668.21	1.68	398.807	
300.00	300.00	301.50	301.50	0.99	0.99	89.64	4.21	669.88	669.89	667.92	1.98	338.448	
350.00	350.00	351.50	351.50	1.15	1.15	89.64	4.21	669.88	669.89	667.60	2.30	291.789	
400.00	400.00	401.50	401.50	1.31	1.31	89.64	4.21	669.88	669.89	667.27	2.62	255.378	
450.00	450.00	451.50	451.50	1.48	1.48	89.64	4.21	669.88	669.89	666.94	2.96	226.491	
500.00	500.00	501.50	501.50	1.65	1.65	89.64	4.21	669.88	669.89	666.60	3.30	203.165	
550.00	550.00	551.50	551.50	1.82	1.82	89.64	4.21	669.88	669.89	666.25	3.64	184.011	
600.00	600.00	601.50	601.50	1.99	2.00	89.64	4.21	669.88	669.89	665.91	3.99	168.045	
650.00	650.00	651.50	651.50	2.16	2.17	89.64	4.21	669.88	669.89	665.56	4.33	154.555	
700.00	700.00	701.50	701.50	2.34	2.34	89.64	4.21	669.88	669.89	665.21	4.68	143.021	
750.00	750.00	751.50	751.50	2.51	2.52	89.64	4.21	669.88	669.89	664.86	5.03	133.056	
800.00	800.00	801.50	801.50	2.69	2.70	89.64	4.21	669.88	669.89	664.51	5.39	124.366	
850.00	850.00	851.50	851.50	2.87	2.87	89.64	4.21	669.88	669.89	664.16	5.74	116.725	
900.00	900.00	901.50	901.50	3.04	3.05	89.64	4.21	669.88	669.89	663.80	6.09	109.956	
950.00	950.00	951.50	951.50	3.22	3.23	89.64	4.21	669.88	669.89	663.45	6.45	103.920	
1,000.00	1,000.00	1,001.50	1,001.50	3.40	3.40	89.64	4.21	669.88	669.89	663.09	6.80	98.505	
1,050.00	1,050.00	1,051.50	1,051.50	3.58	3.58	89.64	4.21	669.88	669.89	662.74	7.16	93.621	
1,100.00	1,100.00	1,101.50	1,101.50	3.75	3.76	89.64	4.21	669.88	669.89	662.38	7.51	89.194	
1,150.00	1,150.00	1,151.50	1,151.50	3.93	3.94	89.64	4.21	669.88	669.89	662.03	7.87	85.164	
1,200.00	1,200.00	1,201.50	1,201.50	4.11	4.11	89.64	4.21	669.88	669.89	661.67	8.22	81.479	
1,250.00	1,250.00	1,251.50	1,251.50	4.29	4.29	89.64	4.21	669.88	669.89	661.32	8.58	78.098	
1,300.00	1,300.00	1,301.50	1,301.50	4.46	4.47	89.64	4.21	669.88	669.89	660.96	8.93	74.985	
1,350.00	1,350.00	1,351.50	1,351.50	4.64	4.65	89.64	4.21	669.88	669.89	660.60	9.29	72.109	
1,400.00	1,400.00	1,401.50	1,401.50	4.82	4.83	89.64	4.21	669.88	669.89	660.25	9.65	69.445	
1,450.00	1,450.00	1,451.50	1,451.50	5.00	5.00	89.64	4.21	669.88	669.89	659.89	10.00	66.969	
1,500.00	1,500.00	1,501.50	1,501.50	5.18	5.18	89.64	4.21	669.88	669.89	659.53	10.36	64.663	
1,550.00	1,550.00	1,551.50	1,551.50	5.36	5.36	89.64	4.21	669.88	669.89	659.18	10.72	62.510	
1,600.00	1,600.00	1,601.50	1,601.50	5.53	5.54	89.64	4.21	669.88	669.89	658.82	11.07	60.495	
1,650.00	1,650.00	1,651.50	1,651.50	5.71	5.72	89.64	4.21	669.88	669.89	658.46	11.43	58.605	
1,700.00	1,700.00	1,701.50	1,701.50	5.89	5.90	89.64	4.21	669.88	669.89	658.11	11.79	56.829	
1,750.00	1,750.00	1,751.50	1,751.50	6.07	6.08	89.64	4.21	669.88	669.89	657.75	12.15	55.158	
1,800.00	1,800.00	1,801.50	1,801.50	6.25	6.25	89.64	4.21	669.88	669.89	657.39	12.50	53.582	
1,850.00	1,850.00	1,851.50	1,851.50	6.43	6.43	89.64	4.21	669.88	669.89	657.03	12.86	52.093	
1,900.00	1,900.00	1,901.50	1,901.50	6.61	6.61	89.64	4.21	669.88	669.89	656.68	13.22	50.684	
1,950.00	1,950.00	1,951.50	1,951.50	6.78	6.79	89.64	4.21	669.88	669.89	656.32	13.57	49.349	
2,000.00	2,000.00	2,001.50	2,001.50	6.96	6.97	89.64	4.21	669.88	669.89	655.96	13.93	48.083	
2,050.00	2,050.00	2,051.50	2,051.50	7.14	7.15	89.64	4.21	669.88	669.89	655.60	14.29	46.880	
2,100.00	2,100.00	2,101.50	2,101.50	7.32	7.33	89.64	4.21	669.88	669.89	655.25	14.65	45.735	
2,150.00	2,150.00	2,151.50	2,151.50	7.50	7.51	89.64	4.21	669.88	669.89	654.89	15.00	44.645	
2,200.00	2,200.00	2,201.50	2,201.50	7.68	7.68	89.64	4.21	669.88	669.89	654.53	15.36	43.606	
2,250.00	2,250.00	2,251.50	2,251.50	7.86	7.86	89.64	4.21	669.88	669.89	654.17	15.72	42.613	
2,300.00	2,300.00	2,301.50	2,301.50	8.04	8.04	89.64	4.21	669.88	669.89	653.82	16.08	41.665	
2,350.00	2,350.00	2,351.50	2,351.50	8.22	8.22	89.64	4.21	669.88	669.89	653.46	16.44	40.758	
2,400.00	2,400.00	2,401.50	2,401.50	8.39	8.40	89.64	4.21	669.88	669.89	653.10	16.79	39.890	
2,450.00	2,450.00	2,451.50	2,451.50	8.57	8.58	89.64	4.21	669.88	669.89	652.74	17.15	39.057	
2,500.00	2,500.00	2,501.50	2,501.50	8.75	8.76	89.64	4.21	669.88	669.89	652.39	17.51	38.259	
2,550.00	2,550.00	2,551.50	2,551.50	8.93	8.94	174.32	4.21	669.88	670.11	652.25	17.86	37.513	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance								Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre +N/-S	Offset Wellbore Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
2,600.00	2,599.99	2,601.49	2,601.49	9.10	9.12	174.33	4.21	669.88	670.76	652.55	18.22	36.821		
2,650.00	2,649.88	2,651.48	2,651.48	9.27	9.29	174.34	4.21	669.88	671.85	653.28	18.57	36.185		
2,700.00	2,699.96	2,701.46	2,701.46	9.45	9.47	174.35	4.21	669.88	673.37	654.45	18.92	35.595		
2,750.00	2,749.92	2,751.42	2,751.42	9.62	9.65	174.36	4.21	669.88	675.32	656.05	19.27	35.049		
2,800.00	2,799.88	2,801.36	2,801.36	9.79	9.83	174.38	4.21	669.88	677.71	658.09	19.62	34.545		
2,850.00	2,849.78	2,851.28	2,851.28	9.96	10.01	174.40	4.21	669.88	680.53	660.56	19.97	34.079		
2,900.00	2,899.69	2,901.19	2,901.19	10.14	10.19	174.43	4.21	669.88	683.55	663.23	20.32	33.639		
2,950.00	2,949.60	2,951.10	2,951.10	10.31	10.37	174.45	4.21	669.88	686.57	665.90	20.67	33.214		
3,000.00	2,999.51	3,001.14	3,001.14	10.49	10.55	174.47	4.21	669.88	689.59	668.57	21.02	32.803		
3,050.00	3,049.41	3,057.88	3,057.88	10.66	10.74	174.50	4.24	669.59	692.36	670.96	21.39	32.363		
3,100.00	3,099.32	3,114.67	3,114.66	10.83	10.94	174.52	4.31	668.74	694.63	672.87	21.76	31.920		
3,150.00	3,149.23	3,171.51	3,171.48	11.01	11.14	174.54	4.44	667.33	696.41	674.28	22.13	31.475		
3,200.00	3,199.14	3,228.38	3,228.32	11.19	11.33	174.55	4.62	665.35	697.69	675.21	22.49	31.025		
3,250.00	3,249.04	3,285.28	3,285.16	11.36	11.53	174.56	4.85	662.81	698.49	675.64	22.85	30.569		
3,300.00	3,298.95	3,339.20	3,339.00	11.54	11.72	174.56	5.11	659.93	698.83	675.62	23.20	30.117		
3,350.00	3,348.86	3,389.20	3,388.92	11.71	11.89	174.56	5.36	657.17	699.09	675.54	23.55	29.685		
3,400.00	3,398.77	3,439.20	3,438.85	11.89	12.06	174.56	5.61	654.41	699.36	675.46	23.90	29.266		
3,450.00	3,448.68	3,489.20	3,488.77	12.07	12.24	174.57	5.86	651.65	699.62	675.37	24.24	28.857		
3,500.00	3,498.58	3,539.20	3,538.69	12.24	12.41	174.57	6.11	648.89	699.88	675.29	24.59	28.460		
3,550.00	3,548.49	3,589.19	3,588.62	12.42	12.58	174.57	6.36	646.13	700.15	675.21	24.94	28.074		
3,600.00	3,598.40	3,639.19	3,638.54	12.60	12.76	174.58	6.61	643.37	700.41	675.12	25.29	27.697		
3,650.00	3,648.31	3,689.19	3,688.46	12.78	12.93	174.58	6.86	640.61	700.67	675.04	25.64	27.331		
3,700.00	3,698.22	3,739.19	3,738.38	12.95	13.11	174.58	7.11	637.86	700.94	674.95	25.99	26.974		
3,750.00	3,748.12	3,789.19	3,788.31	13.13	13.28	174.58	7.36	635.10	701.20	674.86	26.33	26.626		
3,800.00	3,798.03	3,839.19	3,838.23	13.31	13.46	174.59	7.61	632.34	701.46	674.78	26.68	26.287		
3,850.00	3,847.94	3,889.19	3,888.15	13.49	13.63	174.59	7.86	629.58	701.73	674.69	27.03	25.957		
3,900.00	3,897.85	3,939.19	3,938.07	13.67	13.81	174.59	8.11	626.82	701.99	674.61	27.38	25.635		
3,950.00	3,947.75	3,989.19	3,988.00	13.84	13.99	174.59	8.36	624.06	702.25	674.52	27.73	25.320		
4,000.00	3,997.66	4,039.19	4,037.92	14.02	14.16	174.60	8.61	621.30	702.52	674.43	28.09	25.013		
4,050.00	4,047.57	4,089.19	4,087.84	14.20	14.34	174.60	8.86	618.55	702.78	674.34	28.44	24.714		
4,100.00	4,097.48	4,139.19	4,137.76	14.38	14.52	174.60	9.11	615.79	703.04	674.26	28.79	24.422		
4,150.00	4,147.39	4,189.19	4,187.69	14.56	14.69	174.60	9.37	613.03	703.31	674.17	29.14	24.136		
4,200.00	4,197.29	4,239.19	4,237.61	14.74	14.87	174.61	9.62	610.27	703.57	674.08	29.49	23.857		
4,250.00	4,247.20	4,289.18	4,287.53	14.92	15.05	174.61	9.87	607.51	703.83	673.99	29.84	23.585		
4,300.00	4,297.11	4,339.18	4,337.45	15.10	15.22	174.61	10.12	604.75	704.10	673.90	30.19	23.319		
4,350.00	4,347.02	4,389.18	4,387.38	15.28	15.40	174.61	10.37	601.99	704.36	673.81	30.55	23.058		
4,400.00	4,396.92	4,439.18	4,437.30	15.46	15.58	174.62	10.62	599.23	704.63	673.73	30.90	22.804		
4,450.00	4,446.83	4,489.18	4,487.22	15.64	15.76	174.62	10.87	596.48	704.89	673.64	31.25	22.555		
4,500.00	4,496.74	4,539.18	4,537.14	15.82	15.93	174.62	11.12	593.72	705.15	673.55	31.61	22.311		
4,550.00	4,546.65	4,589.18	4,587.07	16.00	16.11	174.62	11.37	590.96	705.42	673.46	31.96	22.073		
4,600.00	4,596.56	4,639.18	4,636.99	16.18	16.29	174.63	11.62	588.20	705.68	673.37	32.31	21.840		
4,650.00	4,646.46	4,689.18	4,686.91	16.36	16.47	174.63	11.87	585.44	705.94	673.28	32.66	21.612		
4,700.00	4,696.37	4,739.18	4,736.83	16.54	16.65	174.63	12.12	582.68	706.21	673.19	33.02	21.388		
4,750.00	4,746.28	4,789.18	4,786.76	16.72	16.82	174.63	12.37	579.92	706.47	673.10	33.37	21.170		
4,800.00	4,796.19	4,839.18	4,836.68	16.90	17.00	174.64	12.62	577.17	706.73	673.01	33.73	20.955		
4,850.00	4,846.09	4,889.18	4,886.60	17.08	17.18	174.64	12.87	574.41	707.00	672.92	34.08	20.746		
4,900.00	4,896.00	4,939.18	4,936.52	17.26	17.36	174.64	13.12	571.65	707.26	672.83	34.43	20.540		
4,950.00	4,945.91	4,989.18	4,986.45	17.44	17.54	174.64	13.37	568.89	707.52	672.74	34.79	20.338		
5,000.00	4,995.82	5,039.17	5,036.37	17.62	17.72	174.65	13.62	566.13	707.79	672.65	35.14	20.141		
5,050.00	5,045.73	5,089.17	5,086.29	17.80	17.90	174.65	13.87	563.37	708.05	672.55	35.50	19.947		
5,100.00	5,095.63	5,139.17	5,136.21	17.98	18.07	174.65	14.12	560.61	708.32	672.46	35.85	19.757		
5,150.00	5,145.54	5,189.17	5,186.14	18.16	18.25	174.65	14.37	557.85	708.58	672.37	36.21	19.571		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		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	5,195.45	5,239.17	5,238.06	18.34	18.43	174.66	14.62	555.10	708.84	672.28	36.56	19.388		
5,250.00	5,245.36	5,289.17	5,285.98	18.53	18.61	174.66	14.87	552.34	709.11	672.19	36.92	19.209		
5,300.00	5,295.27	5,339.17	5,335.90	18.71	18.79	174.66	15.12	549.58	709.37	672.10	37.27	19.033		
5,350.00	5,345.17	5,389.17	5,385.83	18.89	18.97	174.66	15.37	546.82	709.63	672.01	37.63	18.860		
5,400.00	5,395.08	5,439.17	5,435.75	19.07	19.15	174.67	15.62	544.06	709.90	671.91	37.98	18.691		
5,450.00	5,444.99	5,489.17	5,485.67	19.25	19.33	174.67	15.87	541.30	710.16	671.82	38.34	18.524		
5,500.00	5,494.90	5,539.17	5,535.59	19.43	19.51	174.67	16.12	538.54	710.42	671.73	38.69	18.361		
5,550.00	5,544.80	5,589.17	5,585.52	19.61	19.69	174.67	16.37	535.79	710.69	671.64	39.05	18.200		
5,600.00	5,594.71	5,639.17	5,635.44	19.79	19.87	174.68	16.62	533.03	710.95	671.55	39.40	18.043		
5,650.00	5,644.62	5,689.17	5,685.36	19.98	20.05	174.68	16.87	530.27	711.21	671.45	39.76	17.888		
5,700.00	5,694.53	5,739.16	5,735.28	20.16	20.23	174.68	17.12	527.51	711.48	671.36	40.12	17.736		
5,750.00	5,744.44	5,789.16	5,785.21	20.34	20.41	174.68	17.37	524.75	711.74	671.27	40.47	17.586		
5,800.00	5,794.34	5,839.16	5,835.13	20.52	20.59	174.69	17.62	521.99	712.00	671.18	40.83	17.439		
5,850.00	5,844.25	5,889.16	5,885.05	20.70	20.77	174.69	17.87	519.23	712.27	671.09	41.18	17.295		
5,900.00	5,894.16	5,939.16	5,934.97	20.88	20.95	174.69	18.12	516.47	712.53	670.99	41.54	17.153		
5,950.00	5,944.07	5,989.16	5,984.90	21.06	21.13	174.69	18.37	513.72	712.80	670.90	41.90	17.014		
6,000.00	5,993.97	6,039.16	6,034.82	21.25	21.31	174.70	18.62	510.96	713.06	670.81	42.25	16.876		
6,050.00	6,043.88	6,089.16	6,084.74	21.43	21.49	174.70	18.87	508.20	713.32	670.71	42.61	16.741		
6,100.00	6,093.79	6,139.16	6,134.66	21.61	21.67	174.70	19.12	505.44	713.59	670.62	42.96	16.609		
6,150.00	6,143.70	6,189.16	6,184.59	21.79	21.85	174.70	19.37	502.68	713.85	670.53	43.32	16.478		
6,200.00	6,193.61	6,239.16	6,234.51	21.97	22.03	174.71	19.62	499.92	714.11	670.44	43.68	16.349		
6,250.00	6,243.51	6,289.16	6,284.43	22.16	22.21	174.71	19.87	497.16	714.38	670.34	44.03	16.223		
6,300.00	6,293.42	6,339.16	6,334.35	22.34	22.39	174.71	20.12	494.41	714.64	670.25	44.39	16.099		
6,350.00	6,343.33	6,389.16	6,384.28	22.52	22.57	174.71	20.37	491.65	714.90	670.16	44.75	15.976		
6,400.00	6,393.24	6,439.15	6,434.20	22.70	22.75	174.72	20.62	488.89	715.17	670.06	45.11	15.856		
6,450.00	6,443.15	6,489.15	6,484.12	22.88	22.93	174.72	20.87	486.13	715.43	669.97	45.46	15.737		
6,500.00	6,493.05	6,539.15	6,534.04	23.07	23.11	174.72	21.12	483.37	715.69	669.88	45.82	15.620		
6,550.00	6,542.96	6,589.15	6,583.97	23.25	23.29	174.72	21.37	480.61	715.96	669.78	46.18	15.505		
6,600.00	6,592.87	6,639.15	6,633.89	23.43	23.47	174.73	21.62	477.85	716.22	669.69	46.53	15.392		
6,650.00	6,642.78	6,689.15	6,683.81	23.61	23.66	174.73	21.87	475.09	716.49	669.60	46.89	15.280		
6,700.00	6,692.68	6,739.15	6,733.73	23.79	23.84	174.73	22.12	472.34	716.75	669.50	47.25	15.170		
6,750.00	6,742.59	6,789.15	6,783.66	23.98	24.02	174.73	22.37	469.58	717.01	669.41	47.61	15.062		
6,800.00	6,792.50	6,839.15	6,833.58	24.16	24.20	174.74	22.62	466.82	717.28	669.31	47.96	14.955		
6,850.00	6,842.41	6,889.15	6,883.50	24.34	24.38	174.74	22.87	464.06	717.54	669.22	48.32	14.850		
6,900.00	6,892.32	6,939.15	6,933.42	24.52	24.56	174.74	23.12	461.30	717.80	669.13	48.68	14.746		
6,950.00	6,942.22	6,989.15	6,983.35	24.71	24.74	174.74	23.37	458.54	718.07	669.03	49.03	14.644		
7,000.00	6,992.13	7,039.15	7,033.27	24.89	24.92	174.75	23.62	455.78	718.33	668.94	49.39	14.543		
7,050.00	7,042.04	7,089.15	7,083.19	25.07	25.10	174.75	23.87	453.02	718.59	668.84	49.75	14.444		
7,100.00	7,091.95	7,139.14	7,133.11	25.25	25.28	174.75	24.12	450.27	718.86	668.75	50.11	14.346		
7,150.00	7,141.85	7,189.14	7,183.04	25.44	25.46	174.75	24.37	447.51	719.12	668.66	50.47	14.250		
7,200.00	7,191.76	7,239.14	7,232.96	25.62	25.65	174.76	24.62	444.75	719.39	668.56	50.82	14.155		
7,250.00	7,241.67	7,289.14	7,282.88	25.80	25.83	174.76	24.87	441.99	719.65	668.47	51.18	14.061		
7,300.00	7,291.58	7,339.14	7,332.80	25.98	26.01	174.76	25.12	439.23	719.91	668.37	51.54	13.968		
7,350.00	7,341.49	7,389.14	7,382.73	26.17	26.19	174.76	25.37	436.47	720.18	668.28	51.90	13.877		
7,400.00	7,391.39	7,439.14	7,432.65	26.35	26.37	174.77	25.62	433.71	720.44	668.19	52.25	13.787		
7,450.00	7,441.30	7,489.14	7,482.57	26.53	26.55	174.77	25.87	430.96	720.70	668.09	52.61	13.698		
7,500.00	7,491.21	7,539.14	7,532.49	26.71	26.73	174.77	26.12	428.20	720.97	668.00	52.97	13.611		
7,550.00	7,541.12	7,589.14	7,582.42	26.90	26.91	174.77	26.37	425.44	721.23	667.90	53.33	13.524		
7,600.00	7,591.02	7,639.14	7,632.34	27.08	27.10	174.78	26.62	422.68	721.49	667.81	53.69	13.439		
7,650.00	7,640.93	7,689.14	7,682.26	27.26	27.28	174.78	26.87	419.92	721.76	667.71	54.04	13.355		
7,700.00	7,690.84	7,739.14	7,732.18	27.44	27.46	174.78	27.12	417.16	722.02	667.62	54.40	13.272		
7,750.00	7,740.75	7,789.14	7,782.11	27.63	27.64	174.78	27.38	414.40	722.29	667.52	54.76	13.190		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: O-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		
7,800.00	7,790.66	7,839.13	7,832.03	27.81	27.82	174.79	27.63	411.64	722.55	667.43	55.12	13.109		
7,850.00	7,840.56	7,889.13	7,881.95	27.99	28.00	174.79	27.88	408.89	722.81	667.34	55.48	13.029		
7,900.00	7,890.47	7,939.13	7,931.87	28.17	28.19	174.79	28.13	406.13	723.08	667.24	55.83	12.950		
7,950.00	7,940.38	7,989.13	7,981.80	28.36	28.37	174.79	28.38	403.37	723.34	667.15	56.19	12.872		
8,000.00	7,990.29	8,039.13	8,031.72	28.54	28.55	174.80	28.63	400.61	723.60	667.05	56.55	12.796		
8,050.00	8,040.19	8,089.13	8,081.64	28.72	28.73	174.80	28.88	397.85	723.87	666.96	56.91	12.720		
8,100.00	8,090.10	8,139.13	8,131.56	28.91	28.91	174.80	29.13	395.09	724.13	666.86	57.27	12.645		
8,150.00	8,140.01	8,189.13	8,181.49	29.09	29.09	174.80	29.38	392.33	724.39	666.77	57.63	12.571		
8,200.00	8,189.92	8,239.13	8,231.41	29.27	29.27	174.81	29.63	389.58	724.66	666.67	57.98	12.497		
8,250.00	8,239.83	8,289.13	8,281.33	29.45	29.46	174.81	29.88	386.82	724.92	666.58	58.34	12.425		
8,300.00	8,289.73	8,339.13	8,331.25	29.64	29.64	174.81	30.13	384.06	725.19	666.48	58.70	12.354		
8,350.00	8,339.64	8,389.13	8,381.18	29.82	29.82	174.81	30.38	381.30	725.45	666.39	59.06	12.283		
8,400.00	8,389.55	8,439.13	8,431.10	30.00	30.00	174.82	30.63	378.54	725.71	666.29	59.42	12.214		
8,450.00	8,439.46	8,489.13	8,481.02	30.19	30.18	174.82	30.88	375.78	725.98	666.20	59.78	12.145		
8,500.00	8,489.37	8,539.13	8,530.94	30.37	30.36	174.82	31.13	373.02	726.24	666.10	60.14	12.077		
8,550.00	8,539.27	8,589.12	8,580.87	30.55	30.55	174.82	31.38	370.26	726.50	666.01	60.49	12.009		
8,600.00	8,589.18	8,639.12	8,630.79	30.73	30.73	174.82	31.63	367.51	726.77	665.91	60.85	11.943		
8,650.00	8,639.09	8,689.12	8,680.71	30.92	30.91	174.83	31.88	364.75	727.03	665.82	61.21	11.877		
8,700.00	8,689.00	8,739.12	8,730.63	31.10	31.09	174.83	32.13	361.99	727.29	665.72	61.57	11.812		
8,750.00	8,738.90	8,789.12	8,780.56	31.28	31.27	174.83	32.38	359.23	727.56	665.63	61.93	11.748		
8,800.00	8,788.82	8,839.12	8,830.48	31.47	31.46	174.83	32.63	356.47	727.77	665.48	62.29	11.684		
8,850.00	8,838.76	8,889.12	8,880.40	31.65	31.64	174.83	32.88	353.71	727.43	664.79	62.65	11.612		
8,900.00	8,888.72	8,939.11	8,930.31	31.83	31.82	174.82	33.13	350.95	726.45	663.45	63.00	11.530		
8,950.00	8,938.71	8,989.08	8,980.21	32.01	32.00	174.81	33.38	348.20	724.81	661.45	63.36	11.439		
9,000.00	8,988.71	9,039.03	9,030.08	32.18	32.18	174.79	33.63	345.44	722.53	658.81	63.72	11.339		
9,050.00	9,038.71	9,088.95	9,079.93	32.36	32.36	90.09	33.88	342.69	719.78	655.71	64.07	11.234		
9,100.00	9,088.71	9,138.88	9,129.77	32.53	32.55	90.07	34.13	339.93	717.03	652.60	64.42	11.130		
9,150.00	9,138.71	9,188.80	9,179.62	32.70	32.73	90.05	34.38	337.18	714.27	649.49	64.78	11.026		
9,200.00	9,188.71	9,238.72	9,229.47	32.88	32.91	90.03	34.63	334.42	711.51	646.38	65.13	10.924		
9,250.00	9,238.71	9,288.65	9,279.31	33.05	33.09	90.01	34.88	331.67	708.75	643.27	65.48	10.823		
9,300.00	9,288.71	9,338.57	9,329.16	33.22	33.27	89.99	35.13	328.91	705.99	640.15	65.84	10.723		
9,350.00	9,338.71	9,388.49	9,379.01	33.40	33.45	89.97	35.38	326.16	703.23	637.04	66.19	10.625		
9,400.00	9,388.71	9,438.42	9,428.85	33.57	33.64	89.95	35.63	323.41	700.47	633.93	66.54	10.527		
9,450.00	9,438.71	9,488.34	9,478.70	33.74	33.82	89.93	35.88	320.65	697.71	630.82	66.90	10.430		
9,500.00	9,488.71	9,538.26	9,528.55	33.92	34.00	89.91	36.13	317.90	694.96	627.71	67.25	10.334		
9,550.00	9,538.71	9,588.19	9,578.39	34.09	34.18	89.89	36.38	315.14	692.20	624.60	67.60	10.239		
9,600.00	9,588.71	9,638.11	9,628.24	34.26	34.36	89.86	36.63	312.39	689.44	621.48	67.96	10.145		
9,650.00	9,638.71	9,688.03	9,678.09	34.44	34.55	89.84	36.87	309.63	686.68	618.37	68.31	10.053		
9,700.00	9,688.71	9,737.95	9,727.93	34.61	34.73	89.82	37.12	306.88	683.92	615.26	68.66	9.961		
9,750.00	9,738.71	9,787.88	9,777.78	34.78	34.91	89.80	37.37	304.12	681.17	612.15	69.02	9.870		
9,800.00	9,788.71	9,837.80	9,827.63	34.96	35.09	89.78	37.62	301.37	678.41	609.04	69.37	9.780		
9,850.00	9,838.71	9,887.72	9,877.47	35.13	35.27	89.76	37.87	298.62	675.65	605.93	69.72	9.690		
9,900.00	9,888.71	9,937.65	9,927.32	35.31	35.46	89.73	38.12	295.86	672.89	602.82	70.08	9.602		
9,950.00	9,938.71	9,987.57	9,977.16	35.48	35.64	89.71	38.37	293.11	670.14	599.70	70.43	9.515		
10,000.00	9,988.71	10,037.49	10,027.01	35.65	35.82	89.69	38.62	290.35	667.38	596.59	70.79	9.428		
10,050.00	10,038.71	10,087.41	10,077.18	35.83	35.98	89.67	38.83	288.05	664.79	593.66	71.12	9.347		
10,100.00	10,088.71	10,124.32	10,113.74	36.00	36.13	89.65	38.99	286.30	662.73	591.28	71.45	9.275		
10,150.00	10,138.71	10,166.94	10,156.34	36.18	36.29	89.64	39.11	285.02	661.23	589.46	71.78	9.212		
10,200.00	10,188.71	10,209.59	10,198.98	36.35	36.44	89.64	39.18	284.22	660.29	588.20	72.10	9.158		
10,250.00	10,238.71	10,252.25	10,241.64	36.52	36.59	89.63	39.21	283.89	659.91	587.50	72.41	9.114		
10,270.73	10,259.43	10,271.54	10,260.93	36.60	36.66	89.63	39.21	283.88	659.89	587.35	72.54	9.097		
10,300.00	10,288.71	10,300.82	10,290.21	36.70	36.76	89.63	39.21	283.88	659.89	587.15	72.75	9.071		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	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)			
10,350.00	10,338.71	10,350.82	10,340.21	36.87	36.93	89.63	39.21	283.88	659.89	586.80	73.10	9.028		
10,400.00	10,388.71	10,400.82	10,390.21	37.05	37.10	89.63	39.21	283.88	659.89	586.45	73.45	8.985		
10,450.00	10,438.71	10,450.82	10,440.21	37.22	37.28	89.63	39.21	283.88	659.89	586.10	73.80	8.942		
10,500.00	10,488.71	10,500.82	10,490.21	37.40	37.45	89.63	39.21	283.88	659.89	585.75	74.15	8.900		
10,550.00	10,538.71	10,550.82	10,540.21	37.57	37.63	89.63	39.21	283.88	659.89	585.40	74.50	8.858		
10,600.00	10,588.71	10,600.82	10,590.21	37.75	37.80	89.63	39.21	283.88	659.89	585.05	74.85	8.817		
10,650.00	10,638.71	10,650.92	10,640.28	37.92	37.97	89.76	37.80	283.89	659.89	584.70	75.19	8.776		
10,662.48	10,651.19	10,663.37	10,652.69	37.96	38.01	89.84	36.79	283.89	659.89	584.61	75.28	8.766 CC		
10,700.00	10,688.71	10,700.46	10,689.48	38.09	38.13	90.24	32.19	283.90	659.91	584.38	75.53	8.737		
10,750.00	10,738.71	10,748.68	10,736.74	38.27	38.29	91.07	22.66	283.93	660.05	584.20	75.86	8.701 ES		
10,800.00	10,788.71	10,794.99	10,781.22	38.44	38.43	92.19	9.81	283.96	660.50	584.34	76.16	8.672		
10,850.00	10,838.71	10,838.94	10,822.34	38.62	38.57	93.53	-5.67	284.00	661.50	585.06	76.44	8.654		
10,900.00	10,888.71	10,880.22	10,859.78	38.79	38.68	95.03	-23.04	284.05	663.30	586.62	76.68	8.650		
10,950.00	10,938.71	10,918.69	10,893.46	38.97	38.79	96.62	-41.62	284.10	666.17	589.32	76.86	8.667		
11,000.00	10,988.71	10,954.32	10,923.47	39.14	38.88	98.26	-60.80	284.15	670.40	593.43	76.97	8.710		
11,050.00	11,038.71	10,987.15	10,950.03	39.32	38.97	99.89	-80.11	284.20	676.20	599.22	76.98	8.784		
11,100.00	11,088.71	11,017.32	10,973.42	39.49	39.04	101.49	-99.15	284.26	683.79	606.90	76.89	8.893		
11,150.00	11,138.71	11,044.99	10,993.96	39.67	39.10	103.02	-117.68	284.31	693.33	616.64	76.69	9.041		
11,200.00	11,188.71	11,070.34	11,011.98	39.84	39.16	104.48	-135.51	284.35	704.92	628.56	76.36	9.232		
11,250.00	11,238.67	11,094.38	11,028.32	40.01	39.22	-72.83	-153.14	284.40	718.18	642.26	75.91	9.460		
11,300.00	11,288.29	11,118.48	11,043.94	40.18	39.27	-70.17	-171.49	284.45	732.22	656.84	75.39	9.713		
11,350.00	11,337.21	11,142.64	11,058.82	40.34	39.33	-67.58	-190.52	284.50	746.75	671.95	74.80	9.984		
11,400.00	11,385.04	11,166.86	11,072.91	40.49	39.38	-65.09	-210.21	284.56	761.49	687.33	74.16	10.269		
11,450.00	11,431.43	11,191.12	11,086.19	40.64	39.44	-62.74	-230.52	284.61	776.18	702.70	73.48	10.563		
11,500.00	11,476.02	11,215.42	11,098.61	40.78	39.50	-60.53	-251.41	284.67	790.61	717.83	72.78	10.863		
11,550.00	11,518.47	11,239.76	11,110.15	40.91	39.56	-58.50	-272.84	284.73	804.58	732.50	72.08	11.163		
11,600.00	11,558.46	11,264.13	11,120.78	41.03	39.62	-56.64	-294.77	284.79	817.90	746.51	71.38	11.458		
11,650.00	11,595.68	11,288.53	11,130.48	41.15	39.68	-54.97	-317.15	284.85	830.41	759.70	70.71	11.744		
11,700.00	11,629.85	11,312.95	11,139.23	41.26	39.75	-53.48	-339.94	284.91	841.98	771.91	70.07	12.015		
11,750.00	11,660.72	11,337.38	11,147.00	41.37	39.81	-52.17	-363.11	284.97	852.49	783.00	69.49	12.268		
11,800.00	11,688.04	11,361.83	11,153.78	41.48	39.88	-51.04	-386.60	285.03	861.84	792.88	68.96	12.498		
11,850.00	11,711.81	11,386.30	11,159.56	41.60	39.95	-50.09	-410.37	285.10	869.93	801.42	68.50	12.699		
11,900.00	11,731.24	11,410.77	11,164.32	41.72	40.02	-49.32	-434.37	285.16	876.69	808.56	68.13	12.868		
11,950.00	11,746.80	11,435.26	11,168.05	41.85	40.09	-48.71	-458.57	285.23	882.07	814.22	67.85	13.001		
12,000.00	11,758.16	11,450.00	11,169.79	41.98	40.13	-48.32	-473.21	285.27	886.13	818.55	67.58	13.112		
12,050.00	11,765.23	11,484.24	11,172.39	42.12	40.23	-48.00	-507.35	285.36	888.51	820.93	67.58	13.148		
12,100.00	11,767.96	11,514.56	11,173.00	42.25	40.32	-47.89	-529.84	285.42	889.51	821.90	67.61	13.156		
12,150.00	11,768.00	11,556.74	11,173.00	42.40	40.45	-47.89	-579.84	285.56	889.53	821.73	67.79	13.121		
12,200.00	11,768.00	11,606.74	11,173.00	42.54	40.61	-47.89	-629.84	285.69	889.53	821.53	68.00	13.081		
12,250.00	11,768.00	11,656.74	11,173.00	42.71	40.78	-47.89	-679.84	285.83	889.53	821.29	68.24	13.035		
12,300.00	11,768.00	11,706.74	11,173.00	42.88	40.96	-47.89	-729.84	285.96	889.53	821.04	68.49	12.989		
12,350.00	11,768.00	11,756.74	11,173.00	43.07	41.16	-47.89	-779.84	286.10	889.53	820.76	68.77	12.935		
12,400.00	11,768.00	11,806.74	11,173.00	43.26	41.36	-47.89	-829.84	286.23	889.53	820.48	69.05	12.882		
12,450.00	11,768.00	11,856.74	11,173.00	43.47	41.59	-47.89	-879.84	286.37	889.53	820.16	69.37	12.822		
12,500.00	11,768.00	11,906.74	11,173.00	43.68	41.81	-47.89	-929.84	286.50	889.53	819.83	69.70	12.763		
12,550.00	11,768.00	11,956.74	11,173.00	43.91	42.06	-47.89	-979.84	286.64	889.53	819.47	70.06	12.697		
12,600.00	11,768.00	12,006.74	11,173.00	44.15	42.30	-47.89	-1,029.84	286.78	889.53	819.11	70.42	12.632		
12,650.00	11,768.00	12,056.74	11,173.00	44.40	42.57	-47.89	-1,079.84	286.91	889.53	818.71	70.81	12.562		
12,700.00	11,768.00	12,106.74	11,173.00	44.66	42.84	-47.89	-1,129.84	287.05	889.53	818.32	71.21	12.491		
12,750.00	11,768.00	12,156.74	11,173.00	44.93	43.12	-47.89	-1,179.84	287.18	889.53	817.88	71.64	12.416		
12,800.00	11,768.00	12,206.74	11,173.00	45.20	43.41	-47.89	-1,229.84	287.32	889.53	817.45	72.08	12.341		
12,850.00	11,768.00	12,256.74	11,173.00	45.50	43.72	-47.89	-1,279.84	287.45	889.53	816.98	72.54	12.262		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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	11,768.00	12,306.74	11,173.00	45.79	44.03	-47.89	-1,329.84	287.59	889.53	816.52	73.01	12.183	
12,950.00	11,768.00	12,356.74	11,173.00	46.10	44.36	-47.89	-1,379.84	287.72	889.53	816.02	73.51	12.101	
13,000.00	11,768.00	12,406.74	11,173.00	46.42	44.68	-47.89	-1,429.83	287.86	889.53	815.51	74.01	12.019	
13,050.00	11,768.00	12,456.74	11,173.00	46.75	45.03	-47.89	-1,479.83	287.99	889.53	814.98	74.54	11.933	
13,100.00	11,768.00	12,506.74	11,173.00	47.08	45.38	-47.89	-1,529.83	288.13	889.53	814.45	75.08	11.848	
13,150.00	11,768.00	12,556.74	11,173.00	47.43	45.74	-47.89	-1,579.83	288.26	889.53	813.89	75.64	11.760	
13,200.00	11,768.00	12,606.74	11,173.00	47.78	46.10	-47.89	-1,629.83	288.40	889.53	813.33	76.20	11.673	
13,250.00	11,768.00	12,656.74	11,173.00	48.14	46.48	-47.89	-1,679.83	288.53	889.53	812.73	76.79	11.584	
13,300.00	11,768.00	12,706.74	11,173.00	48.51	46.86	-47.89	-1,729.83	288.67	889.53	812.14	77.38	11.495	
13,350.00	11,768.00	12,756.74	11,173.00	48.89	47.26	-47.89	-1,779.83	288.81	889.53	811.52	78.00	11.404	
13,400.00	11,768.00	12,806.74	11,173.00	49.27	47.66	-47.89	-1,829.83	288.94	889.53	810.90	78.62	11.314	
13,450.00	11,768.00	12,856.74	11,173.00	49.66	48.07	-47.89	-1,879.83	289.08	889.53	810.26	79.27	11.222	
13,500.00	11,768.00	12,906.74	11,173.00	50.06	48.48	-47.89	-1,929.83	289.21	889.53	809.61	79.91	11.131	
13,550.00	11,768.00	12,956.74	11,173.00	50.47	48.90	-47.89	-1,979.83	289.35	889.53	808.94	80.58	11.038	
13,600.00	11,768.00	13,006.74	11,173.00	50.88	49.33	-47.89	-2,029.83	289.48	889.53	808.27	81.26	10.947	
13,650.00	11,768.00	13,056.74	11,173.00	51.31	49.77	-47.89	-2,079.83	289.62	889.53	807.57	81.95	10.854	
13,700.00	11,768.00	13,106.74	11,173.00	51.73	50.21	-47.89	-2,129.83	289.75	889.53	806.88	82.65	10.763	
13,750.00	11,768.00	13,156.74	11,173.00	52.17	50.66	-47.89	-2,179.83	289.89	889.53	806.16	83.36	10.670	
13,800.00	11,768.00	13,206.74	11,173.00	52.61	51.12	-47.89	-2,229.83	290.02	889.52	805.44	84.08	10.579	
13,850.00	11,768.00	13,256.74	11,173.00	53.06	51.58	-47.89	-2,279.83	290.16	889.52	804.70	84.82	10.487	
13,900.00	11,768.00	13,306.74	11,173.00	53.51	52.05	-47.89	-2,329.83	290.29	889.52	803.96	85.56	10.396	
13,950.00	11,768.00	13,356.74	11,173.00	53.97	52.52	-47.89	-2,379.83	290.43	889.52	803.20	86.32	10.305	
14,000.00	11,768.00	13,406.74	11,173.00	54.43	53.00	-47.89	-2,429.83	290.56	889.52	802.44	87.08	10.215	
14,050.00	11,768.00	13,456.74	11,173.00	54.91	53.49	-47.89	-2,479.83	290.70	889.52	801.66	87.86	10.124	
14,100.00	11,768.00	13,506.74	11,173.00	55.38	53.98	-47.89	-2,529.83	290.84	889.52	800.88	88.64	10.035	
14,150.00	11,768.00	13,556.74	11,173.00	55.87	54.47	-47.89	-2,579.83	290.97	889.52	800.09	89.44	9.946	
14,200.00	11,768.00	13,606.74	11,173.00	56.35	54.97	-47.89	-2,629.83	291.11	889.52	799.29	90.24	9.858	
14,250.00	11,768.00	13,656.74	11,173.00	56.85	55.48	-47.89	-2,679.83	291.24	889.52	798.47	91.05	9.769	
14,300.00	11,768.00	13,706.74	11,173.00	57.34	55.99	-47.89	-2,729.83	291.38	889.52	797.66	91.87	9.683	
14,350.00	11,768.00	13,756.74	11,173.00	57.84	56.51	-47.89	-2,779.83	291.51	889.52	796.82	92.70	9.596	
14,400.00	11,768.00	13,806.74	11,173.00	58.35	57.03	-47.89	-2,829.83	291.65	889.52	795.99	93.53	9.510	
14,450.00	11,768.00	13,856.74	11,173.00	58.86	57.55	-47.89	-2,879.83	291.78	889.52	795.14	94.38	9.425	
14,500.00	11,768.00	13,906.74	11,173.00	59.38	58.08	-47.89	-2,929.83	291.92	889.52	794.30	95.23	9.341	
14,550.00	11,768.00	13,956.74	11,173.00	59.90	58.62	-47.89	-2,979.83	292.05	889.52	793.43	96.09	9.257	
14,600.00	11,768.00	14,006.74	11,173.00	60.42	59.15	-47.89	-3,029.83	292.19	889.52	792.57	96.95	9.175	
14,650.00	11,768.00	14,056.74	11,173.00	60.95	59.70	-47.89	-3,079.83	292.32	889.52	791.69	97.83	9.093	
14,700.00	11,768.00	14,106.74	11,173.00	61.48	60.24	-47.89	-3,129.83	292.46	889.52	790.82	98.71	9.012	
14,750.00	11,768.00	14,156.74	11,173.00	62.02	60.79	-47.89	-3,179.83	292.59	889.52	789.93	99.60	8.931	
14,800.00	11,768.00	14,206.74	11,173.00	62.56	61.34	-47.89	-3,229.83	292.73	889.52	789.04	100.49	8.852	
14,850.00	11,768.00	14,256.74	11,173.00	63.11	61.90	-47.89	-3,279.83	292.87	889.52	788.13	101.39	8.773	
14,900.00	11,768.00	14,306.74	11,173.00	63.65	62.46	-47.89	-3,329.83	293.00	889.52	787.23	102.29	8.696	
14,950.00	11,768.00	14,356.74	11,173.00	64.21	63.02	-47.89	-3,379.83	293.14	889.52	786.32	103.21	8.619	
15,000.00	11,768.00	14,406.74	11,173.00	64.76	63.59	-47.89	-3,429.83	293.27	889.52	785.40	104.12	8.543	
15,050.00	11,768.00	14,456.74	11,173.00	65.32	64.16	-47.89	-3,479.83	293.41	889.52	784.47	105.05	8.468	
15,100.00	11,768.00	14,506.74	11,173.00	65.88	64.73	-47.89	-3,529.83	293.54	889.52	783.55	105.97	8.394	
15,150.00	11,768.00	14,556.74	11,173.00	66.45	65.31	-47.89	-3,579.83	293.68	889.52	782.61	106.91	8.320	
15,200.00	11,768.00	14,606.74	11,173.00	67.01	65.89	-47.89	-3,629.83	293.81	889.52	781.67	107.85	8.248	
15,250.00	11,768.00	14,656.74	11,173.00	67.58	66.47	-47.89	-3,679.83	293.95	889.52	780.72	108.80	8.176	
15,300.00	11,768.00	14,706.74	11,173.00	68.16	67.05	-47.89	-3,729.83	294.08	889.52	779.78	109.74	8.105	
15,350.00	11,768.00	14,756.74	11,173.00	68.73	67.64	-47.89	-3,779.83	294.22	889.52	778.82	110.70	8.035	
15,400.00	11,768.00	14,806.74	11,173.00	69.31	68.23	-47.89	-3,829.83	294.35	889.52	777.86	111.66	7.966	
15,450.00	11,768.00	14,856.74	11,173.00	69.90	68.83	-47.89	-3,879.83	294.49	889.52	776.90	112.62	7.898	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
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	11,768.00	14,906.74	11,173.00	70.48	69.42	-47.89	-3,929.83	294.62	889.52	775.93	113.59	7.831	
15,550.00	11,768.00	14,956.74	11,173.00	71.07	70.02	-47.89	-3,979.83	294.76	889.52	774.95	114.57	7.764	
15,600.00	11,768.00	15,006.74	11,173.00	71.66	70.62	-47.89	-4,029.83	294.90	889.52	773.98	115.54	7.699	
15,650.00	11,768.00	15,056.74	11,173.00	72.25	71.22	-47.89	-4,079.83	295.03	889.52	773.00	116.52	7.634	
15,700.00	11,768.00	15,106.74	11,173.00	72.85	71.83	-47.89	-4,129.83	295.17	889.52	772.01	117.51	7.570	
15,750.00	11,768.00	15,156.74	11,173.00	73.45	72.44	-47.89	-4,179.82	295.30	889.52	771.02	118.50	7.507	
15,800.00	11,768.00	15,206.74	11,173.00	74.04	73.04	-47.89	-4,229.82	295.44	889.52	770.03	119.49	7.444	
15,850.00	11,768.00	15,256.74	11,173.00	74.65	73.66	-47.89	-4,279.82	295.57	889.52	769.03	120.49	7.383	
15,900.00	11,768.00	15,306.74	11,173.00	75.25	74.27	-47.89	-4,329.82	295.71	889.52	768.03	121.49	7.322	
15,950.00	11,768.00	15,356.74	11,173.00	75.86	74.89	-47.89	-4,379.82	295.84	889.52	767.02	122.50	7.262	
16,000.00	11,768.00	15,406.74	11,173.00	76.47	75.50	-47.89	-4,429.82	295.98	889.52	766.02	123.50	7.202	
16,050.00	11,768.00	15,456.74	11,173.00	77.08	76.12	-47.89	-4,479.82	296.11	889.52	765.00	124.51	7.144	
16,100.00	11,768.00	15,506.74	11,173.00	77.69	76.74	-47.89	-4,529.82	296.25	889.52	763.99	125.53	7.086	
16,150.00	11,768.00	15,556.74	11,173.00	78.30	77.37	-47.89	-4,579.82	296.38	889.52	762.97	126.55	7.029	
16,200.00	11,768.00	15,606.74	11,173.00	78.92	77.99	-47.89	-4,629.82	296.52	889.52	761.95	127.57	6.973	
16,250.00	11,768.00	15,656.74	11,173.00	79.54	78.62	-47.89	-4,679.82	296.65	889.52	760.93	128.59	6.917	
16,300.00	11,768.00	15,706.74	11,173.00	80.16	79.25	-47.89	-4,729.82	296.79	889.52	759.90	129.62	6.863	
16,350.00	11,768.00	15,756.74	11,173.00	80.78	79.88	-47.89	-4,779.82	296.93	889.52	758.87	130.65	6.808	
16,400.00	11,768.00	15,806.74	11,173.00	81.40	80.51	-47.89	-4,829.82	297.06	889.52	757.84	131.68	6.755	
16,450.00	11,768.00	15,856.74	11,173.00	82.03	81.14	-47.89	-4,879.82	297.20	889.52	756.80	132.72	6.702	
16,500.00	11,768.00	15,906.74	11,173.00	82.66	81.78	-47.89	-4,929.82	297.33	889.52	755.76	133.76	6.650	
16,550.00	11,768.00	15,956.74	11,173.00	83.29	82.42	-47.89	-4,979.82	297.47	889.52	754.72	134.80	6.599	
16,600.00	11,768.00	16,006.74	11,173.00	83.92	83.05	-47.89	-5,029.82	297.60	889.52	753.68	135.84	6.548	
16,650.00	11,768.00	16,056.74	11,173.00	84.55	83.69	-47.89	-5,079.82	297.74	889.52	752.63	136.89	6.498	
16,700.00	11,768.00	16,106.74	11,173.00	85.18	84.33	-47.89	-5,129.82	297.87	889.52	751.58	137.94	6.449	
16,750.00	11,768.00	16,156.74	11,173.00	85.82	84.98	-47.89	-5,179.82	298.01	889.52	750.53	138.99	6.400	
16,800.00	11,768.00	16,206.74	11,173.00	86.45	85.62	-47.89	-5,229.82	298.14	889.52	749.47	140.04	6.352	
16,850.00	11,768.00	16,256.74	11,173.00	87.09	86.26	-47.89	-5,279.82	298.28	889.52	748.42	141.10	6.304	
16,900.00	11,768.00	16,306.74	11,173.00	87.73	86.91	-47.89	-5,329.82	298.41	889.52	747.36	142.16	6.257	
16,950.00	11,768.00	16,356.74	11,173.00	88.37	87.56	-47.89	-5,379.82	298.55	889.52	746.30	143.22	6.211	
17,000.00	11,768.00	16,406.74	11,173.00	89.01	88.21	-47.89	-5,429.82	298.68	889.52	745.24	144.28	6.165	
17,050.00	11,768.00	16,456.74	11,173.00	89.65	88.86	-47.89	-5,479.82	298.82	889.52	744.17	145.35	6.120	
17,100.00	11,768.00	16,506.74	11,173.00	90.30	89.51	-47.89	-5,529.82	298.96	889.52	743.10	146.41	6.075	
17,150.00	11,768.00	16,556.74	11,173.00	90.94	90.16	-47.89	-5,579.82	299.09	889.52	742.03	147.48	6.031	
17,200.00	11,768.00	16,606.74	11,173.00	91.59	90.81	-47.89	-5,629.82	299.23	889.52	740.96	148.55	5.988	
17,250.00	11,768.00	16,656.74	11,173.00	92.24	91.47	-47.89	-5,679.82	299.36	889.52	739.89	149.63	5.945	
17,300.00	11,768.00	16,706.74	11,173.00	92.89	92.12	-47.89	-5,729.82	299.50	889.52	738.81	150.70	5.902	
17,350.00	11,768.00	16,756.74	11,173.00	93.54	92.78	-47.89	-5,779.82	299.63	889.52	737.74	151.78	5.861	
17,400.00	11,768.00	16,806.74	11,173.00	94.19	93.44	-47.89	-5,829.82	299.77	889.52	736.66	152.86	5.819	
17,450.00	11,768.00	16,856.74	11,173.00	94.84	94.10	-47.89	-5,879.82	299.90	889.52	735.58	153.94	5.778	
17,500.00	11,768.00	16,906.74	11,173.00	95.50	94.76	-47.89	-5,929.82	300.04	889.52	734.49	155.02	5.738	
17,550.00	11,768.00	16,956.74	11,173.00	96.15	95.42	-47.89	-5,979.82	300.17	889.52	733.41	156.11	5.698	
17,600.00	11,768.00	17,006.74	11,173.00	96.81	96.08	-47.89	-6,029.82	300.31	889.52	732.32	157.19	5.659	
17,650.00	11,768.00	17,056.74	11,173.00	97.46	96.74	-47.89	-6,079.82	300.44	889.51	731.24	158.28	5.620	
17,700.00	11,768.00	17,106.74	11,173.00	98.12	97.41	-47.89	-6,129.82	300.58	889.51	730.15	159.37	5.582	
17,750.00	11,768.00	17,156.74	11,173.00	98.78	98.07	-47.89	-6,179.82	300.72	889.51	729.06	160.46	5.544	
17,800.00	11,768.00	17,206.74	11,173.00	99.44	98.74	-47.89	-6,229.82	300.85	889.51	727.96	161.55	5.506	
17,850.00	11,768.00	17,256.74	11,173.00	100.10	99.40	-47.89	-6,279.82	300.99	889.51	726.87	162.64	5.469	
17,900.00	11,768.00	17,306.74	11,173.00	100.76	100.07	-47.89	-6,329.82	301.12	889.51	725.77	163.74	5.433	
17,950.00	11,768.00	17,356.74	11,173.00	101.42	100.74	-47.89	-6,379.82	301.26	889.51	724.68	164.84	5.396	
18,000.00	11,768.00	17,406.74	11,173.00	102.09	101.40	-47.89	-6,429.82	301.39	889.51	723.58	165.93	5.361	
18,050.00	11,768.00	17,456.74	11,173.00	102.75	102.07	-47.89	-6,479.82	301.53	889.51	722.48	167.03	5.325	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		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)						
18,100.00	11,768.00	17,506.74	11,173.00	103.41	102.74	-47.89	-6,529.82	301.66	889.51	721.38	168.13	5.290		
18,150.00	11,768.00	17,556.74	11,173.00	104.08	103.42	-47.89	-6,579.82	301.80	889.51	720.28	169.24	5.256		
18,200.00	11,768.00	17,606.74	11,173.00	104.75	104.09	-47.89	-6,629.82	301.93	889.51	719.17	170.34	5.222		
18,250.00	11,768.00	17,656.74	11,173.00	105.41	104.76	-47.89	-6,679.82	302.07	889.51	718.07	171.45	5.188		
18,300.00	11,768.00	17,706.74	11,173.00	106.08	105.43	-47.89	-6,729.82	302.20	889.51	716.96	172.55	5.155		
18,350.00	11,768.00	17,756.74	11,173.00	106.75	106.11	-47.89	-6,779.82	302.34	889.51	715.85	173.66	5.122		
18,400.00	11,768.00	17,806.74	11,173.00	107.42	106.78	-47.89	-6,829.82	302.47	889.51	714.74	174.77	5.090		
18,450.00	11,768.00	17,856.74	11,173.00	108.09	107.46	-47.89	-6,879.82	302.61	889.51	713.63	175.88	5.058		
18,500.00	11,768.00	17,906.74	11,173.00	108.76	108.13	-47.89	-6,929.81	302.75	889.51	712.52	176.99	5.026		
18,550.00	11,768.00	17,956.74	11,173.00	109.43	108.81	-47.89	-6,979.81	302.88	889.51	711.41	178.10	4.994	Alert	
18,600.00	11,768.00	18,006.74	11,173.00	110.11	109.49	-47.89	-7,029.81	303.02	889.51	710.30	179.22	4.963	Alert	
18,650.00	11,768.00	18,056.74	11,173.00	110.78	110.16	-47.89	-7,079.81	303.15	889.51	709.18	180.33	4.933	Alert	
18,700.00	11,768.00	18,106.74	11,173.00	111.45	110.84	-47.89	-7,129.81	303.29	889.51	708.07	181.45	4.902	Alert	
18,750.00	11,768.00	18,156.74	11,173.00	112.13	111.52	-47.89	-7,179.81	303.42	889.51	706.95	182.56	4.872	Alert	
18,800.00	11,768.00	18,206.74	11,173.00	112.80	112.20	-47.89	-7,229.81	303.56	889.51	705.83	183.68	4.843	Alert	
18,850.00	11,768.00	18,256.74	11,173.00	113.48	112.88	-47.89	-7,279.81	303.69	889.51	704.71	184.80	4.813	Alert	
18,900.00	11,768.00	18,306.74	11,173.00	114.16	113.56	-47.89	-7,329.81	303.83	889.51	703.59	185.92	4.784	Alert	
18,950.00	11,768.00	18,356.74	11,173.00	114.83	114.24	-47.89	-7,379.81	303.96	889.51	702.47	187.04	4.756	Alert	
19,000.00	11,768.00	18,406.74	11,173.00	115.51	114.93	-47.89	-7,429.81	304.10	889.51	701.35	188.16	4.727	Alert	
19,050.00	11,768.00	18,456.74	11,173.00	116.19	115.61	-47.89	-7,479.81	304.23	889.51	700.23	189.28	4.699	Alert	
19,100.00	11,768.00	18,506.74	11,173.00	116.87	116.29	-47.89	-7,529.81	304.37	889.51	699.10	190.41	4.672	Alert	
19,150.00	11,768.00	18,556.74	11,173.00	117.55	116.98	-47.89	-7,579.81	304.50	889.51	697.98	191.53	4.644	Alert	
19,200.00	11,768.00	18,606.74	11,173.00	118.23	117.66	-47.89	-7,629.81	304.64	889.51	696.85	192.66	4.617	Alert	
19,250.00	11,768.00	18,656.74	11,173.00	118.91	118.34	-47.89	-7,679.81	304.78	889.51	695.73	193.78	4.590	Alert	
19,300.00	11,768.00	18,706.74	11,173.00	119.59	119.03	-47.89	-7,729.81	304.91	889.51	694.60	194.91	4.564	Alert	
19,350.00	11,768.00	18,756.74	11,173.00	120.27	119.72	-47.89	-7,779.81	305.05	889.51	693.47	196.04	4.537	Alert	
19,400.00	11,768.00	18,806.74	11,173.00	120.95	120.40	-47.89	-7,829.81	305.18	889.51	692.34	197.17	4.511	Alert	
19,450.00	11,768.00	18,856.74	11,173.00	121.64	121.09	-47.89	-7,879.81	305.32	889.51	691.21	198.30	4.486	Alert	
19,500.00	11,768.00	18,906.74	11,173.00	122.32	121.78	-47.89	-7,929.81	305.45	889.51	690.08	199.43	4.460	Alert	
19,550.00	11,768.00	18,956.74	11,173.00	123.00	122.46	-47.89	-7,979.81	305.59	889.51	688.95	200.56	4.435	Alert	
19,600.00	11,768.00	19,006.74	11,173.00	123.69	123.15	-47.89	-8,029.81	305.72	889.51	687.82	201.69	4.410	Alert	
19,650.00	11,768.00	19,056.74	11,173.00	124.37	123.84	-47.89	-8,079.81	305.86	889.51	686.68	202.83	4.386	Alert	
19,700.00	11,768.00	19,106.74	11,173.00	125.06	124.53	-47.89	-8,129.81	305.99	889.51	685.55	203.96	4.361	Alert	
19,750.00	11,768.00	19,156.74	11,173.00	125.74	125.22	-47.89	-8,179.81	306.13	889.51	684.41	205.10	4.337	Alert	
19,800.00	11,768.00	19,206.74	11,173.00	126.43	125.91	-47.89	-8,229.81	306.26	889.51	683.28	206.23	4.313	Alert	
19,850.00	11,768.00	19,256.74	11,173.00	127.12	126.60	-47.89	-8,279.81	306.40	889.51	682.14	207.37	4.290	Alert	
19,900.00	11,768.00	19,306.74	11,173.00	127.80	127.29	-47.89	-8,329.81	306.53	889.51	681.01	208.50	4.266	Alert	
19,950.00	11,768.00	19,356.74	11,173.00	128.49	127.98	-47.89	-8,379.81	306.67	889.51	679.87	209.64	4.243	Alert	
20,000.00	11,768.00	19,406.74	11,173.00	129.18	128.67	-47.89	-8,429.81	306.81	889.51	678.73	210.78	4.220	Alert	
20,050.00	11,768.00	19,456.74	11,173.00	129.87	129.36	-47.89	-8,479.81	306.94	889.51	677.59	211.92	4.197	Alert	
20,100.00	11,768.00	19,506.74	11,173.00	130.55	130.05	-47.89	-8,529.81	307.08	889.51	676.45	213.06	4.175	Alert	
20,150.00	11,768.00	19,556.74	11,173.00	131.24	130.75	-47.89	-8,579.81	307.21	889.51	675.31	214.20	4.153	Alert	
20,200.00	11,768.00	19,606.74	11,173.00	131.93	131.44	-47.89	-8,629.81	307.35	889.51	674.17	215.34	4.131	Alert	
20,250.00	11,768.00	19,656.74	11,173.00	132.62	132.13	-47.89	-8,679.81	307.48	889.51	673.03	216.48	4.109	Alert	
20,300.00	11,768.00	19,706.74	11,173.00	133.31	132.83	-47.89	-8,729.81	307.62	889.51	671.88	217.62	4.087	Alert	
20,350.00	11,768.00	19,756.74	11,173.00	134.00	133.52	-47.89	-8,779.81	307.75	889.51	670.74	218.77	4.066	Alert	
20,400.00	11,768.00	19,806.74	11,173.00	134.70	134.21	-47.89	-8,829.81	307.89	889.51	669.60	219.91	4.045	Alert	
20,450.00	11,768.00	19,856.74	11,173.00	135.39	134.91	-47.89	-8,879.81	308.02	889.51	668.45	221.05	4.024	Alert	
20,500.00	11,768.00	19,906.74	11,173.00	136.08	135.60	-47.89	-8,929.81	308.16	889.51	667.31	222.20	4.003	Alert	
20,550.00	11,768.00	19,956.74	11,173.00	136.77	136.30	-47.89	-8,979.81	308.29	889.51	666.16	223.34	3.983	Alert	
20,600.00	11,768.00	20,006.74	11,173.00	137.46	137.00	-47.89	-9,029.81	308.43	889.51	665.02	224.49	3.962	Alert	
20,650.00	11,768.00	20,056.74	11,173.00	138.16	137.69	-47.89	-9,079.81	308.56	889.51	663.87	225.64	3.942	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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Plan 1											Offset Site Error:		0.00 ft
Survey Program: 0-MWD+HDGM											Offset Well Error:		0.50 ft
Reference		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	11,768.00	20,106.74	11,173.00	138.85	138.39	-47.89	-9,129.81	308.70	889.51	662.72	226.78	3.922 Alert	
20,750.00	11,768.00	20,156.74	11,173.00	139.54	139.08	-47.89	-9,179.81	308.84	889.51	661.58	227.93	3.903 Alert	
20,800.00	11,768.00	20,206.74	11,173.00	140.24	139.78	-47.89	-9,229.81	308.97	889.51	660.43	229.08	3.883 Alert	
20,850.00	11,768.00	20,256.74	11,173.00	140.93	140.48	-47.89	-9,279.81	309.11	889.51	659.28	230.23	3.864 Alert	
20,900.00	11,768.00	20,306.74	11,173.00	141.63	141.18	-47.89	-9,329.81	309.24	889.51	658.13	231.38	3.844 Alert	
20,950.00	11,768.00	20,356.74	11,173.00	142.32	141.87	-47.89	-9,379.81	309.38	889.51	656.98	232.53	3.825 Alert	
21,000.00	11,768.00	20,406.74	11,173.00	143.02	142.57	-47.89	-9,429.81	309.51	889.51	655.83	233.68	3.807 Alert	
21,050.00	11,768.00	20,456.74	11,173.00	143.71	143.27	-47.89	-9,479.81	309.65	889.51	654.68	234.83	3.788 Alert	
21,100.00	11,768.00	20,506.74	11,173.00	144.41	143.97	-47.89	-9,529.81	309.78	889.51	653.53	235.98	3.769 Alert	
21,150.00	11,768.00	20,556.74	11,173.00	145.10	144.67	-47.89	-9,579.81	309.92	889.51	652.38	237.13	3.751 Alert	
21,200.00	11,768.00	20,606.74	11,173.00	145.80	145.37	-47.89	-9,629.81	310.05	889.51	651.22	238.28	3.733 Alert	
21,250.00	11,768.00	20,656.74	11,173.00	146.50	146.07	-47.89	-9,679.80	310.19	889.51	650.07	239.43	3.715 Alert	
21,300.00	11,768.00	20,706.74	11,173.00	147.19	146.77	-47.89	-9,729.80	310.32	889.51	648.92	240.59	3.697 Alert	
21,350.00	11,768.00	20,756.74	11,173.00	147.89	147.47	-47.89	-9,779.80	310.46	889.51	647.76	241.74	3.680 Alert	
21,400.00	11,768.00	20,806.74	11,173.00	148.59	148.17	-47.89	-9,829.80	310.59	889.51	646.61	242.90	3.662 Alert	
21,450.00	11,768.00	20,856.74	11,173.00	149.29	148.87	-47.89	-9,879.80	310.73	889.51	645.46	244.05	3.645 Alert	
21,500.00	11,768.00	20,906.74	11,173.00	149.99	149.57	-47.89	-9,929.80	310.87	889.50	644.30	245.20	3.628 Alert	
21,550.00	11,768.00	20,956.74	11,173.00	150.68	150.27	-47.89	-9,979.80	311.00	889.50	643.14	246.36	3.611 Alert	
21,600.00	11,768.00	21,006.74	11,173.00	151.38	150.97	-47.89	-10,029.80	311.14	889.50	641.99	247.52	3.594 Alert	
21,650.00	11,768.00	21,056.74	11,173.00	152.08	151.67	-47.89	-10,079.80	311.27	889.50	640.83	248.67	3.577 Alert	
21,700.00	11,768.00	21,106.74	11,173.00	152.78	152.37	-47.89	-10,129.80	311.41	889.50	639.68	249.83	3.560 Alert	
21,750.00	11,768.00	21,156.74	11,173.00	153.48	153.08	-47.89	-10,179.80	311.54	889.50	638.52	250.99	3.544 Alert	
21,800.00	11,768.00	21,206.74	11,173.00	154.18	153.78	-47.89	-10,229.80	311.68	889.50	637.36	252.14	3.528 Alert	
21,850.00	11,768.00	21,256.74	11,173.00	154.88	154.48	-47.89	-10,279.80	311.81	889.50	636.20	253.30	3.512 Alert	
21,900.00	11,768.00	21,306.74	11,173.00	155.58	155.18	-47.89	-10,329.80	311.95	889.50	635.04	254.46	3.496 Alert	
21,904.71	11,768.00	21,311.45	11,173.00	155.65	155.25	-47.89	-10,334.51	311.96	889.50	634.94	254.57	3.494 Alert, SF	

