

RECEIVED

Form 3160-3
(June 2015)

JAN 22 2019

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018UNITED 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 716H 319562
3a. Address 333 West Sheridan Avenue Oklahoma City OK 73102	3b. Phone No. (include area code) (800)583-3866	9. API Well No. 6137 30-015-45657
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface NENE / 235 FNL / 1234 FEL / LAT 32.1079106 / LONG -103.7613328 At proposed prod. zone SWSE / 20 FSL / 1650 FEL / LAT 32.079507 / LONG -103.7627622		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) 540 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. 235 feet	19. Proposed Depth 11798 feet / 22087 feet
20. BLM/BIA Bond No. in file FED: CO1104	21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3338 feet	22. Approximate date work will start* 01/01/2019
23. Estimated duration 45 days	24. Attachments	

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

- | | |
|--|---|
| 1. Well plat certified by a registered surveyor. | 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 08/28/2018
Title Regulatory Compliance Professional		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 01/17/2019
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.

RUP-25-19.

APPROVED WITH CONDITIONS

NSP Required.

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 01/17/2019

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

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

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

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

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

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

Additional Operator Remarks

Location of Well

1. SHL: NENE / 235 FNL / 1234 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.1079106 / LONG: -103.7613328 (TVD: 0 feet, MD: 0 feet)
PPP: NWNE / 100 FNL / 1650 FEL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.10829 / LONG: -103.762674 (TVD: 11459 feet, MD: 11482 feet)
BHL: SWSE / 20 FSL / 1650 FEL / TWSP: 25S / RANGE: 31E / SECTION: 34 / LAT: 32.079507 / LONG: -103.7627622 (TVD: 11798 feet, MD: 22087 feet)

BLM Point of Contact

Name: Tenille Ortiz

Title: Legal Instruments Examiner

Phone: 5752342224

Email: tortiz@blm.gov

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Review and Appeal Rights

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

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PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM125635
WELL NAME & NO.:	LUSITANO 27-34 FED COM 716H
SURFACE HOLE FOOTAGE:	235'/N & 1234'/E
BOTTOM HOLE FOOTAGE:	20'/S & 1650'/E
LOCATION:	SECTION 27, T25S, R31E, NMPM
COUNTY:	EDDY

COA

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

A. Hydrogen Sulfide

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

B. CASING

Primary Casing Design

1. The 10-3/4 inch surface casing shall be set at approximately **940** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

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

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

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

Option 1 (Single Stage):

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

Option 2:

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

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

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

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

3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification.

Alternate Casing Design:

4. The 13-3/8 inch surface casing shall be set at approximately 940 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

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

5. The minimum required fill of cement behind the 8-5/8 inch intermediate casing is:

Option 1 (Single Stage):

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

Option 2:

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

- c. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- d. Second stage above DV tool:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

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

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

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

- Cement should tie-back at least **200** feet into previous casing string. Operator shall provide method of verification. **Must provide enough cement on location for 200 feet tie-back.**

C. PRESSURE CONTROL

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

2.

Option 1:

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

Option 2:

- i. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5M (5M)** psi.
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT

Communitization Agreement

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

GENERAL REQUIREMENTS

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

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

☒ Chaves and Roosevelt Counties

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

☒ Eddy County

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

☒ Lea County

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

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

- a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.
 3. The record of the drilling rate along with the GR/N well log (one log per well pad is acceptable) run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

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

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

D. WASTE MATERIAL AND FLUIDS

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

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

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	DEVON ENERGY PRODUCTION COMPANY LP
LEASE NO.:	NMNM125635
WELL NAME & NO.:	LUSITANO 27-34 FED COM 716H
SURFACE HOLE FOOTAGE:	235'/N & 1234'/E
BOTTOM HOLE FOOTAGE	20'/S & 1650'/E
LOCATION:	SECTION 27, T25S, R31E, NMPM
COUNTY:	EDDY

TABLE OF CONTENTS

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

- ☐ **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.

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.

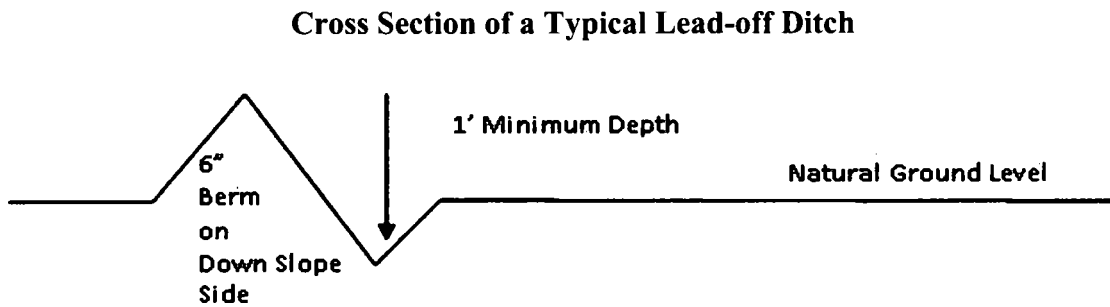
Turnouts

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 outslowing 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

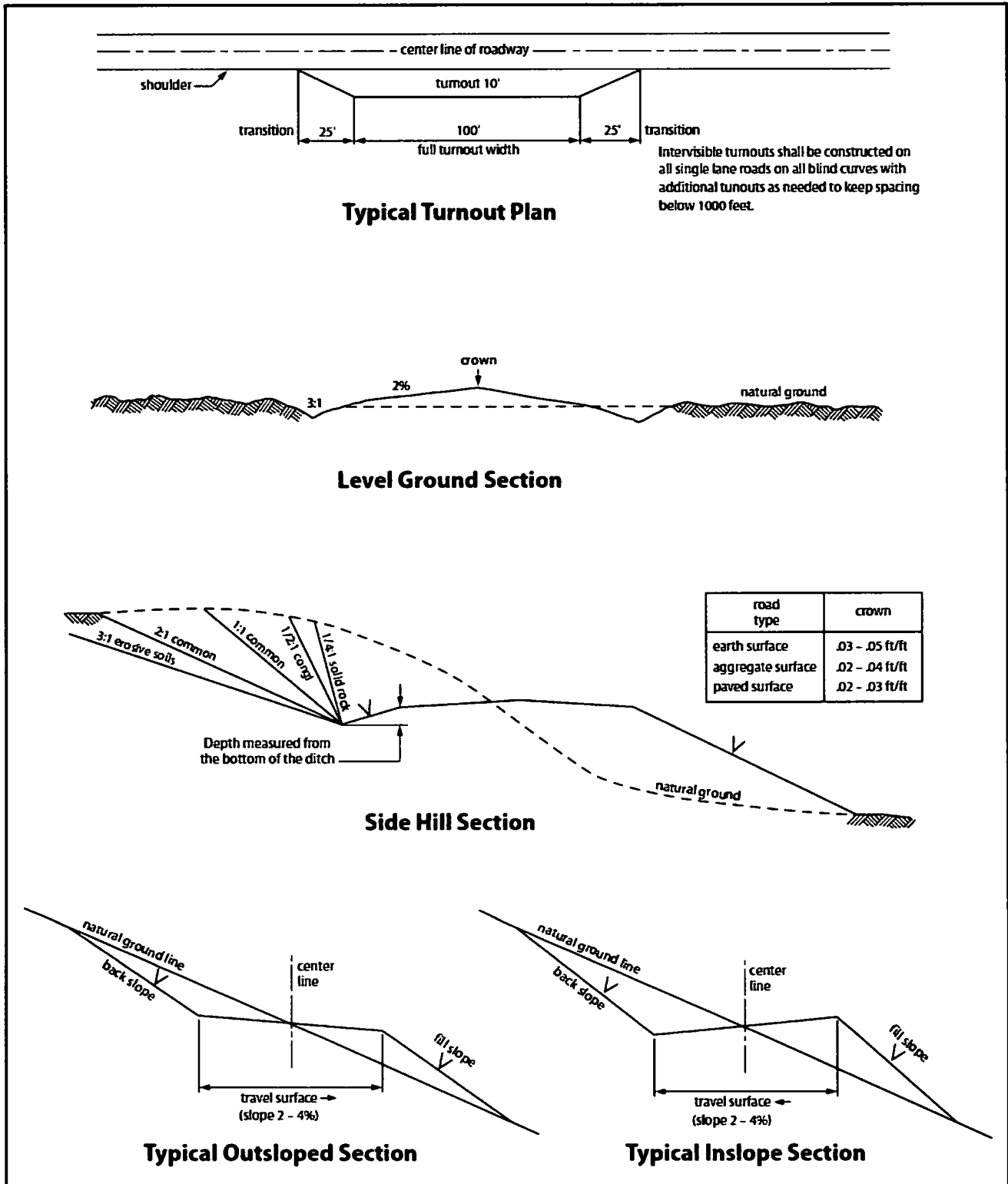


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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

01/18/2019

Operator Certification

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

NAME: Linda Good

Signed on: 08/28/2018

Title: Regulatory Compliance Professional

Street Address: 333 West Sheridan Avenue

City: Oklahoma City

State: OK

Zip: 73102

Phone: (405)552-6558

Email address: Linda.Good@dvn.com

Field Representative

Representative Name: Ray Vaz

Street Address: 6488 Seven Rivers Hwy

City: Artesia

State: NM

Zip: 88210

Phone: (575)748-1871

Email address: ray.vaz@dvn.com

APD ID: 10400033365

Submission Date: 08/28/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

Section 1 - General

APD ID: 10400033365

Tie to previous NOS?

Submission Date: 08/28/2018

BLM Office: CARLSBAD

User: Linda Good

Title: Regulatory Compliance
Professional

Federal/Indian APD: FED

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

Lease number: NMNM125635

Lease Acres: 720

Surface access agreement in place?

Allotted?

Reservation:

Agreement in place? NO

Federal or Indian agreement:

Agreement number:

Agreement name:

Keep application confidential? YES

Permitting Agent? NO

APD Operator: DEVON ENERGY PRODUCTION COMPANY LP

Operator letter of designation:

Operator Info

Operator Organization Name: DEVON ENERGY PRODUCTION COMPANY LP

Operator Address: 333 West Sheridan Avenue

Zip: 73102

Operator PO Box:

Operator City: Oklahoma City State: OK

Operator Phone: (800)583-3866

Operator Internet Address:

Section 2 - Well Information

Well in Master Development Plan? EXISTING

Mater Development Plan name: Cotton Draw 1 MDP

Well in Master SUPO? NO

Master SUPO name:

Well in Master Drilling Plan? NO

Master Drilling Plan name:

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

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: 716H

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: 5

LUSITANO 27 WELLPAD

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: OIL WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town:

Distance to nearest well: 235 FT

Distance to lease line: 540 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Lusitano_27_34_Fed_Com_716H_C_102_signed_20180827080448.pdf

Well work start Date: 01/01/2019

Duration: 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

Vertical Datum: NAVD88

Survey number: 6439

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	235	FNL	123 4	FEL	25S	31E	27	Aliquot NENE	32.10791 06	- 103.7613 328	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	333 8	0	0
KOP Leg #1	50	FNL	165 0	FEL	25S	31E	27	Aliquot NWNE	32.10843	- 103.7626 73	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	- 788 7	112 41	112 25
PPP Leg #1	100	FNL	165 0	FEL	25S	31E	27	Aliquot NWNE	32.10829	- 103.7626 74	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 016348	- 812 1	114 82	114 59

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.



SCALE: 1" = 120'

DIRECTIONS TO LOCATION

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

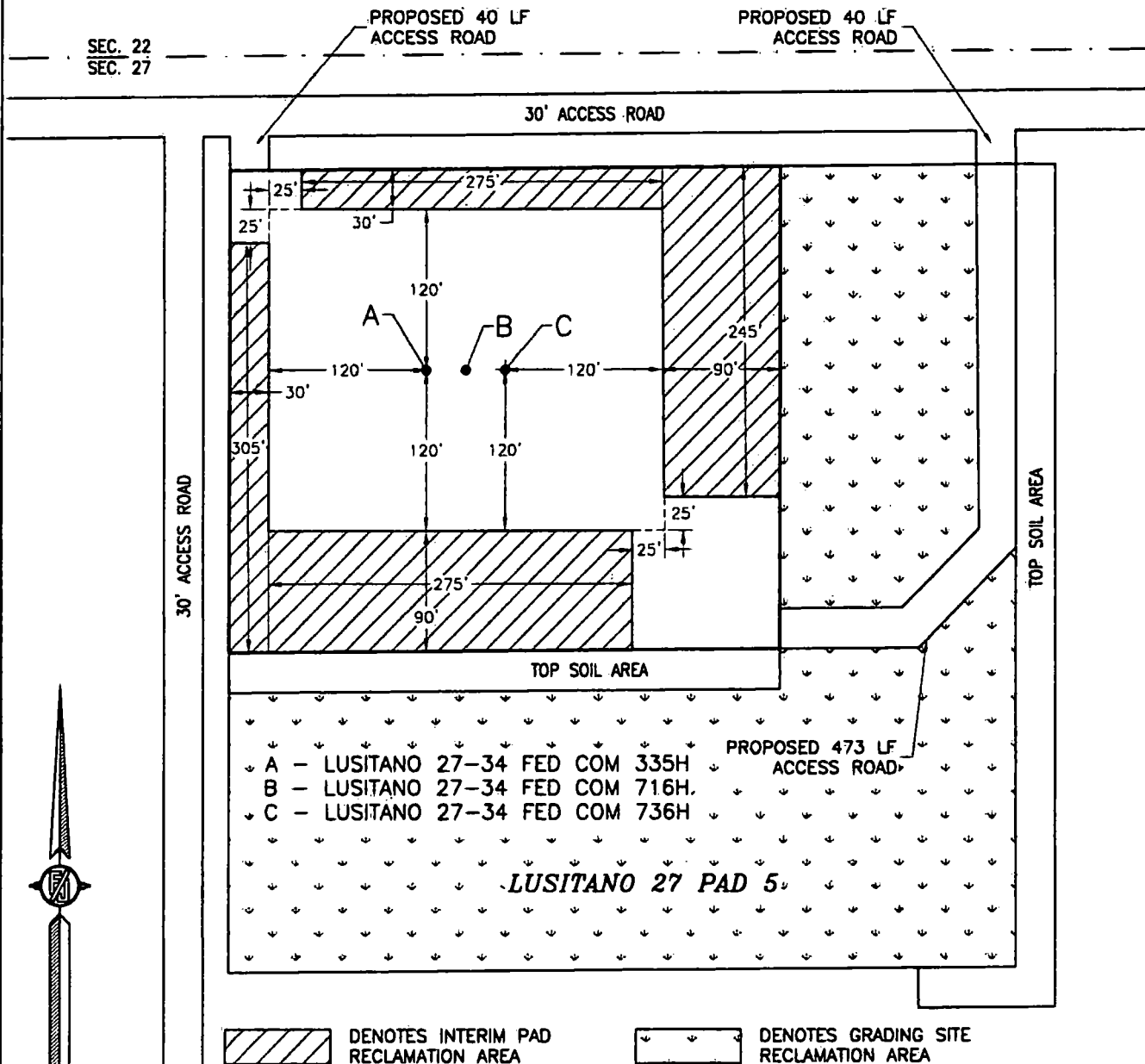
AUGUST 3, 2018

SURVEY NO. 6439.

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

301 SOUTH CAVAL
(575) 234-3341

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



0 12 60 120 240
SCALE 1" = 120'

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

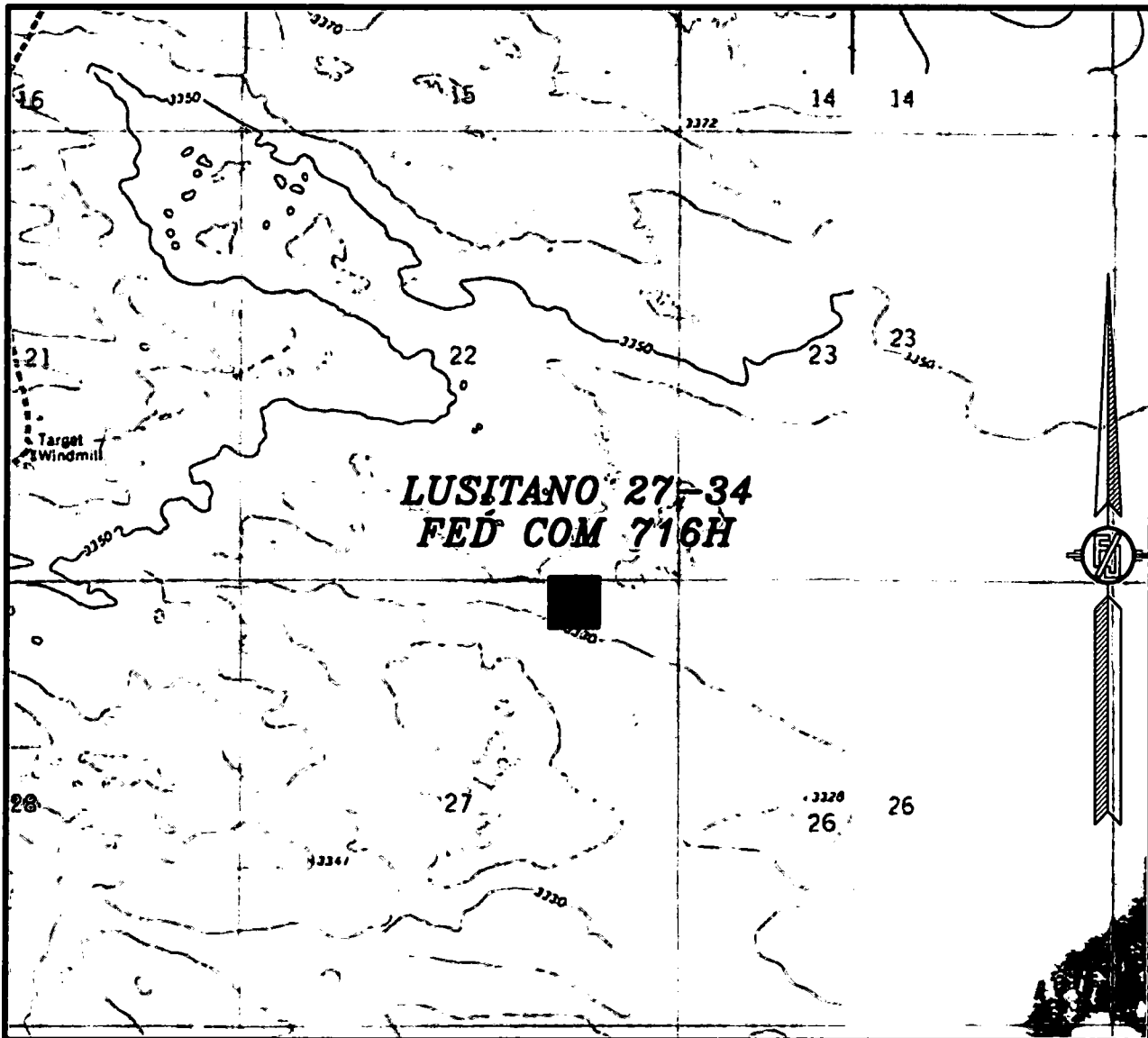
DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 716H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1234 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6439

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

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



USGS QUAD MAP:
PHANTOM BANKS

NOT TO SCALE

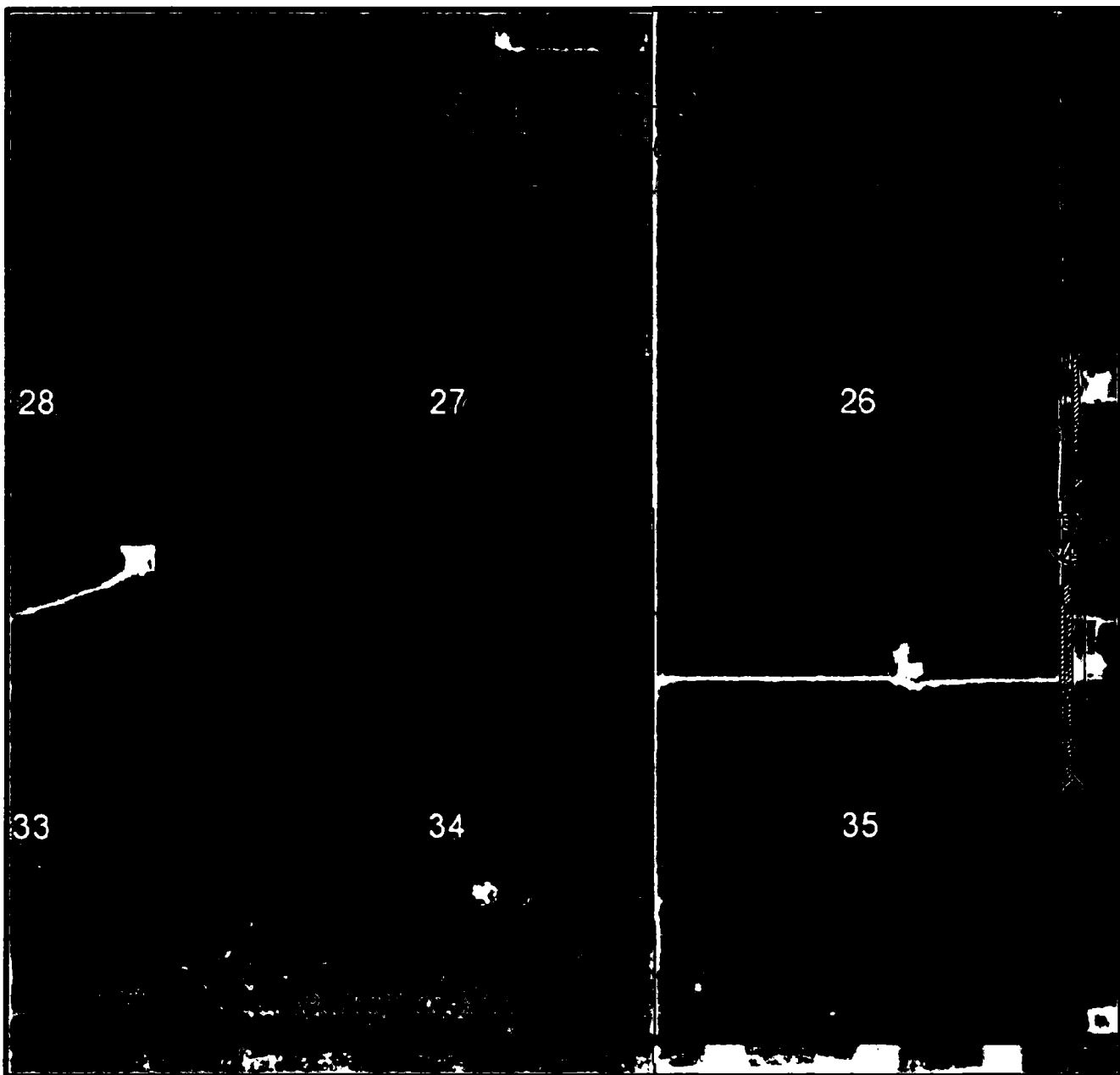
DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 716H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1234 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6439

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

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



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 716H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1234 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6439

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

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



NOT TO SCALE
AERIAL PHOTO:
GOOGLE EARTH
NOVEMBER 2017

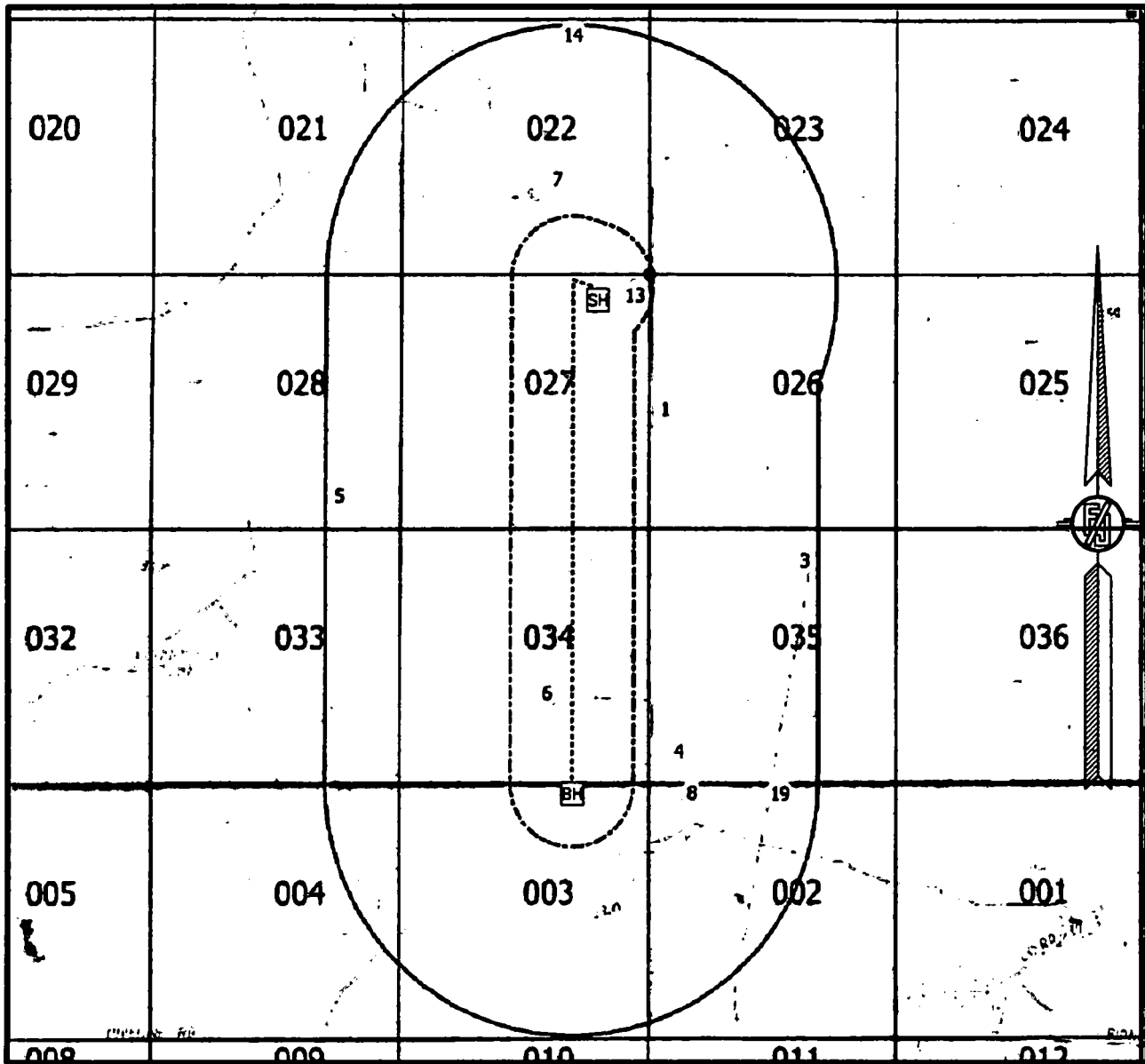
DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 716H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1234 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6439

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

1-MILE MAP



NOT TO SCALE

WELL DATA FROM NMOCD GIS - 8/9/18

[SH] SURFACE LOCATION

[BH] BOTTOM OF HOLE

(XX) WELLS WITHIN 1 MILE

----- WELL PATH

----- 1/4 MILE BOUNDARY

 1-MILE BOUNDARY

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 716H

LOCATED 235 FT. FROM THE NORTH LINE

AND 1234 FT. FROM THE EAST LINE OF

SECTION 27, TOWNSHIP 25 SOUTH,

RANGE 31 EAST, N.M.P.M.

EDDY COUNTY, STATE OF NEW MEXICO

LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6439.

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

301 SOUTH CANA
(575) 234-3341

CARLSBAD, NEW MEXICO

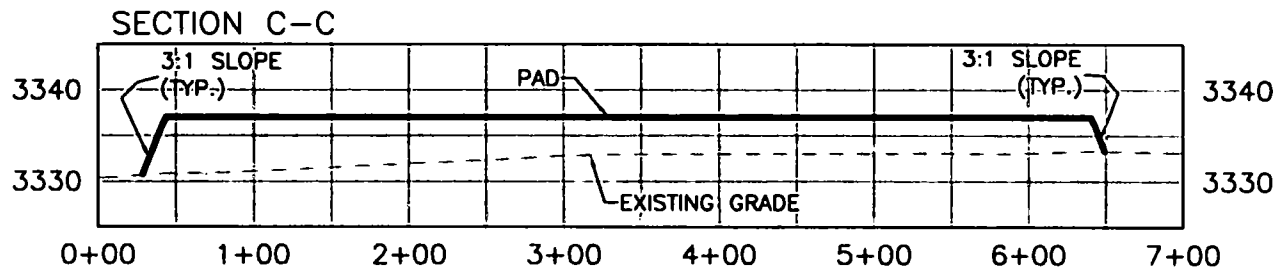
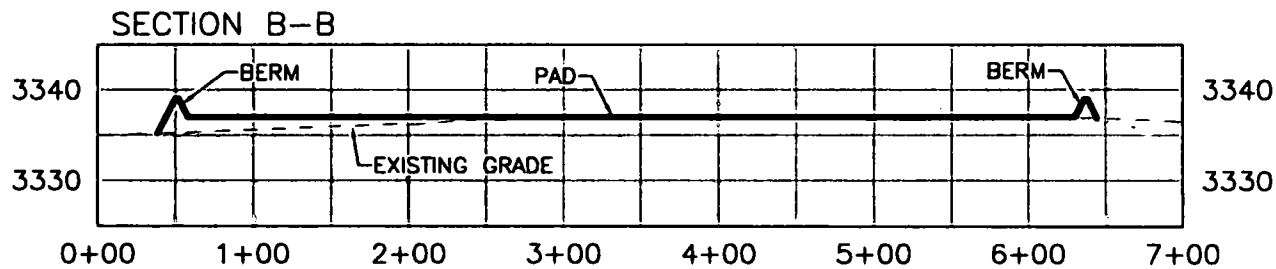
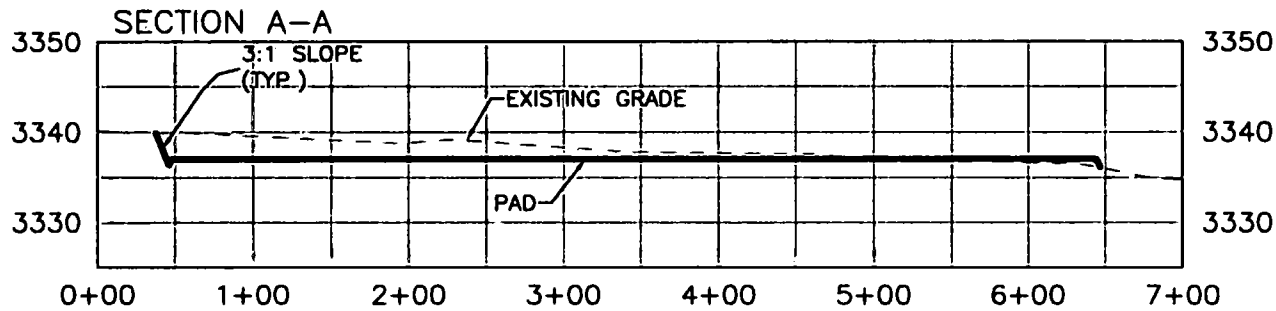
30' ACCESS ROAD



EARTHWORK QUANTITIES ARE ESTIMATED

SHEET 1-2
SURVEY NO. 6439 ☒

CROSS SECTIONS



DEVON ENERGY PRODUCTION COMPANY, L.P.
GRADING PLAN AND CROSS SECTIONS
FOR LUSITANO 27-34 FED COM 716H
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO

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

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

EARTHWORK QUANTITIES ARE ESTIMATED.

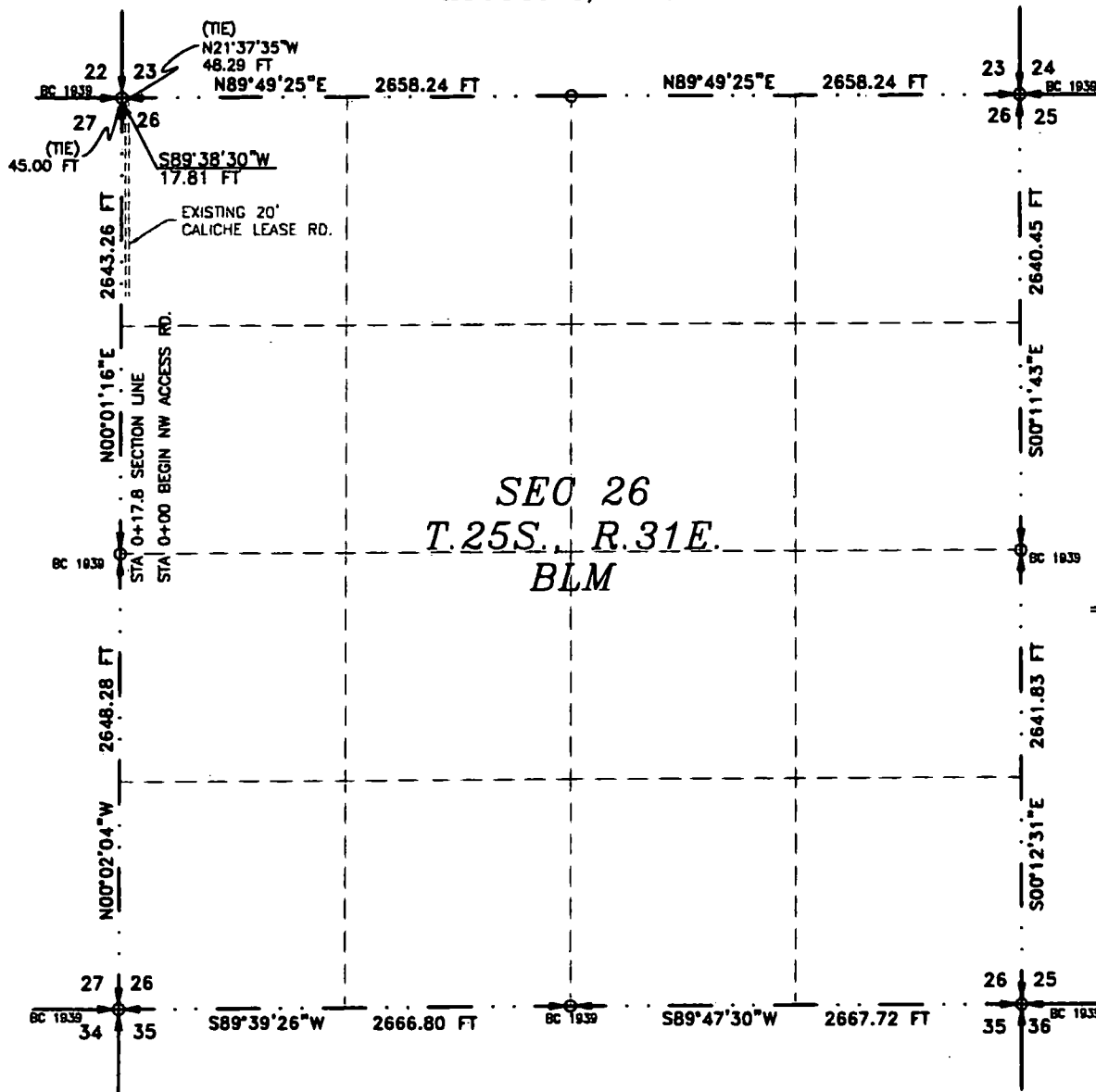
AUGUST 3, 2018
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SHEET 2-2
SURVEY NO. 6439

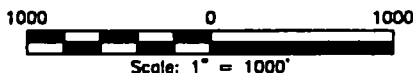
ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 6 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 3, 2018



SEE NEXT SHEET (2-4) FOR DESCRIPTION



GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 1-4

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

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 3RD DAY OF AUGUST 2018

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

SURVEY NO. 6439

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 6 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

**DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 3, 2018**

DESCRIPTION

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

NORTHWEST ACCESS ROAD

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

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

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

NW/4 NW/4 17.81 LF. 1.08 RODS 0.012 ACRES

GENERAL NOTES

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

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

SHEET: 2-4

MADRON SURVEYING, INC.

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 12TH DAY OF AUGUST 2018.

FILIMON F. JARAMILLO, PLS. 12797

301 SOUTH CANAL
(575) 234-3341

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

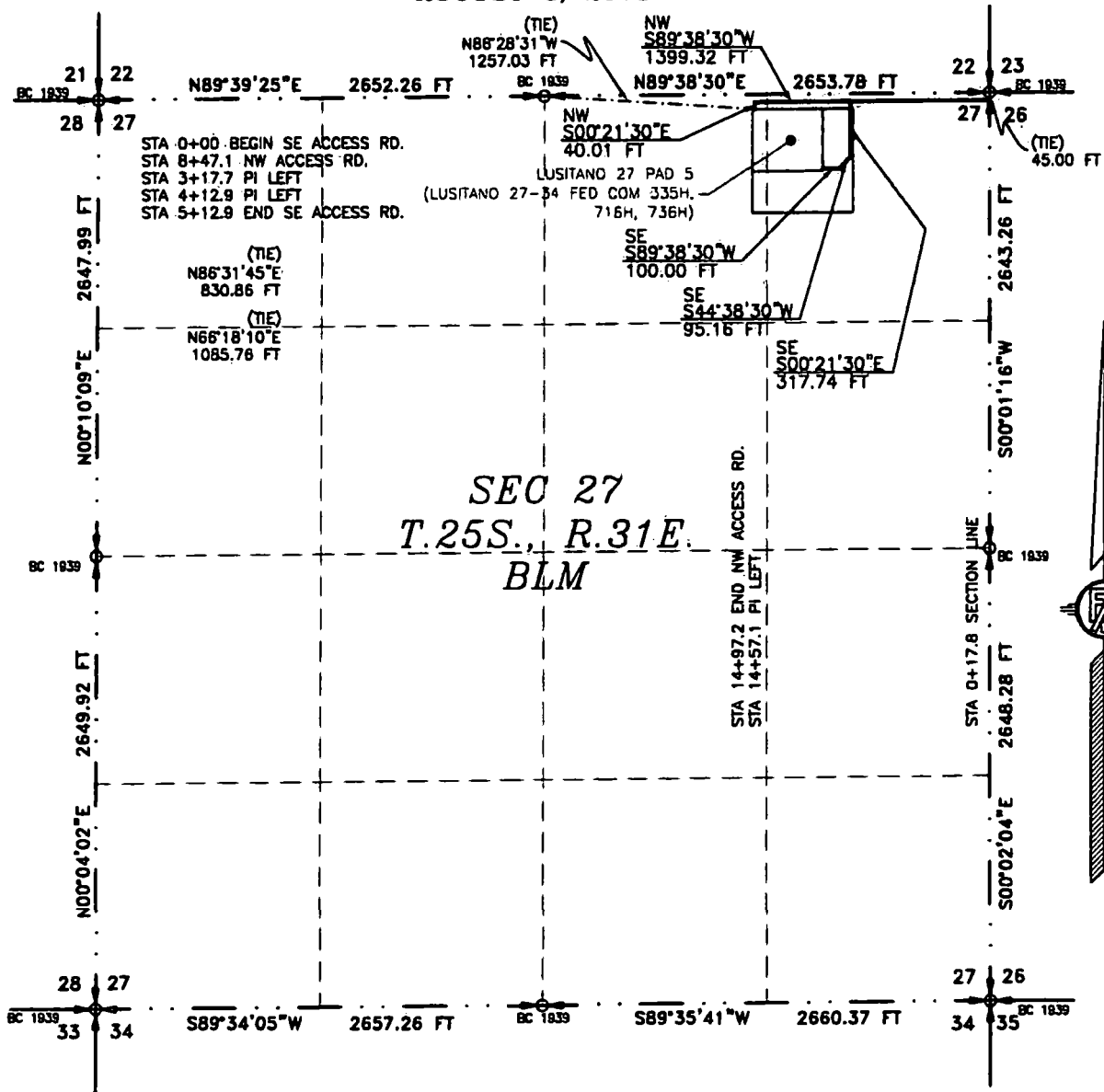
SURVEY NO. 6439

CARLSBAD, NEW MEXICO

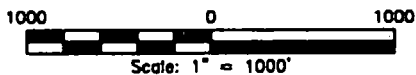
ACCESS ROAD PLAT

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

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 3, 2018



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.

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 AUGUST 2018

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

SURVEY NO. 6439

CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

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

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 3, 2018

DESCRIPTION

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

NORTHWEST ACCESS ROAD

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

THENCE S89°38'30"W A DISTANCE OF 1399.32 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S00°21'30"E A DISTANCE OF 40.01 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°28'31"W, A DISTANCE OF 1257.03 FEET;

SAID STRIP OF LAND BEING 1439.33 FEET OR 87.23 RODS IN LENGTH, CONTAINING 0.991 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	1326.90 L.F.	80.42 RODS	0.914 ACRES
NW/4 NE/4	112.43 L.F.	6.81 RODS	0.077 ACRES

NORTHWEST ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°31'45"E, A DISTANCE OF 830.86 FEET;

THENCE S00°21'30"E A DISTANCE OF 317.74 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S44°38'30"W A DISTANCE OF 95.16 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S89°38'30"W A DISTANCE OF 100.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N66°18'10"E, A DISTANCE OF 1085.76 FEET;

SAID STRIP OF LAND BEING 512.90 FEET OR 31.08 RODS IN LENGTH, CONTAINING 0.353 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4	512.90 L.F.	31.08 RODS	0.353 ACRES
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SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 1ST DAY OF AUGUST 2018

FILIMON F. JARAMILLO, P.E. 12797

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

SURVEY NO. 6439

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

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



APD ID: 10400033365

Submission Date: 08/28/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

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	
2	RUSTLER	2480	858	858	SALT	NONE	
3	BASE OF SALT	-922	4260	4260	SALT	NONE	
4	DELAWARE	-957	4295	4295	SANDSTONE	NATURAL GAS,OIL	
5	BONE SPRING	-4892	8230	8230	LIMESTONE,SANDSTONE	NATURAL GAS,OIL	
6	WOLFCAMP	-8322	11660	11660	SANDSTONE	NATURAL GAS,OIL	

Section 2 - Blowout Prevention

Pressure Rating (PSI): 5M

Rating Depth: 11798

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

Requesting Variance? YES

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

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

Choke Diagram Attachment:

Lusitano_27_34_Fed_Com_716H_5M_BOPE_CK_20180827083342.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_716H_5M_BOPE_CK_20180827083400.pdf

Pressure Rating (PSI): 5M

Rating Depth: 11798

Equipment: BOP/BOPE will be installed per Onshore Oil & Gas Order #2 requirements prior to drilling below 13-3/8" surface casing, a 13-5/8" BOP/BOPE system with a minimum rating of 3M will be installed on the wellhead system. BOP/BOPE will be tested by an independent service company per Onshore Oil & Gas Order #2 requirements and MASP (Maximum Anticipated Surface Pressure) calculations. If the system is upgraded, all the components installed will be functional and tested.

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Choke Diagram Attachment:

Lusitano_27_34_Fed_Com_716H_5M_BOPE_CK_20180827083437.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_716H_5M_BOPE_CK_20180827083455.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	928	0	928	-6993	-7781	928	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	12140	11225	11798	-6993	-11343	12140	P-110	29.7	OTHER - FLUSHMAX	1.125	1.25	BUOY	1.6	BUOY	1.6
3	PRODUCTION	6.75	5.5	NEW	API	N	0	22087	0	11798	-6993	-17388	22087	P-110	20	OTHER - VAM-SG	1.125	1.25	BUOY	1.6	BUOY	1.6

Casing Attachments

Casing Attachments

Casing ID: 1String Type: SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_716H_Surf_Csg_Ass_20180827083641.pdf

Casing ID: 2String Type: INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_716H_Int_Csg_Ass_20180827083936.pdf

Casing ID: 3String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_716H_Prod_Csg_Ass_20180827084107.pdf

Section 4 - Cement

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	928	599	1.33	13.2	797	50	C	Class C + adds

INTERMEDIATE	Lead		928	8140	1200	1.85	9	2220	30	TUNED	TUNED LIGHT
INTERMEDIATE	Tail		8140	12140	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		11640	22087	661	1.33	13.2	965	10	H	0.125 lbs/sack Poly-E-Flake

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

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

Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
928	12140	OTHER : DBE / SATURATED BRINE	9	10							

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	928	WATER-BASED MUD	8.5	9							
12140	22087	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:

DS,GR,MUDLOG

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6442

Anticipated Surface Pressure: 3846.44

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_716H_H2S_Plans_20180822130802.pdf

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

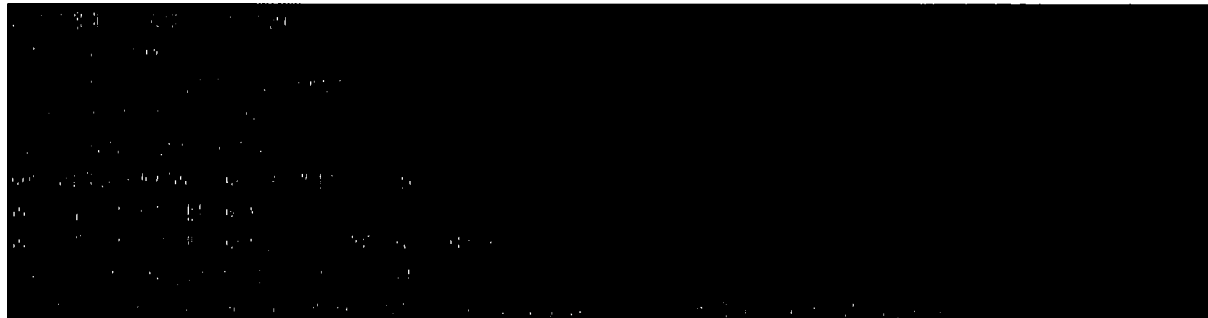
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Lusitano_27_34_Fed_Com_716H_Dir_Plan_20180827085459.pdf

Lusitano_27_34_Fed_Com_716H_Plot_20180827085511.pdf

Lusitano_27_34_Fed_Com_716H_Plot_20180827085524.pdf

Other proposed operations facets description:



Other proposed operations facets attachment:

Lusitano_27_34_Fed_Com_716H_Clsd_Loop_20180827085841.pdf

Lusitano_27_34_Fed_Com_716H_5.5_x_20_P110_EC_VAMSG_20180827090131.pdf

Lusitano_27_34_Fed_Com_716H_7.625_29.70_P110_Flushmax_20180827090148.pdf

Lusitano_27_34_Fed_Com_716H_Gas_Capture_Plan_20180827104238.pdf

Lusitano_27_34_Fed_Com_716H_Drilling_Plan_Rev1_20181210054646.pdf

WLFMP_MB_Verb_5M_Alt_Design_20181210060904.pdf

WLFMP_Wellhead_Schematic_Contingency_13.375x8.625x5.5_20181210060907.pdf

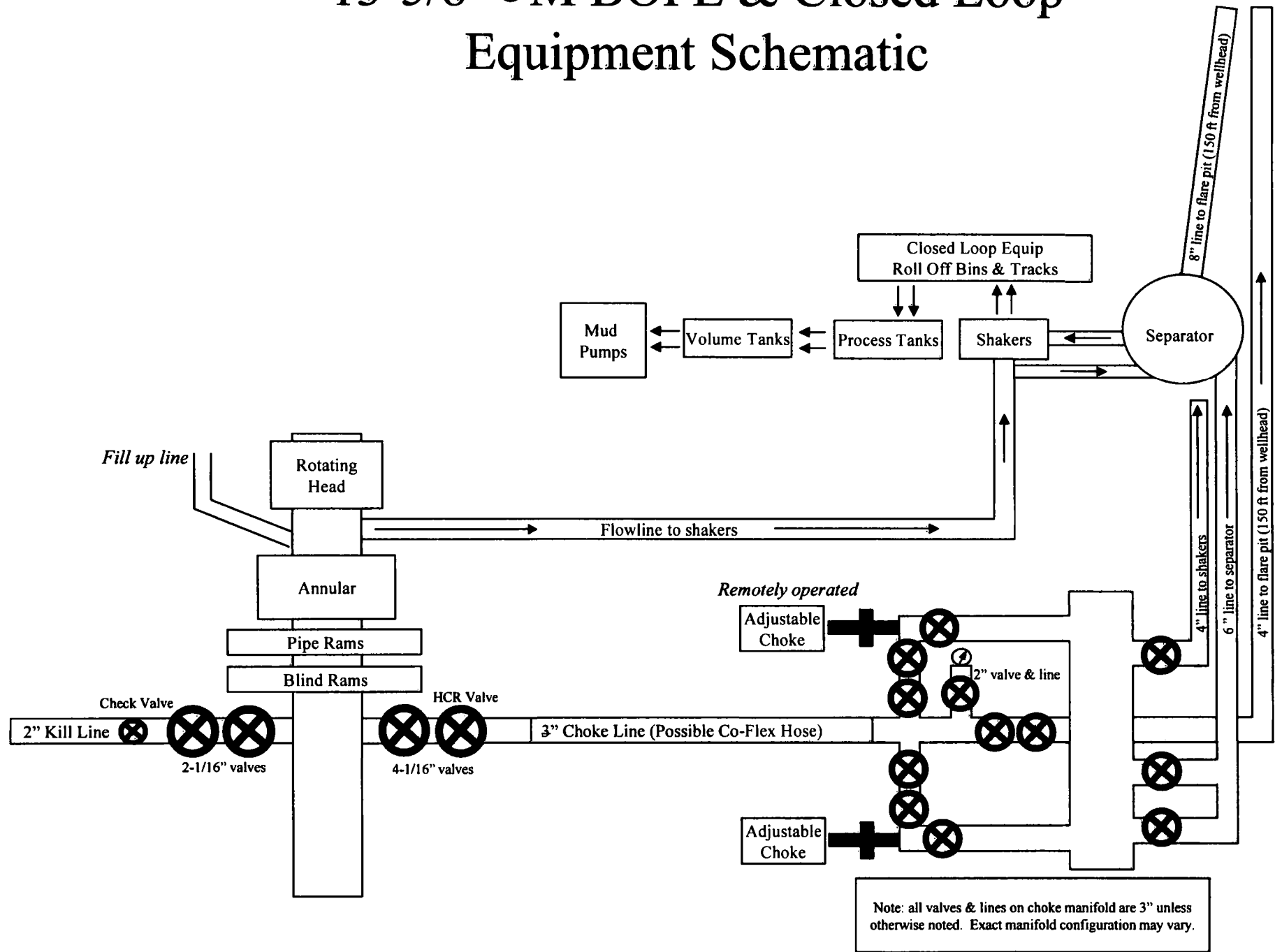
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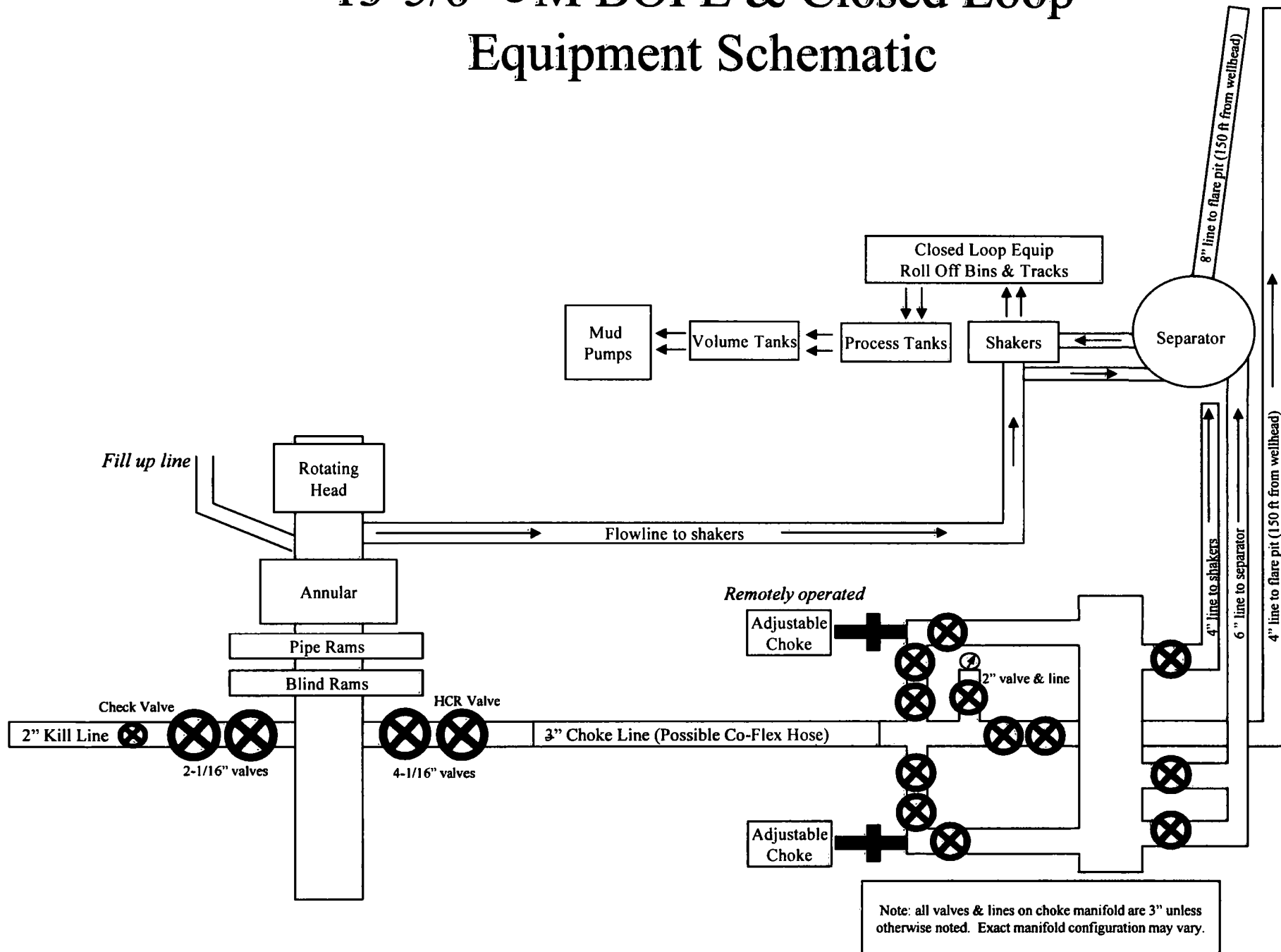
Other Variance attachment:

Lusitano_27_34_Fed_Com_716H_Co_flex_20180827085742.pdf

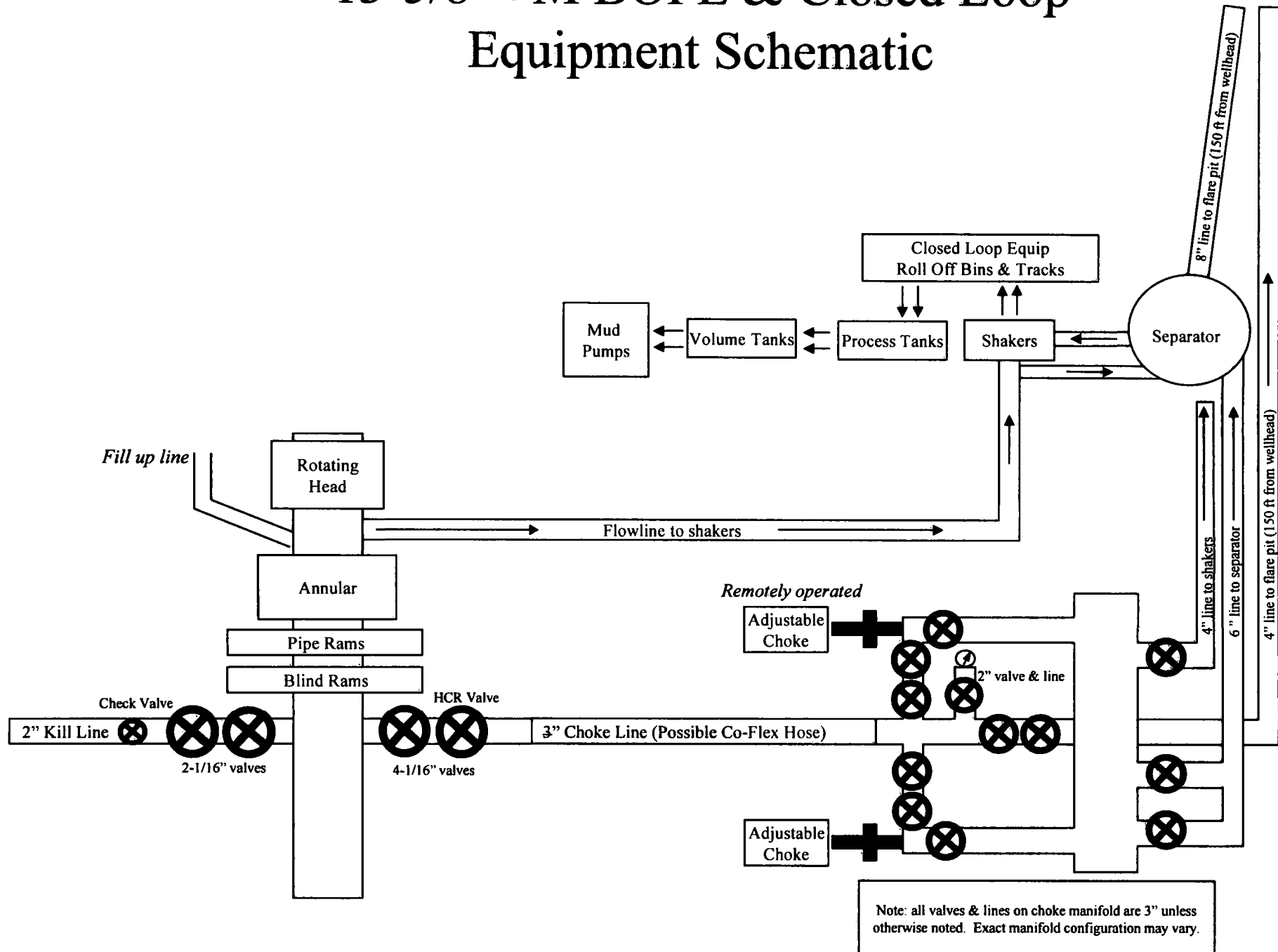
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



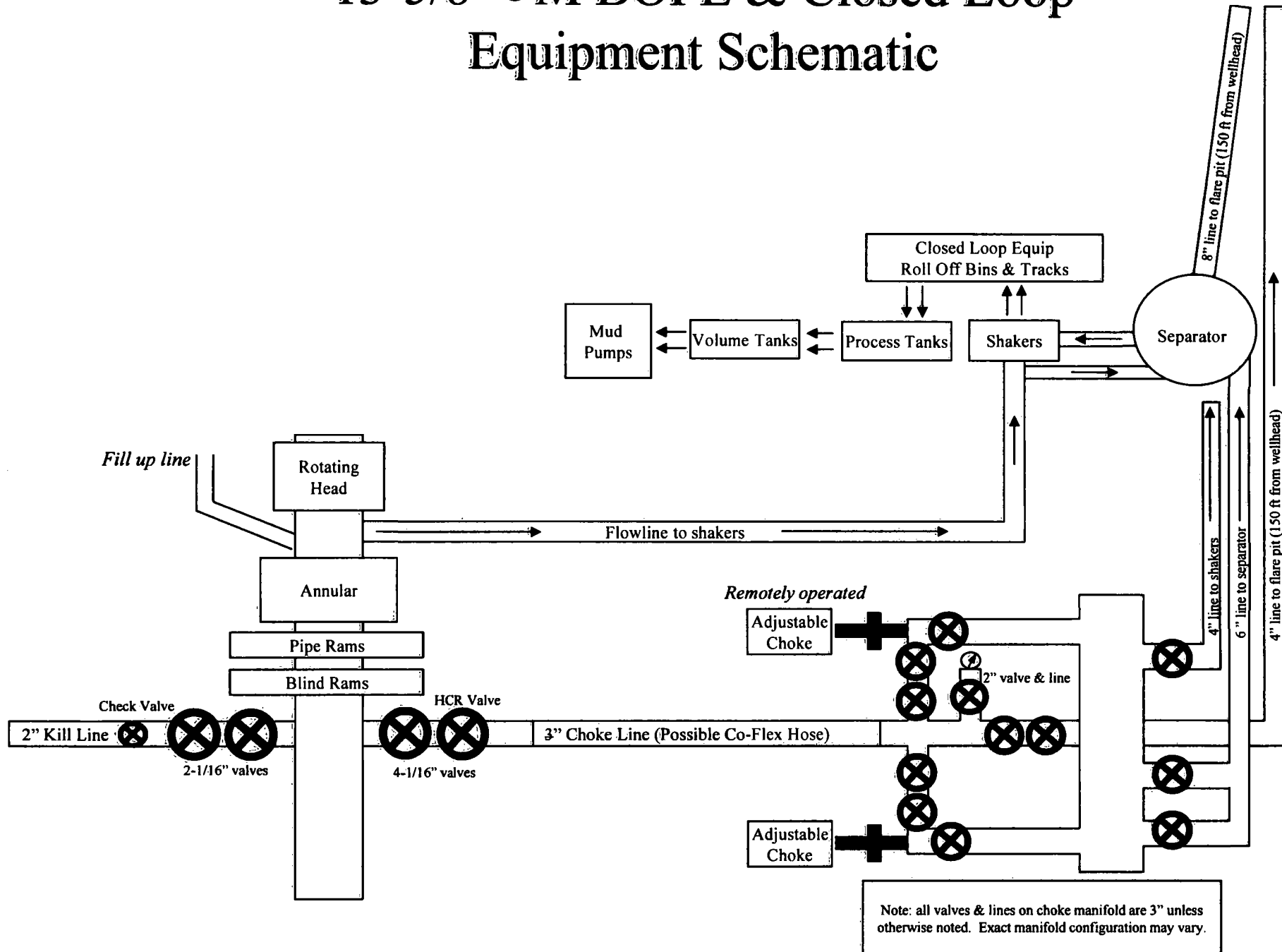
13-5/8" 5M BOPE & Closed Loop Equipment Schematic



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



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



Casing Assumptions and Load Cases

Surface

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

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

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

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

Casing Assumptions and Load Cases

Intermediate

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

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

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

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

Casing Assumptions and Load Cases

Production

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

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

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

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



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

Hydrogen Sulfide (H₂S) Contingency Plan

For

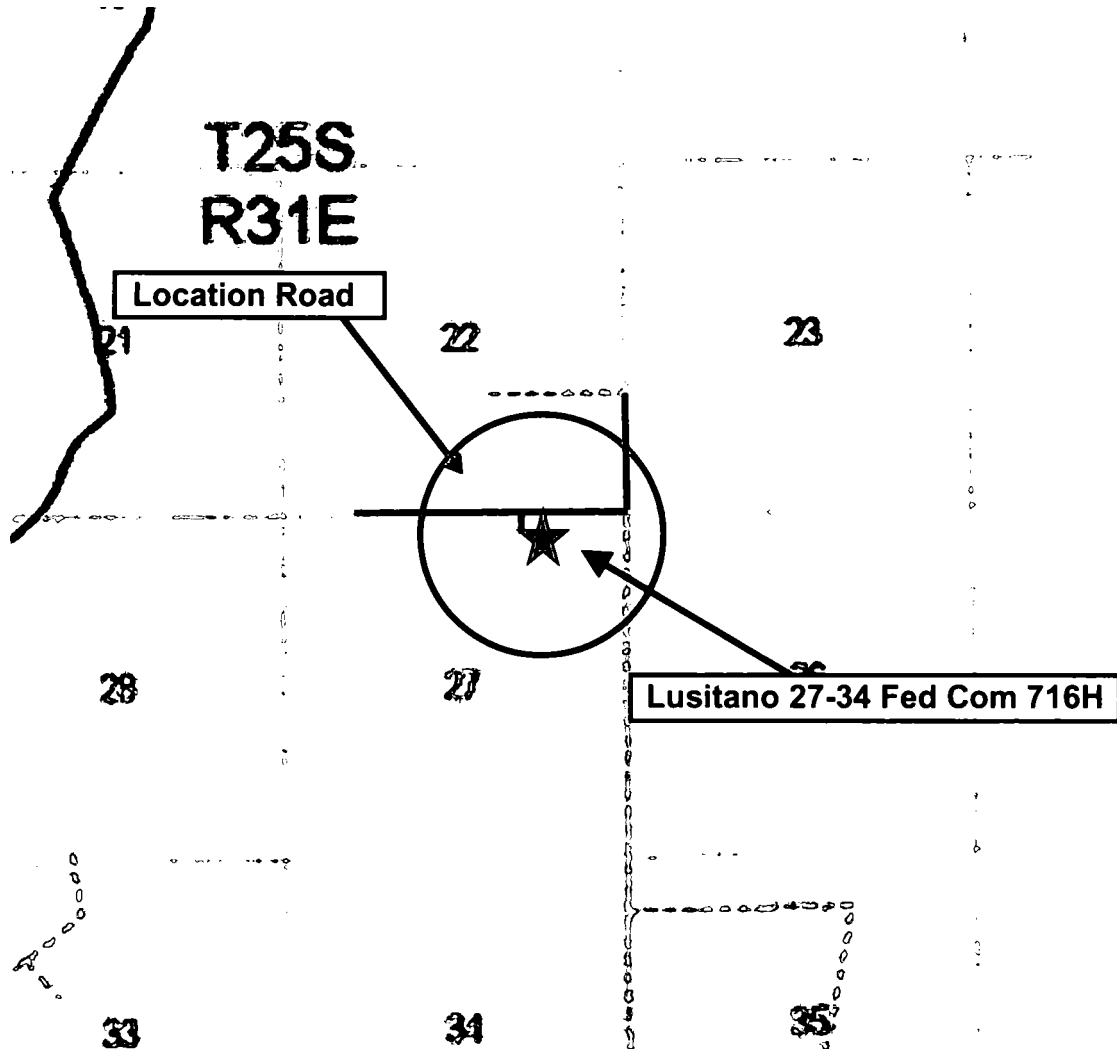
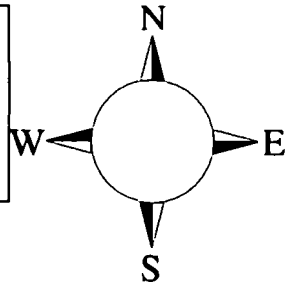
Lusitano 27-34 Fed Com 716H

**Sec-27 T-25S R-31E
235' FNL & 1234' FEL
LAT. = 32.1079106' N (NAD83)
LONG = 103.7613328' W**

Eddy County NM

Lusitano 27-34 Fed Com 716H

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.

Devon Energy Corp. Company Call List

Drilling Supervisor – Basin – Mark Kramer	405-823-4796
EHS Professional – Laura Wright	405-439-8129

Agency Call List

<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
<u>Give GPS position:</u>	Native Air – Emergency Helicopter – Hobbs	(575) 392-6429
	Flight For Life - Lubbock, TX	(806) 743-9911
	Aerocare - Lubbock, TX	(806) 747-8923
	Med Flight Air Amb - Albuquerque, NM	(575) 842-4433
	Lifeguard Air Med Svc. Albuquerque, NM	(800) 222-1222
	Poison Control (24/7)	(575) 272-3115
	Oil & Gas Pipeline 24 Hour Service	(800) 364-4366
	NOAA – Website - www.nhc.noaa.gov	

Prepared in conjunction with
Dave Small



WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Lusitano 27_34 Fed Com 716H

Wellbore #1

Permit Plan 1

Anticollision Report

21 August, 2018

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

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

Survey Tool Program	Date 8/21/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	22,087.66	Permit Plan 1 (Wellbore #1)	MWD+HDGM	OWSG MWD + HDGM

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 27-T25S-R31E						
Gunnison 34 Fed #001 (P&A) - Wellbore #1 - Wellbore #						Out of range
Lusitano 27_22 Fed Com 232H - Wellbore #1 - Permit Pl						Out of range
Lusitano 27_34 Fed Com 523H - Wellbore #1 - Permit Pl						Out of range
Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Pl	8,863.95	8,865.09	1,251.41	1,188.78	19.980	CC, ES
Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Pl	8,950.00	8,914.30	1,253.10	1,190.28	19.948	SF
Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit Pl						Out of range
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Pl	11,237.18	11,239.04	1,346.01	1,266.20	16.865	CC
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Pl	22,087.66	22,070.47	1,358.48	1,046.12	4.349	Alert, ES, SF
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore	0.00	0.00	958.67			
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	1,250.00	1,240.19	959.11	950.77	114.944	ES
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore	10,400.00	10,554.58	1,319.41	1,246.38	18.069	SF
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	10,762.01	10,736.68	1,360.00	1,283.95	17.881	CC
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	19,650.00	18,858.23	1,499.98	1,273.16	6.613	ES, SF
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	1,102.63	1,101.65	903.67	896.70	129.588	CC
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	1,150.00	1,142.78	903.83	896.67	126.157	ES
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore	21,950.00	21,785.00	1,284.89	983.84	4.268	Alert, SF
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	4,193.86	4,232.33	811.45	781.77	27.340	CC
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	4,250.00	4,289.26	811.71	781.63	26.983	ES
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore	8,550.00	8,537.00	1,016.84	956.35	16.809	SF
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	6,035.51	6,095.50	658.71	615.33	15.183	CC
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	6,250.00	6,305.53	659.93	614.98	14.681	ES
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore	8,750.00	8,787.43	758.03	695.84	12.189	SF
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore	8,037.85	8,084.26	535.23	480.74	9.822	CC
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore	21,894.53	21,945.00	614.40	309.04	2.012	Minor Risk, ES, SF
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	1,369.80	1,369.21	869.92	861.65	105.205	CC
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	2,700.00	2,696.82	877.44	860.96	53.238	ES
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore	21,700.00	21,850.56	1,277.65	977.52	4.257	Alert, SF

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:	O-MWD+HDGM												Offset Well Error:	0.50 ft
Reference	Offset	Semi Major Axis		Distance										
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
6,850.00	6,843.71	7,103.68	7,048.52	24.30	26.97	-22.26	126.23	-1,644.68	1,490.81	1,441.25	49.57	30.077		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: O-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	
6,900.00	6,893.60	7,152.59	7,096.83	24.48	27.17	-22.19	129.28	-1,637.69	1,480.61	1,430.68	49.93	29.654		
6,950.00	6,943.48	7,201.49	7,145.14	24.66	27.37	-22.11	132.33	-1,630.70	1,470.41	1,420.12	50.29	29.238		
7,000.00	6,993.36	7,250.40	7,193.45	24.84	27.57	-22.02	135.38	-1,623.71	1,460.22	1,409.56	50.65	28.828		
7,050.00	7,043.24	7,300.69	7,241.76	25.02	27.78	-21.94	138.43	-1,616.71	1,450.03	1,399.00	51.02	28.420		
7,100.00	7,093.12	7,348.21	7,290.06	25.20	27.97	-21.86	141.48	-1,609.72	1,439.84	1,388.46	51.38	28.024		
7,150.00	7,143.00	7,402.88	7,338.37	25.39	28.20	-21.77	144.53	-1,602.73	1,429.65	1,377.89	51.76	27.619		
7,200.00	7,192.88	7,446.03	7,386.68	25.57	28.38	-21.69	147.58	-1,595.73	1,419.47	1,367.36	52.10	27.243		
7,250.00	7,242.76	7,494.94	7,434.99	25.75	28.58	-21.60	150.63	-1,588.74	1,409.29	1,356.82	52.47	26.860		
7,300.00	7,292.64	7,537.79	7,477.33	25.93	28.75	-21.52	153.28	-1,582.66	1,399.16	1,346.33	52.83	26.486		
7,350.00	7,342.52	7,574.69	7,513.83	26.11	28.90	-21.46	155.44	-1,577.70	1,389.41	1,336.23	53.18	26.127		
7,400.00	7,392.40	7,611.73	7,550.52	26.29	29.05	-21.41	157.47	-1,573.05	1,380.09	1,326.56	53.53	25.783		
7,450.00	7,442.29	7,648.89	7,587.38	26.48	29.20	-21.36	159.36	-1,568.72	1,371.20	1,317.33	53.87	25.452		
7,500.00	7,492.17	7,686.19	7,624.41	26.66	29.34	-21.32	161.12	-1,564.70	1,362.74	1,308.52	54.22	25.135		
7,550.00	7,542.05	7,723.59	7,661.61	26.84	29.49	-21.28	162.73	-1,561.00	1,354.71	1,300.16	54.55	24.832		
7,600.00	7,591.93	7,761.12	7,698.94	27.02	29.63	-21.25	164.20	-1,557.63	1,347.12	1,292.23	54.89	24.542		
7,650.00	7,641.81	7,800.00	7,737.68	27.20	29.78	-21.23	165.57	-1,554.49	1,339.97	1,284.74	55.23	24.263		
7,700.00	7,691.69	7,836.46	7,774.03	27.39	29.91	-21.21	166.71	-1,551.87	1,333.25	1,277.70	55.55	24.000		
7,750.00	7,741.57	7,874.27	7,811.75	27.57	30.05	-21.20	167.75	-1,549.49	1,326.97	1,271.10	55.88	23.749		
7,800.00	7,791.45	7,912.17	7,849.58	27.75	30.19	-21.20	168.64	-1,547.45	1,321.14	1,264.94	56.20	23.509		
7,850.00	7,841.33	7,950.14	7,887.50	27.93	30.32	-21.20	169.38	-1,545.75	1,315.74	1,259.23	56.51	23.282		
7,900.00	7,891.21	7,988.18	7,925.51	28.11	30.45	-21.22	169.97	-1,544.40	1,310.79	1,253.96	56.83	23.067		
7,950.00	7,941.09	8,026.28	7,963.60	28.30	30.58	-21.24	170.41	-1,543.39	1,306.28	1,249.15	57.13	22.863		
8,000.00	7,990.98	8,064.43	8,001.75	28.48	30.71	-21.27	170.70	-1,542.72	1,302.22	1,244.78	57.44	22.671		
8,050.00	8,040.86	8,102.63	8,039.95	28.66	30.84	-21.30	170.84	-1,542.41	1,298.61	1,240.87	57.74	22.491		
8,100.00	8,090.74	8,147.93	8,085.24	28.84	30.99	-21.35	170.85	-1,542.38	1,295.36	1,237.29	58.07	22.308		
8,150.00	8,140.62	8,202.19	8,135.12	29.03	31.17	-21.41	170.85	-1,542.38	1,292.14	1,233.72	58.43	22.115		
8,200.00	8,190.50	8,247.69	8,185.00	29.21	31.31	-21.46	170.85	-1,542.38	1,288.93	1,230.17	58.76	21.935		
8,250.00	8,240.38	8,302.43	8,234.88	29.39	31.49	-21.52	170.85	-1,542.38	1,285.72	1,226.60	59.12	21.746		
8,300.00	8,290.26	8,347.45	8,284.76	29.57	31.64	-21.57	170.85	-1,542.38	1,282.51	1,223.06	59.45	21.571		
8,350.00	8,340.14	8,402.67	8,334.64	29.76	31.82	-21.63	170.85	-1,542.38	1,279.31	1,219.49	59.82	21.386		
8,400.00	8,390.02	8,447.21	8,384.52	29.94	31.97	-21.69	170.85	-1,542.38	1,276.10	1,215.95	60.15	21.215		
8,450.00	8,439.90	8,500.02	8,437.31	30.12	32.14	-21.79	169.94	-1,542.38	1,272.86	1,212.36	60.51	21.037		
8,500.00	8,489.78	8,554.07	8,491.06	30.30	32.29	-22.10	164.36	-1,542.37	1,269.46	1,208.62	60.84	20.864		
8,550.00	8,539.67	8,606.34	8,542.31	30.49	32.44	-22.63	154.16	-1,542.36	1,265.97	1,204.81	61.16	20.698		
8,600.00	8,589.55	8,656.11	8,590.05	30.67	32.56	-23.32	140.16	-1,542.34	1,262.50	1,201.04	61.46	20.542		
8,650.00	8,639.43	8,702.85	8,633.62	30.85	32.67	-24.14	123.28	-1,542.31	1,259.22	1,197.48	61.74	20.397		
8,700.00	8,689.31	8,746.28	8,672.75	31.03	32.76	-25.05	104.46	-1,542.28	1,256.29	1,194.30	61.99	20.266		
8,750.00	8,739.19	8,786.29	8,707.44	31.22	32.84	-26.01	84.55	-1,542.25	1,253.90	1,191.69	62.22	20.153		
8,800.00	8,789.07	8,822.92	8,737.91	31.40	32.90	-26.98	64.24	-1,542.22	1,252.24	1,189.82	62.42	20.061		
8,850.00	8,838.95	8,856.32	8,764.52	31.58	32.95	-27.94	44.05	-1,542.19	1,251.45	1,188.86	62.59	19.994		
8,863.95	8,852.87	8,865.09	8,771.31	31.63	32.96	-28.21	38.49	-1,542.18	1,251.41	1,188.78	62.63	19.980 CC, ES		
8,900.00	8,888.83	8,886.70	8,787.66	31.76	32.99	-28.88	24.37	-1,542.16	1,251.70	1,188.97	62.73	19.955		
8,950.00	8,938.71	8,914.30	8,807.75	31.95	33.02	-29.77	5.45	-1,542.13	1,253.10	1,190.28	62.82	19.948 SF		
9,000.00	8,988.59	8,939.38	8,825.20	32.13	33.05	-30.62	-12.56	-1,542.11	1,255.77	1,192.91	62.86	19.976		
9,050.00	9,038.48	8,962.18	8,840.37	32.31	33.07	-31.41	-29.59	-1,542.08	1,259.79	1,196.93	62.86	20.042		
9,100.00	9,088.36	8,982.94	8,853.57	32.50	33.09	-32.16	-45.60	-1,542.06	1,265.24	1,202.44	62.80	20.147		
9,150.00	9,138.24	9,000.00	8,863.99	32.68	33.10	-32.78	-59.11	-1,542.04	1,272.17	1,209.49	62.67	20.298		
9,200.00	9,188.12	9,019.17	8,875.20	32.86	33.11	-33.50	-74.65	-1,542.01	1,280.60	1,218.07	62.52	20.482		
9,250.00	9,238.00	9,035.01	8,884.08	33.05	33.12	-34.11	-87.77	-1,541.99	1,290.56	1,228.26	62.31	20.713		
9,300.00	9,287.88	9,050.00	8,892.14	33.23	33.13	-34.68	-100.41	-1,541.97	1,302.07	1,240.03	62.04	20.987		
9,350.00	9,337.76	9,062.91	8,898.81	33.41	33.14	-35.19	-111.47	-1,541.96	1,315.11	1,253.38	61.72	21.306		
9,400.00	9,387.64	9,075.24	8,904.95	33.59	33.14	-35.67	-122.16	-1,541.94	1,329.67	1,268.30	61.37	21.668		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 534H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance						Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
9,450.00	9,437.52	9,086.63	8,910.41	33.78	33.15	-36.13	-132.15	-1,541.92	1,345.73	1,284.76	60.97	22.073		
9,500.00	9,487.40	9,100.00	8,916.58	33.96	33.16	-36.66	-144.02	-1,541.91	1,363.26	1,302.69	60.56	22.510		
9,550.00	9,537.28	9,100.00	8,916.58	34.14	33.16	-36.66	-144.02	-1,541.91	1,382.24	1,322.24	60.00	23.036		
9,600.00	9,587.17	9,116.08	8,923.62	34.33	33.16	-37.31	-158.47	-1,541.88	1,402.55	1,342.96	59.59	23.537		
9,650.00	9,637.05	9,124.56	8,927.17	34.51	33.16	-37.65	-166.18	-1,541.87	1,424.23	1,365.15	59.08	24.106		
9,700.00	9,686.93	9,132.49	8,930.38	34.69	33.17	-37.98	-173.42	-1,541.86	1,447.21	1,388.64	58.56	24.712		
9,750.00	9,736.81	9,150.00	8,937.12	34.88	33.17	-38.69	-189.58	-1,541.84	1,471.51	1,413.38	58.13	25.313		
9,800.00	9,786.69	9,150.00	8,937.12	35.06	33.17	-38.69	-189.58	-1,541.84	1,496.85	1,439.32	57.52	26.021		

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 716H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
 TVD Reference: RKB @ 3363.10ft
 MD Reference: RKB @ 3363.10ft
 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	
9.550.00	9,537.28	9,653.76	9,635.99	34.14	34.80	-24.34	145.79	-1,836.16	1,499.80	1,431.78	68.02	22.048	
9.600.00	9,587.17	9,703.33	9,685.44	34.33	34.98	-24.35	146.93	-1,832.80	1,493.28	1,424.90	68.38	21.838	
9.650.00	9,637.05	9,752.90	9,734.88	34.51	35.17	-24.36	148.06	-1,829.44	1,486.75	1,418.01	68.74	21.629	
9.700.00	9,686.93	9,802.48	9,784.33	34.69	35.35	-24.38	149.20	-1,826.08	1,480.23	1,411.13	69.10	21.422	
9.750.00	9,736.81	9,852.05	9,833.77	34.88	35.53	-24.39	150.33	-1,822.72	1,473.70	1,404.25	69.46	21.218	
9.800.00	9,786.69	9,901.62	9,883.21	35.06	35.72	-24.40	151.46	-1,819.36	1,467.18	1,397.37	69.81	21.016	
9.850.00	9,836.57	9,951.19	9,932.66	35.24	35.90	-24.41	152.60	-1,816.00	1,460.66	1,390.48	70.17	20.815	
9.900.00	9,886.45	10,000.76	9,982.10	35.43	36.08	-24.42	153.73	-1,812.64	1,454.13	1,383.60	70.53	20.617	
9.950.00	9,936.33	10,050.33	10,031.55	35.61	36.26	-24.43	154.87	-1,809.28	1,447.61	1,376.72	70.89	20.421	
10.000.00	9,986.21	10,100.10	10,080.99	35.79	36.45	-24.45	156.00	-1,805.92	1,441.08	1,369.83	71.25	20.227	
10.050.00	10,036.09	10,149.48	10,130.44	35.98	36.63	-24.46	157.14	-1,802.56	1,434.56	1,362.95	71.60	20.034	
10.100.00	10,085.97	10,200.95	10,179.88	36.16	36.82	-24.47	158.27	-1,799.20	1,428.03	1,356.06	71.97	19.842	
10.150.00	10,135.86	10,248.62	10,229.33	36.34	37.00	-24.48	159.41	-1,795.84	1,421.51	1,349.19	72.32	19.655	
10.200.00	10,185.74	10,301.81	10,278.77	36.53	37.19	-24.50	160.54	-1,792.48	1,414.98	1,342.29	72.69	19.465	
10.250.00	10,235.62	10,347.76	10,328.22	36.71	37.36	-24.51	161.67	-1,789.12	1,408.46	1,335.42	73.04	19.284	
10.300.00	10,285.50	10,402.67	10,377.66	36.89	37.57	-24.52	162.81	-1,785.76	1,401.94	1,328.52	73.42	19.096	
10.350.00	10,335.38	10,446.91	10,427.10	37.08	37.73	-24.53	163.94	-1,782.40	1,395.41	1,321.66	73.76	18.919	
10.400.00	10,385.26	10,503.52	10,476.55	37.26	37.94	-24.55	165.08	-1,779.04	1,388.89	1,314.75	74.14	18.734	
10.450.00	10,435.14	10,546.05	10,525.99	37.44	38.10	-24.56	166.21	-1,775.68	1,382.37	1,307.89	74.47	18.562	
10.500.00	10,485.02	10,595.62	10,575.44	37.63	38.28	-24.57	167.35	-1,772.32	1,375.84	1,301.01	74.83	18.386	
10.550.00	10,534.90	10,636.75	10,616.47	37.81	38.43	-24.59	168.26	-1,769.60	1,369.42	1,294.24	75.18	18.216	
10.600.00	10,584.78	10,673.79	10,653.44	37.99	38.57	-24.60	168.97	-1,767.49	1,363.43	1,287.92	75.51	18.055	
10.650.00	10,634.67	10,710.92	10,690.52	38.18	38.70	-24.61	169.57	-1,765.71	1,357.96	1,282.12	75.85	17.904	
10.700.00	10,684.59	10,748.15	10,727.73	38.36	38.83	-24.59	170.06	-1,764.27	1,353.46	1,277.29	76.17	17.768	
10.750.00	10,734.54	10,785.48	10,765.03	38.54	38.97	-24.59	170.43	-1,763.17	1,350.02	1,273.52	76.50	17.648	
10.800.00	10,784.52	10,822.87	10,802.41	38.72	39.10	-24.58	170.69	-1,762.42	1,347.63	1,270.82	76.82	17.544	
10.850.00	10,834.51	10,860.30	10,839.84	38.90	39.23	-24.58	170.82	-1,762.01	1,346.31	1,269.18	77.13	17.456	
10.900.00	10,884.51	10,901.87	10,881.41	39.07	39.38	-90.60	170.85	-1,761.93	1,346.01	1,268.56	77.45	17.379	
10.950.00	10,934.51	10,951.87	10,931.41	39.25	39.55	-90.60	170.85	-1,761.93	1,346.01	1,268.21	77.80	17.301	
11.000.00	10,984.51	11,001.87	10,981.41	39.42	39.72	-90.60	170.85	-1,761.93	1,346.01	1,267.86	78.15	17.224	
11.050.00	11,034.51	11,051.87	11,031.41	39.60	39.89	-90.60	170.85	-1,761.93	1,346.01	1,267.51	78.50	17.147	
11.100.00	11,084.51	11,101.87	11,081.41	39.77	40.07	-90.60	170.85	-1,761.93	1,346.01	1,267.16	78.85	17.071	
11.150.00	11,134.51	11,151.87	11,131.41	39.95	40.24	-90.60	170.85	-1,761.93	1,346.01	1,266.81	79.20	16.995	
11.200.00	11,184.51	11,201.87	11,181.41	40.12	40.41	-90.60	170.85	-1,761.93	1,346.01	1,266.46	79.55	16.920	
11.237.18	11,221.69	11,239.04	11,218.59	40.25	40.54	89.56	170.85	-1,761.93	1,346.01	1,266.20	79.81	16.865 CC	
11.250.00	11,234.51	11,251.53	11,231.07	40.30	40.58	89.54	170.63	-1,761.93	1,346.01	1,266.11	79.90	16.847	
11.300.00	11,284.40	11,300.45	11,279.85	40.46	40.74	89.52	167.17	-1,761.93	1,346.02	1,265.80	80.22	16.780	
11.350.00	11,333.85	11,349.33	11,328.13	40.61	40.89	89.50	159.58	-1,761.92	1,346.03	1,265.51	80.53	16.715	
11.400.00	11,382.46	11,398.19	11,375.55	40.76	41.04	89.49	147.91	-1,761.90	1,346.05	1,265.22	80.83	16.654	
11.450.00	11,429.88	11,447.02	11,421.79	40.91	41.18	89.48	132.25	-1,761.88	1,346.07	1,264.96	81.11	16.595	
11.500.00	11,475.73	11,495.83	11,466.51	41.04	41.31	89.47	112.72	-1,761.85	1,346.10	1,264.70	81.39	16.539	
11.550.00	11,519.68	11,544.64	11,509.40	41.16	41.43	89.46	89.45	-1,761.81	1,346.12	1,264.47	81.66	16.485	
11.600.00	11,561.39	11,593.46	11,550.16	41.27	41.53	89.46	62.62	-1,761.77	1,346.16	1,264.24	81.91	16.434	
11.650.00	11,600.53	11,642.28	11,588.50	41.37	41.63	89.47	32.41	-1,761.73	1,346.19	1,264.03	82.16	16.386	
11.700.00	11,636.82	11,691.12	11,624.14	41.46	41.72	89.48	-0.96	-1,761.68	1,346.23	1,263.83	82.39	16.339	
11.750.00	11,669.98	11,739.99	11,656.83	41.53	41.80	89.49	-37.27	-1,761.63	1,346.27	1,263.64	82.63	16.294	
11.800.00	11,699.75	11,788.89	11,686.32	41.60	41.87	89.50	-76.26	-1,761.57	1,346.31	1,263.46	82.85	16.250	
11.850.00	11,725.90	11,837.84	11,712.40	41.66	41.94	89.52	-117.66	-1,761.51	1,346.36	1,263.28	83.07	16.207	
11.900.00	11,748.25	11,866.84	11,734.88	41.73	42.01	89.55	-161.18	-1,761.44	1,346.41	1,263.11	83.29	16.165	
11.950.00	11,766.61	11,935.90	11,753.58	41.82	42.09	89.57	-206.52	-1,761.38	1,346.45	1,262.95	83.51	16.124	
12.000.00	11,780.85	11,985.02	11,768.35	41.92	42.18	89.60	-253.35	-1,761.31	1,346.50	1,262.78	83.72	16.083	
12.050.00	11,790.86	12,034.22	11,779.07	42.03	42.28	89.64	-301.35	-1,761.23	1,346.56	1,262.62	83.94	16.042	

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
12,100.00	11,796.57	12,083.49	11,785.64	42.14	42.38	89.67	-350.17	-1,761.16	1,346.61	1,262.46	84.15	16.003	
12,150.00	11,798.00	12,138.19	11,788.00	42.25	42.51	89.71	-399.42	-1,761.09	1,346.66	1,262.29	84.37	15.962	
12,200.00	11,798.00	12,182.81	11,788.00	42.37	42.61	89.71	-449.42	-1,761.02	1,346.72	1,262.14	84.58	15.923	
12,250.00	11,798.00	12,232.81	11,788.00	42.51	42.75	89.71	-499.42	-1,760.94	1,346.78	1,261.95	84.83	15.876	
12,300.00	11,798.00	12,282.81	11,788.00	42.65	42.89	89.71	-549.42	-1,760.87	1,346.84	1,261.75	85.10	15.827	
12,350.00	11,798.00	12,332.81	11,788.00	42.80	43.04	89.71	-599.42	-1,760.79	1,346.90	1,261.51	85.40	15.772	
12,400.00	11,798.00	12,382.81	11,788.00	42.96	43.20	89.71	-649.42	-1,760.72	1,346.96	1,261.26	85.71	15.716	
12,450.00	11,798.00	12,432.81	11,788.00	43.14	43.38	89.71	-699.42	-1,760.64	1,347.02	1,260.97	86.05	15.653	
12,500.00	11,798.00	12,482.81	11,788.00	43.32	43.56	89.71	-749.42	-1,760.57	1,347.08	1,260.67	86.41	15.590	
12,550.00	11,798.00	12,532.81	11,788.00	43.53	43.76	89.71	-799.42	-1,760.50	1,347.14	1,260.34	86.80	15.520	
12,600.00	11,798.00	12,582.81	11,788.00	43.73	43.96	89.71	-849.42	-1,760.42	1,347.20	1,260.00	87.20	15.449	
12,650.00	11,798.00	12,632.81	11,788.00	43.95	44.18	89.71	-899.42	-1,760.35	1,347.26	1,259.62	87.64	15.372	
12,700.00	11,798.00	12,682.81	11,788.00	44.18	44.41	89.71	-949.42	-1,760.27	1,347.32	1,259.23	88.09	15.295	
12,750.00	11,798.00	12,732.81	11,788.00	44.42	44.65	89.71	-999.42	-1,760.20	1,347.38	1,258.81	88.57	15.213	
12,800.00	11,798.00	12,782.81	11,788.00	44.67	44.89	89.71	-1,049.42	-1,760.13	1,347.44	1,258.38	89.06	15.130	
12,850.00	11,798.00	12,832.81	11,788.00	44.93	45.15	89.71	-1,099.42	-1,760.05	1,347.50	1,257.92	89.58	15.042	
12,900.00	11,798.00	12,882.81	11,788.00	45.20	45.42	89.71	-1,149.42	-1,759.98	1,347.56	1,257.45	90.11	14.955	
12,950.00	11,798.00	12,932.81	11,788.00	45.48	45.70	89.71	-1,199.42	-1,759.90	1,347.61	1,256.94	90.67	14.862	
13,000.00	11,798.00	12,982.81	11,788.00	45.77	45.98	89.71	-1,249.42	-1,759.83	1,347.67	1,256.43	91.24	14.770	
13,050.00	11,798.00	13,032.81	11,788.00	46.07	46.28	89.71	-1,299.42	-1,759.76	1,347.73	1,255.89	91.85	14.674	
13,100.00	11,798.00	13,082.81	11,788.00	46.38	46.59	89.71	-1,349.42	-1,759.68	1,347.79	1,255.34	92.46	14.578	
13,150.00	11,798.00	13,132.81	11,788.00	46.70	46.90	89.71	-1,399.42	-1,759.61	1,347.85	1,254.76	93.09	14.478	
13,200.00	11,798.00	13,182.81	11,788.00	47.02	47.23	89.71	-1,449.42	-1,759.53	1,347.91	1,254.17	93.74	14.379	
13,250.00	11,798.00	13,232.81	11,788.00	47.36	47.56	89.71	-1,499.42	-1,759.46	1,347.97	1,253.56	94.42	14.277	
13,300.00	11,798.00	13,282.81	11,788.00	47.70	47.90	89.71	-1,549.42	-1,759.38	1,348.03	1,252.93	95.10	14.175	
13,350.00	11,798.00	13,332.81	11,788.00	48.06	48.25	89.71	-1,599.42	-1,759.31	1,348.09	1,252.28	95.81	14.071	
13,400.00	11,798.00	13,382.81	11,788.00	48.42	48.61	89.71	-1,649.42	-1,759.24	1,348.15	1,251.63	96.52	13.967	
13,450.00	11,798.00	13,432.81	11,788.00	48.79	48.98	89.71	-1,699.42	-1,759.16	1,348.21	1,250.94	97.27	13.861	
13,500.00	11,798.00	13,482.81	11,788.00	49.16	49.35	89.71	-1,749.42	-1,759.09	1,348.27	1,250.25	98.02	13.756	
13,550.00	11,798.00	13,532.81	11,788.00	49.55	49.73	89.71	-1,799.42	-1,759.01	1,348.33	1,249.54	98.79	13.649	
13,600.00	11,798.00	13,582.81	11,788.00	49.94	50.12	89.71	-1,849.42	-1,758.94	1,348.39	1,248.82	99.57	13.542	
13,650.00	11,798.00	13,632.81	11,788.00	50.34	50.52	89.71	-1,899.42	-1,758.87	1,348.45	1,248.07	100.37	13.434	
13,700.00	11,798.00	13,682.81	11,788.00	50.75	50.92	89.71	-1,949.42	-1,758.79	1,348.51	1,247.32	101.18	13.327	
13,750.00	11,798.00	13,732.81	11,788.00	51.16	51.34	89.71	-1,999.42	-1,758.72	1,348.57	1,246.55	102.02	13.219	
13,800.00	11,798.00	13,782.81	11,788.00	51.58	51.75	89.71	-2,049.42	-1,758.64	1,348.63	1,245.77	102.85	13.112	
13,850.00	11,798.00	13,832.81	11,788.00	52.01	52.18	89.71	-2,099.42	-1,758.57	1,348.68	1,244.97	103.71	13.004	
13,900.00	11,798.00	13,882.81	11,788.00	52.44	52.61	89.71	-2,149.42	-1,758.49	1,348.74	1,244.17	104.58	12.897	
13,950.00	11,798.00	13,932.81	11,788.00	52.89	53.05	89.71	-2,199.42	-1,758.42	1,348.80	1,243.34	105.46	12.789	
14,000.00	11,798.00	13,982.81	11,788.00	53.33	53.49	89.71	-2,249.42	-1,758.35	1,348.86	1,242.51	106.35	12.683	
14,050.00	11,798.00	14,032.81	11,788.00	53.79	53.94	89.71	-2,299.42	-1,758.27	1,348.92	1,241.66	107.26	12.576	
14,100.00	11,798.00	14,082.81	11,788.00	54.25	54.40	89.71	-2,349.42	-1,758.20	1,348.98	1,240.80	108.18	12.470	
14,150.00	11,798.00	14,132.81	11,788.00	54.71	54.86	89.71	-2,399.42	-1,758.12	1,349.04	1,239.93	109.11	12.364	
14,200.00	11,798.00	14,182.81	11,788.00	55.18	55.33	89.71	-2,449.42	-1,758.05	1,349.10	1,239.05	110.05	12.259	
14,250.00	11,798.00	14,232.81	11,788.00	55.66	55.80	89.71	-2,499.42	-1,757.98	1,349.16	1,238.15	111.01	12.154	
14,300.00	11,798.00	14,282.81	11,788.00	56.14	56.28	89.71	-2,549.42	-1,757.90	1,349.22	1,237.25	111.97	12.050	
14,350.00	11,798.00	14,332.81	11,788.00	56.63	56.76	89.71	-2,599.42	-1,757.83	1,349.28	1,236.34	112.94	11.947	
14,400.00	11,798.00	14,382.81	11,788.00	57.12	57.25	89.71	-2,649.42	-1,757.75	1,349.34	1,235.42	113.92	11.844	
14,450.00	11,798.00	14,432.81	11,788.00	57.62	57.75	89.71	-2,699.42	-1,757.68	1,349.40	1,234.48	114.92	11.742	
14,500.00	11,798.00	14,482.81	11,788.00	58.11	58.25	89.71	-2,749.42	-1,757.61	1,349.46	1,233.54	115.92	11.641	
14,550.00	11,798.00	14,532.81	11,788.00	58.62	58.75	89.71	-2,799.42	-1,757.53	1,349.52	1,232.58	116.94	11.541	
14,600.00	11,798.00	14,582.81	11,788.00	59.13	59.26	89.71	-2,849.42	-1,757.46	1,349.58	1,231.62	117.96	11.441	
14,650.00	11,798.00	14,632.81	11,788.00	59.65	59.77	89.71	-2,899.42	-1,757.38	1,349.64	1,230.65	118.99	11.342	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
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
14,700.00	11,798.00	14,682.81	11,788.00	60.17	60.29	89.71	-2,949.42	-1,757.31	1,349.69	1,229.67	120.03	11.245	
14,750.00	11,798.00	14,732.81	11,788.00	60.69	60.81	89.71	-2,999.42	-1,757.23	1,349.75	1,228.68	121.08	11.148	
14,800.00	11,798.00	14,782.81	11,788.00	61.22	61.33	89.71	-3,049.42	-1,757.16	1,349.81	1,227.68	122.13	11.052	
14,850.00	11,798.00	14,832.81	11,788.00	61.75	61.86	89.71	-3,099.42	-1,757.09	1,349.87	1,226.67	123.20	10.957	
14,900.00	11,798.00	14,882.81	11,788.00	62.29	62.40	89.71	-3,149.42	-1,757.01	1,349.93	1,225.66	124.27	10.863	
14,950.00	11,798.00	14,932.81	11,788.00	62.83	62.94	89.71	-3,199.42	-1,756.94	1,349.99	1,224.64	125.35	10.770	
15,000.00	11,798.00	14,982.81	11,788.00	63.37	63.48	89.71	-3,249.42	-1,756.86	1,350.05	1,223.61	126.44	10.678	
15,050.00	11,798.00	15,032.81	11,788.00	63.92	64.02	89.71	-3,299.42	-1,756.79	1,350.11	1,222.57	127.54	10.586	
15,100.00	11,798.00	15,082.81	11,788.00	64.47	64.57	89.71	-3,349.42	-1,756.72	1,350.17	1,221.53	128.64	10.496	
15,150.00	11,798.00	15,132.81	11,788.00	65.02	65.12	89.71	-3,399.42	-1,756.64	1,350.23	1,220.48	129.75	10.407	
15,200.00	11,798.00	15,182.81	11,788.00	65.58	65.68	89.71	-3,449.42	-1,756.57	1,350.29	1,219.43	130.86	10.318	
15,250.00	11,798.00	15,232.81	11,788.00	66.14	66.24	89.71	-3,499.42	-1,756.49	1,350.35	1,218.36	131.99	10.231	
15,300.00	11,798.00	15,282.81	11,788.00	66.70	66.80	89.71	-3,549.42	-1,756.42	1,350.41	1,217.30	133.11	10.145	
15,350.00	11,798.00	15,332.81	11,788.00	67.27	67.36	89.71	-3,599.42	-1,756.35	1,350.47	1,216.22	134.25	10.059	
15,400.00	11,798.00	15,382.81	11,788.00	67.84	67.93	89.71	-3,649.42	-1,756.27	1,350.53	1,215.14	135.39	9.975	
15,450.00	11,798.00	15,432.81	11,788.00	68.42	68.50	89.71	-3,699.42	-1,756.20	1,350.59	1,214.05	136.54	9.892	
15,500.00	11,798.00	15,482.81	11,788.00	68.99	69.08	89.71	-3,749.42	-1,756.12	1,350.65	1,212.96	137.69	9.809	
15,550.00	11,798.00	15,532.81	11,788.00	69.57	69.65	89.71	-3,799.42	-1,756.05	1,350.71	1,211.86	138.85	9.728	
15,600.00	11,798.00	15,582.81	11,788.00	70.15	70.23	89.71	-3,849.42	-1,755.97	1,350.76	1,210.75	140.01	9.647	
15,650.00	11,798.00	15,632.81	11,788.00	70.74	70.81	89.71	-3,899.42	-1,755.90	1,350.82	1,209.64	141.18	9.568	
15,700.00	11,798.00	15,682.81	11,788.00	71.32	71.40	89.71	-3,949.41	-1,755.83	1,350.88	1,208.53	142.36	9.489	
15,750.00	11,798.00	15,732.81	11,788.00	71.91	71.99	89.71	-3,999.41	-1,755.75	1,350.94	1,207.41	143.54	9.412	
15,800.00	11,798.00	15,782.81	11,788.00	72.50	72.58	89.71	-4,049.41	-1,755.68	1,351.00	1,206.28	144.72	9.335	
15,850.00	11,798.00	15,832.81	11,788.00	73.10	73.17	89.71	-4,099.41	-1,755.60	1,351.06	1,205.15	145.91	9.259	
15,900.00	11,798.00	15,882.81	11,788.00	73.70	73.76	89.71	-4,149.41	-1,755.53	1,351.12	1,204.02	147.11	9.185	
15,950.00	11,798.00	15,932.81	11,788.00	74.30	74.36	89.71	-4,199.41	-1,755.46	1,351.18	1,202.87	148.31	9.111	
16,000.00	11,798.00	15,982.81	11,788.00	74.90	74.96	89.71	-4,249.41	-1,755.38	1,351.24	1,201.73	149.51	9.038	
16,050.00	11,798.00	16,032.81	11,788.00	75.50	75.56	89.71	-4,299.41	-1,755.31	1,351.30	1,200.58	150.72	8.966	
16,100.00	11,798.00	16,082.81	11,788.00	76.11	76.17	89.71	-4,349.41	-1,755.23	1,351.36	1,199.43	151.93	8.895	
16,150.00	11,798.00	16,132.81	11,788.00	76.71	76.77	89.71	-4,399.41	-1,755.16	1,351.42	1,198.27	153.15	8.824	
16,200.00	11,798.00	16,182.81	11,788.00	77.32	77.38	89.71	-4,449.41	-1,755.09	1,351.48	1,197.11	154.36	8.755	
16,250.00	11,798.00	16,232.81	11,788.00	77.94	77.99	89.71	-4,499.41	-1,755.01	1,351.54	1,195.95	155.59	8.686	
16,300.00	11,798.00	16,282.81	11,788.00	78.55	78.60	89.71	-4,549.41	-1,754.94	1,351.60	1,194.78	156.82	8.619	
16,350.00	11,798.00	16,332.81	11,788.00	79.17	79.22	89.71	-4,599.41	-1,754.86	1,351.66	1,193.60	158.05	8.552	
16,400.00	11,798.00	16,382.81	11,788.00	79.78	79.83	89.71	-4,649.41	-1,754.79	1,351.72	1,192.43	159.29	8.486	
16,450.00	11,798.00	16,432.81	11,788.00	80.40	80.45	89.71	-4,699.41	-1,754.71	1,351.77	1,191.25	160.53	8.421	
16,500.00	11,798.00	16,482.81	11,788.00	81.02	81.07	89.71	-4,749.41	-1,754.64	1,351.83	1,190.06	161.77	8.357	
16,550.00	11,798.00	16,532.81	11,788.00	81.65	81.69	89.71	-4,799.41	-1,754.57	1,351.89	1,188.88	163.02	8.293	
16,600.00	11,798.00	16,582.81	11,788.00	82.27	82.31	89.71	-4,849.41	-1,754.49	1,351.95	1,187.69	164.27	8.230	
16,650.00	11,798.00	16,632.81	11,788.00	82.90	82.94	89.71	-4,899.41	-1,754.42	1,352.01	1,186.49	165.52	8.168	
16,700.00	11,798.00	16,682.81	11,788.00	83.53	83.57	89.71	-4,949.41	-1,754.34	1,352.07	1,185.30	166.78	8.107	
16,750.00	11,798.00	16,732.81	11,788.00	84.16	84.19	89.71	-4,999.41	-1,754.27	1,352.13	1,184.09	168.04	8.047	
16,800.00	11,798.00	16,782.81	11,788.00	84.79	84.82	89.71	-5,049.41	-1,754.20	1,352.19	1,182.89	169.30	7.987	
16,850.00	11,798.00	16,832.81	11,788.00	85.42	85.45	89.71	-5,099.41	-1,754.12	1,352.25	1,181.68	170.57	7.928	
16,900.00	11,798.00	16,882.81	11,788.00	86.05	86.09	89.71	-5,149.41	-1,754.05	1,352.31	1,180.48	171.83	7.870	
16,950.00	11,798.00	16,932.81	11,788.00	86.69	86.72	89.71	-5,199.41	-1,753.97	1,352.37	1,179.26	173.11	7.812	
17,000.00	11,798.00	16,982.81	11,788.00	87.33	87.36	89.71	-5,249.41	-1,753.90	1,352.43	1,178.05	174.38	7.756	
17,050.00	11,798.00	17,032.81	11,788.00	87.97	87.99	89.71	-5,299.41	-1,753.83	1,352.49	1,176.83	175.66	7.700	
17,100.00	11,798.00	17,082.81	11,788.00	88.60	88.63	89.71	-5,349.41	-1,753.75	1,352.55	1,175.61	176.94	7.644	
17,150.00	11,798.00	17,132.81	11,788.00	89.25	89.27	89.71	-5,399.41	-1,753.68	1,352.61	1,174.38	178.22	7.589	
17,200.00	11,798.00	17,182.81	11,788.00	89.89	89.91	89.71	-5,449.41	-1,753.60	1,352.67	1,173.16	179.51	7.535	
17,250.00	11,798.00	17,232.81	11,788.00	90.53	90.56	89.71	-5,499.41	-1,753.53	1,352.73	1,171.93	180.80	7.482	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Plan 1												Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
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
17,300.00	11,798.00	17,282.81	11,788.00	91.18	91.20	89.71	-5,548.41	-1,753.45	1,352.79	1,170.70	182.09	7.429	
17,350.00	11,798.00	17,332.81	11,788.00	91.82	91.84	89.71	-5,599.41	-1,753.38	1,352.84	1,169.47	183.38	7.377	
17,400.00	11,798.00	17,382.81	11,788.00	92.47	92.49	89.71	-5,649.41	-1,753.31	1,352.90	1,168.23	184.67	7.326	
17,450.00	11,798.00	17,432.81	11,788.00	93.12	93.14	89.71	-5,699.41	-1,753.23	1,352.96	1,166.99	185.97	7.275	
17,500.00	11,798.00	17,482.81	11,788.00	93.77	93.79	89.71	-5,749.41	-1,753.16	1,353.02	1,165.75	187.27	7.225	
17,550.00	11,798.00	17,532.81	11,788.00	94.42	94.43	89.71	-5,799.41	-1,753.08	1,353.08	1,164.51	188.57	7.175	
17,600.00	11,798.00	17,582.81	11,788.00	95.07	95.09	89.71	-5,849.41	-1,753.01	1,353.14	1,163.26	189.88	7.126	
17,650.00	11,798.00	17,632.81	11,788.00	95.72	95.74	89.71	-5,899.41	-1,752.94	1,353.20	1,162.02	191.18	7.078	
17,700.00	11,798.00	17,682.81	11,788.00	96.38	96.39	89.71	-5,949.41	-1,752.86	1,353.26	1,160.77	192.49	7.030	
17,750.00	11,798.00	17,732.81	11,788.00	97.03	97.04	89.71	-5,999.41	-1,752.79	1,353.32	1,159.52	193.80	6.983	
17,800.00	11,798.00	17,782.81	11,788.00	97.69	97.70	89.71	-6,049.41	-1,752.71	1,353.38	1,158.26	195.12	6.936	
17,850.00	11,798.00	17,832.81	11,788.00	98.35	98.35	89.71	-6,099.41	-1,752.64	1,353.44	1,157.01	196.43	6.890	
17,900.00	11,798.00	17,882.81	11,788.00	99.00	99.01	89.71	-6,149.41	-1,752.57	1,353.50	1,155.75	197.75	6.845	
17,950.00	11,798.00	17,932.81	11,788.00	99.66	99.67	89.71	-6,199.41	-1,752.49	1,353.56	1,154.49	199.07	6.800	
18,000.00	11,798.00	17,982.81	11,788.00	100.32	100.33	89.71	-6,249.41	-1,752.42	1,353.62	1,153.23	200.39	6.755	
18,050.00	11,798.00	18,032.81	11,788.00	100.99	100.99	89.71	-6,299.41	-1,752.34	1,353.68	1,151.97	201.71	6.711	
18,100.00	11,798.00	18,082.81	11,788.00	101.65	101.65	89.71	-6,349.41	-1,752.27	1,353.74	1,150.70	203.03	6.668	
18,150.00	11,798.00	18,132.81	11,788.00	102.31	102.31	89.71	-6,399.41	-1,752.19	1,353.80	1,149.44	204.36	6.625	
18,200.00	11,798.00	18,182.81	11,788.00	102.97	102.97	89.71	-6,449.41	-1,752.12	1,353.85	1,148.17	205.69	6.582	
18,250.00	11,798.00	18,232.81	11,788.00	103.64	103.64	89.71	-6,499.41	-1,752.05	1,353.91	1,146.90	207.02	6.540	
18,300.00	11,798.00	18,282.81	11,788.00	104.30	104.30	89.71	-6,549.41	-1,751.97	1,353.97	1,145.63	208.35	6.499	
18,350.00	11,798.00	18,332.81	11,788.00	104.97	104.96	89.71	-6,599.41	-1,751.90	1,354.03	1,144.35	209.68	6.458	
18,400.00	11,798.00	18,382.81	11,788.00	105.64	105.63	89.71	-6,649.41	-1,751.82	1,354.09	1,143.08	211.01	6.417	
18,450.00	11,798.00	18,432.81	11,788.00	106.30	106.30	89.71	-6,699.41	-1,751.75	1,354.15	1,141.80	212.35	6.377	
18,500.00	11,798.00	18,482.81	11,788.00	106.97	106.96	89.71	-6,749.41	-1,751.68	1,354.21	1,140.53	213.69	6.337	
18,550.00	11,798.00	18,532.81	11,788.00	107.64	107.63	89.71	-6,799.41	-1,751.60	1,354.27	1,139.25	215.03	6.298	
18,600.00	11,798.00	18,582.81	11,788.00	108.31	108.30	89.71	-6,849.41	-1,751.53	1,354.33	1,137.97	216.37	6.259	
18,650.00	11,798.00	18,632.81	11,788.00	108.98	108.97	89.71	-6,899.41	-1,751.45	1,354.39	1,136.68	217.71	6.221	
18,700.00	11,798.00	18,682.81	11,788.00	109.65	109.64	89.71	-6,949.41	-1,751.38	1,354.45	1,135.40	219.05	6.183	
18,750.00	11,798.00	18,732.81	11,788.00	110.33	110.31	89.71	-6,999.41	-1,751.31	1,354.51	1,134.11	220.39	6.146	
18,800.00	11,798.00	18,782.81	11,788.00	111.00	110.98	89.71	-7,049.41	-1,751.23	1,354.57	1,132.83	221.74	6.109	
18,850.00	11,798.00	18,832.81	11,788.00	111.67	111.66	89.71	-7,099.41	-1,751.16	1,354.63	1,131.54	223.09	6.072	
18,900.00	11,798.00	18,882.81	11,788.00	112.35	112.33	89.71	-7,149.41	-1,751.08	1,354.69	1,130.25	224.44	6.036	
18,950.00	11,798.00	18,932.81	11,788.00	113.02	113.00	89.71	-7,199.41	-1,751.01	1,354.75	1,128.96	225.79	6.000	
19,000.00	11,798.00	18,982.81	11,788.00	113.70	113.68	89.71	-7,249.41	-1,750.93	1,354.81	1,127.67	227.14	5.965	
19,050.00	11,798.00	19,032.81	11,788.00	114.37	114.35	89.71	-7,299.41	-1,750.86	1,354.87	1,126.38	228.49	5.930	
19,100.00	11,798.00	19,082.81	11,788.00	115.05	115.03	89.71	-7,349.41	-1,750.79	1,354.92	1,125.08	229.84	5.895	
19,150.00	11,798.00	19,132.81	11,788.00	115.73	115.70	89.71	-7,399.41	-1,750.71	1,354.98	1,123.79	231.20	5.861	
19,200.00	11,798.00	19,182.81	11,788.00	116.40	116.38	89.71	-7,449.41	-1,750.64	1,355.04	1,122.49	232.55	5.827	
19,250.00	11,798.00	19,232.81	11,788.00	117.08	117.06	89.71	-7,499.41	-1,750.56	1,355.10	1,121.19	233.91	5.793	
19,300.00	11,798.00	19,282.81	11,788.00	117.76	117.74	89.71	-7,549.41	-1,750.49	1,355.16	1,119.89	235.27	5.760	
19,350.00	11,798.00	19,332.81	11,788.00	118.44	118.41	89.71	-7,599.41	-1,750.42	1,355.22	1,118.59	236.63	5.727	
19,400.00	11,798.00	19,382.81	11,788.00	119.12	119.09	89.71	-7,649.41	-1,750.34	1,355.28	1,117.29	237.99	5.695	
19,450.00	11,798.00	19,432.81	11,788.00	119.80	119.77	89.71	-7,699.41	-1,750.27	1,355.34	1,115.99	239.35	5.663	
19,500.00	11,798.00	19,482.81	11,788.00	120.48	120.45	89.71	-7,749.41	-1,750.19	1,355.40	1,114.69	240.71	5.631	
19,550.00	11,798.00	19,532.81	11,788.00	121.16	121.14	89.71	-7,799.41	-1,750.12	1,355.46	1,113.38	242.08	5.599	
19,600.00	11,798.00	19,582.81	11,788.00	121.85	121.82	89.71	-7,849.41	-1,750.05	1,355.52	1,112.08	243.44	5.568	
19,650.00	11,798.00	19,632.81	11,788.00	122.53	122.50	89.71	-7,899.41	-1,749.97	1,355.58	1,110.77	244.81	5.537	
19,700.00	11,798.00	19,682.81	11,788.00	123.21	123.18	89.71	-7,949.41	-1,749.90	1,355.64	1,109.46	246.18	5.507	
19,750.00	11,798.00	19,732.81	11,788.00	123.90	123.86	89.71	-7,999.41	-1,749.82	1,355.70	1,108.15	247.54	5.477	
19,800.00	11,798.00	19,782.81	11,788.00	124.58	124.55	89.71	-8,049.41	-1,749.75	1,355.76	1,106.84	248.91	5.447	
19,850.00	11,798.00	19,832.81	11,788.00	125.27	125.23	89.71	-8,099.41	-1,749.67	1,355.82	1,105.53	250.28	5.417	