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			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		
2,750.00	2,749.92	2,867.40	2,858.70	9.62	10.10	177.05	-61.20	1,488.57	1,499.21	1,479.62	19.59	76.520		
2,800.00	2,799.86	2,926.77	2,917.78	9.79	10.32	176.92	-57.38	1,484.25	1,497.83	1,477.85	19.98	74.977		
2,850.00	2,849.78	2,983.19	2,973.91	9.96	10.53	176.80	-53.82	1,479.83	1,496.61	1,476.26	20.35	73.534		
2,900.00	2,899.69	3,039.06	3,029.49	10.14	10.75	176.68	-50.37	1,475.22	1,495.40	1,474.68	20.73	72.148		
2,950.00	2,949.60	3,082.74	3,072.94	10.31	10.91	176.58	-47.55	1,471.66	1,494.23	1,473.17	21.07	70.933		
3,000.00	2,999.51	3,128.06	3,118.00	10.49	11.08	176.47	-44.41	1,468.10	1,493.22	1,471.81	21.41	69.747		
3,050.00	3,049.41	3,176.01	3,165.69	10.66	11.27	176.35	-40.91	1,464.45	1,492.32	1,470.56	21.76	68.576		
3,100.00	3,099.32	3,224.47	3,213.87	10.83	11.45	176.22	-37.27	1,460.83	1,491.50	1,469.38	22.12	67.441		
3,150.00	3,149.23	3,280.93	3,270.02	11.01	11.67	176.08	-33.21	1,456.49	1,490.58	1,468.09	22.49	66.264		
3,200.00	3,199.14	3,337.10	3,325.89	11.19	11.88	175.95	-29.62	1,451.92	1,489.46	1,466.58	22.87	65.122		
3,250.00	3,249.04	3,392.75	3,381.24	11.36	12.09	175.84	-26.41	1,447.16	1,488.14	1,464.89	23.25	64.015		
3,300.00	3,298.95	3,446.84	3,435.04	11.54	12.30	175.75	-23.57	1,442.34	1,486.65	1,463.03	23.62	62.949		
3,350.00	3,348.86	3,500.15	3,488.07	11.71	12.50	175.66	-20.91	1,437.46	1,485.05	1,461.06	23.98	61.918		
3,400.00	3,398.77	3,544.10	3,531.78	11.89	12.66	175.59	-18.66	1,433.46	1,483.48	1,459.15	24.32	60.987		
3,450.00	3,448.68	3,587.14	3,574.62	12.07	12.83	175.53	-17.03	1,429.74	1,482.14	1,457.48	24.68	60.097		
3,500.00	3,498.58	3,629.73	3,617.03	12.24	12.99	175.47	-15.32	1,426.25	1,481.04	1,456.04	25.00	59.247		
3,550.00	3,548.49	3,672.13	3,659.27	12.42	13.14	175.41	-13.52	1,423.00	1,480.20	1,454.87	25.33	58.430		
3,600.00	3,598.40	3,714.95	3,701.94	12.60	13.30	175.35	-11.58	1,419.94	1,479.62	1,453.95	25.67	57.643		
3,650.00	3,648.31	3,758.27	3,745.11	12.78	13.47	175.28	-9.56	1,417.04	1,479.26	1,453.26	26.01	56.882		
3,700.00	3,698.22	3,803.00	3,789.70	12.95	13.63	175.20	-7.41	1,414.24	1,479.13	1,452.78	26.35	56.140		
3,750.00	3,748.12	3,851.59	3,838.14	13.13	13.81	175.12	-5.10	1,411.28	1,479.09	1,452.39	26.70	55.395		
3,762.77	3,760.87	3,863.99	3,850.52	13.18	13.86	175.10	-4.52	1,410.54	1,479.09	1,452.30	26.79	55.208		
3,800.00	3,798.03	3,901.11	3,887.52	13.31	14.00	175.05	-2.80	1,408.32	1,479.10	1,452.04	27.06	54.664		
3,850.00	3,847.94	3,952.48	3,938.74	13.49	14.19	174.96	-0.27	1,405.21	1,479.08	1,451.66	27.42	53.939		
3,900.00	3,897.85	4,005.64	3,991.72	13.67	14.39	174.86	2.57	1,401.93	1,479.00	1,451.21	27.79	53.219		
3,950.00	3,947.75	4,060.71	4,046.58	13.84	14.59	174.75	5.72	1,398.36	1,478.77	1,450.61	28.17	52.499		
4,000.00	3,997.66	4,112.71	4,098.37	14.02	14.79	174.64	8.88	1,394.85	1,478.42	1,449.88	28.53	51.811		
4,050.00	4,047.57	4,163.72	4,149.15	14.20	14.98	174.52	12.17	1,391.37	1,478.02	1,449.12	28.90	51.143		
4,100.00	4,097.48	4,216.55	4,201.73	14.38	15.18	174.39	15.88	1,387.69	1,477.57	1,448.30	29.27	50.478		
4,150.00	4,147.39	4,269.51	4,254.39	14.56	15.38	174.24	19.99	1,383.90	1,477.02	1,447.38	29.64	49.826		
4,200.00	4,197.29	4,322.11	4,306.66	14.74	15.59	174.08	24.37	1,380.02	1,476.38	1,446.36	30.02	49.185		
4,250.00	4,247.20	4,376.19	4,360.38	14.92	15.79	173.91	29.11	1,375.93	1,475.65	1,445.26	30.39	48.550		
4,300.00	4,297.11	4,433.20	4,416.97	15.10	16.01	173.72	34.22	1,371.37	1,474.72	1,443.94	30.78	47.909		
4,350.00	4,347.02	4,482.90	4,466.30	15.28	16.21	173.56	38.70	1,367.25	1,473.65	1,442.51	31.15	47.313		
4,400.00	4,396.92	4,529.57	4,512.64	15.46	16.39	173.41	42.77	1,363.46	1,472.68	1,441.18	31.50	46.747		
4,450.00	4,446.83	4,591.21	4,573.85	15.64	16.63	173.22	48.02	1,358.35	1,471.66	1,439.75	31.90	46.127		
4,500.00	4,496.74	4,654.37	4,636.50	15.82	16.87	173.02	53.37	1,352.44	1,470.08	1,437.77	32.31	45.502		
4,550.00	4,546.65	4,705.58	4,687.27	16.00	17.07	172.86	57.74	1,347.45	1,468.32	1,435.64	32.68	44.932		
4,600.00	4,596.56	4,753.11	4,734.40	16.18	17.26	172.71	61.83	1,342.79	1,466.58	1,433.52	33.04	44.389		
4,650.00	4,646.46	4,796.10	4,777.04	16.36	17.43	172.57	65.50	1,338.74	1,464.99	1,431.60	33.39	43.880		
4,700.00	4,696.37	4,840.38	4,820.98	16.54	17.60	172.43	69.23	1,334.77	1,463.66	1,429.92	33.74	43.384		
4,750.00	4,746.28	4,888.80	4,869.06	16.72	17.79	172.29	73.24	1,330.53	1,462.45	1,428.35	34.10	42.887		
4,800.00	4,796.19	4,938.40	4,918.30	16.90	17.98	172.14	77.27	1,326.23	1,461.28	1,426.82	34.47	42.398		
4,850.00	4,846.09	4,991.08	4,970.60	17.08	18.18	171.98	81.49	1,321.61	1,460.07	1,425.23	34.84	41.907		
4,900.00	4,896.00	5,043.38	5,022.53	17.26	18.39	171.83	85.64	1,316.92	1,458.78	1,423.56	35.21	41.426		
4,950.00	4,945.91	5,095.27	5,074.05	17.44	18.59	171.68	89.69	1,312.20	1,457.42	1,421.83	35.59	40.954		
5,000.00	4,995.82	5,146.70	5,125.10	17.62	18.79	171.53	93.65	1,307.45	1,456.00	1,420.04	35.96	40.492		
5,050.00	5,045.73	5,197.87	5,175.90	17.80	18.99	171.38	97.58	1,302.68	1,454.55	1,418.22	36.33	40.039		
5,100.00	5,095.63	5,247.83	5,225.49	17.98	19.18	171.24	101.38	1,298.00	1,453.08	1,416.38	36.70	39.598		
5,150.00	5,145.54	5,297.49	5,274.80	18.16	19.38	171.10	105.02	1,293.35	1,451.62	1,414.56	37.06	39.167		
5,200.00	5,195.45	5,345.07	5,322.06	18.34	19.56	170.98	108.36	1,288.95	1,450.21	1,412.78	37.42	38.753		
5,250.00	5,245.36	5,392.41	5,369.10	18.53	19.74	170.86	111.43	1,284.66	1,448.89	1,411.11	37.78	38.350		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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							
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	
5,300.00	5,295.27	5,439.80	5,416.20	18.71	19.93	170.75	114.53	1,280.46	1,447.66	1,409.52	38.14	37.957		
5,350.00	5,345.17	5,487.14	5,463.23	18.89	20.11	170.62	118.04	1,276.31	1,446.53	1,408.04	38.50	37.574		
5,400.00	5,395.08	5,539.57	5,515.29	19.07	20.31	170.46	122.24	1,271.71	1,445.42	1,406.55	38.87	37.182		
5,450.00	5,444.99	5,592.71	5,568.04	19.25	20.52	170.29	126.55	1,266.92	1,444.21	1,404.96	39.25	36.793		
5,500.00	5,494.90	5,628.06	5,603.14	19.43	20.66	170.18	129.43	1,263.89	1,443.23	1,403.65	39.58	36.466		
5,550.00	5,544.80	5,684.88	5,639.72	19.61	20.80	170.07	132.47	1,261.07	1,442.70	1,402.80	39.90	36.155		
5,600.00	5,594.71	5,709.38	5,683.97	19.79	20.97	169.93	136.15	1,258.00	1,442.57	1,402.32	40.25	35.837		
5,650.00	5,644.62	5,761.34	5,735.63	19.98	21.17	169.78	140.38	1,254.40	1,442.44	1,401.81	40.63	35.503		
5,700.00	5,694.53	5,812.10	5,786.10	20.16	21.36	169.63	144.42	1,250.83	1,442.26	1,401.26	41.00	35.178		
5,750.00	5,744.44	5,862.29	5,836.02	20.34	21.55	169.48	148.26	1,247.30	1,442.08	1,400.71	41.37	34.860		
5,800.00	5,794.34	5,915.83	5,889.27	20.52	21.76	169.34	152.22	1,243.49	1,441.85	1,400.10	41.75	34.538		
5,850.00	5,844.25	5,970.26	5,943.41	20.70	21.97	169.19	156.20	1,239.45	1,441.47	1,399.34	42.13	34.216		
5,900.00	5,894.16	6,018.17	5,991.07	20.88	22.15	169.06	159.55	1,235.87	1,441.06	1,398.57	42.49	33.917		
5,950.00	5,944.07	6,066.36	6,039.03	21.06	22.33	168.95	162.67	1,232.35	1,440.72	1,397.87	42.85	33.623		
6,000.00	5,993.97	6,109.45	6,081.92	21.25	22.50	168.84	165.54	1,229.33	1,440.53	1,397.34	43.19	33.351		
6,014.68	6,008.63	6,122.19	6,094.60	21.30	22.55	168.81	166.44	1,228.46	1,440.52	1,397.23	43.29	33.273 CC		
6,050.00	6,043.88	6,152.84	6,125.10	21.43	22.66	168.72	168.71	1,226.45	1,440.58	1,397.04	43.54	33.088		
6,100.00	6,093.79	6,202.92	6,174.92	21.61	22.85	168.58	172.56	1,223.24	1,440.76	1,396.85	43.91	32.815		
6,150.00	6,143.70	6,253.91	6,225.66	21.79	23.05	168.44	176.43	1,219.93	1,440.91	1,396.64	44.28	32.543		
6,200.00	6,193.61	6,302.46	6,273.98	21.97	23.23	168.31	180.07	1,216.79	1,441.08	1,396.44	44.64	32.282		
6,250.00	6,243.51	6,351.07	6,322.35	22.16	23.42	168.17	183.68	1,213.70	1,441.29	1,396.29	45.00	32.027		
6,300.00	6,293.42	6,399.81	6,370.87	22.34	23.60	168.05	187.20	1,210.65	1,441.56	1,396.19	45.37	31.777		
6,350.00	6,343.33	6,448.57	6,419.42	22.52	23.79	167.92	190.55	1,207.65	1,441.87	1,396.15	45.73	31.532 ES		
6,400.00	6,393.24	6,496.47	6,467.13	22.70	23.97	167.81	193.70	1,204.78	1,442.25	1,396.16	46.09	31.295		
6,450.00	6,443.14	6,545.00	6,515.47	22.88	24.15	167.70	196.76	1,201.95	1,442.70	1,396.25	46.45	31.061		
6,500.00	6,493.05	6,596.28	6,566.57	23.07	24.34	167.59	199.97	1,198.95	1,443.14	1,396.33	46.82	30.825		
6,550.00	6,542.96	6,643.58	6,613.70	23.25	24.52	167.48	202.96	1,196.16	1,443.57	1,396.40	47.17	30.602		
6,600.00	6,592.87	6,682.56	6,652.56	23.43	24.66	167.40	205.11	1,194.12	1,444.28	1,396.78	47.50	30.409		
6,650.00	6,642.78	6,721.57	6,691.49	23.61	24.80	167.35	206.85	1,192.43	1,445.37	1,397.56	47.82	30.228		
6,700.00	6,692.68	6,769.18	6,739.04	23.79	24.98	167.30	208.59	1,190.65	1,446.71	1,398.55	48.17	30.036		
6,750.00	6,742.59	6,817.64	6,787.44	23.98	25.15	167.25	210.18	1,188.91	1,448.11	1,399.59	48.52	29.846		
6,800.00	6,792.50	6,864.93	6,834.68	24.16	25.32	167.21	211.54	1,187.31	1,449.57	1,400.71	48.87	29.664		
6,850.00	6,842.41	6,912.16	6,881.87	24.34	25.49	167.19	212.70	1,185.82	1,451.13	1,401.92	49.21	29.487		
6,900.00	6,892.32	6,961.20	6,930.89	24.52	25.66	167.16	213.70	1,184.37	1,452.76	1,403.19	49.56	29.310		
6,950.00	6,942.22	7,010.37	6,980.03	24.71	25.84	167.15	214.51	1,182.97	1,454.41	1,404.49	49.92	29.136		
7,000.00	6,992.13	7,048.06	7,017.70	24.89	25.97	167.14	215.17	1,182.06	1,456.29	1,406.07	50.22	28.997		
7,050.00	7,042.04	7,085.80	7,055.43	25.07	26.10	167.13	216.02	1,181.44	1,458.59	1,408.07	50.52	28.870		
7,100.00	7,091.95	7,131.26	7,100.87	25.25	26.26	167.10	217.24	1,181.01	1,461.24	1,410.38	50.86	28.732		
7,150.00	7,141.85	7,184.77	7,154.36	25.44	26.45	167.07	218.55	1,180.44	1,463.84	1,412.61	51.23	28.574		
7,200.00	7,191.76	7,236.13	7,205.70	25.62	26.62	167.06	219.64	1,179.83	1,466.34	1,414.75	51.59	28.423		
7,250.00	7,241.67	7,286.63	7,256.19	25.80	26.80	167.05	220.51	1,179.22	1,468.82	1,416.88	51.95	28.275		
7,300.00	7,291.58	7,337.77	7,307.32	25.98	26.98	167.04	221.22	1,178.61	1,471.28	1,418.97	52.31	28.126		
7,350.00	7,341.49	7,389.04	7,358.58	26.17	27.16	167.04	221.80	1,177.96	1,473.69	1,421.02	52.67	27.982		
7,400.00	7,391.39	7,440.01	7,409.55	26.35	27.33	167.05	222.23	1,177.29	1,476.05	1,423.03	53.02	27.838		
7,450.00	7,441.30	7,490.98	7,460.52	26.53	27.51	167.06	222.49	1,176.61	1,478.39	1,425.01	53.38	27.695		
7,500.00	7,491.21	7,537.11	7,506.64	26.71	27.67	167.08	222.60	1,176.07	1,480.78	1,427.06	53.71	27.567		
7,550.00	7,541.12	7,583.66	7,553.19	26.90	27.82	167.10	222.60	1,175.64	1,483.28	1,429.23	54.05	27.442		
7,600.00	7,591.02	7,629.17	7,598.70	27.08	27.98	167.13	222.56	1,175.35	1,485.91	1,431.53	54.38	27.325		
7,650.00	7,640.93	7,674.79	7,644.32	27.26	28.13	167.15	222.50	1,175.19	1,488.69	1,433.99	54.71	27.212		
7,700.00	7,690.84	7,723.86	7,693.39	27.44	28.29	167.18	222.39	1,175.11	1,491.56	1,436.51	55.05	27.097		
7,750.00	7,740.75	7,772.93	7,742.46	27.63	28.45	167.21	222.21	1,175.07	1,494.46	1,439.07	55.38	26.983		
7,800.00	7,790.66	7,821.87	7,791.40	27.81	28.60	167.25	221.94	1,175.08	1,497.38	1,441.66	55.72	26.874 SF		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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
1,700.00	1,700.00	1,822.09	1,819.59	5.89	4.44	88.09	49.72	1,493.80	1,499.39	1,489.11	10.28	145.825	
1,750.00	1,750.00	1,880.18	1,877.41	6.07	4.60	87.99	52.27	1,488.94	1,495.27	1,484.67	10.60	141.027	
1,800.00	1,800.00	1,934.65	1,931.64	6.25	4.75	87.91	54.20	1,484.17	1,490.96	1,480.04	10.92	136.492	
1,850.00	1,850.00	1,986.15	1,982.91	6.43	4.89	87.84	55.68	1,479.52	1,486.50	1,475.26	11.24	132.261	
1,900.00	1,900.00	2,035.25	2,031.79	6.61	5.03	87.79	57.00	1,475.10	1,482.05	1,470.50	11.55	128.297	
1,950.00	1,950.00	2,083.56	2,079.90	6.78	5.17	87.73	58.22	1,470.78	1,477.63	1,465.77	11.87	124.530	
2,000.00	2,000.00	2,131.48	2,127.62	6.96	5.32	87.68	59.37	1,466.55	1,473.27	1,461.09	12.18	120.954	
2,050.00	2,050.00	2,179.55	2,175.49	7.14	5.46	87.63	60.46	1,462.38	1,468.98	1,456.48	12.50	117.533	
2,100.00	2,100.00	2,227.69	2,223.44	7.32	5.61	87.58	61.58	1,458.25	1,464.75	1,451.93	12.82	114.272	
2,150.00	2,150.00	2,275.41	2,270.97	7.50	5.76	87.53	62.71	1,454.22	1,460.57	1,447.43	13.14	111.161	
2,200.00	2,200.00	2,322.95	2,318.34	7.68	5.90	87.48	63.91	1,450.27	1,456.48	1,443.02	13.46	108.198	
2,250.00	2,250.00	2,383.26	2,378.41	7.86	6.10	87.41	65.41	1,445.15	1,452.30	1,438.48	13.82	105.097	
2,300.00	2,300.00	2,448.29	2,443.14	8.04	6.30	87.34	66.77	1,439.00	1,447.63	1,433.44	14.19	102.032	
2,350.00	2,350.00	2,489.21	2,483.86	8.22	6.44	87.31	67.54	1,435.15	1,442.95	1,428.45	14.50	99.515	
2,400.00	2,400.00	2,534.81	2,529.27	8.39	6.59	87.27	68.33	1,430.95	1,438.39	1,423.56	14.82	97.037	
2,450.00	2,450.00	2,579.68	2,573.95	8.57	6.74	87.23	69.00	1,426.97	1,433.98	1,418.84	15.15	94.679	
2,500.00	2,500.00	2,624.58	2,618.68	8.75	6.89	87.20	69.58	1,423.14	1,429.76	1,414.29	15.47	92.430	
2,550.00	2,550.00	2,668.53	2,662.48	8.93	7.03	171.86	70.06	1,419.56	1,425.93	1,410.15	15.79	90.330	
2,600.00	2,599.99	2,712.58	2,706.40	9.10	7.18	171.85	70.49	1,416.16	1,422.74	1,406.64	16.10	88.351	
2,650.00	2,649.98	2,758.97	2,752.66	9.27	7.33	171.83	71.06	1,412.72	1,420.15	1,403.73	16.43	86.461	
2,700.00	2,699.96	2,805.63	2,799.19	9.45	7.49	171.79	71.98	1,409.36	1,418.11	1,401.36	16.75	84.671	
2,750.00	2,749.92	2,870.29	2,863.65	9.62	7.71	171.74	73.52	1,404.47	1,416.35	1,399.22	17.12	82.707	
2,800.00	2,799.86	2,930.42	2,923.54	9.79	7.91	171.69	74.85	1,399.29	1,414.46	1,396.97	17.49	80.879	
2,850.00	2,849.78	2,981.79	2,974.70	9.96	8.09	171.68	75.86	1,394.72	1,412.87	1,395.04	17.83	79.242	
2,900.00	2,899.69	3,031.89	3,024.59	10.14	8.26	171.64	76.70	1,390.24	1,411.45	1,393.28	18.17	77.686	
2,950.00	2,949.60	3,081.17	3,073.67	10.31	8.44	171.62	77.37	1,385.86	1,410.04	1,391.53	18.51	76.195	
3,000.00	2,999.51	3,127.44	3,119.76	10.49	8.60	171.60	77.95	1,381.80	1,408.69	1,389.86	18.84	74.788	
3,050.00	3,049.41	3,172.29	3,164.43	10.66	8.75	171.58	78.79	1,378.01	1,407.52	1,388.36	19.16	73.452	
3,100.00	3,099.32	3,216.75	3,208.73	10.83	8.91	171.54	79.86	1,374.40	1,406.54	1,387.05	19.49	72.172	
3,150.00	3,149.23	3,260.88	3,252.73	11.01	9.06	171.51	80.91	1,371.01	1,405.76	1,385.95	19.81	70.946	
3,200.00	3,199.14	3,313.20	3,304.89	11.19	9.25	171.47	82.07	1,367.13	1,405.13	1,384.97	20.16	69.684	
3,250.00	3,249.04	3,377.37	3,368.84	11.36	9.47	171.44	83.17	1,361.92	1,404.12	1,383.58	20.55	68.333	
3,300.00	3,298.95	3,428.61	3,419.87	11.54	9.65	171.42	83.78	1,357.48	1,402.82	1,381.93	20.90	67.134	
3,350.00	3,348.86	3,479.15	3,470.23	11.71	9.83	171.41	84.20	1,353.09	1,401.51	1,380.27	21.24	65.978	
3,400.00	3,398.77	3,537.98	3,528.81	11.89	10.04	171.40	84.74	1,347.78	1,400.03	1,378.42	21.61	64.780	
3,450.00	3,448.68	3,588.45	3,579.05	12.07	10.23	171.38	85.42	1,342.96	1,398.29	1,376.34	21.96	63.676	
3,500.00	3,498.58	3,627.50	3,617.94	12.24	10.37	171.36	85.91	1,339.44	1,396.83	1,374.56	22.28	62.705	
3,550.00	3,548.49	3,668.00	3,658.30	12.42	10.51	171.35	86.33	1,336.12	1,395.76	1,373.16	22.60	61.770	
3,600.00	3,598.40	3,712.27	3,702.44	12.60	10.67	171.34	86.90	1,332.72	1,394.96	1,372.04	22.93	60.845	
3,650.00	3,648.31	3,758.23	3,748.26	12.78	10.83	171.31	87.82	1,329.31	1,394.31	1,371.05	23.26	59.939	
3,700.00	3,698.22	3,801.59	3,791.49	12.95	10.99	171.28	88.86	1,326.24	1,393.85	1,370.26	23.59	59.085	
3,750.00	3,748.12	3,844.65	3,834.45	13.13	11.14	171.24	89.87	1,323.41	1,393.63	1,369.72	23.92	58.268	
3,770.06	3,768.14	3,862.18	3,851.94	13.20	11.20	171.23	90.27	1,322.32	1,393.62	1,369.57	24.05	57.948	
3,800.00	3,798.03	3,890.24	3,879.94	13.31	11.30	171.21	90.89	1,320.61	1,393.64	1,369.38	24.25	57.464	
3,850.00	3,847.94	3,937.10	3,926.71	13.49	11.46	171.19	91.80	1,317.86	1,393.76	1,369.17	24.59	56.678	
3,900.00	3,897.85	3,994.05	3,983.56	13.67	11.67	171.16	92.83	1,314.50	1,393.88	1,368.92	24.96	55.839	
3,950.00	3,947.75	4,057.10	4,046.44	13.84	11.89	171.11	94.27	1,310.25	1,393.59	1,368.23	25.35	54.968	
4,000.00	3,997.66	4,122.95	4,112.05	14.02	12.13	171.04	96.33	1,305.09	1,392.77	1,367.01	25.75	54.084	
4,050.00	4,047.57	4,173.69	4,162.57	14.20	12.31	170.97	98.30	1,300.69	1,391.55	1,365.45	26.11	53.303	
4,100.00	4,097.48	4,216.34	4,205.04	14.38	12.47	170.91	99.93	1,297.17	1,390.56	1,364.12	26.44	52.597	
4,150.00	4,147.39	4,268.68	4,257.18	14.56	12.66	170.84	101.84	1,293.04	1,389.74	1,362.94	26.80	51.859	
4,200.00	4,197.29	4,331.97	4,320.19	14.74	12.89	170.75	104.15	1,287.58	1,388.55	1,361.36	27.19	51.068	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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						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	
4,250.00	4,247.20	4,381.41	4,369.40	14.92	13.08	170.68	105.99	1,283.08	1,387.13	1,359.58	27.54	50.362	
4,300.00	4,297.11	4,430.45	4,418.20	15.10	13.26	170.61	107.85	1,278.65	1,385.74	1,357.85	27.89	49.678	
4,350.00	4,347.02	4,481.27	4,468.78	15.28	13.45	170.54	109.75	1,274.06	1,384.35	1,356.10	28.25	49.000	
4,400.00	4,396.92	4,532.10	4,519.37	15.46	13.63	170.48	111.57	1,269.44	1,382.94	1,354.33	28.61	48.339	
4,450.00	4,446.83	4,579.69	4,566.73	15.64	13.81	170.41	113.30	1,265.14	1,381.56	1,352.60	28.96	47.709	
4,500.00	4,496.74	4,627.94	4,614.75	15.82	13.99	170.34	115.16	1,260.85	1,380.25	1,350.94	29.31	47.094	
4,550.00	4,546.65	4,677.19	4,663.77	16.00	14.17	170.27	117.05	1,256.51	1,378.99	1,349.33	29.66	46.490	
4,600.00	4,596.56	4,726.18	4,712.54	16.18	14.35	170.20	118.86	1,252.22	1,377.75	1,347.74	30.02	45.902	
4,650.00	4,646.46	4,774.42	4,760.57	16.36	14.53	170.13	120.70	1,248.04	1,376.57	1,346.20	30.37	45.332	
4,700.00	4,696.37	4,822.95	4,808.88	16.54	14.71	170.06	122.62	1,243.89	1,375.45	1,344.73	30.72	44.776	
4,750.00	4,746.28	4,872.20	4,857.92	16.72	14.89	169.99	124.50	1,239.72	1,374.37	1,343.30	31.07	44.231	
4,800.00	4,796.19	4,920.77	4,906.29	16.90	15.07	169.93	126.21	1,235.65	1,373.32	1,341.89	31.42	43.702	
4,850.00	4,846.09	4,968.10	4,953.43	17.08	15.25	169.87	127.72	1,231.77	1,372.35	1,340.58	31.77	43.193	
4,900.00	4,896.00	5,017.51	5,002.66	17.26	15.43	169.82	129.08	1,227.82	1,371.47	1,339.34	32.13	42.689	
4,950.00	4,945.91	5,070.82	5,055.79	17.44	15.63	169.79	130.13	1,223.51	1,370.51	1,338.02	32.49	42.180	
5,000.00	4,995.82	5,130.43	5,115.18	17.62	15.85	169.76	130.88	1,218.50	1,369.37	1,336.49	32.88	41.654	
5,050.00	5,045.73	5,194.82	5,179.28	17.80	16.08	169.72	132.01	1,212.44	1,367.74	1,334.47	33.27	41.111	
5,100.00	5,095.63	5,245.26	5,229.45	17.98	16.27	169.69	133.02	1,207.43	1,365.86	1,332.23	33.63	40.617	
5,150.00	5,145.54	5,295.26	5,279.20	18.16	16.46	169.65	134.02	1,202.41	1,363.92	1,329.94	33.98	40.133	
5,200.00	5,195.45	5,340.00	5,323.71	18.34	16.63	169.62	134.89	1,198.03	1,362.11	1,327.78	34.33	39.679	
5,250.00	5,245.36	5,385.22	5,368.72	18.53	16.80	169.59	135.75	1,193.77	1,360.48	1,325.81	34.67	39.238	
5,300.00	5,295.27	5,434.41	5,417.70	18.71	16.98	169.56	136.61	1,189.24	1,358.95	1,323.92	35.03	38.797	
5,350.00	5,345.17	5,483.61	5,466.69	18.89	17.17	169.53	137.37	1,184.74	1,357.45	1,322.07	35.38	38.366	
5,400.00	5,395.08	5,530.64	5,513.52	19.07	17.34	169.50	138.11	1,180.51	1,356.02	1,320.29	35.73	37.952	
5,450.00	5,444.99	5,578.10	5,560.79	19.25	17.52	169.48	138.90	1,176.33	1,354.69	1,318.61	36.08	37.547	
5,500.00	5,494.90	5,626.21	5,608.70	19.43	17.70	169.45	139.75	1,172.17	1,353.44	1,317.01	36.43	37.150	
5,550.00	5,544.80	5,674.32	5,656.64	19.61	17.87	169.42	140.65	1,168.06	1,352.26	1,315.47	36.78	36.762	
5,600.00	5,594.71	5,722.50	5,704.63	19.79	18.05	169.38	141.61	1,164.01	1,351.14	1,314.01	37.14	36.384	
5,650.00	5,644.62	5,772.15	5,754.10	19.98	18.24	169.34	142.68	1,159.89	1,350.09	1,312.60	37.49	36.009	
5,700.00	5,694.53	5,826.94	5,808.68	20.16	18.44	169.30	143.96	1,155.22	1,348.94	1,311.07	37.86	35.625	
5,750.00	5,744.44	5,878.87	5,860.39	20.34	18.64	169.25	145.26	1,150.63	1,347.63	1,309.40	38.23	35.252	
5,800.00	5,794.34	5,927.59	5,908.90	20.52	18.82	169.20	146.55	1,146.33	1,346.33	1,307.75	38.58	34.894	
5,850.00	5,844.25	5,974.51	5,955.62	20.70	18.99	169.15	147.84	1,142.24	1,345.11	1,306.17	38.93	34.549	
5,900.00	5,894.16	6,019.78	6,000.71	20.88	19.16	169.11	149.03	1,138.44	1,344.04	1,304.76	39.28	34.219	
5,950.00	5,944.07	6,067.90	6,048.66	21.06	19.34	169.06	150.27	1,134.56	1,343.13	1,303.50	39.63	33.891	
6,000.00	5,993.97	6,119.92	6,100.48	21.25	19.53	169.00	151.89	1,130.30	1,342.18	1,302.18	40.00	33.558	
6,050.00	6,043.88	6,170.29	6,150.64	21.43	19.72	168.93	153.68	1,126.10	1,341.18	1,300.82	40.36	33.233	
6,100.00	6,093.79	6,219.55	6,199.71	21.61	19.91	168.87	155.25	1,122.02	1,340.20	1,299.48	40.71	32.917	
6,150.00	6,143.70	6,269.53	6,249.50	21.79	20.09	168.82	156.64	1,117.92	1,339.23	1,298.16	41.07	32.606	
6,200.00	6,193.61	6,319.85	6,299.64	21.97	20.28	168.77	158.00	1,113.79	1,338.26	1,296.82	41.43	32.299	
6,250.00	6,243.51	6,367.38	6,346.99	22.16	20.46	168.72	159.26	1,109.91	1,337.31	1,295.53	41.78	32.005	
6,300.00	6,293.42	6,414.12	6,393.57	22.34	20.63	168.68	160.50	1,106.21	1,336.49	1,294.35	42.13	31.720	
6,350.00	6,343.33	6,468.81	6,448.06	22.52	20.83	168.62	162.08	1,101.88	1,335.67	1,293.16	42.51	31.422	
6,400.00	6,393.24	6,526.17	6,505.17	22.70	21.05	168.54	164.18	1,096.98	1,334.59	1,291.70	42.89	31.117	
6,450.00	6,443.14	6,575.10	6,553.88	22.88	21.23	168.46	166.18	1,092.68	1,333.41	1,290.16	43.25	30.832	
6,500.00	6,493.05	6,624.61	6,603.14	23.07	21.42	168.37	168.29	1,088.34	1,332.25	1,288.64	43.61	30.551	
6,550.00	6,542.96	6,667.67	6,646.02	23.25	21.58	168.30	170.06	1,084.70	1,331.24	1,287.29	43.95	30.291	
6,600.00	6,592.87	6,711.61	6,689.79	23.43	21.74	168.24	171.75	1,081.20	1,330.46	1,286.17	44.29	30.040	
6,650.00	6,642.78	6,756.27	6,734.29	23.61	21.91	168.17	173.37	1,077.84	1,329.90	1,285.26	44.63	29.796	
6,700.00	6,692.68	6,800.94	6,778.81	23.79	22.07	168.12	174.93	1,074.66	1,329.53	1,284.56	44.98	29.561	
6,750.00	6,742.59	6,851.99	6,829.72	23.98	22.26	168.05	176.67	1,071.14	1,329.27	1,283.93	45.34	29.319	
6,800.00	6,792.50	6,904.05	6,881.62	24.16	22.46	167.99	178.41	1,067.47	1,328.93	1,283.22	45.71	29.076	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 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
6,850.00	6,842.41	6,954.15	6,931.57	24.34	22.64	167.92	180.11	1,063.90	1,328.55	1,282.49	46.07	28.840	
6,900.00	6,892.32	7,005.66	6,982.91	24.52	22.83	167.86	181.93	1,060.20	1,328.16	1,281.73	46.43	28.605	
6,950.00	6,942.22	7,064.97	7,042.00	24.71	23.05	167.77	184.15	1,055.66	1,327.55	1,280.73	46.82	28.354	
7,000.00	6,992.13	7,119.56	7,096.36	24.89	23.26	167.68	186.33	1,051.14	1,326.64	1,279.44	47.20	28.109	
7,050.00	7,042.04	7,170.21	7,146.79	25.07	23.45	167.60	188.37	1,046.88	1,325.67	1,278.11	47.56	27.874	
7,100.00	7,091.95	7,216.91	7,193.29	25.25	23.62	167.53	190.25	1,042.97	1,324.73	1,276.81	47.91	27.649	
7,150.00	7,141.85	7,261.66	7,237.86	25.44	23.79	167.46	192.01	1,039.40	1,323.97	1,275.71	48.26	27.436	
7,200.00	7,191.76	7,313.28	7,289.29	25.62	23.98	167.38	193.94	1,035.42	1,323.34	1,274.72	48.62	27.216	
7,250.00	7,241.67	7,371.15	7,346.94	25.80	24.20	167.31	195.76	1,030.73	1,322.48	1,273.47	49.01	26.985	
7,300.00	7,291.58	7,421.48	7,397.07	25.98	24.39	167.26	197.06	1,026.50	1,321.44	1,272.07	49.37	26.766	
7,350.00	7,341.49	7,470.80	7,446.21	26.17	24.57	167.22	198.18	1,022.41	1,320.43	1,270.70	49.73	26.553	
7,400.00	7,391.39	7,517.31	7,492.56	26.35	24.74	167.18	199.13	1,018.63	1,319.49	1,269.41	50.08	26.349	
7,450.00	7,441.30	7,563.64	7,538.74	26.53	24.92	167.15	200.06	1,015.00	1,318.69	1,268.26	50.43	26.151	
7,500.00	7,491.21	7,609.42	7,584.38	26.71	25.09	167.12	200.94	1,011.55	1,318.04	1,267.27	50.77	25.960	
7,550.00	7,541.12	7,655.14	7,629.97	26.90	25.25	167.09	201.74	1,008.26	1,317.55	1,266.43	51.12	25.774	
7,600.00	7,591.02	7,702.43	7,677.15	27.08	25.43	167.07	202.50	1,005.01	1,317.20	1,265.73	51.47	25.592	
7,650.00	7,640.93	7,750.11	7,724.71	27.26	25.60	167.05	203.23	1,001.81	1,316.94	1,265.12	51.82	25.414	
7,700.00	7,690.84	7,797.14	7,771.64	27.44	25.77	167.03	203.91	998.76	1,316.78	1,264.61	52.17	25.241	
7,743.53	7,734.29	7,837.95	7,812.37	27.60	25.92	167.01	204.46	996.21	1,316.73	1,264.26	52.47	25.094	
7,750.00	7,740.75	7,844.02	7,818.42	27.63	25.95	167.01	204.54	995.84	1,316.73	1,264.22	52.52	25.073	
7,800.00	7,790.66	7,892.97	7,867.28	27.81	26.12	166.99	205.19	992.87	1,316.78	1,263.91	52.87	24.906	
7,850.00	7,840.56	7,942.47	7,916.68	27.99	26.30	166.98	205.91	989.89	1,316.84	1,263.62	53.23	24.740	
7,900.00	7,890.47	7,993.85	7,967.96	28.17	26.49	166.95	206.71	986.77	1,316.90	1,263.31	53.59	24.573	
7,950.00	7,940.38	8,045.55	8,019.56	28.36	26.68	166.93	207.58	983.55	1,316.89	1,262.93	53.96	24.407	
7,960.53	7,950.89	8,056.44	8,030.42	28.40	26.72	166.92	207.77	982.87	1,316.88	1,262.84	54.03	24.372	
8,000.00	7,990.29	8,092.61	8,066.52	28.54	26.85	166.91	208.34	980.66	1,316.90	1,262.60	54.30	24.250	
8,050.00	8,040.19	8,139.72	8,113.55	28.72	27.02	166.89	208.98	977.88	1,317.02	1,262.37	54.65	24.098	
8,100.00	8,090.10	8,186.63	8,160.38	28.91	27.19	166.88	209.50	975.23	1,317.26	1,262.26	55.00	23.951	
8,150.00	8,140.01	8,233.55	8,207.22	29.09	27.36	166.88	209.90	972.71	1,317.62	1,262.27	55.35	23.807	
8,200.00	8,189.92	8,276.98	8,250.61	29.27	27.52	166.88	210.14	970.56	1,318.15	1,262.48	55.68	23.675	
8,250.00	8,239.83	8,320.31	8,293.89	29.45	27.67	166.89	210.25	968.65	1,318.94	1,262.93	56.01	23.549	
8,300.00	8,289.73	8,366.61	8,340.15	29.64	27.83	166.91	210.25	966.82	1,319.94	1,263.59	56.35	23.425	
8,350.00	8,339.64	8,413.77	8,387.28	29.82	28.00	166.93	210.15	965.07	1,321.05	1,264.38	56.69	23.302	
8,400.00	8,389.55	8,460.15	8,433.63	30.00	28.16	166.95	209.98	963.47	1,322.27	1,265.24	57.03	23.185	
8,450.00	8,439.46	8,506.28	8,479.74	30.19	28.32	166.98	209.74	962.03	1,323.65	1,266.28	57.37	23.073	
8,500.00	8,489.37	8,552.76	8,526.20	30.37	28.48	167.01	209.48	960.71	1,325.16	1,267.45	57.71	22.964	
8,550.00	8,539.27	8,599.40	8,572.82	30.55	28.64	167.04	209.25	959.50	1,326.80	1,268.75	58.05	22.858	
8,600.00	8,589.18	8,653.08	8,626.48	30.73	28.83	167.08	208.99	958.14	1,328.48	1,270.06	58.42	22.742	
8,650.00	8,639.09	8,710.66	8,684.04	30.92	29.03	167.12	208.55	956.41	1,329.90	1,271.10	58.80	22.617	
8,700.00	8,689.00	8,755.85	8,729.21	31.10	29.19	167.15	208.39	954.98	1,331.26	1,272.13	59.14	22.512	
8,750.00	8,738.90	8,800.96	8,774.30	31.28	29.35	167.15	208.76	953.65	1,332.81	1,273.34	59.47	22.412	
8,800.00	8,788.82	8,855.65	8,828.95	31.47	29.54	167.14	209.67	951.99	1,334.33	1,274.48	59.85	22.295	
8,850.00	8,838.76	8,906.60	8,879.86	31.65	29.72	167.11	210.70	950.23	1,335.13	1,274.92	60.21	22.175	
8,900.00	8,888.72	8,944.70	8,917.94	31.83	29.85	167.08	211.45	949.13	1,335.56	1,275.05	60.51	22.071	
8,950.00	8,938.71	8,982.81	8,956.03	32.01	29.99	167.06	212.11	948.37	1,335.79	1,274.98	60.81	21.967	
9,000.00	8,988.71	9,031.13	9,004.35	32.18	30.16	167.03	212.79	947.73	1,335.69	1,274.53	61.16	21.841	
9,050.00	9,038.71	9,082.26	9,055.47	32.36	30.33	82.33	213.20	947.06	1,335.11	1,273.59	61.51	21.705	
9,100.00	9,088.71	9,134.17	9,107.37	32.53	30.51	82.30	213.83	946.29	1,334.45	1,272.58	61.87	21.568	
9,150.00	9,138.71	9,186.39	9,159.56	32.70	30.69	82.23	215.37	945.31	1,333.72	1,271.49	62.23	21.431	
9,200.00	9,188.71	9,241.29	9,214.41	32.88	30.89	82.15	217.08	944.12	1,332.86	1,270.25	62.61	21.289	
9,250.00	9,238.71	9,293.02	9,266.12	33.05	31.07	82.09	218.23	942.88	1,331.83	1,268.86	62.97	21.151	
9,300.00	9,288.71	9,338.85	9,311.94	33.22	31.23	82.06	218.87	941.92	1,330.89	1,267.59	63.30	21.026	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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
9,350.00	9,338.71	9,385.32	9,358.40	33.40	31.39	82.04	219.16	941.14	1,330.10	1,266.46	63.63	20.903	
9,400.00	9,388.71	9,433.26	9,406.33	33.57	31.56	82.02	219.44	940.43	1,329.40	1,265.43	63.97	20.781	
9,450.00	9,438.71	9,481.20	9,454.27	33.74	31.72	82.00	219.83	939.78	1,328.78	1,264.47	64.31	20.661	
9,500.00	9,488.71	9,526.51	9,499.57	33.92	31.88	81.98	220.29	939.23	1,328.26	1,263.62	64.64	20.549	
9,545.64	9,534.35	9,561.49	9,534.55	34.07	32.00	81.96	220.81	939.01	1,328.08	1,263.17	64.90	20.463	
9,550.00	9,538.71	9,564.84	9,537.89	34.09	32.01	81.95	220.87	939.01	1,328.08	1,263.15	64.93	20.455	
9,600.00	9,588.71	9,603.16	9,576.20	34.26	32.14	81.92	221.66	939.09	1,328.34	1,263.13	65.21	20.370	
9,650.00	9,638.71	9,649.39	9,622.42	34.44	32.29	81.88	222.75	939.48	1,328.92	1,263.38	65.53	20.279	
9,700.00	9,688.71	9,697.66	9,670.68	34.61	32.44	81.84	223.75	939.98	1,329.57	1,263.70	65.86	20.187	
9,750.00	9,738.71	9,751.50	9,724.51	34.78	32.62	81.81	224.53	940.55	1,330.20	1,263.98	66.22	20.087	
9,800.00	9,788.71	9,806.99	9,780.00	34.96	32.79	81.80	224.73	941.02	1,330.65	1,264.06	66.59	19.983	
9,850.00	9,838.71	9,866.80	9,839.81	35.13	32.98	81.82	224.30	941.26	1,330.80	1,263.82	66.97	19.870	
9,900.00	9,888.71	9,917.99	9,890.98	35.31	33.14	81.86	223.50	941.24	1,330.66	1,263.35	67.32	19.768	
9,914.74	9,903.44	9,930.65	9,903.64	35.36	33.18	81.86	223.31	941.26	1,330.65	1,263.25	67.40	19.741	
9,950.00	9,938.71	9,960.95	9,933.94	35.48	33.27	81.88	222.94	941.37	1,330.72	1,263.10	67.62	19.681	
10,000.00	9,988.71	10,006.01	9,979.00	35.65	33.42	81.90	222.54	941.71	1,331.02	1,263.10	67.93	19.595	
10,050.00	10,038.71	10,055.97	10,028.96	35.83	33.57	81.92	222.17	942.14	1,331.40	1,263.14	68.26	19.505	
10,100.00	10,088.71	10,109.19	10,082.17	36.00	33.74	81.94	221.76	942.57	1,331.75	1,263.13	68.61	19.410	
10,150.00	10,138.71	10,167.30	10,140.28	36.18	33.92	81.98	220.90	942.81	1,331.85	1,262.86	68.99	19.306	
10,200.00	10,188.71	10,228.99	10,201.95	36.35	34.12	82.03	219.70	942.66	1,331.59	1,262.21	69.39	19.191	
10,250.00	10,238.71	10,293.47	10,266.42	36.52	34.34	82.06	218.77	941.82	1,330.85	1,261.06	69.80	19.068	
10,300.00	10,288.71	10,362.88	10,335.80	36.70	34.57	82.09	217.86	939.98	1,329.46	1,259.23	70.23	18.931	
10,350.00	10,338.71	10,408.35	10,381.24	36.87	34.73	82.10	217.36	938.46	1,327.72	1,257.17	70.56	18.818	
10,400.00	10,388.71	10,450.68	10,423.55	37.05	34.88	82.10	217.15	937.25	1,326.27	1,255.40	70.88	18.712	
10,450.00	10,438.71	10,504.56	10,477.42	37.22	35.07	82.10	217.10	935.83	1,324.97	1,253.73	71.24	18.597	
10,500.00	10,488.71	10,564.98	10,537.81	37.40	35.29	82.09	216.95	933.84	1,323.32	1,251.68	71.64	18.472	
10,550.00	10,538.71	10,604.99	10,577.79	37.57	35.43	82.08	216.93	932.53	1,321.69	1,249.74	71.95	18.369	
10,600.00	10,588.71	10,646.28	10,619.07	37.75	35.57	82.07	217.08	931.42	1,320.38	1,248.12	72.27	18.271	
10,650.00	10,638.71	10,682.79	10,655.57	37.92	35.70	82.06	217.29	930.72	1,319.47	1,246.92	72.55	18.187	
10,700.00	10,688.71	10,717.84	10,690.62	38.09	35.81	82.05	217.34	930.46	1,319.13	1,246.30	72.82	18.114	
10,705.72	10,694.42	10,721.85	10,694.62	38.11	35.83	82.05	217.34	930.46	1,319.12	1,246.27	72.85	18.106	
10,750.00	10,738.71	10,753.09	10,725.87	38.27	35.93	82.06	217.24	930.63	1,319.34	1,246.26	73.09	18.051	
10,800.00	10,788.71	10,796.01	10,768.78	38.44	36.06	82.08	216.84	931.23	1,319.97	1,246.59	73.39	17.987	
10,850.00	10,838.71	10,838.90	10,811.66	38.62	36.20	82.12	216.09	932.11	1,320.87	1,247.19	73.68	17.927	
10,900.00	10,888.71	10,897.57	10,870.30	38.79	36.38	82.17	215.02	933.34	1,321.79	1,247.72	74.06	17.847	
10,950.00	10,938.71	10,959.40	10,932.12	38.97	36.57	82.19	214.59	934.00	1,322.27	1,247.81	74.46	17.758	
11,000.00	10,988.71	11,016.43	10,989.15	39.14	36.76	82.20	214.38	934.19	1,322.42	1,247.57	74.84	17.669	
11,050.00	11,038.71	11,070.67	11,043.39	39.32	36.94	82.21	214.31	934.08	1,322.30	1,247.09	75.21	17.581	
11,100.00	11,088.71	11,122.80	11,095.53	39.49	37.12	82.20	214.39	933.85	1,322.09	1,246.52	75.57	17.495	
11,150.00	11,138.71	11,173.23	11,145.95	39.67	37.30	82.19	214.60	933.55	1,321.83	1,245.90	75.92	17.410	
11,200.00	11,188.71	11,224.87	11,197.59	39.84	37.48	82.17	214.96	933.20	1,321.54	1,245.26	76.28	17.324	
11,250.00	11,238.67	11,297.54	11,270.22	40.01	37.72	-97.78	213.80	932.51	1,321.27	1,244.53	76.73	17.219	
11,300.00	11,288.29	11,464.03	11,430.25	40.18	38.23	-97.09	171.70	925.76	1,317.36	1,240.05	77.31	17.040	
11,350.00	11,337.21	11,517.59	11,478.48	40.34	38.38	-96.98	148.60	922.97	1,313.16	1,235.54	77.62	16.918	
11,400.00	11,385.04	11,587.09	11,538.10	40.49	38.54	-96.68	113.11	919.51	1,309.08	1,231.15	77.93	16.798	
11,450.00	11,431.43	11,649.13	11,587.71	40.64	38.67	-96.40	76.04	916.44	1,304.95	1,226.71	78.23	16.681	
11,500.00	11,476.02	11,706.54	11,629.78	40.78	38.79	-96.12	37.09	913.91	1,301.03	1,222.49	78.53	16.567	
11,550.00	11,518.47	11,734.03	11,648.61	40.91	38.83	-96.12	17.09	913.08	1,297.94	1,219.14	78.80	16.472	
11,600.00	11,558.46	11,762.38	11,667.26	41.03	38.88	-96.04	-4.27	912.78	1,296.18	1,217.14	79.04	16.399	
11,650.00	11,595.68	11,800.00	11,690.71	41.15	38.94	-95.83	-33.67	913.27	1,295.78	1,216.50	79.28	16.344	
11,653.27	11,598.01	11,800.00	11,690.71	41.15	38.94	-95.83	-33.67	913.27	1,295.78	1,216.49	79.29	16.342	
11,700.00	11,629.85	11,821.99	11,703.77	41.26	38.97	-95.65	-51.34	913.98	1,296.53	1,217.05	79.48	16.314	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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						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		
11,750.00	11,660.72	11,854.48	11,722.30	41.37	39.01	-95.37	-77.99	915.49	1,298.44	1,218.76	79.68	16.295		
11,800.00	11,688.04	11,895.00	11,744.06	41.48	39.07	-95.06	-112.06	918.12	1,301.48	1,221.57	79.90	16.288		
11,850.00	11,711.61	12,173.65	11,827.46	41.60	39.65	-92.93	-374.81	918.37	1,301.41	1,220.52	80.88	16.090		
11,900.00	11,731.24	12,222.08	11,832.93	41.72	39.79	-92.80	-422.80	914.69	1,296.57	1,215.39	81.18	15.971		
11,950.00	11,746.80	12,252.84	11,835.12	41.85	39.89	-92.89	-453.40	912.67	1,292.44	1,211.03	81.41	15.877		
12,000.00	11,758.16	12,283.00	11,836.18	41.98	39.99	-92.96	-483.51	911.16	1,289.27	1,207.66	81.61	15.797		
12,050.00	11,765.23	12,315.08	11,836.26	42.12	40.10	-92.98	-515.57	910.08	1,287.07	1,205.24	81.83	15.728		
12,100.00	11,767.96	12,346.21	11,835.43	42.25	40.21	-92.99	-546.68	909.53	1,285.84	1,203.80	82.04	15.673		
12,150.00	11,768.00	12,388.35	11,833.37	42.40	40.36	-92.91	-588.77	909.36	1,285.37	1,203.04	82.32	15.614		
12,200.00	11,768.00	12,439.24	11,831.37	42.54	40.56	-92.82	-639.61	909.16	1,284.94	1,202.28	82.65	15.546		
12,250.00	11,768.00	12,486.34	11,830.13	42.71	40.75	-92.76	-686.71	908.96	1,284.52	1,201.52	83.00	15.476		
12,300.00	11,768.00	12,531.76	11,829.48	42.88	40.94	-92.74	-732.12	908.89	1,284.28	1,200.94	83.34	15.410		
12,324.80	11,768.00	12,554.29	11,829.36	42.97	41.03	-92.73	-754.64	908.91	1,284.23	1,200.70	83.52	15.376		
12,350.00	11,768.00	12,550.00	11,829.37	43.07	41.02	-92.73	-750.36	908.91	1,284.53	1,201.00	83.53	15.377		
12,400.00	11,768.00	12,590.42	11,829.40	43.26	41.20	-92.73	-790.77	909.57	1,285.33	1,201.45	83.88	15.323		
12,450.00	11,768.00	12,615.68	11,829.59	43.47	41.31	-92.74	-816.01	910.61	1,287.26	1,203.12	84.14	15.299		
12,500.00	11,768.00	12,645.00	11,829.97	43.68	41.45	-92.75	-845.27	912.41	1,290.17	1,205.75	84.42	15.283		
12,550.00	11,768.00	12,616.88	11,832.37	43.91	42.33	-92.85	-1,017.03	915.46	1,290.78	1,204.91	85.87	15.032		
12,600.00	11,768.00	12,859.25	11,832.81	44.15	42.57	-92.87	-1,059.38	914.16	1,289.19	1,202.87	86.32	14.935		
12,650.00	11,768.00	12,887.59	11,833.07	44.40	42.74	-92.89	-1,087.72	913.78	1,288.40	1,201.72	86.68	14.864		
12,672.14	11,768.00	12,900.14	11,833.18	44.51	42.81	-92.89	-1,100.27	913.76	1,288.32	1,201.48	86.84	14.836		
12,700.00	11,768.00	12,930.00	11,833.40	44.66	42.98	-92.90	-1,130.12	914.09	1,288.58	1,201.42	87.16	14.785		
12,701.99	11,768.00	12,930.00	11,833.40	44.67	42.98	-92.90	-1,130.12	914.09	1,288.58	1,201.42	87.16	14.784		
12,750.00	11,768.00	12,953.16	11,833.55	44.93	43.12	-92.91	-1,153.27	914.58	1,289.25	1,201.76	87.49	14.736		
12,800.00	11,768.00	12,999.10	11,833.71	45.20	43.41	-92.91	-1,199.20	915.65	1,290.29	1,202.26	88.03	14.657		
12,850.00	11,768.00	13,054.38	11,833.73	45.50	43.76	-92.91	-1,254.46	917.03	1,291.41	1,202.71	88.69	14.560		
12,900.00	11,768.00	13,208.00	11,833.82	45.79	44.79	-92.92	-1,408.03	915.64	1,291.87	1,201.51	90.36	14.297		
12,950.00	11,768.00	13,208.00	11,833.82	46.10	44.79	-92.92	-1,408.03	915.64	1,289.74	1,199.22	90.52	14.248		
13,000.00	11,768.00	13,252.36	11,833.69	46.42	45.10	-92.92	-1,452.35	913.94	1,287.80	1,196.66	91.14	14.131		
13,042.90	11,768.00	13,271.04	11,833.49	46.70	45.24	-92.91	-1,471.03	913.83	1,287.40	1,195.93	91.46	14.075		
13,050.00	11,768.00	13,274.14	11,833.45	46.75	45.26	-92.91	-1,474.13	913.84	1,287.41	1,195.89	91.52	14.067		
13,100.00	11,768.00	13,303.00	11,832.96	47.08	45.47	-92.88	-1,502.98	914.45	1,288.16	1,196.19	91.97	14.007		
13,150.00	11,768.00	13,324.76	11,832.54	47.43	45.63	-92.86	-1,524.72	915.34	1,289.82	1,197.47	92.35	13.966		
13,200.00	11,768.00	13,357.01	11,832.07	47.78	45.88	-92.84	-1,556.92	917.00	1,292.23	1,199.37	92.86	13.916		
13,250.00	11,768.00	13,397.00	11,831.69	48.14	46.18	-92.82	-1,596.82	919.68	1,295.36	1,201.89	93.47	13.859		
13,300.00	11,768.00	13,300.00	11,831.40	48.51	45.43	-92.79	-1,668.46	923.19	1,297.48	1,204.30	93.18	13.924		
13,350.00	11,768.00	13,531.73	11,831.28	48.89	47.24	-92.79	-1,731.41	925.45	1,299.03	1,203.56	95.47	13.607		
13,400.00	11,768.00	13,565.77	11,831.29	49.27	47.52	-92.78	-1,765.41	926.98	1,301.14	1,205.09	96.04	13.547		
13,450.00	11,768.00	13,608.89	11,831.29	49.66	47.88	-92.78	-1,808.47	929.37	1,303.76	1,206.99	96.76	13.474		
13,500.00	11,768.00	13,659.42	11,830.87	50.06	48.31	-92.75	-1,858.92	932.21	1,306.41	1,208.83	97.59	13.387		
13,550.00	11,768.00	13,701.80	11,830.35	50.47	48.67	-92.73	-1,901.22	934.67	1,309.16	1,210.84	98.32	13.315		
13,600.00	11,768.00	13,740.51	11,830.43	50.88	49.01	-92.72	-1,939.85	937.22	1,312.31	1,213.30	99.00	13.255		
13,650.00	11,768.00	13,781.47	11,831.10	51.31	49.37	-92.75	-1,980.69	940.22	1,315.87	1,216.14	99.73	13.194		
13,700.00	11,768.00	13,829.78	11,831.34	51.73	49.81	-92.75	-2,028.85	943.95	1,319.60	1,219.01	100.59	13.119		
13,750.00	11,768.00	13,750.00	11,828.82	52.17	49.06	-92.63	-2,119.75	949.44	1,322.27	1,221.75	100.53	13.153		
13,800.00	11,768.00	14,058.01	11,823.70	52.61	51.94	-92.41	-2,256.69	951.29	1,322.55	1,218.24	104.31	12.679		
13,850.00	11,768.00	14,098.40	11,822.54	53.06	52.33	-92.36	-2,297.07	950.74	1,321.67	1,216.56	105.11	12.574		
13,900.00	11,768.00	14,139.89	11,821.00	53.51	52.73	-92.29	-2,338.52	950.45	1,321.11	1,215.19	105.92	12.472		
13,950.00	11,768.00	14,193.28	11,818.97	53.97	53.25	-92.20	-2,391.87	950.25	1,320.71	1,213.79	106.93	12.351		
14,000.00	11,768.00	14,254.30	11,817.81	54.43	53.86	-92.15	-2,452.88	949.62	1,320.04	1,211.99	108.05	12.217		
14,050.00	11,768.00	14,348.58	11,817.00	54.91	54.79	-92.12	-2,547.10	946.55	1,318.26	1,208.62	109.64	12.024		
14,100.00	11,768.00	14,404.53	11,816.95	55.38	55.36	-92.13	-2,602.98	943.70	1,315.58	1,204.89	110.70	11.885		

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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+HDM												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
14,150.00	11,768.00	14,458.19	11,817.38	55.87	55.90	-92.15	-2,656.55	940.64	1,312.61	1,200.87	111.74	11.747	
14,200.00	11,768.00	14,506.36	11,818.11	56.35	56.40	-92.19	-2,704.64	937.89	1,309.66	1,196.94	112.72	11.619	
14,250.00	11,768.00	14,547.07	11,818.95	56.85	56.82	-92.23	-2,745.28	935.67	1,306.84	1,193.24	113.61	11.503	
14,300.00	11,768.00	14,581.20	11,819.70	57.34	57.18	-92.26	-2,779.37	934.18	1,304.58	1,190.17	114.40	11.403	
14,350.00	11,768.00	14,623.00	11,820.63	57.84	57.62	-92.31	-2,821.14	932.92	1,302.95	1,187.63	115.31	11.299	
14,400.00	11,768.00	14,658.66	11,821.43	58.35	58.00	-92.34	-2,856.78	932.16	1,301.72	1,185.58	116.14	11.208	
14,450.00	11,768.00	14,704.60	11,822.45	58.86	58.49	-92.39	-2,902.70	931.30	1,300.70	1,183.57	117.13	11.105	
14,500.00	11,768.00	14,761.36	11,823.69	59.38	59.10	-92.45	-2,959.44	930.24	1,299.68	1,181.39	118.29	10.987	
14,550.00	11,768.00	14,822.57	11,824.99	59.90	59.76	-92.51	-3,020.61	928.61	1,298.26	1,178.73	119.53	10.861	
14,600.00	11,768.00	14,845.48	11,825.19	60.42	60.02	-92.52	-3,043.52	928.28	1,297.27	1,177.10	120.18	10.795	
14,635.97	11,768.00	14,866.04	11,825.15	60.80	60.24	-92.52	-3,064.07	928.21	1,297.06	1,176.36	120.70	10.746	
14,650.00	11,768.00	14,874.05	11,825.08	60.95	60.33	-92.51	-3,072.09	928.26	1,297.09	1,176.20	120.90	10.729	
14,700.00	11,768.00	14,906.00	11,824.47	61.48	60.68	-92.49	-3,104.03	928.81	1,297.74	1,176.09	121.66	10.667	
14,750.00	11,768.00	14,956.83	11,824.12	62.02	61.26	-92.47	-3,154.83	930.01	1,298.77	1,176.00	122.78	10.578	
14,800.00	11,768.00	15,014.44	11,826.25	62.56	61.90	-92.56	-3,212.40	930.94	1,299.52	1,175.50	124.02	10.478	
14,850.00	11,768.00	15,047.74	11,827.20	63.11	62.28	-92.60	-3,245.67	931.71	1,300.56	1,175.73	124.83	10.419	
14,900.00	11,768.00	15,085.65	11,827.65	63.65	62.71	-92.62	-3,283.56	932.91	1,302.03	1,176.32	125.71	10.357	
14,950.00	11,768.00	15,125.21	11,827.47	64.21	63.17	-92.61	-3,323.08	934.55	1,303.95	1,177.32	126.63	10.297	
15,000.00	11,768.00	15,165.29	11,827.18	64.76	63.63	-92.59	-3,363.12	936.51	1,306.25	1,178.69	127.56	10.240	
15,050.00	11,768.00	15,208.14	11,826.78	65.32	64.12	-92.57	-3,405.90	938.93	1,308.90	1,180.35	128.55	10.182	
15,100.00	11,768.00	15,254.65	11,826.37	65.88	64.67	-92.55	-3,452.32	941.70	1,311.72	1,182.10	129.63	10.119	
15,150.00	11,768.00	15,318.93	11,825.75	66.45	65.42	-92.51	-3,516.49	945.47	1,314.54	1,183.46	131.08	10.028	
15,200.00	11,768.00	15,412.72	11,823.92	67.01	66.52	-92.43	-3,610.21	948.66	1,316.07	1,182.96	133.12	9.886	
15,250.00	11,768.00	15,491.89	11,822.70	67.58	67.45	-92.37	-3,689.36	948.92	1,316.00	1,181.18	134.82	9.761	
15,300.00	11,768.00	15,543.35	11,822.44	68.16	68.06	-92.36	-3,740.82	948.59	1,315.54	1,179.53	136.01	9.672	
15,350.00	11,768.00	15,593.80	11,822.63	68.73	68.66	-92.37	-3,791.26	948.22	1,315.04	1,177.85	137.19	9.586	
15,400.00	11,768.00	15,643.44	11,822.96	69.31	69.25	-92.39	-3,840.90	947.85	1,314.54	1,176.18	138.36	9.501	
15,450.00	11,768.00	15,694.70	11,823.37	69.90	69.86	-92.41	-3,892.16	947.45	1,314.04	1,174.47	139.57	9.415	
15,500.00	11,768.00	15,746.77	11,823.76	70.48	70.49	-92.42	-3,944.23	946.98	1,313.46	1,172.67	140.79	9.329	
15,550.00	11,768.00	15,792.66	11,823.86	71.07	71.04	-92.43	-3,990.11	946.59	1,312.91	1,171.00	141.91	9.252	
15,600.00	11,768.00	15,837.55	11,823.42	71.66	71.58	-92.41	-4,035.00	946.40	1,312.55	1,169.53	143.01	9.178	
15,650.00	11,768.00	15,887.68	11,822.41	72.25	72.19	-92.37	-4,085.13	946.33	1,312.30	1,168.08	144.22	9.099	
15,700.00	11,768.00	15,939.41	11,821.14	72.85	72.83	-92.31	-4,136.84	946.21	1,312.00	1,166.54	145.46	9.020	
15,750.00	11,768.00	15,989.68	11,820.29	73.45	73.44	-92.28	-4,187.09	946.04	1,311.66	1,164.99	146.67	8.943	
15,800.00	11,768.00	16,040.38	11,820.54	74.04	74.06	-92.29	-4,237.80	945.81	1,311.31	1,163.41	147.90	8.866	
15,850.00	11,768.00	16,097.14	11,821.08	74.65	74.76	-92.31	-4,294.55	945.38	1,310.81	1,161.56	149.25	8.783	
15,900.00	11,768.00	16,172.55	11,820.82	75.25	75.69	-92.30	-4,369.94	944.12	1,309.90	1,159.00	150.91	8.680	
15,950.00	11,768.00	16,239.02	11,818.67	75.86	76.51	-92.21	-4,436.33	941.50	1,307.65	1,155.26	152.40	8.581	
16,000.00	11,768.00	16,269.74	11,817.70	76.47	76.89	-92.17	-4,467.02	940.48	1,305.80	1,152.48	153.31	8.517	
16,050.00	11,768.00	16,300.50	11,817.07	77.08	77.27	-92.15	-4,497.76	939.90	1,304.67	1,150.47	154.21	8.461	
16,100.00	11,768.00	16,336.22	11,816.67	77.69	77.72	-92.13	-4,533.48	939.72	1,304.25	1,149.07	155.18	8.405	
16,134.76	11,768.00	16,365.58	11,816.36	78.12	78.09	-92.12	-4,562.84	939.75	1,304.17	1,148.24	155.94	8.363	
16,150.00	11,768.00	16,378.45	11,816.20	78.30	78.25	-92.11	-4,575.71	939.80	1,304.19	1,147.92	156.27	8.346	
16,200.00	11,768.00	16,421.96	11,815.64	78.92	78.80	-92.08	-4,619.21	940.15	1,304.42	1,147.04	157.39	8.288	
16,250.00	11,768.00	16,470.43	11,815.31	79.54	79.41	-92.07	-4,667.68	940.65	1,304.79	1,146.18	158.61	8.226	
16,300.00	11,768.00	16,522.64	11,815.45	80.16	80.07	-92.07	-4,719.88	941.21	1,305.20	1,145.29	159.91	8.162	
16,350.00	11,768.00	16,585.13	11,815.39	80.78	80.86	-92.07	-4,782.37	941.47	1,305.27	1,143.86	161.42	8.086	
16,377.37	11,768.00	16,619.33	11,815.15	81.12	81.30	-92.06	-4,816.57	941.37	1,305.11	1,142.88	162.24	8.045	
16,400.00	11,768.00	16,629.65	11,815.15	81.40	81.43	-92.06	-4,826.89	941.47	1,305.13	1,142.56	162.57	8.028	
16,450.00	11,768.00	16,668.56	11,815.07	82.03	81.92	-92.06	-4,865.80	941.78	1,305.39	1,141.78	163.61	7.979	
16,500.00	11,768.00	16,718.11	11,815.12	82.66	82.56	-92.06	-4,915.34	942.52	1,306.01	1,141.14	164.87	7.922	
16,550.00	11,768.00	16,790.21	11,814.74	83.29	83.48	-92.04	-4,987.45	942.82	1,306.07	1,139.49	166.58	7.840	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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		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	
16,574.24	11,768.00	16,805.08	11,814.59	83.59	83.67	-92.04	-5,002.31	942.82	1,305.99	1,138.98	167.01	7.820	
16,600.00	11,768.00	16,821.59	11,814.39	83.92	83.89	-92.03	-5,018.82	942.93	1,306.08	1,138.60	167.48	7.798	
16,650.00	11,768.00	16,853.63	11,813.92	84.55	84.30	-92.01	-5,050.85	943.48	1,306.78	1,138.40	168.38	7.761	
16,700.00	11,768.00	16,888.13	11,813.30	85.18	84.74	-91.98	-5,085.33	944.57	1,308.18	1,138.86	169.30	7.727	
16,750.00	11,768.00	16,950.21	11,811.73	85.82	85.55	-91.91	-5,147.36	946.53	1,309.56	1,138.69	170.87	7.664	
16,800.00	11,768.00	17,002.31	11,809.99	86.45	86.23	-91.83	-5,199.41	947.82	1,310.61	1,138.41	172.20	7.611	
16,850.00	11,768.00	17,046.33	11,808.84	87.09	86.80	-91.78	-5,243.40	949.04	1,311.82	1,138.46	173.36	7.567	
16,900.00	11,768.00	17,095.28	11,807.94	87.73	87.44	-91.74	-5,292.32	950.57	1,313.21	1,138.58	174.63	7.520	
16,950.00	11,768.00	17,151.10	11,806.68	88.37	88.17	-91.68	-5,348.10	952.15	1,314.46	1,138.40	176.06	7.466	
17,000.00	11,768.00	17,212.15	11,804.82	89.01	88.97	-91.60	-5,409.10	953.53	1,315.42	1,137.82	177.60	7.407	
17,050.00	11,768.00	17,275.07	11,802.28	89.65	89.80	-91.48	-5,471.97	954.37	1,315.89	1,136.72	179.18	7.344	
17,100.00	11,768.00	17,314.98	11,801.09	90.30	90.32	-91.43	-5,511.86	954.94	1,316.41	1,136.15	180.26	7.303	
17,150.00	11,768.00	17,360.38	11,800.35	90.94	90.92	-91.40	-5,557.25	955.74	1,317.14	1,135.67	181.47	7.258	
17,200.00	11,768.00	17,422.14	11,799.25	91.59	91.73	-91.35	-5,618.99	956.64	1,317.70	1,134.68	183.03	7.200	
17,250.00	11,768.00	17,477.25	11,797.73	92.24	92.46	-91.28	-5,674.08	957.04	1,317.89	1,133.45	184.44	7.145	
17,300.00	11,768.00	17,526.94	11,796.94	92.89	93.11	-91.25	-5,723.76	957.34	1,318.05	1,132.31	185.74	7.096	
17,350.00	11,768.00	17,589.12	11,796.48	93.54	93.93	-91.23	-5,785.94	957.52	1,318.06	1,130.76	187.30	7.037	
17,400.00	11,768.00	17,656.25	11,795.22	94.19	94.82	-91.18	-5,853.05	956.87	1,317.42	1,128.49	188.93	6.973	
17,450.00	11,768.00	17,719.50	11,793.55	94.84	95.65	-91.10	-5,916.27	955.55	1,316.22	1,125.74	190.47	6.910	
17,500.00	11,768.00	17,769.65	11,791.99	95.50	96.31	-91.04	-5,966.38	954.21	1,314.71	1,122.93	191.78	6.855	
17,550.00	11,768.00	17,816.58	11,790.39	96.15	96.93	-90.97	-6,013.26	953.05	1,313.31	1,120.27	193.04	6.803	
17,600.00	11,768.00	17,857.92	11,789.15	96.81	97.47	-90.91	-6,054.57	952.19	1,312.12	1,117.91	194.20	6.756	
17,650.00	11,768.00	17,897.88	11,788.70	97.46	98.00	-90.90	-6,094.52	951.65	1,311.30	1,115.96	195.34	6.713	
17,700.00	11,768.00	17,941.57	11,788.98	98.12	98.58	-90.91	-6,138.21	951.36	1,310.83	1,114.29	196.54	6.670	
17,750.00	11,768.00	17,990.37	11,789.23	98.78	99.23	-90.92	-6,187.01	951.13	1,310.47	1,112.63	197.84	6.624	
17,800.00	11,768.00	18,043.43	11,789.28	99.44	99.94	-90.92	-6,240.07	950.89	1,310.11	1,110.88	199.23	6.576	
17,850.00	11,768.00	18,100.82	11,789.45	100.10	100.70	-90.93	-6,297.46	950.36	1,309.51	1,108.81	200.70	6.525	
17,900.00	11,768.00	18,139.15	11,789.51	100.76	101.21	-90.93	-6,335.79	950.01	1,308.93	1,107.13	201.80	6.486	
17,925.27	11,768.00	18,156.69	11,789.39	101.10	101.45	-90.93	-6,353.33	950.00	1,308.86	1,106.54	202.32	6.469	
17,950.00	11,768.00	18,173.86	11,789.19	101.42	101.68	-90.92	-6,370.49	950.10	1,308.93	1,106.11	202.82	6.454	
18,000.00	11,768.00	18,210.39	11,788.46	102.09	102.17	-90.89	-6,407.01	950.64	1,309.50	1,105.65	203.85	6.424	
18,050.00	11,768.00	18,259.17	11,787.35	102.75	102.83	-90.84	-6,455.76	951.60	1,310.33	1,105.17	205.16	6.387	
18,100.00	11,768.00	18,308.92	11,786.29	103.41	103.50	-90.79	-6,505.50	952.61	1,311.20	1,104.71	206.49	6.350	
18,150.00	11,768.00	18,362.54	11,786.02	104.08	104.22	-90.78	-6,559.11	953.61	1,311.99	1,104.07	207.92	6.310	
18,200.00	11,768.00	18,419.77	11,786.88	104.75	105.00	-90.82	-6,616.32	954.46	1,312.61	1,103.18	209.43	6.268	
18,250.00	11,768.00	18,481.40	11,787.41	105.41	105.83	-90.84	-6,677.95	954.90	1,312.84	1,101.81	211.03	6.221	
18,300.00	11,768.00	18,524.08	11,787.69	106.08	106.41	-90.85	-6,720.63	955.10	1,312.95	1,100.74	212.22	6.187	
18,350.00	11,768.00	18,565.21	11,788.45	106.75	106.96	-90.88	-6,761.75	955.57	1,313.41	1,100.04	213.37	6.156	
18,400.00	11,768.00	18,617.01	11,789.47	107.42	107.67	-90.93	-6,813.53	956.38	1,314.07	1,099.30	214.76	6.119	
18,450.00	11,768.00	18,674.80	11,788.75	108.09	108.45	-90.90	-6,871.31	957.01	1,314.47	1,098.19	216.28	6.078	
18,500.00	11,768.00	18,721.88	11,787.62	108.76	109.09	-90.85	-6,918.37	957.46	1,314.78	1,097.21	217.57	6.043	
18,550.00	11,768.00	18,769.12	11,787.02	109.43	109.73	-90.82	-6,965.61	957.99	1,315.20	1,096.34	218.86	6.009	
18,600.00	11,768.00	18,815.50	11,787.08	110.11	110.37	-90.82	-7,011.99	958.62	1,315.75	1,095.61	220.13	5.977	
18,650.00	11,768.00	18,861.89	11,787.90	110.78	111.00	-90.86	-7,058.36	959.36	1,316.42	1,095.01	221.41	5.946	
18,700.00	11,768.00	18,915.32	11,788.85	111.45	111.73	-90.90	-7,111.77	960.22	1,317.11	1,094.26	222.85	5.910	
18,750.00	11,768.00	18,976.06	11,788.83	112.13	112.56	-90.90	-7,172.50	960.99	1,317.63	1,093.18	224.45	5.871	
18,800.00	11,768.00	19,059.75	11,785.41	112.80	113.70	-90.75	-7,256.12	960.55	1,317.20	1,090.73	226.46	5.816	
18,850.00	11,768.00	19,104.27	11,783.47	113.48	114.30	-90.66	-7,300.59	959.93	1,316.32	1,088.61	227.71	5.781	
18,900.00	11,768.00	19,152.96	11,782.43	114.16	114.96	-90.62	-7,349.26	959.26	1,315.49	1,086.45	229.04	5.743	
18,950.00	11,768.00	19,190.44	11,782.03	114.83	115.47	-90.60	-7,386.73	958.97	1,314.96	1,084.80	230.16	5.713	
18,989.77	11,768.00	19,221.51	11,781.84	115.37	115.90	-90.59	-7,417.81	958.96	1,314.82	1,083.76	231.06	5.690	
19,000.00	11,768.00	19,229.50	11,781.81	115.51	116.00	-90.59	-7,425.80	958.99	1,314.83	1,083.54	231.29	5.685	

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 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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 Tooface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
19,050.00	11,768.00	19,282.58	11,781.70	116.19	116.73	-90.59	-7,478.87	959.22	1,314.92	1,082.20	232.72	5.650	
19,100.00	11,768.00	19,340.14	11,781.66	116.87	117.52	-90.59	-7,536.44	959.18	1,314.75	1,080.51	234.24	5.613	
19,145.38	11,768.00	19,377.12	11,781.36	117.49	118.02	-90.57	-7,573.41	959.20	1,314.64	1,079.33	235.31	5.587	
19,150.00	11,768.00	19,381.07	11,781.30	117.55	118.08	-90.57	-7,577.37	959.21	1,314.64	1,079.22	235.42	5.584	
19,200.00	11,768.00	19,423.82	11,780.38	118.23	118.66	-90.53	-7,620.10	959.48	1,314.80	1,078.18	236.62	5.557	
19,250.00	11,768.00	19,483.19	11,778.47	118.91	119.48	-90.45	-7,679.44	959.82	1,314.95	1,076.76	238.19	5.521	
19,300.00	11,768.00	19,543.10	11,776.24	119.59	120.30	-90.35	-7,739.31	959.70	1,314.70	1,074.95	239.75	5.484	
19,350.00	11,768.00	19,601.74	11,774.37	120.27	121.10	-90.27	-7,797.91	959.18	1,314.11	1,072.83	241.28	5.446	
19,400.00	11,768.00	19,650.13	11,773.35	120.95	121.77	-90.22	-7,846.29	958.57	1,313.34	1,070.72	242.62	5.413	
19,450.00	11,768.00	19,695.55	11,773.20	121.64	122.39	-90.22	-7,891.70	958.14	1,312.73	1,068.83	243.90	5.382	
19,500.00	11,768.00	19,743.15	11,773.59	122.32	123.04	-90.24	-7,939.30	957.83	1,312.27	1,067.05	245.22	5.351	
19,550.00	11,768.00	19,791.77	11,773.63	123.00	123.71	-90.24	-7,987.93	957.57	1,311.87	1,065.30	246.57	5.321	
19,600.00	11,768.00	19,833.64	11,773.57	123.69	124.29	-90.23	-8,029.80	957.46	1,311.61	1,063.84	247.77	5.294	
19,608.42	11,768.00	19,840.31	11,773.62	123.80	124.38	-90.24	-8,036.47	957.48	1,311.61	1,063.64	247.97	5.289	
19,650.00	11,768.00	19,873.23	11,774.12	124.37	124.83	-90.26	-8,069.38	957.67	1,311.74	1,062.82	248.92	5.270	
19,700.00	11,768.00	19,912.95	11,775.29	125.06	125.38	-90.31	-8,109.08	958.19	1,312.27	1,062.21	250.07	5.248	
19,750.00	11,768.00	19,952.88	11,777.01	125.74	125.94	-90.38	-8,148.96	959.02	1,313.19	1,061.98	251.21	5.227	
19,800.00	11,768.00	19,993.12	11,779.26	126.43	126.50	-90.48	-8,189.12	960.16	1,314.49	1,062.14	252.34	5.209	
19,850.00	11,768.00	20,053.31	11,781.98	127.12	127.34	-90.60	-8,249.22	961.85	1,315.78	1,061.78	254.00	5.180	
19,900.00	11,768.00	20,106.28	11,782.78	127.80	128.08	-90.63	-8,302.18	963.01	1,316.74	1,061.28	255.46	5.154	
19,950.00	11,768.00	20,150.57	11,782.69	128.49	128.69	-90.63	-8,346.45	964.09	1,317.83	1,061.13	256.70	5.134	
20,000.00	11,768.00	20,198.63	11,781.97	129.18	129.36	-90.60	-8,394.49	965.47	1,319.11	1,061.08	258.04	5.112	
20,050.00	11,768.00	20,255.03	11,781.23	129.87	130.15	-90.57	-8,450.86	966.92	1,320.26	1,060.68	259.58	5.086	
20,100.00	11,768.00	20,299.68	11,780.84	130.55	130.77	-90.55	-8,495.49	967.98	1,321.31	1,060.48	260.84	5.066	
20,150.00	11,768.00	20,337.87	11,780.45	131.24	131.31	-90.53	-8,533.67	969.19	1,322.77	1,060.85	261.91	5.050	
20,200.00	11,768.00	20,369.00	11,780.06	131.93	131.74	-90.51	-8,564.77	970.44	1,324.69	1,061.93	262.76	5.041	
20,250.00	11,768.00	20,410.54	11,779.70	132.62	132.33	-90.50	-8,606.26	972.53	1,327.09	1,063.19	263.90	5.029	
20,300.00	11,768.00	20,445.57	11,779.70	133.31	132.82	-90.50	-8,641.22	974.71	1,330.07	1,065.25	264.82	5.023	
20,350.00	11,768.00	20,491.21	11,779.95	134.00	133.47	-90.51	-8,686.73	977.99	1,333.52	1,067.45	266.07	5.012	
20,400.00	11,768.00	20,548.71	11,779.84	134.70	134.28	-90.50	-8,744.10	981.91	1,336.80	1,069.07	267.73	4.993 Alert	
20,450.00	11,768.00	20,646.39	11,776.89	135.39	135.66	-90.37	-8,841.60	986.70	1,339.15	1,068.63	270.52	4.950 Alert	
20,500.00	11,768.00	20,702.05	11,773.78	136.08	136.44	-90.24	-8,897.16	988.22	1,340.37	1,068.31	272.05	4.927 Alert	
20,550.00	11,768.00	20,757.04	11,771.02	136.77	137.21	-90.12	-8,952.06	989.56	1,341.45	1,067.88	273.56	4.904 Alert	
20,600.00	11,768.00	20,819.20	11,768.29	137.46	138.08	-90.00	-9,014.15	990.65	1,342.19	1,066.95	275.24	4.876 Alert	
20,650.00	11,768.00	20,869.69	11,766.54	138.16	138.78	-89.93	-9,064.61	991.22	1,342.62	1,065.98	276.64	4.853 Alert	
20,700.00	11,768.00	20,914.34	11,766.06	138.85	139.41	-89.91	-9,109.24	991.88	1,343.22	1,065.31	277.90	4.833 Alert	
20,750.00	11,768.00	20,995.40	11,766.08	139.54	140.54	-89.91	-9,190.30	992.60	1,343.65	1,063.69	279.97	4.799 Alert	
20,800.00	11,768.00	21,136.98	11,757.02	140.24	142.48	-89.52	-9,331.34	986.45	1,341.10	1,058.63	282.47	4.748 Alert	
20,850.00	11,768.00	21,175.17	11,753.29	140.93	143.00	-89.36	-9,369.26	983.76	1,337.47	1,053.72	283.74	4.714 Alert	
20,900.00	11,768.00	21,213.53	11,750.15	141.63	143.52	-89.22	-9,407.41	981.38	1,334.27	1,049.27	285.00	4.682 Alert	
20,950.00	11,768.00	21,285.73	11,745.78	142.32	144.50	-89.03	-9,479.33	976.68	1,330.94	1,044.42	286.52	4.645 Alert	
21,000.00	11,768.00	21,337.85	11,743.56	143.02	145.21	-88.93	-9,531.24	972.62	1,326.94	1,039.05	287.89	4.609 Alert	
21,050.00	11,768.00	21,378.18	11,741.39	143.71	145.76	-88.84	-9,571.40	969.70	1,323.23	1,034.05	289.19	4.576 Alert	
21,100.00	11,768.00	21,423.10	11,738.48	144.41	146.37	-88.71	-9,616.14	966.74	1,319.86	1,029.35	290.50	4.543 Alert	
21,150.00	11,768.00	21,477.33	11,736.09	145.10	147.11	-88.60	-9,670.18	963.13	1,316.44	1,024.54	291.90	4.510 Alert	
21,200.00	11,768.00	21,531.75	11,735.38	145.80	147.86	-88.56	-9,724.47	959.35	1,312.85	1,019.56	293.30	4.476 Alert	
21,250.00	11,768.00	21,586.23	11,736.41	146.50	148.60	-88.60	-9,778.79	955.43	1,309.09	1,014.39	294.71	4.442 Alert	
21,300.00	11,768.00	21,639.60	11,738.46	147.19	149.33	-88.69	-9,831.98	951.44	1,305.18	1,009.06	296.12	4.408 Alert	
21,350.00	11,768.00	21,694.09	11,740.49	147.89	150.07	-88.78	-9,886.26	947.22	1,301.13	1,003.60	297.53	4.373 Alert	
21,400.00	11,768.00	21,761.42	11,741.11	148.59	150.99	-88.80	-9,953.33	941.37	1,296.64	997.69	298.95	4.337 Alert	
21,450.00	11,768.00	21,818.47	11,739.65	149.29	151.76	-88.73	-10,010.08	935.76	1,291.61	991.30	300.31	4.301 Alert	
21,500.00	11,768.00	21,871.01	11,738.34	149.99	152.47	-88.66	-10,062.34	930.45	1,286.45	984.78	301.66	4.264 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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design												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						
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
21,550.00	11,768.00	21,921.04	11,737.18	150.68	153.14	-88.61	-10,112.10	925.33	1,281.22	978.20	303.02	4.228	Alert
21,600.00	11,768.00	21,945.00	11,736.63	151.38	153.46	-88.58	-10,135.92	922.87	1,276.25	971.90	304.35	4.193	Alert
21,650.00	11,768.00	21,945.00	11,736.63	152.08	153.46	-88.58	-10,135.92	922.87	1,273.00	967.66	305.35	4.169	Alert
21,700.00	11,768.00	21,945.00	11,736.63	152.78	153.46	-88.58	-10,135.92	922.87	1,271.72	965.80	305.91	4.157	Alert
21,707.78	11,768.00	21,945.00	11,736.63	152.89	153.46	-88.58	-10,135.92	922.87	1,271.69	965.73	305.96	4.156	Alert, CC, ES, SF
21,750.00	11,768.00	21,945.00	11,736.63	153.48	153.46	-88.58	-10,135.92	922.87	1,272.39	966.34	306.05	4.157	Alert
21,800.00	11,768.00	21,945.00	11,736.63	154.18	153.46	-88.58	-10,135.92	922.87	1,275.03	969.27	305.76	4.170	Alert
21,850.00	11,768.00	21,945.00	11,736.63	154.88	153.46	-88.58	-10,135.92	922.87	1,279.62	974.58	305.04	4.195	Alert
21,900.00	11,768.00	21,945.00	11,736.63	155.58	153.46	-88.58	-10,135.92	922.87	1,286.14	982.22	303.92	4.232	Alert
21,904.71	11,768.00	21,945.00	11,736.63	155.65	153.46	-88.58	-10,135.92	922.87	1,286.85	983.06	303.79	4.236	Alert

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		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	0.30	-0.30	0.50	0.50	89.58	0.22	29.99	29.99				
50.00	50.00	49.70	49.70	0.50	0.50	89.58	0.22	29.99	29.99	28.98	1.01	29.799	
100.00	100.00	100.30	99.70	0.52	0.52	89.58	0.22	29.99	29.99	28.96	1.04	28.955	
150.00	150.00	149.70	149.70	0.59	0.59	89.58	0.22	29.99	29.99	28.81	1.18	25.418	
200.00	200.00	200.30	199.70	0.70	0.70	89.58	0.22	29.99	29.99	28.59	1.40	21.346	
250.00	250.00	249.70	249.70	0.84	0.84	89.58	0.22	29.99	29.99	28.32	1.67	17.910	
300.00	300.00	300.30	299.70	0.99	0.99	89.58	0.22	29.99	29.99	28.02	1.98	15.181	
350.00	350.00	349.70	349.70	1.15	1.14	89.58	0.22	29.99	29.99	27.70	2.29	13.096	
400.00	400.00	400.30	399.70	1.31	1.31	89.58	0.22	29.99	29.99	27.37	2.62	11.451	
450.00	450.00	449.70	449.70	1.48	1.48	89.58	0.22	29.99	29.99	27.04	2.95	10.161	
500.00	500.00	500.30	499.70	1.65	1.65	89.58	0.22	29.99	29.99	26.70	3.29	9.107	
550.00	550.00	549.70	549.70	1.82	1.82	89.58	0.22	29.99	29.99	26.36	3.63	8.252	
600.00	600.00	600.30	599.70	1.99	1.99	89.58	0.22	29.99	29.99	26.01	3.98	7.531	
650.00	650.00	649.70	649.70	2.16	2.16	89.58	0.22	29.99	29.99	25.66	4.33	6.929	
700.00	700.00	700.30	699.70	2.34	2.34	89.58	0.22	29.99	29.99	25.31	4.68	6.409	
750.00	750.00	749.70	749.70	2.51	2.51	89.58	0.22	29.99	29.99	24.96	5.03	5.964	
800.00	800.00	800.30	799.70	2.69	2.69	89.58	0.22	29.99	29.99	24.61	5.38	5.572	
850.00	850.00	849.70	849.70	2.87	2.87	89.58	0.22	29.99	29.99	24.26	5.73	5.232	
900.00	900.00	900.30	899.70	3.04	3.04	89.58	0.22	29.99	29.99	23.90	6.09	4.926 Alert	
950.00	950.00	949.70	949.70	3.22	3.22	89.58	0.22	29.99	29.99	23.55	6.44	4.657 Alert	
1,000.00	1,000.00	1,000.30	999.70	3.40	3.40	89.58	0.22	29.99	29.99	23.19	6.80	4.413 Alert	
1,050.00	1,050.00	1,049.70	1,049.70	3.58	3.57	89.58	0.22	29.99	29.99	22.84	7.15	4.195 Alert	
1,100.00	1,100.00	1,100.30	1,099.70	3.75	3.75	89.58	0.22	29.99	29.99	22.48	7.51	3.995 Alert	
1,150.00	1,150.00	1,149.70	1,149.70	3.93	3.93	89.58	0.22	29.99	29.99	22.13	7.86	3.816 Alert	
1,200.00	1,200.00	1,200.30	1,199.70	4.11	4.11	89.58	0.22	29.99	29.99	21.77	8.22	3.650 Alert	
1,250.00	1,250.00	1,249.70	1,249.70	4.29	4.29	89.58	0.22	29.99	29.99	21.42	8.57	3.499 Alert	
1,300.00	1,300.00	1,300.30	1,299.70	4.46	4.47	89.58	0.22	29.99	29.99	21.06	8.93	3.359 Alert	
1,350.00	1,350.00	1,349.70	1,349.70	4.64	4.64	89.58	0.22	29.99	29.99	20.71	9.28	3.231 Alert	
1,400.00	1,400.00	1,400.30	1,399.70	4.82	4.82	89.58	0.22	29.99	29.99	20.35	9.64	3.110 Alert	
1,450.00	1,450.00	1,449.70	1,449.70	5.00	5.00	89.58	0.22	29.99	29.99	19.99	10.00	3.000 Alert	
1,500.00	1,500.00	1,500.30	1,499.70	5.18	5.18	89.58	0.22	29.99	29.99	19.64	10.36	2.896 Alert	
1,550.00	1,550.00	1,549.70	1,549.70	5.36	5.35	89.58	0.22	29.99	29.99	19.28	10.71	2.800 Alert	
1,600.00	1,600.00	1,600.30	1,599.70	5.53	5.54	89.58	0.22	29.99	29.99	18.92	11.07	2.709 Alert	
1,650.00	1,650.00	1,649.70	1,649.70	5.71	5.71	89.58	0.22	29.99	29.99	18.57	11.42	2.625 Alert	
1,700.00	1,700.00	1,700.30	1,699.70	5.89	5.89	89.58	0.22	29.99	29.99	18.21	11.78	2.545 Alert	
1,750.00	1,750.00	1,749.70	1,749.70	6.07	6.07	89.58	0.22	29.99	29.99	17.85	12.14	2.471 Minor Risk	
1,800.00	1,800.00	1,800.30	1,799.70	6.25	6.25	89.58	0.22	29.99	29.99	17.49	12.50	2.400 Minor Risk	
1,850.00	1,850.00	1,849.70	1,849.70	6.43	6.43	89.58	0.22	29.99	29.99	17.14	12.85	2.333 Minor Risk	
1,900.00	1,900.00	1,900.30	1,899.70	6.61	6.61	89.58	0.22	29.99	29.99	16.78	13.21	2.270 Minor Risk	
1,950.00	1,950.00	1,949.70	1,949.70	6.78	6.78	89.58	0.22	29.99	29.99	16.42	13.57	2.210 Minor Risk	
2,000.00	2,000.00	2,000.30	1,999.70	6.96	6.96	89.58	0.22	29.99	29.99	16.06	13.93	2.153 Minor Risk	
2,050.00	2,050.00	2,049.70	2,049.70	7.14	7.14	89.58	0.22	29.99	29.99	15.71	14.28	2.100 Minor Risk	
2,100.00	2,100.00	2,100.30	2,099.70	7.32	7.32	89.58	0.22	29.99	29.99	15.35	14.64	2.048 Minor Risk	
2,150.00	2,150.00	2,149.70	2,149.70	7.50	7.50	89.58	0.22	29.99	29.99	14.99	15.00	2.000 Minor Risk	
2,200.00	2,200.00	2,200.30	2,199.70	7.68	7.68	89.58	0.22	29.99	29.99	14.63	15.36	1.953 Minor Risk	
2,250.00	2,250.00	2,249.70	2,249.70	7.86	7.86	89.58	0.22	29.99	29.99	14.28	15.71	1.909 Minor Risk	
2,300.00	2,300.00	2,300.30	2,299.70	8.04	8.04	89.58	0.22	29.99	29.99	13.92	16.07	1.866 Minor Risk	
2,350.00	2,350.00	2,349.70	2,349.70	8.22	8.21	89.58	0.22	29.99	29.99	13.56	16.43	1.825 Minor Risk	
2,400.00	2,400.00	2,400.30	2,399.70	8.39	8.40	89.58	0.22	29.99	29.99	13.20	16.79	1.786 Minor Risk	
2,450.00	2,450.00	2,449.70	2,449.70	8.57	8.57	89.58	0.22	29.99	29.99	12.85	17.15	1.749 Minor Risk	
2,500.00	2,500.00	2,500.30	2,499.70	8.75	8.75	89.58	0.22	29.99	29.99	12.49	17.51	1.713 Minor Risk, CC	
2,550.00	2,550.00	2,549.70	2,549.70	8.93	8.93	174.30	0.22	29.99	30.21	12.35	17.86	1.692 Minor Risk, ES, SF	