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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		
19,900.00	11,798.00	19,882.81	11,788.00	125.95	125.92	89.71	-8,149.41	-1,749.60	1,355.88	1,104.22	251.65	5.388		
19,950.00	11,798.00	19,932.81	11,788.00	126.64	126.60	89.71	-8,199.41	-1,749.53	1,355.93	1,102.91	253.02	5.359		
20,000.00	11,798.00	19,982.81	11,788.00	127.32	127.29	89.71	-8,249.41	-1,749.45	1,355.99	1,101.60	254.40	5.330		
20,050.00	11,798.00	20,032.81	11,788.00	128.01	127.97	89.71	-8,299.41	-1,749.38	1,356.05	1,100.28	255.77	5.302		
20,100.00	11,798.00	20,082.81	11,788.00	128.70	128.66	89.71	-8,349.41	-1,749.30	1,356.11	1,098.97	257.14	5.274		
20,150.00	11,798.00	20,132.81	11,788.00	129.38	129.34	89.71	-8,399.41	-1,749.23	1,356.17	1,097.65	258.52	5.246		
20,200.00	11,798.00	20,182.81	11,788.00	130.07	130.03	89.71	-8,449.41	-1,749.16	1,356.23	1,096.34	259.90	5.218		
20,250.00	11,798.00	20,232.81	11,788.00	130.76	130.72	89.71	-8,499.41	-1,749.08	1,356.29	1,095.02	261.27	5.191		
20,300.00	11,798.00	20,282.81	11,788.00	131.45	131.41	89.71	-8,549.41	-1,749.01	1,356.35	1,093.70	262.65	5.164		
20,350.00	11,798.00	20,332.81	11,788.00	132.14	132.09	89.71	-8,599.41	-1,748.93	1,356.41	1,092.38	264.03	5.137		
20,400.00	11,798.00	20,382.81	11,788.00	132.83	132.78	89.71	-8,649.41	-1,748.86	1,356.47	1,091.06	265.41	5.111		
20,450.00	11,798.00	20,432.81	11,788.00	133.52	133.47	89.71	-8,699.41	-1,748.78	1,356.53	1,089.74	266.79	5.085		
20,500.00	11,798.00	20,482.81	11,788.00	134.21	134.16	89.71	-8,749.41	-1,748.71	1,356.59	1,088.42	268.17	5.059		
20,550.00	11,798.00	20,532.81	11,788.00	134.90	134.85	89.71	-8,799.41	-1,748.64	1,356.65	1,087.10	269.55	5.033		
20,600.00	11,798.00	20,582.81	11,788.00	135.59	135.54	89.71	-8,849.41	-1,748.56	1,356.71	1,085.77	270.93	5.008		
20,650.00	11,798.00	20,632.81	11,788.00	136.28	136.23	89.71	-8,899.41	-1,748.49	1,356.77	1,084.45	272.32	4.982	Alert	
20,700.00	11,798.00	20,682.81	11,788.00	136.97	136.92	89.71	-8,949.41	-1,748.41	1,356.83	1,083.13	273.70	4.957	Alert	
20,750.00	11,798.00	20,732.81	11,788.00	137.67	137.62	89.71	-8,999.41	-1,748.34	1,356.89	1,081.80	275.09	4.933	Alert	
20,800.00	11,798.00	20,782.81	11,788.00	138.36	138.31	89.71	-9,049.41	-1,748.27	1,356.95	1,080.47	276.47	4.908	Alert	
20,850.00	11,798.00	20,832.81	11,788.00	139.05	139.00	89.71	-9,099.41	-1,748.19	1,357.00	1,079.15	277.86	4.884	Alert	
20,900.00	11,798.00	20,882.81	11,788.00	139.74	139.69	89.71	-9,149.41	-1,748.12	1,357.06	1,077.82	279.24	4.860	Alert	
20,950.00	11,798.00	20,932.81	11,788.00	140.44	140.38	89.71	-9,199.41	-1,748.04	1,357.12	1,076.49	280.63	4.836	Alert	
21,000.00	11,798.00	20,982.81	11,788.00	141.13	141.08	89.71	-9,249.41	-1,747.97	1,357.18	1,075.16	282.02	4.812	Alert	
21,050.00	11,798.00	21,032.81	11,788.00	141.83	141.77	89.71	-9,299.41	-1,747.90	1,357.24	1,073.83	283.41	4.789	Alert	
21,100.00	11,798.00	21,082.81	11,788.00	142.52	142.47	89.71	-9,349.41	-1,747.82	1,357.30	1,072.51	284.80	4.766	Alert	
21,150.00	11,798.00	21,132.81	11,788.00	143.22	143.16	89.71	-9,399.41	-1,747.75	1,357.36	1,071.17	286.19	4.743	Alert	
21,200.00	11,798.00	21,182.81	11,788.00	143.91	143.85	89.71	-9,449.41	-1,747.67	1,357.42	1,069.84	287.58	4.720	Alert	
21,250.00	11,798.00	21,232.81	11,788.00	144.61	144.55	89.71	-9,499.41	-1,747.60	1,357.48	1,068.51	288.97	4.698	Alert	
21,300.00	11,798.00	21,282.81	11,788.00	145.30	145.24	89.71	-9,549.41	-1,747.52	1,357.54	1,067.18	290.36	4.675	Alert	
21,350.00	11,798.00	21,332.81	11,788.00	146.00	145.94	89.71	-9,599.40	-1,747.45	1,357.60	1,065.85	291.75	4.653	Alert	
21,400.00	11,798.00	21,382.81	11,788.00	146.69	146.64	89.71	-9,649.40	-1,747.38	1,357.66	1,064.51	293.15	4.631	Alert	
21,450.00	11,798.00	21,432.81	11,788.00	147.39	147.33	89.71	-9,699.40	-1,747.30	1,357.72	1,063.18	294.54	4.610	Alert	
21,500.00	11,798.00	21,482.81	11,788.00	148.09	148.03	89.71	-9,749.40	-1,747.23	1,357.78	1,061.84	295.93	4.588	Alert	
21,550.00	11,798.00	21,532.81	11,788.00	148.79	148.72	89.71	-9,799.40	-1,747.15	1,357.84	1,060.51	297.33	4.567	Alert	
21,600.00	11,798.00	21,582.81	11,788.00	149.48	149.42	89.71	-9,849.40	-1,747.08	1,357.90	1,059.17	298.72	4.546	Alert	
21,650.00	11,798.00	21,632.81	11,788.00	150.18	150.12	89.71	-9,899.40	-1,747.01	1,357.96	1,057.84	300.12	4.525	Alert	
21,700.00	11,798.00	21,682.81	11,788.00	150.88	150.82	89.71	-9,949.40	-1,746.93	1,358.01	1,056.50	301.52	4.504	Alert	
21,750.00	11,798.00	21,732.81	11,788.00	151.58	151.51	89.71	-9,999.40	-1,746.86	1,358.07	1,055.16	302.91	4.483	Alert	
21,800.00	11,798.00	21,782.81	11,788.00	152.28	152.21	89.71	-10,049.40	-1,746.78	1,358.13	1,053.82	304.31	4.463	Alert	
21,850.00	11,798.00	21,832.81	11,788.00	152.98	152.91	89.71	-10,099.40	-1,746.71	1,358.19	1,052.48	305.71	4.443	Alert	
21,900.00	11,798.00	21,882.81	11,788.00	153.67	153.61	89.71	-10,149.40	-1,746.64	1,358.25	1,051.15	307.11	4.423	Alert	
21,950.00	11,798.00	21,932.81	11,788.00	154.37	154.31	89.71	-10,199.40	-1,746.56	1,358.31	1,049.81	308.51	4.403	Alert	
22,000.00	11,798.00	21,982.81	11,788.00	155.07	155.01	89.71	-10,249.40	-1,746.49	1,358.37	1,048.47	309.91	4.383	Alert	
22,050.00	11,798.00	22,032.81	11,788.00	155.77	155.71	89.71	-10,299.40	-1,746.41	1,358.43	1,047.13	311.31	4.364	Alert	
22,087.66	11,798.00	22,070.47	11,788.00	156.30	156.23	89.71	-10,337.06	-1,746.36	1,358.48	1,046.12	312.36	4.349	Alert, ES, SF	

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		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	0.00	0.00	0.50	0.50	101.68	-194.04	938.82	958.67				
50.00	50.00	44.92	44.92	0.50	0.50	101.68	-194.06	938.89	958.74	957.73	1.01	952.287	
100.00	100.00	91.80	91.80	0.52	0.52	101.68	-194.13	939.10	958.98	957.94	1.04	924.301	
150.00	150.00	138.68	138.68	0.59	0.54	101.68	-194.26	939.46	959.38	958.24	1.13	845.887	
200.00	200.00	186.96	186.96	0.70	0.59	101.69	-194.43	939.97	959.93	958.64	1.29	743.054	
250.00	250.00	240.06	240.06	0.84	0.71	101.69	-194.62	940.46	960.42	958.87	1.55	620.941	
300.00	300.00	291.88	291.87	0.99	0.85	101.70	-194.78	940.79	960.76	958.93	1.84	522.746	
350.00	350.00	342.63	342.62	1.15	1.00	101.70	-194.88	941.08	961.06	958.91	2.15	447.253	
400.00	400.00	394.58	394.57	1.31	1.17	101.70	-194.93	941.31	961.29	958.82	2.47	388.578	
450.00	450.00	447.15	447.14	1.48	1.33	101.70	-195.04	941.41	961.40	958.59	2.81	342.366	
500.00	500.00	499.72	499.71	1.65	1.50	101.71	-195.19	941.35	961.37	958.22	3.15	305.348	
550.00	550.00	552.29	552.28	1.82	1.68	101.73	-195.40	941.13	961.21	957.72	3.49	275.176	
600.00	600.00	601.00	600.98	1.99	1.84	101.75	-195.67	940.89	961.02	957.20	3.83	251.094	
650.00	650.00	650.25	650.23	2.16	2.00	101.77	-196.02	940.68	960.89	956.72	4.17	230.647	
700.00	700.00	701.44	701.42	2.34	2.18	101.80	-196.49	940.42	960.74	956.22	4.52	212.771	
750.00	750.00	751.83	751.81	2.51	2.35	101.84	-197.07	940.09	960.53	955.67	4.86	197.488	
800.00	800.00	800.41	800.38	2.69	2.52	101.88	-197.68	939.79	960.36	955.16	5.21	184.406	
850.00	850.00	849.87	849.84	2.87	2.69	101.92	-198.33	939.56	960.26	954.71	5.56	172.826	
900.00	900.00	900.81	900.77	3.04	2.87	101.96	-198.98	939.29	960.14	954.23	5.91	162.435	
950.00	950.00	951.75	951.70	3.22	3.05	102.00	-199.61	938.97	959.96	953.70	6.27	153.198	
1,000.00	1,000.00	1,002.69	1,002.64	3.40	3.22	102.04	-200.22	938.61	959.74	953.12	6.62	144.932	
1,050.00	1,050.00	1,056.75	1,056.70	3.58	3.41	102.09	-200.95	938.08	959.41	952.42	6.99	137.270	
1,100.00	1,100.00	1,103.81	1,103.75	3.75	3.58	102.14	-201.66	937.54	959.00	951.67	7.33	130.783	
1,150.00	1,150.00	1,149.69	1,149.62	3.93	3.74	102.17	-202.09	937.26	958.80	951.13	7.67	124.967	
1,169.20	1,169.20	1,167.16	1,167.10	4.00	3.80	102.17	-202.19	937.22	958.78	950.98	7.80	122.889	
1,200.00	1,200.00	1,195.00	1,194.94	4.11	3.90	102.18	-202.32	937.24	958.83	950.82	8.01	119.724	
1,250.00	1,250.00	1,240.19	1,240.13	4.29	4.06	102.19	-202.46	937.46	959.11	950.77	8.34	114.944 ES	
1,300.00	1,300.00	1,285.94	1,285.87	4.46	4.22	102.18	-202.50	937.94	959.63	950.95	8.68	110.563	
1,350.00	1,350.00	1,331.89	1,331.81	4.64	4.37	102.17	-202.41	938.65	960.36	951.35	9.01	106.531	
1,400.00	1,400.00	1,381.02	1,380.93	4.82	4.54	102.14	-202.11	939.60	961.25	951.89	9.36	102.692	
1,450.00	1,450.00	1,431.42	1,431.31	5.00	4.71	102.09	-201.42	940.65	962.12	952.41	9.71	99.081	
1,500.00	1,500.00	1,480.73	1,480.61	5.18	4.88	102.01	-200.36	941.76	962.99	952.94	10.06	95.761	
1,550.00	1,550.00	1,529.87	1,529.70	5.36	5.05	101.91	-198.88	943.00	963.92	953.51	10.40	92.672	
1,600.00	1,600.00	1,575.73	1,575.52	5.53	5.20	101.79	-197.18	944.34	964.96	954.23	10.74	89.883	
1,650.00	1,650.00	1,621.42	1,621.14	5.71	5.36	101.66	-195.24	945.93	966.24	955.17	11.07	87.289	
1,700.00	1,700.00	1,668.68	1,668.30	5.89	5.52	101.51	-192.95	947.80	967.69	956.28	11.41	84.812	
1,750.00	1,750.00	1,715.95	1,715.45	6.07	5.69	101.33	-190.37	949.86	969.29	957.54	11.75	82.492	
1,800.00	1,800.00	1,767.59	1,766.96	6.25	5.86	101.13	-187.27	952.20	970.93	958.82	12.11	80.189	
1,850.00	1,850.00	1,819.22	1,818.42	6.43	6.04	100.91	-183.92	954.48	972.48	960.02	12.47	78.010	
1,900.00	1,900.00	1,869.98	1,869.02	6.61	6.22	100.68	-180.44	956.69	973.99	961.16	12.82	75.961	
1,950.00	1,950.00	1,922.14	1,920.99	6.78	6.40	100.44	-176.70	958.92	975.44	962.26	13.18	73.988	
2,000.00	2,000.00	1,977.14	1,975.79	6.96	6.60	100.17	-172.47	961.09	976.69	963.14	13.56	72.045	
2,050.00	2,050.00	2,033.10	2,031.52	7.14	6.79	99.88	-167.81	963.04	977.69	963.76	13.93	70.168	
2,100.00	2,100.00	2,089.73	2,087.90	7.32	6.99	99.58	-162.75	964.68	978.36	964.05	14.31	68.355	
2,150.00	2,150.00	2,141.34	2,139.27	7.50	7.18	99.29	-157.99	965.96	978.83	964.15	14.67	66.701	
2,200.00	2,200.00	2,192.45	2,190.16	7.68	7.36	99.01	-153.38	967.13	979.25	964.21	15.04	65.130	
2,250.00	2,250.00	2,243.44	2,240.94	7.86	7.54	98.74	-148.90	968.21	979.62	964.23	15.40	63.629	
2,300.00	2,300.00	2,294.46	2,291.76	8.04	7.72	98.48	-144.53	969.22	979.96	964.20	15.76	62.194	
2,350.00	2,350.00	2,338.48	2,335.61	8.22	7.88	98.25	-140.75	970.22	980.45	964.36	16.09	60.925	
2,400.00	2,400.00	2,383.68	2,380.62	8.39	8.04	98.02	-136.81	971.47	981.21	964.78	16.43	59.709	
2,450.00	2,450.00	2,432.37	2,429.10	8.57	8.22	97.76	-132.59	972.96	982.13	965.34	16.79	58.505	
2,500.00	2,500.00	2,481.20	2,477.74	8.75	8.40	97.51	-128.45	974.49	983.13	965.98	17.14	57.354	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM													Offset Well Error:	0.50 ft
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	
2,550.00	2,550.00	2,531.17	2,527.50	8.93	8.58	97.26	-124.29	976.06	984.16	966.66	17.50	56.236		
2,600.00	2,600.00	2,580.99	2,577.13	9.11	8.76	97.01	-120.23	977.62	985.20	967.34	17.86	55.165		
2,650.00	2,650.00	2,630.20	2,626.16	9.29	8.93	96.77	-116.28	979.16	986.28	968.06	18.22	54.144		
2,700.00	2,700.00	2,680.19	2,675.97	9.47	9.12	96.53	-112.34	980.74	987.40	968.82	18.58	53.156		
2,750.00	2,750.00	2,732.49	2,728.08	9.65	9.31	96.29	-108.21	982.31	988.45	969.51	18.94	52.177		
2,800.00	2,800.00	2,783.34	2,778.75	9.83	9.49	96.04	-104.17	983.73	989.42	970.11	19.31	51.245		
2,850.00	2,850.00	2,832.34	2,827.58	10.00	9.67	95.82	-100.39	985.11	990.42	970.75	19.68	50.368		
2,900.00	2,900.00	2,882.85	2,877.93	10.18	9.85	95.59	-96.61	986.53	991.45	971.43	20.03	49.509		
2,950.00	2,950.00	2,934.86	2,929.78	10.36	10.04	95.36	-92.61	987.91	992.41	972.02	20.39	48.662		
3,000.00	3,000.00	2,985.60	2,980.34	10.54	10.23	95.12	-88.58	989.19	993.30	972.54	20.76	47.853		
3,050.00	3,050.00	3,035.69	3,030.24	10.72	10.41	94.87	-84.42	990.44	994.18	973.07	21.12	47.076		
3,100.00	3,100.00	3,081.23	3,075.60	10.90	10.58	94.64	-80.56	991.65	995.16	973.70	21.46	46.367		
3,150.00	3,150.00	3,125.45	3,119.65	11.08	10.74	94.43	-76.88	993.06	996.43	974.63	21.80	45.705		
3,200.00	3,200.00	3,173.51	3,167.51	11.26	10.91	94.19	-72.94	994.81	997.94	975.78	22.16	45.043		
3,250.00	3,250.00	3,223.84	3,217.62	11.44	11.10	93.94	-68.66	996.64	999.46	976.94	22.52	44.384		
3,300.00	3,300.00	3,274.08	3,267.64	11.62	11.28	93.69	-64.31	998.44	1,000.97	978.09	22.88	43.745		
3,350.00	3,350.00	3,324.32	3,317.67	11.80	11.47	93.44	-60.06	1,000.22	1,002.48	979.24	23.24	43.127		
3,400.00	3,400.00	3,376.98	3,370.12	11.97	11.66	93.18	-55.72	1,002.00	1,003.94	980.32	23.62	42.508		
3,450.00	3,450.00	3,430.11	3,423.06	12.15	11.86	92.93	-51.44	1,003.62	1,005.24	981.25	23.99	41.899		
3,500.00	3,500.00	3,481.33	3,474.10	12.33	12.05	92.71	-47.49	1,005.05	1,006.46	982.10	24.36	41.318		
3,550.00	3,550.00	3,532.66	3,525.28	12.51	12.23	92.49	-43.76	1,006.40	1,007.61	982.88	24.73	40.752		
3,600.00	3,600.00	3,582.25	3,574.73	12.69	12.42	92.29	-40.22	1,007.68	1,008.75	983.67	25.08	40.214		
3,650.00	3,650.00	3,631.22	3,623.55	12.87	12.60	92.08	-36.71	1,008.95	1,009.91	984.47	25.44	39.695		
3,700.00	3,700.00	3,677.67	3,669.86	13.05	12.77	91.89	-33.40	1,010.27	1,011.21	985.42	25.79	39.211		
3,750.00	3,750.00	3,725.38	3,717.43	13.23	12.94	91.70	-30.00	1,011.78	1,012.68	986.54	26.14	38.739		
3,800.00	3,800.00	3,777.68	3,769.56	13.41	13.13	91.48	-26.15	1,013.40	1,014.13	987.62	26.51	38.251		
3,850.00	3,850.00	3,829.28	3,820.99	13.59	13.32	91.25	-22.15	1,014.88	1,015.48	988.60	26.88	37.777		
3,900.00	3,900.00	3,879.85	3,871.37	13.77	13.51	91.01	-17.97	1,016.29	1,016.80	989.55	27.25	37.319		
3,950.00	3,950.00	3,929.89	3,921.19	13.94	13.69	90.77	-13.64	1,017.66	1,018.10	990.49	27.61	36.876		
4,000.00	4,000.00	3,979.49	3,970.60	14.12	13.88	90.54	-9.54	1,019.01	1,019.42	991.45	27.97	36.448		
4,050.00	4,050.00	4,028.00	4,018.96	14.30	14.06	156.34	-5.74	1,020.36	1,021.04	992.72	28.32	36.049		
4,100.00	4,099.99	4,075.79	4,066.58	14.48	14.23	156.14	-2.00	1,021.78	1,023.26	994.59	28.67	35.686		
4,150.00	4,149.97	4,126.32	4,116.92	14.65	14.42	155.94	1.95	1,023.34	1,026.05	997.02	29.03	35.341		
4,200.00	4,199.94	4,178.53	4,168.96	14.83	14.61	155.74	6.00	1,024.85	1,029.25	999.85	29.40	35.009		
4,250.00	4,249.88	4,228.26	4,218.52	15.00	14.80	155.56	9.87	1,026.21	1,032.88	1,003.12	29.76	34.712		
4,300.00	4,299.79	4,277.32	4,267.39	15.17	14.98	155.39	13.87	1,027.59	1,037.04	1,006.93	30.11	34.443		
4,350.00	4,349.67	4,327.00	4,316.88	15.35	15.16	155.23	18.02	1,029.00	1,041.62	1,011.15	30.47	34.190		
4,400.00	4,399.55	4,377.71	4,367.40	15.53	15.35	155.08	22.20	1,030.42	1,046.21	1,015.39	30.83	33.939		
4,450.00	4,449.43	4,429.95	4,419.45	15.70	15.54	154.93	26.47	1,031.79	1,050.72	1,019.52	31.19	33.684		
4,500.00	4,499.31	4,478.77	4,468.09	15.88	15.72	154.79	30.43	1,032.98	1,055.14	1,023.59	31.55	33.447		
4,550.00	4,549.19	4,520.53	4,509.68	16.05	15.88	154.67	33.91	1,034.22	1,059.83	1,027.96	31.87	33.255		
4,600.00	4,599.07	4,562.81	4,551.78	16.23	16.04	154.54	37.58	1,035.79	1,064.89	1,032.70	32.19	33.077		
4,650.00	4,648.95	4,612.37	4,601.11	16.41	16.22	154.40	41.83	1,037.79	1,070.13	1,037.58	32.55	32.875		
4,700.00	4,698.84	4,662.35	4,650.88	16.58	16.41	154.26	45.90	1,039.81	1,075.38	1,042.47	32.91	32.676		
4,750.00	4,748.72	4,714.43	4,702.75	16.76	16.60	154.11	50.24	1,041.84	1,080.56	1,047.28	33.28	32.470		
4,800.00	4,798.60	4,768.55	4,756.61	16.94	16.80	153.95	55.01	1,043.80	1,085.62	1,051.96	33.66	32.256		
4,850.00	4,848.48	4,826.74	4,814.57	17.11	17.02	153.79	59.99	1,045.54	1,090.36	1,056.31	34.05	32.021		
4,900.00	4,898.36	4,881.17	4,868.81	17.29	17.22	153.64	64.38	1,046.81	1,094.78	1,060.35	34.43	31.798		
4,950.00	4,948.24	4,934.03	4,921.51	17.47	17.42	153.52	68.34	1,047.90	1,099.06	1,064.26	34.80	31.583		
5,000.00	4,998.12	4,977.02	4,964.37	17.65	17.57	153.43	71.49	1,048.85	1,103.40	1,068.27	35.13	31.410		
5,050.00	5,048.00	5,019.14	5,006.35	17.82	17.73	153.33	74.74	1,050.06	1,108.09	1,072.64	35.45	31.254		
5,100.00	5,097.88	5,066.24	5,053.27	18.00	17.90	153.22	78.51	1,051.66	1,113.05	1,077.25	35.80	31.090		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N-S (ft)	+E-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,150.00	5,147.76	5,115.81	5,102.65	18.18	18.09	153.10	82.40	1,053.37	1,118.04	1,081.88	36.16	30.920		
5,200.00	5,197.64	5,169.30	5,155.97	18.36	18.29	152.98	86.42	1,055.16	1,122.98	1,086.44	36.53	30.738		
5,250.00	5,247.53	5,224.01	5,210.53	18.54	18.49	152.89	90.13	1,056.77	1,127.70	1,090.79	36.91	30.550		
5,300.00	5,297.41	5,272.18	5,258.57	18.71	18.67	152.80	93.37	1,058.13	1,132.36	1,095.09	37.26	30.387		
5,350.00	5,347.29	5,321.17	5,307.41	18.89	18.85	152.70	96.94	1,059.55	1,137.07	1,099.46	37.62	30.226		
5,400.00	5,397.17	5,376.11	5,362.18	19.07	19.05	152.60	100.88	1,061.03	1,141.69	1,103.69	38.00	30.045		
5,450.00	5,447.05	5,429.83	5,415.77	19.25	19.25	152.51	104.44	1,062.26	1,146.08	1,107.71	38.37	29.866		
5,500.00	5,496.93	5,481.19	5,467.02	19.43	19.43	152.43	107.64	1,063.34	1,150.38	1,111.64	38.74	29.696		
5,550.00	5,546.81	5,533.11	5,518.84	19.61	19.62	152.37	110.70	1,064.37	1,154.61	1,115.50	39.10	29.526		
5,600.00	5,596.69	5,585.55	5,571.19	19.79	19.82	152.30	113.70	1,065.30	1,158.73	1,119.25	39.47	29.356		
5,650.00	5,646.57	5,642.75	5,628.30	19.97	20.02	152.25	116.77	1,066.11	1,162.66	1,122.80	39.86	29.171		
5,700.00	5,696.45	5,702.02	5,687.50	20.15	20.24	152.21	119.47	1,066.52	1,166.21	1,125.96	40.25	28.975		
5,750.00	5,746.33	5,750.96	5,736.41	20.33	20.41	152.20	121.31	1,066.73	1,169.60	1,129.00	40.60	28.808		
5,800.00	5,796.22	5,801.10	5,786.53	20.51	20.59	152.20	122.80	1,066.97	1,172.98	1,132.03	40.96	28.641		
5,850.00	5,846.10	5,852.27	5,837.69	20.69	20.77	152.24	123.78	1,067.20	1,176.33	1,135.02	41.31	28.474		
5,900.00	5,895.98	5,903.11	5,888.52	20.87	20.95	152.30	124.18	1,067.43	1,179.63	1,137.96	41.67	28.310		
5,950.00	5,945.86	5,953.37	5,938.78	21.05	21.12	152.36	124.49	1,067.63	1,182.90	1,140.88	42.02	28.150		
6,000.00	5,995.74	6,003.63	5,989.04	21.23	21.30	152.42	124.83	1,067.81	1,186.16	1,143.79	42.38	27.992		
6,050.00	6,045.62	6,053.89	6,039.30	21.41	21.47	152.49	125.13	1,067.98	1,189.41	1,146.68	42.73	27.836		
6,100.00	6,095.50	6,104.55	6,089.96	21.59	21.65	152.55	125.36	1,068.13	1,192.63	1,149.55	43.08	27.682		
6,150.00	6,145.38	6,155.51	6,140.92	21.77	21.83	152.63	125.50	1,068.25	1,195.82	1,152.38	43.44	27.528		
6,200.00	6,195.26	6,207.14	6,192.55	21.95	22.00	152.70	125.57	1,068.31	1,198.95	1,155.15	43.79	27.377		
6,250.00	6,245.14	6,259.05	6,244.46	22.13	22.18	152.78	125.59	1,068.29	1,202.00	1,157.85	44.15	27.226		
6,300.00	6,295.02	6,310.28	6,295.69	22.31	22.35	152.85	125.60	1,068.20	1,204.98	1,160.48	44.50	27.079		
6,350.00	6,344.91	6,361.42	6,346.83	22.49	22.52	152.93	125.61	1,068.06	1,207.91	1,163.06	44.85	26.934		
6,400.00	6,394.79	6,411.81	6,397.22	22.67	22.69	153.00	125.60	1,067.88	1,210.81	1,165.61	45.19	26.792		
6,450.00	6,444.67	6,462.22	6,447.63	22.85	22.86	153.08	125.56	1,067.68	1,213.68	1,168.15	45.54	26.652		
6,500.00	6,494.55	6,510.59	6,496.00	23.03	23.02	153.16	125.45	1,067.52	1,216.59	1,170.72	45.88	26.519		
6,550.00	6,544.43	6,559.70	6,545.11	23.21	23.18	153.24	125.25	1,067.41	1,219.55	1,173.33	46.22	26.388		
6,600.00	6,594.31	6,610.53	6,595.94	23.39	23.35	153.32	125.04	1,067.28	1,222.50	1,175.94	46.56	26.255		
6,650.00	6,644.19	6,661.74	6,647.15	23.57	23.52	153.40	124.86	1,067.11	1,225.41	1,178.50	46.91	26.123		
6,700.00	6,694.07	6,713.70	6,699.11	23.75	23.69	153.48	124.75	1,066.86	1,228.25	1,180.99	47.26	25.989		
6,750.00	6,743.95	6,764.85	6,750.25	23.93	23.86	153.56	124.70	1,066.53	1,231.01	1,183.40	47.61	25.857		
6,800.00	6,793.83	6,815.21	6,800.61	24.12	24.03	153.64	124.54	1,066.18	1,233.75	1,185.80	47.96	25.727		
6,850.00	6,843.71	6,865.45	6,850.85	24.30	24.19	153.72	124.27	1,065.83	1,236.48	1,188.18	48.30	25.600		
6,900.00	6,893.60	6,915.62	6,901.02	24.48	24.36	153.81	123.90	1,065.46	1,239.19	1,190.55	48.65	25.474		
6,950.00	6,943.48	6,963.00	6,948.40	24.66	24.52	153.89	123.55	1,065.14	1,241.94	1,192.96	48.98	25.355		
7,000.00	6,993.36	7,009.37	6,994.76	24.84	24.67	153.96	123.36	1,064.95	1,244.83	1,195.52	49.31	25.243		
7,050.00	7,043.24	7,057.41	7,042.80	25.02	24.83	154.03	123.30	1,064.86	1,247.84	1,198.19	49.65	25.131		
7,100.00	7,093.12	7,106.21	7,091.61	25.20	24.99	154.10	123.21	1,064.82	1,250.90	1,200.90	50.00	25.020		
7,150.00	7,143.00	7,154.84	7,140.23	25.39	25.16	154.18	123.09	1,064.83	1,254.00	1,203.67	50.34	24.912		
7,200.00	7,192.88	7,203.40	7,188.79	25.57	25.32	154.25	122.92	1,064.88	1,257.16	1,206.49	50.68	24.807		
7,250.00	7,242.76	7,253.55	7,238.95	25.75	25.49	154.33	122.69	1,064.97	1,260.35	1,209.33	51.02	24.701		
7,300.00	7,292.64	7,304.16	7,289.55	25.93	25.66	154.41	122.40	1,065.03	1,263.52	1,212.14	51.37	24.595		
7,350.00	7,342.52	7,353.28	7,338.67	26.11	25.82	154.49	122.06	1,065.09	1,266.68	1,214.97	51.72	24.493		
7,400.00	7,392.40	7,402.28	7,387.67	26.29	25.98	154.58	121.65	1,065.19	1,269.88	1,217.82	52.06	24.393		
7,450.00	7,442.29	7,455.30	7,440.69	26.48	26.16	154.67	121.30	1,065.24	1,273.04	1,220.63	52.42	24.287		
7,500.00	7,492.17	7,508.42	7,493.81	26.66	26.34	154.74	121.22	1,065.16	1,276.08	1,223.30	52.78	24.179		
7,550.00	7,542.05	7,557.85	7,543.23	26.84	26.51	154.81	121.17	1,065.04	1,279.08	1,225.96	53.12	24.078		
7,600.00	7,591.93	7,607.51	7,592.89	27.02	26.68	154.88	121.06	1,064.91	1,282.07	1,228.60	53.47	23.978		
7,650.00	7,641.81	7,656.38	7,641.76	27.20	26.84	154.95	120.92	1,064.82	1,285.10	1,231.29	53.81	23.882		
7,700.00	7,691.69	7,705.09	7,690.48	27.39	27.00	155.02	120.76	1,064.76	1,288.17	1,234.01	54.15	23.787		

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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 235H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
7,750.00	7,741.57	7,753.55	7,738.94	27.57	27.17	155.09	120.56	1,064.76	1,291.29	1,236.79	54.50	23.695		
7,800.00	7,791.45	7,801.79	7,787.18	27.75	27.33	155.16	120.35	1,064.81	1,294.47	1,239.63	54.84	23.605		
7,850.00	7,841.33	7,849.73	7,835.11	27.93	27.49	155.22	120.30	1,064.93	1,297.72	1,242.54	55.18	23.517		
7,900.00	7,891.21	7,898.35	7,883.74	28.11	27.66	155.28	120.44	1,065.11	1,301.04	1,245.51	55.53	23.430		
7,950.00	7,941.09	7,947.88	7,933.26	28.30	27.83	155.34	120.54	1,065.32	1,304.39	1,248.51	55.88	23.343		
8,000.00	7,990.98	7,998.45	7,983.84	28.48	28.01	155.40	120.62	1,065.54	1,307.74	1,251.51	56.24	23.255		
8,050.00	8,040.86	8,049.98	8,035.36	28.66	28.19	155.45	120.98	1,065.70	1,311.04	1,254.45	56.59	23.165		
8,100.00	8,090.74	8,100.64	8,086.02	28.84	28.37	155.49	121.57	1,065.80	1,314.29	1,257.34	56.95	23.077		
8,150.00	8,140.62	8,150.91	8,136.28	29.03	28.54	155.53	122.08	1,065.89	1,317.52	1,260.21	57.31	22.990		
8,200.00	8,190.50	8,204.29	8,189.66	29.21	28.73	155.57	122.54	1,065.92	1,320.69	1,263.02	57.67	22.899		
8,250.00	8,240.38	8,258.46	8,243.84	29.39	28.92	155.63	122.89	1,065.78	1,323.71	1,265.66	58.04	22.806		
8,300.00	8,290.26	8,309.74	8,295.11	29.57	29.10	155.68	123.16	1,065.54	1,326.62	1,268.22	58.40	22.716		
8,350.00	8,340.14	8,361.14	8,346.51	29.76	29.28	155.73	123.39	1,065.24	1,329.47	1,270.71	58.76	22.627		
8,400.00	8,390.02	8,410.26	8,395.63	29.94	29.44	155.78	123.56	1,064.95	1,332.32	1,273.22	59.11	22.542		
8,450.00	8,439.90	8,459.42	8,444.79	30.12	29.61	155.84	123.68	1,064.67	1,335.19	1,275.74	59.45	22.458		
8,500.00	8,489.78	8,507.81	8,493.17	30.30	29.78	155.89	123.92	1,064.45	1,338.11	1,278.30	59.80	22.376		
8,550.00	8,539.67	8,557.54	8,542.90	30.49	29.96	155.93	124.34	1,064.26	1,341.07	1,280.92	60.15	22.294		
8,600.00	8,589.55	8,609.95	8,595.31	30.67	30.14	155.96	124.98	1,064.00	1,343.97	1,283.46	60.52	22.208		
8,650.00	8,639.43	8,666.84	8,652.19	30.85	30.34	156.00	125.79	1,063.56	1,346.74	1,285.85	60.89	22.116		
8,700.00	8,689.31	8,727.84	8,713.19	31.03	30.55	156.05	126.14	1,062.64	1,349.14	1,287.86	61.28	22.016		
8,750.00	8,739.19	8,782.38	8,767.71	31.22	30.73	156.12	126.09	1,061.49	1,351.24	1,289.60	61.64	21.920		
8,800.00	8,789.07	8,836.69	8,822.00	31.40	30.92	156.19	125.90	1,060.17	1,353.19	1,291.18	62.01	21.823		
8,850.00	8,838.95	8,873.65	8,858.96	31.58	31.04	156.24	125.84	1,059.47	1,355.36	1,293.04	62.32	21.749		
8,900.00	8,888.83	8,913.87	8,899.17	31.76	31.18	156.29	125.88	1,058.96	1,357.89	1,295.25	62.64	21.678		
8,950.00	8,938.71	8,958.51	8,943.81	31.95	31.33	156.33	125.96	1,058.64	1,360.69	1,297.73	62.97	21.609		
9,000.00	8,988.59	9,003.77	8,989.07	32.13	31.49	156.39	125.92	1,058.48	1,363.68	1,300.37	63.30	21.542		
9,050.00	9,038.48	9,050.86	9,036.17	32.31	31.65	156.45	125.82	1,058.45	1,366.80	1,303.16	63.64	21.476		
9,100.00	9,088.36	9,098.50	9,083.80	32.50	31.81	156.50	125.84	1,058.49	1,370.01	1,306.03	63.99	21.411		
9,150.00	9,138.24	9,148.57	9,133.88	32.68	31.99	156.56	125.93	1,058.59	1,373.27	1,308.93	64.34	21.344		
9,200.00	9,188.12	9,199.26	9,184.57	32.86	32.17	156.61	126.00	1,058.66	1,376.51	1,311.81	64.70	21.276		
9,250.00	9,238.00	9,258.71	9,244.02	33.05	32.37	156.68	125.91	1,058.52	1,379.59	1,314.48	65.08	21.197		
9,300.00	9,287.88	9,316.39	9,301.69	33.23	32.57	156.76	125.53	1,057.99	1,382.27	1,316.81	65.46	21.116		
9,350.00	9,337.76	9,370.03	9,355.32	33.41	32.75	156.83	125.38	1,057.30	1,384.80	1,318.98	65.82	21.038		
9,400.00	9,387.64	9,422.77	9,408.06	33.59	32.93	156.88	125.52	1,056.49	1,387.21	1,321.02	66.18	20.960		
9,450.00	9,437.52	9,474.89	9,460.17	33.78	33.11	156.93	125.73	1,055.61	1,389.53	1,322.99	66.54	20.882		
9,500.00	9,487.40	9,525.21	9,510.48	33.96	33.29	156.98	126.05	1,054.70	1,391.80	1,324.91	66.90	20.805		
9,550.00	9,537.28	9,575.06	9,560.32	34.14	33.46	157.01	126.67	1,053.81	1,394.07	1,326.83	67.25	20.730		
9,600.00	9,587.17	9,619.26	9,604.50	34.33	33.61	157.03	127.46	1,053.11	1,396.44	1,328.86	67.59	20.662		
9,650.00	9,637.05	9,662.82	9,648.05	34.51	33.77	157.03	128.44	1,052.62	1,399.04	1,331.12	67.92	20.599		
9,700.00	9,686.93	9,703.88	9,689.10	34.69	33.91	157.04	129.50	1,052.37	1,401.89	1,333.65	68.24	20.543		
9,750.00	9,736.81	10,345.20	10,265.15	34.88	35.79	164.17	-18.37	935.88	1,404.19	1,337.28	68.91	20.986		
9,800.00	9,786.69	10,365.27	10,277.25	35.06	35.83	164.84	-32.84	929.03	1,389.02	1,321.47	67.56	20.561		
9,850.00	9,836.57	10,384.80	10,288.47	35.24	35.87	165.51	-47.48	922.61	1,375.06	1,306.87	68.20	20.163		
9,900.00	9,886.45	10,402.40	10,298.09	35.43	35.91	166.14	-61.13	917.06	1,362.41	1,293.59	68.83	19.795		
9,950.00	9,936.33	10,418.29	10,306.37	35.61	35.94	166.73	-73.80	912.23	1,351.17	1,281.73	69.44	19.458		
10,000.00	9,986.21	10,436.00	10,315.14	35.79	35.98	167.39	-88.30	907.08	1,341.42	1,271.40	70.02	19.158		
10,050.00	10,036.09	10,454.93	10,324.05	35.98	36.02	168.12	-104.11	901.72	1,333.15	1,262.59	70.56	18.893		
10,100.00	10,085.97	10,477.61	10,334.23	36.16	36.07	169.00	-123.34	895.32	1,326.31	1,255.25	71.06	18.663		
10,150.00	10,135.86	10,497.97	10,342.90	36.34	36.11	169.81	-140.85	889.61	1,320.99	1,249.46	71.53	18.467		
10,200.00	10,185.74	10,516.31	10,350.34	36.53	36.15	170.54	-156.83	884.50	1,317.24	1,245.29	71.95	18.307		
10,250.00	10,235.62	10,530.00	10,355.64	36.71	36.17	171.09	-168.86	880.71	1,315.13	1,242.81	72.32	18.185		
10,282.61	10,268.15	10,530.00	10,355.64	36.83	36.17	171.09	-168.86	880.71	1,314.73	1,242.21	72.51	18.131		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				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)	Minimum Separation (ft)	Separation Factor		
10,300.00	10,285.50	10,530.00	10,355.64	36.89	36.17	171.09	-168.86	880.71	1,314.84	1,242.24	72.60	18.110		
10,350.00	10,335.38	10,530.00	10,355.64	37.08	36.17	171.09	-168.86	880.71	1,316.45	1,243.64	72.81	18.080		
10,400.00	10,385.26	10,554.58	10,364.67	37.26	36.22	172.09	-190.77	874.18	1,319.41	1,246.38	73.02	18.069 SF		
10,450.00	10,435.14	10,561.55	10,367.11	37.44	36.24	172.38	-197.06	872.43	1,324.41	1,251.29	73.12	18.112		
10,500.00	10,485.02	10,568.21	10,369.40	37.63	36.25	172.65	-203.10	870.80	1,331.19	1,258.04	73.16	18.196		
10,550.00	10,534.90	10,574.56	10,371.53	37.81	36.27	172.91	-208.89	869.28	1,339.73	1,266.60	73.13	18.320		
10,600.00	10,584.78	10,580.64	10,373.53	37.99	36.28	173.16	-214.45	867.86	1,349.99	1,276.95	73.04	18.482		
10,650.00	10,634.67	10,586.46	10,375.41	38.18	36.29	173.41	-219.79	866.53	1,361.87	1,288.97	72.90	18.682		
10,700.00	10,684.59	10,592.07	10,377.18	38.36	36.30	173.67	-224.96	865.28	1,374.87	1,302.17	72.70	18.912		
10,750.00	10,734.54	10,597.49	10,378.87	38.54	36.31	173.91	-229.98	864.10	1,388.87	1,316.42	72.45	19.170		
10,800.00	10,784.52	10,626.00	10,387.17	38.72	36.38	175.10	-256.64	858.34	1,404.39	1,332.11	72.28	19.430		
10,850.00	10,834.51	10,626.00	10,387.17	38.90	36.38	175.12	-256.64	858.34	1,420.09	1,348.17	71.92	19.746		
10,900.00	10,884.51	10,626.00	10,387.17	39.07	36.38	109.11	-256.64	858.34	1,436.75	1,365.23	71.51	20.091		
10,950.00	10,934.51	10,626.00	10,387.17	39.25	36.38	109.11	-256.64	858.34	1,454.74	1,383.66	71.08	20.468		
11,000.00	10,984.51	10,626.00	10,387.17	39.42	36.38	109.11	-256.64	858.34	1,474.21	1,403.60	70.61	20.878		
11,050.00	11,034.51	10,626.00	10,387.17	39.60	36.38	109.11	-256.64	858.34	1,495.10	1,424.98	70.12	21.322		