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
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	
2,600.00	2,599.99	2,600.31	2,599.69	9.10	9.11	174.42	0.22	29.99	30.86	12.65	18.21	1.694	Minor Risk	
2,650.00	2,649.98	2,649.68	2,649.68	9.27	9.29	174.61	0.22	29.99	31.95	13.38	18.56	1.721	Minor Risk	
2,700.00	2,699.96	2,700.34	2,699.66	9.45	9.47	174.86	0.22	29.99	33.47	14.55	18.91	1.769	Minor Risk	
2,750.00	2,749.92	2,749.62	2,749.62	9.62	9.65	175.14	0.22	29.99	35.42	16.16	19.26	1.839	Minor Risk	
2,800.00	2,799.86	2,800.44	2,799.56	9.79	9.83	175.45	0.22	29.99	37.81	18.20	19.61	1.928	Minor Risk	
2,850.00	2,849.78	2,849.48	2,849.48	9.96	10.00	175.76	0.22	29.99	40.64	20.68	19.96	2.036	Minor Risk	
2,900.00	2,899.69	2,900.61	2,899.39	10.14	10.19	176.05	0.22	29.99	43.67	23.35	20.32	2.149	Minor Risk	
2,950.00	2,949.60	2,949.30	2,949.30	10.31	10.36	176.31	0.22	29.99	46.69	26.03	20.66	2.260	Minor Risk	
3,000.00	2,999.51	3,000.79	2,999.21	10.49	10.54	176.54	0.22	29.99	49.72	28.70	21.02	2.365	Minor Risk	
3,050.00	3,049.41	3,049.11	3,049.11	10.66	10.72	176.74	0.22	29.99	52.75	31.38	21.37	2.469	Minor Risk	
3,100.00	3,099.32	3,100.98	3,099.02	10.83	10.90	176.91	0.22	29.99	55.78	34.06	21.73	2.568	Alert	
3,150.00	3,149.23	3,148.93	3,148.93	11.01	11.08	177.07	0.22	29.99	58.81	36.74	22.07	2.665	Alert	
3,200.00	3,199.14	3,201.16	3,198.84	11.19	11.26	177.22	0.22	29.99	61.84	39.41	22.43	2.757	Alert	
3,250.00	3,249.04	3,248.74	3,248.74	11.36	11.43	177.35	0.22	29.99	64.88	42.10	22.78	2.848	Alert	
3,300.00	3,298.95	3,301.35	3,298.65	11.54	11.62	177.46	0.22	29.99	67.91	44.77	23.14	2.935	Alert	
3,350.00	3,348.86	3,348.56	3,348.56	11.71	11.79	177.57	0.22	29.99	70.94	47.46	23.48	3.021	Alert	
3,400.00	3,398.77	3,401.53	3,398.47	11.89	11.98	177.67	0.22	29.99	73.97	50.13	23.84	3.102	Alert	
3,450.00	3,448.68	3,448.38	3,448.38	12.07	12.15	177.76	0.22	29.99	77.00	52.82	24.19	3.184	Alert	
3,500.00	3,498.58	3,501.72	3,498.28	12.24	12.34	177.85	0.22	29.99	80.04	55.48	24.55	3.260	Alert	
3,550.00	3,548.49	3,548.19	3,548.19	12.42	12.51	177.93	0.22	29.99	83.07	58.18	24.89	3.337	Alert	
3,600.00	3,598.40	3,601.90	3,598.10	12.60	12.70	178.00	0.22	29.99	86.10	60.84	25.26	3.408	Alert	
3,650.00	3,648.31	3,648.01	3,648.01	12.78	12.86	178.07	0.22	29.99	89.14	63.53	25.60	3.482	Alert	
3,700.00	3,698.22	3,702.08	3,697.92	12.95	13.06	178.13	0.22	29.99	92.17	66.20	25.97	3.549	Alert	
3,750.00	3,748.12	3,747.82	3,747.82	13.13	13.22	178.19	0.22	29.99	95.20	68.89	26.31	3.619	Alert	
3,800.00	3,798.03	3,802.27	3,797.73	13.31	13.42	178.25	0.22	29.99	98.24	71.56	26.68	3.682	Alert	
3,850.00	3,847.94	3,847.64	3,847.64	13.49	13.58	178.30	0.22	29.99	101.27	74.25	27.02	3.748	Alert	
3,900.00	3,897.85	3,902.45	3,897.55	13.67	13.77	178.35	0.22	29.99	104.30	76.91	27.39	3.808	Alert	
3,950.00	3,947.75	3,947.45	3,947.45	13.84	13.94	178.40	0.22	29.99	107.34	79.61	27.73	3.871	Alert	
4,000.00	3,997.66	3,997.36	3,997.36	14.02	14.11	178.44	0.22	29.99	110.37	82.29	28.08	3.930	Alert	
4,050.00	4,047.57	4,048.39	4,048.39	14.20	14.29	178.44	0.33	29.76	113.17	84.73	28.44	3.979	Alert	
4,100.00	4,097.48	4,099.53	4,099.52	14.38	14.48	178.33	0.67	29.01	115.45	86.66	28.79	4.009	Alert	
4,150.00	4,147.39	4,150.71	4,150.68	14.56	14.65	178.14	1.25	27.74	117.21	88.07	29.15	4.022	Alert	
4,200.00	4,197.29	4,201.92	4,201.85	14.74	14.83	177.84	2.06	25.94	118.45	88.96	29.49	4.016	Alert	
4,250.00	4,247.20	4,253.14	4,253.01	14.92	15.01	177.45	3.12	23.63	119.18	89.34	29.84	3.994	Alert	
4,300.00	4,297.11	4,304.17	4,303.95	15.10	15.19	176.97	4.40	20.82	119.40	89.21	30.18	3.956	Alert	
4,350.00	4,347.02	4,354.16	4,353.83	15.28	15.37	176.46	5.74	17.88	119.44	88.91	30.53	3.912	Alert	
4,400.00	4,396.92	4,404.15	4,403.72	15.46	15.54	175.95	7.08	14.94	119.50	88.61	30.89	3.869	Alert	
4,450.00	4,446.83	4,454.14	4,453.60	15.64	15.72	175.45	8.41	12.01	119.57	88.33	31.24	3.828	Alert	
4,500.00	4,496.74	4,504.12	4,503.48	15.82	15.89	174.94	9.75	9.07	119.64	88.05	31.59	3.787	Alert	
4,550.00	4,546.65	4,554.11	4,553.37	16.00	16.07	174.43	11.09	6.13	119.72	87.78	31.94	3.748	Alert	
4,600.00	4,596.56	4,604.10	4,603.25	16.18	16.24	173.93	12.43	3.20	119.82	87.52	32.29	3.710	Alert	
4,650.00	4,646.46	4,654.09	4,653.14	16.36	16.42	173.43	13.77	0.26	119.92	87.27	32.65	3.673	Alert	
4,700.00	4,696.37	4,704.08	4,703.02	16.54	16.60	172.92	15.10	-2.67	120.03	87.03	33.00	3.637	Alert	
4,750.00	4,746.28	4,754.07	4,752.91	16.72	16.77	172.42	16.44	-5.61	120.15	86.80	33.35	3.603	Alert	
4,800.00	4,796.19	4,804.06	4,802.79	16.90	16.95	171.92	17.78	-8.55	120.28	86.58	33.71	3.569	Alert	
4,850.00	4,846.09	4,854.05	4,852.68	17.08	17.13	171.42	19.12	-11.48	120.42	86.37	34.06	3.536	Alert	
4,900.00	4,896.00	4,904.03	4,902.56	17.26	17.30	170.92	20.46	-14.42	120.57	86.16	34.41	3.504	Alert	
4,950.00	4,945.91	4,954.02	4,952.44	17.44	17.48	170.42	21.79	-17.36	120.73	85.96	34.77	3.473	Alert	
5,000.00	4,995.82	5,004.01	5,002.33	17.62	17.66	169.92	23.13	-20.29	120.90	85.78	35.12	3.442	Alert	
5,050.00	5,045.73	5,054.00	5,052.21	17.80	17.84	169.43	24.47	-23.23	121.07	85.60	35.47	3.413	Alert	
5,100.00	5,095.63	5,103.99	5,102.10	17.98	18.01	168.94	25.81	-26.16	121.26	85.43	35.83	3.384	Alert	
5,150.00	5,145.54	5,153.98	5,151.98	18.16	18.19	168.44	27.15	-29.10	121.45	85.27	36.18	3.357	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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
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
5,200.00	5,195.45	5,203.97	5,201.87	18.34	18.37	167.95	28.48	-32.04	121.66	85.12	36.54	3.330	Alert
5,250.00	5,245.36	5,253.96	5,251.75	18.53	18.55	167.46	29.82	-34.97	121.87	84.98	36.89	3.303	Alert
5,300.00	5,295.27	5,303.94	5,301.64	18.71	18.73	166.98	31.16	-37.91	122.09	84.84	37.25	3.278	Alert
5,350.00	5,345.17	5,353.93	5,351.52	18.89	18.91	166.49	32.50	-40.85	122.32	84.71	37.60	3.253	Alert
5,400.00	5,395.08	5,403.92	5,401.41	19.07	19.08	166.01	33.84	-43.78	122.56	84.60	37.96	3.229	Alert
5,450.00	5,444.99	5,453.91	5,451.29	19.25	19.26	165.53	35.17	-46.72	122.80	84.49	38.32	3.205	Alert
5,500.00	5,494.90	5,503.90	5,501.17	19.43	19.44	165.05	36.51	-49.65	123.06	84.39	38.67	3.182	Alert
5,550.00	5,544.80	5,553.89	5,551.06	19.61	19.62	164.57	37.85	-52.59	123.32	84.30	39.03	3.160	Alert
5,600.00	5,594.71	5,603.88	5,600.94	19.79	19.80	164.09	39.19	-55.53	123.60	84.21	39.38	3.138	Alert
5,650.00	5,644.62	5,653.87	5,650.83	19.98	19.98	163.62	40.53	-58.46	123.88	84.14	39.74	3.117	Alert
5,700.00	5,694.53	5,703.85	5,700.71	20.16	20.16	163.15	41.86	-61.40	124.17	84.07	40.10	3.097	Alert
5,750.00	5,744.44	5,753.84	5,750.60	20.34	20.34	162.68	43.20	-64.34	124.47	84.01	40.45	3.077	Alert
5,800.00	5,794.34	5,803.83	5,800.48	20.52	20.52	162.21	44.54	-67.27	124.77	83.96	40.81	3.057	Alert
5,850.00	5,844.25	5,853.82	5,850.37	20.70	20.69	161.75	45.88	-70.21	125.09	83.92	41.17	3.038	Alert
5,900.00	5,894.16	5,903.81	5,900.25	20.88	20.87	161.29	47.22	-73.15	125.41	83.88	41.53	3.020	Alert
5,950.00	5,944.07	5,953.80	5,950.13	21.06	21.05	160.83	48.55	-76.08	125.74	83.86	41.88	3.002	Alert
6,000.00	5,993.97	6,003.79	6,000.02	21.25	21.23	160.37	49.89	-79.02	126.08	83.84	42.24	2.985	Alert
6,050.00	6,043.88	6,053.78	6,049.90	21.43	21.41	159.92	51.23	-81.95	126.43	83.83	42.60	2.968	Alert
6,100.00	6,093.79	6,103.76	6,099.79	21.61	21.59	159.46	52.57	-84.89	126.78	83.82	42.96	2.951	Alert
6,150.00	6,143.70	6,153.75	6,149.67	21.79	21.77	159.01	53.91	-87.83	127.14	83.83	43.32	2.935	Alert
6,200.00	6,193.61	6,203.74	6,199.56	21.97	21.95	158.57	55.24	-90.76	127.51	83.84	43.67	2.920	Alert
6,250.00	6,243.51	6,253.73	6,249.44	22.16	22.13	158.12	56.58	-93.70	127.89	83.86	44.03	2.905	Alert
6,300.00	6,293.42	6,303.72	6,299.33	22.34	22.31	157.68	57.92	-96.64	128.28	83.89	44.39	2.890	Alert
6,350.00	6,343.33	6,353.71	6,349.21	22.52	22.49	157.24	59.26	-99.57	128.67	83.92	44.75	2.875	Alert
6,400.00	6,393.24	6,403.70	6,399.10	22.70	22.67	156.81	60.59	-102.51	129.07	83.96	45.11	2.861	Alert
6,450.00	6,443.14	6,453.69	6,448.98	22.88	22.85	156.37	61.93	-105.44	129.48	84.01	45.47	2.848	Alert
6,500.00	6,493.05	6,503.67	6,498.86	23.07	23.03	155.94	63.27	-108.38	129.90	84.07	45.83	2.834	Alert
6,550.00	6,542.96	6,553.66	6,548.75	23.25	23.21	155.51	64.61	-111.32	130.32	84.13	46.19	2.822	Alert
6,600.00	6,592.87	6,603.65	6,598.63	23.43	23.39	155.09	65.95	-114.25	130.75	84.20	46.55	2.809	Alert
6,650.00	6,642.78	6,653.64	6,648.52	23.61	23.57	154.67	67.28	-117.19	131.19	84.28	46.91	2.797	Alert
6,700.00	6,692.68	6,703.63	6,698.40	23.79	23.75	154.25	68.62	-120.13	131.63	84.37	47.27	2.785	Alert
6,750.00	6,742.59	6,753.62	6,748.29	23.98	23.94	153.83	69.96	-123.06	132.08	84.46	47.63	2.773	Alert
6,800.00	6,792.50	6,803.61	6,798.17	24.16	24.12	153.41	71.30	-126.00	132.54	84.55	47.99	2.762	Alert
6,850.00	6,842.41	6,853.60	6,848.06	24.34	24.30	153.00	72.64	-128.93	133.01	84.66	48.35	2.751	Alert
6,900.00	6,892.32	6,903.58	6,897.94	24.52	24.48	152.60	73.97	-131.87	133.48	84.77	48.71	2.740	Alert
6,950.00	6,942.22	6,953.57	6,947.82	24.71	24.66	152.19	75.31	-134.81	133.96	84.89	49.07	2.730	Alert
7,000.00	6,992.13	7,003.56	6,997.71	24.89	24.84	151.79	76.65	-137.74	134.44	85.01	49.43	2.720	Alert
7,050.00	7,042.04	7,053.55	7,047.59	25.07	25.02	151.39	77.99	-140.68	134.94	85.15	49.79	2.710	Alert
7,100.00	7,091.95	7,103.54	7,097.48	25.25	25.20	150.99	79.33	-143.62	135.43	85.28	50.15	2.701	Alert
7,150.00	7,141.85	7,153.53	7,147.36	25.44	25.38	150.60	80.66	-146.55	135.94	85.43	50.51	2.691	Alert
7,200.00	7,191.76	7,203.52	7,197.25	25.62	25.56	150.21	82.00	-149.49	136.45	85.58	50.87	2.682	Alert
7,250.00	7,241.67	7,253.51	7,247.13	25.80	25.74	149.82	83.34	-152.43	136.97	85.73	51.24	2.673	Alert
7,300.00	7,291.58	7,303.49	7,297.02	25.98	25.93	149.43	84.68	-155.36	137.49	85.90	51.60	2.665	Alert
7,350.00	7,341.49	7,353.48	7,346.90	26.17	26.11	149.05	86.02	-158.30	138.02	86.06	51.96	2.656	Alert
7,400.00	7,391.39	7,403.47	7,396.79	26.35	26.29	148.67	87.35	-161.23	138.56	86.24	52.32	2.648	Alert
7,450.00	7,441.30	7,453.46	7,446.67	26.53	26.47	148.30	88.69	-164.17	139.10	86.42	52.68	2.640	Alert
7,500.00	7,491.21	7,503.45	7,496.55	26.71	26.65	147.92	90.03	-167.11	139.65	86.61	53.04	2.633	Alert
7,550.00	7,541.12	7,553.44	7,546.44	26.90	26.83	147.55	91.37	-170.04	140.20	86.80	53.41	2.625	Alert
7,600.00	7,591.02	7,603.43	7,596.32	27.08	27.01	147.19	92.71	-172.98	140.76	86.99	53.77	2.618	Alert
7,650.00	7,640.93	7,653.42	7,646.21	27.26	27.19	146.82	94.04	-175.92	141.33	87.20	54.13	2.611	Alert
7,700.00	7,690.84	7,703.40	7,696.09	27.44	27.38	146.46	95.38	-178.85	141.90	87.41	54.49	2.604	Alert
7,750.00	7,740.75	7,753.39	7,745.98	27.63	27.56	146.10	96.72	-181.79	142.48	87.62	54.86	2.597	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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
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	
7,800.00	7,790.66	7,803.38	7,795.86	27.81	27.74	145.75	98.06	-184.72	143.06	87.84	55.22	2.591	Alert	
7,850.00	7,840.56	7,853.37	7,845.75	27.99	27.92	145.39	99.40	-187.66	143.65	88.07	55.58	2.584	Alert	
7,900.00	7,890.47	7,903.36	7,895.63	28.17	28.10	145.04	100.73	-190.60	144.24	88.30	55.94	2.578	Alert	
7,950.00	7,940.38	7,953.35	7,945.51	28.36	28.28	144.70	102.07	-193.53	144.84	88.53	56.31	2.572	Alert	
8,000.00	7,990.29	8,003.34	7,995.40	28.54	28.47	144.35	103.41	-196.47	145.44	88.77	56.67	2.566	Alert	
8,050.00	8,040.19	8,053.33	8,045.28	28.72	28.65	144.01	104.75	-199.41	146.05	89.02	57.03	2.561	Alert	
8,100.00	8,090.10	8,103.31	8,095.17	28.91	28.83	143.67	106.09	-202.34	146.67	89.27	57.40	2.555	Alert	
8,150.00	8,140.01	8,153.30	8,145.05	29.09	29.01	143.34	107.42	-205.28	147.29	89.52	57.76	2.550	Alert	
8,200.00	8,189.92	8,203.29	8,184.94	29.27	29.19	143.01	108.76	-208.22	147.91	89.79	58.12	2.545	Alert	
8,250.00	8,239.83	8,253.28	8,244.82	29.45	29.37	142.68	110.10	-211.15	148.54	90.05	58.49	2.540	Alert	
8,300.00	8,289.73	8,303.27	8,294.71	29.64	29.56	142.35	111.44	-214.09	149.17	90.32	58.85	2.535	Alert	
8,350.00	8,339.64	8,353.26	8,344.59	29.82	29.74	142.02	112.78	-217.02	149.81	90.60	59.22	2.530	Alert	
8,400.00	8,389.55	8,403.25	8,394.48	30.00	29.92	141.70	114.11	-219.96	150.46	90.88	59.58	2.525	Alert	
8,450.00	8,439.46	8,453.24	8,444.36	30.19	30.10	141.38	115.45	-222.90	151.10	91.16	59.94	2.521	Alert	
8,500.00	8,489.37	8,503.22	8,494.24	30.37	30.28	141.07	116.79	-225.83	151.76	91.45	60.31	2.516	Alert	
8,550.00	8,539.27	8,553.21	8,544.13	30.55	30.47	140.75	118.13	-228.77	152.42	91.74	60.67	2.512	Alert	
8,600.00	8,589.18	8,603.20	8,594.01	30.73	30.65	140.44	119.47	-231.71	153.08	92.04	61.04	2.508	Alert	
8,650.00	8,639.09	8,653.19	8,643.90	30.92	30.83	140.14	120.80	-234.64	153.74	92.34	61.40	2.504	Alert	
8,700.00	8,689.00	8,703.18	8,693.78	31.10	31.01	139.83	122.14	-237.58	154.42	92.65	61.77	2.500	Alert	
8,750.00	8,738.90	8,753.17	8,743.67	31.28	31.19	139.53	123.48	-240.51	155.09	92.96	62.13	2.496	Minor Risk	
8,800.00	8,788.82	8,803.16	8,793.55	31.47	31.38	139.22	124.82	-243.45	155.73	93.23	62.49	2.492	Minor Risk	
8,850.00	8,838.76	8,853.14	8,843.43	31.65	31.56	138.78	126.16	-246.39	155.96	93.10	62.86	2.481	Minor Risk	
8,900.00	8,888.72	8,903.11	8,893.30	31.83	31.74	138.17	127.49	-249.32	155.72	92.49	63.23	2.463	Minor Risk	
8,950.00	8,938.71	8,953.07	8,943.15	32.01	31.92	137.40	128.83	-252.26	155.01	91.41	63.59	2.437	Minor Risk	
9,000.00	8,988.71	9,002.99	8,992.97	32.18	32.11	136.45	130.17	-255.19	153.85	89.89	63.96	2.405	Minor Risk	
9,050.00	9,038.71	9,052.88	9,042.76	32.36	32.29	135.09	131.50	-258.12	152.41	88.08	64.33	2.369	Minor Risk	
9,100.00	9,088.71	9,102.78	9,092.55	32.53	32.47	134.00	132.84	-261.05	151.01	86.31	64.69	2.334	Minor Risk	
9,150.00	9,138.71	9,152.68	9,142.34	32.70	32.65	132.88	134.17	-263.98	149.66	84.60	65.06	2.300	Minor Risk	
9,200.00	9,188.71	9,202.57	9,192.13	32.88	32.83	131.74	135.51	-266.91	148.38	82.95	65.43	2.268	Minor Risk	
9,250.00	9,238.71	9,252.47	9,241.92	33.05	33.02	130.61	136.84	-269.84	147.15	81.36	65.79	2.237	Minor Risk	
9,300.00	9,288.71	9,302.36	9,291.72	33.22	33.20	129.49	138.18	-272.77	145.99	79.83	66.16	2.207	Minor Risk	
9,350.00	9,338.71	9,352.26	9,341.51	33.40	33.38	128.37	139.51	-275.70	144.89	78.36	66.53	2.178	Minor Risk	
9,400.00	9,388.71	9,402.15	9,391.30	33.57	33.56	127.25	140.85	-278.64	143.85	76.95	66.90	2.150	Minor Risk	
9,450.00	9,438.71	9,452.05	9,441.09	33.74	33.74	126.13	142.19	-281.57	142.88	75.61	67.27	2.124	Minor Risk	
9,500.00	9,488.71	9,501.95	9,490.88	33.92	33.93	125.01	143.52	-284.50	141.97	74.34	67.63	2.099	Minor Risk	
9,550.00	9,538.71	9,551.84	9,540.67	34.09	34.11	123.89	144.86	-287.43	141.13	73.13	68.00	2.075	Minor Risk	
9,600.00	9,588.71	9,601.74	9,590.47	34.26	34.29	122.77	146.19	-290.36	140.36	72.00	68.37	2.053	Minor Risk	
9,650.00	9,638.71	9,651.63	9,640.26	34.44	34.47	121.65	147.53	-293.29	139.67	70.93	68.74	2.032	Minor Risk	
9,700.00	9,688.71	9,701.53	9,690.05	34.61	34.65	120.53	148.86	-296.22	139.04	69.93	69.11	2.012	Minor Risk	
9,750.00	9,738.71	9,751.42	9,739.84	34.78	34.84	119.41	150.20	-299.15	138.49	69.01	69.47	1.993	Minor Risk	
9,800.00	9,788.71	9,801.32	9,789.63	34.96	35.02	118.29	151.53	-302.08	138.01	68.16	69.84	1.976	Minor Risk	
9,850.00	9,838.71	9,851.22	9,839.42	35.13	35.20	117.17	152.87	-305.01	137.60	67.39	70.21	1.960	Minor Risk	
9,900.00	9,888.71	9,901.11	9,889.22	35.31	35.38	116.05	154.20	-307.94	137.27	66.69	70.58	1.945	Minor Risk	
9,950.00	9,938.71	9,951.01	9,939.01	35.48	35.57	114.93	155.54	-310.87	137.01	66.07	70.94	1.931	Minor Risk	
10,000.00	9,988.71	10,000.90	9,988.80	35.65	35.75	113.81	156.88	-313.81	136.83	65.52	71.31	1.919	Minor Risk	
10,050.00	10,038.71	10,050.80	10,038.59	35.83	35.93	112.69	158.21	-316.74	136.72	65.05	71.68	1.908	Minor Risk	
10,094.09	10,082.80	10,105.20	10,082.50	35.98	36.13	111.57	159.39	-319.32	136.69	64.66	72.04	1.898	Minor Risk	
10,100.00	10,088.71	10,100.69	10,088.38	36.00	36.11	110.45	159.55	-319.67	136.69	64.65	72.04	1.897	Minor Risk	
10,150.00	10,138.71	10,150.59	10,138.17	36.18	36.30	109.33	160.88	-322.60	136.74	64.34	72.41	1.889	Minor Risk	
10,200.00	10,188.71	10,200.49	10,187.97	36.35	36.48	108.21	162.22	-325.53	136.86	64.09	72.77	1.881	Minor Risk	
10,250.00	10,238.71	10,250.38	10,237.76	36.52	36.66	107.09	163.55	-328.46	137.06	63.93	73.13	1.874	Minor Risk	
10,300.00	10,288.71	10,300.28	10,287.55	36.70	36.84	105.97	164.89	-331.39	137.34	63.84	73.50	1.869	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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: O-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)			
10,350.00	10,338.71	10,350.17	10,337.34	36.87	37.02	17.62	166.22	-334.32	137.69	63.83	73.86	1.864	Minor Risk	
10,400.00	10,388.71	10,400.07	10,387.13	37.05	37.21	16.29	167.56	-337.25	138.11	63.89	74.22	1.861	Minor Risk	
10,450.00	10,438.71	10,449.96	10,436.92	37.22	37.39	14.98	168.89	-340.18	138.61	64.03	74.58	1.858	Minor Risk	
10,500.00	10,488.71	10,500.14	10,486.72	37.40	37.57	13.67	170.23	-343.11	139.18	64.24	74.94	1.857	Minor Risk	
10,550.00	10,538.71	10,549.76	10,536.51	37.57	37.75	12.37	171.57	-346.04	139.83	64.52	75.30	1.857	Minor Risk	
10,600.00	10,588.71	10,600.35	10,586.30	37.75	37.94	11.09	172.90	-348.98	140.54	64.88	75.66	1.857	Minor Risk	
10,650.00	10,638.71	10,649.55	10,636.09	37.92	38.12	9.82	174.24	-351.91	141.32	65.31	76.02	1.859	Minor Risk	
10,700.00	10,688.71	10,700.56	10,685.88	38.09	38.31	8.56	175.57	-354.84	142.18	65.80	76.38	1.861	Minor Risk	
10,750.00	10,738.71	10,749.34	10,735.67	38.27	38.48	7.32	176.91	-357.77	143.10	66.37	76.73	1.865	Minor Risk	
10,800.00	10,788.71	10,800.77	10,785.47	38.44	38.67	6.10	178.24	-360.70	144.09	66.99	77.10	1.869	Minor Risk	
10,850.00	10,838.71	10,849.13	10,835.26	38.62	38.85	4.89	179.58	-363.63	145.14	67.69	77.45	1.874	Minor Risk	
10,900.00	10,888.71	10,900.97	10,885.05	38.79	39.04	3.70	180.91	-366.56	146.26	68.45	77.81	1.880	Minor Risk	
10,950.00	10,938.71	10,949.10	10,935.02	38.97	39.22	2.53	182.25	-369.48	147.43	69.27	78.16	1.886	Minor Risk	
11,000.00	10,988.71	10,999.78	10,985.62	39.14	39.40	1.54	183.39	-372.00	148.47	69.96	78.52	1.891	Minor Risk	
11,050.00	11,038.71	11,050.52	11,036.32	39.32	39.58	0.80	184.26	-373.91	149.29	70.42	78.88	1.893	Minor Risk	
11,100.00	11,088.71	11,101.31	11,087.09	39.49	39.77	0.30	184.86	-375.21	149.86	70.63	79.23	1.891	Minor Risk	
11,150.00	11,138.71	11,152.13	11,137.90	39.67	39.94	0.04	185.17	-375.89	150.17	70.58	79.59	1.887	Minor Risk	
11,200.00	11,188.71	11,202.63	11,188.41	39.84	40.12	0.00	185.22	-376.01	150.22	70.28	79.94	1.879	Minor Risk	
11,250.00	11,238.67	11,252.59	11,238.37	40.01	40.30	-179.85	185.22	-376.01	151.88	71.60	80.28	1.892	Minor Risk	
11,300.00	11,288.29	11,302.22	11,287.99	40.18	40.47	-179.85	185.22	-376.01	157.86	77.24	80.62	1.958	Minor Risk	
11,350.00	11,337.21	11,351.13	11,336.91	40.34	40.64	-179.86	185.22	-376.01	168.14	87.19	80.95	2.077	Minor Risk	
11,400.00	11,385.04	11,401.03	11,384.74	40.49	40.82	-179.87	185.22	-376.01	182.64	101.36	81.28	2.247	Minor Risk	
11,450.00	11,431.43	11,445.35	11,431.13	40.64	40.97	-179.88	185.22	-376.01	201.26	119.67	81.58	2.467	Minor Risk	
11,500.00	11,476.02	11,489.94	11,475.72	40.78	41.13	-179.88	185.22	-376.01	223.85	141.97	81.88	2.734	Alert	
11,550.00	11,518.47	11,532.39	11,518.17	40.91	41.28	-179.89	185.22	-376.01	250.24	168.08	82.15	3.046	Alert	
11,600.00	11,558.46	11,609.38	11,594.93	41.03	41.53	-179.90	180.17	-376.00	277.62	195.64	81.98	3.386	Alert	
11,650.00	11,595.68	11,697.27	11,680.81	41.15	41.80	-179.92	161.91	-375.95	302.58	221.99	80.60	3.754	Alert	
11,700.00	11,629.85	11,796.99	11,773.55	41.26	42.07	-179.92	125.59	-375.85	324.17	246.57	77.60	4.178	Alert	
11,750.00	11,660.72	11,909.27	11,868.63	41.37	42.33	-179.93	66.21	-375.69	341.25	268.54	72.71	4.693	Alert	
11,800.00	11,688.04	12,032.93	11,957.73	41.48	42.54	-179.94	-19.19	-375.46	352.63	286.54	66.09	5.335		
11,850.00	11,711.61	11,850.00	12,018.10	41.60	42.38	-179.94	-107.01	-375.23	357.27	296.72	60.55	5.900		
11,900.00	11,731.24	12,296.20	12,075.68	41.72	42.96	-179.94	-251.98	-374.84	354.84	301.68	53.17	6.674		
11,950.00	11,746.80	12,422.74	12,091.90	41.85	43.23	-179.94	-377.21	-374.51	345.46	294.41	51.05	6.767		
12,000.00	11,758.16	12,477.76	12,092.00	41.98	43.36	-179.93	-432.23	-374.36	334.14	282.97	51.17	6.530		
12,050.00	11,765.23	12,527.25	12,092.00	42.12	43.49	-179.93	-481.71	-374.23	327.07	275.77	51.30	6.376		
12,100.00	11,767.96	12,577.16	12,092.00	42.25	43.62	-179.93	-531.62	-374.09	324.34	272.91	51.43	6.307		
12,144.33	11,768.23	12,621.49	12,092.00	42.38	43.75	-179.93	-575.96	-373.98	324.06	272.51	51.55	6.286		
12,150.00	11,768.00	12,627.16	12,092.00	42.40	43.77	-179.93	-581.62	-373.96	324.30	272.74	51.57	6.289		
12,200.00	11,768.00	12,677.16	12,092.00	42.54	43.92	-179.94	-631.62	-373.83	324.30	272.59	51.71	6.271		
12,250.00	11,768.00	12,727.16	12,092.00	42.71	44.09	-179.94	-681.62	-373.69	324.30	272.43	51.87	6.252		
12,300.00	11,768.00	12,777.16	12,092.00	42.88	44.27	-179.94	-731.62	-373.56	324.30	272.26	52.04	6.232		
12,350.00	11,768.00	12,827.16	12,092.00	43.07	44.46	-179.94	-781.62	-373.43	324.30	272.08	52.23	6.210		
12,400.00	11,768.00	12,877.16	12,092.00	43.26	44.66	-179.94	-831.62	-373.29	324.30	271.89	52.41	6.187		
12,450.00	11,768.00	12,927.16	12,092.00	43.47	44.87	-179.94	-881.62	-373.16	324.30	271.68	52.62	6.163		
12,500.00	11,768.00	12,977.16	12,092.00	43.68	45.09	-179.94	-931.62	-373.03	324.30	271.47	52.83	6.138		
12,550.00	11,768.00	13,027.16	12,092.00	43.91	45.32	-179.94	-981.62	-372.89	324.30	271.24	53.06	6.112		
12,600.00	11,768.00	13,077.16	12,092.00	44.15	45.56	-179.94	-1,031.62	-372.76	324.30	271.01	53.29	6.085		
12,650.00	11,768.00	13,127.16	12,092.00	44.40	45.81	-179.94	-1,081.62	-372.62	324.30	270.76	53.54	6.057		
12,700.00	11,768.00	13,177.16	12,092.00	44.66	46.07	-179.94	-1,131.62	-372.49	324.30	270.51	53.80	6.028		
12,750.00	11,768.00	13,227.16	12,092.00	44.93	46.35	-179.94	-1,181.62	-372.36	324.30	270.24	54.07	5.998		
12,800.00	11,768.00	13,277.16	12,092.00	45.20	46.63	-179.94	-1,231.62	-372.22	324.30	269.96	54.34	5.968		
12,850.00	11,768.00	13,327.16	12,092.00	45.50	46.92	-179.94	-1,281.62	-372.09	324.30	269.67	54.63	5.936		

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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
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
12,900.00	11,768.00	13,377.16	12,092.00	45.79	47.22	-179.94	-1,331.62	-371.96	324.30	269.38	54.92	5.905	
12,950.00	11,768.00	13,427.16	12,092.00	46.10	47.53	-179.94	-1,381.62	-371.82	324.30	269.07	55.23	5.872	
13,000.00	11,768.00	13,477.16	12,092.00	46.42	47.84	-179.94	-1,431.62	-371.69	324.30	268.76	55.55	5.839	
13,050.00	11,768.00	13,527.16	12,092.00	46.75	48.17	-179.94	-1,481.62	-371.56	324.30	268.43	55.87	5.804	
13,100.00	11,768.00	13,577.16	12,092.00	47.08	48.50	-179.94	-1,531.62	-371.42	324.30	268.10	56.20	5.770	
13,150.00	11,768.00	13,627.16	12,092.00	47.43	48.85	-179.94	-1,581.62	-371.29	324.30	267.75	56.55	5.735	
13,200.00	11,768.00	13,677.16	12,092.00	47.78	49.20	-179.94	-1,631.62	-371.15	324.30	267.40	56.90	5.700	
13,250.00	11,768.00	13,727.16	12,092.00	48.14	49.56	-179.94	-1,681.62	-371.02	324.30	267.04	57.26	5.664	
13,300.00	11,768.00	13,777.16	12,092.00	48.51	49.93	-179.94	-1,731.62	-370.89	324.30	266.68	57.63	5.628	
13,350.00	11,768.00	13,827.16	12,092.00	48.89	50.30	-179.94	-1,781.62	-370.75	324.30	266.30	58.01	5.591	
13,400.00	11,768.00	13,877.16	12,092.00	49.27	50.69	-179.94	-1,831.62	-370.62	324.30	265.91	58.39	5.554	
13,450.00	11,768.00	13,927.16	12,092.00	49.66	51.08	-179.94	-1,881.62	-370.49	324.30	265.52	58.78	5.517	
13,500.00	11,768.00	13,977.16	12,092.00	50.06	51.47	-179.94	-1,931.62	-370.35	324.30	265.12	59.18	5.480	
13,550.00	11,768.00	14,027.16	12,092.00	50.47	51.88	-179.94	-1,981.62	-370.22	324.30	264.71	59.59	5.442	
13,600.00	11,768.00	14,077.16	12,092.00	50.88	52.29	-179.94	-2,031.62	-370.09	324.30	264.30	60.01	5.404	
13,650.00	11,768.00	14,127.16	12,092.00	51.31	52.71	-179.94	-2,081.62	-369.95	324.30	263.87	60.43	5.366	
13,700.00	11,768.00	14,177.16	12,092.00	51.73	53.14	-179.95	-2,131.62	-369.82	324.30	263.44	60.86	5.329	
13,750.00	11,768.00	14,227.16	12,092.00	52.17	53.57	-179.95	-2,181.62	-369.68	324.30	263.00	61.30	5.290	
13,800.00	11,768.00	14,277.16	12,092.00	52.61	54.00	-179.95	-2,231.62	-369.55	324.30	262.56	61.74	5.253	
13,850.00	11,768.00	14,327.16	12,092.00	53.06	54.45	-179.95	-2,281.62	-369.42	324.30	262.11	62.19	5.214	
13,900.00	11,768.00	14,377.16	12,092.00	53.51	54.90	-179.95	-2,331.62	-369.28	324.30	261.65	62.65	5.176	
13,950.00	11,768.00	14,427.16	12,092.00	53.97	55.36	-179.95	-2,381.62	-369.15	324.30	261.19	63.12	5.138	
14,000.00	11,768.00	14,477.16	12,092.00	54.43	55.82	-179.95	-2,431.62	-369.02	324.30	260.72	63.58	5.100	
14,050.00	11,768.00	14,527.16	12,092.00	54.91	56.29	-179.95	-2,481.62	-368.88	324.30	260.24	64.06	5.062	
14,100.00	11,768.00	14,577.16	12,092.00	55.38	56.76	-179.95	-2,531.62	-368.75	324.30	259.76	64.54	5.025	
14,150.00	11,768.00	14,627.16	12,092.00	55.87	57.24	-179.95	-2,581.62	-368.62	324.30	259.27	65.03	4.987 Alert	
14,200.00	11,768.00	14,677.16	12,092.00	56.35	57.72	-179.95	-2,631.62	-368.48	324.30	258.78	65.53	4.949 Alert	
14,250.00	11,768.00	14,727.16	12,092.00	56.85	58.21	-179.95	-2,681.62	-368.35	324.30	258.27	66.03	4.912 Alert	
14,300.00	11,768.00	14,777.16	12,092.00	57.34	58.70	-179.95	-2,731.62	-368.21	324.30	257.77	66.53	4.874 Alert	
14,350.00	11,768.00	14,827.16	12,092.00	57.84	59.20	-179.95	-2,781.62	-368.08	324.30	257.26	67.04	4.837 Alert	
14,400.00	11,768.00	14,877.16	12,092.00	58.35	59.70	-179.95	-2,831.62	-367.95	324.30	256.74	67.56	4.800 Alert	
14,450.00	11,768.00	14,927.16	12,092.00	58.86	60.21	-179.95	-2,881.62	-367.81	324.30	256.22	68.08	4.763 Alert	
14,500.00	11,768.00	14,977.16	12,092.00	59.38	60.72	-179.95	-2,931.61	-367.68	324.30	255.70	68.61	4.727 Alert	
14,550.00	11,768.00	15,027.16	12,092.00	59.90	61.24	-179.95	-2,981.61	-367.55	324.30	255.16	69.14	4.691 Alert	
14,600.00	11,768.00	15,077.16	12,092.00	60.42	61.76	-179.95	-3,031.61	-367.41	324.30	254.63	69.67	4.655 Alert	
14,650.00	11,768.00	15,127.16	12,092.00	60.95	62.28	-179.95	-3,081.61	-367.28	324.30	254.09	70.21	4.619 Alert	
14,700.00	11,768.00	15,177.16	12,092.00	61.48	62.81	-179.95	-3,131.61	-367.15	324.30	253.54	70.76	4.583 Alert	
14,750.00	11,768.00	15,227.16	12,092.00	62.02	63.34	-179.95	-3,181.61	-367.01	324.30	252.99	71.31	4.548 Alert	
14,800.00	11,768.00	15,277.16	12,092.00	62.56	63.88	-179.95	-3,231.61	-366.88	324.30	252.44	71.86	4.513 Alert	
14,850.00	11,768.00	15,327.16	12,092.00	63.11	64.42	-179.95	-3,281.61	-366.74	324.30	251.88	72.42	4.478 Alert	
14,900.00	11,768.00	15,377.16	12,092.00	63.65	64.96	-179.95	-3,331.61	-366.61	324.30	251.32	72.98	4.444 Alert	
14,950.00	11,768.00	15,427.16	12,092.00	64.21	65.51	-179.95	-3,381.61	-366.48	324.30	250.75	73.55	4.409 Alert	
15,000.00	11,768.00	15,477.16	12,092.00	64.76	66.06	-179.95	-3,431.61	-366.34	324.30	250.18	74.12	4.375 Alert	
15,050.00	11,768.00	15,527.16	12,092.00	65.32	66.62	-179.95	-3,481.61	-366.21	324.30	249.61	74.69	4.342 Alert	
15,100.00	11,768.00	15,577.16	12,092.00	65.88	67.17	-179.95	-3,531.61	-366.08	324.30	249.03	75.27	4.308 Alert	
15,150.00	11,768.00	15,627.16	12,092.00	66.45	67.74	-179.95	-3,581.61	-365.94	324.30	248.45	75.85	4.275 Alert	
15,200.00	11,768.00	15,677.16	12,092.00	67.01	68.30	-179.96	-3,631.61	-365.81	324.30	247.86	76.44	4.243 Alert	
15,250.00	11,768.00	15,727.16	12,092.00	67.58	68.87	-179.96	-3,681.61	-365.68	324.30	247.27	77.03	4.210 Alert	
15,300.00	11,768.00	15,777.16	12,092.00	68.16	69.44	-179.96	-3,731.61	-365.54	324.30	246.68	77.62	4.178 Alert	
15,350.00	11,768.00	15,827.16	12,092.00	68.73	70.01	-179.96	-3,781.61	-365.41	324.30	246.08	78.22	4.146 Alert	
15,400.00	11,768.00	15,877.16	12,092.00	69.31	70.58	-179.96	-3,831.61	-365.27	324.30	245.49	78.82	4.115 Alert	
15,450.00	11,768.00	15,927.16	12,092.00	69.90	71.16	-179.96	-3,881.61	-365.14	324.30	244.88	79.42	4.083 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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	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	11,768.00	15,977.16	12,092.00	70.48	71.74	-179.96	-179.96	-3,931.61	-365.01	324.30	244.28	80.02	4.053 Alert	
15,550.00	11,768.00	16,027.16	12,092.00	71.07	72.33	-179.96	-179.96	-3,981.61	-364.87	324.30	243.67	80.63	4.022 Alert	
15,600.00	11,768.00	16,077.16	12,092.00	71.66	72.91	-179.96	-179.96	-4,031.61	-364.74	324.30	243.06	81.24	3.992 Alert	
15,650.00	11,768.00	16,127.16	12,092.00	72.25	73.50	-179.96	-179.96	-4,081.61	-364.61	324.30	242.44	81.86	3.962 Alert	
15,700.00	11,768.00	16,177.16	12,092.00	72.85	74.09	-179.96	-179.96	-4,131.61	-364.47	324.30	241.83	82.48	3.932 Alert	
15,750.00	11,768.00	16,227.16	12,092.00	73.45	74.69	-179.96	-179.96	-4,181.61	-364.34	324.30	241.20	83.10	3.903 Alert	
15,800.00	11,768.00	16,277.16	12,092.00	74.04	75.28	-179.96	-179.96	-4,231.61	-364.21	324.30	240.58	83.72	3.874 Alert	
15,850.00	11,768.00	16,327.16	12,092.00	74.65	75.88	-179.96	-179.96	-4,281.61	-364.07	324.30	239.96	84.35	3.845 Alert	
15,900.00	11,768.00	16,377.16	12,092.00	75.25	76.48	-179.96	-179.96	-4,331.61	-363.94	324.30	239.33	84.97	3.816 Alert	
15,950.00	11,768.00	16,427.16	12,092.00	75.86	77.08	-179.96	-179.96	-4,381.61	-363.80	324.30	238.70	85.61	3.788 Alert	
16,000.00	11,768.00	16,477.16	12,092.00	76.47	77.69	-179.96	-179.96	-4,431.61	-363.67	324.30	238.06	86.24	3.761 Alert	
16,050.00	11,768.00	16,527.16	12,092.00	77.08	78.30	-179.96	-179.96	-4,481.61	-363.54	324.30	237.43	86.88	3.733 Alert	
16,100.00	11,768.00	16,577.16	12,092.00	77.69	78.90	-179.96	-179.96	-4,531.61	-363.40	324.30	236.79	87.51	3.706 Alert	
16,150.00	11,768.00	16,627.16	12,092.00	78.30	79.52	-179.96	-179.96	-4,581.61	-363.27	324.30	236.15	88.15	3.679 Alert	
16,200.00	11,768.00	16,677.16	12,092.00	78.92	80.13	-179.96	-179.96	-4,631.61	-363.14	324.30	235.51	88.80	3.652 Alert	
16,250.00	11,768.00	16,727.16	12,092.00	79.54	80.74	-179.96	-179.96	-4,681.61	-363.00	324.30	234.86	89.44	3.626 Alert	
16,300.00	11,768.00	16,777.16	12,092.00	80.16	81.36	-179.96	-179.96	-4,731.61	-362.87	324.30	234.21	90.09	3.600 Alert	
16,350.00	11,768.00	16,827.16	12,092.00	80.78	81.98	-179.96	-179.96	-4,781.61	-362.74	324.30	233.56	90.74	3.574 Alert	
16,400.00	11,768.00	16,877.16	12,092.00	81.40	82.60	-179.96	-179.96	-4,831.61	-362.60	324.30	232.91	91.39	3.548 Alert	
16,450.00	11,768.00	16,927.16	12,092.00	82.03	83.22	-179.96	-179.96	-4,881.61	-362.47	324.30	232.26	92.05	3.523 Alert	
16,500.00	11,768.00	16,977.16	12,092.00	82.66	83.84	-179.96	-179.96	-4,931.61	-362.33	324.30	231.60	92.70	3.498 Alert	
16,550.00	11,768.00	17,027.16	12,092.00	83.29	84.47	-179.96	-179.96	-4,981.61	-362.20	324.30	230.94	93.36	3.474 Alert	
16,600.00	11,768.00	17,077.16	12,092.00	83.92	85.09	-179.96	-179.96	-5,031.61	-362.07	324.30	230.28	94.02	3.449 Alert	
16,650.00	11,768.00	17,127.16	12,092.00	84.55	85.72	-179.96	-179.96	-5,081.61	-361.93	324.30	229.62	94.68	3.425 Alert	
16,700.00	11,768.00	17,177.16	12,092.00	85.18	86.35	-179.97	-179.97	-5,131.61	-361.80	324.30	228.96	95.35	3.401 Alert	
16,750.00	11,768.00	17,227.16	12,092.00	85.82	86.98	-179.97	-179.97	-5,181.61	-361.67	324.30	228.29	96.01	3.378 Alert	
16,800.00	11,768.00	17,277.16	12,092.00	86.45	87.62	-179.97	-179.97	-5,231.61	-361.53	324.30	227.62	96.68	3.354 Alert	
16,850.00	11,768.00	17,327.16	12,092.00	87.09	88.25	-179.97	-179.97	-5,281.61	-361.40	324.30	226.95	97.35	3.331 Alert	
16,900.00	11,768.00	17,377.16	12,092.00	87.73	88.89	-179.97	-179.97	-5,331.61	-361.27	324.30	226.28	98.02	3.309 Alert	
16,950.00	11,768.00	17,427.16	12,092.00	88.37	89.52	-179.97	-179.97	-5,381.61	-361.13	324.30	225.61	98.69	3.286 Alert	
17,000.00	11,768.00	17,477.16	12,092.00	89.01	90.16	-179.97	-179.97	-5,431.61	-361.00	324.30	224.94	99.36	3.264 Alert	
17,050.00	11,768.00	17,527.16	12,092.00	89.65	90.80	-179.97	-179.97	-5,481.61	-360.87	324.30	224.26	100.04	3.242 Alert	
17,100.00	11,768.00	17,577.16	12,092.00	90.30	91.44	-179.97	-179.97	-5,531.61	-360.73	324.30	223.58	100.72	3.220 Alert	
17,150.00	11,768.00	17,627.16	12,092.00	90.94	92.09	-179.97	-179.97	-5,581.61	-360.60	324.30	222.91	101.40	3.198 Alert	
17,200.00	11,768.00	17,677.16	12,092.00	91.59	92.73	-179.97	-179.97	-5,631.61	-360.46	324.30	222.23	102.08	3.177 Alert	
17,250.00	11,768.00	17,727.16	12,092.00	92.24	93.38	-179.97	-179.97	-5,681.61	-360.33	324.30	221.54	102.76	3.156 Alert	
17,300.00	11,768.00	17,777.16	12,092.00	92.89	94.02	-179.97	-179.97	-5,731.61	-360.20	324.30	220.86	103.44	3.135 Alert	
17,350.00	11,768.00	17,827.16	12,092.00	93.54	94.67	-179.97	-179.97	-5,781.61	-360.06	324.30	220.18	104.13	3.114 Alert	
17,400.00	11,768.00	17,877.16	12,092.00	94.19	95.32	-179.97	-179.97	-5,831.61	-359.93	324.30	219.49	104.81	3.094 Alert	
17,450.00	11,768.00	17,927.16	12,092.00	94.84	95.97	-179.97	-179.97	-5,881.61	-359.80	324.30	218.80	105.50	3.074 Alert	
17,500.00	11,768.00	17,977.16	12,092.00	95.50	96.62	-179.97	-179.97	-5,931.61	-359.66	324.30	218.11	106.19	3.054 Alert	
17,550.00	11,768.00	18,027.16	12,092.00	96.15	97.27	-179.97	-179.97	-5,981.61	-359.53	324.30	217.42	106.88	3.034 Alert	
17,600.00	11,768.00	18,077.16	12,092.00	96.81	97.92	-179.97	-179.97	-6,031.61	-359.40	324.30	216.73	107.57	3.015 Alert	
17,650.00	11,768.00	18,127.16	12,092.00	97.46	98.58	-179.97	-179.97	-6,081.61	-359.26	324.30	216.04	108.26	2.995 Alert	
17,700.00	11,768.00	18,177.16	12,092.00	98.12	99.23	-179.97	-179.97	-6,131.61	-359.13	324.30	215.34	108.96	2.976 Alert	
17,750.00	11,768.00	18,227.16	12,092.00	98.78	99.89	-179.97	-179.97	-6,181.61	-358.99	324.30	214.65	109.65	2.958 Alert	
17,800.00	11,768.00	18,277.16	12,092.00	99.44	100.54	-179.97	-179.97	-6,231.61	-358.86	324.30	213.95	110.35	2.939 Alert	
17,850.00	11,768.00	18,327.16	12,092.00	100.10	101.20	-179.97	-179.97	-6,281.61	-358.73	324.30	213.26	111.05	2.920 Alert	
17,900.00	11,768.00	18,377.16	12,092.00	100.76	101.86	-179.97	-179.97	-6,331.61	-358.59	324.30	212.56	111.75	2.902 Alert	
17,950.00	11,768.00	18,427.16	12,092.00	101.42	102.52	-179.97	-179.97	-6,381.61	-358.46	324.30	211.86	112.45	2.884 Alert	
18,000.00	11,768.00	18,477.16	12,092.00	102.09	103.18	-179.97	-179.97	-6,431.61	-358.33	324.30	211.16	113.15	2.866 Alert	
18,050.00	11,768.00	18,527.16	12,092.00	102.75	103.84	-179.97	-179.97	-6,481.61	-358.19	324.30	210.45	113.85	2.849 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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			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)			
18,100.00	11,768.00	18,577.16	12,092.00	103.41	104.50	-179.97	-6,531.60	-358.06	324.30	209.75	114.55	2.831	Alert	
18,150.00	11,768.00	18,627.16	12,092.00	104.08	105.17	-179.97	-6,581.60	-357.93	324.30	209.05	115.26	2.814	Alert	
18,200.00	11,768.00	18,677.16	12,092.00	104.75	105.83	-179.98	-6,631.60	-357.79	324.30	208.34	115.96	2.797	Alert	
18,250.00	11,768.00	18,727.16	12,092.00	105.41	106.49	-179.98	-6,681.60	-357.66	324.30	207.63	116.67	2.780	Alert	
18,300.00	11,768.00	18,777.16	12,092.00	106.08	107.16	-179.98	-6,731.60	-357.52	324.30	206.93	117.37	2.763	Alert	
18,350.00	11,768.00	18,827.16	12,092.00	106.75	107.83	-179.98	-6,781.60	-357.39	324.30	206.22	118.08	2.746	Alert	
18,400.00	11,768.00	18,877.16	12,092.00	107.42	108.49	-179.98	-6,831.60	-357.26	324.30	205.51	118.79	2.730	Alert	
18,450.00	11,768.00	18,927.16	12,092.00	108.09	109.16	-179.98	-6,881.60	-357.12	324.30	204.80	119.50	2.714	Alert	
18,500.00	11,768.00	18,977.16	12,092.00	108.76	109.83	-179.98	-6,931.60	-356.99	324.30	204.09	120.21	2.698	Alert	
18,550.00	11,768.00	19,027.16	12,092.00	109.43	110.50	-179.98	-6,981.60	-356.86	324.30	203.38	120.93	2.682	Alert	
18,600.00	11,768.00	19,077.16	12,092.00	110.11	111.17	-179.98	-7,031.60	-356.72	324.30	202.66	121.64	2.666	Alert	
18,650.00	11,768.00	19,127.16	12,092.00	110.78	111.84	-179.98	-7,081.60	-356.59	324.30	201.95	122.35	2.651	Alert	
18,700.00	11,768.00	19,177.16	12,092.00	111.45	112.51	-179.98	-7,131.60	-356.46	324.30	201.24	123.07	2.635	Alert	
18,750.00	11,768.00	19,227.16	12,092.00	112.13	113.18	-179.98	-7,181.60	-356.32	324.30	200.52	123.78	2.620	Alert	
18,800.00	11,768.00	19,277.16	12,092.00	112.80	113.86	-179.98	-7,231.60	-356.19	324.30	199.80	124.50	2.605	Alert	
18,850.00	11,768.00	19,327.16	12,092.00	113.48	114.53	-179.98	-7,281.60	-356.05	324.30	199.09	125.22	2.590	Alert	
18,900.00	11,768.00	19,377.16	12,092.00	114.16	115.21	-179.98	-7,331.60	-355.92	324.30	198.37	125.93	2.575	Alert	
18,950.00	11,768.00	19,427.16	12,092.00	114.83	115.88	-179.98	-7,381.60	-355.79	324.30	197.65	126.65	2.561	Alert	
19,000.00	11,768.00	19,477.16	12,092.00	115.51	116.56	-179.98	-7,431.60	-355.65	324.30	196.93	127.37	2.546	Alert	
19,050.00	11,768.00	19,527.16	12,092.00	116.19	117.23	-179.98	-7,481.60	-355.52	324.30	196.21	128.09	2.532	Alert	
19,100.00	11,768.00	19,577.16	12,092.00	116.87	117.91	-179.98	-7,531.60	-355.39	324.30	195.49	128.81	2.518	Alert	
19,150.00	11,768.00	19,627.16	12,092.00	117.55	118.59	-179.98	-7,581.60	-355.25	324.30	194.77	129.54	2.504	Alert	
19,200.00	11,768.00	19,677.16	12,092.00	118.23	119.26	-179.98	-7,631.60	-355.12	324.30	194.04	130.26	2.490	Minor Risk	
19,250.00	11,768.00	19,727.16	12,092.00	118.91	119.94	-179.98	-7,681.60	-354.99	324.30	193.32	130.98	2.476	Minor Risk	
19,300.00	11,768.00	19,777.16	12,092.00	119.59	120.62	-179.98	-7,731.60	-354.85	324.30	192.60	131.70	2.462	Minor Risk	
19,350.00	11,768.00	19,827.16	12,092.00	120.27	121.30	-179.98	-7,781.60	-354.72	324.30	191.87	132.43	2.449	Minor Risk	
19,400.00	11,768.00	19,877.16	12,092.00	120.95	121.98	-179.98	-7,831.60	-354.58	324.30	191.15	133.15	2.436	Minor Risk	
19,450.00	11,768.00	19,927.16	12,092.00	121.64	122.66	-179.98	-7,881.60	-354.45	324.30	190.42	133.88	2.422	Minor Risk	
19,500.00	11,768.00	19,977.16	12,092.00	122.32	123.34	-179.98	-7,931.60	-354.32	324.30	189.69	134.61	2.409	Minor Risk	
19,550.00	11,768.00	20,027.16	12,092.00	123.00	124.02	-179.98	-7,981.60	-354.18	324.30	188.97	135.33	2.396	Minor Risk	
19,600.00	11,768.00	20,077.16	12,092.00	123.69	124.71	-179.98	-8,031.60	-354.05	324.30	188.24	136.06	2.383	Minor Risk	
19,650.00	11,768.00	20,127.16	12,092.00	124.37	125.39	-179.98	-8,081.60	-353.92	324.30	187.51	136.79	2.371	Minor Risk	
19,700.00	11,768.00	20,177.16	12,092.00	125.06	126.07	-179.99	-8,131.60	-353.78	324.30	186.78	137.52	2.358	Minor Risk	
19,750.00	11,768.00	20,227.16	12,092.00	125.74	126.76	-179.99	-8,181.60	-353.65	324.30	186.05	138.25	2.346	Minor Risk	
19,800.00	11,768.00	20,277.16	12,092.00	126.43	127.44	-179.99	-8,231.60	-353.52	324.30	185.32	138.98	2.333	Minor Risk	
19,850.00	11,768.00	20,327.16	12,092.00	127.12	128.12	-179.99	-8,281.60	-353.38	324.30	184.59	139.71	2.321	Minor Risk	
19,900.00	11,768.00	20,377.16	12,092.00	127.80	128.81	-179.99	-8,331.60	-353.25	324.30	183.86	140.44	2.309	Minor Risk	
19,950.00	11,768.00	20,427.16	12,092.00	128.49	129.49	-179.99	-8,381.60	-353.11	324.30	183.13	141.18	2.297	Minor Risk	
20,000.00	11,768.00	20,477.16	12,092.00	129.18	130.18	-179.99	-8,431.60	-352.98	324.30	182.39	141.91	2.285	Minor Risk	
20,050.00	11,768.00	20,527.16	12,092.00	129.87	130.87	-179.99	-8,481.60	-352.85	324.30	181.66	142.64	2.274	Minor Risk	
20,100.00	11,768.00	20,577.16	12,092.00	130.55	131.55	-179.99	-8,531.59	-352.71	324.30	180.93	143.37	2.262	Minor Risk	
20,150.00	11,768.00	20,627.16	12,092.00	131.24	132.24	-179.99	-8,581.59	-352.58	324.30	180.19	144.11	2.250	Minor Risk	
20,200.00	11,768.00	20,677.16	12,092.00	131.93	132.93	-179.99	-8,631.59	-352.45	324.30	179.46	144.84	2.239	Minor Risk	
20,250.00	11,768.00	20,727.16	12,092.00	132.62	133.62	-179.99	-8,681.59	-352.31	324.30	178.72	145.58	2.228	Minor Risk	
20,300.00	11,768.00	20,777.16	12,092.00	133.31	134.31	-179.99	-8,731.59	-352.18	324.30	177.99	146.32	2.216	Minor Risk	
20,350.00	11,768.00	20,827.16	12,092.00	134.00	134.99	-179.99	-8,781.59	-352.05	324.30	177.25	147.05	2.205	Minor Risk	
20,400.00	11,768.00	20,877.16	12,092.00	134.70	135.68	-179.99	-8,831.59	-351.91	324.30	176.51	147.79	2.194	Minor Risk	
20,450.00	11,768.00	20,927.16	12,092.00	135.39	136.37	-179.99	-8,881.59	-351.78	324.30	175.78	148.53	2.183	Minor Risk	
20,500.00	11,768.00	20,977.16	12,092.00	136.08	137.06	-179.99	-8,931.59	-351.64	324.30	175.04	149.26	2.173	Minor Risk	
20,550.00	11,768.00	21,027.16	12,092.00	136.77	137.75	-179.99	-8,981.59	-351.51	324.30	174.30	150.00	2.162	Minor Risk	
20,600.00	11,768.00	21,077.16	12,092.00	137.46	138.45	-179.99	-9,031.59	-351.38	324.30	173.56	150.74	2.151	Minor Risk	
20,650.00	11,768.00	21,127.16	12,092.00	138.16	139.14	-179.99	-9,081.59	-351.24	324.30	172.82	151.48	2.141	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 624H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3361.80ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3361.80ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 2	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			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)				
20,700.00	11,768.00	21,177.16	12,092.00	138.85	139.83	-179.99	-9,131.59	-351.11	324.30	172.08	152.22	2.130	Minor Risk	
20,750.00	11,768.00	21,227.16	12,092.00	139.54	140.52	-179.99	-9,181.59	-350.98	324.30	171.34	152.96	2.120	Minor Risk	
20,800.00	11,768.00	21,277.16	12,092.00	140.24	141.21	-179.99	-9,231.59	-350.84	324.30	170.60	153.70	2.110	Minor Risk	
20,850.00	11,768.00	21,327.16	12,092.00	140.93	141.91	-179.99	-9,281.59	-350.71	324.30	169.86	154.44	2.100	Minor Risk	
20,900.00	11,768.00	21,377.16	12,092.00	141.63	142.60	-179.99	-9,331.59	-350.58	324.30	169.12	155.18	2.090	Minor Risk	
20,950.00	11,768.00	21,427.16	12,092.00	142.32	143.29	-179.99	-9,381.59	-350.44	324.30	168.38	155.93	2.080	Minor Risk	
21,000.00	11,768.00	21,477.16	12,092.00	143.02	143.99	-179.99	-9,431.59	-350.31	324.30	167.63	156.67	2.070	Minor Risk	
21,050.00	11,768.00	21,527.16	12,092.00	143.71	144.68	-179.99	-9,481.59	-350.17	324.30	166.89	157.41	2.060	Minor Risk	
21,100.00	11,768.00	21,577.16	12,092.00	144.41	145.37	-179.99	-9,531.59	-350.04	324.30	166.15	158.15	2.051	Minor Risk	
21,150.00	11,768.00	21,627.16	12,092.00	145.10	146.07	-179.99	-9,581.59	-349.91	324.30	165.41	158.90	2.041	Minor Risk	
21,200.00	11,768.00	21,677.16	12,092.00	145.80	146.76	-180.00	-9,631.59	-349.77	324.30	164.66	159.64	2.031	Minor Risk	
21,250.00	11,768.00	21,727.16	12,092.00	146.50	147.46	-180.00	-9,681.59	-349.64	324.30	163.92	160.39	2.022	Minor Risk	
21,300.00	11,768.00	21,777.16	12,092.00	147.19	148.15	-180.00	-9,731.59	-349.51	324.30	163.17	161.13	2.013	Minor Risk	
21,350.00	11,768.00	21,827.16	12,092.00	147.89	148.85	-180.00	-9,781.59	-349.37	324.30	162.43	161.87	2.003	Minor Risk	
21,400.00	11,768.00	21,877.16	12,092.00	148.59	149.55	-180.00	-9,831.59	-349.24	324.30	161.68	162.62	1.994	Minor Risk	
21,450.00	11,768.00	21,927.16	12,092.00	149.29	150.24	-180.00	-9,881.59	-349.11	324.30	160.94	163.37	1.985	Minor Risk	
21,500.00	11,768.00	21,977.16	12,092.00	149.99	150.94	-180.00	-9,931.59	-348.97	324.30	160.19	164.11	1.976	Minor Risk	
21,550.00	11,768.00	22,027.16	12,092.00	150.68	151.64	-180.00	-9,981.59	-348.84	324.30	159.44	164.86	1.967	Minor Risk	
21,600.00	11,768.00	22,077.16	12,092.00	151.38	152.33	-180.00	-10,031.59	-348.71	324.30	158.70	165.61	1.958	Minor Risk	
21,650.00	11,768.00	22,127.16	12,092.00	152.08	153.03	-180.00	-10,081.59	-348.57	324.30	157.95	166.35	1.949	Minor Risk	
21,700.00	11,768.00	22,177.16	12,092.00	152.78	153.73	-180.00	-10,131.59	-348.44	324.30	157.20	167.10	1.941	Minor Risk	
21,750.00	11,768.00	22,227.16	12,092.00	153.48	154.43	-180.00	-10,181.59	-348.30	324.30	156.45	167.85	1.932	Minor Risk	
21,800.00	11,768.00	22,277.16	12,092.00	154.18	155.13	-180.00	-10,231.59	-348.17	324.30	155.71	168.60	1.924	Minor Risk	
21,850.00	11,768.00	22,327.16	12,092.00	154.88	155.82	-180.00	-10,281.59	-348.04	324.30	154.96	169.35	1.915	Minor Risk	
21,900.00	11,768.00	22,377.16	12,092.00	155.58	156.52	-180.00	-10,331.59	-347.90	324.30	154.21	170.09	1.907	Minor Risk	
21,904.71	11,768.00	22,381.87	12,092.00	155.65	156.59	180.00	-10,336.30	-347.89	324.30	154.14	170.16	1.906	Minor Risk	

Anticollision Report

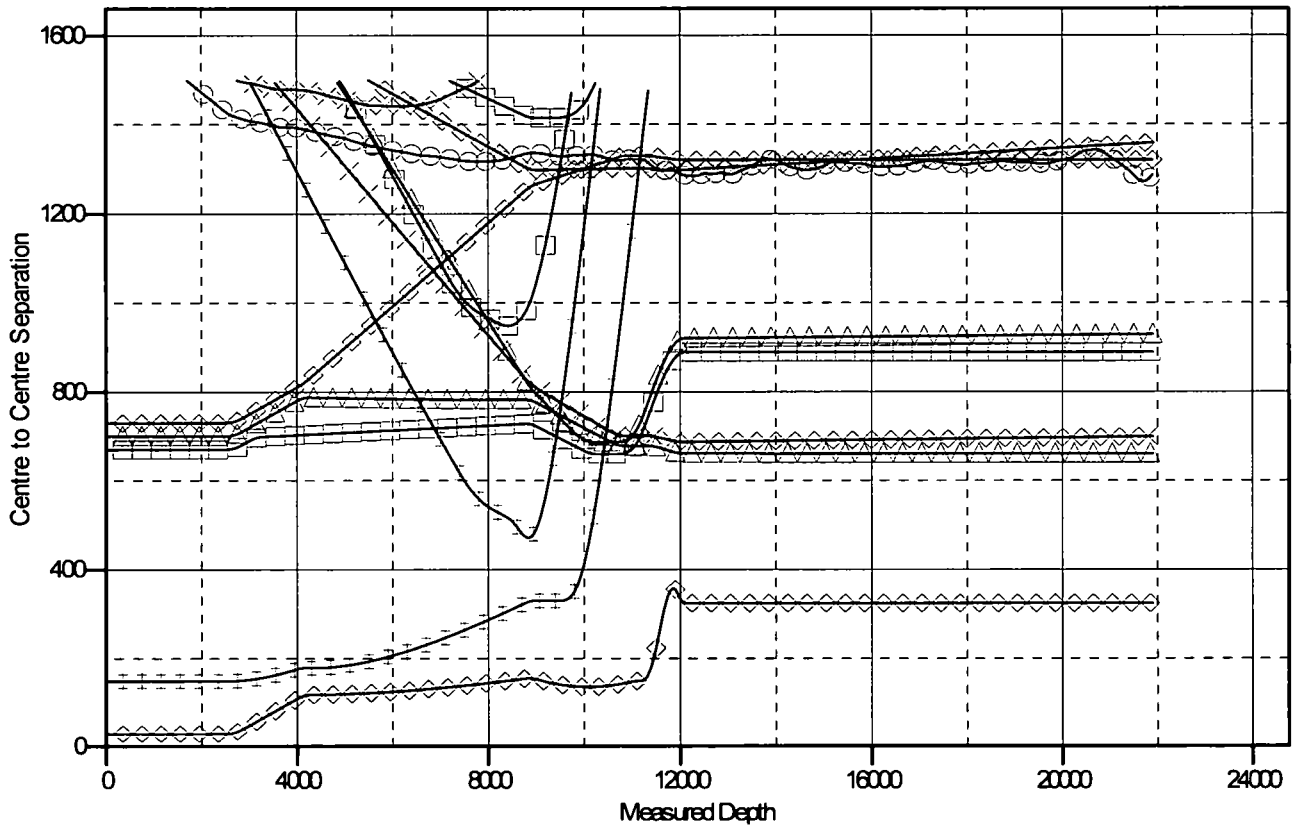
Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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 @ 3361.80ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.333334

Coordinates are relative to: Lusitano 27-34 Fed Com 624H
 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 734H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27_34 Fed Com 335H, Wellbore #1, Permit Plan 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 626H, Wellbore #1, Wellbore #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 333H, Wellbore #1, Permit Plan 1 V0 - Lusitano 27_22 Fed Com 232H, Wellbore #1, Permit Plan 1 V0
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Anticollision Report

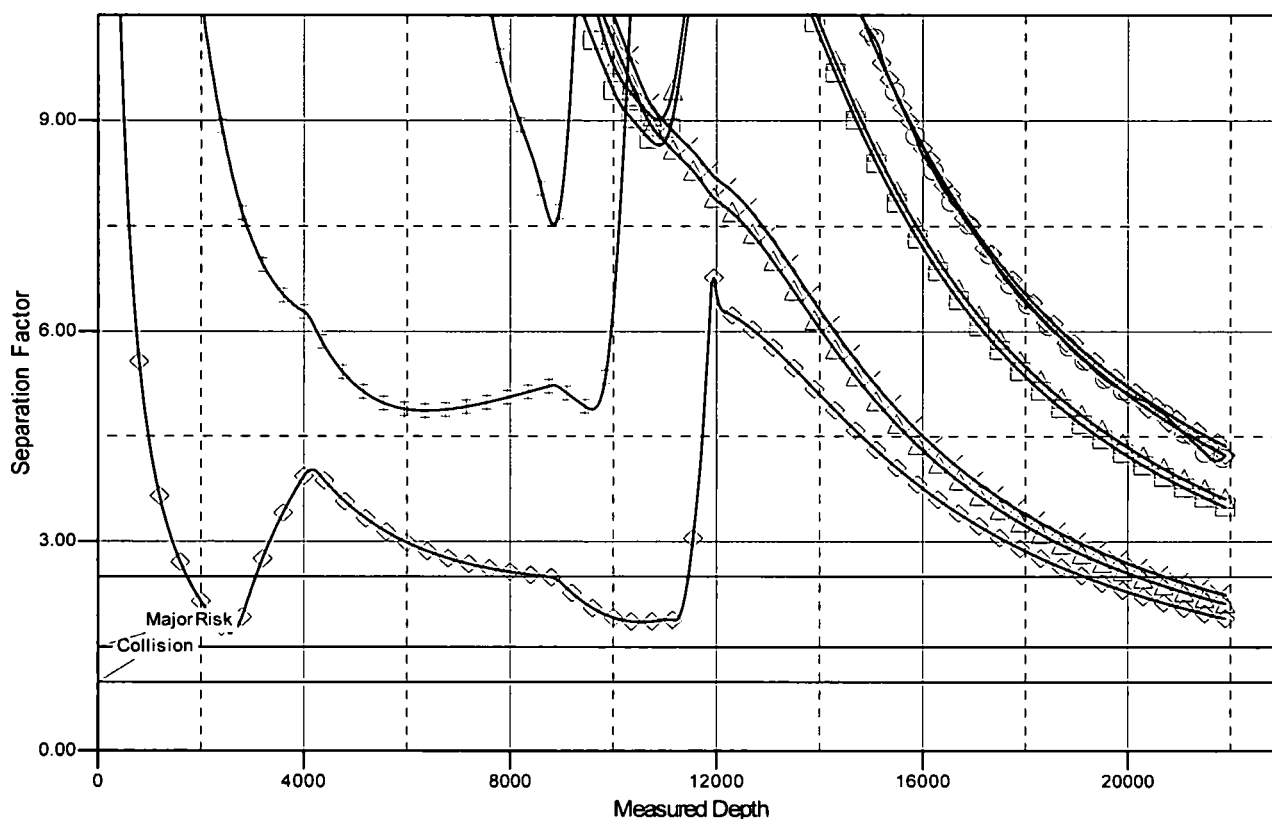
Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27-34 Fed Com 624H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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 @ 3361.80ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.333334

Coordinates are relative to: Lusitano 27-34 Fed Com 624H
 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 736H, Wellbore #1, Permit Plan 1 V0	Lusitano 27_34 Fed Com 232H, Wellbore #1, Permit Plan 1 V0
Lusitano 27_34 Fed Com 622H, Wellbore #1, Permit Plan 1 V0	Lusitano 27_34 Fed Com 713H, Wellbore #1, Permit Plan 1 V0	Lusitano 27_34 Fed Com 333H, 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 734H, Wellbore #1, Permit Plan 1 V0	Lusitano 27_34 Fed Com 536H, Wellbore #1, Wellbore #1 V0	
Lusitano 27_34 Fed Com 333H, Wellbore #1, Permit Plan 1 V0	Lusitano 27_34 Fed Com 623H, Wellbore #1, Permit Plan 1 V0	

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DISTRICT II-ARTESIA O.C.D.