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 716H
 Well Error: 0.50 ft
 Reference Wellbore: Wellbore #1
 Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
 TVD Reference: RKB @ 3363.10ft
 MD Reference: RKB @ 3363.10ft
 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	
9,400.00	9,387.64	9,579.11	9,550.51	33.59	34.50	-29.23	17.50	-1,813.86	1,498.32	1,431.47	66.85	22.415	
9,450.00	9,437.52	9,628.35	9,599.44	33.78	34.69	-29.30	17.83	-1,808.42	1,489.80	1,422.60	67.20	22.169	
9,500.00	9,487.40	9,677.58	9,648.38	33.96	34.87	-29.38	18.16	-1,802.98	1,481.29	1,413.73	67.56	21.926	
9,550.00	9,537.28	9,726.82	9,697.31	34.14	35.06	-29.45	18.49	-1,797.54	1,472.78	1,404.86	67.92	21.685	
9,600.00	9,587.17	9,776.05	9,746.24	34.33	35.25	-29.52	18.82	-1,792.10	1,464.27	1,395.99	68.27	21.447	
9,650.00	9,637.05	9,825.29	9,795.18	34.51	35.43	-29.60	19.15	-1,786.66	1,455.76	1,387.13	68.63	21.212	
9,700.00	9,686.93	9,864.34	9,834.00	34.69	35.58	-29.66	19.41	-1,782.44	1,447.39	1,378.40	68.98	20.981	
9,750.00	9,736.81	9,900.00	9,869.48	34.88	35.72	-29.71	19.62	-1,778.92	1,439.46	1,370.13	69.33	20.761	
9,800.00	9,786.69	9,936.06	9,905.40	35.06	35.85	-29.76	19.81	-1,775.69	1,432.00	1,362.32	69.68	20.551	
9,850.00	9,836.57	9,972.08	9,941.30	35.24	35.98	-29.82	19.99	-1,772.80	1,425.01	1,354.99	70.02	20.351	
9,900.00	9,886.45	10,008.19	9,977.32	35.43	36.12	-29.87	20.14	-1,770.25	1,418.49	1,348.13	70.36	20.160	
9,950.00	9,936.33	10,044.38	10,013.44	35.61	36.25	-29.93	20.28	-1,768.03	1,412.44	1,341.74	70.69	19.979	
10,000.00	9,986.21	10,080.66	10,049.67	35.79	36.38	-29.98	20.39	-1,766.15	1,406.86	1,335.83	71.02	19.808	
10,050.00	10,036.09	10,117.01	10,085.99	35.98	36.51	-30.04	20.49	-1,764.61	1,401.75	1,330.41	71.35	19.646	
10,100.00	10,085.97	10,153.44	10,122.39	36.16	36.64	-30.09	20.56	-1,763.41	1,397.13	1,325.46	71.67	19.494	
10,150.00	10,135.86	10,189.92	10,158.87	36.34	36.77	-30.14	20.61	-1,762.56	1,392.97	1,320.99	71.99	19.351	
10,200.00	10,185.74	10,226.46	10,195.41	36.53	36.89	-30.20	20.64	-1,762.05	1,389.30	1,317.00	72.30	19.216	
10,250.00	10,235.62	10,263.77	10,232.72	36.71	37.02	-30.25	20.65	-1,761.89	1,386.11	1,313.50	72.61	19.091	
10,300.00	10,285.50	10,313.65	10,282.60	36.89	37.20	-30.32	20.65	-1,761.89	1,383.13	1,310.16	72.96	18.957	
10,350.00	10,335.38	10,363.53	10,332.48	37.08	37.37	-30.40	20.65	-1,761.89	1,380.15	1,306.83	73.32	18.824	
10,400.00	10,385.26	10,413.42	10,382.36	37.26	37.54	-30.47	20.65	-1,761.89	1,377.17	1,303.50	73.67	18.693	
10,450.00	10,435.14	10,463.30	10,432.24	37.44	37.71	-30.54	20.65	-1,761.89	1,374.20	1,300.17	74.03	18.563	
10,500.00	10,485.02	10,513.18	10,482.12	37.63	37.89	-30.61	20.65	-1,761.89	1,371.23	1,296.85	74.38	18.435	
10,550.00	10,534.90	10,563.06	10,532.00	37.81	38.06	-30.69	20.65	-1,761.89	1,368.26	1,293.52	74.74	18.307	
10,600.00	10,584.78	10,612.54	10,581.49	37.99	38.23	-30.76	20.65	-1,761.89	1,365.29	1,290.20	75.09	18.181	
10,650.00	10,634.67	10,650.00	10,618.91	38.18	38.35	-30.86	19.33	-1,761.89	1,362.60	1,287.21	75.40	18.073	
10,700.00	10,684.59	10,690.01	10,658.71	38.36	38.48	-31.07	15.22	-1,761.89	1,360.81	1,285.11	75.70	17.978	
10,750.00	10,734.54	10,727.76	10,695.90	38.54	38.60	-31.36	8.81	-1,761.88	1,360.03	1,284.04	75.99	17.898	
10,762.01	10,746.54	10,736.68	10,704.62	38.58	38.63	-31.45	6.94	-1,761.87	1,360.00	1,283.95	76.06	17.881 CC	
10,800.00	10,784.52	10,764.49	10,731.61	38.72	38.72	-31.75	0.24	-1,761.86	1,360.32	1,284.05	76.27	17.836	
10,850.00	10,834.51	10,800.00	10,765.54	38.90	38.83	-32.21	-10.21	-1,761.85	1,361.72	1,285.18	76.53	17.792	
10,900.00	10,884.51	10,834.10	10,797.46	39.07	38.93	-98.75	-22.20	-1,761.83	1,364.29	1,287.51	76.78	17.769	
10,950.00	10,934.51	10,866.64	10,827.19	39.25	39.02	-99.30	-35.40	-1,761.81	1,367.73	1,290.73	77.00	17.762	
11,000.00	10,984.51	10,900.00	10,856.86	39.42	39.11	-99.93	-50.66	-1,761.79	1,371.95	1,294.73	77.22	17.767	
11,050.00	11,034.51	10,926.65	10,879.89	39.60	39.18	-100.49	-64.07	-1,761.77	1,377.01	1,299.64	77.37	17.798	
11,100.00	11,084.51	10,950.00	10,899.53	39.77	39.24	-101.00	-76.69	-1,761.75	1,383.00	1,305.52	77.47	17.851	
11,150.00	11,134.51	10,979.85	10,923.86	39.95	39.32	-101.71	-93.97	-1,761.72	1,389.95	1,312.34	77.61	17.910	
11,200.00	11,184.51	11,000.00	10,939.76	40.12	39.36	-102.22	-106.35	-1,761.70	1,397.96	1,320.32	77.64	18.007	
11,250.00	11,234.51	11,026.58	10,960.06	40.30	39.42	77.06	-123.51	-1,761.68	1,407.03	1,329.33	77.69	18.110	
11,300.00	11,284.40	11,050.00	10,977.26	40.46	39.48	75.53	-139.40	-1,761.65	1,416.55	1,338.87	77.68	18.236	
11,350.00	11,333.85	11,071.21	10,992.27	40.61	39.52	74.09	-154.38	-1,761.63	1,426.08	1,348.47	77.61	18.375	
11,400.00	11,382.46	11,100.00	11,011.74	40.76	39.58	72.56	-175.59	-1,761.60	1,435.51	1,357.92	77.59	18.501	
11,450.00	11,429.88	11,116.39	11,022.34	40.91	39.62	71.35	-188.09	-1,761.58	1,444.63	1,367.22	77.42	18.660	
11,500.00	11,475.73	11,139.15	11,036.45	41.04	39.66	70.11	-205.94	-1,761.55	1,453.40	1,376.11	77.29	18.805	
11,550.00	11,519.68	11,162.00	11,049.90	41.16	39.71	68.95	-224.41	-1,761.53	1,461.68	1,384.53	77.14	18.947	
11,600.00	11,561.39	11,184.92	11,062.63	41.27	39.75	67.90	-243.46	-1,761.50	1,469.36	1,392.36	76.99	19.084	
11,650.00	11,600.53	11,200.00	11,070.60	41.37	39.78	67.06	-256.27	-1,761.48	1,476.39	1,399.64	76.76	19.234	
11,700.00	11,636.82	11,230.94	11,085.86	41.46	39.84	66.14	-283.18	-1,761.44	1,482.58	1,405.89	76.69	19.332	
11,750.00	11,669.98	11,250.00	11,094.53	41.53	39.88	65.47	-300.15	-1,761.41	1,487.99	1,411.47	76.52	19.446	
11,800.00	11,699.75	11,277.15	11,105.90	41.60	39.94	64.86	-324.81	-1,761.38	1,492.47	1,416.03	76.44	19.524	
11,850.00	11,725.90	11,300.00	11,114.55	41.66	39.99	64.41	-345.95	-1,761.34	1,496.03	1,419.68	76.35	19.594	
11,900.00	11,748.25	11,323.47	11,122.55	41.73	40.04	64.09	-368.02	-1,761.31	1,498.60	1,422.30	76.29	19.642	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Plan 1													Offset Site Error:	0.00 ft
Survey Program: 0-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							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		
12,100.00	11,796.57	11,416.22	11,145.16	42.14	40.26	64.09	-457.86	-1,761.18	1,498.69	1,422.21	76.48	19.596		
12,150.00	11,798.00	11,450.00	11,149.74	42.25	40.35	64.40	-491.33	-1,761.13	1,496.28	1,419.58	76.70	19.509		
12,200.00	11,798.00	11,462.71	11,150.96	42.37	40.38	64.44	-503.98	-1,761.11	1,493.98	1,417.15	76.83	19.445		
12,250.00	11,798.00	11,486.19	11,152.46	42.51	40.45	64.49	-527.40	-1,761.07	1,492.65	1,415.63	77.02	19.379		
12,294.80	11,798.00	11,519.17	11,153.00	42.63	40.54	64.51	-544.24	-1,761.05	1,492.21	1,414.99	77.22	19.325		
12,300.00	11,798.00	11,513.96	11,153.00	42.65	40.53	64.51	-549.45	-1,761.04	1,492.21	1,414.99	77.22	19.325		
12,350.00	11,798.00	11,558.23	11,153.00	42.80	40.66	64.51	-599.44	-1,760.96	1,492.26	1,414.79	77.48	19.260		
12,400.00	11,798.00	11,608.23	11,153.00	42.96	40.81	64.52	-649.44	-1,760.89	1,492.32	1,414.56	77.76	19.192		
12,450.00	11,798.00	11,658.23	11,153.00	43.14	40.98	64.52	-699.44	-1,760.81	1,492.37	1,414.29	78.08	19.114		
12,500.00	11,798.00	11,708.23	11,153.00	43.32	41.16	64.52	-749.44	-1,760.74	1,492.42	1,414.02	78.40	19.036		
12,550.00	11,798.00	11,758.23	11,153.00	43.53	41.36	64.52	-799.44	-1,760.66	1,492.48	1,413.71	78.76	18.949		
12,600.00	11,798.00	11,808.23	11,153.00	43.73	41.56	64.52	-849.44	-1,760.59	1,492.53	1,413.40	79.13	18.862		
12,650.00	11,798.00	11,858.23	11,153.00	43.95	41.78	64.52	-899.44	-1,760.51	1,492.58	1,413.05	79.53	18.767		
12,700.00	11,798.00	11,908.23	11,153.00	44.18	42.00	64.52	-949.44	-1,760.44	1,492.63	1,412.69	79.94	18.671		
12,750.00	11,798.00	11,958.23	11,153.00	44.42	42.24	64.52	-999.44	-1,760.36	1,492.69	1,412.30	80.39	18.568		
12,800.00	11,798.00	12,008.23	11,153.00	44.67	42.49	64.52	-1,049.44	-1,760.29	1,492.74	1,411.90	80.84	18.465		
12,850.00	11,798.00	12,058.23	11,153.00	44.93	42.75	64.52	-1,099.44	-1,760.21	1,492.79	1,411.47	81.33	18.356		
12,900.00	11,798.00	12,108.23	11,153.00	45.20	43.02	64.52	-1,149.44	-1,760.14	1,492.85	1,411.03	81.82	18.246		
12,950.00	11,798.00	12,158.23	11,153.00	45.48	43.30	64.53	-1,199.44	-1,760.06	1,492.90	1,410.56	82.34	18.130		
13,000.00	11,798.00	12,208.23	11,153.00	45.77	43.59	64.53	-1,249.44	-1,759.99	1,492.95	1,410.08	82.87	18.015		
13,050.00	11,798.00	12,258.23	11,153.00	46.07	43.89	64.53	-1,299.44	-1,759.91	1,493.00	1,409.57	83.43	17.894		
13,100.00	11,798.00	12,308.23	11,153.00	46.38	44.20	64.53	-1,349.44	-1,759.84	1,493.06	1,409.06	84.00	17.774		
13,150.00	11,798.00	12,358.23	11,153.00	46.70	44.53	64.53	-1,399.44	-1,759.76	1,493.11	1,408.51	84.60	17.649		
13,200.00	11,798.00	12,408.23	11,153.00	47.02	44.85	64.53	-1,449.44	-1,759.69	1,493.16	1,407.96	85.20	17.525		
13,250.00	11,798.00	12,458.23	11,153.00	47.36	45.19	64.53	-1,499.44	-1,759.61	1,493.22	1,407.38	85.83	17.396		
13,300.00	11,798.00	12,508.23	11,153.00	47.70	45.54	64.53	-1,549.44	-1,759.54	1,493.27	1,406.80	86.47	17.269		
13,350.00	11,798.00	12,558.23	11,153.00	48.06	45.90	64.53	-1,599.44	-1,759.46	1,493.32	1,406.18	87.14	17.138		
13,400.00	11,798.00	12,608.23	11,153.00	48.42	46.26	64.53	-1,649.44	-1,759.39	1,493.37	1,405.57	87.81	17.008		
13,450.00	11,798.00	12,658.23	11,153.00	48.79	46.64	64.54	-1,699.44	-1,759.31	1,493.43	1,404.92	88.50	16.874		
13,500.00	11,798.00	12,708.23	11,153.00	49.16	47.02	64.54	-1,749.44	-1,759.24	1,493.48	1,404.28	89.20	16.743		
13,550.00	11,798.00	12,758.23	11,153.00	49.55	47.41	64.54	-1,799.44	-1,759.16	1,493.53	1,403.60	89.93	16.608		
13,600.00	11,798.00	12,808.23	11,153.00	49.94	47.80	64.54	-1,849.44	-1,759.09	1,493.59	1,402.93	90.66	16.475		
13,650.00	11,798.00	12,858.23	11,153.00	50.34	48.21	64.54	-1,899.44	-1,759.01	1,493.64	1,402.22	91.41	16.339		
13,700.00	11,798.00	12,908.23	11,153.00	50.75	48.62	64.54	-1,949.44	-1,758.94	1,493.69	1,401.52	92.17	16.205		
13,750.00	11,798.00	12,958.23	11,153.00	51.16	49.05	64.54	-1,999.44	-1,758.86	1,493.74	1,400.79	92.96	16.069		
13,800.00	11,798.00	13,008.23	11,153.00	51.58	49.47	64.54	-2,049.44	-1,758.79	1,493.80	1,400.06	93.74	15.936		
13,850.00	11,798.00	13,058.23	11,153.00	52.01	49.91	64.54	-2,099.44	-1,758.71	1,493.85	1,399.30	94.55	15.800		
13,900.00	11,798.00	13,108.23	11,153.00	52.44	50.35	64.54	-2,149.44	-1,758.64	1,493.90	1,398.54	95.36	15.666		
13,950.00	11,798.00	13,158.23	11,153.00	52.89	50.79	64.55	-2,199.44	-1,758.56	1,493.96	1,397.76	96.19	15.531		
14,000.00	11,798.00	13,208.23	11,153.00	53.33	51.25	64.55	-2,249.44	-1,758.49	1,494.01	1,396.98	97.03	15.398		
14,050.00	11,798.00	13,258.23	11,153.00	53.79	51.71	64.55	-2,299.44	-1,758.41	1,494.06	1,396.18	97.88	15.264		
14,100.00	11,798.00	13,308.23	11,153.00	54.25	52.17	64.55	-2,349.44	-1,758.34	1,494.11	1,395.37	98.74	15.132		
14,150.00	11,798.00	13,358.23	11,153.00	54.71	52.65	64.55	-2,399.44	-1,758.26	1,494.17	1,394.55	99.62	14.999		
14,200.00	11,798.00	13,408.23	11,153.00	55.18	53.12	64.55	-2,449.44	-1,758.19	1,494.22	1,393.72	100.50	14.868		
14,250.00	11,798.00	13,458.23	11,153.00	55.66	53.61	64.55	-2,499.44	-1,758.11	1,494.27	1,392.87	101.40	14.737		
14,300.00	11,798.00	13,508.23	11,153.00	56.14	54.09	64.55	-2,549.44	-1,758.04	1,494.33	1,392.03	102.30	14.607		
14,350.00	11,798.00	13,558.23	11,153.00	56.63	54.59	64.55	-2,599.44	-1,757.96	1,494.38	1,391.16	103.22	14.478		
14,400.00	11,798.00	13,608.23	11,153.00	57.12	55.09	64.55	-2,649.44	-1,757.89	1,494.43	1,390.29	104.14	14.350		
14,450.00	11,798.00	13,658.23	11,153.00	57.62	55.59	64.55	-2,699.44	-1,757.81	1,494.48	1,389.41	105.08	14.223		
14,500.00	11,798.00	13,708.23	11,153.00	58.11	56.10	64.56	-2,749.44	-1,757.74	1,494.54	1,388.52	106.02	14.097		
14,550.00	11,798.00	13,758.23	11,153.00	58.62	56.62	64.56	-2,799.44	-1,757.66	1,494.59	1,387.62	106.97	13.972		
14,600.00	11,798.00	13,808.23	11,153.00	59.13	57.13	64.56	-2,849.44	-1,757.59	1,494.64	1,386.71	107.93	13.849		

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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		
14,650.00	11,798.00	13,858.23	11,153.00	59.65	57.66	64.56	-2,899.44	-1,757.51	1,494.70	1,385.80	108.90	13.725		
14,700.00	11,798.00	13,908.23	11,153.00	60.17	58.18	64.56	-2,949.44	-1,757.44	1,494.75	1,384.87	109.87	13.604		
14,750.00	11,798.00	13,958.23	11,153.00	60.69	58.72	64.56	-2,999.44	-1,757.36	1,494.80	1,383.94	110.86	13.483		
14,800.00	11,798.00	14,008.23	11,153.00	61.22	59.25	64.56	-3,049.44	-1,757.29	1,494.85	1,383.00	111.85	13.365		
14,850.00	11,798.00	14,058.23	11,153.00	61.75	59.79	64.56	-3,099.44	-1,757.21	1,494.91	1,382.05	112.86	13.246		
14,900.00	11,798.00	14,108.23	11,153.00	62.29	60.33	64.56	-3,149.44	-1,757.14	1,494.96	1,381.10	113.86	13.130		
14,950.00	11,798.00	14,158.23	11,153.00	62.83	60.88	64.56	-3,199.44	-1,757.06	1,495.01	1,380.14	114.88	13.014		
15,000.00	11,798.00	14,208.23	11,153.00	63.37	61.43	64.57	-3,249.44	-1,756.99	1,495.07	1,379.17	115.90	12.900		
15,050.00	11,798.00	14,258.23	11,153.00	63.92	61.99	64.57	-3,299.44	-1,756.91	1,495.12	1,378.19	116.93	12.787		
15,100.00	11,798.00	14,308.23	11,153.00	64.47	62.54	64.57	-3,349.44	-1,756.84	1,495.17	1,377.21	117.96	12.675		
15,150.00	11,798.00	14,358.23	11,153.00	65.02	63.11	64.57	-3,399.44	-1,756.76	1,495.22	1,376.22	119.00	12.564		
15,200.00	11,798.00	14,408.23	11,153.00	65.58	63.67	64.57	-3,449.44	-1,756.69	1,495.28	1,375.23	120.05	12.455		
15,250.00	11,798.00	14,458.23	11,153.00	66.14	64.24	64.57	-3,499.44	-1,756.61	1,495.33	1,374.22	121.11	12.347		
15,300.00	11,798.00	14,508.23	11,153.00	66.70	64.81	64.57	-3,549.44	-1,756.54	1,495.38	1,373.22	122.16	12.241		
15,350.00	11,798.00	14,558.23	11,153.00	67.27	65.39	64.57	-3,599.44	-1,756.46	1,495.44	1,372.20	123.23	12.135		
15,400.00	11,798.00	14,608.23	11,153.00	67.84	65.96	64.57	-3,649.44	-1,756.39	1,495.49	1,371.19	124.30	12.031		
15,450.00	11,798.00	14,658.23	11,153.00	68.42	66.54	64.57	-3,699.44	-1,756.31	1,495.54	1,370.16	125.38	11.928		
15,500.00	11,798.00	14,708.23	11,153.00	68.99	67.13	64.58	-3,749.44	-1,756.24	1,495.59	1,369.13	126.46	11.826		
15,550.00	11,798.00	14,758.23	11,153.00	69.57	67.71	64.58	-3,799.44	-1,756.16	1,495.65	1,368.10	127.55	11.726		
15,600.00	11,798.00	14,808.23	11,153.00	70.15	68.30	64.58	-3,849.44	-1,756.09	1,495.70	1,367.06	128.64	11.627		
15,650.00	11,798.00	14,858.23	11,153.00	70.74	68.89	64.58	-3,899.44	-1,756.01	1,495.75	1,366.01	129.74	11.529		
15,700.00	11,798.00	14,908.23	11,153.00	71.32	69.49	64.58	-3,949.44	-1,755.94	1,495.81	1,364.96	130.84	11.432		
15,750.00	11,798.00	14,958.23	11,153.00	71.91	70.08	64.58	-3,999.44	-1,755.86	1,495.86	1,363.91	131.95	11.336		
15,800.00	11,798.00	15,008.23	11,153.00	72.50	70.68	64.58	-4,049.44	-1,755.79	1,495.91	1,362.85	133.06	11.242		
15,850.00	11,798.00	15,058.23	11,153.00	73.10	71.28	64.58	-4,099.44	-1,755.71	1,495.96	1,361.78	134.18	11.149		
15,900.00	11,798.00	15,108.23	11,153.00	73.70	71.89	64.58	-4,149.44	-1,755.64	1,496.02	1,360.72	135.30	11.057		
15,950.00	11,798.00	15,158.23	11,153.00	74.30	72.49	64.58	-4,199.44	-1,755.56	1,496.07	1,359.64	136.43	10.966		
16,000.00	11,798.00	15,208.23	11,153.00	74.90	73.10	64.58	-4,249.44	-1,755.49	1,496.12	1,358.57	137.55	10.877		
16,050.00	11,798.00	15,258.23	11,153.00	75.50	73.71	64.59	-4,299.44	-1,755.41	1,496.18	1,357.49	138.69	10.788		
16,100.00	11,798.00	15,308.23	11,153.00	76.11	74.32	64.59	-4,349.44	-1,755.34	1,496.23	1,356.41	139.82	10.701		
16,150.00	11,798.00	15,358.23	11,153.00	76.71	74.94	64.59	-4,399.44	-1,755.26	1,496.28	1,355.32	140.97	10.614		
16,200.00	11,798.00	15,408.23	11,153.00	77.32	75.55	64.59	-4,449.44	-1,755.19	1,496.33	1,354.23	142.11	10.529		
16,250.00	11,798.00	15,458.23	11,153.00	77.94	76.17	64.59	-4,499.44	-1,755.11	1,496.39	1,353.13	143.26	10.445		
16,300.00	11,798.00	15,508.23	11,153.00	78.55	76.79	64.59	-4,549.44	-1,755.04	1,496.44	1,352.03	144.41	10.362		
16,350.00	11,798.00	15,558.23	11,153.00	79.17	77.41	64.59	-4,599.44	-1,754.96	1,496.49	1,350.93	145.57	10.280		
16,400.00	11,798.00	15,608.23	11,153.00	79.78	78.04	64.59	-4,649.44	-1,754.89	1,496.55	1,349.82	146.73	10.200		
16,450.00	11,798.00	15,658.23	11,153.00	80.40	78.66	64.59	-4,699.44	-1,754.81	1,496.60	1,348.71	147.89	10.120		
16,500.00	11,798.00	15,708.23	11,153.00	81.02	79.29	64.59	-4,749.44	-1,754.74	1,496.65	1,347.60	149.05	10.041		
16,550.00	11,798.00	15,758.23	11,153.00	81.65	79.92	64.60	-4,799.44	-1,754.66	1,496.70	1,346.48	150.22	9.963		
16,600.00	11,798.00	15,808.23	11,153.00	82.27	80.55	64.60	-4,849.44	-1,754.59	1,496.76	1,345.36	151.39	9.886		
16,650.00	11,798.00	15,858.23	11,153.00	82.90	81.18	64.60	-4,899.44	-1,754.51	1,496.81	1,344.24	152.57	9.811		
16,700.00	11,798.00	15,908.23	11,153.00	83.53	81.81	64.60	-4,949.44	-1,754.44	1,496.86	1,343.12	153.75	9.736		
16,750.00	11,798.00	15,958.23	11,153.00	84.16	82.45	64.60	-4,999.44	-1,754.36	1,496.92	1,341.99	154.93	9.662		
16,800.00	11,798.00	16,008.23	11,153.00	84.79	83.09	64.60	-5,049.44	-1,754.29	1,496.97	1,340.86	156.11	9.589		
16,850.00	11,798.00	16,058.23	11,153.00	85.42	83.72	64.60	-5,099.44	-1,754.21	1,497.02	1,339.72	157.30	9.517		
16,900.00	11,798.00	16,108.23	11,153.00	86.05	84.36	64.60	-5,149.44	-1,754.14	1,497.08	1,338.59	158.49	9.446		
16,950.00	11,798.00	16,158.23	11,153.00	86.69	85.00	64.60	-5,199.44	-1,754.06	1,497.13	1,337.45	159.68	9.376		
17,000.00	11,798.00	16,208.23	11,153.00	87.33	85.65	64.60	-5,249.44	-1,753.99	1,497.18	1,336.31	160.88	9.306		
17,050.00	11,798.00	16,258.23	11,153.00	87.97	86.29	64.60	-5,299.44	-1,753.91	1,497.23	1,335.16	162.07	9.238		
17,100.00	11,798.00	16,308.23	11,153.00	88.60	86.94	64.61	-5,349.44	-1,753.84	1,497.29	1,334.01	163.27	9.170		
17,150.00	11,798.00	16,358.23	11,153.00	89.25	87.58	64.61	-5,399.44	-1,753.76	1,497.34	1,332.86	164.48	9.104		
17,200.00	11,798.00	16,408.23	11,153.00	89.89	88.23	64.61	-5,449.44	-1,753.69	1,497.39	1,331.71	165.68	9.038		

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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		
17,250.00	11,798.00	16,458.23	11,153.00	90.53	88.88	64.61	-5,499.44	-1,753.61	1,497.45	1,330.56	166.89	8.973		
17,300.00	11,798.00	16,508.23	11,153.00	91.18	89.53	64.61	-5,549.44	-1,753.54	1,497.50	1,329.40	168.10	8.909		
17,350.00	11,798.00	16,558.23	11,153.00	91.82	90.18	64.61	-5,599.44	-1,753.46	1,497.55	1,328.24	169.31	8.845		
17,400.00	11,798.00	16,608.23	11,153.00	92.47	90.83	64.61	-5,649.44	-1,753.39	1,497.60	1,327.08	170.52	8.783		
17,450.00	11,798.00	16,658.23	11,153.00	93.12	91.49	64.61	-5,699.44	-1,753.31	1,497.66	1,325.92	171.74	8.721		
17,500.00	11,798.00	16,708.23	11,153.00	93.77	92.14	64.61	-5,749.44	-1,753.24	1,497.71	1,324.76	172.95	8.660		
17,550.00	11,798.00	16,758.23	11,153.00	94.42	92.80	64.61	-5,799.44	-1,753.16	1,497.76	1,323.59	174.18	8.599		
17,600.00	11,798.00	16,808.23	11,153.00	95.07	93.45	64.62	-5,849.44	-1,753.09	1,497.82	1,322.42	175.40	8.540		
17,650.00	11,798.00	16,858.23	11,153.00	95.72	94.11	64.62	-5,899.44	-1,753.01	1,497.87	1,321.25	176.62	8.481		
17,700.00	11,798.00	16,908.23	11,153.00	96.38	94.77	64.62	-5,949.44	-1,752.94	1,497.92	1,320.08	177.85	8.423		
17,750.00	11,798.00	16,958.23	11,153.00	97.03	95.43	64.62	-5,999.44	-1,752.86	1,497.97	1,318.90	179.07	8.365		
17,800.00	11,798.00	17,008.23	11,153.00	97.69	96.09	64.62	-6,049.44	-1,752.79	1,498.03	1,317.72	180.30	8.308		
17,850.00	11,798.00	17,058.23	11,153.00	98.35	96.75	64.62	-6,099.44	-1,752.71	1,498.08	1,316.54	181.54	8.252		
17,900.00	11,798.00	17,108.23	11,153.00	99.00	97.41	64.62	-6,149.44	-1,752.64	1,498.13	1,315.37	182.77	8.197		
17,950.00	11,798.00	17,158.23	11,153.00	99.66	98.08	64.62	-6,199.43	-1,752.56	1,498.19	1,314.18	184.00	8.142		
18,000.00	11,798.00	17,208.23	11,153.00	100.32	98.74	64.62	-6,249.43	-1,752.49	1,498.24	1,313.00	185.24	8.088		
18,050.00	11,798.00	17,258.23	11,153.00	100.99	99.41	64.62	-6,299.43	-1,752.41	1,498.29	1,311.81	186.48	8.035		
18,100.00	11,798.00	17,308.23	11,153.00	101.65	100.07	64.63	-6,349.43	-1,752.34	1,498.34	1,310.63	187.72	7.982		
18,150.00	11,798.00	17,358.23	11,153.00	102.31	100.74	64.63	-6,399.43	-1,752.26	1,498.40	1,309.44	188.96	7.930		
18,200.00	11,798.00	17,408.23	11,153.00	102.97	101.41	64.63	-6,449.43	-1,752.19	1,498.45	1,308.25	190.20	7.878		
18,250.00	11,798.00	17,458.23	11,153.00	103.64	102.07	64.63	-6,499.43	-1,752.11	1,498.50	1,307.06	191.45	7.827		
18,300.00	11,798.00	17,508.23	11,153.00	104.30	102.74	64.63	-6,549.43	-1,752.04	1,498.56	1,305.86	192.69	7.777		
18,350.00	11,798.00	17,558.23	11,153.00	104.97	103.41	64.63	-6,599.43	-1,751.96	1,498.61	1,304.67	193.94	7.727		
18,400.00	11,798.00	17,608.23	11,153.00	105.64	104.08	64.63	-6,649.43	-1,751.89	1,498.66	1,303.47	195.19	7.678		
18,450.00	11,798.00	17,658.23	11,153.00	106.30	104.76	64.63	-6,699.43	-1,751.81	1,498.71	1,302.27	196.44	7.629		
18,500.00	11,798.00	17,708.23	11,153.00	106.97	105.43	64.63	-6,749.43	-1,751.74	1,498.77	1,301.08	197.69	7.581		
18,550.00	11,798.00	17,758.23	11,153.00	107.64	106.10	64.63	-6,799.43	-1,751.66	1,498.82	1,299.87	198.95	7.534		
18,600.00	11,798.00	17,808.23	11,153.00	108.31	106.78	64.63	-6,849.43	-1,751.59	1,498.87	1,298.67	200.20	7.487		
18,650.00	11,798.00	17,858.23	11,153.00	108.98	107.45	64.64	-6,899.43	-1,751.51	1,498.93	1,297.47	201.46	7.440		
18,700.00	11,798.00	17,908.23	11,153.00	109.65	108.12	64.64	-6,949.43	-1,751.44	1,498.98	1,296.27	202.71	7.395		
18,750.00	11,798.00	17,958.23	11,153.00	110.33	108.80	64.64	-6,999.43	-1,751.36	1,499.03	1,295.06	203.97	7.349		
18,800.00	11,798.00	18,008.23	11,153.00	111.00	109.48	64.64	-7,049.43	-1,751.29	1,499.09	1,293.85	205.23	7.304		
18,850.00	11,798.00	18,058.23	11,153.00	111.67	110.15	64.64	-7,099.43	-1,751.21	1,499.14	1,292.64	206.49	7.260		
18,900.00	11,798.00	18,108.23	11,153.00	112.35	110.83	64.64	-7,149.43	-1,751.14	1,499.19	1,291.44	207.76	7.216		
18,950.00	11,798.00	18,158.23	11,153.00	113.02	111.51	64.64	-7,199.43	-1,751.06	1,499.24	1,290.22	209.02	7.173		
19,000.00	11,798.00	18,208.23	11,153.00	113.70	112.19	64.64	-7,249.43	-1,750.99	1,499.30	1,289.01	210.28	7.130		
19,050.00	11,798.00	18,258.23	11,153.00	114.37	112.87	64.64	-7,299.43	-1,750.91	1,499.35	1,287.80	211.55	7.087		
19,100.00	11,798.00	18,308.23	11,153.00	115.05	113.55	64.64	-7,349.43	-1,750.84	1,499.40	1,286.59	212.82	7.046		
19,150.00	11,798.00	18,358.23	11,153.00	115.73	114.23	64.65	-7,399.43	-1,750.76	1,499.46	1,285.37	214.09	7.004		
19,200.00	11,798.00	18,408.23	11,153.00	116.40	114.91	64.65	-7,449.43	-1,750.69	1,499.51	1,284.15	215.35	6.963		
19,250.00	11,798.00	18,458.23	11,153.00	117.08	115.59	64.65	-7,499.43	-1,750.61	1,499.56	1,282.94	216.62	6.922		
19,300.00	11,798.00	18,508.23	11,153.00	117.76	116.27	64.65	-7,549.43	-1,750.54	1,499.61	1,281.72	217.90	6.882		
19,350.00	11,798.00	18,558.23	11,153.00	118.44	116.96	64.65	-7,599.43	-1,750.46	1,499.67	1,280.50	219.17	6.843		
19,400.00	11,798.00	18,608.23	11,153.00	119.12	117.64	64.65	-7,649.43	-1,750.39	1,499.72	1,279.28	220.44	6.803		
19,450.00	11,798.00	18,658.23	11,153.00	119.80	118.32	64.65	-7,699.43	-1,750.31	1,499.77	1,278.06	221.72	6.764		
19,500.00	11,798.00	18,708.23	11,153.00	120.48	119.01	64.65	-7,749.43	-1,750.24	1,499.83	1,276.84	222.99	6.726		
19,550.00	11,798.00	18,758.23	11,153.00	121.16	119.69	64.65	-7,799.43	-1,750.16	1,499.88	1,275.61	224.27	6.688		
19,600.00	11,798.00	18,808.23	11,153.00	121.85	120.38	64.65	-7,849.43	-1,750.09	1,499.93	1,274.39	225.54	6.650		
19,650.00	11,798.00	18,858.23	11,153.00	122.53	121.06	64.65	-7,899.43	-1,750.01	1,499.98	1,273.16	226.82	6.613 ES, SF		