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Lusitano 27-34 Fed Com 624H

Wellbore #1

Plan: Permit Plan 2

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 624H
Wellbore: Wellbore #1
Design: Permit Plan 2

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 624H
TVD Reference: RKB @ 3361.80ft
MD Reference: RKB @ 3361.80ft
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 624H			
Well Position	+N/-S	0.00 ft	Northing: 403,459.82 usft	Latitude: 32.107909
	+E/-W	0.00 ft	Easting: 717,744.29 usft	Longitude: -103.763593
Position Uncertainty		0.50 ft	Wellhead Elevation:	Ground Level: 3,336.80 ft

Wellbore	Wellbore #1			
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/23/2018	6.91	59.91	47,728.01616392

Design	Permit Plan 2			
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Audit Notes:				
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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	181.93

Plan Survey Tool Program	Date	8/24/2018		
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Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	21,904.71	Permit Plan 2 (Wellbore #1)	MWD+HDGM OWSG MWD + HDGM

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,847.99	3.48	275.32	2,847.77	0.98	-10.52	1.00	1.00	0.00	275.32	
8,779.30	3.48	275.32	8,768.15	34.35	-368.99	0.00	0.00	0.00	0.00	
9,011.29	0.00	0.00	9,000.00	35.00	-376.00	1.50	-1.50	0.00	180.00	
11,206.33	0.00	0.00	11,195.04	35.00	-376.00	0.00	0.00	0.00	0.00	
12,106.33	90.00	179.84	11,768.00	-537.96	-374.45	10.00	10.00	0.00	179.84	PBHL - Lusitano 27-3
21,904.71	90.00	179.84	11,768.00	-10,336.30	-347.89	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 624H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3361.80ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3361.80ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
100.00	0.00	0.00	100.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
200.00	0.00	0.00	200.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
300.00	0.00	0.00	300.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
400.00	0.00	0.00	400.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
500.00	0.00	0.00	500.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
600.00	0.00	0.00	600.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
700.00	0.00	0.00	700.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
800.00	0.00	0.00	800.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
900.00	0.00	0.00	900.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,000.00	0.00	0.00	1,000.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,100.00	0.00	0.00	1,100.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,200.00	0.00	0.00	1,200.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,300.00	0.00	0.00	1,300.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,400.00	0.00	0.00	1,400.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,500.00	0.00	0.00	1,500.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,600.00	0.00	0.00	1,600.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,700.00	0.00	0.00	1,700.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,800.00	0.00	0.00	1,800.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
1,900.00	0.00	0.00	1,900.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
2,000.00	0.00	0.00	2,000.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
2,100.00	0.00	0.00	2,100.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
2,200.00	0.00	0.00	2,200.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
2,300.00	0.00	0.00	2,300.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
2,400.00	0.00	0.00	2,400.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
2,500.00	0.00	0.00	2,500.00	0.00	0.00	403,459.82	717,744.29	32.107909	-103.763593
2,600.00	1.00	275.32	2,599.99	0.08	-0.87	403,459.90	717,743.42	32.107909	-103.763596
2,700.00	2.00	275.32	2,699.96	0.32	-3.48	403,460.14	717,740.81	32.107910	-103.763605
2,800.00	3.00	275.32	2,799.86	0.73	-7.82	403,460.55	717,736.47	32.107911	-103.763619
2,847.99	3.48	275.32	2,847.77	0.98	-10.52	403,460.80	717,733.77	32.107912	-103.763627
2,900.00	3.48	275.32	2,899.69	1.27	-13.66	403,461.09	717,730.62	32.107913	-103.763637
3,000.00	3.48	275.32	2,999.51	1.83	-19.71	403,461.65	717,724.58	32.107914	-103.763657
3,100.00	3.48	275.32	3,099.32	2.40	-25.75	403,462.22	717,718.54	32.107916	-103.763676
3,200.00	3.48	275.32	3,199.14	2.96	-31.79	403,462.78	717,712.49	32.107917	-103.763696
3,300.00	3.48	275.32	3,298.95	3.52	-37.84	403,463.34	717,706.45	32.107919	-103.763715
3,400.00	3.48	275.32	3,398.77	4.08	-43.88	403,463.90	717,700.41	32.107921	-103.763735
3,500.00	3.48	275.32	3,498.58	4.65	-49.92	403,464.47	717,694.36	32.107922	-103.763755
3,600.00	3.48	275.32	3,598.40	5.21	-55.97	403,465.03	717,688.32	32.107924	-103.763774
3,700.00	3.48	275.32	3,698.22	5.77	-62.01	403,465.59	717,682.27	32.107926	-103.763794
3,800.00	3.48	275.32	3,798.03	6.33	-68.06	403,466.15	717,676.23	32.107927	-103.763813
3,900.00	3.48	275.32	3,897.85	6.90	-74.10	403,466.72	717,670.19	32.107929	-103.763833
4,000.00	3.48	275.32	3,997.66	7.46	-80.14	403,467.28	717,664.14	32.107931	-103.763852
4,100.00	3.48	275.32	4,097.48	8.02	-86.19	403,467.84	717,658.10	32.107932	-103.763872
4,200.00	3.48	275.32	4,197.29	8.59	-92.23	403,468.40	717,652.06	32.107934	-103.763891
4,300.00	3.48	275.32	4,297.11	9.15	-98.27	403,468.97	717,646.01	32.107935	-103.763911
4,400.00	3.48	275.32	4,396.92	9.71	-104.32	403,469.53	717,639.97	32.107937	-103.763930
4,500.00	3.48	275.32	4,496.74	10.27	-110.36	403,470.09	717,633.93	32.107939	-103.763950
4,600.00	3.48	275.32	4,596.56	10.84	-116.40	403,470.65	717,627.88	32.107940	-103.763969
4,700.00	3.48	275.32	4,696.37	11.40	-122.45	403,471.22	717,621.84	32.107942	-103.763989
4,800.00	3.48	275.32	4,796.19	11.96	-128.49	403,471.78	717,615.79	32.107944	-103.764008
4,900.00	3.48	275.32	4,896.00	12.52	-134.54	403,472.34	717,609.75	32.107945	-103.764028
5,000.00	3.48	275.32	4,995.82	13.09	-140.58	403,472.90	717,603.71	32.107947	-103.764047
5,100.00	3.48	275.32	5,095.63	13.65	-146.62	403,473.47	717,597.66	32.107948	-103.764067
5,200.00	3.48	275.32	5,195.45	14.21	-152.67	403,474.03	717,591.62	32.107950	-103.764086
5,300.00	3.48	275.32	5,295.27	14.77	-158.71	403,474.59	717,585.58	32.107952	-103.764106

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3361.80ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3361.80ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,400.00	3.48	275.32	5,395.08	15.34	-164.75	403,475.16	717,579.53	32.107953	-103.764125
5,500.00	3.48	275.32	5,494.90	15.90	-170.80	403,475.72	717,573.49	32.107955	-103.764145
5,600.00	3.48	275.32	5,594.71	16.46	-176.84	403,476.28	717,567.45	32.107957	-103.764164
5,700.00	3.48	275.32	5,694.53	17.02	-182.88	403,476.84	717,561.40	32.107958	-103.764184
5,800.00	3.48	275.32	5,794.34	17.59	-188.93	403,477.41	717,555.36	32.107960	-103.764203
5,900.00	3.48	275.32	5,894.16	18.15	-194.97	403,477.97	717,549.31	32.107962	-103.764223
6,000.00	3.48	275.32	5,993.97	18.71	-201.02	403,478.53	717,543.27	32.107963	-103.764242
6,100.00	3.48	275.32	6,093.79	19.27	-207.06	403,479.09	717,537.23	32.107965	-103.764262
6,200.00	3.48	275.32	6,193.61	19.84	-213.10	403,479.66	717,531.18	32.107966	-103.764281
6,300.00	3.48	275.32	6,293.42	20.40	-219.15	403,480.22	717,525.14	32.107968	-103.764301
6,400.00	3.48	275.32	6,393.24	20.96	-225.19	403,480.78	717,519.10	32.107970	-103.764320
6,500.00	3.48	275.32	6,493.05	21.52	-231.23	403,481.34	717,513.05	32.107971	-103.764340
6,600.00	3.48	275.32	6,592.87	22.09	-237.28	403,481.91	717,507.01	32.107973	-103.764359
6,700.00	3.48	275.32	6,692.68	22.65	-243.32	403,482.47	717,500.97	32.107975	-103.764379
6,800.00	3.48	275.32	6,792.50	23.21	-249.37	403,483.03	717,494.92	32.107976	-103.764398
6,900.00	3.48	275.32	6,892.32	23.77	-255.41	403,483.59	717,488.88	32.107978	-103.764418
7,000.00	3.48	275.32	6,992.13	24.34	-261.45	403,484.16	717,482.83	32.107980	-103.764437
7,100.00	3.48	275.32	7,091.95	24.90	-267.50	403,484.72	717,476.79	32.107981	-103.764457
7,200.00	3.48	275.32	7,191.76	25.46	-273.54	403,485.28	717,470.75	32.107983	-103.764476
7,300.00	3.48	275.32	7,291.58	26.03	-279.58	403,485.84	717,464.70	32.107984	-103.764496
7,400.00	3.48	275.32	7,391.39	26.59	-285.63	403,486.41	717,458.66	32.107986	-103.764515
7,500.00	3.48	275.32	7,491.21	27.15	-291.67	403,486.97	717,452.62	32.107988	-103.764535
7,600.00	3.48	275.32	7,591.02	27.71	-297.71	403,487.53	717,446.57	32.107989	-103.764554
7,700.00	3.48	275.32	7,690.84	28.28	-303.76	403,488.09	717,440.53	32.107991	-103.764574
7,800.00	3.48	275.32	7,790.66	28.84	-309.80	403,488.66	717,434.48	32.107993	-103.764593
7,900.00	3.48	275.32	7,890.47	29.40	-315.85	403,489.22	717,428.44	32.107994	-103.764613
8,000.00	3.48	275.32	7,990.29	29.96	-321.89	403,489.78	717,422.40	32.107996	-103.764632
8,100.00	3.48	275.32	8,090.10	30.53	-327.93	403,490.34	717,416.35	32.107998	-103.764652
8,200.00	3.48	275.32	8,189.92	31.09	-333.98	403,490.91	717,410.31	32.107999	-103.764671
8,300.00	3.48	275.32	8,289.73	31.65	-340.02	403,491.47	717,404.27	32.108001	-103.764691
8,400.00	3.48	275.32	8,389.55	32.21	-346.06	403,492.03	717,398.22	32.108002	-103.764710
8,500.00	3.48	275.32	8,489.37	32.78	-352.11	403,492.59	717,392.18	32.108004	-103.764730
8,600.00	3.48	275.32	8,589.18	33.34	-358.15	403,493.16	717,386.14	32.108006	-103.764749
8,700.00	3.48	275.32	8,689.00	33.90	-364.19	403,493.72	717,380.09	32.108007	-103.764769
8,779.30	3.48	275.32	8,768.15	34.35	-368.99	403,494.17	717,375.30	32.108009	-103.764784
8,800.00	3.17	275.32	8,788.82	34.46	-370.18	403,494.28	717,374.10	32.108009	-103.764788
8,900.00	1.67	275.32	8,888.72	34.85	-374.39	403,494.67	717,369.90	32.108010	-103.764802
9,000.00	0.17	275.32	8,988.71	35.00	-375.98	403,494.82	717,368.30	32.108011	-103.764807
9,011.29	0.00	0.00	9,000.00	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,100.00	0.00	0.00	9,088.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,200.00	0.00	0.00	9,188.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,300.00	0.00	0.00	9,288.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,400.00	0.00	0.00	9,388.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,500.00	0.00	0.00	9,488.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,600.00	0.00	0.00	9,588.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,700.00	0.00	0.00	9,688.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,800.00	0.00	0.00	9,788.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
9,900.00	0.00	0.00	9,888.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,000.00	0.00	0.00	9,988.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,100.00	0.00	0.00	10,088.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,200.00	0.00	0.00	10,188.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,300.00	0.00	0.00	10,288.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,400.00	0.00	0.00	10,388.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,500.00	0.00	0.00	10,488.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,600.00	0.00	0.00	10,588.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3361.80ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3361.80ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,700.00	0.00	0.00	10,688.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,800.00	0.00	0.00	10,788.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
10,900.00	0.00	0.00	10,888.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
11,000.00	0.00	0.00	10,988.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
11,100.00	0.00	0.00	11,088.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
11,200.00	0.00	0.00	11,188.71	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
11,206.33	0.00	0.00	11,195.04	35.00	-376.00	403,494.82	717,368.29	32.108011	-103.764807
KOP @ 11206' MD, 200' FNL, 2310' FEL									
11,300.00	9.37	179.84	11,288.29	27.36	-375.98	403,487.18	717,368.31	32.107990	-103.764807
11,400.00	19.37	179.84	11,385.04	2.58	-375.91	403,462.40	717,368.37	32.107921	-103.764807
11,500.00	29.37	179.84	11,476.02	-38.63	-375.80	403,421.19	717,368.49	32.107808	-103.764808
11,600.00	39.37	179.84	11,558.46	-95.00	-375.65	403,364.82	717,368.64	32.107653	-103.764808
11,700.00	49.37	179.84	11,629.85	-164.84	-375.46	403,294.98	717,368.83	32.107461	-103.764809
11,706.33	50.00	179.84	11,633.95	-169.67	-375.45	403,290.15	717,368.84	32.107448	-103.764809
FTP @ 11706' MD, 405' FNL, 2310' FEL									
11,800.00	59.37	179.84	11,688.04	-246.01	-375.24	403,213.81	717,369.05	32.107238	-103.764809
11,900.00	69.37	179.84	11,731.24	-336.06	-374.99	403,123.76	717,369.29	32.106991	-103.764810
12,000.00	79.37	179.84	11,758.16	-432.23	-374.73	403,027.59	717,369.55	32.106726	-103.764811
12,100.00	89.37	179.84	11,767.96	-531.62	-374.46	402,928.20	717,369.82	32.106453	-103.764812
12,106.33	90.00	179.84	11,768.00	-537.96	-374.45	402,921.86	717,369.84	32.106436	-103.764812
12,200.00	90.00	179.84	11,768.00	-631.62	-374.19	402,828.20	717,370.09	32.106178	-103.764813
12,300.00	90.00	179.84	11,768.00	-731.62	-373.92	402,728.20	717,370.36	32.105903	-103.764813
12,400.00	90.00	179.84	11,768.00	-831.62	-373.65	402,628.20	717,370.64	32.105628	-103.764814
12,500.00	90.00	179.84	11,768.00	-931.62	-373.38	402,528.20	717,370.91	32.105353	-103.764815
12,600.00	90.00	179.84	11,768.00	-1,031.62	-373.11	402,428.20	717,371.18	32.105079	-103.764816
12,700.00	90.00	179.84	11,768.00	-1,131.62	-372.84	402,328.20	717,371.45	32.104804	-103.764817
12,800.00	90.00	179.84	11,768.00	-1,231.62	-372.57	402,228.20	717,371.72	32.104529	-103.764818
12,900.00	90.00	179.84	11,768.00	-1,331.62	-372.30	402,128.20	717,371.99	32.104254	-103.764818
13,000.00	90.00	179.84	11,768.00	-1,431.62	-372.03	402,028.20	717,372.26	32.103979	-103.764819
13,100.00	90.00	179.84	11,768.00	-1,531.62	-371.75	401,928.20	717,372.53	32.103704	-103.764820
13,200.00	90.00	179.84	11,768.00	-1,631.62	-371.48	401,828.20	717,372.80	32.103429	-103.764821
13,300.00	90.00	179.84	11,768.00	-1,731.62	-371.21	401,728.20	717,373.07	32.103154	-103.764822
13,400.00	90.00	179.84	11,768.00	-1,831.62	-370.94	401,628.20	717,373.35	32.102879	-103.764823
13,500.00	90.00	179.84	11,768.00	-1,931.62	-370.67	401,528.20	717,373.62	32.102605	-103.764823
13,600.00	90.00	179.84	11,768.00	-2,031.62	-370.40	401,428.20	717,373.89	32.102330	-103.764824
13,700.00	90.00	179.84	11,768.00	-2,131.62	-370.13	401,328.20	717,374.16	32.102055	-103.764825
13,800.00	90.00	179.84	11,768.00	-2,231.62	-369.86	401,228.21	717,374.43	32.101780	-103.764826
13,900.00	90.00	179.84	11,768.00	-2,331.62	-369.59	401,128.21	717,374.70	32.101505	-103.764827
14,000.00	90.00	179.84	11,768.00	-2,431.62	-369.31	401,028.21	717,374.97	32.101230	-103.764827
14,100.00	90.00	179.84	11,768.00	-2,531.62	-369.04	400,928.21	717,375.24	32.100955	-103.764828
14,200.00	90.00	179.84	11,768.00	-2,631.62	-368.77	400,828.21	717,375.51	32.100680	-103.764829
14,300.00	90.00	179.84	11,768.00	-2,731.62	-368.50	400,728.21	717,375.79	32.100405	-103.764830
14,400.00	90.00	179.84	11,768.00	-2,831.62	-368.23	400,628.21	717,376.06	32.100131	-103.764831
14,500.00	90.00	179.84	11,768.00	-2,931.62	-367.96	400,528.21	717,376.33	32.099856	-103.764832
14,600.00	90.00	179.84	11,768.00	-3,031.62	-367.69	400,428.21	717,376.60	32.099581	-103.764832
14,700.00	90.00	179.84	11,768.00	-3,131.61	-367.42	400,328.21	717,376.87	32.099306	-103.764833
14,800.00	90.00	179.84	11,768.00	-3,231.61	-367.15	400,228.21	717,377.14	32.099031	-103.764834
14,900.00	90.00	179.84	11,768.00	-3,331.61	-366.88	400,128.21	717,377.41	32.098756	-103.764835
15,000.00	90.00	179.84	11,768.00	-3,431.61	-366.60	400,028.21	717,377.68	32.098481	-103.764836
15,100.00	90.00	179.84	11,768.00	-3,531.61	-366.33	399,928.21	717,377.95	32.098206	-103.764837
15,200.00	90.00	179.84	11,768.00	-3,631.61	-366.06	399,828.21	717,378.22	32.097932	-103.764837
15,300.00	90.00	179.84	11,768.00	-3,731.61	-365.79	399,728.21	717,378.50	32.097657	-103.764838
15,400.00	90.00	179.84	11,768.00	-3,831.61	-365.52	399,628.21	717,378.77	32.097382	-103.764839
15,500.00	90.00	179.84	11,768.00	-3,931.61	-365.25	399,528.21	717,379.04	32.097107	-103.764840

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3361.80ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3361.80ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
15,600.00	90.00	179.84	11,768.00	-4,031.61	-364.98	399,428.22	717,379.31	32.096832	-103.764841
15,700.00	90.00	179.84	11,768.00	-4,131.61	-364.71	399,328.22	717,379.58	32.096557	-103.764842
15,800.00	90.00	179.84	11,768.00	-4,231.61	-364.44	399,228.22	717,379.85	32.096282	-103.764842
15,900.00	90.00	179.84	11,768.00	-4,331.61	-364.17	399,128.22	717,380.12	32.096007	-103.764843
16,000.00	90.00	179.84	11,768.00	-4,431.61	-363.89	399,028.22	717,380.39	32.095732	-103.764844
16,100.00	90.00	179.84	11,768.00	-4,531.61	-363.62	398,928.22	717,380.66	32.095458	-103.764845
16,200.00	90.00	179.84	11,768.00	-4,631.61	-363.35	398,828.22	717,380.93	32.095183	-103.764846
16,300.00	90.00	179.84	11,768.00	-4,731.61	-363.08	398,728.22	717,381.21	32.094908	-103.764847
16,400.00	90.00	179.84	11,768.00	-4,831.61	-362.81	398,628.22	717,381.48	32.094633	-103.764847
16,500.00	90.00	179.84	11,768.00	-4,931.61	-362.54	398,528.22	717,381.75	32.094358	-103.764848
16,600.00	90.00	179.84	11,768.00	-5,031.61	-362.27	398,428.22	717,382.02	32.094083	-103.764849
16,700.00	90.00	179.84	11,768.00	-5,131.61	-362.00	398,328.22	717,382.29	32.093808	-103.764850
16,800.00	90.00	179.84	11,768.00	-5,231.61	-361.73	398,228.22	717,382.56	32.093533	-103.764851
16,900.00	90.00	179.84	11,768.00	-5,331.61	-361.45	398,128.22	717,382.83	32.093258	-103.764851
17,000.00	90.00	179.84	11,768.00	-5,431.61	-361.18	398,028.22	717,383.10	32.092984	-103.764852
17,100.00	90.00	179.84	11,768.00	-5,531.61	-360.91	397,928.22	717,383.37	32.092709	-103.764853
17,200.00	90.00	179.84	11,768.00	-5,631.61	-360.64	397,828.22	717,383.64	32.092434	-103.764854
17,300.00	90.00	179.84	11,768.00	-5,731.61	-360.37	397,728.23	717,383.92	32.092159	-103.764855
17,400.00	90.00	179.84	11,768.00	-5,831.61	-360.10	397,628.23	717,384.19	32.091884	-103.764856
17,500.00	90.00	179.84	11,768.00	-5,931.60	-359.83	397,528.23	717,384.46	32.091609	-103.764856
17,600.00	90.00	179.84	11,768.00	-6,031.60	-359.56	397,428.23	717,384.73	32.091334	-103.764857
17,700.00	90.00	179.84	11,768.00	-6,131.60	-359.29	397,328.23	717,385.00	32.091059	-103.764858
17,800.00	90.00	179.84	11,768.00	-6,231.60	-359.02	397,228.23	717,385.27	32.090785	-103.764859
17,900.00	90.00	179.84	11,768.00	-6,331.60	-358.74	397,128.23	717,385.54	32.090510	-103.764860
18,000.00	90.00	179.84	11,768.00	-6,431.60	-358.47	397,028.23	717,385.81	32.090235	-103.764861
18,100.00	90.00	179.84	11,768.00	-6,531.60	-358.20	396,928.23	717,386.08	32.089960	-103.764861
18,200.00	90.00	179.84	11,768.00	-6,631.60	-357.93	396,828.23	717,386.36	32.089685	-103.764862
18,300.00	90.00	179.84	11,768.00	-6,731.60	-357.66	396,728.23	717,386.63	32.089410	-103.764863
18,400.00	90.00	179.84	11,768.00	-6,831.60	-357.39	396,628.23	717,386.90	32.089135	-103.764864
18,500.00	90.00	179.84	11,768.00	-6,931.60	-357.12	396,528.23	717,387.17	32.088860	-103.764865
18,600.00	90.00	179.84	11,768.00	-7,031.60	-356.85	396,428.23	717,387.44	32.088585	-103.764866
18,700.00	90.00	179.84	11,768.00	-7,131.60	-356.58	396,328.23	717,387.71	32.088311	-103.764866
18,800.00	90.00	179.84	11,768.00	-7,231.60	-356.31	396,228.23	717,387.98	32.088036	-103.764867
18,900.00	90.00	179.84	11,768.00	-7,331.60	-356.03	396,128.23	717,388.25	32.087761	-103.764868
19,000.00	90.00	179.84	11,768.00	-7,431.60	-355.76	396,028.23	717,388.52	32.087486	-103.764869
19,100.00	90.00	179.84	11,768.00	-7,531.60	-355.49	395,928.24	717,388.79	32.087211	-103.764870
19,200.00	90.00	179.84	11,768.00	-7,631.60	-355.22	395,828.24	717,389.07	32.086936	-103.764871
19,300.00	90.00	179.84	11,768.00	-7,731.60	-354.95	395,728.24	717,389.34	32.086661	-103.764871
19,400.00	90.00	179.84	11,768.00	-7,831.60	-354.68	395,628.24	717,389.61	32.086386	-103.764872
19,500.00	90.00	179.84	11,768.00	-7,931.60	-354.41	395,528.24	717,389.88	32.086111	-103.764873
19,600.00	90.00	179.84	11,768.00	-8,031.60	-354.14	395,428.24	717,390.15	32.085837	-103.764874
19,700.00	90.00	179.84	11,768.00	-8,131.60	-353.87	395,328.24	717,390.42	32.085562	-103.764875
19,800.00	90.00	179.84	11,768.00	-8,231.60	-353.60	395,228.24	717,390.69	32.085287	-103.764875
19,900.00	90.00	179.84	11,768.00	-8,331.60	-353.32	395,128.24	717,390.96	32.085012	-103.764876
20,000.00	90.00	179.84	11,768.00	-8,431.60	-353.05	395,028.24	717,391.23	32.084737	-103.764877
20,100.00	90.00	179.84	11,768.00	-8,531.60	-352.78	394,928.24	717,391.50	32.084462	-103.764878
20,200.00	90.00	179.84	11,768.00	-8,631.59	-352.51	394,828.24	717,391.78	32.084187	-103.764879
20,300.00	90.00	179.84	11,768.00	-8,731.59	-352.24	394,728.24	717,392.05	32.083912	-103.764880
20,400.00	90.00	179.84	11,768.00	-8,831.59	-351.97	394,628.24	717,392.32	32.083637	-103.764880
20,500.00	90.00	179.84	11,768.00	-8,931.59	-351.70	394,528.24	717,392.59	32.083363	-103.764881
20,600.00	90.00	179.84	11,768.00	-9,031.59	-351.43	394,428.24	717,392.86	32.083088	-103.764882
20,700.00	90.00	179.84	11,768.00	-9,131.59	-351.16	394,328.24	717,393.13	32.082813	-103.764883
20,800.00	90.00	179.84	11,768.00	-9,231.59	-350.88	394,228.24	717,393.40	32.082538	-103.764884
20,900.00	90.00	179.84	11,768.00	-9,331.59	-350.61	394,128.25	717,393.67	32.082263	-103.764885
21,000.00	90.00	179.84	11,768.00	-9,431.59	-350.34	394,028.25	717,393.94	32.081988	-103.764885

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27-34 Fed Com 624H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3361.80ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3361.80ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27-34 Fed Com 624H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 2		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
21,100.00	90.00	179.84	11,768.00	-9,531.59	-350.07	393,928.25	717,394.22	32.081713	-103.764886
21,200.00	90.00	179.84	11,768.00	-9,631.59	-349.80	393,828.25	717,394.49	32.081438	-103.764887
21,300.00	90.00	179.84	11,768.00	-9,731.59	-349.53	393,728.25	717,394.76	32.081164	-103.764888
21,400.00	90.00	179.84	11,768.00	-9,831.59	-349.26	393,628.25	717,395.03	32.080889	-103.764889
21,500.00	90.00	179.84	11,768.00	-9,931.59	-348.99	393,528.25	717,395.30	32.080614	-103.764890
21,600.00	90.00	179.84	11,768.00	-10,031.59	-348.72	393,428.25	717,395.57	32.080339	-103.764890
21,700.00	90.00	179.84	11,768.00	-10,131.59	-348.45	393,328.25	717,395.84	32.080064	-103.764891
21,800.00	90.00	179.84	11,768.00	-10,231.59	-348.17	393,228.25	717,396.11	32.079789	-103.764892
21,824.71	90.00	179.84	11,768.00	-10,256.30	-348.11	393,203.54	717,396.18	32.079721	-103.764892
LTP @ 21825' MD, 100' FSL, 2310' FEL									
21,900.00	90.00	179.84	11,768.00	-10,331.59	-347.90	393,128.25	717,396.38	32.079514	-103.764893
21,904.71	90.00	179.84	11,768.00	-10,336.30	-347.89	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 E	0.00	0.00	0.00	-10,336.30	-347.89	393,123.54	717,396.40	32.079501	-103.764893
- plan misses target center by 10342.15ft 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)	
11,206.33	11,195.04	35.00	-376.00	KOP @ 11206' MD, 200' FNL, 2310' FEL
11,706.33	11,633.95	-169.67	-375.45	FTP @ 11706' MD, 405' FNL, 2310' FEL
21,824.71	11,768.00	-10,256.30	-348.11	LTP @ 21825' MD, 100' FSL, 2310' FEL
21,904.71	11,768.00	-10,336.30	-347.89	PBHL; 20' FSL, 2310' FEL

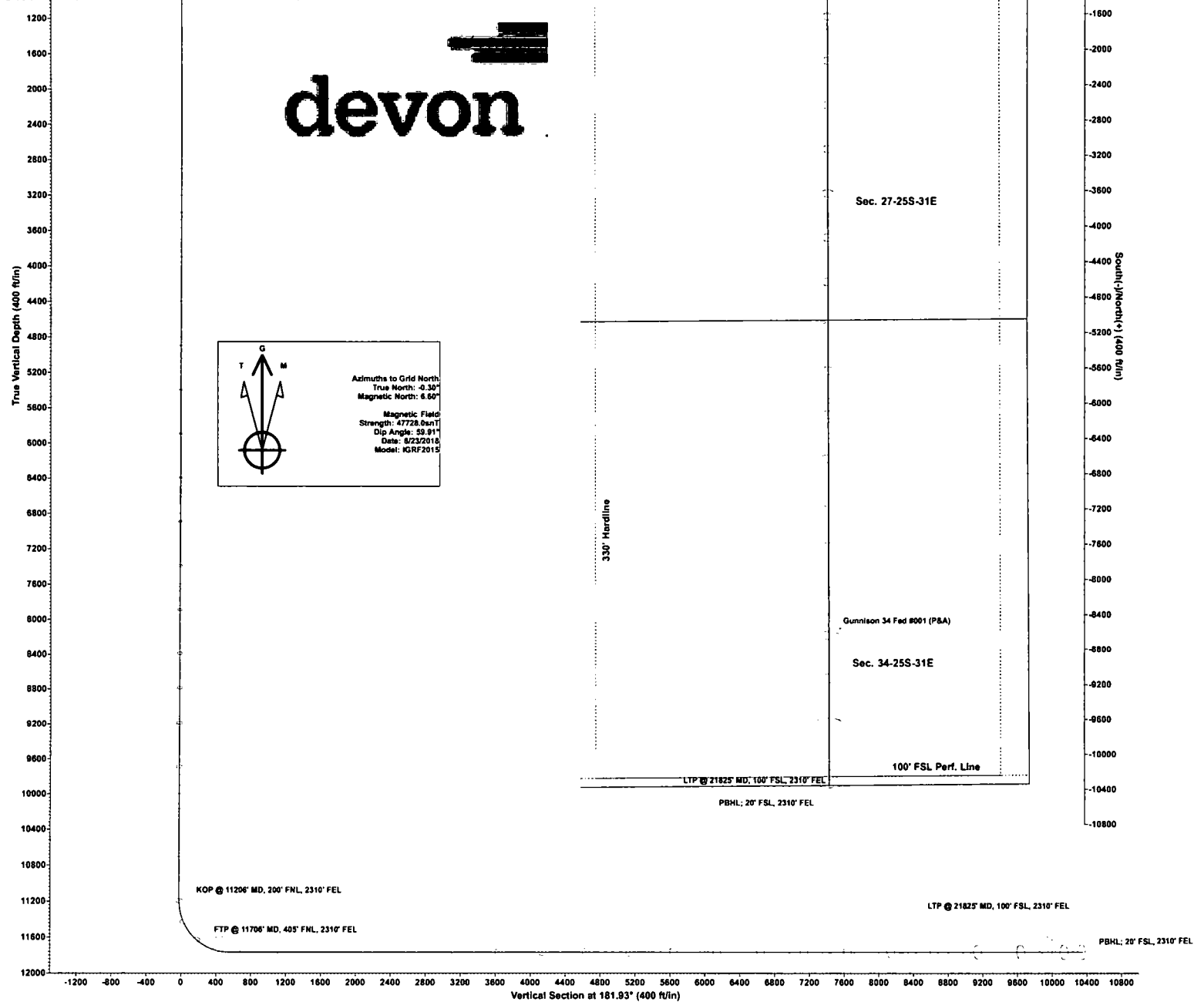
Devon Energy

WELL DETAILS: Lusitano 27-34 Fed Com 624H

RKB @ 3361.80ft
3336.80
Northing 403459.82 Easting 717744.29 Latitude 32.107909 Longitude -103.763593

SECTION DETAILS Permit Plan 2

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2500.00	0.00	0.00	2500.00	0.00	0.00	0.00	0.00	
2847.99	3.48	275.32	2847.77	0.98	-10.52	1.00	-0.62	
8779.30	3.48	275.32	8788.15	34.35	-368.99	0.00	-21.92	
9011.29	0.00	0.00	9000.00	35.00	-376.00	1.50	-22.33	
11206.33	0.00	0.00	11195.04	35.00	-376.00	0.00	-22.33	KOP @ 11206' MD, 200' FNL, 2310' FEL
12106.33	90.00	179.84	11768.00	-537.96	-374.45	10.00	550.25	
21904.71	90.00	179.84	11768.00	-10336.30	-347.89	0.00	10342.15	PBHL: 20' FSL, 2310' FEL



WCDSC Permian NM

Lusitano 27-34 Fed Com 624H - Permit Plan 2

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	1	275.318	2599.99	0.08	-0.87	-0.05	1
2700	2	275.318	2699.96	0.32	-3.48	-0.21	1
2800	3	275.318	2799.86	0.73	-7.82	-0.46	1
2900	3.48	275.318	2899.69	1.27	-13.66	-0.81	0.48
3000	3.48	275.318	2999.51	1.83	-19.71	-1.17	0
3100	3.48	275.318	3099.32	2.4	-25.75	-1.53	0

3200	3.48	275.318	3199.14	2.96	-31.79	-1.89	0
3300	3.48	275.318	3298.95	3.52	-37.84	-2.25	0
3400	3.48	275.318	3398.77	4.08	-43.88	-2.61	0
3500	3.48	275.318	3498.58	4.65	-49.92	-2.97	0
3600	3.48	275.318	3598.4	5.21	-55.97	-3.32	0
3700	3.48	275.318	3698.22	5.77	-62.01	-3.68	0
3800	3.48	275.318	3798.03	6.33	-68.06	-4.04	0
3900	3.48	275.318	3897.85	6.9	-74.1	-4.4	0
4000	3.48	275.318	3997.66	7.46	-80.14	-4.76	0
4100	3.48	275.318	4097.48	8.02	-86.19	-5.12	0
4200	3.48	275.318	4197.29	8.59	-92.23	-5.48	0
4300	3.48	275.318	4297.11	9.15	-98.27	-5.84	0
4400	3.48	275.318	4396.92	9.71	-104.32	-6.2	0
4500	3.48	275.318	4496.74	10.27	-110.36	-6.55	0
4600	3.48	275.318	4596.56	10.84	-116.4	-6.91	0
4700	3.48	275.318	4696.37	11.4	-122.45	-7.27	0
4800	3.48	275.318	4796.19	11.96	-128.49	-7.63	0
4900	3.48	275.318	4896	12.52	-134.54	-7.99	0
5000	3.48	275.318	4995.82	13.09	-140.58	-8.35	0
5100	3.48	275.318	5095.63	13.65	-146.62	-8.71	0
5200	3.48	275.318	5195.45	14.21	-152.67	-9.07	0
5300	3.48	275.318	5295.27	14.77	-158.71	-9.43	0
5400	3.48	275.318	5395.08	15.34	-164.75	-9.79	0
5500	3.48	275.318	5494.9	15.9	-170.8	-10.14	0
5600	3.48	275.318	5594.71	16.46	-176.84	-10.5	0
5700	3.48	275.318	5694.53	17.02	-182.88	-10.86	0
5800	3.48	275.318	5794.34	17.59	-188.93	-11.22	0
5900	3.48	275.318	5894.16	18.15	-194.97	-11.58	0
6000	3.48	275.318	5993.97	18.71	-201.02	-11.94	0
6100	3.48	275.318	6093.79	19.27	-207.06	-12.3	0
6200	3.48	275.318	6193.61	19.84	-213.1	-12.66	0
6300	3.48	275.318	6293.42	20.4	-219.15	-13.02	0
6400	3.48	275.318	6393.24	20.96	-225.19	-13.38	0
6500	3.48	275.318	6493.05	21.52	-231.23	-13.73	0
6600	3.48	275.318	6592.87	22.09	-237.28	-14.09	0
6700	3.48	275.318	6692.68	22.65	-243.32	-14.45	0
6800	3.48	275.318	6792.5	23.21	-249.37	-14.81	0
6900	3.48	275.318	6892.31	23.77	-255.41	-15.17	0
7000	3.48	275.318	6992.13	24.34	-261.45	-15.53	0
7100	3.48	275.318	7091.95	24.9	-267.5	-15.89	0
7200	3.48	275.318	7191.76	25.46	-273.54	-16.25	0
7300	3.48	275.318	7291.58	26.03	-279.58	-16.61	0
7400	3.48	275.318	7391.39	26.59	-285.63	-16.96	0
7500	3.48	275.318	7491.21	27.15	-291.67	-17.32	0
7600	3.48	275.318	7591.02	27.71	-297.71	-17.68	0
7700	3.48	275.318	7690.84	28.28	-303.76	-18.04	0
7800	3.48	275.318	7790.66	28.84	-309.8	-18.4	0

7900	3.48	275.318	7890.47	29.4	-315.85	-18.76	0
8000	3.48	275.318	7990.29	29.96	-321.89	-19.12	0
8100	3.48	275.318	8090.1	30.53	-327.93	-19.48	0
8200	3.48	275.318	8189.92	31.09	-333.98	-19.84	0
8300	3.48	275.318	8289.73	31.65	-340.02	-20.2	0
8400	3.48	275.318	8389.55	32.21	-346.06	-20.55	0
8500	3.48	275.318	8489.36	32.78	-352.11	-20.91	0
8600	3.48	275.318	8589.18	33.34	-358.15	-21.27	0
8700	3.48	275.318	8689	33.9	-364.19	-21.63	0
8800	3.169	275.318	8788.81	34.46	-370.18	-21.99	0.31
8900	1.669	275.318	8888.72	34.85	-374.39	-22.24	1.5
9000	0.169	275.318	8988.71	35	-375.98	-22.33	1.5
9100	0	0	9088.71	35	-376	-22.33	0.17
9200	0	0	9188.71	35	-376	-22.33	0
9300	0	0	9288.71	35	-376	-22.33	0
9400	0	0	9388.71	35	-376	-22.33	0
9500	0	0	9488.71	35	-376	-22.33	0
9600	0	0	9588.71	35	-376	-22.33	0
9700	0	0	9688.71	35	-376	-22.33	0
9800	0	0	9788.71	35	-376	-22.33	0
9900	0	0	9888.71	35	-376	-22.33	0
10000	0	0	9988.71	35	-376	-22.33	0
10100	0	0	10088.71	35	-376	-22.33	0
10200	0	0	10188.71	35	-376	-22.33	0
10300	0	0	10288.71	35	-376	-22.33	0
10400	0	0	10388.71	35	-376	-22.33	0
10500	0	0	10488.71	35	-376	-22.33	0
10600	0	0	10588.71	35	-376	-22.33	0
10700	0	0	10688.71	35	-376	-22.33	0
10800	0	0	10788.71	35	-376	-22.33	0
10900	0	0	10888.71	35	-376	-22.33	0
11000	0	0	10988.71	35	-376	-22.33	0
11100	0	0	11088.71	35	-376	-22.33	0
11200	0	0	11188.71	35	-376	-22.33	0
11300	9.367	179.845	11288.29	27.36	-375.98	-14.7	9.37
11400	19.367	179.845	11385.04	2.58	-375.91	10.07	10
11500	29.367	179.845	11476.02	-38.63	-375.8	51.25	10
11600	39.367	179.845	11558.46	-95	-375.65	107.59	10
11700	49.367	179.845	11629.85	-164.84	-375.46	177.38	10
11800	59.367	179.845	11688.04	-246.01	-375.24	258.5	10
11900	69.367	179.845	11731.24	-336.06	-374.99	348.48	10
12000	79.367	179.845	11758.16	-432.23	-374.73	444.59	10
12100	89.367	179.845	11767.96	-531.62	-374.46	543.92	10
12200	90	179.845	11768	-631.62	-374.19	643.85	0.63
12300	90	179.845	11768	-731.62	-373.92	743.79	0
12400	90	179.845	11768	-831.62	-373.65	843.72	0
12500	90	179.845	11768	-931.62	-373.38	943.66	0

12600	90	179.845	11768	-1031.62	-373.11	1043.59	0
12700	90	179.845	11768	-1131.62	-372.84	1143.52	0
12800	90	179.845	11768	-1231.62	-372.57	1243.46	0
12900	90	179.845	11768	-1331.62	-372.3	1343.39	0
13000	90	179.845	11768	-1431.62	-372.03	1443.33	0
13100	90	179.845	11768	-1531.62	-371.75	1543.26	0
13200	90	179.845	11768	-1631.62	-371.48	1643.19	0
13300	90	179.845	11768	-1731.62	-371.21	1743.13	0
13400	90	179.845	11768	-1831.62	-370.94	1843.06	0
13500	90	179.845	11768	-1931.62	-370.67	1942.99	0
13600	90	179.845	11768	-2031.62	-370.4	2042.93	0
13700	90	179.845	11768	-2131.62	-370.13	2142.86	0
13800	90	179.845	11768	-2231.62	-369.86	2242.8	0
13900	90	179.845	11768	-2331.62	-369.59	2342.73	0
14000	90	179.845	11768	-2431.62	-369.31	2442.66	0
14100	90	179.845	11768	-2531.62	-369.04	2542.6	0
14200	90	179.845	11768	-2631.62	-368.77	2642.53	0
14300	90	179.845	11768	-2731.62	-368.5	2742.47	0
14400	90	179.845	11768	-2831.62	-368.23	2842.4	0
14500	90	179.845	11768	-2931.62	-367.96	2942.33	0
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14700	90	179.845	11768	-3131.61	-367.42	3142.2	0
14800	90	179.845	11768	-3231.61	-367.15	3242.14	0
14900	90	179.845	11768	-3331.61	-366.88	3342.07	0
15000	90	179.845	11768	-3431.61	-366.6	3442	0
15100	90	179.845	11768	-3531.61	-366.33	3541.94	0
15200	90	179.845	11768	-3631.61	-366.06	3641.87	0
15300	90	179.845	11768	-3731.61	-365.79	3741.81	0
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15500	90	179.845	11768	-3931.61	-365.25	3941.67	0
15600	90	179.845	11768	-4031.61	-364.98	4041.61	0
15700	90	179.845	11768	-4131.61	-364.71	4141.54	0
15800	90	179.845	11768	-4231.61	-364.44	4241.47	0
15900	90	179.845	11768	-4331.61	-364.17	4341.41	0
16000	90	179.845	11768	-4431.61	-363.89	4441.34	0
16100	90	179.845	11768	-4531.61	-363.62	4541.28	0
16200	90	179.845	11768	-4631.61	-363.35	4641.21	0
16300	90	179.845	11768	-4731.61	-363.08	4741.14	0
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16700	90	179.845	11768	-5131.61	-362	5140.88	0
16800	90	179.845	11768	-5231.61	-361.73	5240.81	0
16900	90	179.845	11768	-5331.61	-361.45	5340.75	0
17000	90	179.845	11768	-5431.61	-361.18	5440.68	0
17100	90	179.845	11768	-5531.61	-360.91	5540.62	0
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17400	90	179.845	11768	-5831.6	-360.1	5840.42	0
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17700	90	179.845	11768	-6131.6	-359.29	6140.22	0
17800	90	179.845	11768	-6231.6	-359.02	6240.15	0
17900	90	179.845	11768	-6331.6	-358.74	6340.09	0
18000	90	179.845	11768	-6431.6	-358.47	6440.02	0
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18400	90	179.845	11768	-6831.6	-357.39	6839.76	0
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18700	90	179.845	11768	-7131.6	-356.58	7139.56	0
18800	90	179.845	11768	-7231.6	-356.31	7239.49	0
18900	90	179.845	11768	-7331.6	-356.03	7339.43	0
19000	90	179.845	11768	-7431.6	-355.76	7439.36	0
19100	90	179.845	11768	-7531.6	-355.49	7539.29	0
19200	90	179.845	11768	-7631.6	-355.22	7639.23	0
19300	90	179.845	11768	-7731.6	-354.95	7739.16	0
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19500	90	179.845	11768	-7931.6	-354.41	7939.03	0
19600	90	179.845	11768	-8031.6	-354.14	8038.96	0
19700	90	179.845	11768	-8131.6	-353.87	8138.9	0
19800	90	179.845	11768	-8231.6	-353.6	8238.83	0
19900	90	179.845	11768	-8331.6	-353.32	8338.77	0
20000	90	179.845	11768	-8431.6	-353.05	8438.7	0
20100	90	179.845	11768	-8531.59	-352.78	8538.63	0
20200	90	179.845	11768	-8631.59	-352.51	8638.57	0
20300	90	179.845	11768	-8731.59	-352.24	8738.5	0
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20600	90	179.845	11768	-9031.59	-351.43	9038.3	0
20700	90	179.845	11768	-9131.59	-351.16	9138.24	0
20800	90	179.845	11768	-9231.59	-350.88	9238.17	0
20900	90	179.845	11768	-9331.59	-350.61	9338.11	0
21000	90	179.845	11768	-9431.59	-350.34	9438.04	0
21100	90	179.845	11768	-9531.59	-350.07	9537.97	0
21200	90	179.845	11768	-9631.59	-349.8	9637.91	0
21300	90	179.845	11768	-9731.59	-349.53	9737.84	0
21400	90	179.845	11768	-9831.59	-349.26	9837.77	0
21500	90	179.845	11768	-9931.59	-348.99	9937.71	0
21600	90	179.845	11768	-10031.6	-348.72	10037.64	0
21700	90	179.845	11768	-10131.6	-348.45	10137.58	0
21800	90	179.845	11768	-10231.6	-348.17	10237.51	0
21900	90	179.845	11768	-10331.6	-347.9	10337.44	0

21904.71 90 179.845 11768 -10336.3 -347.89 10342.15 0

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

The Dogleg Severity is in Degrees per 100 feet.

Vertical Section is from Slot and calculated along an Azimuth of 181.928° (Grid).

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

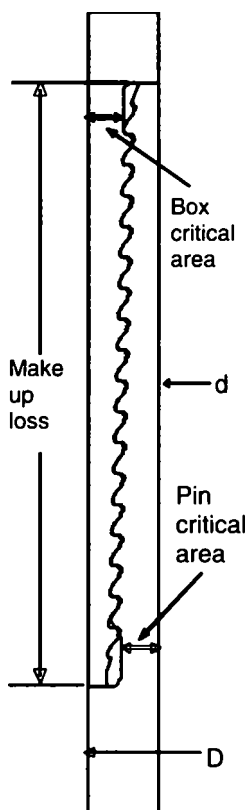
Central meridian is -104.333°.

Grid Convergence at Surface is 0.303°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 21904.71ft.,
the Bottom Hole Displacement is 10342.15ft., in the Direction of 181.928° (Grid).

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		Rev.	N - 1

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
----------	-------	-----	-------	-----

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

Legal Notice

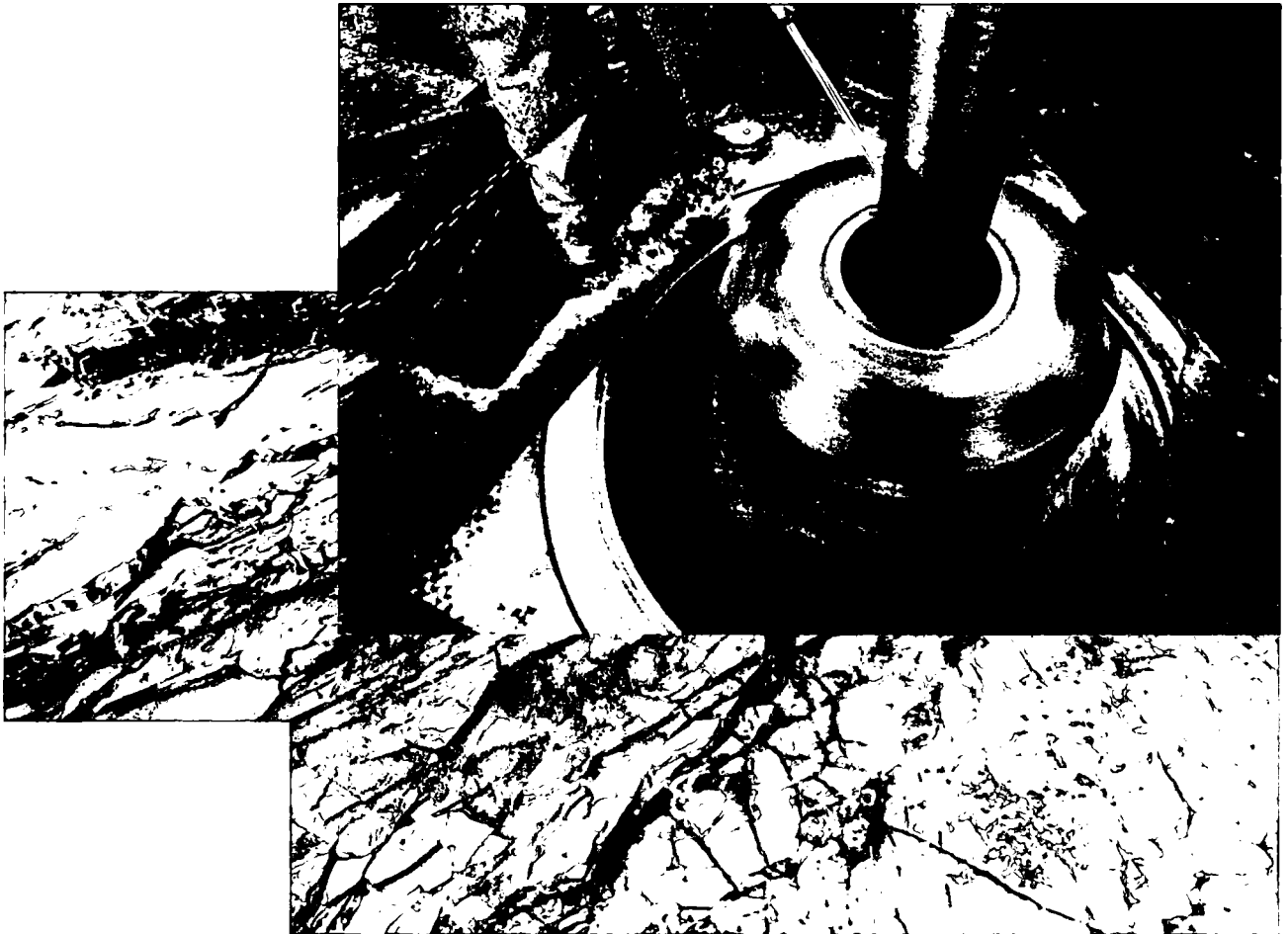
The use of this information is at the reader/user's risk and no warranty is implied or expressed by Metal One Corporation or its parents, subsidiaries or affiliates (herein collectively referred to as "Metal One") with respect to the use of information contained herein. The information provided on this Connection Data Sheet is for informational purposes only, and was prepared by reference to engineering information that is specific to the subject products, without regard to safety-related factors, all of which are the sole responsibility of the operators and users of the subject connectors. Metal One assumes no responsibility for any errors with respect to this information.

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.

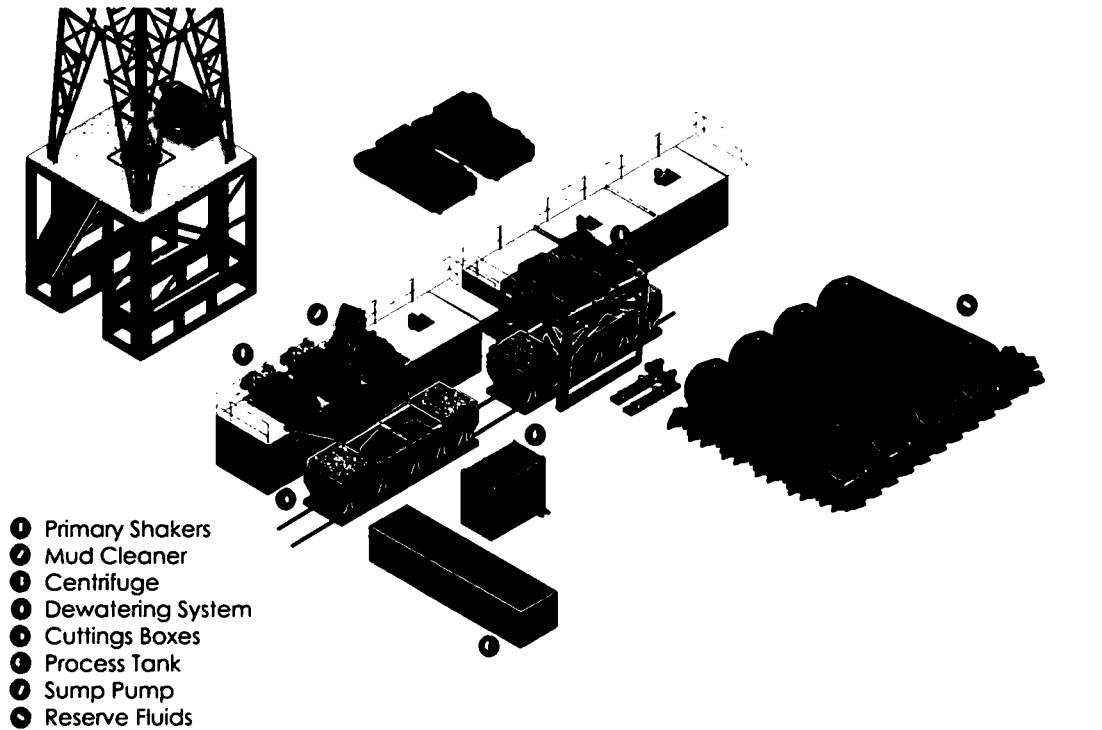
II. Operations and Maintenance Plan

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

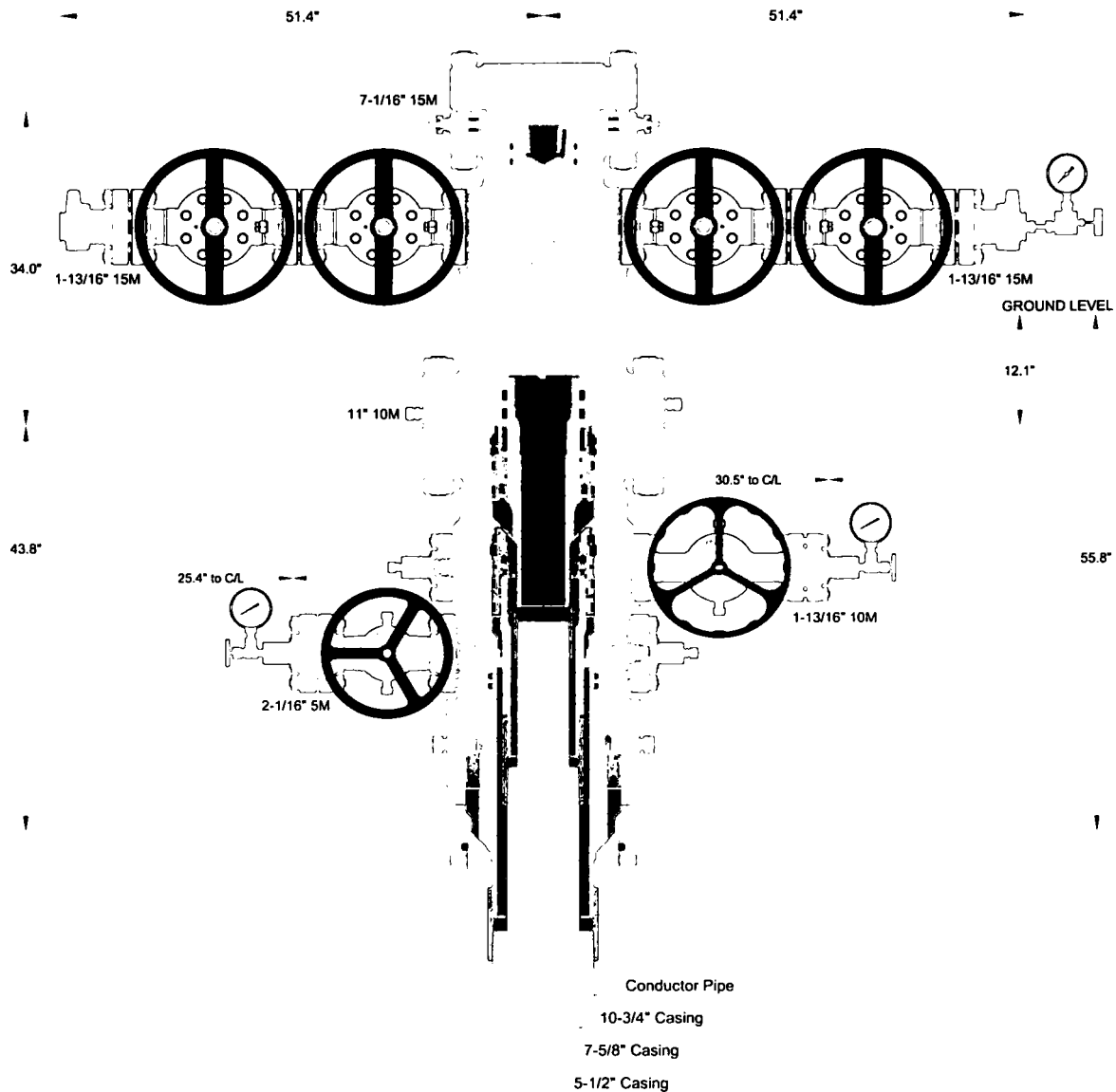
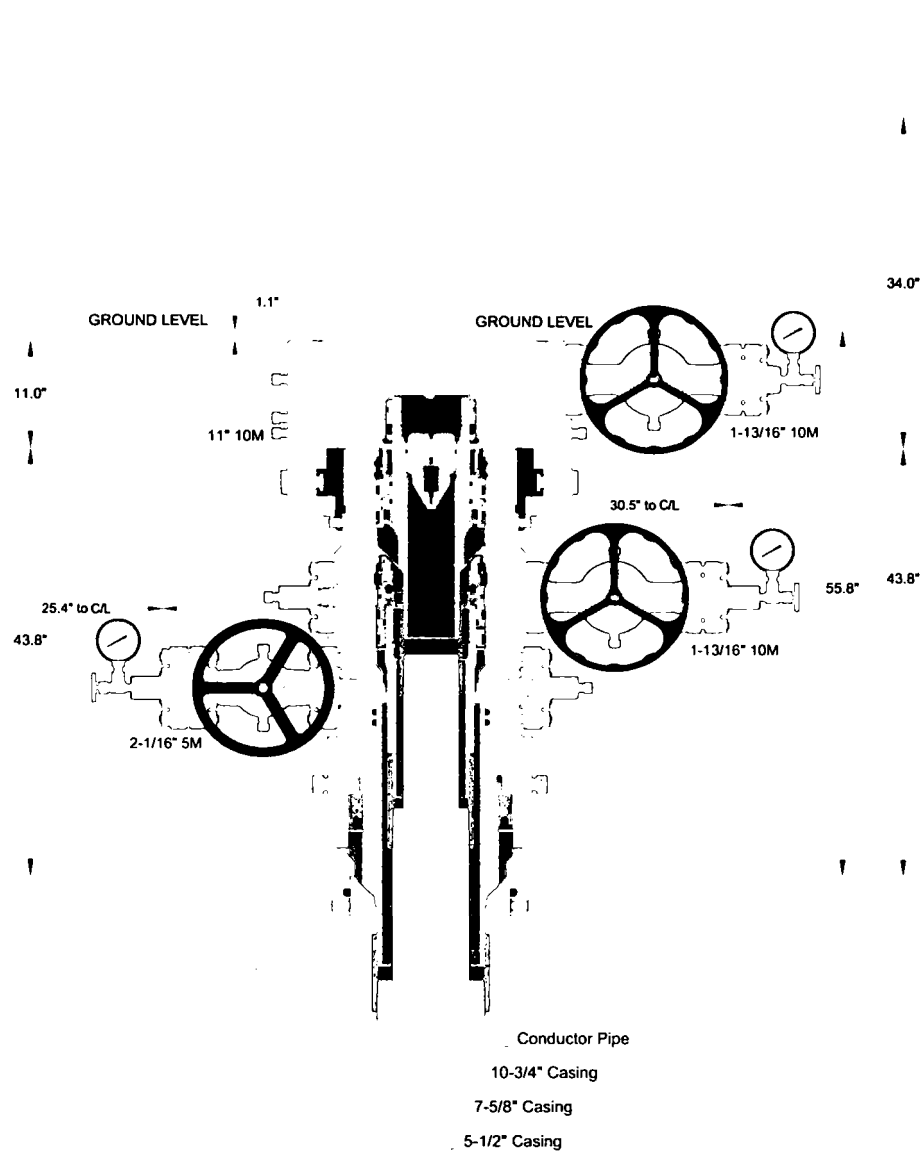
dope, or regulated chemicals are removed from soil and sent to landfills approved for these products.

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

Page 1 of 8

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.



Quotation

ODESSA WAREHOUSE
8001 GROENING STREET
ODESSA TX 79765
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Quote Number : ODE0001804

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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



Quotation

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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-1-1

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



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



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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 venturers, and its contractors and subcontractors of any tier, and the officers, directors, agents, representatives, employees, insurers, and consultants (specifically excluding any member of Customer Group) of all of the foregoing, and its and their respective successors, heirs and assigns ("Company Group") from and against all costs (including the payment of reasonable attorneys' fees), losses, liabilities, demands, causes of action, damages, or claims of every type and character ("Claims"), arising out of or resulting from or related, directly or indirectly, to (i) injury to, illness or death of Customer or its parents, affiliates, subsidiaries, partners, joint owners, joint venturers, and its contractors and subcontractors of any tier, and the officers, directors, agents, representatives, employees, customers, insurers, invitees and consultants of all of the foregoing, and its and their respective successors, heirs and assigns ("Customer Group"), or (ii) loss of or damage to any property of any member of Customer Group, REGARDLESS OF THE CAUSE OF SUCH CLAIMS, INCLUDING THE NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.

B. **Company Indemnity Obligations:** Company hereby releases Customer from any liability for, and shall protect, defend, indemnify, and hold harmless Customer from and against all Claims arising out of or resulting from or related, directly or indirectly, to (i) injury to, illness or death of any member of Company Group, or (ii) loss of or damage to any property of any member of Company Group, REGARDLESS OF THE CAUSE OF SUCH CLAIMS, INCLUDING THE NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF CUSTOMER GROUP.

C. **Third Party Claims:** Notwithstanding the foregoing, to the extent of its negligence, Company and Customer shall each indemnify, defend and hold harmless Claims, of every type and character, which are asserted by third parties for bodily injury, death or loss or destruction of property or interests in property in any manner caused by, directly or indirectly resulting from, incident to, connected with or arising out of the work to be performed. Services to be rendered or materials to be furnished by Customer. When personal injury, death or loss of or damage to property is the result of joint or concurrent negligence of Customer or Company, the indemnitor's duty of indemnification shall be in proportion to its allocable share of such negligence.

D. **Pollution:** Company agrees that it shall be totally responsible for, and shall protect, defend and indemnify, Customer for all losses, damages, claims, demands, costs, charges, and other expenses, including attorneys' fees, for any and all waste and/or hazardous substances which are in Company Group's exclusive possession and control and directly associated with Company Group's equipment and facilities, EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF CUSTOMER GROUP. Customer shall assume all responsibility for, including control and removal of, and shall protect, defend and indemnify Company Group from and against all Claims arising directly or indirectly from all other pollution or contamination which may occur during the conduct of operations hereunder, including, but not limited to, that which may result from fire, blowout, cratering, seepage or any other uncontrolled flow of oil, gas, water or other substance, EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF COMPANY GROUP.

E. **Wild Well:** Customer shall release Company Group of any liability for, and shall protect, defend and indemnify Company Group for any damages, expenses, losses, fines, penalties, costs, expert fees and attorneys' fees arising out of a fire, blow out, cratering, seepage or wild well, including regaining control thereof, debris removal and property restoration and remediation. THIS INDEMNITY APPLIES EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.

F. **Underground Damage:** Customer shall release Company Group of any liability for, and shall protect, defend and indemnify Company Group from and against any and all claims, liability and expenses resulting from operations related to the work under this agreement on account of injury to, destruction of, or loss or impairment of any property right in or to oil, gas or other mineral substance or water, if at the time of the act or omission causing such injury, destruction, loss or impairment said substance and not been reduced to physical possession above the surface of the earth, and for any loss or damage to any formation, strata, or reservoir beneath the surface of the earth. THIS INDEMNITY APPLIES EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.

G. **Compliance With Laws, Rules And Regulations:** Customer expressly agrees to comply with and abide by all of the laws of the united states and of the state in which goods are delivered or services are performed, including, but not limited to, OSHA, EPA and all rules and regulations now existing or that may be hereafter promulgated under and in accordance with any such law or laws, and Customer hereby agrees to indemnify and hold Company Group harmless from any and all claims, demands, or damages incurred by Company Group arising from Customer Group's failure to comply with all laws and governmental regulations.

H. The foregoing indemnities set forth in these Terms and Conditions are intended to be enforceable against the parties hereto in accordance with the express terms and scope hereof notwithstanding Texas' Express Negligence Rule or any similar directive that would prohibit or otherwise limit indemnities because of the negligence (whether sole, concurrent, active or passive, ordinary or gross) or other fault or strict liability of Company or Customer.

I. If a claim is asserted against one of the parties to this agreement which may give rise to a claim for indemnity against the other party hereto, the party against whom the claim is first asserted must notify the potential indemnitor in writing and give the potential indemnitor the right to defend or assist in the defense of the claim.

7. **Risk Of Loss:** a>Title and risk of loss shall pass to Customer upon delivery as specified in Article 9. Customer's receipt of any material delivered hereunder shall be an unqualified acceptance of, and a waiver by Customer of any and all claims with respect to, such material unless Customer gives Company written notice of claim within thirty (30) days after such receipt. Notwithstanding the foregoing, installation or use of materials or equipment shall unequivocally constitute irrevocable acceptance of said materials. Customer assumes all risk and liability for the results obtained by the use of any material or products delivered



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 unfulfilled 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. **g.** 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 filing 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.

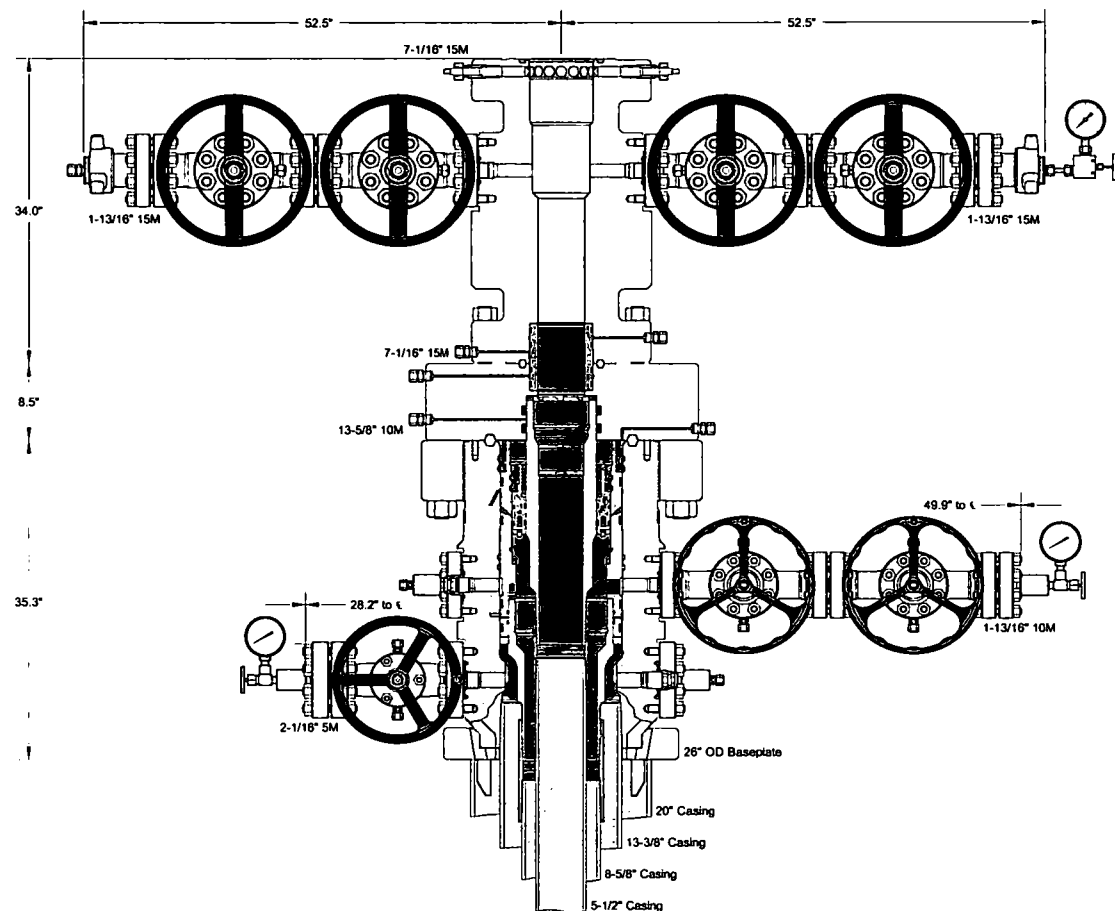
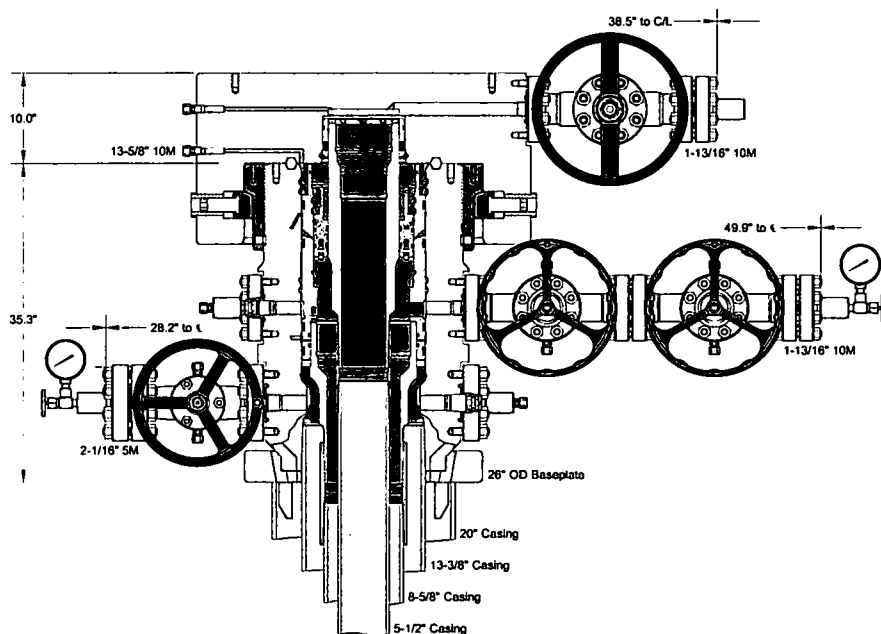
18. **Choice Of Law.** THIS AGREEMENT SHALL BE GOVERNED BY AND CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS AND SHALL BE PERFORMABLE IN HARRIS COUNTY, TEXAS. WITHOUT REGARD TO CONFLICTS OF LAW PRINCIPALS AND WAIVER OF SAME, EACH PARTY HERETO SUBMITS TO THE JURISDICTION OF THE COURTS OF 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.



INFORMATION CONTAINED HEREIN IS THE PROPERTY OF CACTUS WELLHEAD, LLC. REPRODUCTION, DISCLOSURE, OR USE THEREOF IS PERMISSIBLE ONLY AS PROVIDED BY CONTRACT OR AS EXPRESSLY AUTHORIZED BY CACTUS WELLHEAD, LLC.

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

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

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

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

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

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

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

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

- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
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- Devon will test the casing to 0.22 psi/ft or 1500 psi, whichever is greater, as per Onshore Order #2.

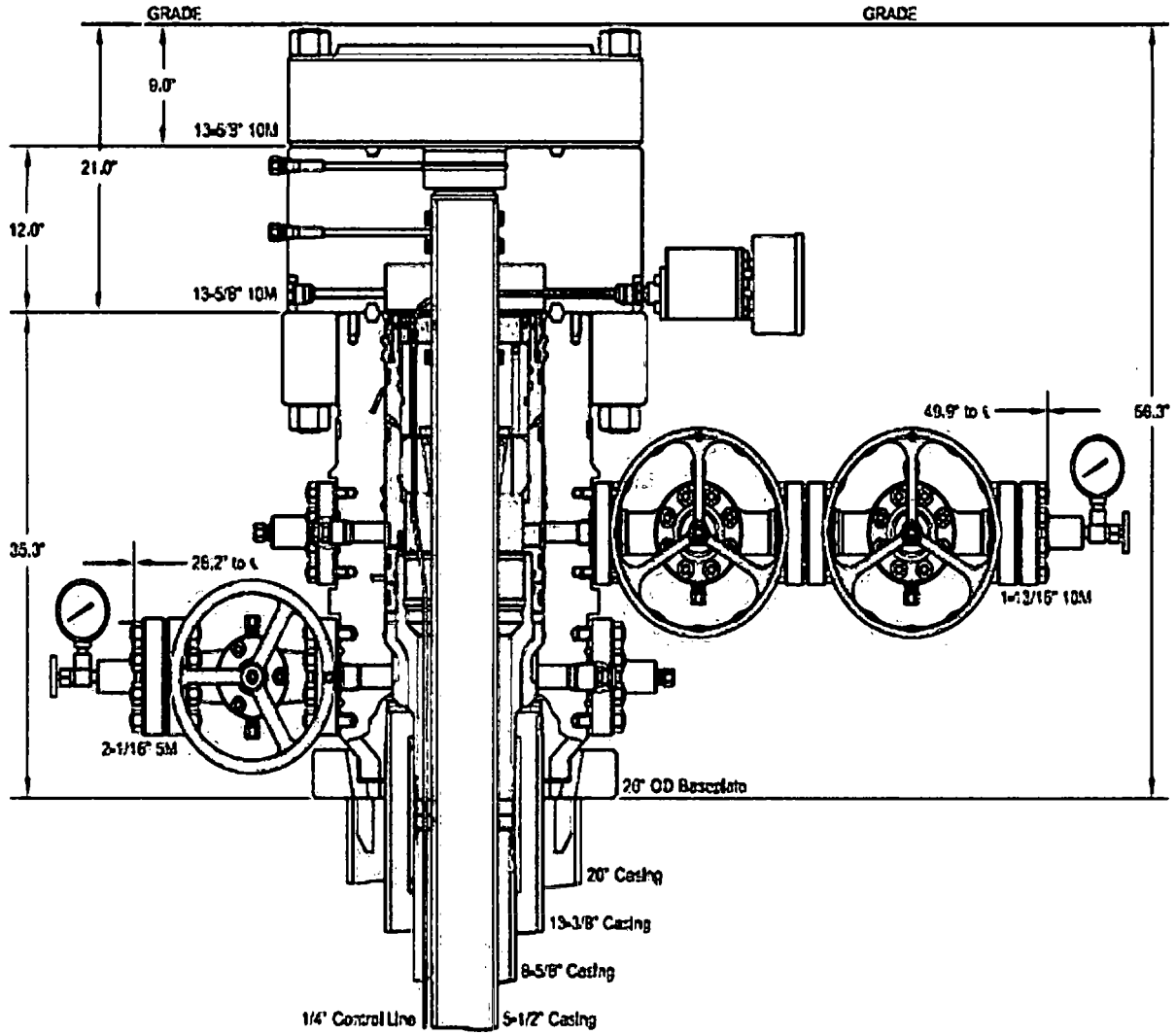
After running the surface casing, a BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days, 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



Lusitano 27-34 Fed Com 624H

1. Geologic Formations

TVD of target	11768	Pilot hole depth	N/A
MD at TD:	21904	Deepest expected fresh water:	

Basin

Formation	Depth (TVD) from KB	Water/Mineral Bearing/ Target Zone?	Hazards*
Rustler	880		
Base of Salt	4270		
Delaware	4300		
Bone Spring	8250		
Wolfcamp	11640		

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

2. 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	931	10.75"	40.5	J-55	STC	1.125	1.25	1.6
9.875"	0	11206	7.625"	29.7	P110	BTC	1.125	1.25	1.6
8.75"	11206	12106				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	931	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	12106				VAM FJL			
7.875"	0	TD	5.5"	20	P110	BTC	1.125	1.25	1.6
BLM Minimum Safety Factor							1.125	1.00	1.6 Dry 1.8 Wet

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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?	

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3. Cementing Program (Primary Design)

Casing	# Sk	TOC	Wt. (lb/gal)	Yld (ft³/sack)	Slurry Description
Surface	601	Surf	13.2	1.33	Lead: Class C Cement + additives
Int 1	1195	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	595	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
	1195	Surf	9	3.31	Lead: Class C Cement + additives
	747	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	651	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%

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Cementing Program (Alternate Design)

Casing	# Sk	TOC	Wt. (lb/gal)	Yld (ft ³ /sack)	Slurry Description
Surface	770	Surf	13.2	1.33	Lead: Class C Cement + additives
Int 1	1291	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	650	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
	625	Surf	9	3.31	2 nd stage Lead: Class C Cement + additives
	55	500' above DV	13.2	1.33	2 nd stage Tail: Class H / C + additives
Int 1 Intermediate Squeeze	As Needed	Surf	13.2	1.33	Squeeze Lead: Class C Cement + additives
	1291	Surf	9	3.31	Lead: Class C Cement + additives
	834	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	1219	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%

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4. Pressure Control Equipment (Three String Design)

Pressure Control Equipment (Three String Design)						
BOP installed and tested before drilling which hole?		Size?	Min. Required WP	Type	✓	Tested to:
Int 1	13-5/8"	5M	Annular		X	50% of rated working pressure
			Blind Ram		X	5M
			Pipe Ram			
			Double Ram		X	
			Other*			
Production	13-5/8"	10M	Annular (5M)		X	100% of rated working pressure
			Blind Ram		X	10M
			Pipe Ram			
			Double Ram		X	
			Other *			
			Annular			
			Blind Ram			
			Pipe Ram			
			Double Ram			
			Other *			
N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
Y	A variance is requested to run a 5M annular on a 10M system.					

5. Mud Program (3 String Design)

Depth		Type	Weight (ppg)	Vis	Water Loss
From	To				
0	931'	FW Gel	8.5 - 9	28-34	N/C
931'	12,106	DBE / Cut Brine	9 - 10	28-34	N/C
12106	TD	OBM	10-10.5	28-34	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
---	-----------------------------

6. Logging and Testing Procedures

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

Additional logs planned	Interval
	Resistivity
	Density
X	CBL
X	Mud log
	PEX

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6425 psi
Abnormal Temperature	No

Mitigation measure for abnormal conditions. Describe. Lost circulation material/sweeps/mud scavengers.

Hydrogen Sulfide (H ₂ S) monitors will be installed prior to drilling out the surface shoe. If H ₂ S 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	H ₂ S is present
Y	H ₂ S Plan attached

8. Other facets of operation

Is this a walking operation? Potentially

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

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

Will be pre-setting casing? Potentially

1. Spudder rig will move in and drill surface hole.

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- 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

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 choose 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.

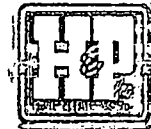
Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

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


**PHOENIX RUBBER
INDUSTRIAL LTD.**
QUALITY DOCUMENT

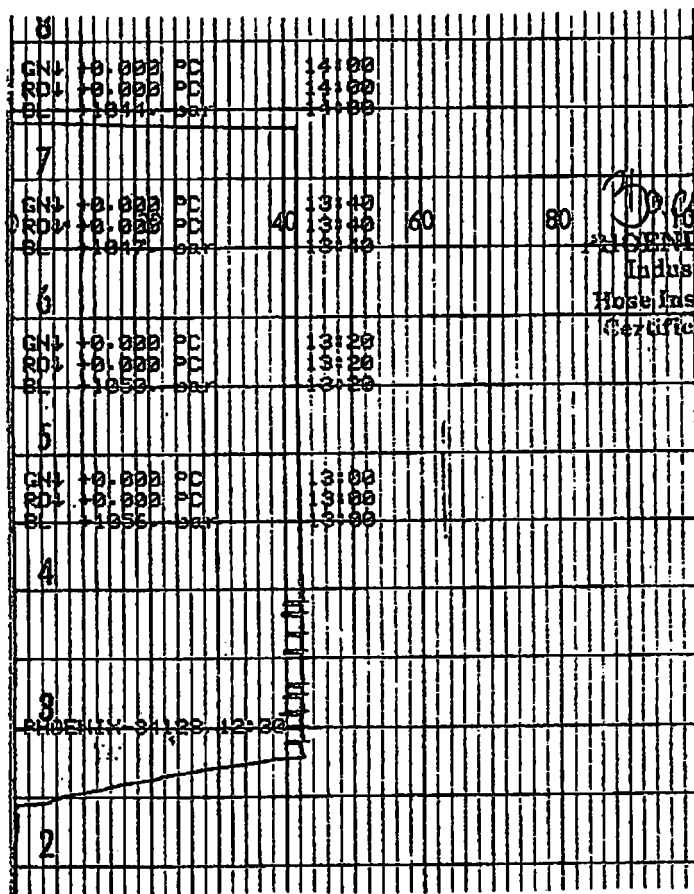
 6723 Szeged, Budapesti út 10. Hungary • H-6701 Szeged, P. O. Box 152
 Phone: (3662) 566-737 • Fax: (3662) 566-738

 SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44. Hungary • H-1440 Budapest, P. O. Box 26
 Phone: (361) 456-4200 • Fax: (361) 217-2972, 456-4273 • www.taurusemerg.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 VESSELS & TUBES PHOENIX RUBBER Q.C.		

14094-65

40920-0-00015 NB00C



[Signature]
PHOENIX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

VERIFIED TRUE CO.
PHOENIX RUBBER CO.



APD ID: 10400033372

Submission Date: 08/29/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 624H

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_624H_Ex_Access_Rd_20180823044347.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_624H_Access_Rds_20180828132044.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: 624H

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_624H_1mile_Map_20180823044450.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: 624H

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_624H_Wtr_Xfr_Map_20180827135011.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: 624H

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_624H_Caliche_Pit_20180823044541.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: DRILL CUTTINGS

Amount of waste: 1238 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: 624H

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: 624H

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_624H_Rig_Layout_20180827135134.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_624H_Reclamation_20180828132247.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: 624H

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: 624H

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: 624H

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: 624H

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: 624H

SUPO Additional Information: BATTERY CONNECT CTB ELECTRIC FLOWLINE

Use a previously conducted onsite? YES

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

Other SUPO Attachment

Lusitano_27_34_Fed_Com_624H_Battery_Connect_20180828132556.pdf

Lusitano_27_34_Fed_Com_624H_CTB_20180828132602.pdf

Lusitano_27_34_Fed_Com_624H_Electric_20180828132606.pdf

Lusitano_27_34_Fed_Com_624H_Flowline_20180828132611.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 624H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1934 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

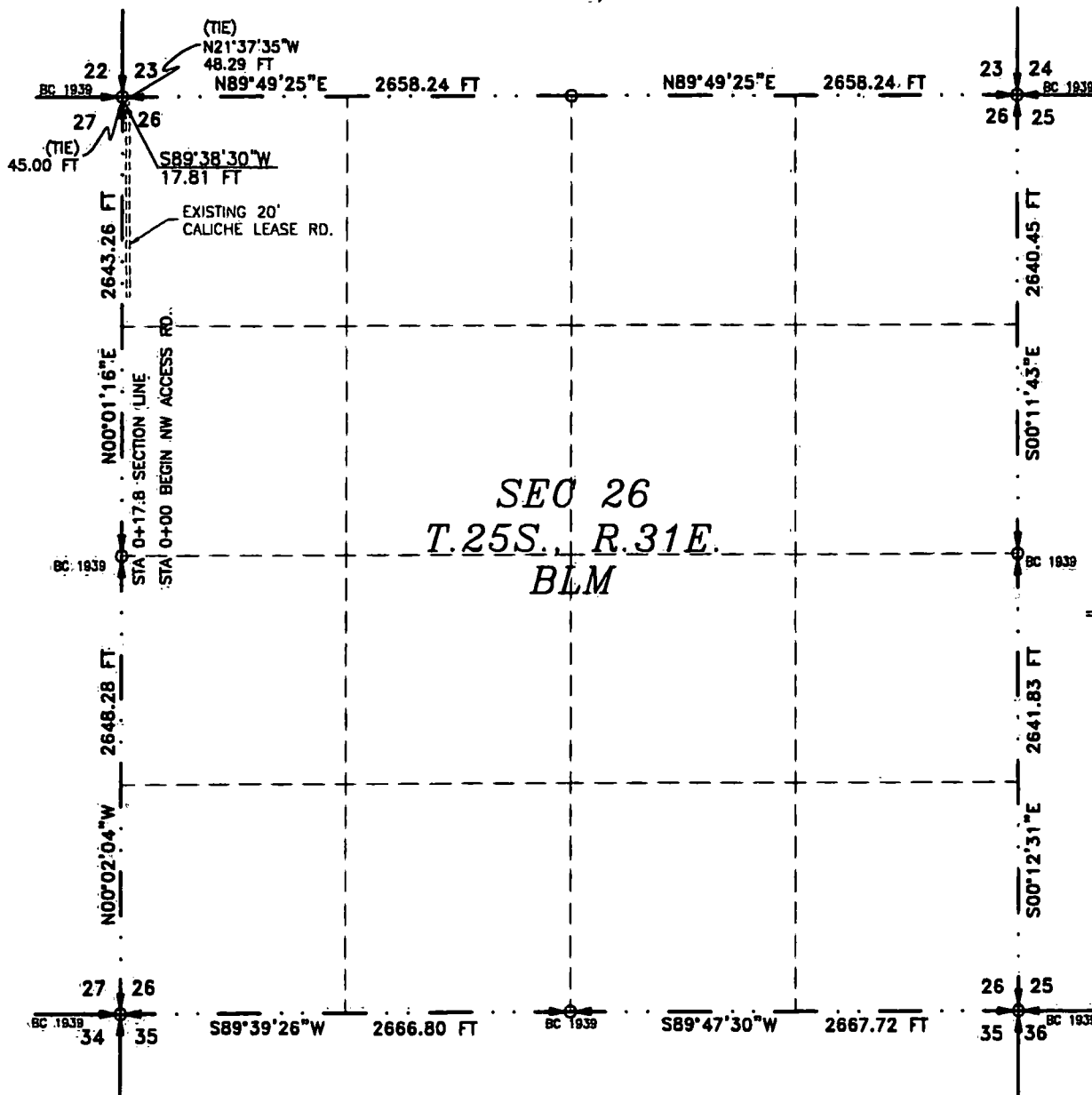
SURVEY NO. 6436

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

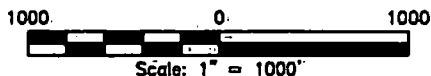
ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 4 (LUSITANO 27-34 FED COM 624H, 734H, 232H, 624H, 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 27TH DAY OF AUGUST 2018.

(Signature of Filmon F. Jaramillo)
FILMON F. JARAMILLO, P.S. 12797
SURVEYOR

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

SHEET: 1-4

MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

SURVEY NO. 6436
CARLSBAD, NEW MEXICO

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 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 LF. 1.08 RODS 0.012 ACRES

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 2ND DAY OF AUGUST 2018

12797

FILIMON F. JARAMILLO, PLS. 12797

301 SOUTH CANAL

(575) 234-3341

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

SURVEY NO. 6436

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.

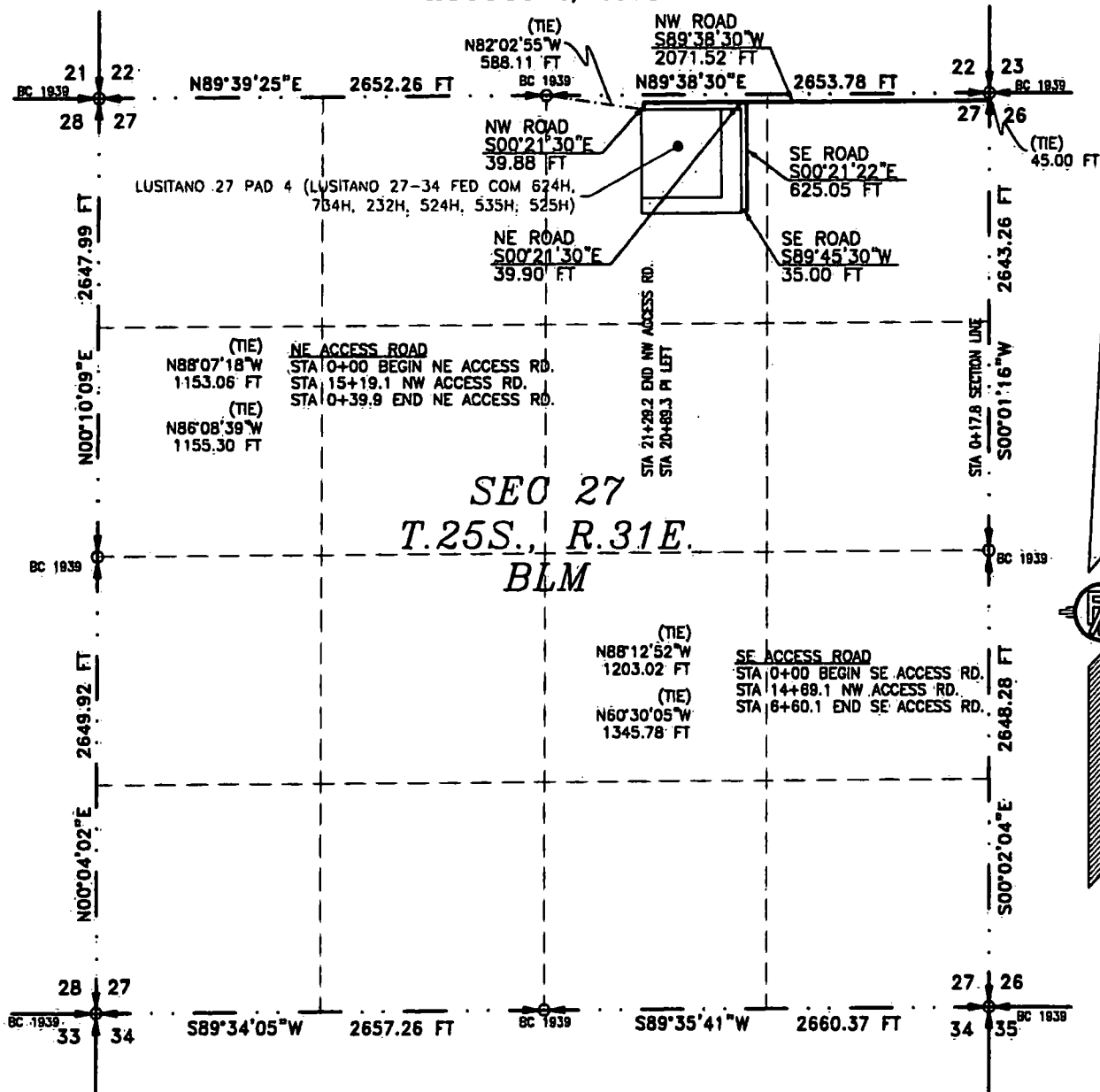
SHEET: 2-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

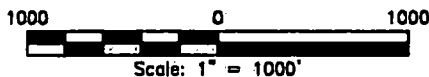
ACCESS ROAD PLAT

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.

SHEET: 3-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

SURVEYOR CERTIFICATE

I, FILMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12787, 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 05 DAY OF AUGUST 2018

FILMON F. JARAMILLO, PLS. 12787

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

SURVEY NO. 6436

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 2ND DAY OF AUGUST 2018

[Signature]

FILMON F. JARAMILLO (PLS# 12797)

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

SURVEY NO. 6436

GENERAL NOTES

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

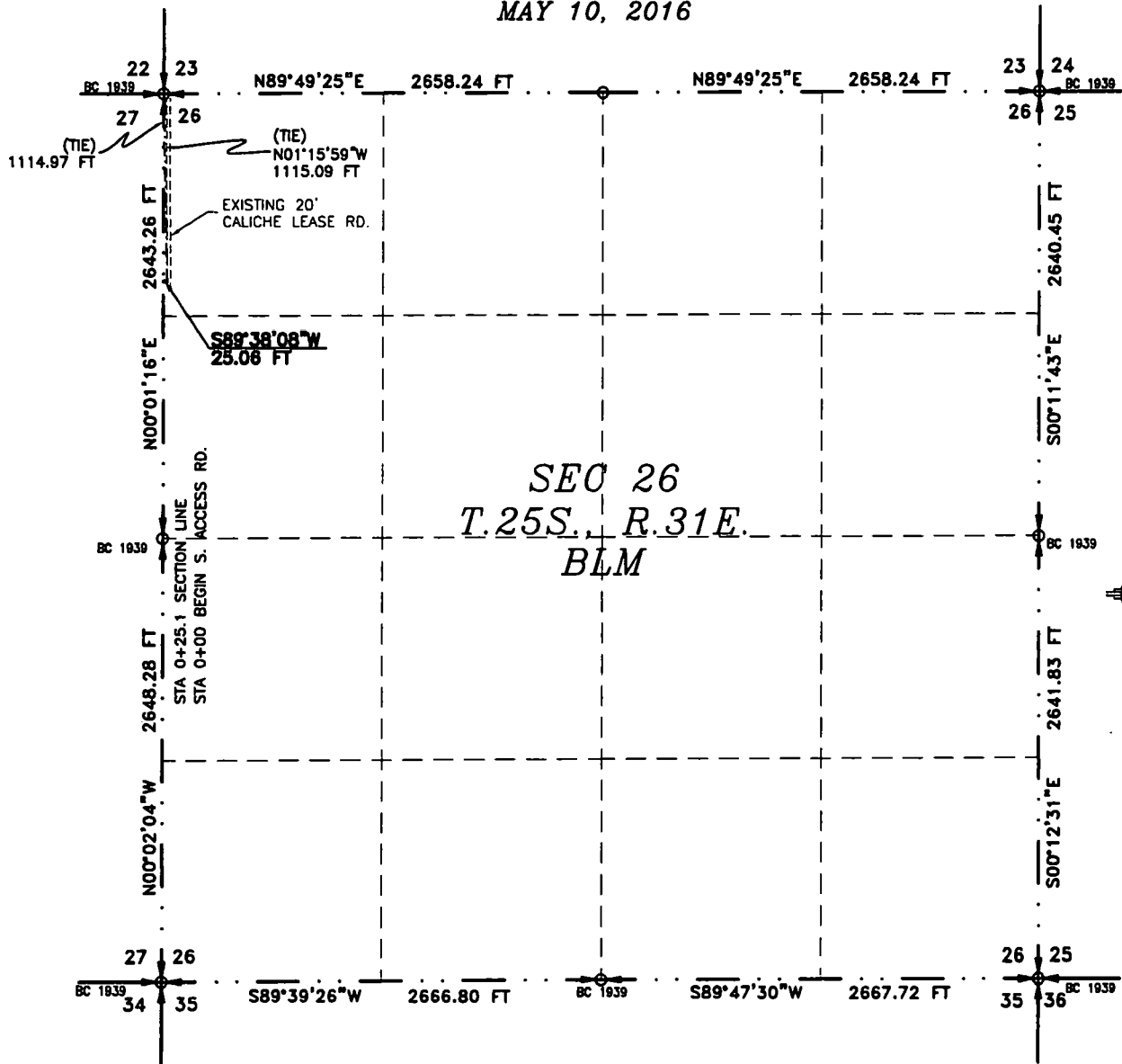
2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 4-4

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

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

DEVON ENERGY PRODUCTION COMPANY, L.P.
 CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
 SECTION 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 11 DAY OF MAY 2016

(Signature of Filmon F. Jaramillo)
 FILMON F. JARAMILLO, PLS. 12797
 MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3341

SHEET: 1-6

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

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

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 12 DAY OF MAY 2016

FILIMON F. JARAMILLO PLS #12797

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

SHEET: 2-6

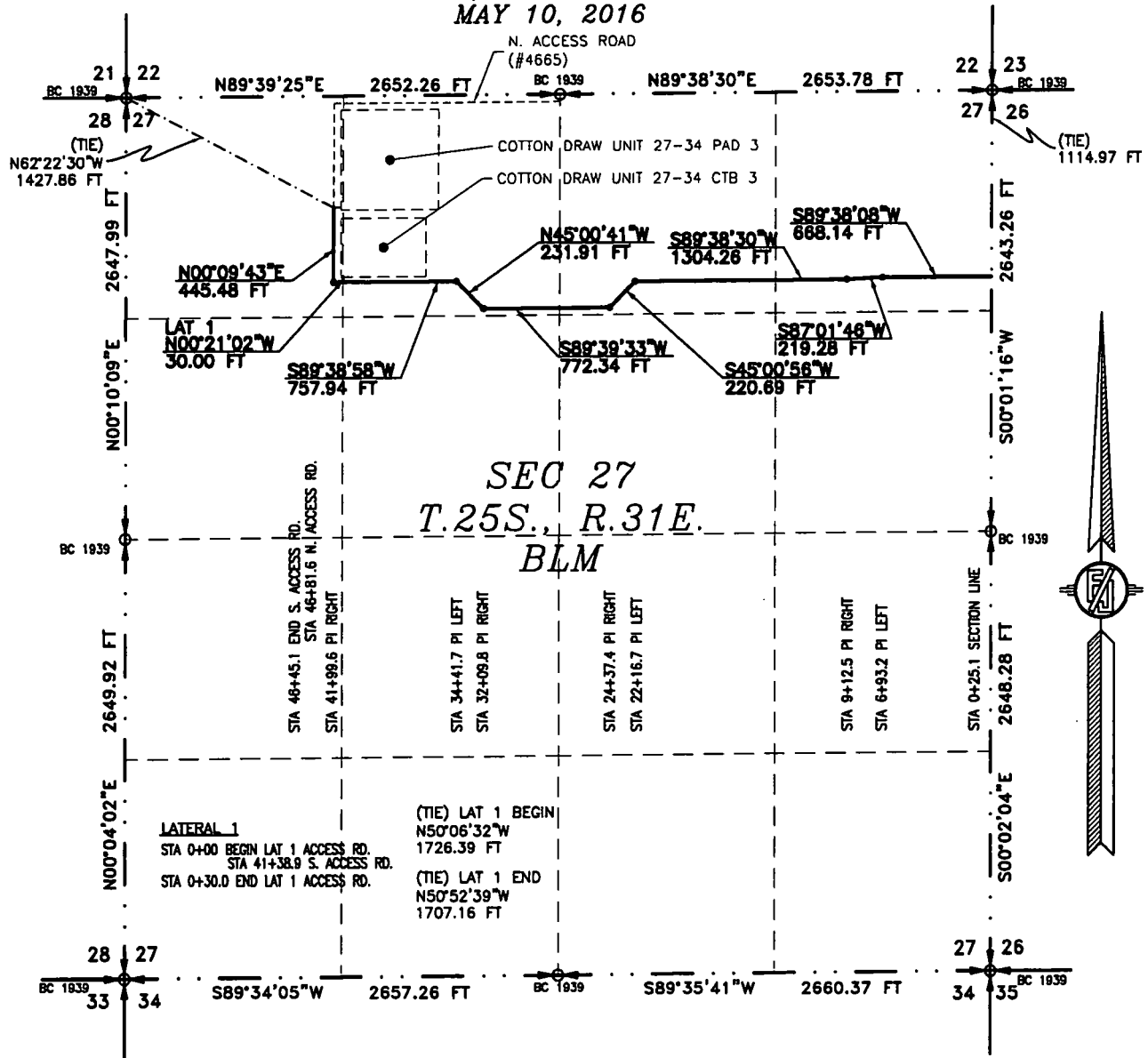
MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

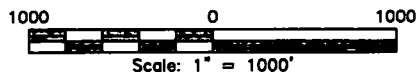
SURVEY NO. 4666
CARLSBAD, NEW MEXICO

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

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



SEE NEXT SHEET (4-6) FOR DESCRIPTION



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. 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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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 10 DAY OF MAY 2016

12797
FILIMON F. JARAMILLO, PLS.
NEW MEXICO

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

SHEET: 4-6

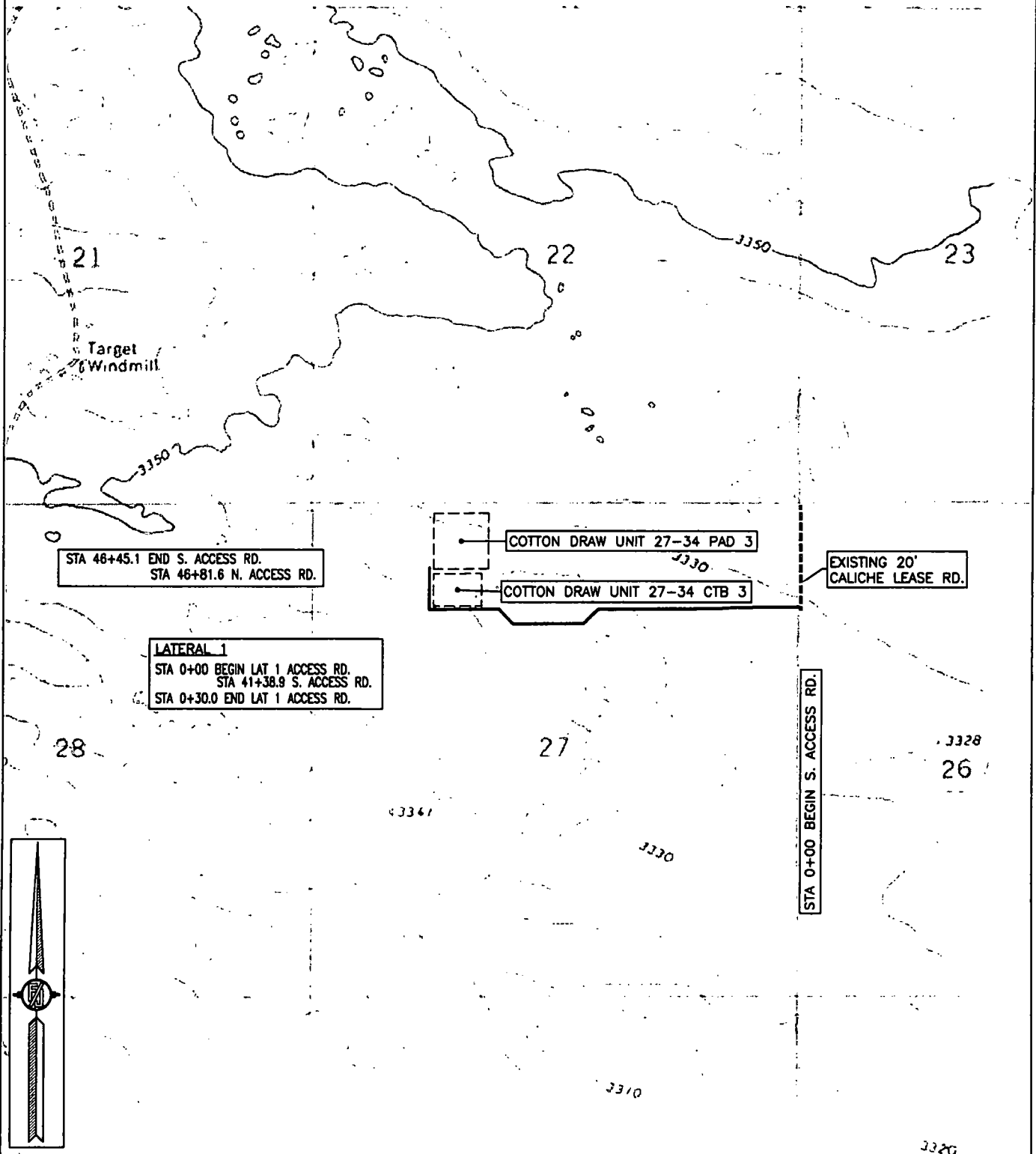
MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

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 T25S 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.

28

27

STA 0+00 BEGIN S. ACCESS RD.



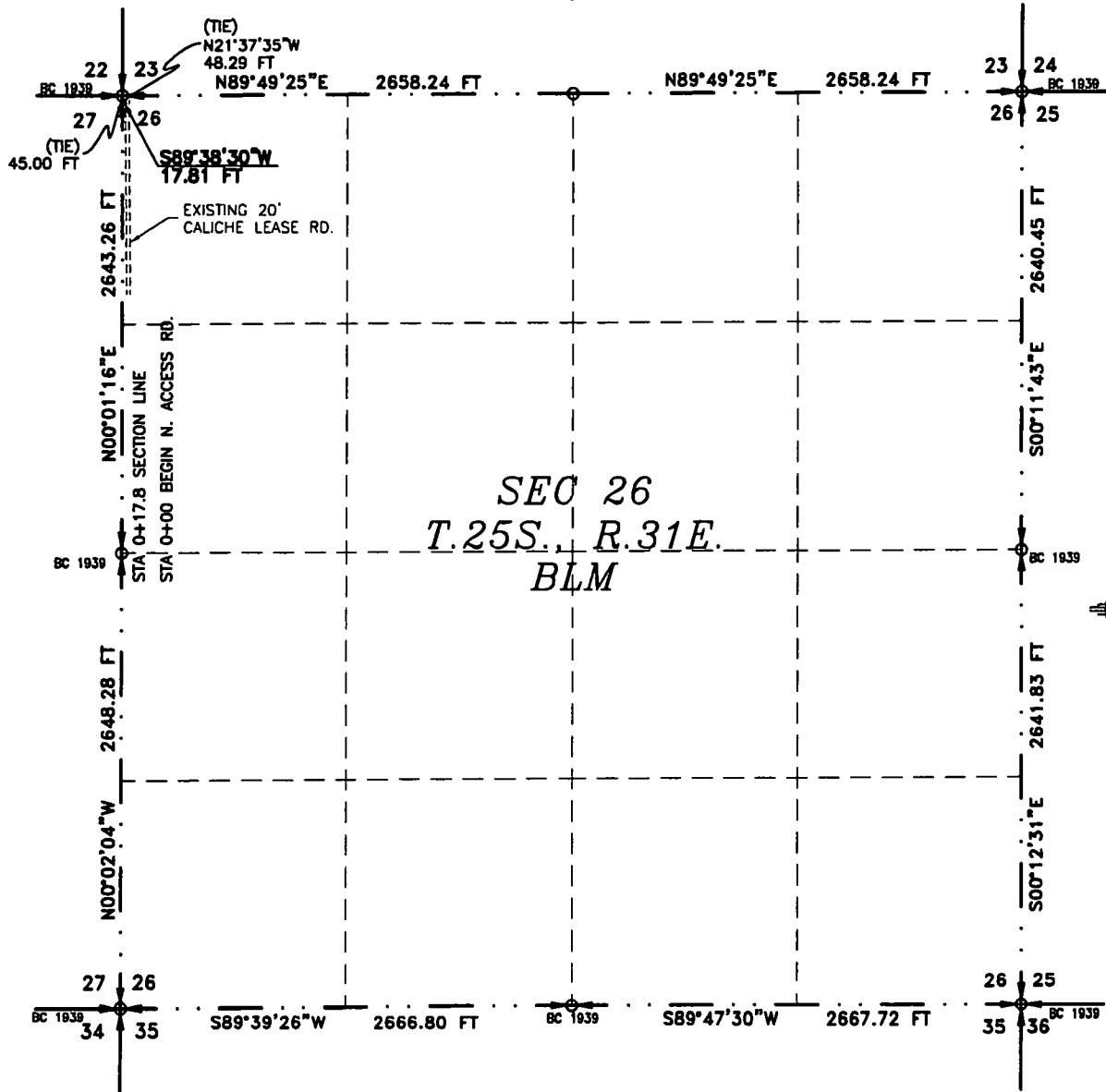
SHEET: 6-6

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

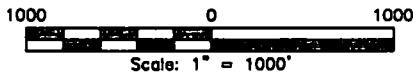
SURVEY NO. 4666

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 10 DAY OF MAY 2016

Filmon F. Jaramillo
FILMON F. JARAMILLO, PLS. 12797
PROFESSIONAL SURVEYOR
301 SOUTH CANAL
(575) 234-3341

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

SHEET: 1-6

MADRON SURVEYING, INC.

SURVEY NO. 4665

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 12 DAY OF MAY 2016

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.

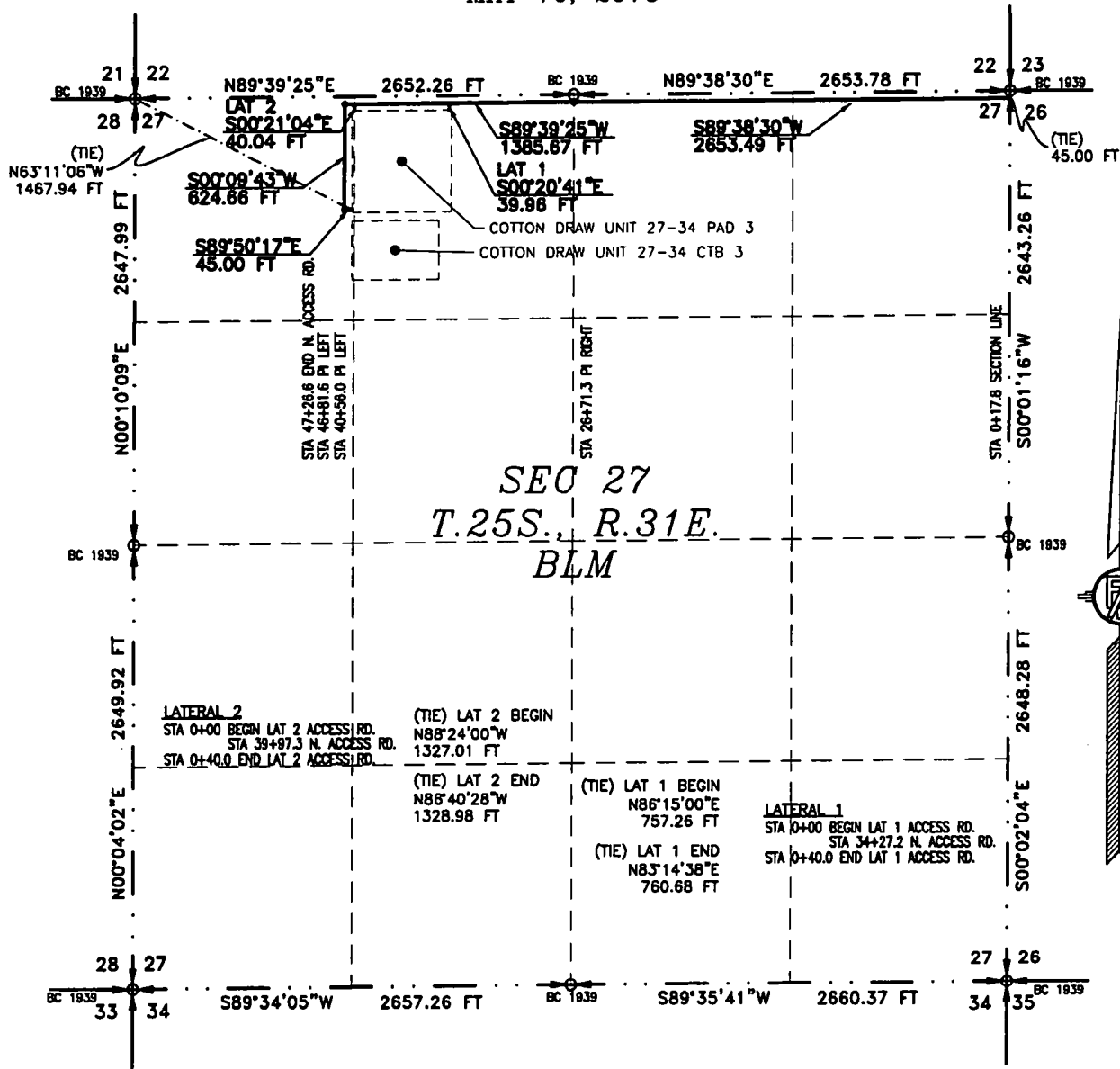
SHEET: 2-6

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

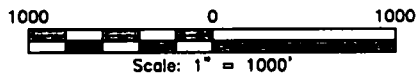
SURVEY NO. 4665

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
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 12 DAY OF MAY 2016

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

SHEET: 3-6

MADRON SURVEYING, INC. 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
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

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.

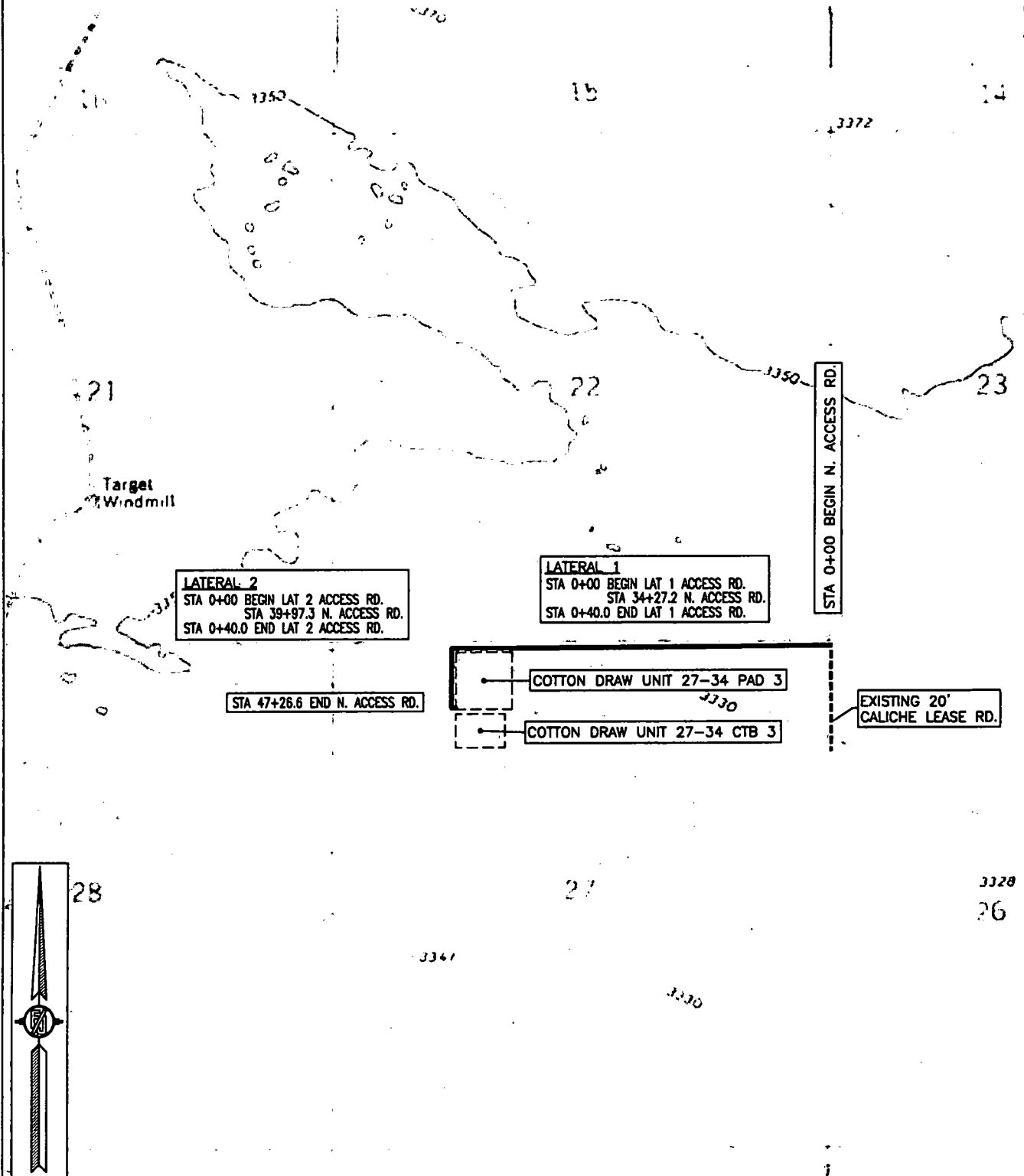
301 SOUTH CANAL
(575) 234-3341

CARLSBAD, NEW MEXICO

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



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+87.3 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 47+28.6 END N. ACCESS RD.