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM												Offset Well Error:	0.50 ft
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	0.00	0.00	0.50	0.50	89.64	5.77	908.88	908.90				
50.00	50.00	48.24	48.24	0.50	0.51	89.63	5.91	908.90	908.92	907.91	1.01	902.361	
100.00	100.00	97.57	97.57	0.52	0.52	89.60	6.34	908.95	908.97	907.93	1.04	874.896	
150.00	150.00	147.05	147.04	0.59	0.55	89.55	7.07	909.03	909.06	907.92	1.14	797.649	
200.00	200.00	199.15	199.14	0.70	0.65	89.50	7.89	909.07	909.11	907.76	1.35	674.082	
229.79	229.79	228.71	228.69	0.78	0.72	89.48	8.32	909.06	909.10	907.60	1.50	606.853	
250.00	250.00	248.61	248.59	0.84	0.77	89.46	8.64	909.06	909.11	907.50	1.61	565.709	
300.00	300.00	297.86	297.84	0.99	0.91	89.40	9.52	909.09	909.14	907.25	1.90	479.507	
350.00	350.00	347.18	347.15	1.15	1.06	89.35	10.34	909.16	909.22	907.02	2.20	412.721	
400.00	400.00	396.97	396.93	1.31	1.21	89.31	10.94	909.27	909.33	906.81	2.52	360.385	
450.00	450.00	451.34	451.30	1.48	1.39	89.28	11.46	909.25	909.32	906.46	2.86	317.400	
500.00	500.00	504.66	504.61	1.65	1.56	89.25	11.92	908.98	909.08	905.87	3.21	283.297	
550.00	550.00	555.98	555.93	1.82	1.73	89.23	12.21	908.62	908.73	905.18	3.55	255.974	
600.00	600.00	605.25	605.20	1.99	1.90	89.21	12.55	908.26	908.37	904.48	3.89	233.637	
650.00	650.00	654.98	654.93	2.16	2.07	89.18	12.94	907.92	908.03	903.80	4.23	214.663	
700.00	700.00	704.70	704.65	2.34	2.23	89.16	13.34	907.59	907.71	903.14	4.57	198.460	
750.00	750.00	754.43	754.37	2.51	2.40	89.13	13.76	907.28	907.40	902.48	4.92	184.476	
800.00	800.00	806.60	806.54	2.69	2.58	89.10	14.24	906.92	907.06	901.79	5.27	172.005	
850.00	850.00	860.23	860.16	2.87	2.77	89.06	14.88	906.35	906.54	900.91	5.63	160.901	
900.00	900.00	911.92	911.84	3.04	2.95	89.01	15.65	905.64	905.87	899.88	5.99	151.239	
950.00	950.00	963.31	963.22	3.22	3.13	88.95	16.54	904.85	905.12	898.77	6.34	142.653	
1,000.00	1,000.00	1,010.74	1,010.63	3.40	3.18	88.89	17.50	904.12	904.37	897.79	6.58	137.466	
1,050.00	1,050.00	1,055.47	1,055.35	3.58	3.19	88.84	18.31	903.66	903.87	897.10	6.77	133.582	
1,100.00	1,100.00	1,099.37	1,099.25	3.75	3.21	88.80	19.00	903.47	903.67	896.71	6.96	129.785	
1,102.63	1,102.63	1,101.65	1,101.53	3.76	3.21	88.79	19.04	903.47	903.67	896.70	6.97	129.588 CC	
1,150.00	1,150.00	1,142.78	1,142.65	3.93	3.24	88.75	19.78	903.60	903.83	896.67	7.16	126.157 ES	
1,200.00	1,200.00	1,187.29	1,187.15	4.11	3.27	88.69	20.73	904.03	904.35	896.97	7.37	122.627	
1,250.00	1,250.00	1,232.76	1,232.60	4.29	3.31	88.61	21.90	904.71	905.12	897.53	7.59	119.204	
1,300.00	1,300.00	1,279.11	1,278.91	4.46	3.36	88.53	23.32	905.62	906.14	898.32	7.82	115.882	
1,350.00	1,350.00	1,326.47	1,326.23	4.64	3.42	88.42	24.95	906.69	907.31	899.26	8.06	112.633	
1,400.00	1,400.00	1,373.56	1,373.27	4.82	3.48	88.31	26.77	907.88	908.64	900.34	8.30	109.503	
1,450.00	1,450.00	1,420.36	1,420.01	5.00	3.55	88.19	28.80	909.22	910.14	901.59	8.55	106.483	
1,500.00	1,500.00	1,466.16	1,465.74	5.18	3.63	88.05	31.01	910.70	911.83	903.03	8.80	103.605	
1,550.00	1,550.00	1,511.03	1,510.51	5.36	3.71	87.90	33.38	912.37	913.79	904.73	9.06	100.872	
1,600.00	1,600.00	1,558.39	1,557.75	5.53	3.80	87.74	36.12	914.36	916.00	906.67	9.33	98.203	
1,650.00	1,650.00	1,608.63	1,607.85	5.71	3.90	87.54	39.33	916.47	918.24	908.63	9.61	95.560	
1,700.00	1,700.00	1,656.77	1,655.82	5.89	4.01	87.34	42.70	918.50	920.50	910.61	9.89	93.057	
1,750.00	1,750.00	1,703.56	1,702.44	6.07	4.12	87.13	46.18	920.60	922.93	912.76	10.18	90.704	
1,800.00	1,800.00	1,753.46	1,752.13	6.25	4.24	86.90	50.02	922.95	925.48	915.01	10.47	88.369	
1,850.00	1,850.00	1,805.09	1,803.57	6.43	4.37	86.67	53.83	925.29	927.97	917.19	10.78	86.094	
1,900.00	1,900.00	1,853.95	1,852.25	6.61	4.49	86.46	57.38	927.48	930.43	919.35	11.08	83.952	
1,950.00	1,950.00	1,902.18	1,900.29	6.78	4.62	86.24	61.10	929.71	932.98	921.60	11.39	81.938	
2,000.00	2,000.00	1,953.63	1,951.51	6.96	4.76	86.00	65.20	932.09	935.57	923.86	11.71	79.922	
2,050.00	2,050.00	2,005.65	2,003.33	7.14	4.91	85.76	69.29	934.37	938.05	926.02	12.03	77.983	
2,100.00	2,100.00	2,058.54	2,056.01	7.32	5.06	85.52	73.34	936.56	940.40	928.04	12.36	76.086	
2,150.00	2,150.00	2,111.45	2,108.74	7.50	5.22	85.29	77.26	938.58	942.61	929.92	12.69	74.275	
2,200.00	2,200.00	2,156.09	2,153.23	7.68	5.35	85.11	80.52	940.39	944.93	931.93	13.00	72.687	
2,250.00	2,250.00	2,201.93	2,198.90	7.86	5.49	84.92	83.84	942.41	947.45	934.14	13.31	71.169	
2,300.00	2,300.00	2,246.04	2,242.82	8.04	5.62	84.73	87.18	944.58	950.25	936.62	13.62	69.756	
2,350.00	2,350.00	2,290.24	2,286.82	8.22	5.76	84.52	90.78	946.99	953.35	939.42	13.93	68.428	
2,400.00	2,400.00	2,340.92	2,337.23	8.39	5.92	84.29	95.03	949.86	956.59	942.32	14.27	67.038	
2,450.00	2,450.00	2,391.60	2,387.66	8.57	6.08	84.05	99.29	952.68	959.80	945.19	14.61	65.709	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,500.00	2,500.00	2,441.87	2,437.68	8.75	6.25	83.82	103.44	955.46	962.99	948.04	14.95	64.431	
2,550.00	2,550.00	2,492.43	2,488.00	8.93	6.41	83.60	107.51	958.22	966.16	950.87	15.29	63.204	
2,600.00	2,600.00	2,543.64	2,538.97	9.11	6.58	83.38	111.50	960.98	969.28	953.65	15.63	62.011	
2,650.00	2,650.00	2,596.27	2,591.38	9.29	6.75	83.17	115.47	963.73	972.32	956.34	15.98	60.841	
2,700.00	2,700.00	2,650.97	2,645.88	9.47	6.94	82.95	119.52	966.36	975.16	958.82	16.34	59.675	
2,750.00	2,750.00	2,704.44	2,699.15	9.65	7.11	82.74	123.44	968.68	977.78	961.09	16.70	58.559	
2,800.00	2,800.00	2,757.28	2,751.79	9.83	7.29	82.52	127.44	970.79	980.26	963.20	17.05	57.487	
2,850.00	2,850.00	2,809.32	2,803.64	10.00	7.47	82.31	131.43	972.72	982.61	965.20	17.40	56.456	
2,900.00	2,900.00	2,861.26	2,855.40	10.18	7.64	82.09	135.35	974.55	984.86	967.10	17.76	55.462	
2,950.00	2,950.00	2,906.84	2,900.82	10.36	7.80	81.91	138.81	976.20	987.19	969.10	18.09	54.578	
3,000.00	3,000.00	2,952.54	2,946.34	10.54	7.95	81.72	142.36	978.03	989.73	971.31	18.42	53.737	
3,050.00	3,050.00	2,997.90	2,991.52	10.72	8.11	81.53	145.99	980.03	992.51	973.76	18.75	52.938	
3,100.00	3,100.00	3,043.22	3,036.63	10.90	8.27	81.33	149.75	982.21	995.51	976.44	19.08	52.181	
3,150.00	3,150.00	3,094.29	3,087.46	11.08	8.45	81.11	153.99	984.78	998.63	979.20	19.43	51.390	
3,200.00	3,200.00	3,146.26	3,139.21	11.26	8.63	80.91	158.05	987.31	1,001.66	981.87	19.79	50.614	
3,250.00	3,250.00	3,194.11	3,186.86	11.44	8.80	80.72	161.68	989.66	1,004.70	984.57	20.13	49.906	
3,300.00	3,300.00	3,242.12	3,234.67	11.62	8.97	80.54	165.33	992.11	1,007.84	987.36	20.47	49.225	
3,350.00	3,350.00	3,287.20	3,279.54	11.80	9.13	80.36	168.91	994.53	1,011.15	990.35	20.81	48.601	
3,400.00	3,400.00	3,332.39	3,324.50	11.97	9.29	80.17	172.76	997.11	1,014.70	993.56	21.14	48.007	
3,450.00	3,450.00	3,386.25	3,378.07	12.15	9.48	79.94	177.39	1,000.20	1,018.28	996.77	21.51	47.348	
3,500.00	3,500.00	3,440.50	3,432.06	12.33	9.67	79.73	181.77	1,003.13	1,021.65	999.78	21.88	46.699	
3,550.00	3,550.00	3,492.58	3,483.91	12.51	9.86	79.54	185.77	1,005.81	1,024.88	1,002.65	22.24	46.085	
3,600.00	3,600.00	3,544.01	3,535.14	12.69	10.04	79.35	189.55	1,008.37	1,028.01	1,005.41	22.60	45.490	
3,650.00	3,650.00	3,593.88	3,584.82	12.87	10.22	79.18	193.24	1,010.81	1,031.11	1,008.16	22.95	44.927	
3,700.00	3,700.00	3,646.19	3,636.92	13.05	10.41	78.99	197.13	1,013.34	1,034.19	1,010.88	23.31	44.359	
3,750.00	3,750.00	3,700.99	3,691.52	13.23	10.60	78.80	201.06	1,015.78	1,037.07	1,013.39	23.69	43.781	
3,800.00	3,800.00	3,756.14	3,746.50	13.41	10.80	78.63	204.78	1,018.00	1,039.72	1,015.66	24.06	43.210	
3,850.00	3,850.00	3,811.53	3,801.76	13.59	10.99	78.47	208.09	1,020.03	1,042.11	1,017.67	24.44	42.646	
3,900.00	3,900.00	3,869.02	3,859.13	13.77	11.19	78.31	211.35	1,021.81	1,044.19	1,019.38	24.82	42.074	
3,950.00	3,950.00	3,925.82	3,915.82	13.94	11.39	78.16	214.57	1,023.15	1,045.93	1,020.73	25.20	41.512	
4,000.00	4,000.00	3,981.46	3,971.38	14.12	11.59	78.02	217.32	1,024.21	1,047.37	1,021.81	25.57	40.964	
4,050.00	4,050.00	4,033.02	4,022.89	14.30	11.77	143.94	219.44	1,025.07	1,048.84	1,022.92	25.92	40.461	
4,100.00	4,099.99	4,082.52	4,072.36	14.48	11.94	143.87	221.11	1,025.98	1,050.75	1,024.48	26.27	40.000	
4,150.00	4,149.97	4,131.14	4,120.94	14.65	12.10	143.84	222.49	1,026.96	1,053.14	1,026.53	26.61	39.578	
4,200.00	4,199.94	4,179.39	4,169.16	14.83	12.27	143.81	223.82	1,028.02	1,056.05	1,029.10	26.95	39.188	
4,250.00	4,249.88	4,235.69	4,225.43	15.00	12.46	143.81	225.33	1,029.19	1,059.33	1,032.01	27.32	38.780	
4,300.00	4,299.79	4,294.57	4,284.29	15.17	12.66	143.83	226.83	1,029.94	1,062.64	1,034.94	27.69	38.373	
4,350.00	4,349.67	4,350.03	4,339.73	15.35	12.85	143.88	228.02	1,030.32	1,065.96	1,037.90	28.05	37.996	
4,400.00	4,399.55	4,403.33	4,393.02	15.53	13.03	143.96	228.91	1,030.46	1,069.05	1,040.64	28.41	37.629	
4,450.00	4,449.43	4,453.38	4,443.06	15.70	13.20	144.03	229.65	1,030.56	1,072.09	1,043.33	28.76	37.283	
4,500.00	4,499.31	4,504.26	4,493.95	15.88	13.37	144.10	230.36	1,030.65	1,075.11	1,046.01	29.10	36.942	
4,550.00	4,549.19	4,555.85	4,545.53	16.05	13.55	144.18	231.03	1,030.67	1,078.07	1,048.62	29.45	36.603	
4,600.00	4,599.07	4,605.86	4,595.54	16.23	13.72	144.25	231.64	1,030.65	1,080.97	1,051.18	29.80	36.277	
4,650.00	4,648.95	4,655.21	4,644.88	16.41	13.89	144.33	232.17	1,030.67	1,083.90	1,053.76	30.14	35.960	
4,700.00	4,698.84	4,704.52	4,694.20	16.58	14.05	144.41	232.65	1,030.72	1,086.86	1,056.37	30.49	35.651	
4,750.00	4,748.72	4,753.84	4,743.51	16.76	14.22	144.49	233.13	1,030.80	1,089.84	1,059.01	30.83	35.350	
4,800.00	4,798.60	4,803.41	4,793.07	16.94	14.39	144.57	233.63	1,030.90	1,092.85	1,061.67	31.18	35.054	
4,850.00	4,848.48	4,853.02	4,842.68	17.11	14.56	144.65	234.16	1,031.00	1,095.87	1,064.35	31.52	34.765	
4,900.00	4,898.36	4,904.46	4,894.12	17.29	14.73	144.73	234.70	1,031.09	1,098.87	1,066.99	31.87	34.476	
4,950.00	4,948.24	4,956.01	4,945.67	17.47	14.91	144.81	235.16	1,031.10	1,101.79	1,069.56	32.23	34.189	
5,000.00	4,998.12	5,006.21	4,995.86	17.65	15.08	144.89	235.60	1,031.08	1,104.68	1,072.10	32.57	33.913	
5,050.00	5,048.00	5,056.56	5,046.22	17.82	15.25	144.97	236.06	1,031.04	1,107.54	1,074.62	32.92	33.641	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		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
5,100.00	5,097.88	5,107.06	5,098.72	18.00	15.43	145.05	236.53	1,030.96	1,110.39	1,077.12	33.27	33.374	
5,150.00	5,147.76	5,156.60	5,146.25	18.18	15.59	145.13	236.98	1,030.87	1,113.21	1,079.60	33.62	33.114	
5,200.00	5,197.64	5,204.13	5,193.77	18.36	15.75	145.21	237.27	1,030.89	1,116.12	1,082.16	33.96	32.869	
5,250.00	5,247.53	5,252.50	5,242.15	18.54	15.92	145.30	237.38	1,031.03	1,119.12	1,084.83	34.30	32.629	
5,300.00	5,297.41	5,302.63	5,292.28	18.71	16.09	145.40	237.46	1,031.21	1,122.15	1,087.50	34.65	32.389	
5,350.00	5,347.29	5,352.74	5,342.39	18.89	16.26	145.50	237.51	1,031.37	1,125.17	1,090.17	34.99	32.153	
5,400.00	5,397.17	5,402.83	5,392.48	19.07	16.43	145.60	237.57	1,031.53	1,128.18	1,092.83	35.34	31.922	
5,450.00	5,447.05	5,453.19	5,442.83	19.25	16.60	145.70	237.63	1,031.68	1,131.18	1,095.49	35.69	31.694	
5,500.00	5,496.93	5,503.77	5,493.42	19.43	16.77	145.79	237.70	1,031.79	1,134.15	1,098.11	36.04	31.468	
5,550.00	5,546.81	5,554.12	5,543.76	19.61	16.94	145.89	237.79	1,031.87	1,137.10	1,100.71	36.39	31.246	
5,600.00	5,596.69	5,604.33	5,593.97	19.79	17.12	145.98	237.88	1,031.93	1,140.04	1,103.30	36.74	31.027	
5,650.00	5,646.57	5,654.86	5,644.51	19.97	17.29	146.08	237.97	1,031.98	1,142.96	1,105.86	37.09	30.812	
5,700.00	5,696.45	5,705.51	5,695.16	20.15	17.46	146.17	238.10	1,031.98	1,145.85	1,108.40	37.45	30.599	
5,750.00	5,746.33	5,755.76	5,745.41	20.33	17.64	146.26	238.26	1,031.95	1,148.72	1,110.92	37.80	30.392	
5,800.00	5,796.22	5,805.95	5,795.60	20.51	17.81	146.34	238.43	1,031.91	1,151.57	1,113.43	38.15	30.188	
5,850.00	5,846.10	5,855.83	5,845.47	20.69	17.98	146.43	238.59	1,031.86	1,154.43	1,115.93	38.50	29.989	
5,900.00	5,895.98	5,905.72	5,895.36	20.87	18.15	146.52	238.69	1,031.82	1,157.28	1,118.44	38.84	29.793	
5,950.00	5,945.86	5,956.25	5,945.89	21.05	18.32	146.61	238.80	1,031.77	1,160.13	1,120.94	39.19	29.599	
6,000.00	5,995.74	6,006.78	5,996.43	21.23	18.49	146.70	238.96	1,031.68	1,162.95	1,123.41	39.54	29.408	
6,050.00	6,045.62	6,056.80	6,046.44	21.41	18.67	146.78	239.15	1,031.57	1,165.76	1,125.86	39.89	29.222	
6,100.00	6,095.50	6,106.99	6,096.63	21.59	18.84	146.86	239.37	1,031.44	1,168.56	1,128.32	40.24	29.037	
6,150.00	6,145.38	6,157.39	6,147.04	21.77	19.01	146.94	239.62	1,031.30	1,171.34	1,130.75	40.59	28.855	
6,200.00	6,195.26	6,207.90	6,197.55	21.95	19.18	147.02	239.88	1,031.12	1,174.11	1,133.17	40.94	28.676	
6,250.00	6,245.14	6,258.56	6,248.20	22.13	19.35	147.10	240.05	1,030.93	1,176.84	1,135.55	41.29	28.501	
6,300.00	6,295.02	6,309.03	6,298.67	22.31	19.52	147.19	240.12	1,030.72	1,179.55	1,137.91	41.64	28.328	
6,350.00	6,344.91	6,359.34	6,348.98	22.49	19.69	147.27	240.21	1,030.50	1,182.25	1,140.26	41.98	28.159	
6,400.00	6,394.79	6,408.28	6,397.92	22.67	19.85	147.36	240.33	1,030.27	1,184.94	1,142.61	42.33	27.994	
6,450.00	6,444.67	6,456.41	6,446.05	22.85	20.02	147.43	240.51	1,030.11	1,187.71	1,145.04	42.67	27.834	
6,500.00	6,494.55	6,505.29	6,494.92	23.03	20.18	147.51	240.72	1,030.00	1,190.54	1,147.52	43.02	27.676	
6,550.00	6,544.43	6,554.55	6,544.19	23.21	20.35	147.59	240.86	1,029.93	1,193.40	1,150.04	43.37	27.520	
6,600.00	6,594.31	6,604.43	6,594.07	23.39	20.52	147.67	240.93	1,029.89	1,196.29	1,152.57	43.71	27.366	
6,650.00	6,644.19	6,654.57	6,644.21	23.57	20.69	147.76	240.97	1,029.84	1,199.16	1,155.10	44.06	27.215	
6,700.00	6,694.07	6,705.52	6,695.15	23.75	20.86	147.85	241.00	1,029.77	1,202.02	1,157.60	44.41	27.064	
6,750.00	6,743.95	6,756.66	6,746.30	23.93	21.04	147.93	241.09	1,029.63	1,204.82	1,160.06	44.76	26.915	
6,800.00	6,793.83	6,804.91	6,794.55	24.12	21.20	148.01	241.17	1,029.51	1,207.64	1,162.53	45.11	26.772	
6,850.00	6,843.71	6,853.01	6,842.65	24.30	21.37	148.09	241.20	1,029.47	1,210.53	1,165.07	45.45	26.632	
6,900.00	6,893.60	6,902.89	6,892.53	24.48	21.54	148.18	241.20	1,029.47	1,213.46	1,167.66	45.80	26.495	
6,950.00	6,943.48	6,952.83	6,942.47	24.66	21.70	148.27	241.18	1,029.47	1,216.39	1,170.24	46.15	26.360	
7,000.00	6,993.36	7,002.95	6,992.59	24.84	21.86	148.35	241.15	1,029.47	1,219.32	1,172.83	46.49	26.230	
7,050.00	7,043.24	7,053.08	7,042.72	25.02	22.02	148.44	241.12	1,029.45	1,222.24	1,175.41	46.83	26.102	
7,100.00	7,093.12	7,102.92	7,092.56	25.20	22.18	148.53	241.07	1,029.44	1,225.16	1,177.99	47.17	25.975	
7,150.00	7,143.00	7,152.70	7,142.34	25.39	22.35	148.61	241.00	1,029.42	1,228.08	1,180.58	47.51	25.851	
7,200.00	7,192.88	7,202.16	7,191.80	25.57	22.51	148.70	240.86	1,029.43	1,231.02	1,183.17	47.84	25.729	
7,250.00	7,242.76	7,251.52	7,241.16	25.75	22.66	148.80	240.64	1,029.47	1,233.98	1,185.79	48.18	25.610	
7,300.00	7,292.64	7,300.72	7,290.36	25.93	22.82	148.89	240.41	1,029.53	1,236.97	1,188.44	48.52	25.492	
7,350.00	7,342.52	7,349.98	7,339.62	26.11	22.99	148.98	240.18	1,029.62	1,239.98	1,191.12	48.86	25.376	
7,400.00	7,392.40	7,399.34	7,388.97	26.29	23.15	149.07	239.96	1,029.73	1,243.02	1,193.82	49.20	25.262	
7,450.00	7,442.29	7,448.46	7,438.09	26.48	23.31	149.16	239.73	1,029.86	1,246.09	1,196.55	49.55	25.151	
7,500.00	7,492.17	7,497.32	7,486.95	26.66	23.47	149.25	239.51	1,030.03	1,249.20	1,199.32	49.89	25.041	
7,550.00	7,542.05	7,547.09	7,536.72	26.84	23.63	149.34	239.30	1,030.23	1,252.34	1,202.11	50.23	24.932	
7,600.00	7,591.93	7,597.66	7,587.30	27.02	23.80	149.44	239.06	1,030.42	1,255.47	1,204.89	50.58	24.823	
7,650.00	7,641.81	7,648.34	7,637.97	27.20	23.97	149.53	238.81	1,030.57	1,258.57	1,207.64	50.92	24.714	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.00 ft
Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1												Offset Well Error:	0.50 ft
Survey Program: 144-GYRO-NS-CT, 995-MWD+HDM													
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,700.00	7,691.69	7,699.07	7,688.70	27.39	24.14	149.62	238.57	1,030.69	1,261.63	1,210.36	51.27	24.607	
7,750.00	7,741.57	7,749.23	7,738.86	27.57	24.30	149.71	238.34	1,030.79	1,264.68	1,213.06	51.62	24.501	
7,800.00	7,791.45	7,799.20	7,788.83	27.75	24.47	149.80	238.11	1,030.87	1,267.72	1,215.76	51.96	24.398	
7,850.00	7,841.33	7,850.47	7,840.10	27.93	24.63	149.90	237.83	1,030.94	1,270.74	1,218.43	52.31	24.293	
7,900.00	7,891.21	7,901.94	7,891.57	28.11	24.80	149.99	237.45	1,030.95	1,273.70	1,221.04	52.66	24.188	
7,950.00	7,941.09	7,951.32	7,940.94	28.30	24.97	150.09	237.01	1,030.95	1,276.65	1,223.65	53.00	24.087	
8,000.00	7,990.98	8,000.73	7,990.35	28.48	25.13	150.19	236.53	1,030.97	1,279.61	1,226.27	53.34	23.988	
8,050.00	8,040.86	8,049.84	8,039.46	28.66	25.29	150.29	235.97	1,031.03	1,282.60	1,228.92	53.68	23.892	
8,100.00	8,090.74	8,099.12	8,088.74	28.84	25.45	150.39	235.32	1,031.12	1,285.63	1,231.60	54.03	23.796	
8,150.00	8,140.62	8,149.27	8,138.88	29.03	25.62	150.50	234.56	1,031.22	1,288.66	1,234.29	54.37	23.701	
8,200.00	8,190.50	8,199.51	8,189.12	29.21	25.78	150.62	233.71	1,031.32	1,291.68	1,236.97	54.72	23.606	
8,250.00	8,240.38	8,250.08	8,239.68	29.39	25.95	150.73	232.88	1,031.40	1,294.69	1,239.63	55.06	23.512	
8,300.00	8,290.26	8,301.04	8,290.63	29.57	26.12	150.84	232.11	1,031.43	1,297.67	1,242.26	55.41	23.418	
8,350.00	8,340.14	8,352.69	8,342.27	29.76	26.29	150.95	231.38	1,031.40	1,300.60	1,244.83	55.76	23.323	
8,400.00	8,390.02	8,401.96	8,391.54	29.94	26.46	151.05	230.75	1,031.33	1,303.48	1,247.38	56.11	23.232	
8,450.00	8,439.90	8,449.27	8,438.84	30.12	26.61	151.14	230.30	1,031.32	1,306.45	1,250.01	56.44	23.146	
8,500.00	8,489.78	8,498.41	8,487.99	30.30	26.78	151.22	229.98	1,031.37	1,309.50	1,252.72	56.79	23.060	
8,550.00	8,539.67	8,549.26	8,538.84	30.49	26.95	151.30	229.82	1,031.40	1,312.54	1,255.40	57.14	22.972	
8,600.00	8,589.55	8,598.92	8,588.50	30.67	27.11	151.38	229.81	1,031.38	1,315.55	1,258.07	57.48	22.885	
8,650.00	8,639.43	8,647.95	8,637.52	30.85	27.28	151.44	229.98	1,031.38	1,318.60	1,260.76	57.83	22.801	
8,700.00	8,689.31	8,701.68	8,691.25	31.03	27.47	151.50	230.32	1,031.34	1,321.61	1,263.41	58.20	22.709	
8,750.00	8,739.19	8,757.33	8,746.90	31.22	27.66	151.56	230.78	1,031.05	1,324.42	1,265.85	58.57	22.612	
8,800.00	8,789.07	8,813.69	8,803.26	31.40	27.86	151.61	231.37	1,030.49	1,327.00	1,268.06	58.95	22.512	
8,850.00	8,838.95	8,868.69	8,858.24	31.58	28.05	151.66	232.05	1,029.68	1,329.35	1,270.03	59.32	22.411	
8,900.00	8,888.83	8,920.45	8,910.00	31.76	28.23	151.70	232.70	1,028.80	1,331.59	1,271.91	59.67	22.314	
8,950.00	8,938.71	8,971.38	8,960.91	31.95	28.40	151.74	233.34	1,027.87	1,333.76	1,273.73	60.03	22.218	
9,000.00	8,988.59	9,021.36	9,010.88	32.13	28.58	151.78	234.08	1,026.94	1,335.93	1,275.55	60.38	22.125	
9,050.00	9,038.48	9,068.80	9,058.30	32.31	28.74	151.81	234.91	1,026.07	1,338.12	1,277.39	60.73	22.035	
9,100.00	9,088.36	9,114.27	9,103.76	32.50	28.90	151.83	235.72	1,025.37	1,340.46	1,279.40	61.07	21.951	
9,150.00	9,138.24	9,159.92	9,149.40	32.68	29.06	151.86	236.54	1,024.82	1,342.97	1,281.57	61.41	21.870	
9,200.00	9,188.12	9,205.76	9,195.23	32.86	29.22	151.89	237.30	1,024.42	1,345.64	1,283.89	61.75	21.793	
9,250.00	9,238.00	9,252.76	9,242.22	33.05	29.38	151.92	238.00	1,024.15	1,348.44	1,286.35	62.09	21.717	
9,300.00	9,287.88	9,307.88	9,297.34	33.23	29.57	151.97	238.70	1,023.79	1,351.22	1,288.75	62.46	21.632	
9,350.00	9,337.76	9,364.52	9,353.97	33.41	29.77	152.03	239.14	1,023.18	1,353.75	1,290.91	62.84	21.543	
9,400.00	9,387.64	9,418.30	9,407.74	33.59	29.96	152.09	239.32	1,022.39	1,356.08	1,292.87	63.20	21.456	
9,450.00	9,437.52	9,462.39	9,451.83	33.78	30.11	152.14	239.57	1,021.78	1,358.45	1,294.92	63.54	21.381	
9,500.00	9,487.40	9,506.52	9,495.96	33.96	30.26	152.17	240.15	1,021.33	1,361.04	1,297.18	63.87	21.310	
9,550.00	9,537.28	9,551.72	9,541.15	34.14	30.42	152.20	241.01	1,021.04	1,363.83	1,299.62	64.21	21.241	
9,600.00	9,587.17	9,597.13	9,586.55	34.33	30.58	152.22	241.96	1,020.88	1,366.78	1,302.24	64.55	21.175	
9,650.00	9,637.05	9,649.24	9,638.64	34.51	30.76	152.24	243.12	1,020.78	1,369.81	1,304.90	64.91	21.103	
9,700.00	9,686.93	9,703.73	9,693.12	34.69	30.96	152.26	244.28	1,020.50	1,372.68	1,307.40	65.28	21.026	
9,750.00	9,736.81	9,762.25	9,751.64	34.88	31.16	152.30	245.12	1,019.95	1,375.32	1,309.65	65.67	20.944	
9,800.00	9,786.69	9,818.30	9,807.68	35.06	31.35	152.37	245.27	1,019.14	1,377.65	1,311.61	66.04	20.861	
9,850.00	9,836.57	9,870.16	9,859.52	35.24	31.53	152.43	245.53	1,018.25	1,379.88	1,313.48	66.40	20.782	
9,900.00	9,886.45	9,927.28	9,916.63	35.43	31.73	152.47	246.21	1,017.11	1,381.98	1,315.21	66.77	20.697	
9,950.00	9,936.33	9,988.90	9,978.21	35.61	31.94	152.49	247.54	1,015.37	1,383.70	1,316.54	67.16	20.603	
10,000.00	9,986.21	10,032.16	10,021.44	35.79	32.09	152.50	248.70	1,014.05	1,385.32	1,317.82	67.50	20.524	
10,050.00	10,036.09	10,075.08	10,064.32	35.98	32.24	152.51	249.86	1,012.96	1,387.20	1,319.37	67.83	20.451	
10,100.00	10,085.97	10,112.25	10,101.48	36.16	32.37	152.51	250.89	1,012.26	1,389.41	1,321.26	68.14	20.389	
10,150.00	10,135.86	10,147.66	10,136.87	36.34	32.50	152.51	251.94	1,011.96	1,392.13	1,323.68	68.45	20.339	
10,200.00	10,185.74	10,183.57	10,172.76	36.53	32.63	152.51	253.10	1,012.02	1,395.38	1,326.63	68.75	20.297	
10,250.00	10,235.62	10,225.07	10,214.23	36.71	32.77	152.51	254.48	1,012.42	1,399.01	1,329.94	69.07	20.255	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		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		
10,300.00	10,285.50	10,266.53	10,255.66	36.89	32.92	152.51	255.87	1,013.06	1,402.95	1,333.56	69.39	20.218		
10,350.00	10,335.38	10,307.82	10,296.92	37.08	33.07	152.51	257.27	1,013.95	1,407.18	1,337.47	69.71	20.187		
10,400.00	10,385.26	10,349.03	10,338.09	37.26	33.22	152.51	258.67	1,015.09	1,411.72	1,341.70	70.02	20.161		
10,450.00	10,435.14	10,390.90	10,379.92	37.44	33.36	152.51	260.07	1,016.50	1,416.55	1,346.21	70.34	20.139		
10,500.00	10,485.02	10,433.72	10,422.69	37.63	33.52	152.52	261.27	1,018.17	1,421.64	1,350.98	70.66	20.120		
10,550.00	10,534.90	10,477.37	10,466.29	37.81	33.67	152.54	262.18	1,020.10	1,426.97	1,355.99	70.98	20.104		
10,600.00	10,584.78	10,524.51	10,513.37	37.99	33.84	152.59	262.69	1,022.35	1,432.43	1,361.11	71.32	20.085		
10,650.00	10,634.67	10,600.30	10,589.08	38.18	34.10	152.72	262.42	1,025.81	1,437.84	1,366.04	71.80	20.025		
10,700.00	10,684.59	10,696.57	10,685.32	38.36	34.42	152.90	260.90	1,026.79	1,440.55	1,368.21	72.34	19.913		
10,750.00	10,734.54	10,750.28	10,739.03	38.54	34.60	152.99	260.05	1,026.70	1,442.35	1,369.65	72.70	19.839		
10,800.00	10,784.52	10,797.47	10,786.21	38.72	34.76	153.04	259.56	1,026.58	1,443.55	1,370.51	73.04	19.763		
10,850.00	10,834.51	10,844.33	10,833.07	38.90	34.92	153.06	259.54	1,026.54	1,444.27	1,370.89	73.38	19.682		
10,900.00	10,884.51	10,895.98	10,884.73	39.07	35.10	87.03	259.81	1,026.51	1,444.45	1,370.72	73.74	19.589		
10,950.00	10,934.51	11,352.45	11,322.72	39.25	36.53	90.15	181.25	971.38	1,440.97	1,367.26	73.71	19.549		
11,000.00	10,984.51	11,375.91	11,341.88	39.42	36.58	90.67	168.79	966.11	1,427.94	1,353.76	74.18	19.250		
11,050.00	11,034.51	11,397.88	11,359.24	39.60	36.64	91.20	156.12	961.60	1,415.90	1,341.26	74.64	18.970		
11,100.00	11,084.51	11,422.00	11,377.60	39.77	36.70	91.83	141.12	957.12	1,404.96	1,329.88	75.08	18.712		
11,150.00	11,134.51	11,474.55	11,415.26	39.95	36.82	93.33	105.74	947.70	1,394.78	1,319.33	75.45	18.486		
11,200.00	11,184.51	11,531.95	11,452.88	40.12	36.95	95.12	63.76	936.97	1,384.86	1,309.03	75.83	18.263		
11,250.00	11,234.51	11,587.35	11,485.33	40.30	37.07	-83.03	20.23	926.03	1,375.37	1,299.14	76.23	18.042		
11,300.00	11,284.40	11,628.03	11,506.60	40.46	37.16	-82.53	-13.42	917.67	1,366.26	1,289.62	76.64	17.827		
11,350.00	11,333.85	11,660.08	11,521.83	40.61	37.23	-82.31	-40.83	911.07	1,357.64	1,280.61	77.03	17.624		
11,400.00	11,382.46	11,691.72	11,535.53	40.76	37.30	-82.08	-68.60	904.59	1,349.51	1,272.12	77.39	17.437		
11,450.00	11,429.88	11,708.00	11,542.05	40.91	37.33	-82.31	-83.15	901.28	1,341.95	1,264.25	77.70	17.271		
11,500.00	11,475.73	11,733.20	11,551.55	41.04	37.39	-82.22	-105.97	896.41	1,335.04	1,257.06	77.97	17.122		
11,550.00	11,519.68	11,751.28	11,557.98	41.16	37.43	-82.31	-122.57	893.22	1,328.95	1,250.76	78.19	16.997		
11,600.00	11,561.39	11,770.11	11,584.33	41.27	37.47	-82.35	-140.03	890.16	1,323.60	1,245.24	78.36	16.891		
11,650.00	11,600.53	11,802.00	11,574.25	41.37	37.55	-82.06	-169.99	885.61	1,319.08	1,240.54	78.54	16.795		
11,700.00	11,636.82	11,813.55	11,577.63	41.46	37.58	-82.23	-180.93	884.12	1,314.95	1,236.33	78.63	16.723		
11,750.00	11,669.98	11,844.65	11,586.55	41.53	37.65	-82.01	-210.48	880.34	1,311.29	1,232.52	78.76	16.648		
11,800.00	11,699.75	11,876.70	11,595.45	41.60	37.73	-81.86	-241.06	876.75	1,307.81	1,228.92	78.89	16.577		
11,850.00	11,725.90	11,897.00	11,600.93	41.66	37.78	-81.91	-260.50	874.64	1,304.53	1,225.56	78.97	16.519		
11,900.00	11,748.25	11,937.22	11,610.40	41.73	37.89	-81.80	-299.39	870.85	1,301.29	1,222.16	79.13	16.444		
11,950.00	11,766.61	11,966.38	11,615.67	41.82	37.97	-81.83	-327.97	868.41	1,298.32	1,219.07	79.25	16.382		
12,000.00	11,780.85	11,992.00	11,619.18	41.92	38.04	-81.92	-353.27	866.49	1,295.57	1,216.20	79.36	16.324		
12,050.00	11,790.86	12,029.16	11,622.50	42.03	38.14	-81.97	-390.20	863.98	1,292.89	1,213.36	79.53	16.257		
12,100.00	11,796.57	12,062.30	11,623.77	42.14	38.22	-82.11	-423.24	861.98	1,290.28	1,210.59	79.69	16.192		
12,150.00	11,798.00	12,103.03	11,623.59	42.25	38.34	-82.25	-463.91	859.72	1,287.62	1,207.73	79.89	16.118		
12,200.00	11,798.00	12,153.59	11,622.72	42.37	38.49	-82.20	-514.38	856.97	1,284.91	1,204.76	80.15	16.031		
12,250.00	11,798.00	12,205.07	11,622.18	42.51	38.66	-82.16	-565.78	854.16	1,282.14	1,201.70	80.44	15.940		
12,300.00	11,798.00	12,252.90	11,621.74	42.65	38.83	-82.12	-613.54	851.57	1,279.38	1,198.65	80.73	15.847		
12,350.00	11,798.00	12,300.88	11,621.13	42.80	39.00	-82.08	-661.45	849.02	1,276.71	1,195.65	81.05	15.752		
12,400.00	11,798.00	12,338.43	11,620.71	42.96	39.16	-82.05	-698.95	847.25	1,274.32	1,192.98	81.34	15.666		
12,450.00	11,798.00	12,376.60	11,620.46	43.14	39.31	-82.02	-737.10	845.84	1,272.40	1,190.74	81.66	15.582		
12,500.00	11,798.00	12,415.73	11,620.40	43.32	39.48	-82.01	-776.22	844.77	1,270.93	1,188.94	81.99	15.501		
12,550.00	11,798.00	12,455.57	11,620.52	43.53	39.66	-82.01	-816.05	844.04	1,269.86	1,187.51	82.35	15.419		
12,600.00	11,798.00	12,487.00	11,620.75	43.73	39.80	-82.02	-847.48	843.71	1,269.23	1,186.56	82.67	15.353		
12,630.58	11,798.00	12,514.17	11,621.03	43.87	39.93	-82.03	-874.64	843.67	1,269.08	1,186.14	82.94	15.302		
12,650.00	11,798.00	12,526.99	11,621.18	43.95	40.00	-82.04	-887.47	843.76	1,269.13	1,186.05	83.08	15.277		
12,700.00	11,798.00	12,560.00	11,621.61	44.18	40.16	-82.06	-920.46	844.30	1,269.72	1,186.29	83.43	15.218		
12,750.00	11,798.00	12,599.75	11,622.21	44.42	40.36	-82.10	-960.20	845.49	1,270.94	1,187.08	83.86	15.155		
12,800.00	11,798.00	12,653.07	11,622.95	44.67	40.65	-82.14	-1,013.49	847.10	1,272.21	1,187.81	84.40	15.074		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1													Offset Site Error: 0.00 ft	
Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM													Offset Well Error: 0.50 ft	
Reference		Offset		Semi Major Axis			Distance							
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)			
12,850.00	11,798.00	12,703.02	11,623.58	44.93	40.93	-82.17	-1,063.41	848.50	1,273.38	1,188.44	84.94	14.991		
12,900.00	11,798.00	12,750.40	11,624.37	45.20	41.20	-82.22	-1,110.76	849.93	1,274.64	1,189.16	85.48	14.912		
12,950.00	11,798.00	12,796.55	11,625.25	45.48	41.48	-82.27	-1,156.88	851.45	1,276.01	1,189.98	86.03	14.832		
13,000.00	11,798.00	12,841.77	11,625.70	45.77	41.76	-82.29	-1,202.07	853.05	1,277.56	1,190.97	86.59	14.755		
13,050.00	11,798.00	12,889.81	11,625.68	46.07	42.07	-82.30	-1,250.07	854.83	1,279.27	1,192.08	87.19	14.673		
13,100.00	11,798.00	12,941.10	11,625.36	46.38	42.41	-82.30	-1,301.33	856.68	1,280.96	1,193.14	87.82	14.586		
13,150.00	11,798.00	13,005.84	11,624.62	46.70	42.85	-82.28	-1,366.04	858.66	1,282.44	1,193.83	88.61	14.473		
13,200.00	11,798.00	13,071.89	11,623.74	47.02	43.32	-82.24	-1,432.07	859.65	1,283.12	1,193.70	89.42	14.349		
13,250.00	11,798.00	13,122.19	11,622.85	47.36	43.69	-82.21	-1,482.36	860.13	1,283.58	1,193.47	90.12	14.243		
13,300.00	11,798.00	13,181.77	11,621.49	47.70	44.14	-82.15	-1,541.93	860.53	1,283.95	1,193.05	90.91	14.123		
13,350.00	11,798.00	13,253.80	11,619.55	48.06	44.69	-82.06	-1,613.93	859.95	1,283.61	1,191.77	91.84	13.977		
13,400.00	11,798.00	13,311.05	11,618.72	48.42	45.15	-82.01	-1,671.16	858.96	1,282.73	1,190.07	92.65	13.845		
13,450.00	11,798.00	13,366.82	11,618.87	48.79	45.60	-82.01	-1,726.91	857.79	1,281.53	1,188.05	93.48	13.709		
13,500.00	11,798.00	13,419.58	11,619.03	49.16	46.04	-82.01	-1,779.67	856.52	1,280.19	1,185.90	94.29	13.578		
13,550.00	11,798.00	13,476.64	11,619.04	49.55	46.52	-82.00	-1,836.69	854.94	1,278.68	1,183.53	95.16	13.437		
13,600.00	11,798.00	13,535.43	11,618.94	49.94	47.02	-81.98	-1,895.45	852.90	1,276.84	1,180.80	96.05	13.294		
13,650.00	11,798.00	13,589.23	11,618.74	50.34	47.49	-81.96	-1,949.21	850.75	1,274.76	1,177.84	96.92	13.153		
13,700.00	11,798.00	13,638.80	11,618.47	50.75	47.93	-81.93	-1,998.74	848.63	1,272.55	1,174.80	97.75	13.018		
13,750.00	11,798.00	13,679.41	11,618.49	51.16	48.30	-81.92	-2,039.32	847.13	1,270.58	1,172.07	98.52	12.897		
13,800.00	11,798.00	13,719.00	11,618.84	51.58	48.66	-81.93	-2,078.89	846.00	1,268.99	1,169.71	99.28	12.783		
13,850.00	11,798.00	13,757.69	11,619.33	52.01	49.02	-81.95	-2,117.57	845.26	1,267.82	1,167.77	100.05	12.672		
13,900.00	11,798.00	13,795.43	11,619.78	52.44	49.37	-81.96	-2,155.30	844.90	1,267.13	1,166.33	100.80	12.570		
13,950.00	11,798.00	13,839.45	11,620.30	52.89	49.79	-81.99	-2,199.32	844.86	1,266.87	1,165.22	101.65	12.463		
14,000.00	11,798.00	13,889.57	11,620.88	53.33	50.27	-82.01	-2,249.43	844.87	1,266.66	1,164.09	102.57	12.349		
14,050.00	11,798.00	13,937.11	11,621.34	53.79	50.73	-82.03	-2,296.97	844.88	1,266.48	1,163.00	103.48	12.239		
14,085.55	11,798.00	13,969.75	11,621.35	54.11	51.05	-82.03	-2,329.62	844.93	1,266.44	1,162.32	104.11	12.164		
14,100.00	11,798.00	13,983.02	11,621.27	54.25	51.18	-82.03	-2,342.89	844.96	1,266.44	1,162.07	104.37	12.134		
14,150.00	11,798.00	14,034.41	11,620.63	54.71	51.69	-82.00	-2,394.27	845.08	1,266.51	1,161.17	105.34	12.023		
14,200.00	11,798.00	14,090.39	11,619.62	55.18	52.25	-81.95	-2,450.24	844.94	1,266.39	1,160.02	106.36	11.906		
14,250.00	11,798.00	14,138.49	11,618.50	55.66	52.74	-81.90	-2,498.32	844.69	1,266.16	1,158.85	107.31	11.799		
14,300.00	11,798.00	14,185.34	11,617.19	56.14	53.22	-81.84	-2,545.16	844.53	1,266.05	1,157.81	108.24	11.697		
14,314.43	11,798.00	14,198.86	11,616.77	56.28	53.35	-81.82	-2,558.67	844.50	1,266.05	1,157.54	108.51	11.667		
14,350.00	11,798.00	14,226.32	11,616.03	56.63	53.64	-81.79	-2,586.12	844.57	1,266.17	1,157.06	109.11	11.604		
14,400.00	11,798.00	14,266.16	11,615.26	57.12	54.06	-81.75	-2,625.95	844.97	1,266.68	1,156.71	109.97	11.518		
14,450.00	11,798.00	14,310.10	11,614.74	57.62	54.52	-81.74	-2,669.88	845.80	1,267.56	1,156.66	110.90	11.430		
14,500.00	11,798.00	14,359.02	11,614.10	58.11	55.04	-81.71	-2,718.78	846.81	1,268.54	1,156.64	111.90	11.336		
14,550.00	11,798.00	14,411.33	11,613.33	58.62	55.59	-81.68	-2,771.08	847.87	1,269.52	1,156.56	112.96	11.238		
14,600.00	11,798.00	14,466.91	11,612.70	59.13	56.19	-81.66	-2,826.65	848.82	1,270.32	1,156.24	114.08	11.136		
14,650.00	11,798.00	14,519.24	11,612.26	59.65	56.76	-81.65	-2,878.97	849.56	1,270.95	1,155.79	115.16	11.037		
14,700.00	11,798.00	14,570.83	11,611.85	60.17	57.32	-81.63	-2,930.56	850.22	1,271.51	1,155.28	116.23	10.939		
14,750.00	11,798.00	14,624.08	11,611.93	60.69	57.91	-81.64	-2,983.80	850.88	1,271.98	1,154.62	117.35	10.839		
14,800.00	11,798.00	14,677.35	11,613.07	61.22	58.50	-81.69	-3,037.05	851.56	1,272.31	1,153.83	118.48	10.738		
14,850.00	11,798.00	14,722.71	11,614.28	61.75	59.02	-81.75	-3,082.39	852.22	1,272.71	1,153.19	119.52	10.649		
14,900.00	11,798.00	14,769.63	11,615.52	62.29	59.55	-81.81	-3,129.29	853.02	1,273.23	1,152.66	120.58	10.559		
14,950.00	11,798.00	14,818.01	11,616.77	62.83	60.10	-81.87	-3,177.64	853.93	1,273.85	1,152.17	121.67	10.470		
15,000.00	11,798.00	14,867.26	11,618.01	63.37	60.66	-81.93	-3,226.87	854.90	1,274.52	1,151.74	122.78	10.381		
15,050.00	11,798.00	14,919.72	11,619.33	63.92	61.26	-81.99	-3,279.30	855.89	1,275.14	1,151.20	123.95	10.288		
15,100.00	11,798.00	14,969.13	11,620.58	64.47	61.84	-82.06	-3,328.69	856.75	1,275.70	1,150.63	125.07	10.200		
15,150.00	11,798.00	15,014.03	11,621.65	65.02	62.36	-82.11	-3,373.57	857.66	1,276.40	1,150.26	126.14	10.119		
15,200.00	11,798.00	15,066.04	11,622.76	65.58	62.97	-82.16	-3,425.55	858.85	1,277.26	1,149.94	127.31	10.032		
15,250.00	11,798.00	15,133.89	11,623.78	66.14	63.76	-82.21	-3,493.39	859.68	1,277.63	1,148.90	128.74	9.924		
15,300.00	11,798.00	15,194.05	11,624.20	66.70	64.47	-82.23	-3,553.55	859.67	1,277.45	1,147.42	130.03	9.824		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 144-GYRO-NS-CT, 995-MWD+HDGM													Offset Well Error:	0.50 ft
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	
15,350.00	11,798.00	15,253.44	11,624.15	67.27	65.17	-82.22	-3,612.94	859.16	1,276.89	1,145.58	131.31	9.724		
15,400.00	11,798.00	15,295.42	11,624.33	67.84	65.67	-82.23	-3,654.91	858.91	1,276.41	1,144.06	132.36	9.644		
15,450.00	11,798.00	15,341.54	11,624.76	68.42	66.22	-82.25	-3,701.03	858.76	1,276.06	1,142.60	133.47	9.561		
15,500.00	11,798.00	15,387.71	11,625.26	68.99	66.77	-82.27	-3,747.20	858.77	1,275.86	1,141.28	134.58	9.480		
15,550.00	11,798.00	15,435.38	11,625.74	69.57	67.35	-82.29	-3,794.86	858.91	1,275.81	1,140.08	135.73	9.400		
15,600.00	11,798.00	15,489.33	11,625.74	70.15	68.00	-82.29	-3,848.81	858.94	1,275.70	1,138.74	136.96	9.314		
15,650.00	11,798.00	15,550.15	11,624.83	70.74	68.73	-82.25	-3,909.63	858.56	1,275.38	1,137.08	138.30	9.222		
15,700.00	11,798.00	15,619.98	11,623.11	71.32	69.58	-82.16	-3,979.42	857.10	1,274.38	1,134.65	139.73	9.120		
15,750.00	11,798.00	15,679.81	11,621.27	71.91	70.31	-82.06	-4,039.19	855.12	1,272.81	1,131.79	141.02	9.026		
15,800.00	11,798.00	15,733.40	11,619.53	72.50	70.96	-81.97	-4,092.71	852.95	1,270.90	1,128.67	142.24	8.935		
15,850.00	11,798.00	15,780.53	11,618.57	73.10	71.54	-81.92	-4,139.79	851.18	1,269.05	1,125.66	143.38	8.851		
15,900.00	11,798.00	15,822.24	11,618.26	73.70	72.05	-81.89	-4,181.48	849.81	1,267.35	1,122.88	144.47	8.772		
15,950.00	11,798.00	15,858.59	11,618.28	74.30	72.50	-81.89	-4,217.82	849.02	1,266.15	1,120.65	145.50	8.702		
16,000.00	11,798.00	15,899.00	11,618.62	74.90	73.00	-81.90	-4,258.22	848.66	1,265.49	1,118.91	146.57	8.634		
16,050.00	11,798.00	15,938.53	11,619.24	75.50	73.49	-81.93	-4,297.75	848.66	1,265.22	1,117.58	147.65	8.569		
16,083.30	11,798.00	15,968.15	11,619.87	75.90	73.86	-81.96	-4,327.37	848.78	1,265.17	1,116.76	148.41	8.525		
16,100.00	11,798.00	15,983.01	11,620.25	76.11	74.05	-81.97	-4,342.21	848.89	1,265.18	1,116.39	148.79	8.503		
16,150.00	11,798.00	16,037.93	11,621.48	76.71	74.74	-82.03	-4,397.12	849.23	1,265.21	1,115.10	150.12	8.428		
16,200.00	11,798.00	16,096.31	11,621.70	77.32	75.47	-82.04	-4,455.50	849.08	1,264.93	1,113.45	151.47	8.351		
16,236.33	11,798.00	16,121.20	11,621.65	77.77	75.79	-82.04	-4,480.39	849.07	1,264.81	1,112.61	152.20	8.310		
16,250.00	11,798.00	16,131.54	11,621.64	77.94	75.92	-82.04	-4,490.73	849.11	1,264.82	1,112.34	152.48	8.295		
16,300.00	11,798.00	16,169.35	11,621.64	78.55	76.40	-82.04	-4,528.53	849.50	1,265.20	1,111.68	153.52	8.241		
16,350.00	11,798.00	16,211.06	11,621.76	79.17	76.93	-82.05	-4,570.24	850.31	1,266.00	1,111.38	154.62	8.188		
16,400.00	11,798.00	16,254.98	11,622.11	79.78	77.49	-82.07	-4,614.15	851.41	1,267.06	1,111.30	155.77	8.134		
16,450.00	11,798.00	16,312.21	11,622.68	80.40	78.22	-82.10	-4,671.35	852.98	1,268.24	1,111.08	157.16	8.070		
16,500.00	11,798.00	16,384.16	11,622.31	81.02	79.14	-82.09	-4,743.29	853.80	1,268.70	1,109.93	158.77	7.991		
16,550.00	11,798.00	16,424.72	11,622.29	81.65	79.66	-82.09	-4,783.85	854.18	1,269.01	1,109.13	159.88	7.937		
16,600.00	11,798.00	16,470.76	11,622.86	82.27	80.25	-82.12	-4,829.88	854.85	1,269.52	1,108.44	161.08	7.881		
16,650.00	11,798.00	16,554.32	11,624.20	82.90	81.33	-82.18	-4,913.42	855.08	1,269.41	1,106.52	162.89	7.793		
16,700.00	11,798.00	16,598.42	11,624.52	83.53	81.89	-82.19	-4,957.52	854.60	1,268.70	1,104.63	164.07	7.733		
16,750.00	11,798.00	16,638.53	11,624.19	84.16	82.41	-82.17	-4,997.63	854.39	1,268.36	1,103.18	165.18	7.679		
16,768.08	11,798.00	16,653.04	11,623.92	84.38	82.60	-82.16	-5,012.13	854.37	1,268.33	1,102.76	165.58	7.660		
16,800.00	11,798.00	16,679.69	11,623.29	84.79	82.94	-82.13	-5,038.78	854.41	1,268.40	1,102.11	166.29	7.628		
16,850.00	11,798.00	16,721.73	11,622.11	85.42	83.49	-82.08	-5,080.80	854.67	1,268.77	1,101.35	167.42	7.578		
16,900.00	11,798.00	16,767.14	11,620.60	86.05	84.08	-82.02	-5,126.18	855.19	1,269.43	1,100.84	168.59	7.530		
16,950.00	11,798.00	16,822.39	11,618.68	86.69	84.80	-81.93	-5,181.40	855.74	1,270.03	1,100.09	169.94	7.473		
17,000.00	11,798.00	16,876.48	11,616.86	87.33	85.51	-81.85	-5,235.45	856.07	1,270.44	1,099.17	171.26	7.418		
17,050.00	11,798.00	16,929.64	11,615.43	87.97	86.21	-81.79	-5,288.60	856.30	1,270.72	1,098.13	172.58	7.363		
17,100.00	11,798.00	16,990.90	11,613.74	88.60	87.01	-81.71	-5,349.83	856.25	1,270.75	1,096.72	174.02	7.302		
17,150.00	11,798.00	17,054.49	11,610.83	89.25	87.84	-81.58	-5,413.35	855.36	1,270.25	1,094.78	175.47	7.239		
17,200.00	11,798.00	17,095.54	11,609.44	89.89	88.38	-81.51	-5,454.37	854.91	1,269.80	1,093.19	176.60	7.190		
17,250.00	11,798.00	17,144.14	11,608.39	90.53	89.01	-81.46	-5,502.96	854.55	1,269.46	1,091.60	177.86	7.138		
17,300.00	11,798.00	17,200.79	11,607.42	91.18	89.76	-81.41	-5,559.60	854.00	1,268.97	1,089.74	179.23	7.080		
17,350.00	11,798.00	17,276.20	11,605.74	91.82	90.75	-81.32	-5,634.97	852.42	1,268.03	1,087.18	180.84	7.012		
17,400.00	11,798.00	17,341.02	11,603.03	92.47	91.60	-81.18	-5,699.66	849.43	1,265.88	1,083.62	182.26	6.945		
17,450.00	11,798.00	17,381.87	11,601.10	93.12	92.13	-81.08	-5,740.43	847.58	1,263.86	1,080.45	183.41	6.891		
17,500.00	11,798.00	17,415.00	11,599.52	93.77	92.57	-81.00	-5,773.49	846.28	1,262.24	1,077.78	184.46	6.843		
17,550.00	11,798.00	17,452.09	11,597.90	94.42	93.06	-80.92	-5,810.54	845.30	1,261.19	1,075.65	185.54	6.797		
17,593.77	11,798.00	17,479.42	11,596.89	94.99	93.42	-80.87	-5,837.85	845.03	1,260.91	1,074.50	186.41	6.764		
17,600.00	11,798.00	17,483.32	11,596.76	95.07	93.47	-80.87	-5,841.74	845.03	1,260.91	1,074.39	186.53	6.760		
17,650.00	11,798.00	17,516.71	11,595.79	95.72	93.91	-80.82	-5,875.11	845.28	1,261.37	1,073.85	187.52	6.726		
17,700.00	11,798.00	17,562.68	11,594.67	96.38	94.53	-80.78	-5,921.07	846.00	1,262.20	1,073.46	188.74	6.687		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 144-GYRO-NS-CT. 995-MWD+HDM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
17,750.00	11,798.00	17,810.56	11,593.68	97.03	95.17	-80.74	-5,968.93	846.92	1,263.19	1,073.19	190.00	6.648	
17,800.00	11,798.00	17,875.35	11,592.33	97.69	96.04	-80.69	-6,033.70	847.80	1,263.89	1,072.33	191.56	6.598	
17,850.00	11,798.00	17,738.32	11,591.17	98.35	96.88	-80.63	-6,096.65	847.96	1,264.03	1,070.96	193.08	6.547	
17,900.00	11,798.00	17,800.25	11,591.46	99.00	97.71	-80.64	-6,158.58	847.75	1,263.70	1,069.11	194.59	6.494	
17,950.00	11,798.00	17,858.68	11,592.43	99.66	98.49	-80.68	-6,217.00	847.19	1,262.96	1,066.92	196.04	6.442	
18,000.00	11,798.00	17,910.82	11,593.37	100.32	99.19	-80.72	-6,269.13	846.42	1,261.94	1,064.54	197.41	6.393	
18,050.00	11,798.00	17,955.94	11,593.62	100.99	99.79	-80.72	-6,314.24	845.76	1,261.05	1,062.39	198.66	6.348	
18,100.00	11,798.00	17,998.42	11,593.24	101.65	100.36	-80.70	-6,356.72	845.21	1,260.36	1,060.51	199.85	6.306	
18,150.00	11,798.00	18,036.14	11,592.49	102.31	100.87	-80.66	-6,394.43	844.99	1,260.11	1,059.14	200.97	6.270	
18,151.40	11,798.00	18,037.19	11,592.46	102.33	100.89	-80.66	-6,395.48	844.99	1,260.11	1,059.11	201.00	6.269	
18,200.00	11,798.00	18,073.84	11,591.38	102.97	101.38	-80.61	-6,432.11	845.09	1,260.34	1,058.28	202.05	6.238	
18,250.00	11,798.00	18,107.18	11,590.20	103.64	101.83	-80.56	-6,465.43	845.51	1,261.13	1,058.08	203.05	6.211	
18,300.00	11,798.00	18,139.65	11,589.02	104.30	102.27	-80.52	-6,497.87	846.38	1,262.61	1,058.62	203.99	6.190	
18,350.00	11,798.00	18,175.00	11,587.71	104.97	102.75	-80.47	-6,533.16	847.84	1,264.79	1,059.82	204.97	6.171	
18,400.00	11,798.00	18,216.90	11,586.57	105.64	103.33	-80.43	-6,574.98	850.01	1,267.43	1,061.33	206.10	6.150	
18,450.00	11,798.00	18,262.91	11,586.25	106.30	103.96	-80.44	-6,620.91	852.69	1,270.24	1,062.89	207.35	6.126	
18,500.00	11,798.00	18,321.68	11,586.72	106.97	104.77	-80.48	-6,679.58	856.19	1,272.98	1,064.05	208.93	6.093	
18,550.00	11,798.00	18,382.44	11,587.42	107.64	105.60	-80.54	-6,740.26	859.33	1,275.30	1,064.75	210.54	6.057	
18,600.00	11,798.00	18,436.64	11,586.91	108.31	106.35	-80.53	-6,794.41	861.65	1,277.36	1,065.38	211.98	6.026	
18,650.00	11,798.00	18,497.30	11,585.35	108.98	107.18	-80.48	-6,855.00	863.72	1,279.13	1,065.60	213.53	5.990	
18,700.00	11,798.00	18,562.18	11,584.28	109.65	108.07	-80.44	-6,919.86	865.36	1,280.38	1,065.23	215.16	5.951	
18,750.00	11,798.00	18,633.97	11,582.85	110.33	109.05	-80.38	-6,991.63	866.06	1,280.90	1,064.03	216.87	5.906	
18,800.00	11,798.00	18,697.57	11,581.00	111.00	109.91	-80.29	-7,055.20	865.66	1,280.70	1,062.31	218.39	5.864	
18,850.00	11,798.00	18,759.00	11,579.17	111.67	110.75	-80.21	-7,116.59	864.69	1,280.04	1,060.18	219.86	5.822	
18,900.00	11,798.00	18,797.26	11,577.62	112.35	111.27	-80.13	-7,154.82	864.13	1,279.50	1,058.51	220.99	5.790	
18,950.00	11,798.00	18,840.32	11,575.41	113.02	111.86	-80.03	-7,197.82	863.62	1,279.22	1,057.05	222.17	5.758	
19,000.00	11,798.00	18,896.11	11,572.41	113.70	112.62	-79.89	-7,253.52	862.94	1,278.96	1,055.42	223.54	5.721	
19,050.00	11,798.00	18,944.25	11,570.09	114.37	113.27	-79.78	-7,301.60	862.23	1,278.53	1,053.73	224.80	5.688	
19,072.40	11,798.00	18,959.11	11,569.36	114.67	113.48	-79.75	-7,316.44	862.09	1,278.46	1,053.20	225.26	5.676	
19,100.00	11,798.00	18,977.42	11,568.44	115.05	113.73	-79.71	-7,334.73	862.04	1,278.56	1,052.74	225.82	5.662	
19,150.00	11,798.00	19,010.58	11,566.68	115.73	114.18	-79.63	-7,367.84	862.28	1,279.26	1,052.45	226.81	5.640	
19,200.00	11,798.00	19,054.35	11,564.20	116.40	114.79	-79.53	-7,411.54	863.07	1,280.52	1,052.54	227.98	5.617	
19,250.00	11,798.00	19,111.42	11,561.00	117.08	115.57	-79.39	-7,468.51	863.94	1,281.65	1,052.25	229.40	5.587	
19,300.00	11,798.00	19,151.66	11,558.97	117.76	116.13	-79.31	-7,508.69	864.57	1,282.77	1,052.26	230.51	5.565	
19,350.00	11,798.00	19,187.17	11,557.81	118.44	116.62	-79.26	-7,544.17	865.64	1,284.42	1,052.90	231.52	5.548	
19,400.00	11,798.00	19,223.25	11,557.28	119.12	117.12	-79.25	-7,580.20	867.27	1,286.65	1,054.10	232.54	5.533	
19,450.00	11,798.00	19,264.27	11,557.06	119.80	117.69	-79.26	-7,621.16	869.55	1,289.30	1,055.61	233.68	5.517	
19,500.00	11,798.00	19,305.26	11,557.02	120.48	118.27	-79.28	-7,662.06	872.15	1,292.30	1,057.48	234.82	5.503	
19,550.00	11,798.00	19,377.36	11,556.70	121.16	119.27	-79.30	-7,734.04	876.44	1,295.17	1,058.41	236.76	5.470	
19,600.00	11,798.00	19,439.53	11,555.70	121.85	120.14	-79.28	-7,796.15	878.91	1,297.11	1,058.71	238.40	5.441	
19,650.00	11,798.00	19,489.76	11,555.35	122.53	120.84	-79.28	-7,846.34	880.86	1,298.95	1,059.18	239.76	5.418	
19,700.00	11,798.00	19,551.17	11,555.18	123.21	121.70	-79.29	-7,907.71	883.07	1,300.62	1,059.24	241.38	5.388	
19,750.00	11,798.00	19,617.01	11,554.06	123.90	122.61	-79.25	-7,973.52	884.49	1,301.71	1,058.67	243.04	5.356	
19,800.00	11,798.00	19,673.60	11,552.92	124.58	123.40	-79.20	-8,030.10	885.24	1,302.42	1,057.92	244.50	5.327	
19,850.00	11,798.00	19,722.85	11,551.99	125.27	124.08	-79.16	-8,079.34	885.67	1,302.91	1,057.08	245.83	5.300	
19,900.00	11,798.00	19,767.12	11,551.64	125.95	124.70	-79.15	-8,123.60	886.33	1,303.58	1,056.50	247.08	5.276	
19,950.00	11,798.00	19,833.58	11,551.68	126.64	125.62	-79.16	-8,190.05	887.36	1,304.25	1,055.51	248.74	5.243	
20,000.00	11,798.00	19,907.84	11,551.14	127.32	126.65	-79.13	-8,264.30	886.83	1,303.79	1,053.33	250.46	5.206	
20,050.00	11,798.00	19,964.35	11,549.95	128.01	127.42	-79.07	-8,320.79	885.71	1,302.89	1,051.01	251.87	5.173	
20,100.00	11,798.00	20,021.75	11,548.21	128.70	128.21	-78.98	-8,378.14	884.16	1,301.72	1,048.45	253.27	5.140	
20,150.00	11,798.00	20,079.42	11,546.48	129.38	129.01	-78.89	-8,435.76	882.27	1,300.26	1,045.61	254.65	5.106	
20,200.00	11,798.00	20,114.45	11,545.60	130.07	129.49	-78.84	-8,470.76	881.30	1,298.99	1,043.19	255.81	5.078	

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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 336H - Wellbore #1 - Wellbore #1												Offset Site Error:	0 00 ft
Survey Program: 144-GYRO-NS-CT, 99S-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
20,250.00	11,798.00	20,151.78	11,544.93	130.76	130.01	-78.81	-8,508.08	880.66	1,298.21	1,041.24	256.97	5.052	
20,300.00	11,798.00	20,196.36	11,544.47	131.45	130.62	-78.78	-8,552.66	880.36	1,297.83	1,039.59	258.23	5.026	
20,350.00	11,798.00	20,246.51	11,544.37	132.14	131.32	-78.78	-8,602.80	880.12	1,297.49	1,037.89	259.60	4.998	Alert
20,400.00	11,798.00	20,313.91	11,544.60	132.83	132.25	-78.78	-8,670.20	879.53	1,296.93	1,035.72	261.21	4.965	Alert
20,450.00	11,798.00	20,387.14	11,544.63	133.52	133.26	-78.76	-8,743.41	877.53	1,295.44	1,032.61	262.82	4.929	Alert
20,500.00	11,798.00	20,456.72	11,544.80	134.21	134.22	-78.74	-8,812.92	874.51	1,293.15	1,028.82	264.33	4.892	Alert
20,550.00	11,798.00	20,494.50	11,544.67	134.90	134.74	-78.72	-8,850.65	872.74	1,290.76	1,025.17	265.58	4.860	Alert
20,600.00	11,798.00	20,533.90	11,544.04	135.59	135.28	-78.68	-8,890.02	871.12	1,288.77	1,021.95	266.81	4.830	Alert
20,650.00	11,798.00	20,572.25	11,543.01	136.28	135.81	-78.62	-8,928.33	869.79	1,287.20	1,019.19	268.01	4.803	Alert
20,700.00	11,798.00	20,610.02	11,541.83	136.97	136.33	-78.56	-8,966.07	868.81	1,286.11	1,016.93	269.18	4.778	Alert
20,750.00	11,798.00	20,649.85	11,540.43	137.67	136.88	-78.49	-9,005.86	868.14	1,285.48	1,015.13	270.35	4.755	Alert
20,800.00	11,798.00	20,703.78	11,538.50	138.36	137.63	-78.40	-9,059.75	867.30	1,284.95	1,013.23	271.71	4.729	Alert
20,850.00	11,798.00	20,738.00	11,537.31	139.05	138.11	-78.34	-9,093.95	866.68	1,284.40	1,011.60	272.79	4.708	Alert
20,875.17	11,798.00	20,764.97	11,536.53	139.40	138.49	-78.30	-9,120.91	866.38	1,284.19	1,010.70	273.49	4.696	Alert
20,879.66	11,798.00	20,767.76	11,536.47	139.46	138.53	-78.30	-9,123.69	866.37	1,284.19	1,010.61	273.58	4.694	Alert
20,900.00	11,798.00	20,780.39	11,536.21	139.74	138.70	-78.29	-9,136.33	866.39	1,284.25	1,010.25	274.00	4.687	Alert
20,950.00	11,798.00	20,811.46	11,535.85	140.44	139.14	-78.28	-9,167.38	866.82	1,284.92	1,009.92	274.99	4.673	Alert
21,000.00	11,798.00	20,850.43	11,535.88	141.13	139.68	-78.29	-9,206.33	868.04	1,286.28	1,010.14	276.14	4.658	Alert
21,050.00	11,798.00	20,907.34	11,536.06	141.83	140.49	-78.31	-9,263.22	869.78	1,287.61	1,009.92	277.69	4.637	Alert
21,100.00	11,798.00	20,963.72	11,536.09	142.52	141.28	-78.32	-9,319.58	871.16	1,288.68	1,009.47	279.21	4.615	Alert
21,150.00	11,798.00	21,019.80	11,535.32	143.22	142.07	-78.30	-9,375.65	872.10	1,289.51	1,008.82	280.69	4.594	Alert
21,200.00	11,798.00	21,080.93	11,534.57	143.91	142.93	-78.27	-9,436.77	872.74	1,290.01	1,007.75	282.26	4.570	Alert
21,250.00	11,798.00	21,140.68	11,534.97	144.61	143.77	-78.29	-9,496.52	873.07	1,290.08	1,006.27	283.82	4.545	Alert
21,300.00	11,798.00	21,198.02	11,535.13	145.30	144.57	-78.29	-9,553.86	872.98	1,289.84	1,004.53	285.31	4.521	Alert
21,350.00	11,798.00	21,259.44	11,534.85	146.00	145.43	-78.27	-9,615.27	872.35	1,289.26	1,002.42	286.84	4.495	Alert
21,400.00	11,798.00	21,322.15	11,534.33	146.69	146.30	-78.23	-9,677.97	871.04	1,288.19	999.85	288.34	4.468	Alert
21,450.00	11,798.00	21,381.25	11,533.74	147.39	146.85	-78.20	-9,717.06	870.25	1,287.19	997.64	289.56	4.445	Alert
21,500.00	11,798.00	21,404.98	11,532.80	148.09	147.46	-78.15	-9,760.76	869.48	1,286.42	995.61	290.81	4.424	Alert
21,550.00	11,798.00	21,449.13	11,531.38	148.79	148.08	-78.08	-9,804.89	868.81	1,285.88	993.84	292.04	4.403	Alert
21,600.00	11,798.00	21,493.24	11,529.38	149.48	148.69	-77.99	-9,848.95	868.23	1,285.58	992.32	293.25	4.384	Alert
21,650.00	11,798.00	21,541.18	11,526.87	150.18	149.36	-77.87	-9,896.82	867.68	1,285.43	990.93	294.51	4.365	Alert
21,700.00	11,798.00	21,589.49	11,524.46	150.88	150.04	-77.76	-9,945.07	867.22	1,285.36	989.59	295.77	4.346	Alert
21,750.00	11,798.00	21,643.32	11,521.76	151.58	150.79	-77.64	-9,998.82	866.66	1,285.25	988.15	297.11	4.326	Alert
21,800.00	11,798.00	21,699.92	11,518.67	152.28	151.59	-77.49	-10,055.34	865.80	1,284.98	986.51	298.47	4.305	Alert
21,850.00	11,798.00	21,757.71	11,515.13	152.98	152.39	-77.33	-10,113.00	864.38	1,284.30	984.49	299.81	4.284	Alert
21,896.18	11,798.00	21,785.00	11,513.43	153.62	152.77	-77.24	-10,140.23	863.66	1,283.76	983.04	300.72	4.269	Alert
21,900.00	11,798.00	21,785.00	11,513.43	153.67	152.77	-77.24	-10,140.23	863.66	1,283.77	983.01	300.76	4.268	Alert
21,950.00	11,798.00	21,785.00	11,513.43	154.37	152.77	-77.24	-10,140.23	863.66	1,284.89	983.84	301.06	4.268	Alert, SF
22,000.00	11,798.00	21,785.00	11,513.43	155.07	152.77	-77.24	-10,140.23	863.66	1,287.96	987.02	300.93	4.280	Alert
22,050.00	11,798.00	21,785.00	11,513.43	155.77	152.77	-77.24	-10,140.23	863.66	1,292.95	992.54	300.41	4.304	Alert
22,087.66	11,798.00	21,785.00	11,513.43	156.30	152.77	-77.24	-10,140.23	863.66	1,297.97	998.22	299.75	4.330	Alert

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 149-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
0.00	0.00	0.00	0.00	0.50	0.50	102.48	-194.43	878.75	900.01				
50.00	50.00	51.52	51.52	0.50	0.51	102.48	-194.43	878.67	899.93	898.93	1.01	892.970	
100.00	100.00	104.20	104.20	0.52	0.52	102.48	-194.45	878.43	899.71	898.67	1.04	864.155	
150.00	150.00	156.88	156.88	0.59	0.55	102.49	-194.47	878.03	899.34	898.20	1.14	787.671	
200.00	200.00	202.80	202.80	0.70	0.65	102.49	-194.48	877.75	899.04	897.69	1.35	665.216	
250.00	250.00	251.56	251.56	0.84	0.77	102.49	-194.46	877.61	898.90	897.29	1.61	558.263	
300.00	300.00	305.78	305.78	0.99	0.93	102.50	-194.47	877.31	898.64	896.72	1.92	468.906	
350.00	350.00	357.92	357.91	1.15	1.09	102.51	-194.51	876.80	898.16	895.93	2.24	401.546	
400.00	400.00	408.03	408.02	1.31	1.25	102.52	-194.53	876.28	897.66	895.10	2.56	350.276	
450.00	450.00	457.74	457.73	1.48	1.42	102.52	-194.55	875.76	897.16	894.26	2.90	309.896	
500.00	500.00	507.20	507.19	1.65	1.59	102.54	-194.65	875.26	896.68	893.45	3.23	277.455	
550.00	550.00	557.06	557.04	1.82	1.76	102.55	-194.80	874.76	896.22	892.65	3.57	250.784	
600.00	600.00	607.06	607.04	1.99	1.93	102.57	-194.95	874.26	895.77	891.85	3.92	228.578	
650.00	650.00	656.29	656.27	2.16	2.10	102.59	-195.09	873.79	895.33	891.07	4.26	209.997	
700.00	700.00	705.39	705.37	2.34	2.27	102.60	-195.16	873.38	894.95	890.34	4.61	194.159	
750.00	750.00	754.50	754.47	2.51	2.44	102.60	-195.18	873.04	894.61	889.65	4.96	180.495	
800.00	800.00	803.61	803.58	2.69	2.62	102.60	-195.14	872.76	894.32	889.02	5.30	168.595	
850.00	850.00	854.34	854.31	2.87	2.79	102.61	-195.18	872.46	894.04	888.38	5.66	157.995	
900.00	900.00	905.06	905.03	3.04	2.97	102.63	-195.43	872.07	893.72	887.71	6.01	148.619	
950.00	950.00	954.51	954.48	3.22	3.15	102.65	-195.71	871.68	893.40	887.03	6.36	140.378	
1,000.00	1,000.00	1,006.48	1,006.45	3.40	3.33	102.67	-195.95	871.26	893.06	886.33	6.72	132.801	
1,050.00	1,050.00	1,060.16	1,060.13	3.58	3.52	102.69	-196.09	870.65	892.53	885.44	7.09	125.849	
1,100.00	1,100.00	1,110.07	1,110.03	3.75	3.70	102.71	-196.28	869.97	891.91	884.46	7.45	119.773	
1,150.00	1,150.00	1,160.58	1,160.53	3.93	3.88	102.75	-196.66	869.24	891.28	883.48	7.80	114.213	
1,200.00	1,200.00	1,213.10	1,213.04	4.11	4.06	102.79	-197.18	868.34	890.56	882.39	8.17	109.031	
1,250.00	1,250.00	1,264.37	1,264.30	4.29	4.24	102.84	-197.76	867.31	889.71	881.18	8.53	104.326	
1,300.00	1,300.00	1,313.87	1,313.78	4.46	4.42	102.89	-198.25	866.34	888.86	879.97	8.88	100.068	
1,350.00	1,350.00	1,362.46	1,362.36	4.64	4.59	102.92	-198.59	865.45	888.05	878.81	9.23	96.176	
1,400.00	1,400.00	1,410.32	1,410.22	4.82	4.76	102.94	-198.64	864.76	887.35	877.77	9.58	92.608	
1,450.00	1,450.00	1,460.59	1,460.49	5.00	4.94	102.93	-198.36	864.18	886.73	876.79	9.94	89.235	
1,500.00	1,500.00	1,512.39	1,512.28	5.18	5.12	102.90	-197.77	863.57	886.03	875.73	10.30	86.049	
1,550.00	1,550.00	1,563.72	1,563.60	5.36	5.30	102.85	-196.86	862.94	885.23	874.58	10.65	83.095	
1,600.00	1,600.00	1,614.92	1,614.78	5.53	5.48	102.78	-195.60	862.32	884.37	873.36	11.01	80.332	
1,650.00	1,650.00	1,663.52	1,663.35	5.71	5.65	102.69	-194.02	861.82	883.51	872.15	11.35	77.811	
1,700.00	1,700.00	1,712.28	1,712.07	5.89	5.81	102.56	-192.01	861.49	882.73	871.03	11.70	75.443	
1,750.00	1,750.00	1,763.20	1,762.92	6.07	5.99	102.41	-189.44	861.26	881.96	869.91	12.05	73.169	
1,800.00	1,800.00	1,814.21	1,813.84	6.25	6.16	102.21	-186.37	861.08	881.14	868.73	12.41	71.018	
1,850.00	1,850.00	1,865.64	1,865.15	6.43	6.34	101.99	-182.90	860.89	880.26	867.49	12.76	68.969	
1,900.00	1,900.00	1,919.19	1,918.55	6.61	6.53	101.75	-178.94	860.65	879.27	866.15	13.13	66.984	
1,950.00	1,950.00	1,975.81	1,975.01	6.78	6.72	101.48	-174.64	860.03	877.97	864.47	13.50	65.031	
2,000.00	2,000.00	2,030.78	2,029.80	6.96	6.91	101.22	-170.39	859.05	876.33	862.46	13.87	63.179	
2,050.00	2,050.00	2,085.13	2,083.97	7.14	7.10	100.96	-166.12	857.81	874.45	860.21	14.24	61.413	
2,100.00	2,100.00	2,138.43	2,137.08	7.32	7.29	100.71	-161.91	856.34	872.35	857.75	14.60	59.730	
2,150.00	2,150.00	2,190.46	2,188.93	7.50	7.48	100.46	-157.80	854.72	870.08	855.11	14.97	58.132	
2,200.00	2,200.00	2,238.83	2,237.13	7.68	7.65	100.24	-154.08	853.19	867.83	852.51	15.32	56.650	
2,250.00	2,250.00	2,287.40	2,285.54	7.86	7.82	100.02	-150.49	851.71	865.67	850.00	15.67	55.238	
2,300.00	2,300.00	2,336.35	2,334.34	8.04	8.00	99.81	-146.99	850.25	863.59	847.56	16.03	53.888	
2,350.00	2,350.00	2,384.76	2,382.62	8.22	8.17	99.61	-143.65	848.85	861.58	845.20	16.38	52.605	
2,400.00	2,400.00	2,432.25	2,429.99	8.39	8.34	99.41	-140.53	847.56	859.69	842.96	16.73	51.393	
2,450.00	2,450.00	2,480.76	2,478.39	8.57	8.52	99.23	-137.49	846.35	857.95	840.87	17.08	50.228	
2,500.00	2,500.00	2,530.93	2,528.45	8.75	8.70	99.03	-134.31	845.11	856.23	838.79	17.44	49.098	
2,550.00	2,550.00	2,579.80	2,577.20	8.93	8.87	98.83	-131.12	843.92	854.52	836.72	17.79	48.024	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 149-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		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	2,600.00	2,627.36	2,624.63	9.11	9.04	98.62	-127.81	842.91	852.93	834.79	18.14	47.009		
2,650.00	2,650.00	2,674.06	2,671.19	9.29	9.21	98.40	-124.37	842.09	851.51	833.02	18.49	46.049		
2,700.00	2,700.00	2,719.94	2,716.95	9.47	9.38	98.18	-120.99	841.48	850.33	831.49	18.84	45.143		
2,750.00	2,750.00	2,768.50	2,765.37	9.65	9.55	97.95	-117.44	841.04	849.36	830.17	19.19	44.261		
2,800.00	2,800.00	2,820.53	2,817.25	9.83	9.74	97.69	-113.42	840.51	848.33	828.78	19.56	43.381		
2,850.00	2,850.00	2,870.90	2,867.44	10.00	9.92	97.42	-109.35	839.93	847.22	827.31	19.92	42.540		
2,900.00	2,900.00	2,920.20	2,916.58	10.18	10.10	97.15	-105.36	839.38	846.15	825.88	20.27	41.738		
2,950.00	2,950.00	2,967.58	2,963.81	10.36	10.27	96.90	-101.58	838.91	845.17	824.55	20.62	40.981		
3,000.00	3,000.00	3,014.16	3,010.25	10.54	10.44	96.67	-98.04	838.61	844.40	823.43	20.97	40.265		
3,050.00	3,050.00	3,063.50	3,059.45	10.72	10.61	96.42	-94.38	838.42	843.78	822.45	21.33	39.562		
3,100.00	3,100.00	3,114.36	3,110.16	10.90	10.80	96.15	-90.36	838.20	843.13	821.44	21.69	38.870		
3,150.00	3,150.00	3,169.15	3,164.74	11.08	11.00	95.84	-85.68	837.83	842.35	820.28	22.07	38.170		
3,200.00	3,200.00	3,225.13	3,220.48	11.26	11.20	95.49	-80.47	837.11	841.25	818.80	22.45	37.472		
3,250.00	3,250.00	3,283.48	3,278.55	11.44	11.42	95.12	-74.89	835.85	839.72	816.88	22.84	36.767		
3,300.00	3,300.00	3,338.69	3,333.48	11.62	11.62	94.78	-69.70	834.14	837.76	814.54	23.22	36.084		
3,350.00	3,350.00	3,390.25	3,384.81	11.80	11.81	94.48	-65.16	832.33	835.65	812.07	23.58	35.433		
3,400.00	3,400.00	3,439.76	3,434.13	11.97	11.99	94.21	-61.14	830.50	833.50	809.55	23.94	34.809		
3,450.00	3,450.00	3,488.03	3,482.22	12.15	12.17	93.97	-57.54	828.78	831.44	807.14	24.30	34.213		
3,500.00	3,500.00	3,535.87	3,529.92	12.33	12.34	93.75	-54.22	827.14	829.50	804.84	24.66	33.641		
3,550.00	3,550.00	3,583.47	3,577.39	12.51	12.52	93.53	-50.92	825.64	827.70	802.69	25.01	33.092		
3,600.00	3,600.00	3,630.68	3,624.46	12.69	12.69	93.31	-47.61	824.29	826.06	800.70	25.36	32.567		
3,650.00	3,650.00	3,677.67	3,671.31	12.87	12.86	93.07	-44.20	823.12	824.61	798.89	25.72	32.064		
3,700.00	3,700.00	3,726.25	3,719.74	13.05	13.04	92.82	-40.53	822.05	823.31	797.24	26.08	31.575		
3,750.00	3,750.00	3,775.73	3,769.06	13.23	13.22	92.55	-36.56	821.01	822.07	795.63	26.44	31.097		
3,800.00	3,800.00	3,826.16	3,819.30	13.41	13.41	92.26	-32.37	819.95	820.84	794.04	26.80	30.628		
3,850.00	3,850.00	3,876.95	3,869.90	13.59	13.60	91.97	-28.21	818.83	819.58	792.41	27.17	30.170		
3,900.00	3,900.00	3,929.29	3,922.06	13.77	13.79	91.68	-24.03	817.56	818.24	790.70	27.54	29.715		
3,950.00	3,950.00	3,982.00	3,974.59	13.94	13.98	91.40	-19.92	816.10	816.75	788.84	27.91	29.266		
4,000.00	4,000.00	4,036.55	4,028.95	14.12	14.18	91.11	-15.75	814.33	815.04	786.76	28.28	28.816		
4,050.00	4,050.00	4,088.95	4,081.17	14.30	14.38	156.87	-11.82	812.36	813.33	784.68	28.65	28.388		
4,100.00	4,099.99	4,137.07	4,129.13	14.48	14.55	156.66	-8.42	810.55	812.16	783.16	29.01	28.000		
4,150.00	4,149.97	4,186.63	4,178.55	14.65	14.74	156.47	-5.14	808.79	811.59	782.23	29.36	27.641		
4,193.86	4,193.81	4,232.33	4,224.13	14.80	14.91	156.31	-2.14	807.09	811.45	781.77	29.68	27.340 CC		
4,200.00	4,199.94	4,238.73	4,230.50	14.83	14.93	156.29	-1.72	806.84	811.45	781.73	29.72	27.299		
4,250.00	4,249.88	4,289.26	4,280.88	15.00	15.11	156.12	1.61	804.85	811.71	781.63	30.08	26.983 ES		
4,300.00	4,299.79	4,338.53	4,330.02	15.17	15.30	155.99	4.73	802.93	812.50	782.06	30.44	26.694		
4,350.00	4,349.67	4,388.34	4,379.70	15.35	15.48	155.87	7.76	801.02	813.71	782.92	30.79	26.424		
4,400.00	4,399.55	4,438.48	4,429.71	15.53	15.66	155.76	10.71	799.09	814.94	783.79	31.15	26.161		
4,450.00	4,449.43	4,490.30	4,481.40	15.70	15.85	155.65	13.79	797.05	816.13	784.62	31.51	25.898		
4,500.00	4,499.31	4,542.85	4,533.79	15.88	16.05	155.50	17.33	794.82	817.17	785.29	31.88	25.634		
4,550.00	4,549.19	4,593.68	4,584.42	16.05	16.24	155.33	21.15	792.54	818.11	785.87	32.24	25.376		
4,600.00	4,599.07	4,644.32	4,634.84	16.23	16.42	155.14	25.30	790.23	819.01	786.40	32.60	25.122		
4,650.00	4,648.95	4,696.41	4,686.68	16.41	16.62	154.94	29.71	787.75	819.82	786.86	32.97	24.868		
4,700.00	4,698.84	4,748.51	4,738.54	16.58	16.81	154.74	34.06	785.14	820.52	787.19	33.33	24.615		
4,750.00	4,748.72	4,792.64	4,782.44	16.76	16.98	154.55	37.95	783.07	821.38	787.70	33.68	24.388		
4,800.00	4,798.60	4,838.38	4,827.94	16.94	17.15	154.34	42.27	781.15	822.52	788.49	34.03	24.170		
4,850.00	4,848.48	4,886.80	4,876.09	17.11	17.33	154.11	46.95	779.27	823.83	789.44	34.39	23.957		
4,900.00	4,898.36	4,935.50	4,924.53	17.29	17.51	153.89	51.63	777.46	825.24	790.50	34.75	23.750		
4,950.00	4,948.24	4,985.83	4,974.61	17.47	17.70	153.66	56.41	775.61	826.68	791.57	35.11	23.545		
5,000.00	4,998.12	5,036.19	5,024.71	17.65	17.89	153.43	61.10	773.73	828.11	792.63	35.48	23.343		
5,050.00	5,048.00	5,086.58	5,074.84	17.82	18.08	153.21	65.76	771.83	829.51	793.67	35.84	23.145		
5,100.00	5,097.88	5,136.54	5,124.55	18.00	18.27	152.99	70.36	769.91	830.90	794.70	36.20	22.951		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 149-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,150.00	5,147.76	5,185.85	5,173.62	18.18	18.45	152.78	74.87	768.05	832.33	795.77	36.56	22.764		
5,200.00	5,197.64	5,233.95	5,221.49	18.36	18.63	152.58	79.24	766.28	833.82	796.90	36.92	22.583		
5,250.00	5,247.53	5,280.66	5,267.97	18.54	18.81	152.38	83.64	764.71	835.49	798.21	37.27	22.414		
5,300.00	5,297.41	5,327.80	5,314.86	18.71	18.98	152.16	88.21	763.29	837.35	799.72	37.63	22.253		
5,350.00	5,347.29	5,375.54	5,362.38	18.89	19.16	151.95	92.72	761.99	839.37	801.38	37.98	22.097		
5,400.00	5,397.17	5,425.81	5,412.43	19.07	19.35	151.75	97.27	760.73	841.48	803.13	38.35	21.943		
5,450.00	5,447.05	5,479.23	5,465.62	19.25	19.55	151.54	101.91	759.24	843.45	804.73	38.72	21.781		
5,500.00	5,496.93	5,527.75	5,513.94	19.43	19.73	151.36	106.07	757.77	845.31	806.23	39.08	21.629		
5,550.00	5,546.81	5,573.77	5,559.75	19.61	19.90	151.17	110.33	756.55	847.39	807.96	39.43	21.489		
5,600.00	5,596.69	5,622.96	5,608.68	19.79	20.09	150.94	115.22	755.38	849.65	809.85	39.80	21.351		
5,650.00	5,646.57	5,674.24	5,659.66	19.97	20.28	150.70	120.52	754.07	851.86	811.70	40.17	21.209		
5,700.00	5,696.45	5,729.30	5,714.39	20.15	20.49	150.42	126.37	752.47	853.92	813.37	40.55	21.058		
5,750.00	5,746.33	5,785.63	5,770.37	20.33	20.70	150.13	132.39	750.41	855.63	814.69	40.94	20.900		
5,800.00	5,796.22	5,831.83	5,816.27	20.51	20.88	149.90	137.30	748.67	857.28	815.99	41.29	20.780		
5,850.00	5,846.10	5,878.67	5,862.81	20.69	21.06	149.67	142.24	747.07	859.13	817.48	41.65	20.627		
5,900.00	5,895.98	5,926.07	5,909.95	20.87	21.24	149.44	147.11	745.61	861.15	819.14	42.01	20.500		
5,950.00	5,945.86	5,973.49	5,957.11	21.05	21.41	149.23	151.82	744.31	863.33	820.96	42.36	20.378		
6,000.00	5,995.74	6,018.84	6,002.26	21.23	21.58	149.06	155.94	743.29	865.71	823.00	42.71	20.269		
6,050.00	6,045.62	6,064.29	6,047.57	21.41	21.75	148.93	159.46	742.58	868.36	825.31	43.06	20.169		
6,100.00	6,095.50	6,115.35	6,098.50	21.59	21.94	148.82	162.96	741.94	871.12	827.70	43.42	20.062		
6,150.00	6,145.38	6,166.80	6,149.84	21.77	22.13	148.71	166.31	741.23	873.80	830.01	43.79	19.955		
6,200.00	6,195.26	6,218.50	6,201.43	21.95	22.32	148.62	169.51	740.44	876.38	832.22	44.16	19.847		
6,250.00	6,245.14	6,269.00	6,251.84	22.13	22.50	148.54	172.51	739.59	878.87	834.35	44.52	19.742		
6,300.00	6,295.02	6,315.93	6,298.66	22.31	22.67	148.44	175.57	738.85	881.46	836.59	44.87	19.646		
6,350.00	6,344.91	6,363.03	6,345.63	22.49	22.85	148.32	179.05	738.21	884.21	839.00	45.22	19.555		
6,400.00	6,394.79	6,410.84	6,393.29	22.67	23.02	148.19	182.87	737.66	887.11	841.54	45.57	19.466		
6,450.00	6,444.67	6,459.19	6,441.46	22.85	23.20	148.03	186.95	737.17	890.12	844.19	45.93	19.381		
6,500.00	6,494.55	6,509.13	6,491.22	23.03	23.39	147.88	191.10	736.71	893.17	846.88	46.29	19.294		
6,550.00	6,544.43	6,558.75	6,540.68	23.21	23.57	147.74	195.06	736.28	896.22	849.56	46.65	19.210		
6,600.00	6,594.31	6,607.79	6,589.58	23.39	23.75	147.62	198.79	735.91	899.31	852.30	47.01	19.129		
6,650.00	6,644.19	6,657.50	6,639.17	23.57	23.93	147.51	202.29	735.61	902.44	855.07	47.37	19.050		
6,700.00	6,694.07	6,708.06	6,689.64	23.75	24.12	147.45	205.18	735.39	905.55	857.82	47.73	18.971		
6,750.00	6,743.95	6,759.73	6,741.26	23.93	24.30	147.43	207.43	735.20	908.61	860.51	48.10	18.890		
6,800.00	6,793.83	6,812.18	6,793.67	24.12	24.49	147.42	209.42	734.92	911.54	863.07	48.47	18.807		
6,850.00	6,843.71	6,861.76	6,843.22	24.30	24.67	147.43	211.08	734.61	914.38	865.56	48.82	18.729		
6,900.00	6,893.60	6,910.49	6,891.93	24.48	24.84	147.45	212.56	734.39	917.29	868.12	49.17	18.654		
6,950.00	6,943.48	6,964.41	6,945.83	24.66	25.03	147.49	214.03	734.11	920.15	870.60	49.55	18.571		
7,000.00	6,993.36	7,019.44	7,000.85	24.84	25.23	147.53	215.33	733.55	922.73	872.81	49.92	18.483		
7,050.00	7,043.24	7,068.04	7,049.43	25.02	25.40	147.57	216.33	733.00	925.23	874.96	50.27	18.404		
7,100.00	7,093.12	7,117.21	7,098.59	25.20	25.57	147.63	217.18	732.50	927.77	877.15	50.62	18.327		
7,150.00	7,143.00	7,165.97	7,147.35	25.39	25.74	147.69	217.85	732.09	930.37	879.39	50.97	18.252		
7,200.00	7,192.88	7,214.67	7,196.04	25.57	25.91	147.77	218.31	731.76	933.02	881.70	51.32	18.180		
7,250.00	7,242.76	7,262.96	7,244.33	25.75	26.08	147.86	218.69	731.53	935.76	884.09	51.67	18.111		
7,300.00	7,292.64	7,311.94	7,293.31	25.93	26.25	147.94	219.06	731.37	938.58	886.56	52.02	18.044		
7,350.00	7,342.52	7,362.97	7,344.34	26.11	26.43	148.05	219.25	731.22	941.38	889.01	52.37	17.975		
7,400.00	7,392.40	7,412.52	7,393.89	26.29	26.60	148.16	219.21	731.05	944.14	891.42	52.72	17.910		
7,450.00	7,442.29	7,459.95	7,441.32	26.48	26.75	148.26	219.17	730.99	947.00	893.95	53.05	17.851		
7,500.00	7,492.17	7,506.82	7,488.18	26.66	26.91	148.37	219.15	731.05	950.00	896.62	53.38	17.797		
7,550.00	7,542.05	7,552.84	7,534.20	26.84	27.06	148.48	219.00	731.31	953.20	899.49	53.71	17.749		
7,600.00	7,591.93	7,600.65	7,582.01	27.02	27.21	148.60	218.68	731.77	956.58	902.54	54.04	17.703		
7,650.00	7,641.81	7,651.62	7,632.98	27.20	27.38	148.75	218.19	732.28	959.96	905.58	54.38	17.653		
7,700.00	7,691.69	7,700.79	7,682.14	27.39	27.54	148.89	217.65	732.74	963.30	908.59	54.72	17.606		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 149-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,750.00	7,741.57	7,748.20	7,729.55	27.57	27.69	149.00	217.52	733.24	966.76	911.71	55.05	17.562	
7,800.00	7,791.45	7,798.66	7,780.01	27.75	27.86	149.09	217.87	733.79	970.31	914.91	55.40	17.516	
7,850.00	7,841.33	7,852.23	7,833.56	27.93	28.05	149.15	218.74	734.16	973.71	917.94	55.76	17.461	
7,900.00	7,891.21	7,905.27	7,886.59	28.11	28.23	149.19	219.93	734.29	976.93	920.80	56.13	17.404	
7,950.00	7,941.09	7,958.13	7,939.44	28.30	28.42	149.24	220.99	734.28	980.00	923.50	56.50	17.345	
8,000.00	7,990.98	8,006.80	7,988.10	28.48	28.59	149.29	221.82	734.23	983.02	926.17	56.85	17.291	
8,050.00	8,040.86	8,055.22	8,036.51	28.66	28.76	149.35	222.49	734.28	986.11	928.91	57.20	17.240	
8,100.00	8,090.74	8,103.44	8,084.73	28.84	28.93	149.43	222.95	734.43	989.29	931.75	57.54	17.193	
8,150.00	8,140.62	8,151.72	8,133.01	29.03	29.09	149.52	223.11	734.69	992.55	934.67	57.88	17.148	
8,200.00	8,190.50	8,206.70	8,187.99	29.21	29.27	149.63	223.07	734.92	995.73	937.48	58.25	17.095	
8,250.00	8,240.38	8,260.14	8,241.44	29.39	29.45	149.75	222.94	734.88	998.66	940.05	58.61	17.040	
8,300.00	8,290.26	8,310.05	8,291.34	29.57	29.61	149.85	222.83	734.79	1,001.53	942.58	58.95	16.989	
8,350.00	8,340.14	8,365.78	8,347.07	29.76	29.80	149.98	222.55	734.61	1,004.35	945.03	59.32	16.932	
8,400.00	8,390.02	8,415.41	8,396.63	29.94	29.96	150.20	220.30	734.42	1,006.91	947.26	59.65	16.880	
8,450.00	8,439.90	8,459.07	8,439.99	30.12	30.09	150.58	215.19	734.67	1,009.63	949.68	59.96	16.839	
8,500.00	8,489.78	8,496.99	8,477.22	30.30	30.19	151.05	208.10	735.49	1,012.89	952.67	60.22	16.819	
8,550.00	8,539.67	8,537.00	8,515.88	30.49	30.31	151.71	197.92	737.03	1,016.84	956.35	60.49	16.809 SF	
8,600.00	8,589.55	8,562.56	8,540.18	30.67	30.37	152.19	190.14	738.47	1,021.67	961.01	60.67	16.840	
8,650.00	8,639.43	8,589.47	8,565.44	30.85	30.44	152.75	181.09	740.49	1,027.67	966.85	60.82	16.897	
8,700.00	8,689.31	8,613.95	8,587.98	31.03	30.50	153.32	171.85	742.84	1,034.92	973.99	60.93	16.987	
8,750.00	8,739.19	8,625.00	8,597.99	31.22	30.52	153.59	167.33	744.06	1,043.63	982.74	60.89	17.141	
8,800.00	8,789.07	8,646.80	8,617.37	31.40	30.57	154.16	157.80	747.01	1,053.84	992.95	60.88	17.309	
8,850.00	8,838.95	8,657.00	8,626.24	31.58	30.59	154.44	153.05	748.70	1,065.85	1,005.12	60.73	17.551	
8,900.00	8,888.83	8,676.22	8,642.59	31.76	30.63	155.00	143.61	752.31	1,079.42	1,018.80	60.62	17.807	
8,950.00	8,938.71	8,689.00	8,653.17	31.95	30.66	155.39	136.97	754.98	1,094.59	1,034.19	60.40	18.123	
9,000.00	8,988.59	8,711.83	8,671.45	32.13	30.70	156.11	124.27	760.04	1,111.15	1,050.89	60.26	18.440	
9,050.00	9,038.48	8,733.40	8,687.93	32.31	30.74	156.85	111.25	764.85	1,129.01	1,068.94	60.07	18.794	
9,100.00	9,088.36	8,759.43	8,708.83	32.50	30.78	157.79	94.36	770.85	1,148.07	1,088.16	59.91	19.163	
9,150.00	9,138.24	8,795.65	8,731.95	32.68	30.85	159.15	69.42	778.51	1,167.93	1,108.08	59.85	19.515	
9,200.00	9,188.12	8,818.46	8,746.99	32.86	30.89	160.04	52.90	783.10	1,188.84	1,129.23	59.61	19.944	
9,250.00	9,238.00	8,837.84	8,759.25	33.05	30.92	160.80	38.39	786.92	1,210.92	1,151.62	59.31	20.418	
9,300.00	9,287.88	8,846.00	8,764.27	33.23	30.93	161.13	32.15	788.52	1,234.26	1,175.40	58.85	20.972	
9,350.00	9,337.76	8,865.37	8,775.70	33.41	30.97	161.92	16.98	792.28	1,258.76	1,200.24	58.52	21.509	
9,400.00	9,387.64	8,878.00	8,782.74	33.59	30.99	162.45	6.78	794.73	1,284.55	1,226.45	58.10	22.111	
9,450.00	9,437.52	8,878.00	8,782.74	33.78	30.99	162.45	6.78	794.73	1,311.60	1,254.08	57.51	22.805	
9,500.00	9,487.40	8,894.20	8,791.23	33.96	31.01	163.14	-6.65	797.86	1,339.68	1,282.56	57.12	23.454	
9,550.00	9,537.28	8,910.00	8,798.90	34.14	31.04	163.82	-20.13	800.91	1,369.01	1,312.29	56.72	24.138	
9,600.00	9,587.17	8,910.00	8,798.90	34.33	31.04	163.82	-20.13	800.91	1,399.26	1,343.12	56.14	24.925	
9,650.00	9,637.05	8,910.00	8,798.90	34.51	31.04	163.82	-20.13	800.91	1,430.61	1,375.04	55.57	25.746	
9,700.00	9,686.93	8,921.07	8,803.88	34.69	31.06	164.31	-29.78	803.03	1,462.85	1,407.72	55.13	26.535	
9,750.00	9,736.81	8,926.35	8,806.13	34.88	31.06	164.54	-34.45	804.04	1,496.02	1,441.38	54.64	27.380	

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
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	0.00	0.00	0.50	0.50	102.07	-194.26	908.80	929.33				
50.00	50.00	52.81	52.81	0.50	0.51	102.07	-194.29	908.68	929.23	928.22	1.01	921.377	
100.00	100.00	106.81	106.81	0.52	0.53	102.08	-194.40	908.31	928.91	927.87	1.04	889.666	
150.00	150.00	160.80	160.80	0.59	0.56	102.10	-194.57	907.68	928.38	927.23	1.15	808.676	
200.00	200.00	212.65	212.64	0.70	0.64	102.12	-194.77	906.89	927.67	926.33	1.34	689.779	
250.00	250.00	263.74	263.72	0.84	0.77	102.14	-194.96	906.05	926.90	925.29	1.61	576.185	
300.00	300.00	312.40	312.37	0.99	0.91	102.16	-195.11	905.25	926.14	924.24	1.90	487.939	
350.00	350.00	361.01	360.98	1.15	1.06	102.18	-195.22	904.54	925.45	923.24	2.21	419.493	
400.00	400.00	409.56	409.53	1.31	1.22	102.20	-195.36	903.90	924.83	922.31	2.53	366.126	
450.00	450.00	458.43	458.39	1.48	1.38	102.22	-195.55	903.32	924.30	921.44	2.85	323.770	
500.00	500.00	510.57	510.52	1.65	1.56	102.24	-195.77	902.67	923.73	920.53	3.20	288.629	
550.00	550.00	563.18	563.13	1.82	1.74	102.26	-195.96	901.88	923.04	919.48	3.55	259.878	
600.00	600.00	617.12	617.06	1.99	1.92	102.28	-196.10	900.88	922.16	918.25	3.91	235.790	
650.00	650.00	666.76	666.69	2.16	2.10	102.30	-196.20	899.81	921.13	916.87	4.26	216.362	
700.00	700.00	712.46	712.38	2.34	2.25	102.32	-196.33	898.99	920.28	915.69	4.59	200.426	
750.00	750.00	762.55	762.46	2.51	2.43	102.34	-196.52	898.26	919.61	914.66	4.94	186.058	
800.00	800.00	817.72	817.62	2.69	2.63	102.36	-196.67	897.24	918.73	913.42	5.31	172.940	
850.00	850.00	870.41	870.30	2.87	2.81	102.38	-196.74	896.03	917.62	911.95	5.67	161.721	
900.00	900.00	922.31	922.19	3.04	2.99	102.40	-196.69	894.74	916.40	910.37	6.03	151.881	
950.00	950.00	974.21	974.07	3.22	3.18	102.41	-196.55	893.37	915.08	908.69	6.39	143.119	
1,000.00	1,000.00	1,026.11	1,025.94	3.40	3.36	102.41	-196.30	891.90	913.65	906.90	6.75	135.267	
1,050.00	1,050.00	1,078.00	1,077.81	3.58	3.55	102.41	-195.95	890.35	912.12	905.00	7.12	128.189	
1,100.00	1,100.00	1,126.50	1,126.29	3.75	3.72	102.39	-195.26	889.01	910.61	903.15	7.46	122.017	
1,150.00	1,150.00	1,176.18	1,175.94	3.93	3.89	102.34	-194.18	887.73	909.12	901.30	7.81	116.339	
1,200.00	1,200.00	1,226.08	1,225.80	4.11	4.07	102.26	-192.63	886.55	907.63	899.47	8.17	111.152	
1,250.00	1,250.00	1,276.83	1,276.49	4.29	4.24	102.15	-190.58	885.44	906.14	897.62	8.52	106.363	
1,300.00	1,300.00	1,328.02	1,327.62	4.46	4.42	102.01	-188.07	884.35	904.58	895.71	8.87	101.933	
1,350.00	1,350.00	1,383.45	1,382.94	4.64	4.61	101.83	-184.90	883.08	902.87	893.62	9.24	97.670	
1,400.00	1,400.00	1,439.73	1,439.08	4.82	4.81	101.62	-181.28	881.47	900.81	891.19	9.62	93.673	
1,450.00	1,450.00	1,488.97	1,488.18	5.00	4.98	101.42	-177.83	879.99	898.64	888.67	9.97	90.155	
1,500.00	1,500.00	1,541.41	1,540.44	5.18	5.17	101.20	-173.86	878.42	896.43	886.10	10.33	86.782	
1,550.00	1,550.00	1,598.40	1,597.21	5.36	5.37	100.93	-169.23	876.42	893.92	883.21	10.71	83.490	
1,600.00	1,600.00	1,651.55	1,650.11	5.53	5.56	100.66	-164.62	874.26	891.10	880.03	11.07	80.477	
1,650.00	1,650.00	1,703.09	1,701.38	5.71	5.74	100.38	-159.82	872.11	888.18	876.75	11.43	77.679	
1,700.00	1,700.00	1,762.31	1,760.25	5.89	5.96	100.04	-153.92	869.35	885.00	873.18	11.82	74.870	
1,750.00	1,750.00	1,819.11	1,816.64	6.07	6.16	99.69	-147.93	866.13	881.28	869.08	12.20	72.241	
1,800.00	1,800.00	1,869.50	1,866.66	6.25	6.35	99.39	-142.74	863.09	877.43	864.87	12.56	69.859	
1,850.00	1,850.00	1,920.29	1,917.11	6.43	6.54	99.10	-137.71	859.93	873.55	860.63	12.92	67.600	
1,900.00	1,900.00	1,971.52	1,967.98	6.61	6.73	98.80	-132.62	856.66	869.61	856.33	13.29	65.450	
1,950.00	1,950.00	2,024.18	2,020.26	6.78	6.92	98.49	-127.38	853.18	865.58	851.93	13.66	63.387	
2,000.00	2,000.00	2,077.75	2,073.46	6.96	7.12	98.20	-122.36	849.36	861.36	847.33	14.03	61.407	
2,050.00	2,050.00	2,128.53	2,123.89	7.14	7.32	97.94	-117.92	845.53	857.00	842.61	14.39	59.553	
2,100.00	2,100.00	2,178.89	2,173.94	7.32	7.50	97.70	-113.80	841.64	852.61	837.86	14.75	57.792	
2,150.00	2,150.00	2,225.95	2,220.71	7.50	7.68	97.49	-110.12	838.04	848.29	833.19	15.11	56.153	
2,200.00	2,200.00	2,273.17	2,267.67	7.68	7.86	97.27	-106.52	834.57	844.14	828.68	15.46	54.599	
2,250.00	2,250.00	2,323.69	2,317.91	7.86	8.05	97.05	-102.74	830.89	840.05	824.23	15.82	53.087	
2,300.00	2,300.00	2,374.80	2,368.74	8.04	8.24	96.82	-98.97	827.10	835.93	819.74	16.19	51.636	
2,350.00	2,350.00	2,429.44	2,423.07	8.22	8.45	96.59	-95.03	822.82	831.61	815.04	16.56	50.209	
2,400.00	2,400.00	2,482.17	2,475.48	8.39	8.64	96.37	-91.30	818.40	827.03	810.10	16.93	48.844	
2,450.00	2,450.00	2,532.13	2,525.14	8.57	8.83	96.16	-87.85	814.13	822.40	805.10	17.29	47.554	
2,500.00	2,500.00	2,580.96	2,573.68	8.75	9.02	95.96	-84.54	809.95	817.78	800.12	17.65	46.325	
2,550.00	2,550.00	2,628.77	2,621.21	8.93	9.20	95.76	-81.35	805.95	813.27	795.26	18.01	45.157	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,600.00	2,600.00	2,675.08	2,667.28	9.11	9.37	95.57	-78.28	802.20	808.91	790.55	18.36	44.051	
2,650.00	2,650.00	2,720.12	2,712.08	9.29	9.54	95.39	-75.30	798.81	804.83	786.12	18.71	43.010	
2,700.00	2,700.00	2,766.78	2,758.52	9.47	9.72	95.19	-72.20	795.55	801.04	781.97	19.07	42.013	
2,750.00	2,750.00	2,815.60	2,807.12	9.65	9.90	94.98	-68.97	792.23	797.35	777.93	19.43	41.046	
2,800.00	2,800.00	2,867.06	2,858.35	9.83	10.10	94.75	-65.59	788.74	793.70	773.90	19.79	40.101	
2,850.00	2,850.00	2,921.35	2,912.39	10.00	10.30	94.52	-62.09	784.81	789.81	769.65	20.17	39.166	
2,900.00	2,900.00	2,974.44	2,965.21	10.18	10.50	94.30	-58.73	780.68	785.68	765.15	20.54	38.259	
2,950.00	2,950.00	3,027.07	3,017.57	10.36	10.70	94.09	-55.47	776.38	781.38	760.47	20.90	37.378	
3,000.00	3,000.00	3,074.79	3,065.03	10.54	10.88	93.88	-52.45	772.44	777.04	755.78	21.26	36.545	
3,050.00	3,050.00	3,122.11	3,112.09	10.72	11.06	93.66	-49.20	768.71	772.87	751.25	21.62	35.749	
3,100.00	3,100.00	3,170.76	3,160.46	10.90	11.25	93.42	-45.67	765.00	768.83	746.85	21.98	34.978	
3,150.00	3,150.00	3,219.52	3,208.95	11.08	11.43	93.16	-42.01	761.34	764.86	742.52	22.34	34.234	
3,200.00	3,200.00	3,272.10	3,261.24	11.26	11.63	92.89	-38.19	757.33	760.85	738.14	22.71	33.500	
3,250.00	3,250.00	3,324.83	3,313.68	11.44	11.83	92.64	-34.74	753.09	756.67	733.58	23.08	32.781	
3,300.00	3,300.00	3,377.13	3,365.71	11.62	12.03	92.42	-31.65	748.67	752.31	728.86	23.45	32.081	
3,350.00	3,350.00	3,429.14	3,417.44	11.80	12.23	92.22	-28.85	744.08	747.79	723.97	23.82	31.398	
3,400.00	3,400.00	3,480.47	3,468.49	11.97	12.42	92.03	-26.25	739.43	743.16	718.98	24.18	30.733	
3,450.00	3,450.00	3,529.01	3,516.77	12.15	12.61	91.86	-23.92	734.96	738.47	713.93	24.54	30.092	
3,500.00	3,500.00	3,575.04	3,562.58	12.33	12.78	91.72	-21.90	730.91	734.01	709.11	24.89	29.485	
3,550.00	3,550.00	3,620.99	3,608.33	12.51	12.95	91.58	-20.05	727.10	729.80	704.55	25.25	28.906	
3,600.00	3,600.00	3,666.81	3,653.97	12.69	13.12	91.43	-18.12	723.55	725.87	700.27	25.60	28.354	
3,650.00	3,650.00	3,712.86	3,699.85	12.87	13.30	91.28	-16.05	720.23	722.21	696.26	25.95	27.828	
3,700.00	3,700.00	3,759.24	3,746.08	13.05	13.47	91.11	-13.88	717.12	718.81	692.50	26.31	27.325	
3,750.00	3,750.00	3,806.57	3,793.26	13.23	13.65	90.93	-11.61	714.17	715.64	688.98	26.66	26.842	
3,800.00	3,800.00	3,855.75	3,842.30	13.41	13.83	90.75	-9.28	711.18	712.57	685.54	27.02	26.370	
3,850.00	3,850.00	3,905.51	3,891.91	13.59	14.01	90.56	-6.96	708.20	709.54	682.16	27.38	25.912	
3,900.00	3,900.00	3,956.03	3,942.28	13.77	14.20	90.36	-4.45	705.14	706.49	678.74	27.75	25.462	
3,950.00	3,950.00	4,007.43	3,993.51	13.94	14.39	90.14	-1.70	701.96	703.38	675.27	28.11	25.020	
4,000.00	4,000.00	4,059.55	4,045.43	14.12	14.59	89.90	1.28	698.59	700.13	671.65	28.48	24.582	
4,050.00	4,050.00	4,110.37	4,096.04	14.30	14.78	89.69	4.36	695.16	697.02	668.17	28.85	24.164	
4,100.00	4,099.99	4,160.70	4,146.15	14.48	14.97	89.46	7.60	691.73	694.37	665.16	29.21	23.773	
4,150.00	4,149.97	4,211.81	4,197.01	14.65	15.16	89.22	11.16	688.18	692.17	662.60	29.57	23.407	
4,200.00	4,199.94	4,263.02	4,247.94	14.83	15.36	88.97	15.09	684.52	690.38	660.45	29.93	23.063	
4,250.00	4,249.88	4,314.13	4,298.73	15.00	15.56	88.71	19.32	680.77	689.01	658.71	30.30	22.740	
4,300.00	4,299.79	4,365.54	4,349.80	15.17	15.75	88.44	23.79	676.90	688.05	657.39	30.67	22.438	
4,350.00	4,349.67	4,416.54	4,402.42	15.35	15.96	88.17	28.52	672.72	687.32	656.28	31.03	22.147	
4,400.00	4,399.55	4,469.66	4,453.16	15.53	16.15	87.90	33.15	668.49	686.42	655.02	31.40	21.860	
4,450.00	4,449.43	4,518.08	4,501.23	15.70	16.34	87.62	37.41	664.53	685.59	653.83	31.76	21.585	
4,500.00	4,499.31	4,570.55	4,553.33	15.88	16.55	87.34	41.89	660.28	684.81	652.68	32.13	21.313	
4,550.00	4,549.19	4,622.63	4,609.98	16.05	16.77	87.06	46.73	655.17	683.62	651.11	32.51	21.029	
4,600.00	4,599.07	4,679.45	4,661.36	16.23	16.97	86.78	51.13	650.15	682.06	649.18	32.88	20.747	
4,650.00	4,648.95	4,729.95	4,711.44	16.41	17.17	86.50	55.47	645.20	680.46	647.22	33.24	20.470	
4,700.00	4,698.84	4,776.77	4,757.86	16.58	17.35	86.22	59.48	640.68	678.95	645.35	33.60	20.204	
4,750.00	4,748.72	4,823.28	4,804.01	16.76	17.53	85.94	63.42	636.43	677.71	643.74	33.97	19.952	
4,800.00	4,798.60	4,872.22	4,852.59	16.94	17.72	85.66	67.50	632.12	676.64	642.31	34.33	19.710	
4,850.00	4,848.48	4,921.51	4,901.53	17.11	17.91	85.38	71.53	627.84	675.64	640.95	34.70	19.473	
4,900.00	4,898.36	4,972.62	4,952.28	17.29	18.11	85.10	75.64	623.39	674.63	639.57	35.06	19.240	
4,950.00	4,948.24	5,023.82	5,003.12	17.47	18.31	84.82	79.72	618.83	673.54	638.11	35.43	19.009	
5,000.00	4,998.12	5,074.66	5,053.59	17.65	18.51	84.54	83.72	614.23	672.37	636.57	35.80	18.782	
5,050.00	5,048.00	5,125.45	5,104.01	17.82	18.71	84.26	87.65	609.57	671.15	634.98	36.17	18.557	
5,100.00	5,097.88	5,175.98	5,154.17	18.00	18.90	83.98	91.53	604.87	669.88	633.35	36.54	18.335	
5,150.00	5,147.76	5,226.27	5,204.09	18.18	19.10	83.70	95.38	600.16	668.58	631.68	36.90	18.117	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

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	
5,200.00	5,197.64	5,276.17	5,253.64	18.36	19.29	150.10	99.10	595.49	667.29	630.02	37.27	17.904	
5,250.00	5,247.53	5,325.61	5,302.73	18.54	19.48	149.90	102.65	590.89	666.01	628.37	37.64	17.696	
5,300.00	5,297.41	5,374.50	5,351.31	18.71	19.67	149.72	105.92	586.42	664.80	626.80	38.00	17.495	
5,350.00	5,347.29	5,423.20	5,399.71	18.89	19.86	149.56	109.02	582.07	663.69	625.32	38.36	17.300	
5,400.00	5,397.17	5,471.68	5,447.87	19.07	20.05	149.37	112.48	577.81	662.68	623.96	38.73	17.111	
5,450.00	5,447.05	5,521.75	5,497.60	19.25	20.24	149.14	116.44	573.43	661.77	622.67	39.10	16.927	
5,500.00	5,496.93	5,573.10	5,548.57	19.43	20.44	148.89	120.58	568.85	660.77	621.31	39.47	16.742	
5,550.00	5,546.81	5,618.49	5,593.64	19.61	20.62	148.67	124.28	564.83	659.84	620.02	39.83	16.567	
5,600.00	5,596.69	5,661.46	5,636.33	19.79	20.79	148.46	127.81	561.46	659.43	619.24	40.18	16.411	
5,613.97	5,610.63	5,673.47	5,648.27	19.84	20.83	148.40	128.81	560.60	659.40	619.12	40.28	16.370	
5,650.00	5,646.57	5,708.41	5,683.00	19.97	20.97	148.24	131.70	558.21	659.47	618.93	40.54	16.266	
5,700.00	5,696.45	5,759.33	5,733.63	20.15	21.16	148.00	135.85	554.69	659.52	618.61	40.92	16.119	
5,750.00	5,746.33	5,809.79	5,783.81	20.33	21.35	147.77	139.87	551.14	659.53	618.24	41.28	15.975	
5,800.00	5,796.22	5,860.00	5,833.74	20.51	21.55	147.55	143.72	547.61	659.51	617.86	41.65	15.833	
5,850.00	5,846.10	5,911.50	5,884.97	20.69	21.74	147.34	147.54	543.95	659.45	617.43	42.03	15.692	
5,900.00	5,895.98	5,963.46	5,936.65	20.87	21.94	147.13	151.34	540.11	659.25	616.86	42.40	15.549	
5,950.00	5,945.86	6,013.04	5,985.97	21.05	22.13	146.95	154.83	536.40	658.99	616.23	42.76	15.410	
6,000.00	5,995.74	6,062.42	6,035.11	21.23	22.32	146.78	158.06	532.78	658.78	615.65	43.13	15.274	
6,035.51	6,031.17	6,095.50	6,068.03	21.35	22.45	146.67	160.21	530.44	658.71	615.33	43.38	15.183 CC	
6,050.00	6,045.62	6,108.97	6,081.44	21.41	22.50	146.62	161.13	529.51	658.72	615.24	43.49	15.147	
6,100.00	6,095.50	6,155.46	6,127.70	21.59	22.67	146.44	164.55	526.43	658.94	615.09	43.85	15.028	
6,150.00	6,145.38	6,205.73	6,177.72	21.77	22.86	146.23	168.41	523.20	659.28	615.07	44.22	14.911	
6,200.00	6,195.26	6,256.22	6,227.96	21.95	23.06	146.02	172.23	519.93	659.60	615.01	44.59	14.794	
6,250.00	6,245.14	6,305.53	6,277.03	22.13	23.24	145.82	175.92	516.74	659.93	614.98	44.95	14.681 ES	
6,300.00	6,295.02	6,354.94	6,326.20	22.31	23.43	145.63	179.59	513.60	660.31	614.99	45.32	14.570	
6,350.00	6,344.91	6,404.52	6,375.55	22.49	23.62	145.44	183.16	510.50	660.73	615.04	45.69	14.463	
6,400.00	6,394.79	6,454.02	6,424.84	22.67	23.81	145.27	186.54	507.47	661.19	615.13	46.05	14.358	
6,450.00	6,444.67	6,503.23	6,473.86	22.85	23.99	145.12	189.76	504.53	661.70	615.28	46.42	14.256	
6,500.00	6,494.55	6,552.86	6,523.31	23.03	24.18	144.97	192.88	501.64	662.26	615.48	46.78	14.157	
6,550.00	6,544.43	6,603.39	6,573.66	23.21	24.37	144.83	196.05	498.68	662.82	615.67	47.15	14.058	
6,600.00	6,594.31	6,651.34	6,621.43	23.39	24.55	144.69	199.06	495.88	663.37	615.87	47.51	13.964	
6,650.00	6,644.19	6,696.19	6,666.16	23.57	24.71	144.61	201.40	493.64	664.26	616.40	47.85	13.881	
6,700.00	6,694.07	6,742.69	6,712.59	23.75	24.88	144.58	203.28	491.78	665.50	617.30	48.20	13.807	
6,750.00	6,743.95	6,792.16	6,761.99	23.93	25.06	144.57	205.00	489.96	666.86	618.31	48.56	13.734	
6,800.00	6,793.83	6,841.37	6,811.15	24.12	25.24	144.59	206.52	488.24	668.26	619.35	48.91	13.663	
6,850.00	6,843.71	6,890.26	6,859.99	24.30	25.41	144.62	207.82	486.64	669.74	620.48	49.26	13.595	
6,900.00	6,893.60	6,939.58	6,909.28	24.48	25.59	144.67	208.91	485.15	671.29	621.68	49.61	13.530	
6,950.00	6,943.48	6,989.35	6,959.02	24.66	25.76	144.74	209.82	483.71	672.86	622.90	49.97	13.466	
7,000.00	6,993.36	7,035.33	7,004.98	24.84	25.92	144.81	210.55	482.48	674.54	624.23	50.30	13.409	
7,050.00	7,043.24	7,078.61	7,048.23	25.02	26.07	144.87	211.47	481.69	676.66	626.04	50.63	13.366	
7,100.00	7,093.12	7,125.12	7,094.73	25.20	26.24	144.91	212.70	481.21	679.23	628.27	50.96	13.328	
7,150.00	7,143.00	7,176.78	7,146.37	25.39	26.42	144.97	214.00	480.68	681.79	630.47	51.32	13.284	
7,200.00	7,192.88	7,227.72	7,197.29	25.57	26.59	145.04	215.11	480.08	684.24	632.56	51.68	13.240	
7,250.00	7,242.76	7,278.06	7,247.63	25.75	26.77	145.12	216.01	479.47	686.66	634.62	52.04	13.196	
7,300.00	7,292.64	7,328.60	7,298.15	25.93	26.95	145.22	216.73	478.87	689.04	636.64	52.39	13.152	
7,350.00	7,342.52	7,379.23	7,348.78	26.11	27.12	145.33	217.33	478.23	691.37	638.62	52.75	13.108	
7,400.00	7,392.40	7,429.77	7,399.31	26.29	27.30	145.44	217.79	477.58	693.65	640.55	53.10	13.063	
7,450.00	7,442.29	7,480.29	7,449.82	26.48	27.47	145.57	218.08	476.91	695.90	642.45	53.45	13.019	
7,500.00	7,492.17	7,528.88	7,498.41	26.66	27.64	145.71	218.22	476.31	698.17	644.37	53.80	12.978	
7,550.00	7,542.05	7,577.29	7,546.82	26.84	27.80	145.85	218.24	475.84	700.55	646.41	54.14	12.941	
7,600.00	7,591.93	7,625.03	7,594.56	27.02	27.96	146.00	218.19	475.52	703.07	648.60	54.47	12.907	
7,650.00	7,641.81	7,672.75	7,642.28	27.20	28.12	146.16	218.13	475.35	705.74	650.94	54.80	12.878	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
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
7,700.00	7,691.69	7,722.26	7,691.79	27.39	28.28	146.32	218.02	475.27	708.51	653.37	55.14	12.849	
7,750.00	7,741.57	7,771.78	7,741.31	27.57	28.44	146.48	217.85	475.22	711.32	655.84	55.48	12.821	
7,800.00	7,791.45	7,821.24	7,790.77	27.75	28.60	146.66	217.58	475.22	714.15	658.34	55.81	12.795	
7,850.00	7,841.33	7,870.70	7,840.22	27.93	28.75	146.84	217.20	475.27	717.03	660.88	56.15	12.770	
7,900.00	7,891.21	7,919.54	7,889.07	28.11	28.91	147.00	216.94	475.35	719.96	663.48	56.48	12.748	
7,950.00	7,941.09	7,968.79	7,938.31	28.30	29.07	147.16	216.89	475.46	722.96	666.15	56.81	12.726	
8,000.00	7,990.98	8,019.01	7,988.54	28.48	29.22	147.31	216.84	475.58	725.96	668.81	57.15	12.703	
8,050.00	8,040.86	8,069.34	8,038.86	28.66	29.38	147.47	216.71	475.68	728.95	671.46	57.49	12.680	
8,100.00	8,090.74	8,119.85	8,089.37	28.84	29.54	147.64	216.44	475.76	731.90	674.07	57.83	12.657	
8,150.00	8,140.62	8,170.27	8,139.80	29.03	29.70	147.82	216.03	475.81	734.82	676.65	58.17	12.633	
8,200.00	8,190.50	8,220.60	8,190.12	29.21	29.86	148.00	215.53	475.85	737.71	679.20	58.51	12.609	
8,250.00	8,240.38	8,271.29	8,240.81	29.39	30.03	148.18	215.07	475.84	740.57	681.71	58.85	12.583	
8,300.00	8,290.26	8,322.28	8,291.79	29.57	30.20	148.31	215.18	475.68	743.36	684.16	59.20	12.556	
8,350.00	8,340.14	8,373.31	8,342.83	29.76	30.37	148.41	215.73	475.39	746.08	686.52	59.56	12.527	
8,400.00	8,390.02	8,424.36	8,393.87	29.94	30.55	148.51	216.20	475.02	748.73	688.81	59.92	12.496	
8,450.00	8,439.90	8,474.98	8,444.48	30.12	30.73	148.62	216.53	474.62	751.32	691.05	60.27	12.465	
8,500.00	8,489.78	8,526.93	8,496.43	30.30	30.91	148.74	216.71	474.14	753.84	693.20	60.64	12.432	
8,550.00	8,539.67	8,595.57	8,564.99	30.49	31.13	149.10	214.29	472.93	755.72	694.66	61.05	12.378	
8,600.00	8,589.55	8,663.70	8,632.13	30.67	31.33	150.10	203.22	471.02	756.34	694.94	61.41	12.317	
8,650.00	8,639.43	8,726.97	8,692.47	30.85	31.50	151.65	184.50	468.75	756.07	694.36	61.72	12.250	
8,682.39	8,651.78	8,741.70	8,706.13	30.90	31.54	152.09	178.99	468.17	755.93	694.13	61.80	12.233	
8,700.00	8,689.31	8,757.01	8,720.19	31.03	31.56	152.58	172.94	468.03	756.34	694.36	61.98	12.204	
8,750.00	8,739.19	8,787.43	8,747.55	31.22	31.63	153.65	159.66	467.94	758.03	695.84	62.19	12.189 SF	
8,800.00	8,789.07	8,817.00	8,773.37	31.40	31.69	154.80	145.27	468.48	761.32	698.97	62.36	12.210	
8,850.00	8,838.95	8,864.22	8,812.94	31.58	31.76	156.82	119.54	469.58	765.78	703.22	62.56	12.242	
8,900.00	8,888.83	8,908.08	8,847.73	31.76	31.83	158.89	92.87	470.11	771.05	708.33	62.72	12.294	
8,950.00	8,938.71	8,939.91	8,871.77	31.95	31.87	160.48	72.01	470.34	777.65	714.89	62.78	12.391	
9,000.00	8,988.59	8,968.47	8,892.52	32.13	31.91	161.97	52.39	470.64	786.02	723.30	62.72	12.533	
9,050.00	9,038.48	8,994.80	8,910.93	32.31	31.94	163.37	33.57	470.99	796.25	733.66	62.59	12.721	
9,100.00	9,088.36	9,038.09	8,939.71	32.50	31.98	165.76	1.24	471.23	808.21	745.64	62.58	12.916	
9,150.00	9,138.24	9,092.07	8,973.10	32.68	32.03	168.85	-41.10	469.22	821.02	758.38	62.63	13.109	
9,200.00	9,188.12	9,127.35	8,993.38	32.86	32.06	170.92	-69.85	466.60	835.05	772.59	62.45	13.371	
9,250.00	9,238.00	9,156.38	9,009.19	33.05	32.08	172.65	-94.05	463.92	850.81	788.65	62.16	13.688	
9,300.00	9,287.88	9,182.62	9,022.79	33.23	32.10	174.23	-116.32	461.12	868.35	806.57	61.78	14.056	
9,350.00	9,337.76	9,197.00	9,029.95	33.41	32.11	175.10	-128.67	459.43	887.72	826.52	61.20	14.504	
9,400.00	9,387.64	9,197.00	9,029.95	33.59	32.11	175.10	-128.67	459.43	909.33	848.93	60.39	15.056	
9,450.00	9,437.52	9,197.00	9,029.95	33.78	32.11	175.10	-128.67	459.43	933.11	873.57	59.54	15.672	
9,500.00	9,487.40	9,197.00	9,029.95	33.96	32.11	175.10	-128.67	459.43	958.92	900.26	58.66	16.348	
9,550.00	9,537.28	9,228.50	9,044.41	34.14	32.12	177.03	-156.45	456.18	984.92	926.70	58.22	16.917	
9,600.00	9,587.17	9,234.41	9,046.90	34.33	32.12	177.39	-161.79	455.70	1,013.60	956.18	57.42	17.652	
9,650.00	9,637.05	9,239.95	9,049.16	34.51	32.12	177.73	-166.84	455.29	1,043.78	987.15	56.63	18.433	
9,700.00	9,686.93	9,245.16	9,051.22	34.69	32.13	178.04	-171.60	454.94	1,075.34	1,019.50	55.85	19.256	
9,750.00	9,736.81	9,250.05	9,053.11	34.88	32.13	178.34	-176.11	454.64	1,108.18	1,053.10	55.08	20.118	
9,800.00	9,786.69	9,254.66	9,054.84	35.06	32.13	178.62	-180.37	454.38	1,142.19	1,087.84	54.35	21.016	
9,850.00	9,836.57	9,291.00	9,066.84	35.24	32.17	-179.18	-214.64	453.23	1,179.01	1,124.92	54.09	21.798	
9,900.00	9,886.45	9,291.00	9,066.84	35.43	32.17	-179.18	-214.64	453.23	1,214.67	1,161.31	53.35	22.767	
9,950.00	9,936.33	9,291.00	9,066.84	35.61	32.17	-179.18	-214.64	453.23	1,251.30	1,198.65	52.66	23.764	
10,000.00	9,986.21	9,291.00	9,066.84	35.79	32.17	-179.18	-214.64	453.23	1,288.84	1,236.84	52.00	24.788	
10,050.00	10,036.09	9,291.00	9,066.84	35.98	32.17	-179.18	-214.64	453.23	1,327.20	1,275.82	51.37	25.834	
10,100.00	10,085.97	9,291.00	9,066.84	36.16	32.17	-179.18	-214.64	453.23	1,366.31	1,315.52	50.79	26.900	
10,150.00	10,135.86	9,291.00	9,066.84	36.34	32.17	-179.18	-214.64	453.23	1,406.11	1,355.86	50.25	27.984	
10,200.00	10,185.74	9,291.00	9,066.84	36.53	32.17	-179.18	-214.64	453.23	1,446.54	1,396.81	49.74	29.083	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 175-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
10,250.00	10,235.62	9,291.00	9,066.84	36.71	32.17	-179.18	-214.64	453.23	1,487.56	1,438.29	49.27	30.194	

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design												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
0.00	0.00	0.00	0.00	0.50	0.50	89.64	5.34	848.94	848.96				
50.00	50.00	49.24	49.24	0.50	0.51	89.63	5.41	848.93	848.95	847.94	1.01	842.940	
100.00	100.00	99.59	99.59	0.52	0.52	89.62	5.63	848.90	848.92	847.88	1.04	817.525	
150.00	150.00	150.13	150.13	0.59	0.55	89.60	6.00	848.85	848.87	847.73	1.14	745.802	
200.00	200.00	204.48	204.48	0.70	0.65	89.57	6.38	848.62	848.67	847.32	1.35	628.028	
250.00	250.00	252.86	252.85	0.84	0.77	89.54	6.84	848.34	848.37	846.77	1.61	528.216	
300.00	300.00	301.22	301.21	0.99	0.90	89.50	7.45	848.15	848.19	846.30	1.89	448.277	
350.00	350.00	350.78	350.76	1.15	1.05	89.46	8.06	848.05	848.09	845.89	2.20	385.465	
400.00	400.00	402.71	402.69	1.31	1.22	89.41	8.70	847.87	847.92	845.40	2.53	335.468	
450.00	450.00	453.64	453.62	1.48	1.38	89.37	9.32	847.59	847.66	844.80	2.86	296.427	
500.00	500.00	503.58	503.56	1.65	1.55	89.34	9.73	847.31	847.38	844.19	3.19	265.351	
550.00	550.00	553.38	553.35	1.82	1.71	89.33	9.95	847.04	847.11	843.58	3.53	239.947	
600.00	600.00	603.08	603.05	1.99	1.88	89.32	10.10	846.79	846.86	842.99	3.87	218.838	
650.00	650.00	654.96	654.93	2.16	2.05	89.31	10.19	846.49	846.57	842.35	4.22	200.665	
700.00	700.00	707.65	707.61	2.34	2.23	89.31	10.22	846.03	846.14	841.57	4.57	185.053	
750.00	750.00	757.02	756.99	2.51	2.40	89.31	10.23	845.54	845.64	840.72	4.92	172.009	
800.00	800.00	806.37	806.34	2.69	2.57	89.30	10.27	845.09	845.18	839.92	5.26	160.648	
850.00	850.00	860.44	860.40	2.87	2.76	89.30	10.25	844.48	844.62	839.00	5.62	150.209	
900.00	900.00	914.97	914.93	3.04	2.95	89.31	10.10	843.60	843.82	837.83	5.99	140.937	
950.00	950.00	970.73	970.66	3.22	3.14	89.32	9.98	842.36	842.70	836.34	6.36	132.583	
1,000.00	1,000.00	1,016.02	1,015.95	3.40	3.22	89.32	10.04	841.30	841.53	834.91	6.62	127.166	
1,050.00	1,050.00	1,072.71	1,072.62	3.58	3.25	89.29	10.44	839.95	840.35	833.53	6.82	123.295	
1,100.00	1,100.00	1,130.53	1,130.40	3.75	3.26	89.23	11.24	838.04	838.70	831.70	7.01	119.678	
1,150.00	1,150.00	1,182.10	1,181.92	3.93	3.30	89.15	12.36	836.09	836.83	829.61	7.22	115.831	
1,200.00	1,200.00	1,236.26	1,236.01	4.11	3.35	89.04	13.92	833.81	834.75	827.31	7.45	112.101	
1,250.00	1,250.00	1,291.33	1,290.99	4.29	3.40	88.91	15.84	831.16	832.38	824.70	7.68	108.424	
1,300.00	1,300.00	1,346.86	1,346.39	4.46	3.47	88.75	18.10	828.13	829.68	821.76	7.92	104.710	
1,350.00	1,350.00	1,402.38	1,401.74	4.64	3.55	88.56	20.75	824.70	826.65	818.48	8.17	101.157	
1,400.00	1,400.00	1,455.31	1,454.47	4.82	3.64	88.36	23.52	821.17	823.39	814.95	8.44	97.585	
1,450.00	1,450.00	1,506.72	1,505.68	5.00	3.73	88.15	26.43	817.54	819.94	811.23	8.70	94.202	
1,500.00	1,500.00	1,556.04	1,554.78	5.18	3.82	87.93	29.37	814.05	816.49	807.52	8.98	90.972	
1,550.00	1,550.00	1,607.37	1,605.88	5.36	3.93	87.70	32.55	810.40	813.06	803.80	9.26	87.835	
1,600.00	1,600.00	1,660.18	1,658.45	5.53	4.05	87.46	35.80	806.48	809.47	799.92	9.55	84.801	
1,650.00	1,650.00	1,710.38	1,708.41	5.71	4.17	87.23	38.86	802.62	805.76	795.92	9.84	81.902	
1,700.00	1,700.00	1,759.84	1,757.62	5.89	4.28	87.00	41.87	798.84	802.09	791.95	10.13	79.164	
1,750.00	1,750.00	1,813.24	1,810.78	6.07	4.42	86.77	44.91	794.67	798.34	787.90	10.44	76.467	
1,800.00	1,800.00	1,867.34	1,864.63	6.25	4.56	86.57	47.40	790.19	794.33	783.58	10.75	73.886	
1,850.00	1,850.00	1,919.94	1,917.00	6.43	4.71	86.41	49.35	785.62	790.11	779.05	11.07	71.404	
1,900.00	1,900.00	1,971.63	1,968.45	6.61	4.85	86.27	50.91	780.98	785.72	774.34	11.38	69.047	
1,950.00	1,950.00	2,021.08	2,017.68	6.78	4.99	86.15	52.25	776.52	781.31	769.61	11.69	66.817	
2,000.00	2,000.00	2,070.29	2,066.68	6.96	5.13	86.03	53.52	772.11	776.92	764.91	12.01	64.698	
2,050.00	2,050.00	2,119.12	2,115.30	7.14	5.28	85.92	54.71	767.79	772.59	760.26	12.33	62.680	
2,100.00	2,100.00	2,167.98	2,163.97	7.32	5.43	85.82	55.83	763.53	768.33	755.68	12.65	60.758	
2,150.00	2,150.00	2,216.89	2,212.68	7.50	5.57	85.71	56.96	759.32	764.12	751.15	12.97	58.925	
2,200.00	2,200.00	2,265.64	2,261.24	7.68	5.72	85.60	58.11	755.19	759.98	746.69	13.29	57.178	
2,250.00	2,250.00	2,314.21	2,309.63	7.86	5.88	85.49	59.31	751.14	755.92	742.30	13.62	55.514	
2,300.00	2,300.00	2,367.34	2,362.55	8.04	6.05	85.36	60.66	746.70	751.86	737.91	13.95	53.882	
2,350.00	2,350.00	2,424.09	2,419.05	8.22	6.23	85.23	61.93	741.52	747.40	733.10	14.30	52.268	
2,400.00	2,400.00	2,473.00	2,467.73	8.39	6.39	85.12	62.88	736.83	742.70	728.07	14.63	50.762	
2,450.00	2,450.00	2,520.68	2,515.20	8.57	6.54	85.03	63.72	732.39	738.14	723.18	14.96	49.338	
2,500.00	2,500.00	2,567.96	2,562.28	8.75	6.70	84.94	64.47	728.14	733.73	718.44	15.29	47.984	
2,550.00	2,550.00	2,615.21	2,609.35	8.93	6.85	84.86	65.10	724.07	729.50	713.88	15.62	46.698	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1020-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
2,600.00	2,600.00	2,662.00	2,655.98	9.11	7.01	84.79	65.62	720.23	725.46	709.51	15.95	45.476	
2,650.00	2,650.00	2,708.75	2,702.58	9.29	7.16	84.73	66.09	716.59	721.63	705.35	16.28	44.318	
2,700.00	2,700.00	2,756.46	2,750.16	9.47	7.32	84.66	66.65	713.05	717.99	701.38	16.62	43.206	
2,750.00	2,750.00	2,804.38	2,797.94	9.65	7.48	84.56	67.58	709.60	714.49	697.54	16.95	42.145	
2,800.00	2,800.00	2,860.24	2,853.63	9.83	7.67	84.42	68.92	705.43	710.90	693.59	17.31	41.069	
2,850.00	2,850.00	2,917.53	2,910.70	10.00	7.87	84.28	70.21	700.57	706.79	689.12	17.67	40.003	
2,900.00	2,900.00	2,966.86	2,959.83	10.18	8.04	84.16	71.21	696.20	702.48	684.47	18.01	39.002	
2,950.00	2,950.00	3,017.12	3,009.87	10.36	8.21	84.05	72.10	691.71	698.12	679.77	18.36	38.031	
3,000.00	3,000.00	3,066.68	3,059.24	10.54	8.39	83.95	72.82	687.29	693.77	675.07	18.70	37.098	
3,050.00	3,050.00	3,115.23	3,107.59	10.72	8.56	83.87	73.41	683.00	689.44	670.40	19.04	36.203	
3,100.00	3,100.00	3,162.18	3,154.36	10.90	8.72	83.76	74.20	679.00	685.29	665.90	19.38	35.353	
3,150.00	3,150.00	3,209.10	3,201.12	11.08	8.88	83.64	75.30	675.16	681.35	661.62	19.72	34.543	
3,200.00	3,200.00	3,255.99	3,247.85	11.26	9.05	83.51	76.42	671.52	677.63	657.56	20.07	33.770	
3,250.00	3,250.00	3,305.98	3,297.69	11.44	9.22	83.38	77.55	667.83	674.09	653.67	20.41	33.021	
3,300.00	3,300.00	3,361.92	3,353.44	11.62	9.42	83.25	78.57	663.38	670.24	649.47	20.78	32.261	
3,350.00	3,350.00	3,414.08	3,405.41	11.80	9.60	83.14	79.26	658.89	666.04	644.91	21.13	31.523	
3,400.00	3,400.00	3,464.16	3,455.30	11.97	9.78	83.06	79.72	654.54	661.79	640.31	21.48	30.813	
3,450.00	3,450.00	3,516.69	3,507.61	12.15	9.97	82.97	80.14	649.90	657.45	635.61	21.83	30.114	
3,500.00	3,500.00	3,570.00	3,560.68	12.33	10.16	82.86	80.78	644.88	652.85	630.66	22.19	29.425	
3,550.00	3,550.00	3,614.50	3,604.99	12.51	10.32	82.76	81.38	640.73	648.31	625.78	22.53	28.777	
3,600.00	3,600.00	3,658.74	3,649.07	12.69	10.48	82.68	81.87	637.00	644.20	621.33	22.87	28.170	
3,650.00	3,650.00	3,705.65	3,695.83	12.87	10.64	82.59	82.43	633.37	640.44	617.22	23.21	27.590	
3,700.00	3,700.00	3,753.26	3,743.30	13.05	10.81	82.46	83.34	629.82	636.86	613.30	23.56	27.033	
3,750.00	3,750.00	3,799.99	3,789.90	13.23	10.98	82.32	84.45	626.50	633.49	609.59	23.90	26.502	
3,800.00	3,800.00	3,846.53	3,836.33	13.41	11.14	82.19	85.54	623.44	630.39	606.14	24.25	25.998	
3,850.00	3,850.00	3,894.58	3,884.27	13.59	11.31	82.05	86.61	620.50	627.51	602.92	24.59	25.514	
3,900.00	3,900.00	3,943.19	3,932.79	13.77	11.49	81.93	87.53	617.66	624.75	599.81	24.94	25.047	
3,950.00	3,950.00	3,996.42	3,985.92	13.94	11.67	81.80	88.51	614.50	621.95	596.64	25.30	24.579	
4,000.00	4,000.00	4,050.95	4,040.31	14.12	11.87	81.64	89.75	610.84	618.79	593.12	25.67	24.107	
4,050.00	4,050.00	4,106.20	4,095.38	14.30	12.07	81.50	91.37	606.62	615.45	589.42	26.03	23.643	
4,100.00	4,099.99	4,161.39	4,150.32	14.48	12.27	81.30	93.48	601.85	612.15	585.76	26.39	23.194	
4,150.00	4,149.97	4,205.49	4,194.23	14.65	12.43	81.17	95.15	598.19	609.46	582.73	26.73	22.797	
4,200.00	4,199.94	4,254.41	4,242.98	14.83	12.61	81.06	96.95	594.34	607.45	580.37	27.08	22.430	
4,250.00	4,249.88	4,309.36	4,297.69	15.00	12.81	80.96	98.96	589.75	605.67	578.23	27.44	22.070	
4,300.00	4,299.79	4,361.29	4,349.38	15.17	13.00	80.88	100.87	585.06	604.01	576.21	27.80	21.729	
4,350.00	4,349.67	4,410.80	4,398.65	15.35	13.18	80.81	102.73	580.57	602.69	574.54	28.15	21.410	
4,400.00	4,399.55	4,460.91	4,448.51	15.53	13.37	80.75	104.63	576.05	601.42	572.92	28.50	21.101	
4,450.00	4,449.43	4,511.36	4,498.72	15.70	13.56	80.69	106.47	571.47	600.12	571.26	28.86	20.797	
4,500.00	4,499.31	4,560.74	4,547.86	15.88	13.74	80.63	108.23	567.00	598.81	569.61	29.21	20.502	
4,550.00	4,549.19	4,609.76	4,596.66	16.05	13.92	80.56	110.08	562.61	597.58	568.02	29.56	20.216	
4,600.00	4,599.07	4,659.37	4,646.03	16.23	14.11	80.49	112.00	558.22	596.42	566.50	29.91	19.938	
4,650.00	4,648.95	4,709.12	4,695.56	16.41	14.29	80.43	113.87	553.85	595.27	565.00	30.27	19.667	
4,700.00	4,698.84	4,758.32	4,744.53	16.58	14.47	80.36	115.71	549.58	594.16	563.54	30.62	19.404	
4,750.00	4,748.72	4,807.46	4,793.45	16.76	14.65	80.29	117.64	545.36	593.13	562.16	30.97	19.149	
4,800.00	4,798.60	4,857.26	4,843.04	16.94	14.84	80.22	119.58	541.13	592.14	560.81	31.33	18.901	
4,850.00	4,848.48	4,907.10	4,892.67	17.11	15.02	80.17	121.38	536.93	591.17	559.48	31.68	18.659	
4,900.00	4,898.36	4,956.08	4,941.45	17.29	15.20	80.13	122.98	532.89	590.24	558.21	32.04	18.424	
4,950.00	4,948.24	5,005.46	4,990.65	17.47	15.39	80.11	124.41	528.93	589.40	557.01	32.39	18.197	
5,000.00	4,998.12	5,057.31	5,042.32	17.65	15.58	80.13	125.54	524.76	588.49	555.74	32.75	17.971	
5,050.00	5,048.00	5,110.05	5,094.88	17.82	15.77	80.18	126.23	520.42	587.41	554.31	33.10	17.744	
5,100.00	5,097.88	5,164.96	5,149.56	18.00	15.97	80.23	127.06	515.49	585.98	552.51	33.46	17.511	
5,150.00	5,147.76	5,217.47	5,201.81	18.18	16.17	80.24	128.09	510.35	584.18	550.36	33.82	17.273	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design												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
5,200.00	5,197.64	5,268.12	5,252.20	18.36	16.36	146.25	129.11	505.29	582.29	548.12	34.18	17.037	
5,250.00	5,247.53	5,316.77	5,300.59	18.54	16.54	146.26	130.07	500.43	580.40	545.87	34.53	16.808	
5,300.00	5,297.41	5,364.43	5,348.02	18.71	16.72	146.27	130.99	495.85	578.70	543.81	34.89	16.589	
5,350.00	5,347.29	5,413.49	5,396.87	18.89	16.90	146.29	131.88	491.31	577.15	541.91	35.24	16.378	
5,400.00	5,397.17	5,463.23	5,446.39	19.07	17.09	146.33	132.70	486.75	575.64	540.04	35.59	16.172	
5,450.00	5,447.05	5,512.25	5,495.20	19.25	17.27	146.36	133.44	482.30	574.16	538.22	35.95	15.972	
5,500.00	5,496.93	5,561.05	5,543.80	19.43	17.45	146.40	134.24	477.97	572.79	536.49	36.30	15.778	
5,550.00	5,546.81	5,610.11	5,592.67	19.61	17.64	146.43	135.09	473.70	571.52	534.86	36.66	15.591	
5,600.00	5,596.69	5,659.25	5,641.62	19.79	17.82	146.46	135.99	469.49	570.32	533.30	37.01	15.409	
5,650.00	5,646.57	5,708.40	5,690.59	19.97	18.00	146.48	136.95	465.34	569.19	531.82	37.37	15.233	
5,700.00	5,696.45	5,757.56	5,739.56	20.15	18.18	146.50	137.99	461.25	568.13	530.41	37.72	15.061	
5,750.00	5,746.33	5,809.24	5,791.05	20.33	18.38	146.51	139.17	456.90	567.05	528.97	38.08	14.891	
5,800.00	5,796.22	5,861.05	5,842.64	20.51	18.57	146.51	140.43	452.36	565.80	527.36	38.44	14.719	
5,850.00	5,846.10	5,910.21	5,891.59	20.69	18.75	146.49	141.71	448.01	564.52	525.72	38.80	14.551	
5,900.00	5,895.98	5,959.61	5,940.78	20.87	18.94	146.48	143.06	443.67	563.29	524.14	39.15	14.387	
5,950.00	5,945.86	6,007.34	5,988.32	21.05	19.12	146.46	144.34	439.62	562.20	522.69	39.51	14.230	
6,000.00	5,995.74	6,055.83	6,036.63	21.23	19.30	146.46	145.58	435.68	561.28	521.42	39.86	14.080	
6,050.00	6,045.62	6,106.39	6,087.01	21.41	19.48	146.44	147.06	431.57	560.39	520.16	40.22	13.932	
6,100.00	6,095.50	6,156.73	6,137.14	21.59	19.67	146.38	148.84	427.38	559.45	518.86	40.58	13.786	
6,150.00	6,145.38	6,206.62	6,186.83	21.77	19.86	146.34	150.49	423.24	558.50	517.56	40.94	13.642	
6,200.00	6,195.26	6,256.61	6,236.64	21.95	20.04	146.32	151.92	419.13	557.56	516.26	41.30	13.500	
6,250.00	6,245.14	6,306.77	6,286.61	22.13	20.23	146.31	153.28	415.01	556.61	514.95	41.66	13.361	
6,300.00	6,295.02	6,356.13	6,335.78	22.31	20.41	146.30	154.59	410.97	555.67	513.65	42.02	13.225	
6,350.00	6,344.91	6,404.73	6,384.21	22.49	20.59	146.29	155.88	407.10	554.83	512.46	42.37	13.094	
6,400.00	6,394.79	6,455.54	6,434.84	22.67	20.78	146.28	157.29	403.11	554.06	511.33	42.73	12.966	
6,450.00	6,444.67	6,508.04	6,487.13	22.85	20.98	146.23	159.09	398.72	553.10	510.01	43.10	12.834	
6,500.00	6,494.55	6,558.51	6,537.36	23.03	21.17	146.14	161.12	394.29	551.98	508.52	43.46	12.702	
6,550.00	6,544.43	6,608.25	6,586.86	23.21	21.36	146.05	163.21	389.92	550.88	507.06	43.82	12.572	
6,600.00	6,594.31	6,656.08	6,634.48	23.39	21.54	145.96	165.22	385.81	549.86	505.69	44.18	12.447	
6,650.00	6,644.19	6,703.53	6,681.73	23.57	21.71	145.89	167.08	381.97	549.08	504.55	44.53	12.330	
6,700.00	6,694.07	6,751.20	6,729.24	23.75	21.89	145.84	168.82	378.36	548.53	503.64	44.89	12.220	
6,750.00	6,743.95	6,798.93	6,776.81	23.93	22.07	145.80	170.49	374.95	548.18	502.94	45.24	12.117	
6,800.00	6,793.83	6,849.25	6,826.99	24.12	22.25	145.76	172.21	371.48	547.94	502.33	45.60	12.016	
6,850.00	6,843.71	6,900.10	6,877.69	24.30	22.44	145.72	173.91	367.90	547.62	501.66	45.96	11.914	
6,900.00	6,893.60	6,950.16	6,927.59	24.48	22.63	145.69	175.60	364.33	547.27	500.94	46.32	11.814	
6,950.00	6,943.48	7,000.40	6,977.66	24.66	22.81	145.64	177.37	360.73	546.91	500.22	46.68	11.715	
7,000.00	6,993.36	7,053.73	7,030.81	24.84	23.01	145.58	179.35	356.71	546.37	499.32	47.05	11.612	
7,050.00	7,043.24	7,106.19	7,083.05	25.02	23.21	145.50	181.42	352.41	545.55	498.13	47.42	11.505	
7,100.00	7,093.12	7,156.45	7,133.09	25.20	23.39	145.41	183.44	348.19	544.62	496.84	47.78	11.398	
7,150.00	7,143.00	7,205.73	7,182.16	25.39	23.58	145.33	185.43	344.04	543.70	495.55	48.14	11.294	
7,200.00	7,192.88	7,253.49	7,229.73	25.57	23.76	145.26	187.32	340.19	542.93	494.43	48.50	11.195	
7,250.00	7,242.76	7,303.32	7,279.37	25.75	23.94	145.19	189.22	336.35	542.34	493.47	48.86	11.100	
7,300.00	7,292.64	7,356.48	7,332.32	25.93	24.14	145.15	190.97	332.09	541.54	492.32	49.23	11.001	
7,350.00	7,342.52	7,407.65	7,383.30	26.11	24.33	145.13	192.35	327.81	540.51	490.92	49.59	10.900	
7,400.00	7,392.40	7,457.48	7,432.94	26.29	24.52	145.13	193.52	323.66	539.47	489.52	49.95	10.800	
7,450.00	7,442.29	7,506.39	7,481.68	26.48	24.70	145.15	194.54	319.65	538.48	488.17	50.31	10.704	
7,500.00	7,492.17	7,554.85	7,529.98	26.66	24.88	145.17	195.52	315.82	537.62	486.95	50.66	10.611	
7,550.00	7,542.05	7,603.15	7,578.13	26.84	25.06	145.21	196.45	312.16	536.90	485.88	51.02	10.523	
7,600.00	7,591.93	7,651.38	7,626.22	27.02	25.24	145.25	197.30	308.68	536.35	484.98	51.37	10.440	
7,650.00	7,641.81	7,700.22	7,674.94	27.20	25.42	145.30	198.09	305.31	535.95	484.22	51.73	10.361	
7,700.00	7,691.69	7,749.27	7,723.88	27.39	25.60	145.37	198.85	302.02	535.63	483.55	52.09	10.284	
7,750.00	7,741.57	7,798.06	7,772.55	27.57	25.78	145.43	199.55	298.85	535.42	482.98	52.44	10.210	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1020-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,800.00	7,791.45	7,846.77	7,821.17	27.75	25.96	145.51	200.21	295.82	535.32	482.53	52.79	10.140	
7,847.15	7,838.49	7,893.54	7,867.85	27.92	26.13	145.58	200.83	292.99	535.31	482.18	53.13	10.076	
7,850.00	7,841.33	7,896.38	7,870.68	27.93	26.14	145.59	200.87	292.82	535.31	482.16	53.15	10.072	
7,900.00	7,891.21	7,946.14	7,920.35	28.11	26.32	145.66	201.59	289.82	535.32	481.82	53.51	10.005	
7,950.00	7,941.09	7,996.72	7,970.82	28.30	26.50	145.73	202.39	286.74	535.32	481.46	53.86	9.938	
8,000.00	7,990.98	8,047.36	8,021.37	28.48	26.69	145.79	203.24	283.59	535.26	481.04	54.22	9.871	
8,037.85	8,028.74	8,084.26	8,058.19	28.62	26.82	145.84	203.84	281.31	535.23	480.74	54.49	9.822 CC	
8,050.00	8,040.86	8,096.13	8,070.03	28.66	26.86	145.85	204.02	280.59	535.24	480.66	54.58	9.807	
8,100.00	8,090.74	8,144.97	8,118.78	28.84	27.04	145.93	204.68	277.72	535.32	480.38	54.93	9.745	
8,150.00	8,140.62	8,193.71	8,167.45	29.03	27.22	146.03	205.20	274.99	535.51	480.23	55.28	9.686	
8,200.00	8,190.50	8,242.46	8,216.13	29.21	27.39	146.14	205.59	272.40	535.82	480.19	55.64	9.631	
8,250.00	8,240.38	8,289.33	8,262.93	29.39	27.56	146.27	205.82	270.14	536.35	480.37	55.98	9.581	
8,300.00	8,290.26	8,336.66	8,310.22	29.57	27.73	146.42	205.89	268.13	537.15	480.83	56.32	9.537	
8,350.00	8,340.14	8,385.47	8,359.00	29.76	27.90	146.59	205.85	266.25	538.12	481.45	56.67	9.496	
8,400.00	8,390.02	8,434.18	8,407.68	29.94	28.07	146.77	205.71	264.50	539.21	482.19	57.02	9.457	
8,450.00	8,439.90	8,482.51	8,455.98	30.12	28.24	146.95	205.50	262.90	540.43	483.07	57.36	9.421	
8,500.00	8,489.78	8,530.87	8,504.32	30.30	28.41	147.15	205.23	261.46	541.81	484.11	57.71	9.389	
8,550.00	8,539.67	8,579.39	8,552.82	30.49	28.58	147.35	204.97	260.15	543.34	485.29	58.05	9.360	
8,600.00	8,589.55	8,628.96	8,602.37	30.67	28.75	147.55	204.75	258.92	544.99	486.59	58.40	9.332	
8,650.00	8,639.43	8,681.78	8,655.17	30.85	28.93	147.76	204.42	257.47	546.50	487.73	58.76	9.300	
8,700.00	8,689.31	8,732.34	8,705.71	31.03	29.11	147.97	204.03	255.86	547.79	488.68	59.12	9.266	
8,750.00	8,739.19	8,780.13	8,753.47	31.22	29.27	148.12	204.15	254.40	549.22	489.76	59.46	9.237	
8,800.00	8,789.07	8,829.96	8,803.28	31.40	29.45	148.22	204.85	252.95	550.81	491.00	59.81	9.209	
8,850.00	8,838.95	8,882.22	8,855.50	31.58	29.63	148.29	205.82	251.24	552.25	492.07	60.18	9.176	
8,900.00	8,888.83	8,928.59	8,901.83	31.76	29.80	148.35	206.77	249.70	553.68	493.17	60.52	9.149	
8,950.00	8,938.71	8,972.81	8,946.04	31.95	29.95	148.42	207.58	248.68	555.61	494.77	60.84	9.132	
9,000.00	8,988.59	9,020.65	8,993.87	32.13	30.12	148.51	208.30	248.02	557.95	496.77	61.18	9.120	
9,050.00	9,038.48	9,071.04	9,044.25	32.31	30.29	148.64	208.77	247.35	560.31	498.77	61.54	9.105	
9,100.00	9,088.36	9,121.73	9,094.93	32.50	30.47	148.77	209.23	246.64	562.61	500.72	61.90	9.090	
9,150.00	9,138.24	9,172.58	9,145.75	32.68	30.65	148.81	210.51	245.73	564.84	502.59	62.26	9.073	
9,200.00	9,188.12	9,224.29	9,197.43	32.86	30.83	148.81	212.24	244.65	566.96	504.34	62.62	9.054	
9,250.00	9,238.00	9,276.19	9,249.29	33.05	31.01	148.86	213.54	243.43	568.91	505.92	62.99	9.032	
9,300.00	9,287.88	9,324.27	9,297.35	33.23	31.18	148.94	214.34	242.36	570.85	507.52	63.33	9.013	
9,350.00	9,337.76	9,372.28	9,345.36	33.41	31.34	149.08	214.73	241.49	572.97	509.30	63.68	8.998	
9,400.00	9,387.64	9,421.33	9,394.40	33.59	31.51	149.20	214.99	240.75	575.21	511.19	64.02	8.984	
9,450.00	9,437.52	9,470.37	9,443.44	33.78	31.68	149.32	215.36	240.07	577.53	513.16	64.37	8.972	
9,500.00	9,487.40	9,519.41	9,492.47	33.96	31.85	149.44	215.84	239.45	579.94	515.21	64.72	8.961	
9,550.00	9,537.28	9,563.19	9,536.25	34.14	32.00	149.53	216.47	239.16	582.66	517.63	65.03	8.960	
9,600.00	9,587.17	9,607.27	9,580.31	34.33	32.15	149.59	217.39	239.27	585.87	520.54	65.33	8.967	
9,650.00	9,637.05	9,655.89	9,628.91	34.51	32.31	149.65	218.53	239.69	589.41	523.74	65.67	8.975	
9,700.00	9,686.93	9,704.91	9,677.92	34.69	32.47	149.72	219.51	240.21	593.02	527.01	66.01	8.984	
9,750.00	9,736.81	9,756.60	9,729.61	34.88	32.63	149.84	220.20	240.75	596.59	530.23	66.36	8.990	
9,800.00	9,786.69	9,808.61	9,781.62	35.06	32.80	150.00	220.35	241.18	600.01	533.29	66.72	8.993	
9,850.00	9,836.57	9,862.24	9,835.24	35.24	32.96	150.21	219.98	241.41	603.17	536.09	67.08	8.992	
9,900.00	9,886.45	9,913.22	9,886.22	35.43	33.12	150.45	219.20	241.39	606.08	538.65	67.43	8.989	
9,950.00	9,936.33	9,959.71	9,932.70	35.61	33.27	150.66	218.58	241.51	609.15	541.41	67.74	8.992	
10,000.00	9,986.21	10,007.29	9,980.28	35.79	33.42	150.85	218.16	241.87	612.49	544.43	68.06	8.999	
10,050.00	10,036.09	10,057.13	10,030.12	35.98	33.57	151.05	217.79	242.30	615.90	547.51	68.40	9.005	
10,100.00	10,085.97	10,108.31	10,081.29	36.16	33.73	151.24	217.40	242.71	619.30	550.55	68.74	9.009	
10,150.00	10,135.86	10,161.31	10,134.29	36.34	33.90	151.48	216.64	242.95	622.49	553.38	69.11	9.008	
10,200.00	10,185.74	10,215.83	10,188.79	36.53	34.08	151.74	215.56	242.89	625.40	555.92	69.48	9.001	
10,250.00	10,235.62	10,271.24	10,244.20	36.71	34.26	151.98	214.69	242.34	627.89	558.03	69.86	8.988	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1020-MWD+HDGM													Offset Well Error:	0.50 ft
Reference	Offset	Semi Major Axis		Distance										Warning
Measured Depth (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		
10,300.00	10,285.50	10,328.68	10,301.62	36.89	34.46	152.21	213.94	241.16	629.88	559.63	70.25	8.966		
10,350.00	10,335.38	10,386.31	10,359.22	37.08	34.66	152.44	213.18	239.28	631.26	560.63	70.64	8.937		
10,400.00	10,385.26	10,429.52	10,402.40	37.26	34.81	152.59	212.85	237.98	632.77	561.81	70.96	8.917		
10,450.00	10,435.14	10,477.48	10,450.35	37.44	34.98	152.73	212.76	236.73	634.52	563.22	71.30	8.899		
10,500.00	10,485.02	10,531.88	10,504.72	37.63	35.17	152.88	212.68	235.14	636.13	564.45	71.68	8.875		
10,550.00	10,534.90	10,582.18	10,554.99	37.81	35.35	153.02	212.55	233.40	637.47	565.44	72.04	8.849		
10,600.00	10,584.78	10,627.74	10,600.53	37.99	35.51	153.14	212.62	232.04	639.06	566.69	72.37	8.830		
10,650.00	10,634.67	10,671.59	10,644.37	38.18	35.66	153.24	212.87	231.03	640.96	568.27	72.69	8.818		
10,700.00	10,684.59	10,712.64	10,685.41	38.36	35.80	153.33	212.97	230.62	642.98	570.00	72.98	8.810		
10,750.00	10,734.54	10,753.84	10,726.62	38.54	35.93	153.43	212.86	230.79	645.11	571.85	73.26	8.805		
10,800.00	10,784.52	10,799.54	10,772.31	38.72	36.07	153.54	212.42	231.44	647.16	573.59	73.57	8.797		
10,850.00	10,834.51	10,845.22	10,817.97	38.90	36.22	153.66	211.58	232.41	648.95	575.09	73.87	8.786		
10,900.00	10,884.51	10,900.99	10,873.72	39.07	36.39	87.74	210.60	233.54	650.12	575.87	74.25	8.756		
10,950.00	10,934.51	10,956.99	10,929.71	39.25	36.56	87.78	210.22	234.13	650.63	576.00	74.63	8.718		
11,000.00	10,984.51	11,010.22	10,982.94	39.42	36.74	87.80	210.03	234.34	650.82	575.82	75.00	8.678		
11,050.00	11,034.51	11,062.73	11,035.45	39.60	36.92	87.80	209.94	234.25	650.74	575.37	75.36	8.635		
11,100.00	11,084.51	11,113.95	11,086.67	39.77	37.09	87.80	209.99	234.04	650.53	574.81	75.72	8.591		
11,150.00	11,134.51	11,164.50	11,137.23	39.95	37.27	87.78	210.18	233.75	650.25	574.17	76.08	8.547		
11,200.00	11,184.51	11,215.25	11,187.97	40.12	37.44	87.75	210.51	233.43	649.94	573.51	76.43	8.503		
11,250.00	11,234.51	11,266.87	11,239.59	40.30	37.62	-92.14	210.77	233.01	649.55	572.76	76.79	8.458		
11,300.00	11,284.40	11,325.85	11,298.36	40.46	37.82	-92.14	206.41	232.23	648.86	571.68	77.17	8.408		
11,350.00	11,333.85	11,404.03	11,374.38	40.61	38.06	-91.80	188.89	229.40	646.87	569.30	77.57	8.339		
11,400.00	11,382.46	11,457.01	11,423.81	40.76	38.21	-91.51	170.09	226.30	643.68	565.81	77.87	8.266		
11,450.00	11,429.88	11,504.05	11,466.45	40.91	38.34	-91.34	150.40	223.79	640.80	562.65	78.16	8.199		
11,500.00	11,475.73	11,554.91	11,510.97	41.04	38.46	-91.19	125.97	221.27	638.15	559.72	78.44	8.136		
11,550.00	11,519.68	11,606.52	11,554.04	41.16	38.59	-91.07	97.69	218.68	635.48	556.76	78.71	8.073		
11,600.00	11,561.39	11,654.89	11,592.11	41.27	38.69	-90.99	67.96	216.32	632.88	553.91	78.97	8.014		
11,650.00	11,600.53	11,702.76	11,627.14	41.37	38.78	-90.89	35.42	214.21	630.52	551.30	79.21	7.960		
11,700.00	11,636.82	11,738.18	11,651.39	41.46	38.84	-90.87	9.64	213.15	628.87	549.47	79.41	7.920		
11,739.62	11,663.37	11,765.79	11,669.44	41.52	38.88	-90.86	-11.25	212.93	628.48	548.93	79.54	7.901		
11,750.00	11,669.98	11,773.02	11,674.04	41.53	38.89	-90.85	-16.83	212.97	628.50	548.92	79.58	7.898		
11,800.00	11,699.75	11,808.57	11,695.85	41.60	38.95	-90.84	-44.89	213.67	629.40	549.65	79.74	7.893		
11,850.00	11,725.90	11,846.55	11,717.86	41.66	39.00	-90.87	-75.80	215.22	631.38	551.46	79.92	7.900		
11,900.00	11,748.25	11,884.43	11,738.53	41.73	39.05	-90.96	-107.46	217.50	634.40	554.29	80.11	7.920		
11,950.00	11,766.61	11,935.10	11,763.70	41.82	39.12	-91.26	-151.27	221.20	638.10	557.74	80.36	7.940		
12,000.00	11,780.85	12,011.68	11,794.43	41.92	39.25	-91.84	-221.18	225.89	641.49	560.75	80.74	7.945		
12,050.00	11,790.86	12,132.20	11,821.43	42.03	39.53	-92.22	-338.29	221.57	638.35	557.06	81.29	7.853		
12,100.00	11,796.57	12,188.16	11,829.34	42.14	39.69	-92.76	-393.53	217.39	634.55	552.98	81.57	7.780		
12,150.00	11,798.00	12,232.56	11,833.80	42.25	39.83	-93.36	-437.58	214.10	630.90	549.10	81.80	7.712		
12,200.00	11,798.00	12,271.51	11,835.91	42.37	39.95	-93.57	-476.41	211.83	628.03	546.01	82.01	7.658		
12,250.00	11,798.00	12,310.42	11,836.31	42.51	40.08	-93.61	-515.28	210.35	626.02	543.78	82.25	7.612		
12,300.00	11,798.00	12,349.26	11,835.30	42.65	40.22	-93.52	-554.10	209.65	624.91	542.44	82.47	7.577		
12,350.00	11,798.00	12,396.38	11,833.01	42.80	40.39	-93.31	-601.16	209.49	624.45	541.66	82.79	7.543		
12,400.00	11,798.00	12,446.73	11,831.13	42.96	40.59	-93.15	-651.48	209.28	624.01	540.88	83.13	7.506		
12,450.00	11,798.00	12,494.80	11,829.97	43.14	40.78	-93.04	-699.53	209.09	623.61	540.12	83.49	7.469		
12,500.00	11,798.00	12,542.43	11,829.41	43.32	40.98	-92.99	-747.16	209.05	623.40	539.55	83.86	7.434		
12,515.08	11,798.00	12,556.80	11,829.36	43.39	41.04	-92.98	-761.53	209.06	623.38	539.41	83.97	7.424		
12,550.00	11,798.00	12,578.52	11,829.36	43.53	41.14	-92.98	-783.24	209.39	623.78	539.62	84.15	7.412		
12,600.00	11,798.00	12,612.39	11,829.55	43.73	41.30	-93.00	-817.09	210.59	625.42	541.00	84.42	7.408		
12,650.00	11,798.00	12,648.04	11,830.02	43.95	41.46	-93.03	-852.67	212.78	628.36	543.64	84.72	7.417		
12,700.00	11,798.00	12,735.55	11,831.34	44.18	41.90	-93.13	-940.09	216.34	630.30	544.71	85.59	7.364		
12,750.00	11,798.00	12,807.30	11,832.26	44.42	42.28	-93.22	-1,011.83	215.85	629.85	543.51	86.34	7.295		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1020-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			Distance				Minimum Separation (ft)	Separation Factor	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)				
12,800.00	11,798.00	12,857.18	11,832.79	44.67	42.56	-93.28	-1,061.67	214.36	628.25	541.39	86.86	7.233		
12,850.00	11,798.00	12,893.62	11,833.12	44.93	42.77	-93.31	-1,098.11	213.90	627.53	540.26	87.26	7.191		
12,858.71	11,798.00	12,899.97	11,833.17	44.98	42.81	-93.31	-1,104.46	213.91	627.51	540.18	87.33	7.185		
12,900.00	11,798.00	12,930.09	11,833.41	45.20	42.98	-93.33	-1,134.58	214.24	627.88	540.23	87.65	7.164		
12,950.00	11,798.00	12,978.04	11,833.66	45.48	43.28	-93.35	-1,182.51	215.29	628.85	540.63	88.21	7.129		
13,000.00	11,798.00	13,026.35	11,833.73	45.77	43.58	-93.35	-1,230.81	216.51	629.98	541.20	88.78	7.096		
13,050.00	11,798.00	13,083.18	11,833.72	46.07	43.95	-93.35	-1,287.63	217.70	630.89	541.39	89.51	7.048		
13,100.00	11,798.00	13,155.81	11,833.73	46.38	44.43	-93.35	-1,360.26	217.91	631.02	540.56	90.46	6.976		
13,150.00	11,798.00	13,222.20	11,833.83	46.70	44.89	-93.37	-1,426.58	215.03	628.56	537.21	91.36	6.880		
13,200.00	11,798.00	13,252.86	11,833.68	47.02	45.11	-93.36	-1,457.23	214.08	626.88	535.11	91.77	6.831		
13,229.71	11,798.00	13,271.10	11,833.49	47.22	45.24	-93.35	-1,475.46	213.98	626.61	534.59	92.01	6.810		
13,250.00	11,798.00	13,283.56	11,833.31	47.36	45.33	-93.33	-1,487.91	214.10	626.73	534.56	92.18	6.799		
13,300.00	11,798.00	13,317.43	11,832.67	47.70	45.58	-93.27	-1,521.76	215.17	628.08	535.47	92.62	6.782		
13,350.00	11,798.00	13,356.82	11,832.07	48.06	45.88	-93.20	-1,561.09	217.14	630.41	537.25	93.16	6.767		
13,400.00	11,798.00	13,397.00	11,831.69	48.42	46.18	-93.16	-1,601.19	219.83	633.58	539.88	93.72	6.761		
13,450.00	11,798.00	13,474.33	11,831.35	48.79	46.78	-93.11	-1,678.40	223.89	636.09	541.10	94.99	6.697		
13,500.00	11,798.00	13,521.16	11,831.28	49.16	47.16	-93.09	-1,725.21	225.21	637.37	541.66	95.71	6.660		
13,550.00	11,798.00	13,561.79	11,831.29	49.55	47.49	-93.09	-1,765.80	226.93	639.34	543.01	96.33	6.637		
13,600.00	11,798.00	13,607.47	11,831.29	49.94	47.87	-93.08	-1,811.41	229.43	641.94	544.89	97.05	6.615		
13,650.00	11,798.00	13,657.72	11,830.89	50.34	48.29	-93.03	-1,861.58	232.27	644.60	546.72	97.88	6.586		
13,700.00	11,798.00	13,703.64	11,830.34	50.75	48.69	-92.97	-1,907.42	234.94	647.34	548.71	98.63	6.563		
13,750.00	11,798.00	13,747.25	11,830.50	51.16	49.07	-92.97	-1,950.94	237.84	650.54	551.19	99.35	6.548		
13,800.00	11,798.00	13,793.48	11,831.25	51.58	49.48	-93.02	-1,997.03	241.29	654.17	554.04	100.14	6.533		
13,850.00	11,798.00	13,842.62	11,831.23	52.01	49.93	-93.00	-2,046.02	245.11	657.92	556.92	101.00	6.514		
13,900.00	11,798.00	13,914.06	11,829.43	52.44	50.58	-92.82	-2,117.26	250.00	661.26	558.89	102.37	6.460		
13,950.00	11,798.00	13,991.78	11,825.88	52.89	51.31	-92.51	-2,194.87	251.85	662.12	558.28	103.84	6.376		
14,000.00	11,798.00	14,056.55	11,823.74	53.33	51.92	-92.33	-2,259.61	251.47	661.63	556.60	105.03	6.299		
14,050.00	11,798.00	14,101.72	11,822.43	53.79	52.36	-92.22	-2,304.75	250.86	660.76	554.88	105.88	6.241		
14,100.00	11,798.00	14,147.03	11,820.70	54.25	52.80	-92.07	-2,350.03	250.58	660.25	553.53	106.73	6.186		
14,150.00	11,798.00	14,199.94	11,818.79	54.71	53.32	-91.90	-2,402.90	250.35	659.84	552.10	107.74	6.124		
14,200.00	11,798.00	14,255.27	11,817.80	55.18	53.87	-91.82	-2,458.22	249.75	659.14	550.34	108.80	6.058		
14,250.00	11,798.00	14,320.58	11,817.20	55.66	54.52	-91.77	-2,523.51	247.94	657.61	547.55	110.06	5.975		
14,300.00	11,798.00	14,378.12	11,816.91	56.14	55.09	-91.75	-2,580.98	245.24	655.11	543.94	111.17	5.893		
14,350.00	11,798.00	14,432.12	11,817.12	56.63	55.64	-91.78	-2,634.89	242.30	652.26	540.03	112.23	5.812		
14,400.00	11,798.00	14,481.44	11,817.69	57.12	56.14	-91.84	-2,684.13	239.46	649.27	536.04	113.23	5.734		
14,450.00	11,798.00	14,530.49	11,818.59	57.62	56.65	-91.93	-2,733.10	236.69	646.34	532.11	114.23	5.658		
14,500.00	11,798.00	14,570.86	11,819.47	58.11	57.07	-92.01	-2,773.41	234.74	643.83	528.74	115.09	5.594		
14,550.00	11,798.00	14,611.54	11,820.37	58.62	57.50	-92.10	-2,814.05	233.36	642.03	526.08	115.95	5.537		
14,600.00	11,798.00	14,657.41	11,821.40	59.13	57.98	-92.19	-2,859.90	232.33	640.82	523.91	116.91	5.481		
14,650.00	11,798.00	14,705.31	11,822.46	59.65	58.50	-92.29	-2,907.78	231.44	639.80	521.87	117.93	5.425		
14,700.00	11,798.00	14,758.39	11,823.62	60.17	59.07	-92.40	-2,960.83	230.45	638.79	519.73	119.06	5.365		
14,750.00	11,798.00	14,813.31	11,824.79	60.69	59.66	-92.51	-3,015.73	229.04	637.41	517.18	120.23	5.302		
14,800.00	11,798.00	14,849.40	11,825.20	61.22	60.06	-92.55	-3,051.81	228.39	636.40	515.39	121.01	5.259		
14,822.66	11,798.00	14,865.97	11,825.16	61.46	60.24	-92.55	-3,068.38	228.36	636.30	514.93	121.37	5.243		
14,850.00	11,798.00	14,885.96	11,824.92	61.75	60.46	-92.52	-3,088.36	228.54	636.45	514.67	121.78	5.226		
14,900.00	11,798.00	14,930.14	11,824.05	62.29	60.96	-92.44	-3,132.52	229.57	637.43	514.70	122.72	5.194		
14,950.00	11,798.00	14,983.63	11,824.78	62.83	61.56	-92.50	-3,186.00	230.65	638.32	514.40	123.92	5.151		
15,000.00	11,798.00	15,030.16	11,826.71	63.37	62.08	-92.67	-3,232.47	231.43	639.13	514.19	124.95	5.115		
15,050.00	11,798.00	15,073.40	11,827.59	63.92	62.57	-92.75	-3,275.68	232.63	640.43	514.55	125.88	5.087		
15,100.00	11,798.00	15,117.30	11,827.52	64.47	63.08	-92.74	-3,319.55	234.35	642.25	515.41	126.83	5.064		
15,150.00	11,798.00	15,161.85	11,827.21	65.02	63.59	-92.70	-3,364.05	236.48	644.49	516.68	127.81	5.043		
15,200.00	11,798.00	15,207.87	11,826.78	65.58	64.12	-92.65	-3,410.00	239.06	647.13	518.31	128.82	5.023		

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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		
15,250.00	11,798.00	15,256.04	11,826.36	66.14	64.68	-92.60	-3,458.08	241.93	649.96	520.04	129.92	5.003		
15,300.00	11,798.00	15,311.44	11,825.85	66.70	65.33	-92.54	-3,513.38	245.23	652.80	521.56	131.23	4.974	Alert	
15,350.00	11,798.00	15,376.12	11,824.71	67.27	66.09	-92.44	-3,577.99	247.93	654.71	521.88	132.82	4.929	Alert	
15,400.00	11,798.00	15,441.90	11,823.40	67.84	66.86	-92.32	-3,643.74	249.15	655.46	521.06	134.40	4.877	Alert	
15,450.00	11,798.00	15,499.53	11,822.63	68.42	67.54	-92.25	-3,701.37	249.02	655.17	519.42	135.75	4.826	Alert	
15,500.00	11,798.00	15,550.26	11,822.45	68.99	68.14	-92.24	-3,752.10	248.69	654.71	517.77	136.93	4.781	Alert	
15,550.00	11,798.00	15,600.36	11,822.67	69.57	68.74	-92.26	-3,802.20	248.32	654.20	516.09	138.11	4.737	Alert	
15,600.00	11,798.00	15,650.18	11,823.01	70.15	69.33	-92.29	-3,852.02	247.94	653.71	514.42	139.29	4.693	Alert	
15,650.00	11,798.00	15,700.96	11,823.42	70.74	69.94	-92.33	-3,902.79	247.55	653.20	512.71	140.49	4.649	Alert	
15,700.00	11,798.00	15,751.96	11,823.79	71.32	70.55	-92.36	-3,953.79	247.07	652.62	510.92	141.70	4.606	Alert	
15,750.00	11,798.00	15,799.42	11,823.83	71.91	71.12	-92.37	-4,001.25	246.69	652.09	509.25	142.84	4.565	Alert	
15,800.00	11,798.00	15,846.73	11,823.26	72.50	71.70	-92.32	-4,048.55	246.54	651.77	507.79	143.97	4.527	Alert	
15,850.00	11,798.00	15,897.47	11,822.19	73.10	72.31	-92.22	-4,099.28	246.46	651.52	506.33	145.19	4.487	Alert	
15,900.00	11,798.00	15,948.30	11,820.90	73.70	72.93	-92.11	-4,150.09	246.34	651.21	504.79	146.42	4.448	Alert	
15,950.00	11,798.00	15,998.36	11,820.25	74.30	73.55	-92.06	-4,200.14	246.15	650.87	503.24	147.64	4.409	Alert	
16,000.00	11,798.00	16,049.25	11,820.65	74.90	74.17	-92.09	-4,251.03	245.91	650.52	501.64	148.88	4.370	Alert	
16,050.00	11,798.00	16,102.37	11,821.11	75.50	74.83	-92.13	-4,304.15	245.47	649.99	499.81	150.17	4.328	Alert	
16,100.00	11,798.00	16,161.96	11,820.99	76.11	75.56	-92.13	-4,363.73	244.55	649.09	497.48	151.61	4.281	Alert	
16,150.00	11,798.00	16,228.44	11,819.07	76.71	76.38	-91.97	-4,430.13	242.10	647.07	493.91	153.16	4.225	Alert	
16,200.00	11,798.00	16,264.71	11,817.84	77.32	76.83	-91.86	-4,466.36	240.77	645.01	490.89	154.12	4.185	Alert	
16,250.00	11,798.00	16,302.94	11,817.03	77.94	77.30	-91.79	-4,504.57	240.02	643.87	488.78	155.09	4.152	Alert	
16,300.00	11,798.00	16,345.79	11,816.57	78.55	77.84	-91.75	-4,547.42	239.86	643.52	487.38	156.14	4.121	Alert	
16,320.69	11,798.00	16,364.76	11,816.36	78.80	78.08	-91.73	-4,566.38	239.90	643.50	486.88	156.61	4.109	Alert	
16,350.00	11,798.00	16,391.62	11,816.04	79.17	78.42	-91.70	-4,593.24	240.03	643.55	486.27	157.28	4.092	Alert	
16,400.00	11,798.00	16,439.36	11,815.47	79.78	79.02	-91.65	-4,640.98	240.47	643.86	485.40	158.46	4.063	Alert	
16,450.00	11,798.00	16,488.64	11,815.31	80.40	79.64	-91.64	-4,690.26	241.00	644.26	484.56	159.70	4.034	Alert	
16,500.00	11,798.00	16,541.91	11,815.48	81.02	80.31	-91.65	-4,743.52	241.50	644.61	483.56	161.05	4.003	Alert	
16,550.00	11,798.00	16,597.35	11,815.33	81.65	81.02	-91.64	-4,798.96	241.61	644.56	482.11	162.45	3.968	Alert	
16,581.10	11,798.00	16,625.18	11,815.17	82.04	81.37	-91.62	-4,826.79	241.60	644.47	481.32	163.15	3.950	Alert	
16,600.00	11,798.00	16,641.75	11,815.11	82.27	81.58	-91.62	-4,843.36	241.68	644.51	480.94	163.56	3.940	Alert	
16,650.00	11,798.00	16,685.60	11,815.08	82.90	82.14	-91.62	-4,887.21	242.16	644.93	480.27	164.65	3.917	Alert	
16,700.00	11,798.00	16,741.25	11,815.07	83.53	82.85	-91.61	-4,942.86	242.90	645.46	479.38	166.08	3.886	Alert	
16,750.00	11,798.00	16,800.14	11,814.64	84.16	83.61	-91.58	-5,001.74	242.92	645.34	477.74	167.59	3.851	Alert	
16,754.81	11,798.00	16,805.80	11,814.57	84.22	83.68	-91.57	-5,007.40	242.88	645.29	477.55	167.74	3.847	Alert	
16,800.00	11,798.00	16,835.54	11,814.19	84.79	84.06	-91.54	-5,037.14	243.27	645.61	477.14	168.47	3.832	Alert	
16,850.00	11,798.00	16,874.66	11,813.56	85.42	84.57	-91.48	-5,076.24	244.24	646.69	477.29	169.40	3.818	Alert	
16,900.00	11,798.00	16,926.46	11,812.41	86.05	85.24	-91.37	-5,127.99	245.99	648.23	477.48	170.74	3.797	Alert	
16,950.00	11,798.00	16,981.69	11,810.67	86.69	85.96	-91.21	-5,183.18	247.46	649.39	477.20	172.19	3.771	Alert	
17,000.00	11,798.00	17,028.03	11,809.27	87.33	86.56	-91.09	-5,229.48	248.66	650.51	477.15	173.36	3.752	Alert	
17,050.00	11,798.00	17,075.30	11,808.30	87.97	87.18	-91.00	-5,276.72	250.09	651.88	477.31	174.56	3.734	Alert	
17,100.00	11,798.00	17,127.96	11,807.25	88.60	87.87	-90.91	-5,329.34	251.67	653.23	477.29	175.94	3.713	Alert	
17,150.00	11,798.00	17,181.42	11,805.83	89.25	88.57	-90.78	-5,382.77	253.05	654.37	477.02	177.35	3.690	Alert	
17,200.00	11,798.00	17,237.00	11,803.89	89.89	89.30	-90.61	-5,438.31	254.08	655.14	476.33	178.81	3.664	Alert	
17,250.00	11,798.00	17,287.72	11,801.88	90.53	89.96	-90.44	-5,488.99	254.70	655.59	475.48	180.12	3.640	Alert	
17,300.00	11,798.00	17,334.80	11,800.68	91.18	90.58	-90.33	-5,536.04	255.42	656.22	474.89	181.33	3.619	Alert	
17,350.00	11,798.00	17,386.27	11,799.99	91.82	91.26	-90.27	-5,587.50	256.33	656.97	474.29	182.67	3.596	Alert	
17,400.00	11,798.00	17,441.32	11,798.73	92.47	91.99	-90.16	-5,642.53	256.95	657.40	473.28	184.12	3.570	Alert	
17,450.00	11,798.00	17,492.14	11,797.41	93.12	92.65	-90.04	-5,693.34	257.28	657.58	472.13	185.44	3.546	Alert	
17,500.00	11,798.00	17,542.20	11,796.84	93.77	93.31	-90.00	-5,743.39	257.58	657.75	471.00	186.75	3.522	Alert	
17,550.00	11,798.00	17,599.60	11,796.34	94.42	94.07	-89.95	-5,800.78	257.62	657.65	469.40	188.26	3.493	Alert	
17,600.00	11,798.00	17,656.61	11,795.21	95.07	94.82	-89.85	-5,857.78	257.01	656.98	467.25	189.73	3.463	Alert	
17,650.00	11,798.00	17,712.34	11,793.76	95.72	95.55	-89.73	-5,913.48	255.88	655.84	464.68	191.16	3.431	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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1020-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
17,700.00	11,798.00	17,763.29	11,792.20	96.38	96.22	-89.59	-5,964.38	254.52	654.38	461.91	192.47	3.400	Alert
17,750.00	11,798.00	17,811.64	11,790.56	97.03	96.86	-89.44	-6,012.69	253.32	653.01	459.27	193.74	3.371	Alert
17,800.00	11,798.00	17,857.47	11,789.15	97.69	97.47	-89.32	-6,058.49	252.35	651.84	456.89	194.95	3.344	Alert
17,850.00	11,798.00	17,902.27	11,788.70	98.35	98.06	-89.28	-6,103.29	251.76	651.06	454.81	196.14	3.319	Alert
17,900.00	11,798.00	17,949.70	11,789.04	99.00	98.69	-89.31	-6,150.71	251.47	650.61	453.21	197.40	3.296	Alert
17,950.00	11,798.00	17,999.00	11,789.25	99.66	99.35	-89.33	-6,200.01	251.25	650.25	451.54	198.71	3.272	Alert
18,000.00	11,798.00	18,051.12	11,789.29	100.32	100.04	-89.33	-6,252.13	250.99	649.87	449.77	200.10	3.248	Alert
18,050.00	11,798.00	18,104.58	11,789.47	100.99	100.75	-89.34	-6,305.59	250.46	649.24	447.73	201.51	3.222	Alert
18,100.00	11,798.00	18,146.71	11,789.47	101.65	101.31	-89.34	-6,347.71	250.14	648.73	446.09	202.64	3.201	Alert
18,111.17	11,798.00	18,155.84	11,789.40	101.79	101.44	-89.34	-6,356.84	250.15	648.72	445.84	202.88	3.198	Alert
18,150.00	11,798.00	18,187.56	11,788.96	102.31	101.86	-89.30	-6,388.56	250.40	648.93	445.23	203.70	3.186	Alert
18,200.00	11,798.00	18,233.50	11,787.93	102.97	102.48	-89.21	-6,434.48	251.24	649.71	444.81	204.90	3.171	Alert
18,250.00	11,798.00	18,282.90	11,786.82	103.64	103.15	-89.11	-6,483.86	252.23	650.60	444.39	206.21	3.155	Alert
18,300.00	11,798.00	18,334.23	11,786.01	104.30	103.84	-89.04	-6,535.17	253.25	651.48	443.89	207.59	3.138	Alert
18,350.00	11,798.00	18,386.43	11,786.31	104.97	104.55	-89.07	-6,587.36	254.15	652.20	443.19	209.01	3.120	Alert
18,400.00	11,798.00	18,441.08	11,787.14	105.64	105.28	-89.14	-6,642.00	254.82	652.67	442.16	210.50	3.101	Alert
18,450.00	11,798.00	18,496.04	11,787.43	106.30	106.03	-89.17	-6,696.96	255.07	652.76	440.76	211.99	3.079	Alert
18,453.00	11,798.00	18,499.33	11,787.43	106.34	106.07	-89.17	-6,700.25	255.07	652.75	440.67	212.08	3.078	Alert
18,500.00	11,798.00	18,539.68	11,787.93	106.97	106.62	-89.21	-6,740.59	255.40	652.98	439.82	213.16	3.063	Alert
18,550.00	11,798.00	18,585.88	11,789.00	107.64	107.24	-89.31	-6,786.78	256.06	653.54	439.14	214.40	3.048	Alert
18,600.00	11,798.00	18,638.84	11,789.44	108.31	107.96	-89.35	-6,839.73	256.80	654.11	438.26	215.85	3.030	Alert
18,650.00	11,798.00	18,690.39	11,788.32	108.98	108.66	-89.25	-6,891.26	257.30	654.47	437.23	217.24	3.013	Alert
18,700.00	11,798.00	18,739.18	11,787.34	109.65	109.33	-89.16	-6,940.04	257.79	654.85	436.31	218.54	2.996	Alert
18,750.00	11,798.00	18,787.84	11,786.96	110.33	109.99	-89.13	-6,988.69	258.38	655.33	435.47	219.85	2.981	Alert
18,800.00	11,798.00	18,836.29	11,787.35	111.00	110.65	-89.17	-7,037.14	259.08	655.92	434.75	221.16	2.966	Alert
18,850.00	11,798.00	18,886.09	11,788.44	111.67	111.33	-89.26	-7,086.92	259.91	656.60	434.07	222.53	2.951	Alert
18,900.00	11,798.00	18,937.46	11,788.99	112.35	112.03	-89.31	-7,138.28	260.69	657.21	433.28	223.94	2.935	Alert
18,950.00	11,798.00	18,995.45	11,788.42	113.02	112.82	-89.26	-7,196.26	261.22	657.56	432.04	225.52	2.916	Alert
19,000.00	11,798.00	19,057.05	11,785.59	113.70	113.66	-89.01	-7,257.79	260.74	657.07	429.83	227.14	2.893	Alert
19,050.00	11,798.00	19,105.47	11,783.43	114.37	114.32	-88.82	-7,306.15	260.06	656.27	427.83	228.44	2.873	Alert
19,100.00	11,798.00	19,154.10	11,782.40	115.05	114.98	-88.73	-7,354.77	259.40	655.48	425.74	229.75	2.853	Alert
19,150.00	11,798.00	19,198.07	11,781.98	115.73	115.58	-88.69	-7,398.74	259.10	655.02	424.07	230.95	2.836	Alert
19,175.63	11,798.00	19,220.61	11,781.84	116.07	115.88	-88.68	-7,421.28	259.10	654.96	423.40	231.56	2.828	Alert
19,200.00	11,798.00	19,242.71	11,781.77	116.40	116.19	-88.68	-7,443.38	259.21	655.01	422.86	232.15	2.821	Alert
19,250.00	11,798.00	19,296.25	11,781.68	117.08	116.92	-88.67	-7,498.92	259.39	655.05	421.43	233.62	2.804	Alert
19,300.00	11,798.00	19,347.37	11,781.63	117.76	117.62	-88.66	-7,548.03	259.32	654.85	419.84	235.01	2.786	Alert
19,328.52	11,798.00	19,373.51	11,781.41	118.15	117.97	-88.64	-7,574.17	259.34	654.79	419.07	235.72	2.778	Alert
19,350.00	11,798.00	19,393.19	11,781.10	118.44	118.24	-88.62	-7,593.85	259.41	654.82	418.57	236.25	2.772	Alert
19,400.00	11,798.00	19,441.31	11,779.86	118.12	118.90	-88.51	-7,641.95	259.78	655.10	417.55	237.55	2.758	Alert
19,450.00	11,798.00	19,495.96	11,778.02	119.80	119.65	-88.35	-7,696.57	259.99	655.20	416.18	239.02	2.741	Alert
19,500.00	11,798.00	19,550.33	11,775.99	120.48	120.40	-88.17	-7,750.90	259.81	654.96	414.49	240.48	2.724	Alert
19,550.00	11,798.00	19,604.48	11,774.30	121.16	121.14	-88.02	-7,805.02	259.29	654.41	412.49	241.92	2.705	Alert
19,600.00	11,798.00	19,653.72	11,773.31	121.85	121.82	-87.93	-7,854.25	258.68	653.68	410.43	243.25	2.687	Alert
19,650.00	11,798.00	19,701.79	11,773.25	122.53	122.47	-87.92	-7,902.32	258.24	653.10	408.53	244.57	2.670	Alert
19,700.00	11,798.00	19,750.70	11,773.63	123.21	123.15	-87.96	-7,951.22	257.93	652.64	406.72	245.92	2.654	Alert
19,750.00	11,798.00	19,799.77	11,773.59	123.90	123.82	-87.95	-8,000.30	257.68	652.25	404.98	247.27	2.638	Alert
19,796.83	11,798.00	19,841.97	11,773.63	124.54	124.40	-87.96	-8,042.49	257.63	652.07	403.64	248.43	2.625	Alert
19,800.00	11,798.00	19,844.79	11,773.66	124.58	124.44	-87.96	-8,045.32	257.64	652.07	403.56	248.50	2.624	Alert
19,850.00	11,798.00	19,889.42	11,774.53	125.27	125.06	-88.03	-8,089.93	258.00	652.30	402.57	249.73	2.612	Alert
19,900.00	11,798.00	19,934.14	11,776.14	125.95	125.68	-88.18	-8,134.61	258.74	652.94	401.98	250.96	2.602	Alert
19,950.00	11,798.00	19,978.82	11,778.40	126.64	126.30	-88.38	-8,179.23	259.87	653.99	401.80	252.19	2.593	Alert
20,000.00	11,798.00	20,029.92	11,781.16	127.32	127.01	-88.62	-8,230.22	261.39	655.28	401.63	253.65	2.583	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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore #1													Offset Site Error: 0.00 ft	
Survey Program: 148-GYRO-NS-CT, 1020-MWD+HDGM													Offset Well Error: 0.50 ft	
Reference		Offset		Semi Major Axis		Distance								
Measured Depth	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)			
20,050.00	11,798.00	20,083.84	11,782.60	128.01	127.76	-88.75	-8,284.11	262.68	656.31	401.11	255.20	2.572	Alert	
20,100.00	11,798.00	20,130.82	11,782.80	128.70	128.42	-88.77	-8,331.08	263.73	657.29	400.82	256.48	2.563	Alert	
20,150.00	11,798.00	20,177.50	11,782.34	129.38	129.07	-88.73	-8,377.73	265.00	658.53	400.79	257.74	2.555	Alert	
20,200.00	11,798.00	20,230.13	11,781.52	130.07	129.80	-88.66	-8,430.34	266.46	659.80	400.59	259.21	2.545	Alert	
20,250.00	11,798.00	20,283.27	11,780.99	130.76	130.54	-88.62	-8,483.47	267.70	660.84	400.14	260.70	2.535	Alert	
20,300.00	11,798.00	20,324.99	11,780.59	131.45	131.13	-88.59	-8,525.16	268.89	662.14	400.36	261.78	2.529	Alert	
20,350.00	11,798.00	20,368.21	11,780.07	132.14	131.73	-88.55	-8,568.35	270.55	663.94	401.06	262.88	2.526	Alert	
20,400.00	11,798.00	20,409.60	11,779.70	132.83	132.31	-88.52	-8,609.68	272.62	666.32	402.43	263.89	2.525	Alert	
20,450.00	11,798.00	20,450.90	11,779.72	133.52	132.90	-88.53	-8,650.90	275.22	669.34	404.48	264.86	2.527	Alert	
20,500.00	11,798.00	20,500.32	11,779.97	134.21	133.60	-88.56	-8,700.19	278.78	672.79	406.56	266.23	2.527	Alert	
20,550.00	11,798.00	20,553.55	11,779.81	134.90	134.35	-88.55	-8,753.31	282.38	676.04	408.24	267.80	2.524	Alert	
20,600.00	11,798.00	20,619.40	11,778.21	135.59	135.28	-88.42	-8,819.04	285.89	678.61	408.70	269.91	2.514	Alert	
20,650.00	11,798.00	20,678.24	11,775.07	136.28	136.10	-88.16	-8,877.76	287.73	680.11	408.50	271.61	2.504	Alert	
20,700.00	11,798.00	20,730.04	11,772.34	136.97	136.83	-87.93	-8,929.46	289.07	681.36	408.33	273.02	2.496	Minor Risk	
20,750.00	11,798.00	20,784.50	11,769.76	137.67	137.59	-87.72	-8,983.86	290.26	682.41	407.88	274.53	2.486	Minor Risk	
20,800.00	11,798.00	20,840.18	11,767.45	138.36	138.37	-87.53	-9,039.48	291.04	683.06	407.00	276.06	2.474	Minor Risk	
20,850.00	11,798.00	20,887.97	11,766.22	139.05	139.04	-87.43	-9,087.25	291.62	683.59	406.23	277.36	2.465	Minor Risk	
20,900.00	11,798.00	20,936.16	11,766.21	139.74	139.71	-87.43	-9,135.44	292.41	684.27	405.58	278.70	2.455	Minor Risk	
20,950.00	11,798.00	21,004.53	11,765.92	140.44	140.67	-87.40	-9,203.79	292.67	684.34	403.75	280.60	2.439	Minor Risk	
21,000.00	11,798.00	21,081.68	11,762.43	141.13	141.73	-87.10	-9,280.82	290.37	682.87	400.54	282.32	2.419	Minor Risk	
21,050.00	11,798.00	21,144.43	11,756.25	141.83	142.58	-86.56	-9,343.11	286.05	679.48	395.87	283.61	2.396	Minor Risk	
21,100.00	11,798.00	21,188.15	11,752.16	142.52	143.18	-86.20	-9,386.53	283.07	676.22	391.37	284.85	2.374	Minor Risk	
21,150.00	11,798.00	21,237.93	11,748.46	143.22	143.85	-85.87	-9,436.09	280.08	673.35	387.23	286.11	2.353	Minor Risk	
21,200.00	11,798.00	21,299.10	11,745.18	143.91	144.69	-85.56	-9,497.01	275.81	669.93	382.54	287.39	2.331	Minor Risk	
21,250.00	11,798.00	21,346.46	11,743.14	144.61	145.33	-85.36	-9,544.18	272.13	666.09	377.40	288.69	2.307	Minor Risk	
21,300.00	11,798.00	21,390.46	11,740.62	145.30	145.93	-85.12	-9,588.00	269.02	662.67	372.70	289.97	2.285	Minor Risk	
21,350.00	11,798.00	21,440.84	11,737.53	146.00	146.61	-84.82	-9,637.98	265.74	659.54	368.32	291.22	2.265	Minor Risk	
21,400.00	11,798.00	21,493.99	11,735.69	146.69	147.34	-84.63	-9,691.17	262.14	656.20	363.68	292.52	2.243	Minor Risk	
21,450.00	11,798.00	21,547.53	11,735.49	147.39	148.07	-84.59	-9,744.58	258.38	652.60	358.73	293.87	2.221	Minor Risk	
21,500.00	11,798.00	21,601.03	11,736.99	148.09	148.80	-84.68	-9,797.92	254.49	648.71	353.44	295.27	2.197	Minor Risk	
21,550.00	11,798.00	21,652.12	11,738.93	148.79	149.50	-84.82	-9,848.82	250.64	644.65	347.95	296.69	2.173	Minor Risk	
21,600.00	11,798.00	21,704.65	11,740.80	149.48	150.21	-84.96	-9,901.15	246.52	640.45	342.35	298.10	2.148	Minor Risk	
21,650.00	11,798.00	21,759.83	11,741.14	150.18	150.96	-84.95	-9,956.11	241.67	635.91	336.50	299.41	2.124	Minor Risk	
21,700.00	11,798.00	21,812.59	11,739.81	150.88	151.68	-84.78	-10,008.60	236.50	631.01	330.34	300.67	2.099	Minor Risk	
21,750.00	11,798.00	21,863.78	11,738.51	151.58	152.37	-84.62	-10,059.52	231.33	625.97	324.02	301.95	2.073	Minor Risk	
21,800.00	11,798.00	21,913.87	11,737.35	152.28	153.04	-84.47	-10,109.34	226.21	620.85	317.61	303.24	2.047	Minor Risk	
21,850.00	11,798.00	21,945.00	11,736.63	152.98	153.46	-84.37	-10,140.29	223.02	616.01	311.28	304.74	2.021	Minor Risk	
21,894.53	11,798.00	21,945.00	11,736.63	153.60	153.46	-84.37	-10,140.29	223.02	614.40	309.04	305.36	2.012	Minor Risk, ES, SF	
21,900.00	11,798.00	21,945.00	11,736.63	153.67	153.46	-84.37	-10,140.29	223.02	614.43	309.09	305.33	2.012	Minor Risk	
21,950.00	11,798.00	21,945.00	11,736.63	154.37	153.46	-84.37	-10,140.29	223.02	616.90	312.80	304.10	2.029	Minor Risk	
22,000.00	11,798.00	21,945.00	11,736.63	155.07	153.46	-84.37	-10,140.29	223.02	623.39	322.28	301.10	2.070	Minor Risk	
22,050.00	11,798.00	21,945.00	11,736.63	155.77	153.46	-84.37	-10,140.29	223.02	633.77	337.25	296.52	2.137	Minor Risk	
22,087.66	11,798.00	21,945.00	11,736.63	156.30	153.46	-84.37	-10,140.29	223.02	644.04	351.89	292.15	2.204	Minor Risk	

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM													Offset Well Error:	0.50 ft
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)	Distance Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.00	0.00	0.00	0.00	0.50	0.50	89.64	89.64	5.54	878.85	878.87				
50.00	50.00	48.42	48.42	0.50	0.50	89.63	89.63	5.62	878.86	878.88	877.88	1.01	872.751	
100.00	100.00	97.94	97.94	0.52	0.52	89.62	89.62	5.88	878.90	878.92	877.89	1.04	846.752	
150.00	150.00	147.45	147.44	0.59	0.54	89.59	89.59	6.30	878.97	878.99	877.86	1.14	774.419	
200.00	200.00	196.13	196.12	0.70	0.63	89.56	89.56	6.77	879.08	879.11	877.78	1.33	659.215	
250.00	250.00	245.11	245.11	0.84	0.75	89.53	89.53	7.17	879.27	879.31	877.72	1.59	554.292	
300.00	300.00	296.93	296.92	0.99	0.89	89.50	89.50	7.61	879.44	879.47	877.59	1.88	468.015	
350.00	350.00	348.13	348.12	1.15	1.04	89.47	89.47	8.12	879.50	879.54	877.35	2.19	401.524	
400.00	400.00	397.77	397.75	1.31	1.20	89.44	89.44	8.60	879.55	879.59	877.08	2.51	350.499	
450.00	450.00	448.07	448.06	1.48	1.36	89.41	89.41	9.06	879.61	879.66	876.82	2.84	309.847	
500.00	500.00	499.50	499.47	1.65	1.53	89.37	89.37	9.74	879.61	879.67	876.49	3.18	276.785	
550.00	550.00	551.53	551.50	1.82	1.71	89.31	89.31	10.59	879.51	879.58	876.06	3.52	249.628	
600.00	600.00	603.82	603.78	1.99	1.88	89.27	89.27	11.27	879.28	879.37	875.50	3.87	227.058	
650.00	650.00	655.12	655.08	2.16	2.06	89.23	89.23	11.80	878.95	879.05	874.83	4.22	208.282	
700.00	700.00	706.09	706.05	2.34	2.23	89.20	89.20	12.26	878.55	878.67	874.10	4.57	192.335	
750.00	750.00	757.07	757.03	2.51	2.40	89.17	89.17	12.67	878.10	878.23	873.32	4.92	178.585	
800.00	800.00	808.04	808.00	2.69	2.58	89.15	89.15	13.02	877.60	877.74	872.48	5.27	166.614	
850.00	850.00	858.37	858.32	2.87	2.75	89.13	89.13	13.39	877.06	877.22	871.60	5.62	156.158	
900.00	900.00	908.73	908.68	3.04	2.93	89.09	89.09	13.86	876.51	876.67	870.70	5.97	146.902	
950.00	950.00	959.10	959.03	3.22	3.10	89.06	89.06	14.41	875.92	876.10	869.78	6.32	138.656	
1,000.00	1,000.00	1,011.48	1,011.41	3.40	3.23	89.01	89.01	15.12	875.26	875.48	868.85	6.63	132.109	
1,050.00	1,050.00	1,065.54	1,065.45	3.58	3.33	88.94	88.94	16.16	874.35	874.65	867.75	6.90	126.764	
1,100.00	1,100.00	1,115.31	1,115.20	3.75	3.35	88.85	88.85	17.49	873.38	873.70	866.60	7.10	123.063	
1,150.00	1,150.00	1,164.83	1,164.67	3.93	3.37	88.74	88.74	19.25	872.43	872.79	865.49	7.30	119.632	
1,200.00	1,200.00	1,215.33	1,215.11	4.11	3.41	88.59	88.59	21.49	871.45	871.87	864.36	7.51	116.115	
1,250.00	1,250.00	1,264.12	1,263.82	4.29	3.44	88.42	88.42	24.08	870.48	870.94	863.22	7.72	112.748	
1,300.00	1,300.00	1,307.97	1,307.59	4.46	3.49	88.24	88.24	26.66	869.81	870.26	862.31	7.95	109.484	
1,350.00	1,350.00	1,351.82	1,351.35	4.64	3.54	88.06	88.06	29.46	869.44	869.94	861.77	8.17	106.421	
1,369.80	1,369.80	1,369.21	1,368.70	4.71	3.56	87.98	87.98	30.64	869.38	869.92	861.65	8.27	105.205 CC	
1,400.00	1,400.00	1,395.72	1,395.15	4.82	3.60	87.86	87.86	32.54	869.36	869.98	861.57	8.41	103.417	
1,450.00	1,450.00	1,439.65	1,438.93	5.00	3.66	87.63	87.63	35.95	869.58	870.38	861.73	8.65	100.620	
1,500.00	1,500.00	1,488.29	1,487.42	5.18	3.74	87.37	87.37	39.96	870.00	870.99	862.08	8.91	97.765	
1,550.00	1,550.00	1,537.08	1,536.02	5.36	3.82	87.10	87.10	44.11	870.48	871.69	862.53	9.17	95.067	
1,600.00	1,600.00	1,587.70	1,586.45	5.53	3.91	86.82	86.82	48.45	870.99	872.42	862.98	9.45	92.366	
1,650.00	1,650.00	1,638.32	1,636.89	5.71	4.01	86.54	86.54	52.76	871.44	873.12	863.40	9.72	89.815	
1,700.00	1,700.00	1,688.57	1,686.96	5.89	4.12	86.27	86.27	56.91	871.87	873.81	863.80	10.01	87.291	
1,750.00	1,750.00	1,738.69	1,736.93	6.07	4.23	86.01	86.01	60.87	872.29	874.49	864.19	10.30	84.903	
1,800.00	1,800.00	1,788.40	1,786.50	6.25	4.35	85.77	85.77	64.60	872.71	875.19	864.59	10.59	82.607	
1,850.00	1,850.00	1,840.72	1,838.67	6.43	4.47	85.52	85.52	68.35	873.14	875.87	864.97	10.90	80.357	
1,900.00	1,900.00	1,896.48	1,894.28	6.61	4.61	85.25	85.25	72.55	873.28	876.30	865.08	11.22	78.110	
1,950.00	1,950.00	1,949.18	1,946.82	6.78	4.75	84.98	84.98	76.72	873.10	876.47	864.93	11.54	75.980	
2,000.00	2,000.00	2,000.71	1,998.19	6.96	4.89	84.71	84.71	80.79	872.81	876.54	864.69	11.85	73.961	
2,050.00	2,050.00	2,051.29	2,048.61	7.14	5.03	84.45	84.45	84.72	872.47	876.57	864.40	12.17	72.026	
2,100.00	2,100.00	2,101.75	2,098.93	7.32	5.17	84.21	84.21	88.51	872.10	876.58	864.09	12.49	70.187	
2,150.00	2,150.00	2,153.38	2,150.41	7.50	5.32	83.95	83.95	92.32	871.66	876.53	863.72	12.82	68.390	
2,200.00	2,200.00	2,205.00	2,201.89	7.68	5.47	83.70	83.70	96.14	871.11	876.41	863.26	13.14	66.676	
2,250.00	2,250.00	2,252.72	2,249.46	7.86	5.61	83.46	83.46	99.80	870.62	876.32	862.86	13.47	65.076	
2,264.42	2,264.42	2,266.62	2,263.32	7.91	5.65	83.39	83.39	100.90	870.49	876.32	862.76	13.56	64.629	
2,300.00	2,300.00	2,301.21	2,297.79	8.04	5.75	83.20	83.20	103.70	870.19	876.34	862.55	13.79	63.548	
2,350.00	2,350.00	2,350.94	2,347.36	8.22	5.91	82.94	82.94	107.73	869.77	876.42	862.30	14.12	62.062	
2,400.00	2,400.00	2,400.66	2,396.92	8.39	6.06	82.68	82.68	111.72	869.37	876.52	862.07	14.45	60.643	
2,450.00	2,450.00	2,450.35	2,446.45	8.57	6.22	82.42	82.42	115.66	868.98	876.65	861.86	14.79	59.281	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM												Offset Well Error:	0.50 ft
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
2,500.00	2,500.00	2,500.66	2,496.60	8.75	6.37	82.16	119.64	868.59	876.79	861.67	15.13	57.966	
2,550.00	2,550.00	2,552.09	2,547.83	8.93	6.54	81.86	124.14	868.06	876.89	861.42	15.47	56.683	
2,600.00	2,600.00	2,601.65	2,597.16	9.11	6.70	81.54	128.96	867.41	876.94	861.13	15.81	55.467	
2,650.00	2,650.00	2,649.27	2,644.54	9.29	6.86	81.24	133.61	866.87	877.12	860.97	16.15	54.325	
2,700.00	2,700.00	2,696.82	2,691.87	9.47	7.01	80.94	138.18	866.46	877.44	860.96	16.48	53.238 ES	
2,750.00	2,750.00	2,744.35	2,739.19	9.65	7.17	80.65	142.58	866.21	877.92	861.10	16.82	52.201	
2,800.00	2,800.00	2,793.14	2,787.79	9.83	7.33	80.38	146.87	866.09	878.53	861.37	17.16	51.199	
2,850.00	2,850.00	2,843.16	2,837.63	10.00	7.50	80.10	151.17	866.00	879.16	861.66	17.51	50.223	
2,900.00	2,900.00	2,894.02	2,888.31	10.18	7.67	79.82	155.42	865.89	879.79	861.94	17.85	49.276	
2,950.00	2,950.00	2,945.44	2,939.56	10.36	7.85	79.56	159.57	865.73	880.36	862.15	18.21	48.355	
3,000.00	3,000.00	2,995.30	2,989.27	10.54	8.01	79.31	163.45	865.54	880.89	862.34	18.55	47.479	
3,050.00	3,050.00	3,044.66	3,038.50	10.72	8.18	79.07	167.14	865.40	881.46	862.56	18.90	46.642	
3,100.00	3,100.00	3,100.51	3,094.20	10.90	8.37	78.81	171.19	865.13	881.92	862.65	19.27	45.773	
3,150.00	3,150.00	3,157.67	3,151.20	11.08	8.56	78.54	175.31	864.38	881.98	862.35	19.64	44.909	
3,200.00	3,200.00	3,208.23	3,201.63	11.26	8.74	78.29	178.92	863.53	881.87	861.88	19.99	44.114	
3,250.00	3,250.00	3,257.16	3,250.42	11.44	8.90	78.06	182.41	862.63	881.70	861.37	20.34	43.354	
3,261.56	3,261.56	3,267.23	3,260.46	11.48	8.94	78.01	183.15	862.46	881.69	861.28	20.41	43.191	
3,300.00	3,300.00	3,300.69	3,293.83	11.62	9.05	77.84	185.70	862.02	881.80	861.14	20.67	42.668	
3,350.00	3,350.00	3,345.70	3,338.68	11.80	9.21	77.61	189.35	861.66	882.27	861.27	21.00	42.011	
3,400.00	3,400.00	3,399.75	3,392.55	11.97	9.40	77.32	193.83	861.18	882.74	861.37	21.37	41.310	
3,450.00	3,450.00	3,451.67	3,444.28	12.15	9.58	77.03	198.13	860.49	883.02	861.29	21.73	40.638	
3,500.00	3,500.00	3,500.15	3,492.58	12.33	9.75	76.76	202.30	859.83	883.33	861.25	22.08	40.009	
3,550.00	3,550.00	3,549.81	3,542.03	12.51	9.92	76.47	206.73	859.17	883.72	861.29	22.43	39.395	
3,600.00	3,600.00	3,601.12	3,593.15	12.69	10.10	76.19	211.08	858.49	884.08	861.28	22.79	38.789	
3,650.00	3,650.00	3,650.68	3,642.56	12.87	10.28	75.93	214.94	857.86	884.40	861.25	23.14	38.212	
3,700.00	3,700.00	3,698.97	3,690.74	13.05	10.45	75.73	218.16	857.45	884.81	861.32	23.49	37.665	
3,750.00	3,750.00	3,748.07	3,740.76	13.23	10.62	75.54	221.03	857.21	885.29	861.44	23.84	37.128	
3,800.00	3,800.00	3,800.38	3,791.98	13.41	10.80	75.35	224.05	856.88	885.71	861.51	24.20	36.598	
3,850.00	3,850.00	3,851.01	3,842.52	13.59	10.97	75.15	227.04	856.48	886.08	861.53	24.56	36.085	
3,900.00	3,900.00	3,901.44	3,892.88	13.77	11.15	74.99	229.64	856.15	886.43	861.52	24.91	35.587	
3,950.00	3,950.00	3,952.81	3,944.20	13.94	11.32	74.85	231.76	855.90	886.74	861.48	25.26	35.100	
4,000.00	4,000.00	4,004.38	3,995.76	14.12	11.50	74.76	233.17	855.76	886.96	861.34	25.62	34.623	
4,050.00	4,050.00	4,054.25	4,045.62	14.30	11.66	140.74	233.93	855.74	887.35	861.39	25.96	34.183	
4,100.00	4,099.99	4,104.13	4,095.50	14.48	11.83	140.75	234.23	855.85	888.17	861.87	26.30	33.771	
4,150.00	4,149.97	4,153.97	4,145.33	14.65	11.99	140.80	234.29	856.03	889.43	862.79	26.63	33.396	
4,200.00	4,199.94	4,203.73	4,195.09	14.83	12.15	140.87	234.28	856.25	891.11	864.14	26.97	33.046	
4,250.00	4,249.88	4,253.22	4,244.59	15.00	12.30	140.95	234.29	856.47	893.24	865.94	27.30	32.722	
4,300.00	4,299.79	4,302.63	4,294.00	15.17	12.46	141.05	234.35	856.71	895.81	868.18	27.63	32.422	
4,350.00	4,349.67	4,351.84	4,343.21	15.35	12.62	141.18	234.40	856.98	898.76	870.80	27.96	32.141	
4,400.00	4,399.55	4,401.05	4,392.41	15.53	12.78	141.32	234.39	857.31	901.77	873.47	28.30	31.869	
4,450.00	4,449.43	4,450.26	4,441.62	15.70	12.94	141.46	234.38	857.67	904.82	876.19	28.63	31.605	
4,500.00	4,499.31	4,499.33	4,490.69	15.88	13.10	141.60	234.40	858.06	907.91	878.95	28.96	31.349	
4,550.00	4,549.19	4,548.19	4,539.55	16.05	13.25	141.74	234.42	858.50	911.06	881.76	29.29	31.100	
4,600.00	4,599.07	4,597.88	4,589.23	16.23	13.42	141.88	234.46	858.99	914.26	884.63	29.63	30.855	
4,650.00	4,648.95	4,648.58	4,639.94	16.41	13.58	142.02	234.49	859.45	917.43	887.46	29.97	30.610	
4,700.00	4,698.84	4,699.30	4,690.65	16.58	13.75	142.16	234.51	859.87	920.56	890.25	30.31	30.369	
4,750.00	4,748.72	4,750.03	4,741.38	16.76	13.91	142.29	234.53	860.25	923.65	893.00	30.65	30.131	
4,800.00	4,798.60	4,800.69	4,792.04	16.94	14.08	142.43	234.56	860.57	926.70	895.70	31.00	29.896	
4,850.00	4,848.48	4,851.33	4,842.68	17.11	14.25	142.56	234.67	860.83	929.71	898.37	31.34	29.664	
4,900.00	4,898.36	4,902.07	4,893.41	17.29	14.42	142.68	234.81	861.03	932.68	901.00	31.69	29.435	
4,950.00	4,948.24	4,952.81	4,944.16	17.47	14.59	142.81	234.88	861.21	935.61	903.58	32.03	29.208	
5,000.00	4,998.12	5,001.79	4,993.14	17.65	14.75	142.94	234.93	861.38	938.55	906.17	32.37	28.992	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			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		
5,050.00	5,048.00	5,050.73	5,042.07	17.82	14.92	143.06	235.02	861.59	941.54	908.82	32.71	28.783		
5,100.00	5,097.88	5,102.45	5,093.80	18.00	15.09	143.19	235.09	861.79	944.50	911.44	33.06	28.568		
5,150.00	5,147.76	5,154.19	5,145.54	18.18	15.26	143.32	235.11	861.90	947.38	913.97	33.41	28.356		
5,200.00	5,197.64	5,202.00	5,193.35	18.36	15.42	143.43	235.16	862.02	950.28	916.53	33.75	28.159		
5,250.00	5,247.53	5,250.82	5,242.17	18.54	15.59	143.55	235.27	862.20	953.26	919.17	34.09	27.964		
5,300.00	5,297.41	5,301.19	5,292.54	18.71	15.76	143.67	235.44	862.38	956.25	921.81	34.44	27.768		
5,350.00	5,347.29	5,351.46	5,342.80	18.89	15.93	143.78	235.67	862.52	959.21	924.43	34.79	27.575		
5,400.00	5,397.17	5,401.51	5,392.86	19.07	16.11	143.89	235.84	862.66	962.17	927.04	35.13	27.386		
5,450.00	5,447.05	5,452.40	5,443.74	19.25	16.28	144.01	235.95	862.80	965.12	929.63	35.48	27.199		
5,500.00	5,496.93	5,504.48	5,495.82	19.43	16.45	144.13	236.03	862.84	967.97	932.13	35.84	27.010		
5,550.00	5,546.81	5,554.60	5,545.94	19.61	16.62	144.25	236.07	862.81	970.74	934.56	36.18	26.828		
5,600.00	5,596.69	5,603.33	5,594.67	19.79	16.79	144.36	236.11	862.82	973.56	937.04	36.53	26.654		
5,650.00	5,646.57	5,652.21	5,643.56	19.97	16.96	144.47	236.16	862.88	976.44	939.57	36.87	26.484		
5,700.00	5,696.45	5,701.20	5,692.54	20.15	17.12	144.59	236.23	862.99	979.37	942.16	37.21	26.318		
5,750.00	5,746.33	5,750.77	5,742.11	20.33	17.29	144.70	236.32	863.13	982.34	944.78	37.56	26.154		
5,800.00	5,796.22	5,800.59	5,791.93	20.51	17.47	144.81	236.43	863.27	985.32	947.41	37.91	25.992		
5,850.00	5,846.10	5,852.31	5,843.65	20.69	17.64	144.92	236.55	863.37	988.27	950.01	38.26	25.828		
5,900.00	5,895.98	5,904.54	5,895.88	20.87	17.82	145.04	236.63	863.37	991.11	952.49	38.62	25.664		
5,950.00	5,945.86	5,955.68	5,947.02	21.05	17.99	145.15	236.67	863.27	993.85	954.89	38.97	25.505		
6,000.00	5,995.74	6,006.77	5,998.12	21.23	18.16	145.26	236.71	863.12	996.54	957.23	39.32	25.348		
6,050.00	6,045.62	6,055.94	6,047.28	21.41	18.33	145.37	236.78	862.95	999.23	959.57	39.66	25.196		
6,100.00	6,095.50	6,105.67	6,097.01	21.59	18.49	145.47	236.91	862.80	1,001.95	961.94	40.00	25.047		
6,150.00	6,145.38	6,157.40	6,148.74	21.77	18.67	145.58	237.03	862.59	1,004.62	964.26	40.36	24.894		
6,200.00	6,195.26	6,208.88	6,200.22	21.95	18.84	145.69	237.07	862.31	1,007.20	966.49	40.71	24.744		
6,250.00	6,245.14	6,259.83	6,251.17	22.13	19.01	145.80	237.04	861.97	1,009.73	968.67	41.05	24.597		
6,300.00	6,295.02	6,310.22	6,301.56	22.31	19.18	145.91	236.94	861.61	1,012.21	970.81	41.40	24.452		
6,350.00	6,344.91	6,359.96	6,351.29	22.49	19.34	146.02	236.83	861.25	1,014.70	972.96	41.74	24.312		
6,400.00	6,394.79	6,409.06	6,400.40	22.67	19.50	146.13	236.72	860.92	1,017.21	975.13	42.08	24.175		
6,450.00	6,444.67	6,457.66	6,448.99	22.85	19.66	146.25	236.49	860.66	1,019.77	977.36	42.41	24.044		
6,500.00	6,494.55	6,506.62	6,497.95	23.03	19.82	146.37	236.14	860.49	1,022.41	979.66	42.75	23.916		
6,550.00	6,544.43	6,555.82	6,547.15	23.21	19.98	146.50	235.75	860.35	1,025.08	981.99	43.09	23.791		
6,600.00	6,594.31	6,605.36	6,596.69	23.39	20.14	146.62	235.36	860.24	1,027.78	984.36	43.43	23.667		
6,650.00	6,644.19	6,655.07	6,646.39	23.57	20.30	146.75	234.99	860.13	1,030.50	986.74	43.77	23.546		
6,700.00	6,694.07	6,704.14	6,695.47	23.75	20.46	146.87	234.61	860.05	1,033.25	989.14	44.10	23.427		
6,750.00	6,743.95	6,753.00	6,744.33	23.93	20.62	147.00	234.09	860.04	1,036.04	991.60	44.44	23.312		
6,800.00	6,793.83	6,807.63	6,798.95	24.12	20.80	147.15	233.43	859.96	1,038.79	993.99	44.80	23.187		
6,850.00	6,843.71	6,863.78	6,855.10	24.30	20.98	147.30	232.81	859.55	1,041.24	996.08	45.16	23.056		
6,900.00	6,893.60	6,909.26	6,900.57	24.48	21.14	147.39	232.63	859.15	1,043.68	998.18	45.49	22.941		
6,950.00	6,943.48	6,955.95	6,947.26	24.66	21.30	147.47	232.93	858.82	1,046.28	1,000.45	45.83	22.829		
7,000.00	6,993.36	7,005.76	6,997.06	24.84	21.47	147.54	233.51	858.50	1,048.96	1,002.78	46.18	22.713		
7,050.00	7,043.24	7,055.78	7,047.08	25.02	21.64	147.60	234.12	858.18	1,051.65	1,005.11	46.54	22.599		
7,100.00	7,093.12	7,107.01	7,098.31	25.20	21.82	147.68	234.63	857.83	1,054.30	1,007.40	46.89	22.483		
7,150.00	7,143.00	7,157.81	7,149.11	25.39	22.00	147.76	234.93	857.45	1,056.89	1,009.64	47.25	22.370		
7,200.00	7,192.88	7,207.62	7,188.91	25.57	22.17	147.84	235.17	857.07	1,059.47	1,011.87	47.60	22.259		
7,250.00	7,242.76	7,257.11	7,248.40	25.75	22.34	147.93	235.38	856.71	1,062.06	1,014.12	47.94	22.152		
7,300.00	7,292.64	7,306.11	7,297.40	25.93	22.51	148.02	235.49	856.40	1,064.69	1,016.40	48.29	22.048		
7,350.00	7,342.52	7,355.93	7,347.22	26.11	22.68	148.11	235.51	856.14	1,067.36	1,018.72	48.64	21.945		
7,400.00	7,392.40	7,406.87	7,398.15	26.29	22.85	148.21	235.45	855.84	1,069.99	1,021.00	48.99	21.842		
7,450.00	7,442.29	7,457.15	7,448.44	26.48	23.02	148.31	235.32	855.52	1,072.59	1,023.26	49.34	21.740		
7,500.00	7,492.17	7,506.94	7,498.23	26.66	23.18	148.42	235.10	855.21	1,075.20	1,025.51	49.68	21.642		
7,550.00	7,542.05	7,555.34	7,546.62	26.84	23.34	148.52	234.84	854.94	1,077.83	1,027.81	50.02	21.547		
7,600.00	7,591.93	7,603.07	7,594.36	27.02	23.51	148.62	234.71	854.75	1,080.56	1,030.20	50.36	21.456		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM												Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis		Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,650.00	7,641.81	7,652.03	7,643.32	27.20	23.67	148.72	234.65	854.63	1,083.38	1,032.67	50.70	21.367	
7,700.00	7,691.69	7,701.60	7,692.89	27.39	23.84	148.82	234.51	854.53	1,086.21	1,035.17	51.05	21.278	
7,750.00	7,741.57	7,749.09	7,740.37	27.57	24.00	148.91	234.42	854.48	1,089.11	1,037.72	51.39	21.194	
7,800.00	7,791.45	7,795.81	7,787.09	27.75	24.16	148.98	234.70	854.52	1,092.14	1,040.41	51.72	21.115	
7,850.00	7,841.33	7,844.14	7,835.42	27.93	24.33	149.04	235.26	854.65	1,095.29	1,043.22	52.07	21.035	
7,900.00	7,891.21	7,893.15	7,884.43	28.11	24.50	149.11	235.81	854.82	1,098.49	1,046.07	52.42	20.955	
7,950.00	7,941.09	7,943.33	7,934.60	28.30	24.67	149.18	236.33	855.02	1,101.71	1,048.94	52.78	20.875	
8,000.00	7,990.98	7,993.88	7,985.15	28.48	24.85	149.24	236.82	855.19	1,104.91	1,051.77	53.13	20.795	
8,050.00	8,040.86	8,045.78	8,037.04	28.66	25.03	149.32	237.25	855.32	1,108.04	1,054.55	53.49	20.713	
8,100.00	8,090.74	8,097.86	8,089.12	28.84	25.21	149.40	237.49	855.37	1,111.09	1,057.23	53.86	20.630	
8,150.00	8,140.62	8,148.63	8,139.90	29.03	25.39	149.48	237.66	855.35	1,114.06	1,059.85	54.21	20.549	
8,200.00	8,190.50	8,199.03	8,190.30	29.21	25.57	149.56	237.87	855.29	1,117.00	1,062.43	54.57	20.469	
8,250.00	8,240.38	8,248.31	8,239.57	29.39	25.74	149.64	238.04	855.25	1,119.95	1,065.03	54.92	20.392	
8,300.00	8,290.26	8,298.02	8,289.29	29.57	25.91	149.72	238.16	855.23	1,122.93	1,067.65	55.27	20.316	
8,350.00	8,340.14	8,348.53	8,339.80	29.76	26.09	149.82	238.14	855.21	1,125.89	1,070.26	55.63	20.241	
8,400.00	8,390.02	8,398.05	8,389.32	29.94	26.26	149.91	238.01	855.19	1,128.84	1,072.86	55.97	20.167	
8,450.00	8,439.90	8,446.39	8,437.66	30.12	26.42	149.98	238.19	855.19	1,131.84	1,075.52	56.32	20.097	
8,500.00	8,489.78	8,498.28	8,489.55	30.30	26.60	150.05	238.70	855.18	1,134.87	1,078.20	56.68	20.024	
8,550.00	8,539.67	8,553.84	8,545.10	30.49	26.79	150.13	238.91	854.98	1,137.70	1,080.65	57.05	19.942	
8,600.00	8,589.55	8,611.50	8,602.75	30.67	26.99	150.24	238.68	854.48	1,140.25	1,082.82	57.43	19.856	
8,650.00	8,639.43	8,669.75	8,661.00	30.85	27.18	150.37	238.06	853.59	1,142.44	1,084.64	57.80	19.765	
8,700.00	8,689.31	8,713.59	8,704.83	31.03	27.34	150.45	237.89	852.90	1,144.63	1,086.50	58.13	19.690	
8,750.00	8,739.19	8,759.83	8,751.07	31.22	27.50	150.51	238.28	852.27	1,147.00	1,088.52	58.47	19.616	
8,800.00	8,789.07	8,812.37	8,803.60	31.40	27.68	150.56	239.00	851.55	1,149.38	1,090.54	58.83	19.536	
8,850.00	8,838.95	8,862.42	8,853.64	31.58	27.85	150.61	239.63	850.76	1,151.66	1,092.47	59.19	19.457	
8,900.00	8,888.83	8,904.80	8,896.01	31.76	28.00	150.66	240.01	850.28	1,154.15	1,094.63	59.52	19.392	
8,950.00	8,938.71	8,947.15	8,938.36	31.95	28.15	150.72	240.19	850.10	1,156.96	1,097.12	59.84	19.334	
9,000.00	8,988.59	8,993.68	8,984.89	32.13	28.31	150.79	240.33	850.12	1,160.01	1,099.83	60.18	19.276	
9,050.00	9,038.48	9,040.18	9,031.39	32.31	28.48	150.85	240.58	850.27	1,163.21	1,102.69	60.52	19.220	
9,100.00	9,088.36	9,093.70	9,084.91	32.50	28.66	150.93	240.74	850.46	1,166.41	1,105.52	60.89	19.158	
9,150.00	9,138.24	9,147.53	9,138.74	32.68	28.84	151.03	240.51	850.49	1,169.44	1,108.19	61.25	19.093	
9,200.00	9,188.12	9,201.52	9,192.72	32.86	29.02	151.14	240.08	850.36	1,172.31	1,110.69	61.61	19.027	
9,250.00	9,238.00	9,253.11	9,244.31	33.05	29.20	151.25	239.55	850.09	1,175.02	1,113.06	61.96	18.963	
9,300.00	9,287.88	9,301.55	9,292.75	33.23	29.36	151.36	238.84	849.87	1,177.77	1,115.46	62.30	18.903	
9,350.00	9,337.76	9,349.62	9,340.81	33.41	29.52	151.48	237.97	849.73	1,180.58	1,117.93	62.64	18.846	
9,400.00	9,387.64	9,397.32	9,388.51	33.59	29.68	151.59	237.29	849.66	1,183.48	1,120.50	62.98	18.791	
9,450.00	9,