COTTON DRAW UNIT 27-34 PAD 3

COTTON DRAW UNIT 27-34 CTB 3

STA 0+00 BEGIN N. ACCESS RD.

EXISTING 20'
CALICHE LEASE RD.

28

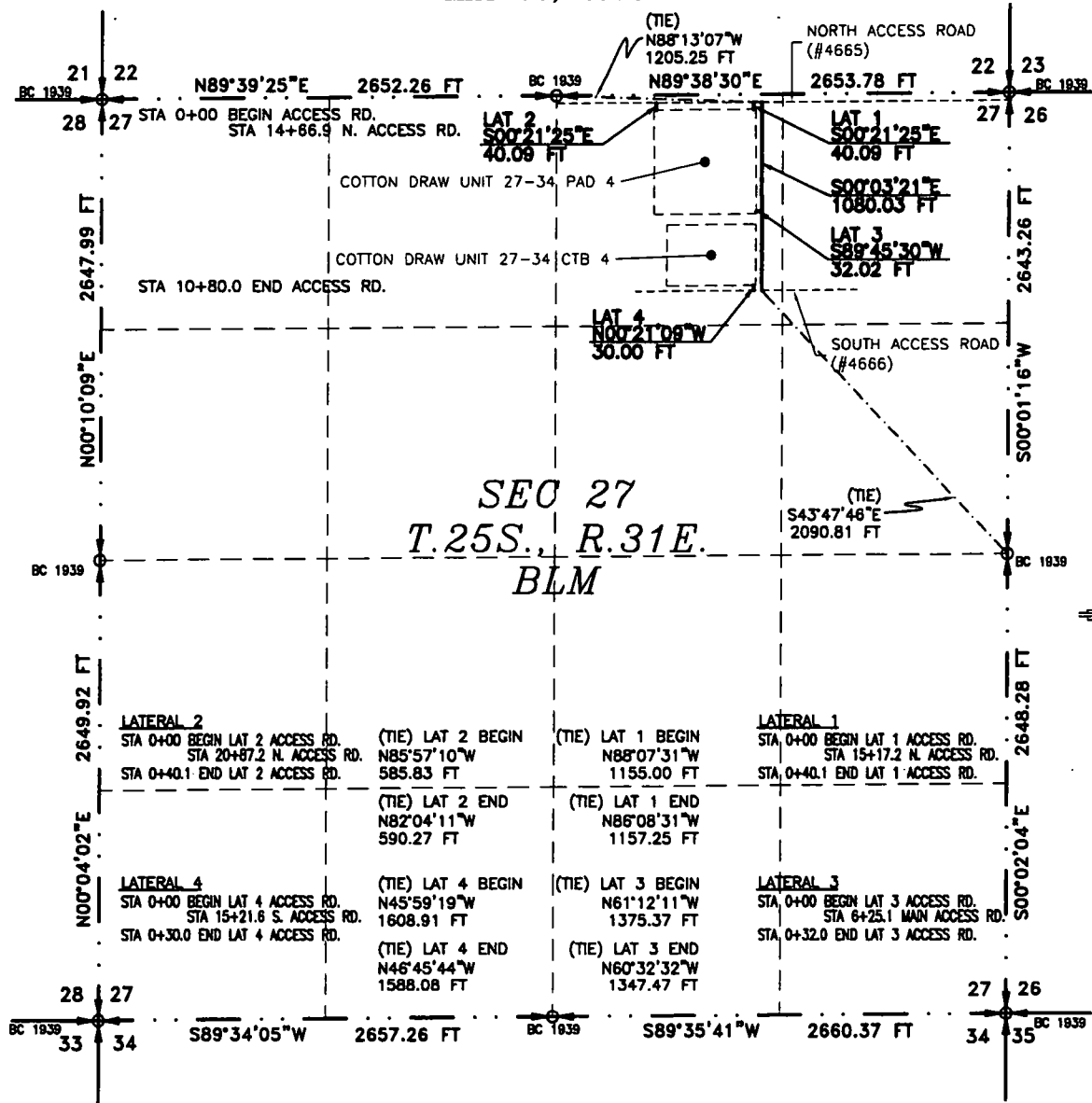
27



ACCESS ROAD PLAT (AA000055106)

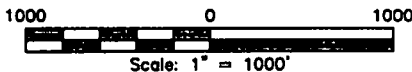
ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 4 & TO THE COTTON DRAW UNIT 27-34 CTB 4

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



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

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 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 12/9/2016 DAY OF MAY 2016

FILMON F. JARAMILLO, P.E.S. 12797
PROFESSIONAL SURVEYOR

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. 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;

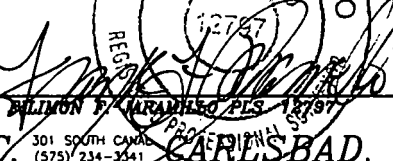
SAID STRIP OF LAND BEING 30.00 FEET OR 1.82 RODS IN LENGTH, CONTAINING 0.021 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 30.00 L.F. 1.82 RODS 0.021 ACRES

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


FILIMON F. JARAMILLO P.L.S. 12797

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

SURVEY NO. 4667

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.

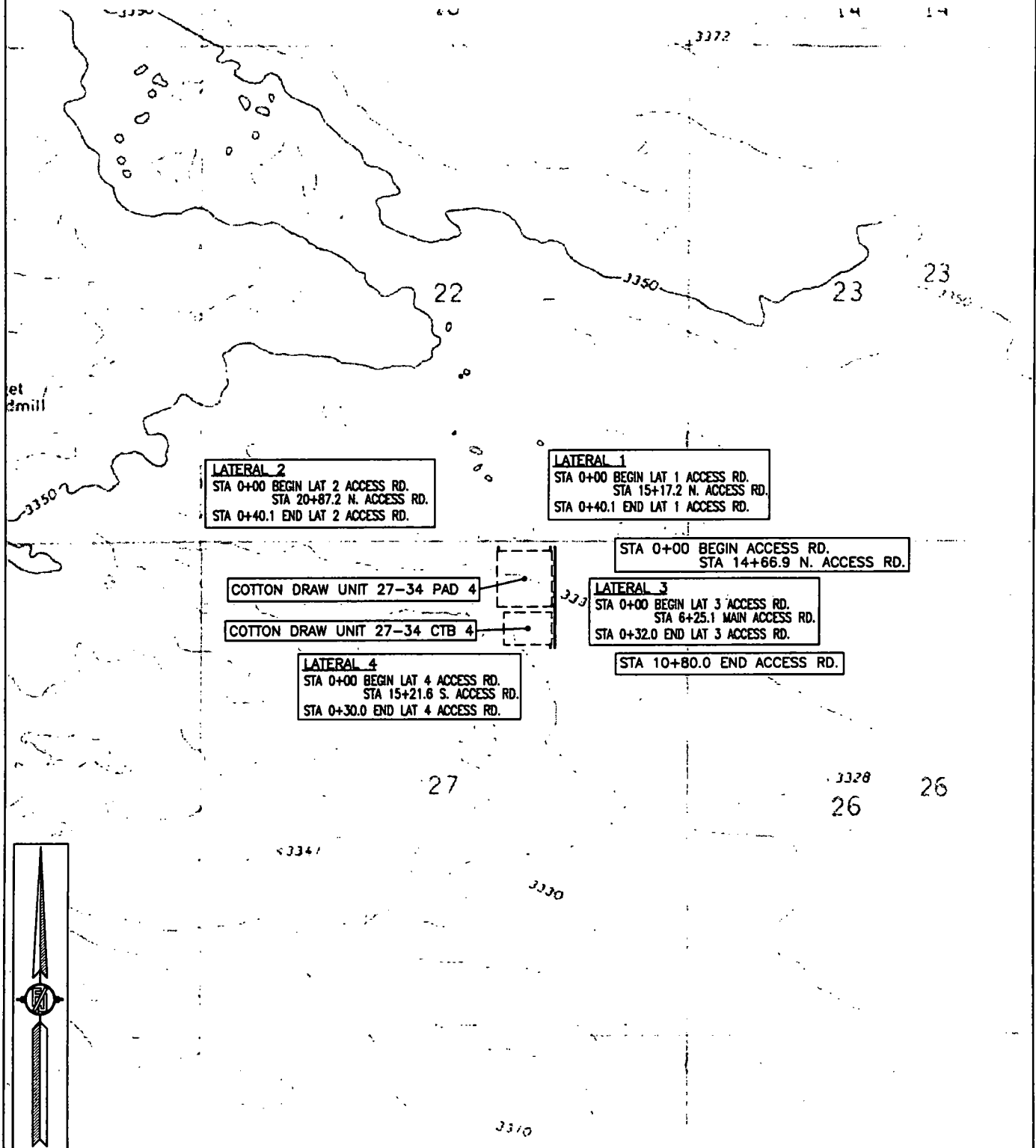
SHEET: 2-4

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

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



SHEET: 3-4

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

SURVEY NO. 4667

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

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

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.

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 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 0.3 Miles 1 inch = 0.44 miles

LUSITANO 27-34 FED COM 624H WA017166728

SHIRE 22 FED 1H

Nearest wellbore to SHL:

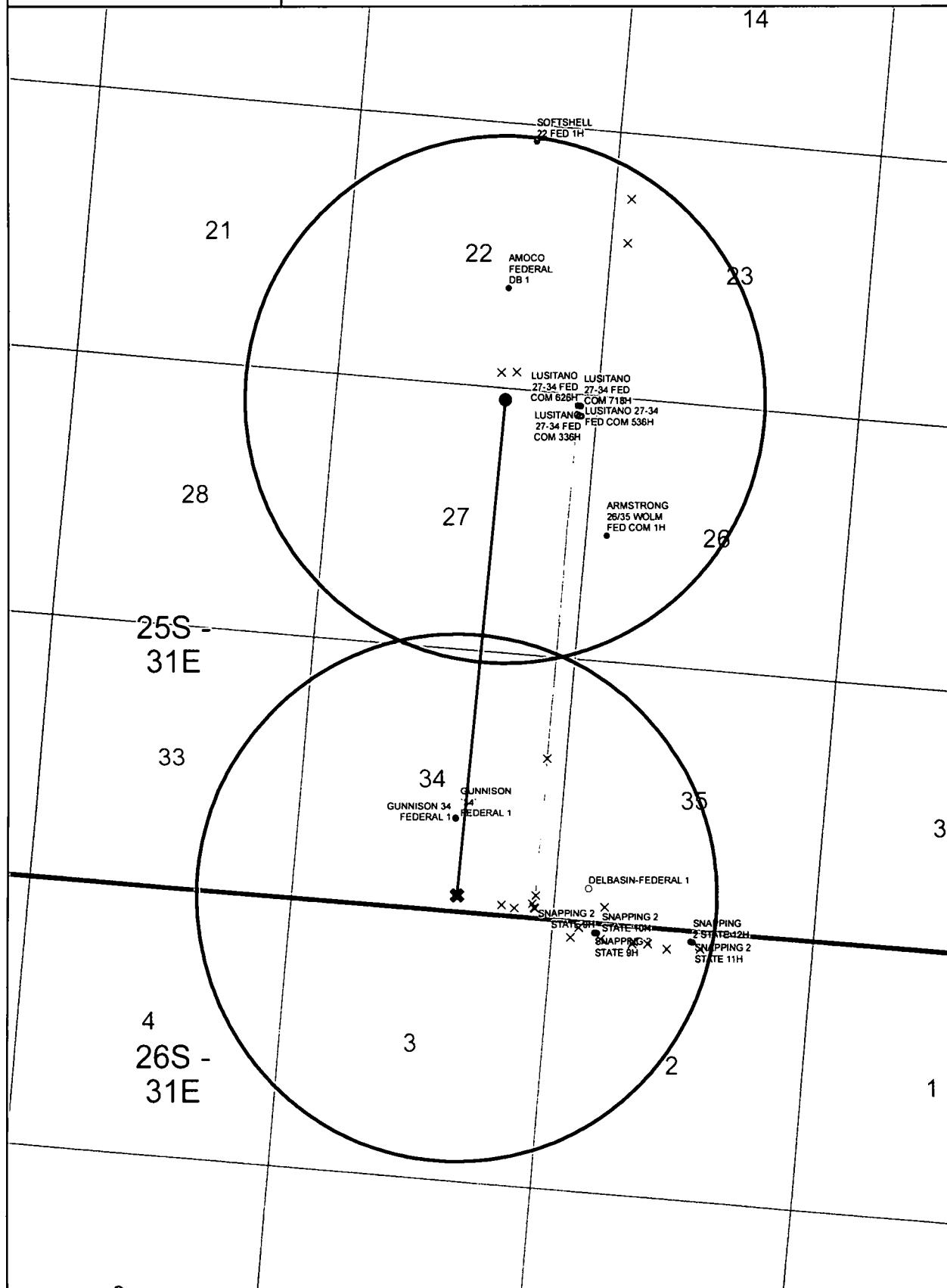
551 ft.

LUSITANO 27-34 FED COM 626H

Nearest wellbore to BHL:

928 ft.

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



LUSITANO 27-34 FED COM

624H/524H/535H/232H/525H

devon

This map is for illustrative purposes only and is neither a legally recorded map nor survey and is not intended to be used as one. Devon makes no warranty, representation, or guarantee of any kind regarding this map.

WGS_1984_Web_Mercator_Auxiliary_Sphere

Prepared by: _User

Map is current as of: 23-Aug-2018

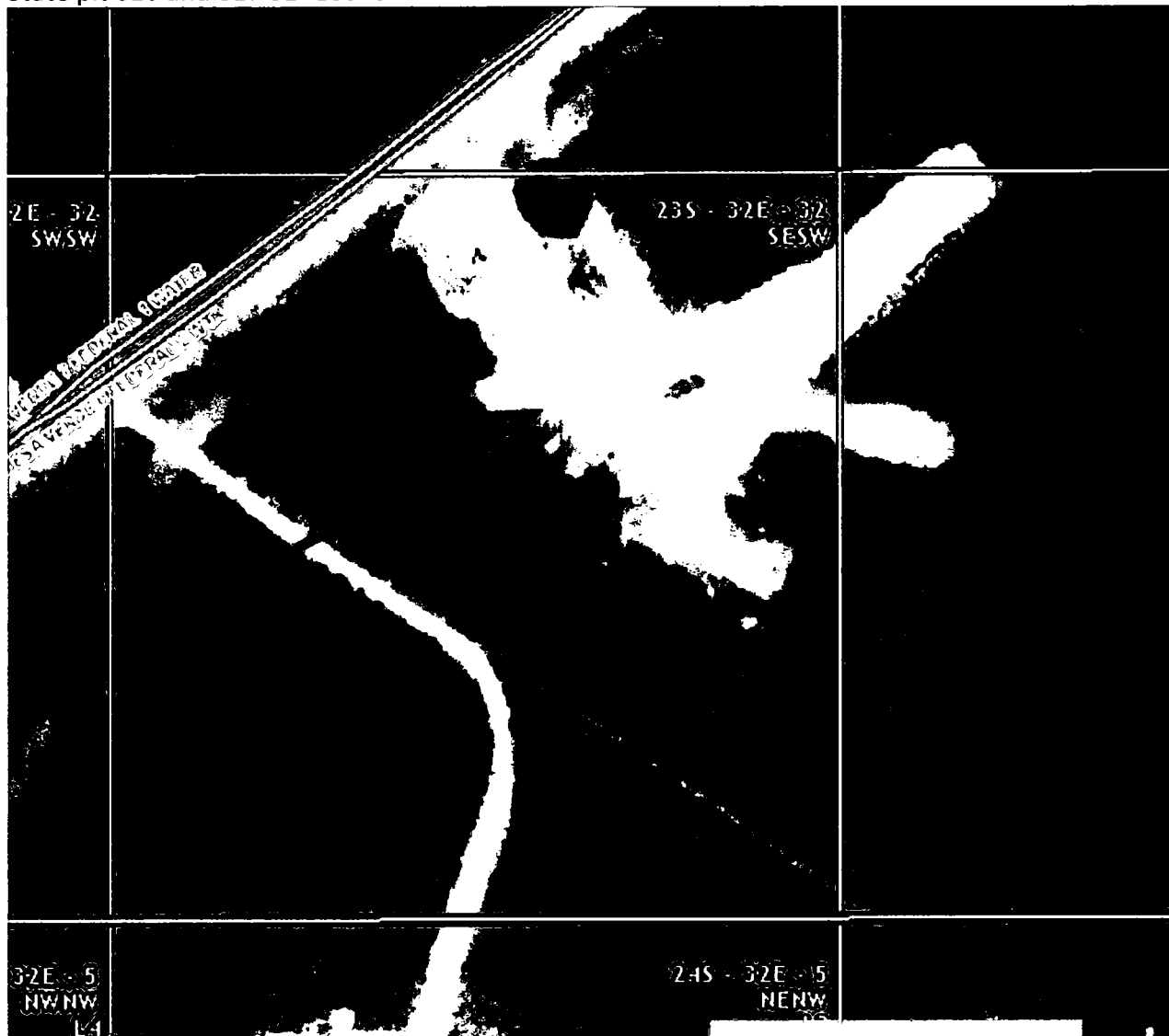


Miles
0 0.14 0.28 0.56 1:28,457

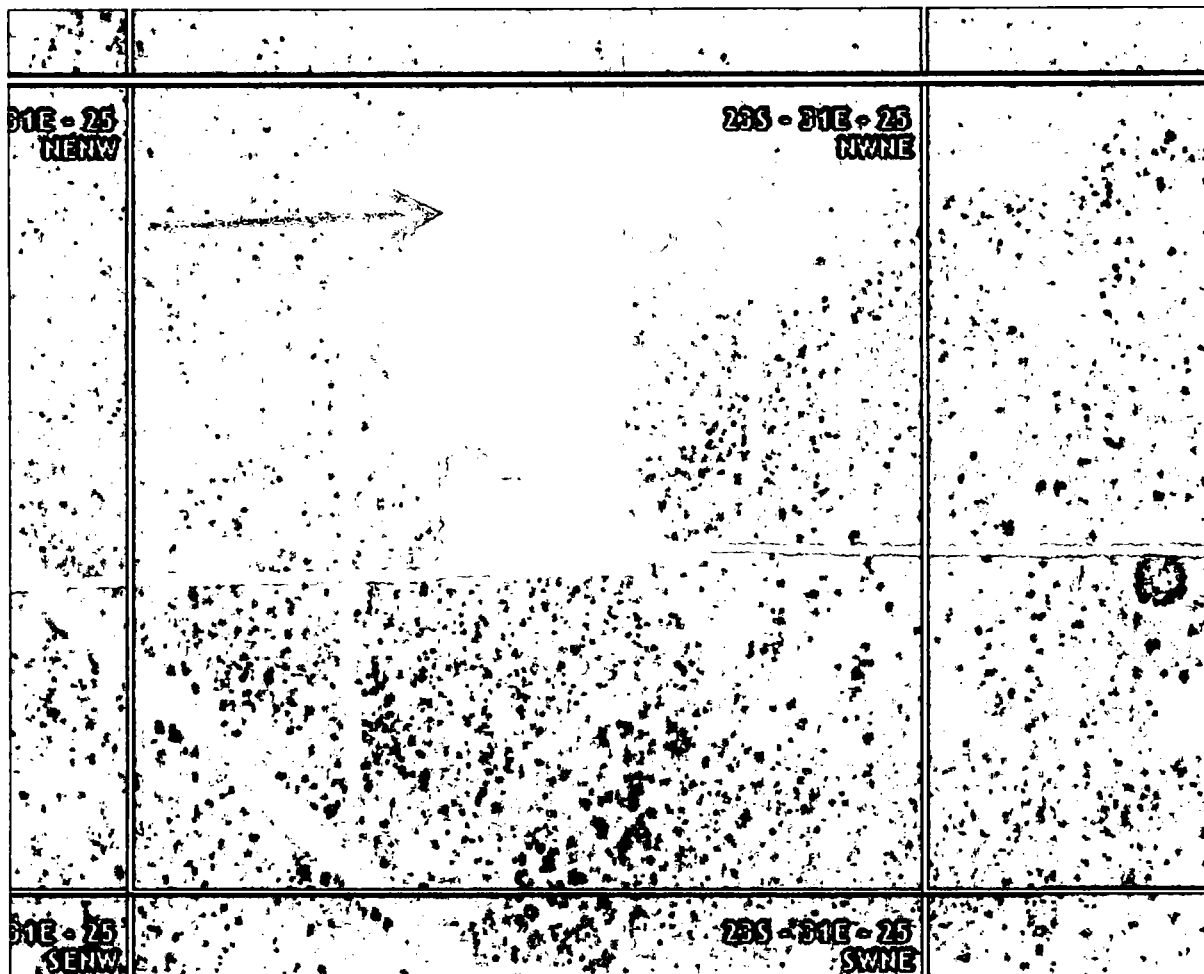
- DYN Currently Drilling
- DYN Currently Fracing



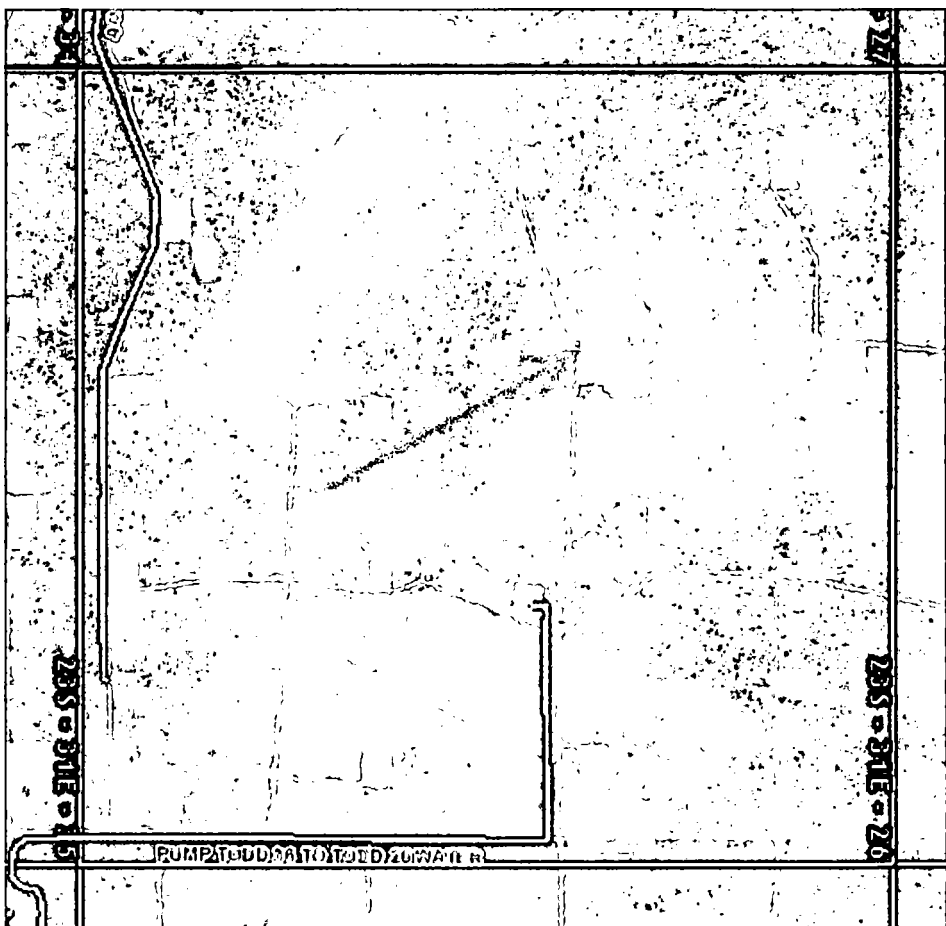
- State pit 616 and 617 32- 23S- 32E



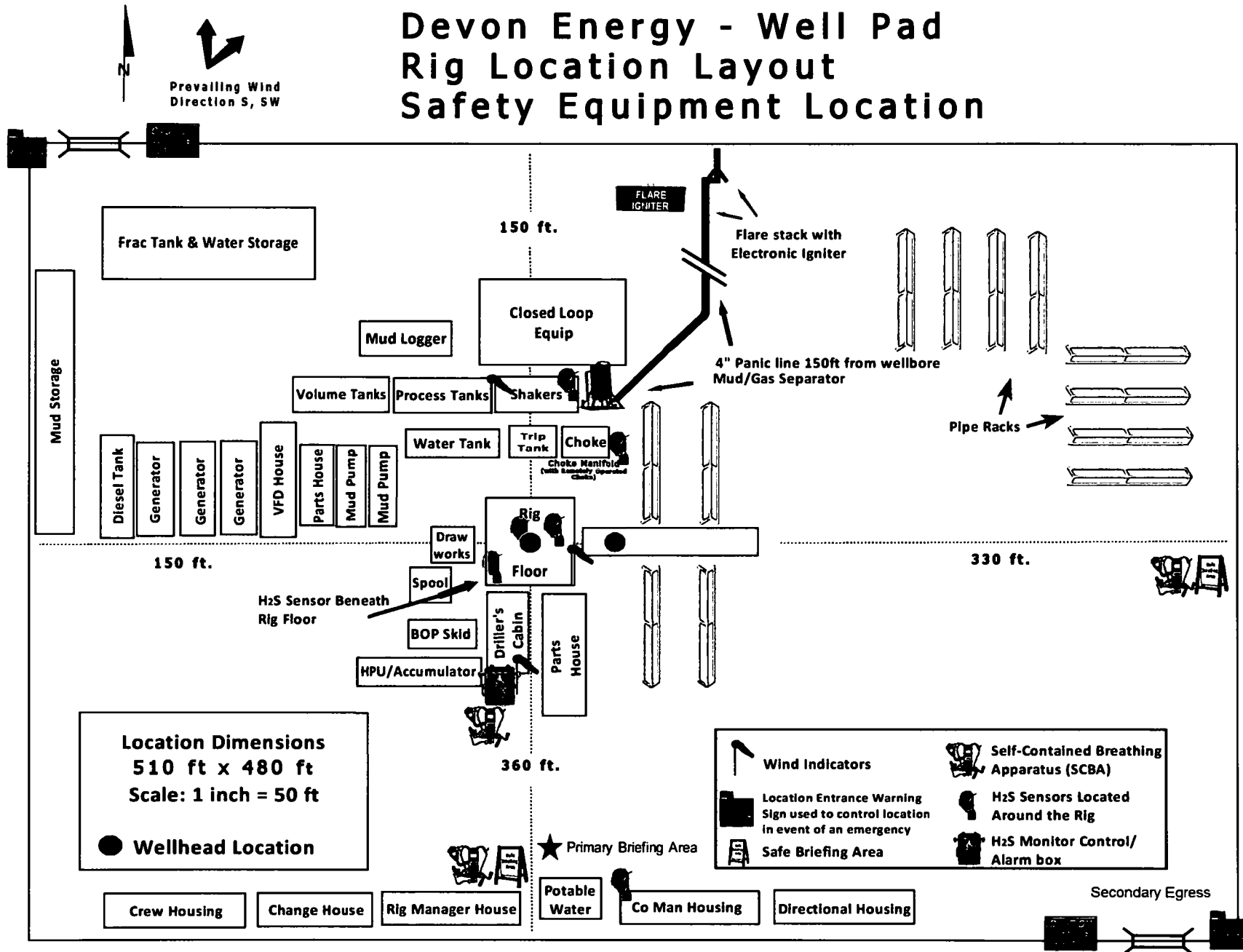
- Fed pit 25- 23S- 31E



- Private pit 26- 23S- 31E



Devon Energy - Well Pad Rig Location Layout Safety Equipment Location

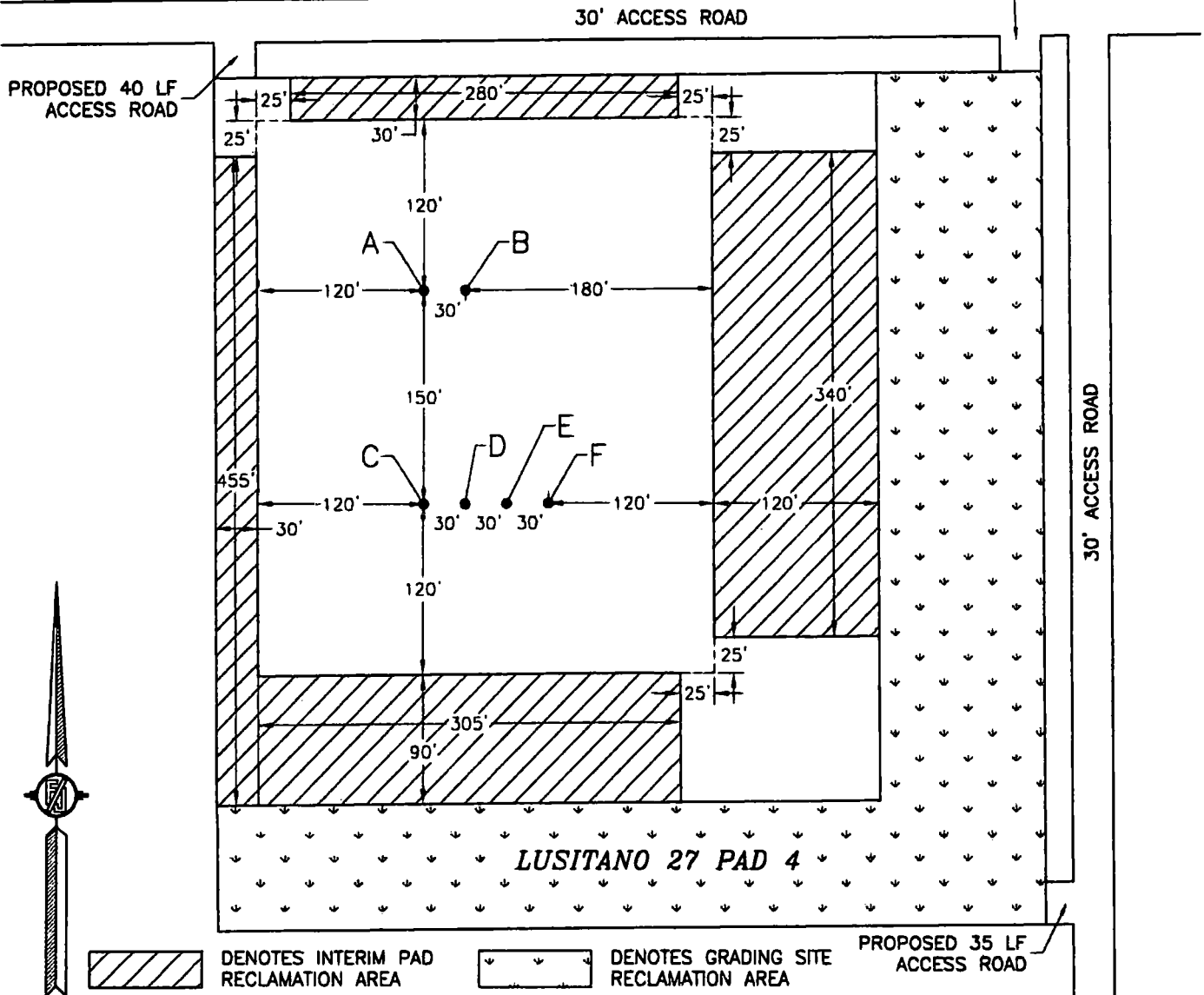


**SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
INTERIM SITE BUILD PLAN**

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



0 10 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

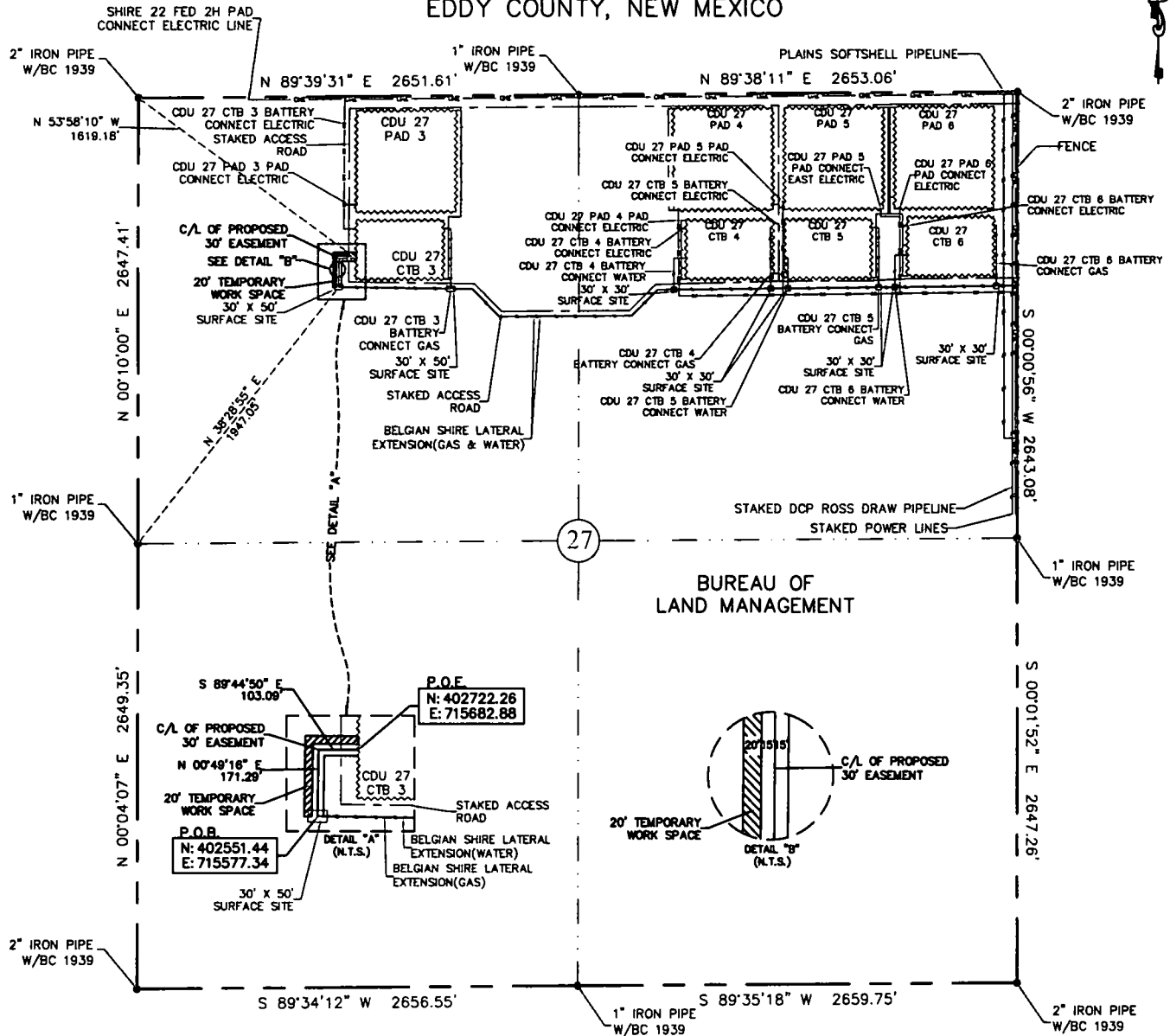
**DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 624H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1934 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM**

AUGUST 2, 2018

SURVEY NO. 6436

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

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



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

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

SEE THE ATTACHED LEGAL DESCRIPTION

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

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

B.L. Laman PLS #22404
 Date Signed: 05-12-2018
 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: 05/03/2018

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:
7800672

WBS NUMBER:
CC-110133.03

SCALE:
1" = 1000'

REVISIONS:

SHEET:
1 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 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:

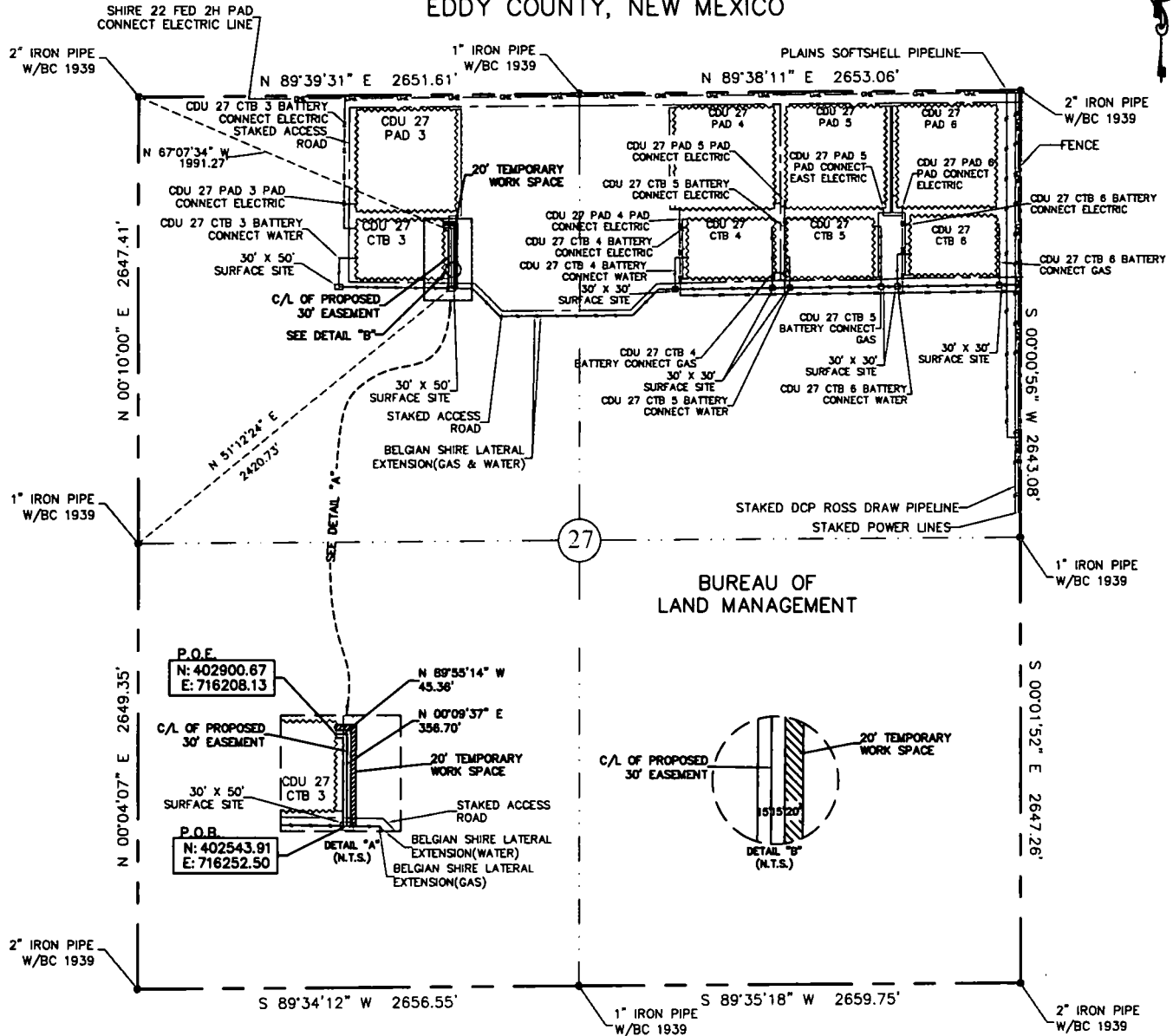
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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



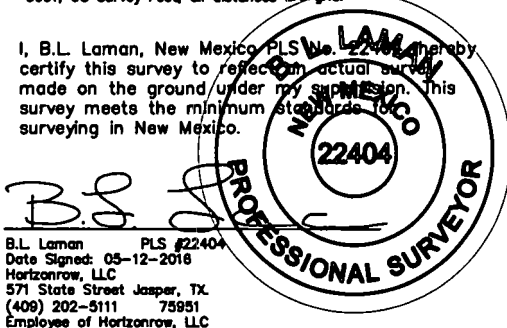
30' EASEMENT AREA = 0.277 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.208 ACRE(S)
402.06 FEET OR 24.37 RODS

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:

devon

Drawn by:
CHRIS MAAS

Date: 05/03/2016

0 1000 2000



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:
760067X

WBS NUMBER:
CC-110133.01

SCALE:
1" = 1000'

REVISIONS:

SHEET:
3 OF 18

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

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

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

20' TEMPORARY WORK SPACE DESCRIPTION:

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

NOTES:

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

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



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

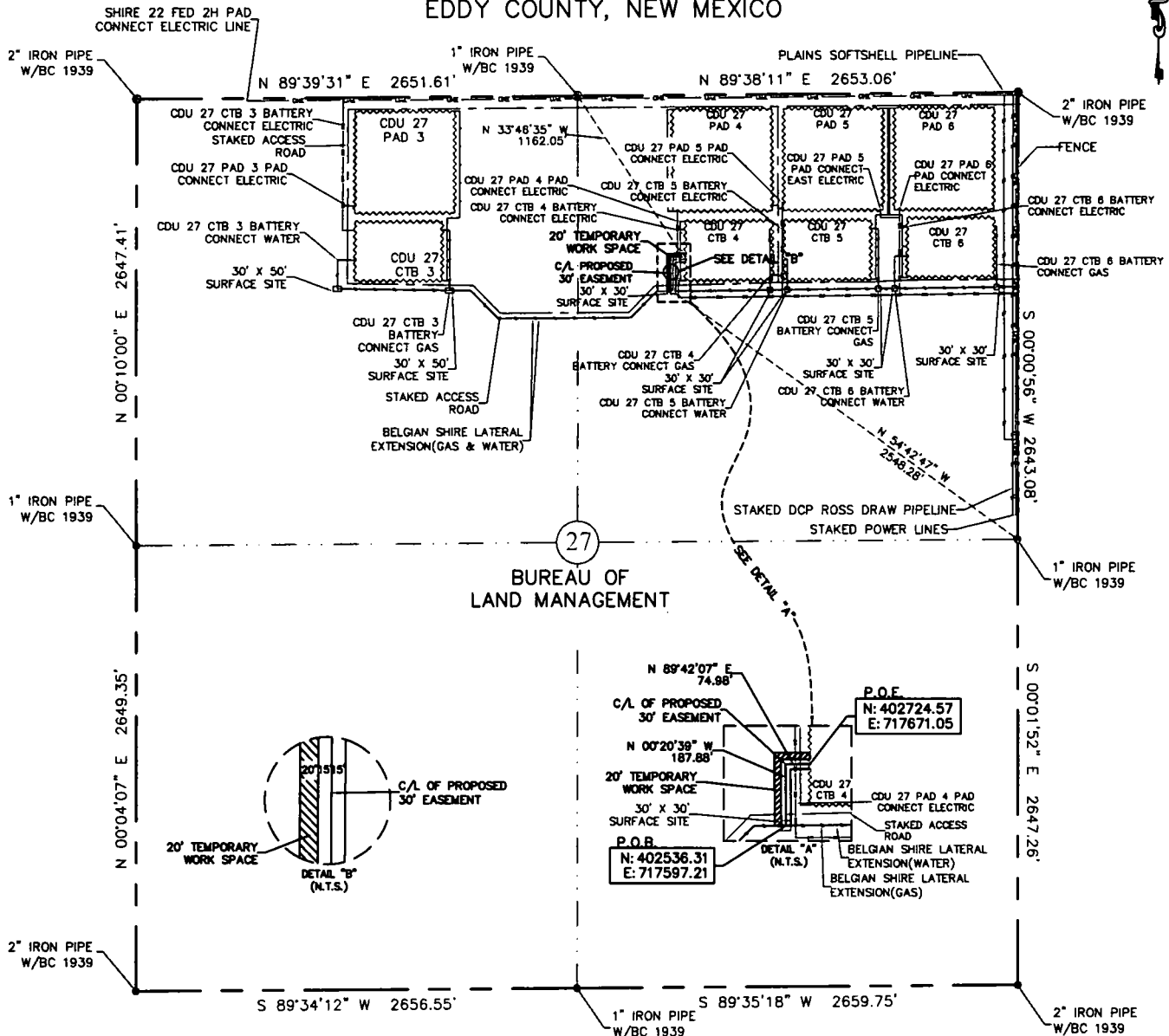
571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC



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



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

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

SEE THE ATTACHED LEGAL DESCRIPTION

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

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: 05/03/2018

0 1000 2000

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 4 BATTERY
CONNECT (WATER)

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

LINE NUMBER:
760068Z

WBS NUMBER:
CC-110133.03

SCALE:
1" = 1000'

REVISIONS:

SHEET:
5 OF 18

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

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

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

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

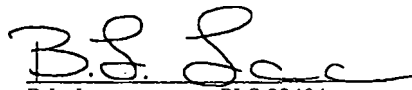
20' TEMPORARY WORK SPACE DESCRIPTION:

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

NOTES:

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

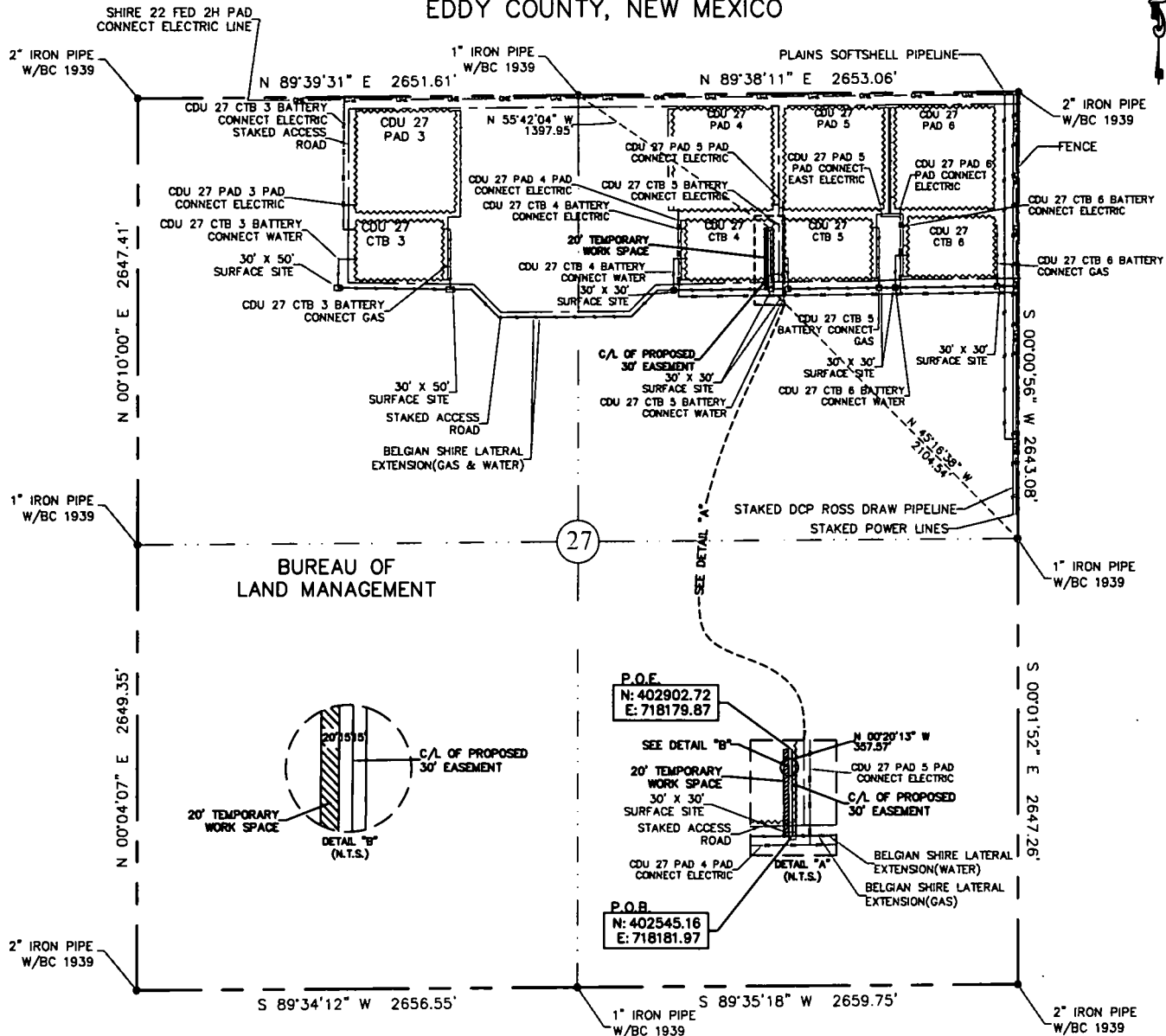
I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.



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



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



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

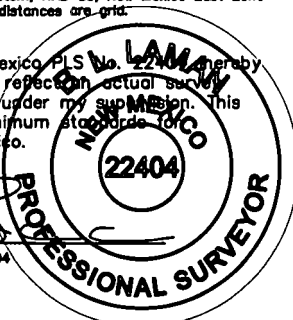
0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
 0+14.0 EXIT 30' X 30' SURFACE SITE
 0+41.9 C/L STAKED ACCESS ROAD
 0+57.7 ENTER CDU 27 CTB 4
 3+57.6 P.O.E.

SEE THE ATTACHED LEGAL DESCRIPTION

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

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect 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**.

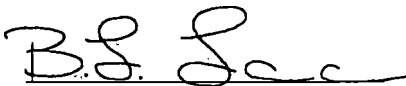
20' TEMPORARY WORK SPACE DESCRIPTION:

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

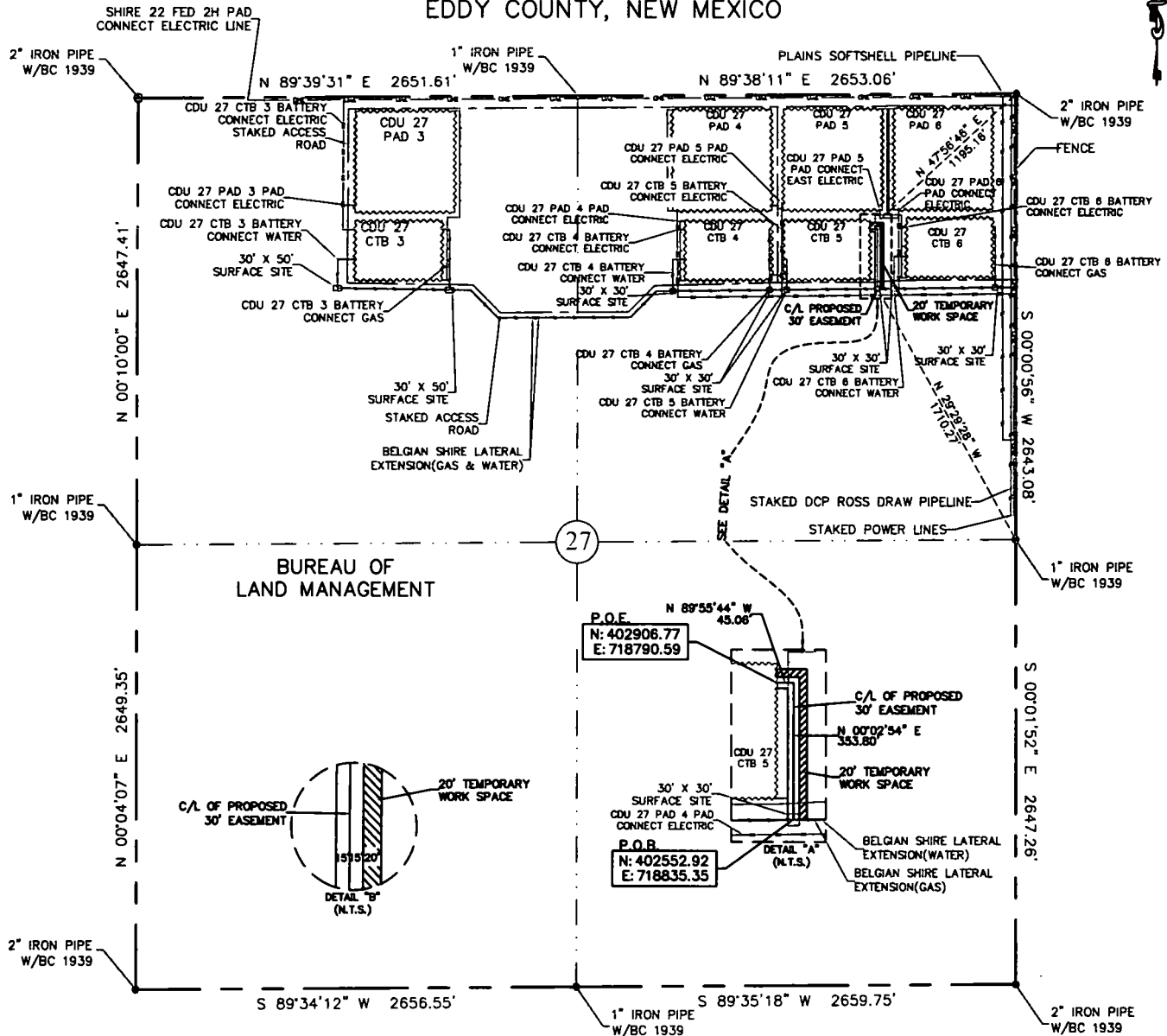
571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 11 of 18
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



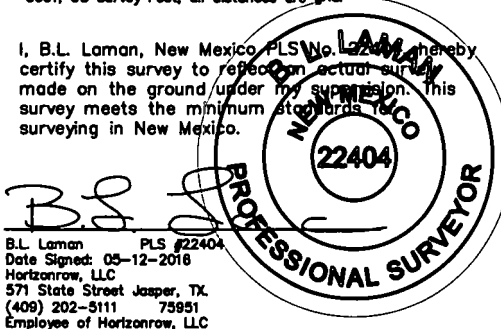
30' EASEMENT AREA = 0.275 ACRE(S)
20' TEMPORARY WORK SPACE AREA = 0.206 ACRE(S)
398.86 FEET OR 24.17 RODS

0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (GAS)
0+14.0 EXIT 30' X 30' SURFACE SITE
0+41.9 C/L STAKED ACCESS ROAD
3+98.9 P.O.E./CDU 27 CTB 5

SEE THE ATTACHED LEGAL DESCRIPTION

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

I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to 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: 05/03/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 5 BATTERY
CONNECT (GAS)

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

LINE NUMBER:
780069X

WBS NUMBER:
CC-110133.01

SCALE:
1" = 1000'

REVISIONS:

SHEET:
11 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 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**.

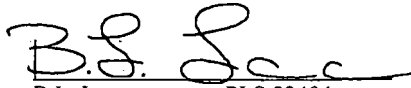
20' TEMPORARY WORK SPACE DESCRIPTION:

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

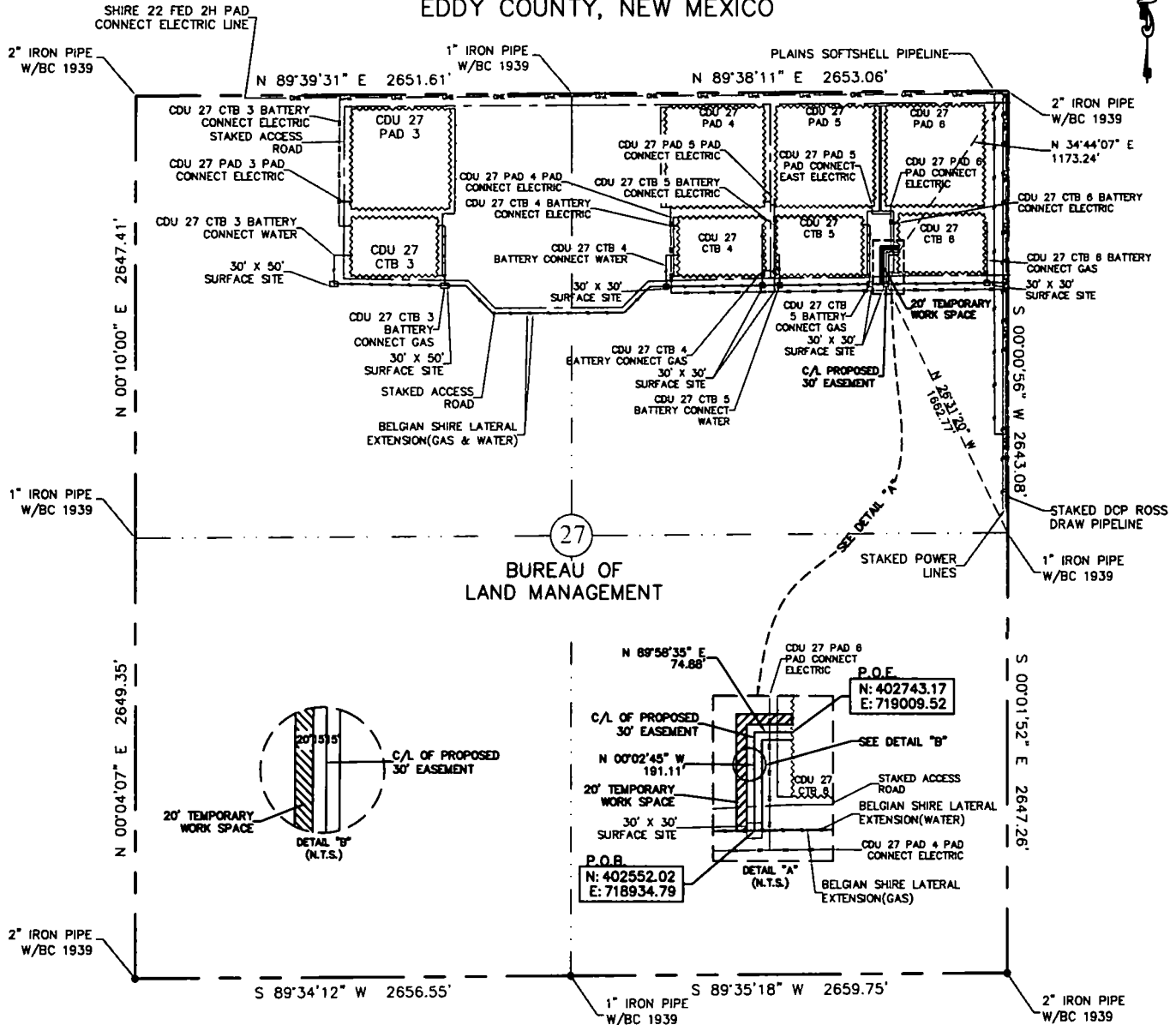
571 State Street, Jasper, TX

(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





**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

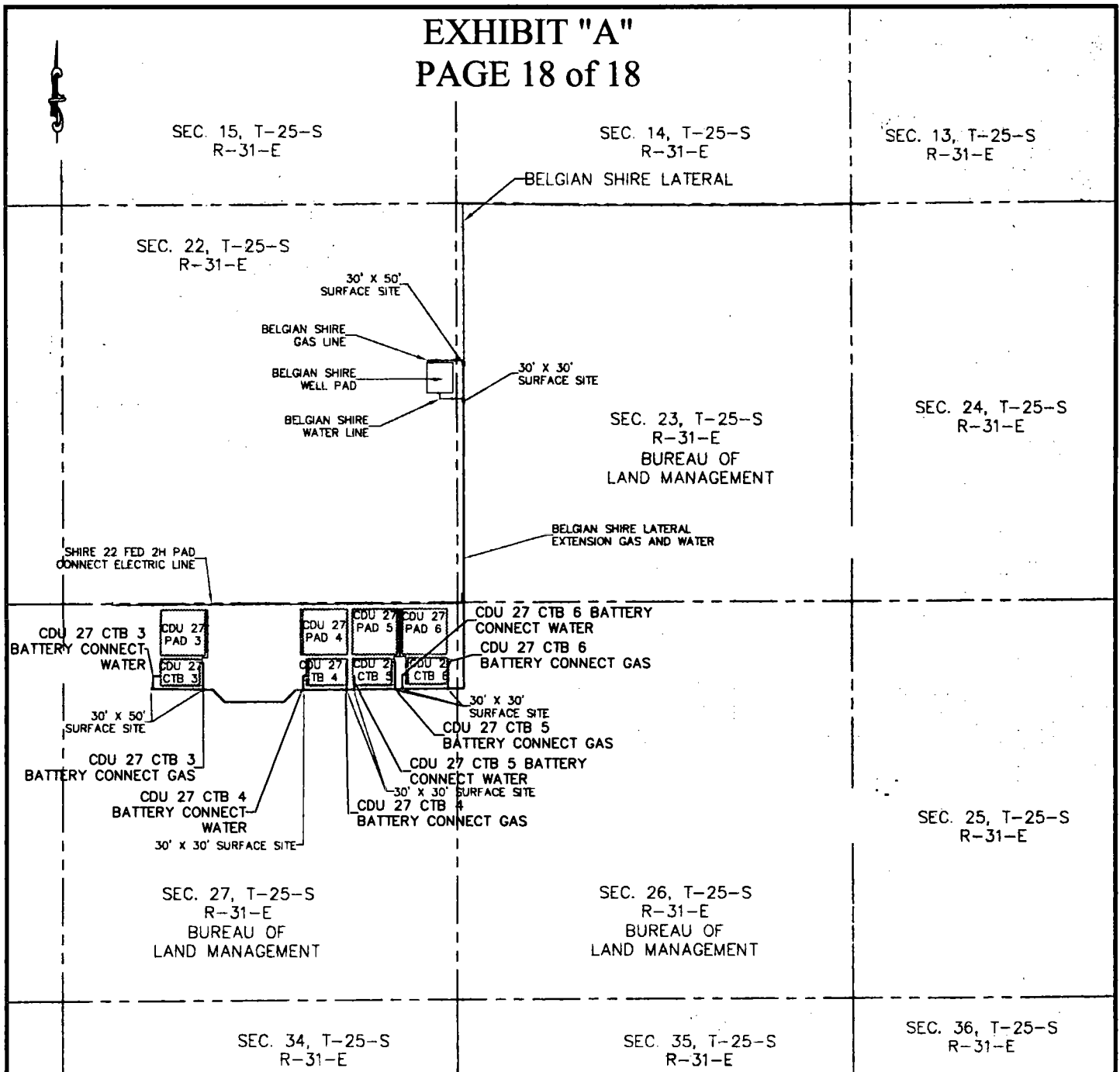


SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

<i>HORIZON ROW LLC</i>		WES NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)		CC-110133.01	7600679X.2
CDU 27 CTB 4 BATTERY CONNECT (GAS & WATER)		CC-110133.01	7600680X.2
CDU 27 CTB 5 BATTERY CONNECT (GAS & WATER)		CC-110133.01	7600681X.2
CDU 27 CTB 6 BATTERY CONNECT (GAS & WATER)		CC-110133.01	7600701X.2
Drawn for:		DEVON ENERGY PRODUCTION COMPANY, L.P.	
 devon		SCALE: 1" = 2000' REVISIONS: SHEET: 18	
Drawn by: CHRIS MAAS	Date: 05/04/2016	PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT	

EXHIBIT "A"

PAGE 18 of 18



AERIAL MAP

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

HORIZON ROW LLC		WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)		CC-110133.01	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	760090X.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: 05/04/2018	SCALE: 1" = 2000'	REVISIONS:
		SHEET: 18 OF 18	

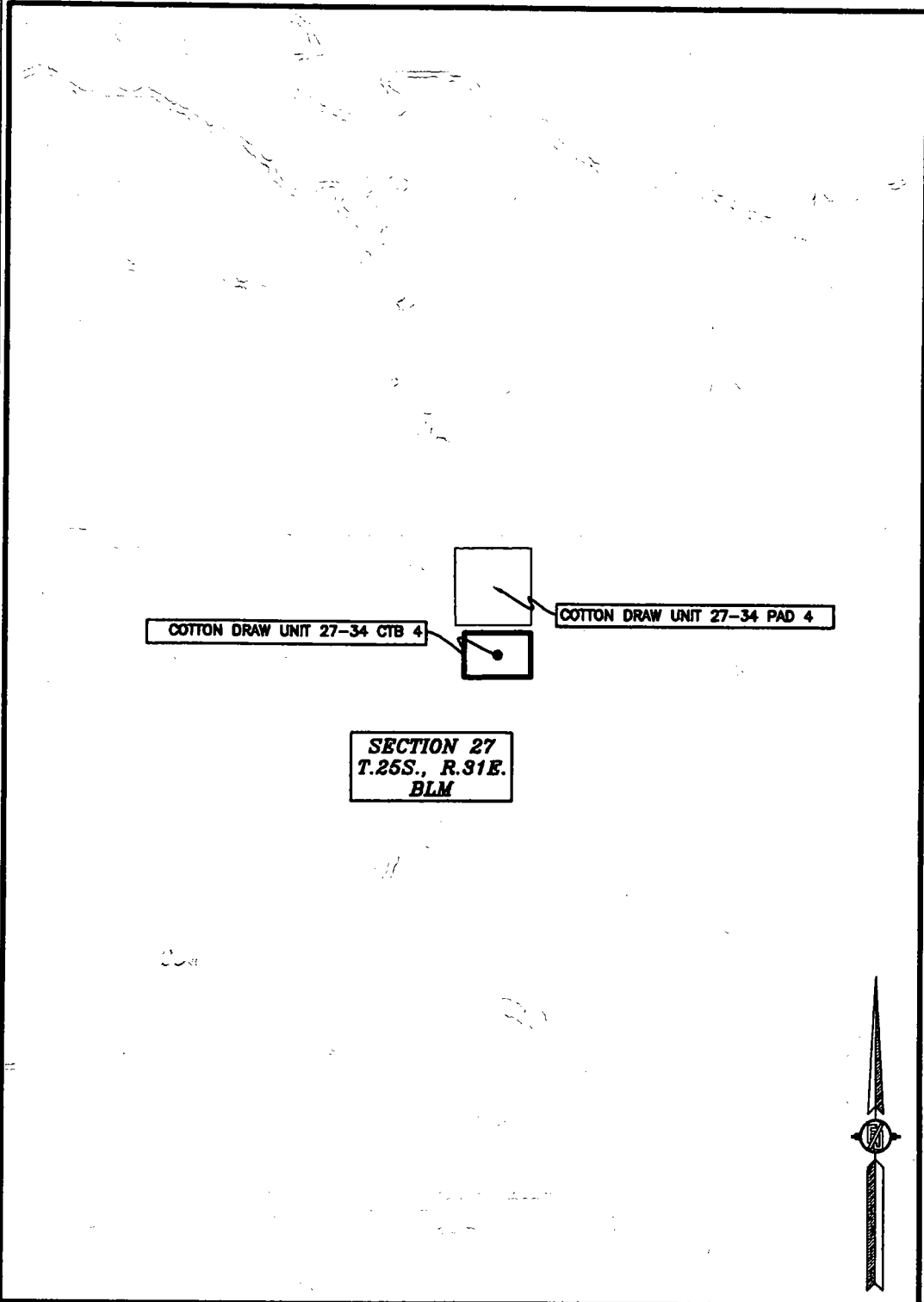
SURVEY NO. 4495B
CARLSBAD, NEW MEXICO

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

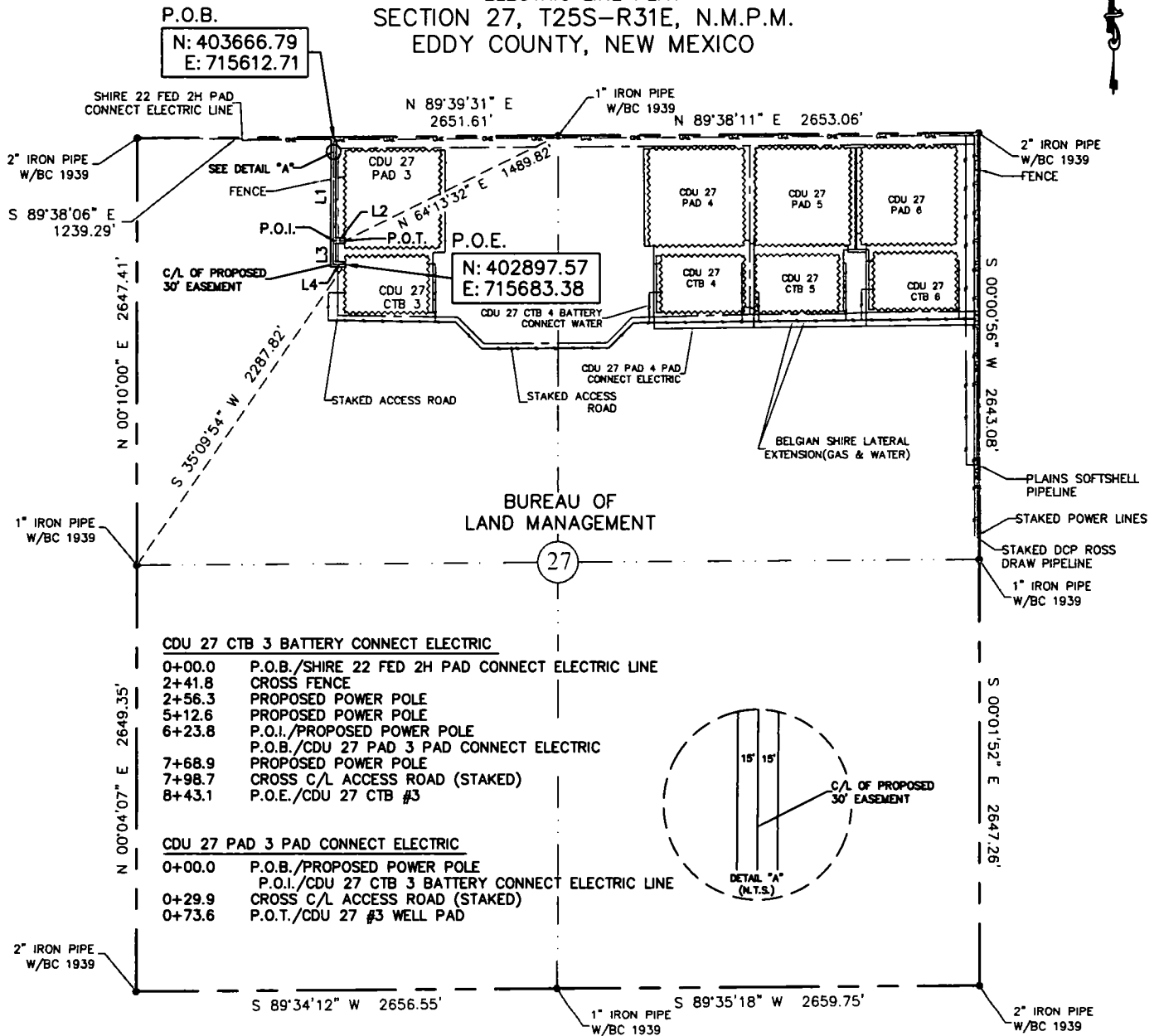
27

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



CDU 27 CTB 3 BATTERY CONNECT ELECTRIC
 0+00.0 P.O.B./SHIRE 22 FED 2H PAD CONNECT ELECTRIC LINE
 2+41.8 CROSS FENCE
 2+56.3 PROPOSED POWER POLE
 5+12.6 PROPOSED POWER POLE
 6+23.8 P.O.I./PROPOSED POWER POLE
 7+68.9 P.O.B./CDU 27 PAD 3 PAD CONNECT ELECTRIC
 7+98.7 PROPOSED POWER POLE
 8+43.1 CROSS C/L ACCESS ROAD (STAKED)
 P.O.E./CDU 27 CTB #3

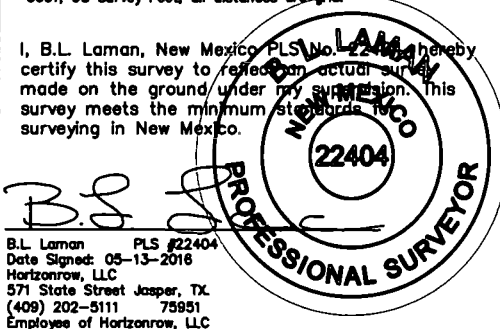
CDU 27 PAD 3 PAD CONNECT ELECTRIC
 0+00.0 P.O.B./PROPOSED POWER POLE
 0+29.9 P.O.I./CDU 27 CTB 3 BATTERY CONNECT ELECTRIC LINE
 0+73.6 CROSS C/L ACCESS ROAD (STAKED)
 P.O.T./CDU 27 #3 WELL PAD

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 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

LINE	BEARING	DISTANCE
L1	S 00°16'02" W	623.83'
L2	S 89°45'48" E	173.61'
L3	S 00°16'02" W	145.03'
L4	S 89°42'35" E	174.25'

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		DEVON ENERGY PRODUCTION COMPANY, L.P.
CDU 27 CTB 3 BATTERY CONNECT AND CDU 27 PAD 3 PAD CONNECT ELECTRIC LINES		SCALE: 1" = 1000'
Drawn for:		REVISIONS:
devon		SHEET: 1 OF 17
Drawn by: WAYNE BEETS		Date: 05/09/2016
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.		

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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

Commencing from a 2" iron pipe w/ BC 1939 for the northwest corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence S 89°38'06" E a distance of 1239.29' to the **Point of Beginning** of this easement having coordinates of Northing=403666.79 feet, Easting=715612.71 feet, and continuing the following courses;

Thence S 00°16'02" W, a distance of 623.83' to the Point of Intersection;

Thence S 89°45'48" E, a distance of 73.61' to the point of termination of this portion of said easement, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 64°13'32" E a distance of 1489.82';

Thence continuing from said point of intersection the following courses;

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

Thence S 89°42'35" E, a distance of 74.25' to the **Point of Ending** having coordinates of Northing=402897.57 feet, Easting=715683.38 feet, from said point a 1" iron pipe w/ BC1939 found for the west quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears S 35°09'54" W a distance of 2287.82', covering **916.72' or 55.56 rods** and having an area of **0.621 acres**.

NOTES:

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

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



B.L. Laman PLS 22404

Date Signed: 05/13/2016

Horizon Row, LLC

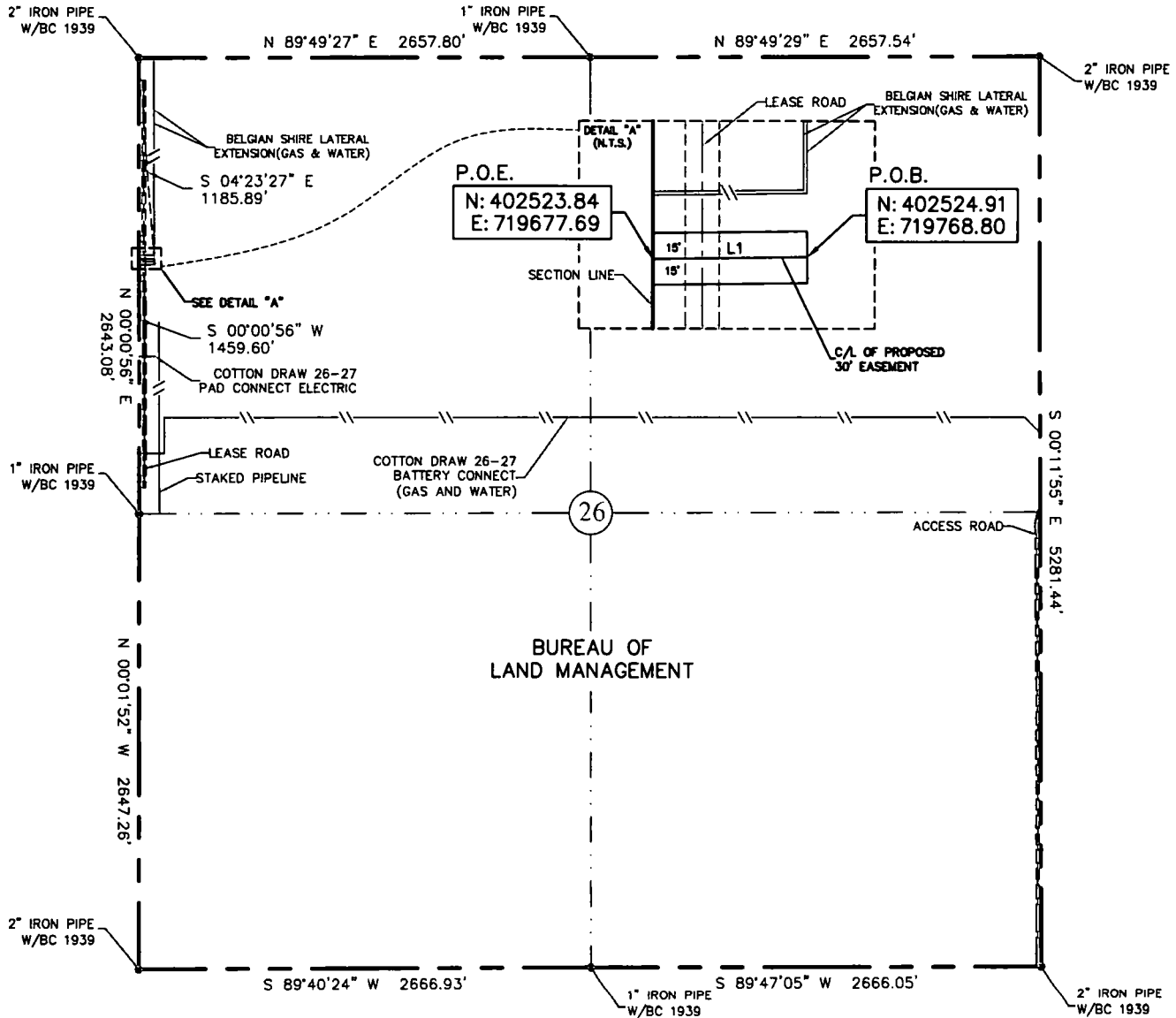
571 State Street, Jasper, TX

(402) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 4 of 17
ELECTRIC LINE PLAT
SECTION 26, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.063 ACRE(S)
91.12 FEET OR 5.52 RODS

0+00.0 P.O.B.
0+35.0 PROPOSED POWER POLE
0+49.9 EDGE OF LEASE ROAD
0+61.3 C/L LEASE ROAD
0+72.6 EDGE OF LEASE ROAD
0+91.1 P.O.E. SECTION LINE

SEE THE ATTACHED LEGAL DESCRIPTION

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

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, 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

HORIZON ROW LLC

Drawn for:

devon

Drawn by:
WAYNE BEETS

Date: 05/05/2018

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-112871.AL

SCALE:
1" = 1000'

REVISIONS:

SHEET:
4 OF 17

**SECTION 26, T25S-R31E, N.M.P.M.,
EDDY COUNTY, NEW MEXICO**

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

BEING an easement thirty (30) feet in width lying fifteen (15) feet on the right side and fifteen (15) feet on the left side of the survey centerline described below, being out of the northwest quarter (NW ¼) of Section 26, Township 25 South, Range 31 East, N.M.P.M., Eddy County, New Mexico, and being out of a parcel of land owned by the Bureau of Land Management. Said centerline of easement being more particularly described as follows:

Commencing from a 2" iron pipe w/ BC 1939 for the northwest corner of Section 26, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

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

Thence S 89°19'37" W, a distance of 91.12' to the **Point of Ending** having coordinates of Northing=402523.84 feet, Easting=719677.69 feet, being in the west line of Section 26, T25S-R31E, from said point a 1" iron pipe w/ BC1939 found for the west quarter corner of Section 26, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears S 00°00'56" W a distance of 1459.60', covering **91.12' or 5.52 rods** and having an area of **0.063 acres**.

NOTES:

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

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


B.L. Laman PLS 22404

Date Signed: 05/13/2016

Horizon Row, LLC

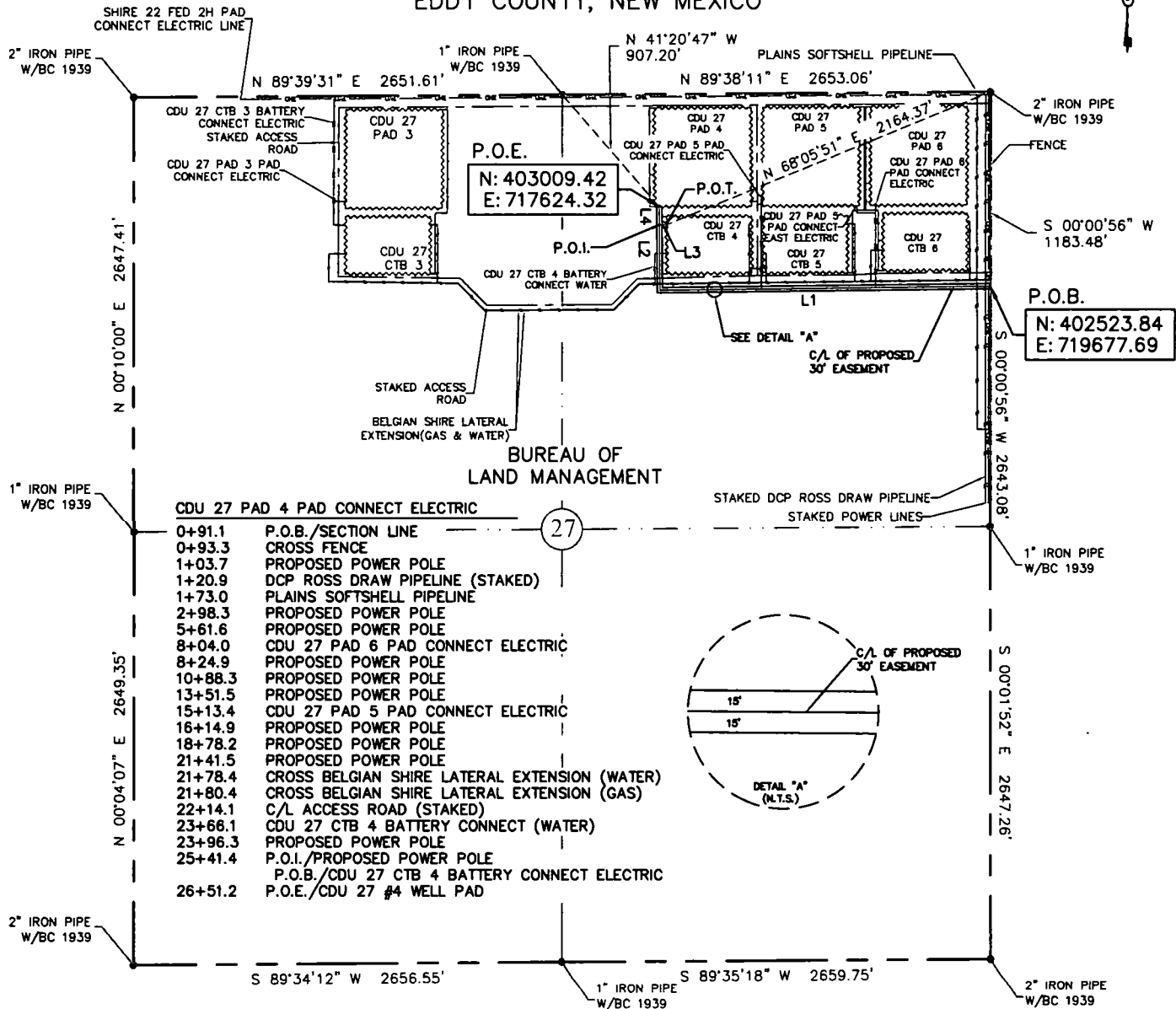
571 State Street, Jasper, TX

(402) 202-5111 75951

Employee of Horizon Row, LLC



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



CDU 27 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

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 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: 05-13-2016
 Horizonrow, LLC
 571 State Street Jasper, TX
 (409) 202-5111 75951
 Employee of Horizonrow, LLC



0 1000 2000



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'

CDU 27 PAD 4 PAD CONNECT ELECTRIC LINE		CC-112971.AL	EL7801
CDU 27 CTB 4 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL	EL7795
<i>HORIZON ROW LLC</i>		DEVON ENERGY PRODUCTION COMPANY, L.P. CDU 27 PAD 4 PAD CONNECT AND CDU 27 CTB 4 BATTERY CONNECT ELECTRIC LINES	SCALE: 1" = 1000'
Drawn for:			REVISIONS:
			SHEET: 6 OF 17
Drawn by: WAYNE BEETS	Date: 05/09/2016	PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.	

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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

Commencing from a 2" iron pipe w/ BC 1939 for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence S 00°00'56" W a distance of 1183.48' to the **Point of Beginning** of this easement having coordinates of Northing=402523.84 feet, Easting=719677.69 feet, and continuing the following courses;

Thence S 89°19'37" W, a distance of 2050.37' to an angle point;

Thence N 00°21'11" W, a distance of 399.93' to the Point of Intersection;

Thence N 89°39'00" E, a distance of 44.87' to the point of termination of this portion of said easement, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 68°05'51" E a distance of 2164.37';

Thence continuing from said point of intersection the following courses;

Thence N 00°21'11" W, a distance of 109.74' to the **Point of Ending** having coordinates of Northing=403009.42 feet, Easting=717624.32 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 41°20'47" W a distance of 907.20', covering **2604.91' or 157.87 rods** and having an area of **1.784 acres**.

NOTES:

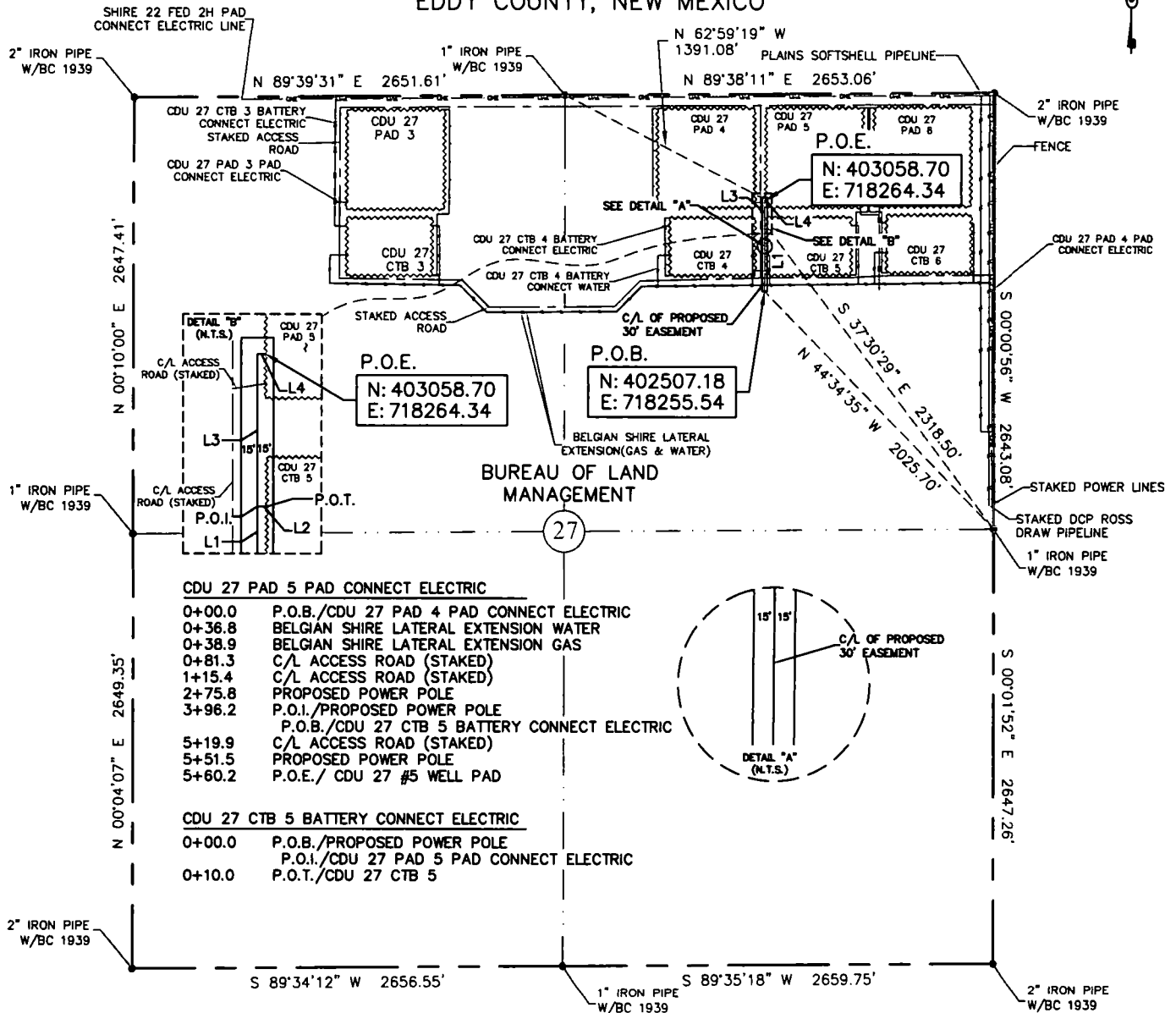
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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


B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 9 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



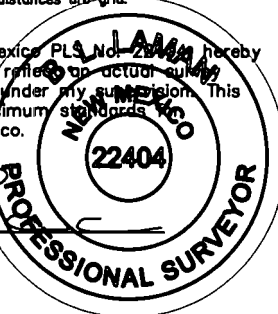
30' EASEMENT AREA = 0.390 ACRE(S)
570.14 FEET OR 34.55 RODS

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 #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



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. CDU 27 PAD 5 PAD CONNECT AND CDU 27 CTB 5 BATTERY CONNECT ELECTRIC LINES	SCALE: 1" = 1000'
Drawn for:			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;

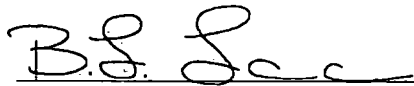
Thence N 00°00'59" E, a distance of 155.30' to an angle point;

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



5



**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.

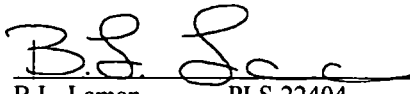
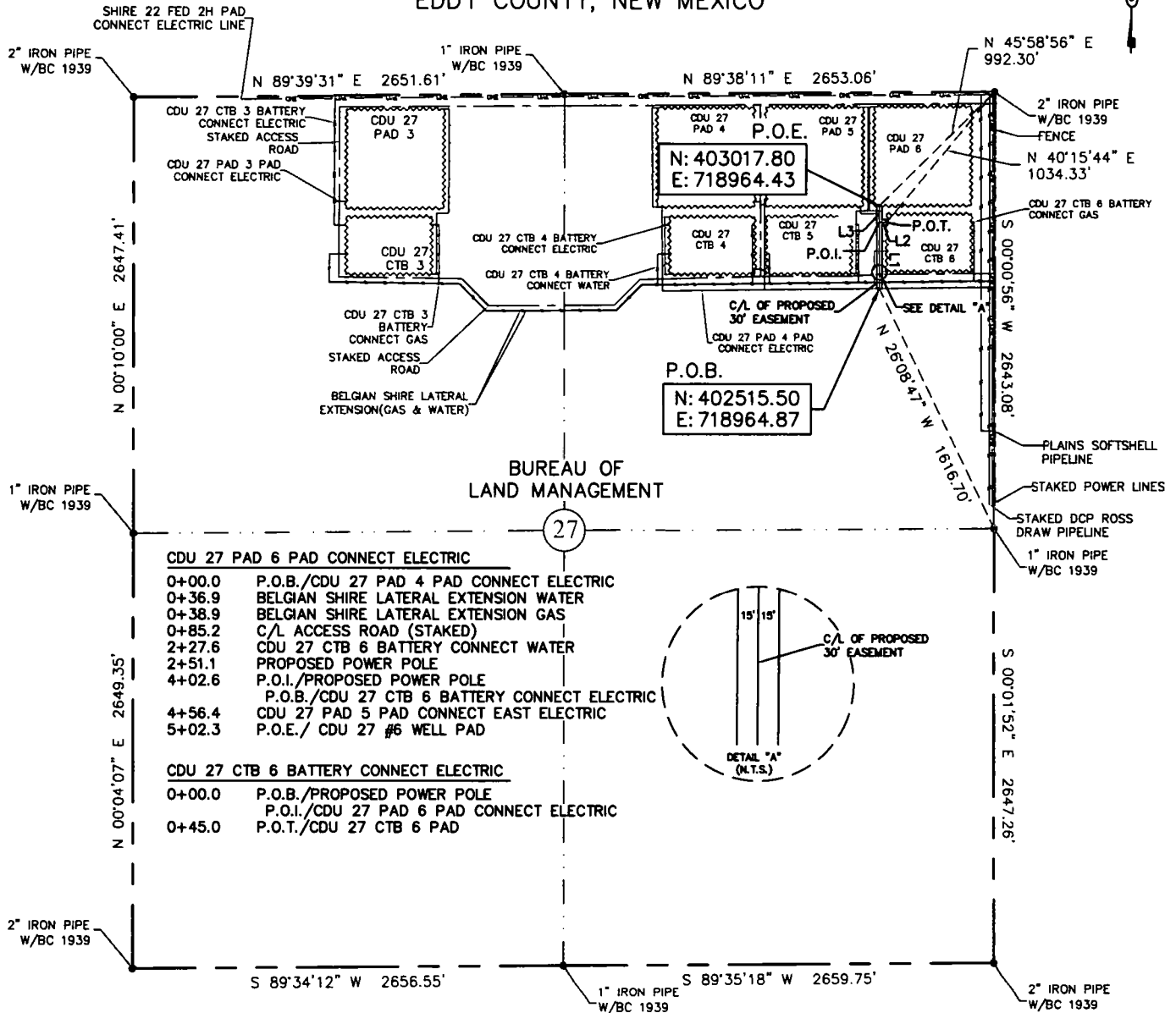
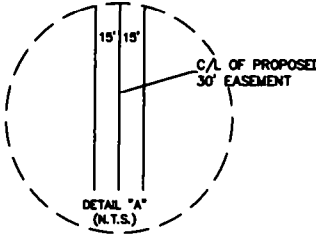

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC



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



30' EASEMENT AREA = 0.367 ACRE(S)
547.32 FEET OR 33.17 RODS

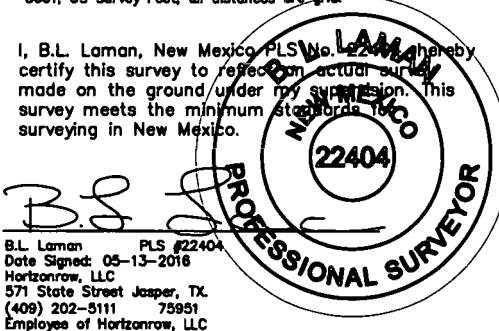
LINE	BEARING	DISTANCE
L1	N 00°03'00" W	402.56'
L2	S 89°58'05" E	45.02'
L3	N 00°03'00" W	99.74'

0 1000 2000

SEE THE ATTACHED LEGAL DESCRIPTION

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

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



B.L. Laman PLS #22404
Date Signed: 05-13-2016
Horizonrow, LLC
571 State Street Jasper, TX
(409) 202-5111 75951
Employee of Horizonrow, LLC

WBS NUMBER:		LINE NUMBER:
CDU 27 PAD 6 PAD CONNECT ELECTRIC LINE		CC-112971.AL EL7803
CDU 27 CTB 6 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL EL7797
HORIZON ROW LLC		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: 05/09/2016		
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.		

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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

Commencing from a 1" iron pipe w/ BC 1939 for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico;

Thence N 26°08'47" W a distance of 1616.70' to the **Point of Beginning** of this easement having coordinates of Northing=402515.50 feet, Easting=718964.87 feet, and continuing the following courses;

Thence N 00°03'00" W, a distance of 402.56' to the Point of Intersection;

Thence S 89°58'05" E, a distance of 45.02' to the point of termination of this portion of said easement, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 40°15'44" E a distance of 1034.33';

Thence continuing from said point of intersection the following course;

Thence N 00°03'00" W, a distance of 99.74' to the **Point of Ending** having coordinates of Northing=403017.80 feet, Easting=718964.43 feet, from said point a 2" iron pipe w/ BC1939 found for the northeast corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 45°58'56" E a distance of 992.30', covering **547.32' or 33.17 rods** and having an area of **0.367 acres**.

NOTES:

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

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

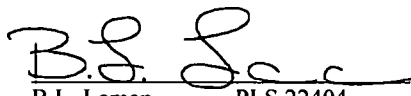
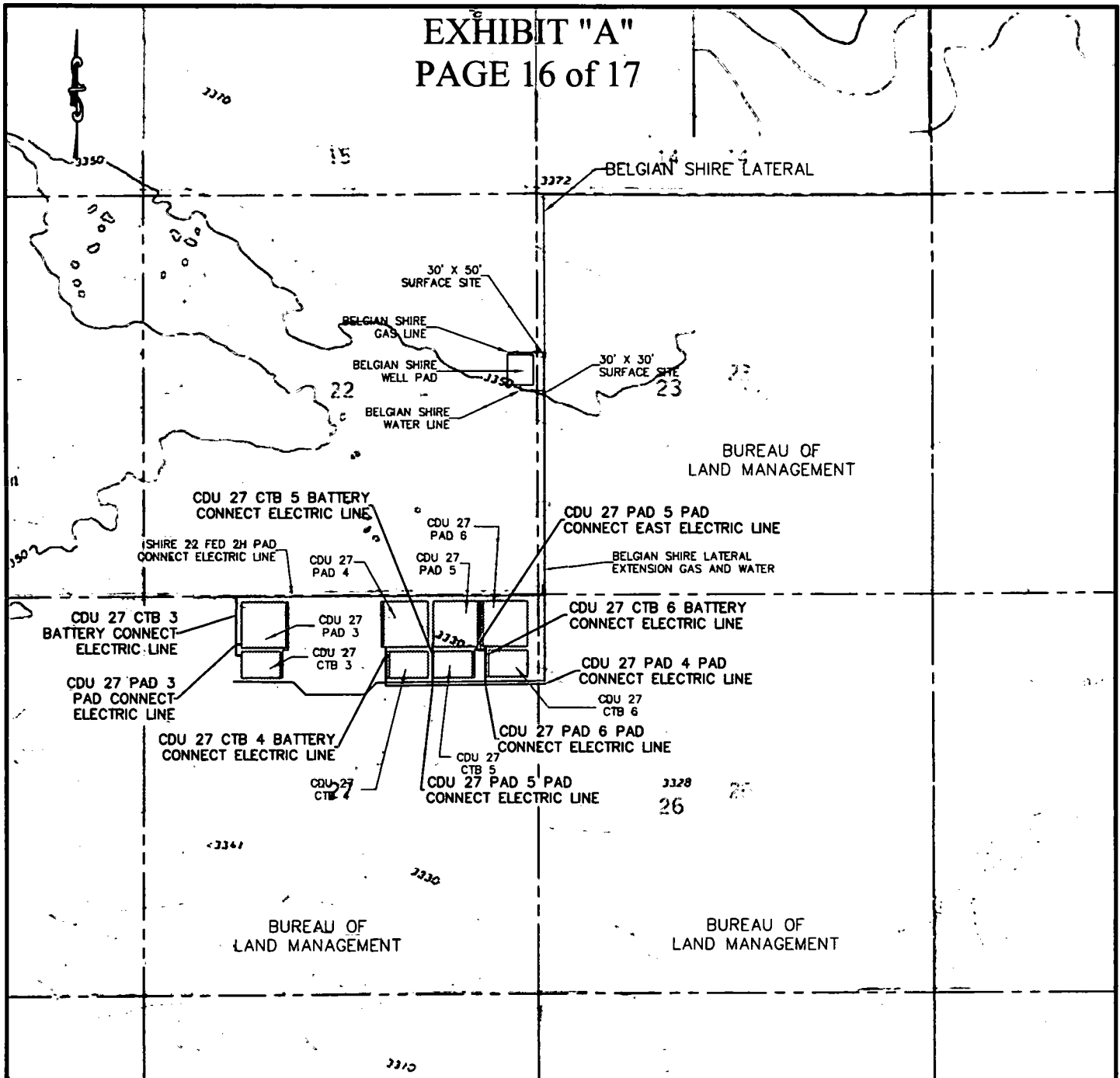

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC



EXHIBIT "A"

PAGE 16 of 17



QUAD MAP

SECTION 27, T25S-R31E, N.M.P.M.
SECTION 26, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL EL7794
CDU 27 PAD 3 PAD CONNECT-ELECTRIC LINE	CC-112971.AL EL7800
CDU 27 PAD 4 PAD CONNECT-ELECTRIC LINE	CC-112971.AL EL7801
CDU 27 CTB 4 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL EL7795
CDU 27 PAD 5 PAD CONNECT EAST-ELECTRIC LINE	CC-112971.AL EL7814
CDU 27 PAD 5 PAD CONNECT-ELECTRIC LINE	CC-112971.AL EL7802
CDU 27 CTB 5 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL 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

Drawn by:
WAYNE BEETS

Date: 05/10/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.

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

SCALE:
1" = 2000'

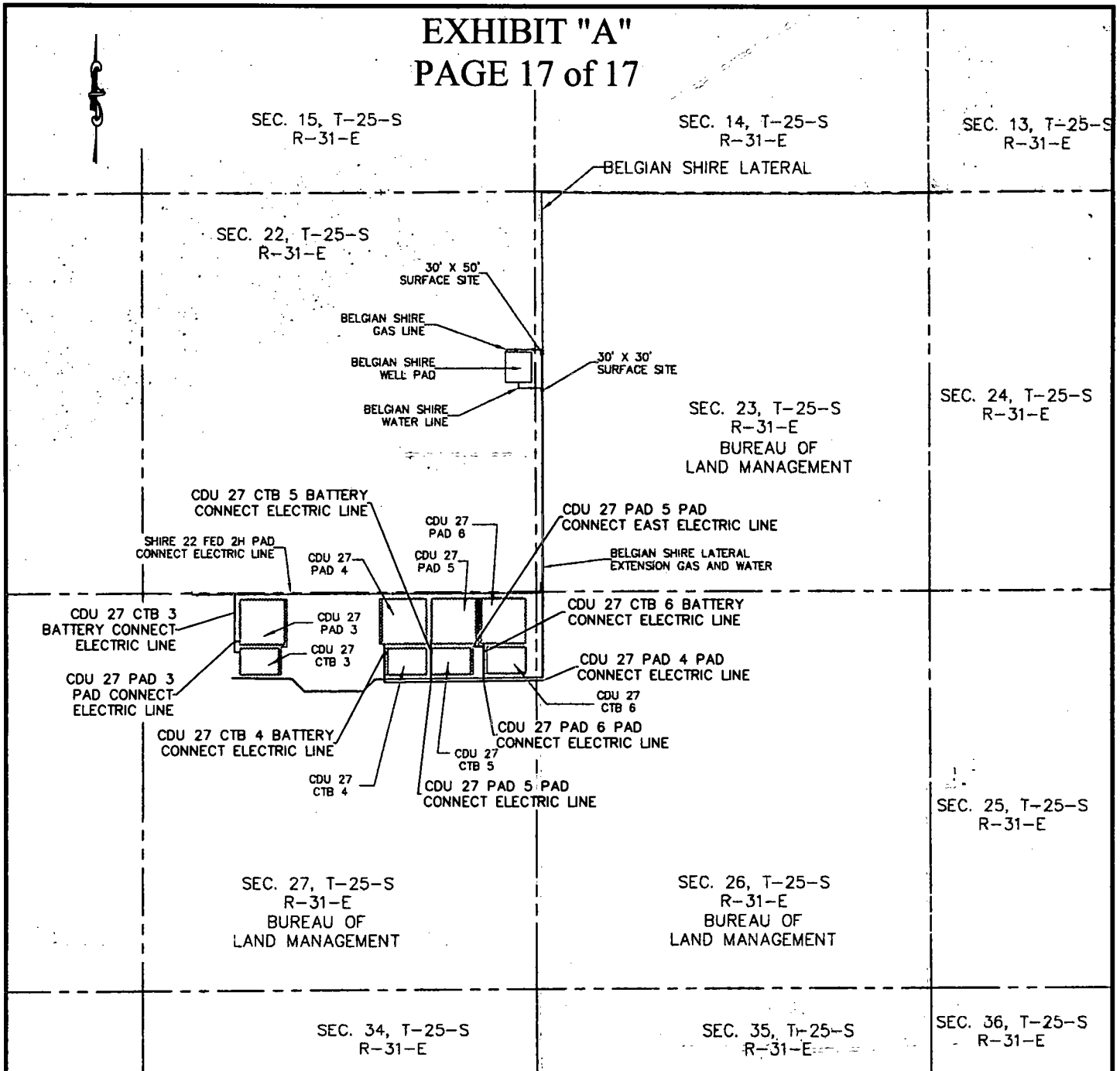
REVISIONS:

SHEET:
16 OF 17

HORIZON ROW LLC

EXHIBIT "A"

PAGE 17 of 17



AERIAL MAP

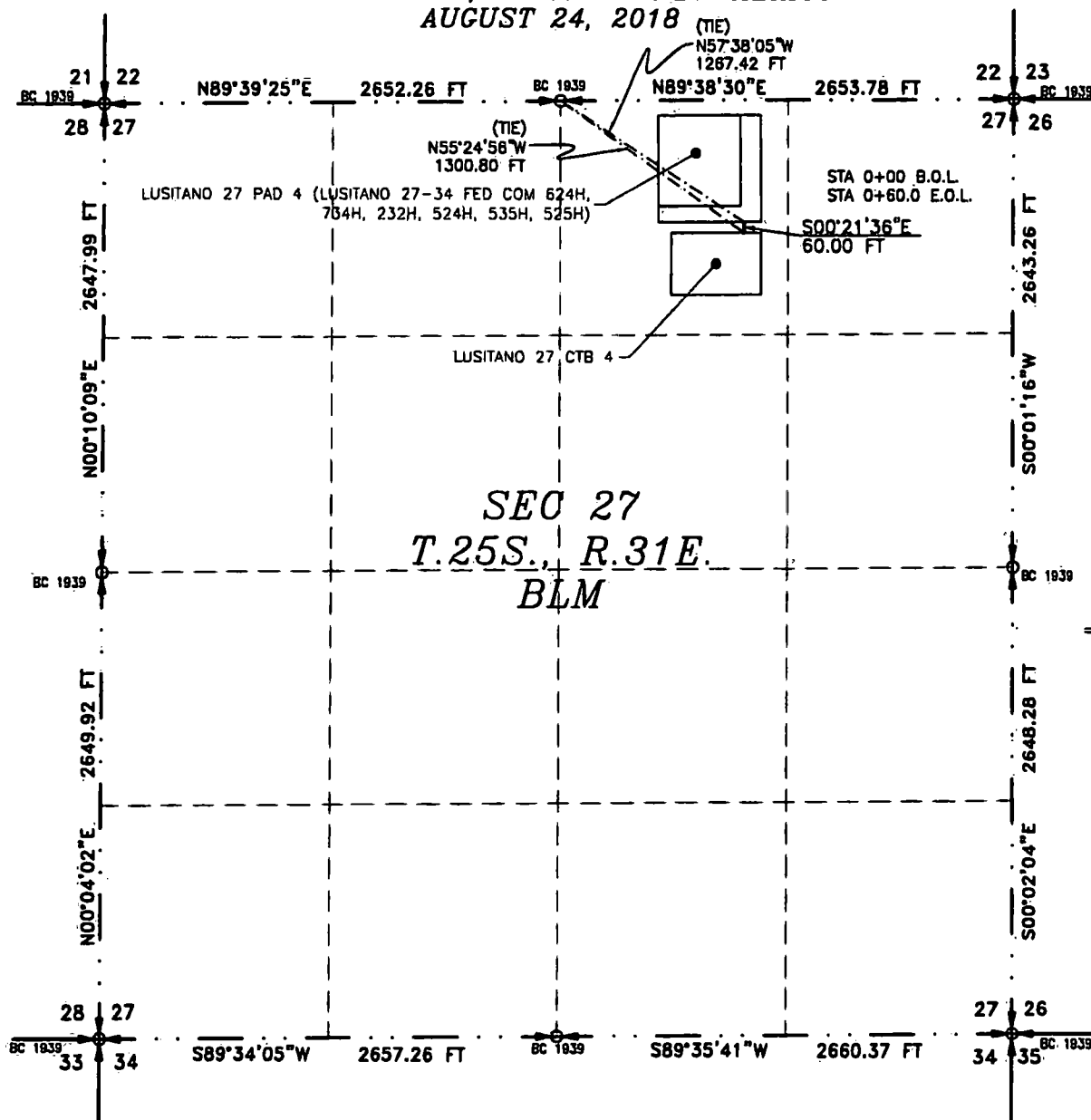
SECTION 27, T25S-R31E, N.M.P.M.
SECTION 26, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

	WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL	EL7794
CDU 27 PAD 3 PAD CONNECT-ELECTRIC LINE	CC-112971.AL	EL7800
CDU 27 PAD 4 PAD CONNECT-ELECTRIC LINE	CC-112971.AL	EL7801
CDU 27 CTB 4 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL	EL7795
CDU 27 PAD 5 PAD CONNECT EAST-ELECTRIC LINE	CC-112971.AL	EL7814
CDU 27 PAD 5 PAD CONNECT-ELECTRIC LINE	CC-112971.AL	EL7802
CDU 27 CTB 5 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL	EL7796
CDU 27 PAD 6 PAD CONNECT-ELECTRIC LINE	CC-112971.AL	EL7803
CDU 27 CTB 6 BATTERY CONNECT-ELECTRIC LINE	CC-112971.AL	EL7797
Drawn for:		
DEVON ENERGY PRODUCTION COMPANY, L.P.		
devon		SCALE: 1" = 2000'
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT		REVISIONS:
Drawn by: WAYNE BEETS	Date: 05/10/2016	SHEET: 17 OF 17

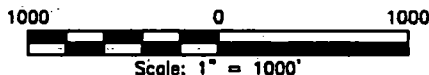
HORIZON ROW LLC

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.

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

[Signature]
 FILMON F. JARAMILLO, P.E. 12797
 PROFESSIONAL SURVEYOR

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. 6505

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, 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 22 DAY OF AUGUST 2018

FILMON 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

SURVEY NO. 6505

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.

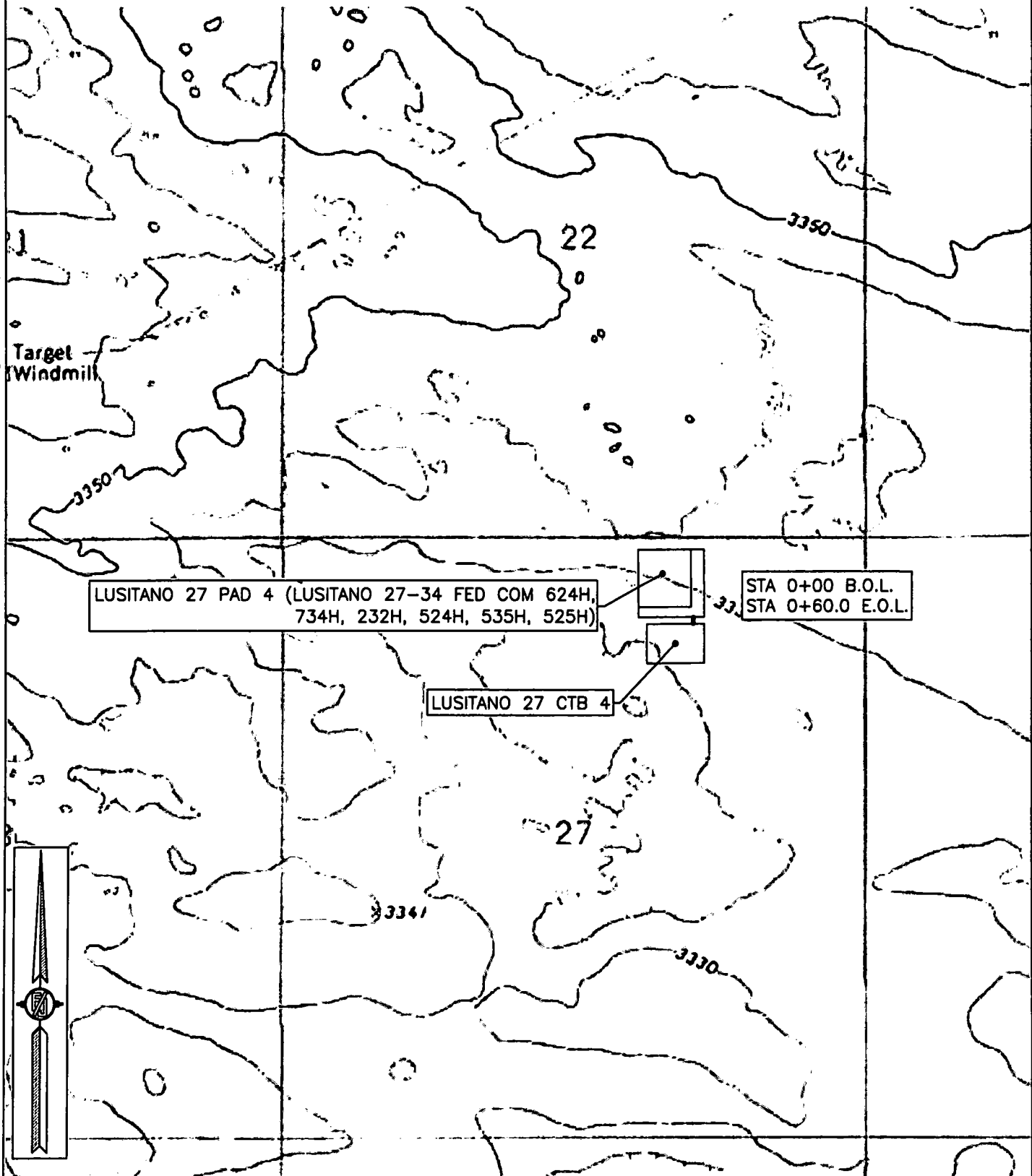
SHEET: 2-4

MADRON SURVEYING, INC. 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



SHEET: 3-4

SURVEY NO. 6505

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

22

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:

Injection well name:

Assigned injection well API number?

Injection well API number:

Injection well new surface disturbance (acres):

Minerals protection information:

Mineral protection attachment:

Underground Injection Control (UIC) Permit?

UIC Permit attachment:

Section 5 - Surface Discharge

Would you like to utilize Surface Discharge PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Surface discharge PWD discharge volume (bbl/day):

Surface Discharge NPDES Permit?

Surface Discharge NPDES Permit attachment:

Surface Discharge site facilities information:

Surface discharge site facilities map:

Section 6 - Other

Would you like to utilize Other PWD options? NO

Produced Water Disposal (PWD) Location:

PWD surface owner:

PWD disturbance (acres):

Other PWD discharge volume (bbl/day):

Other PWD type description:

Other PWD type attachment:

Have other regulatory requirements been met?

Other regulatory requirements attachment:



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

Bond Info Data Report

01/11/2019

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: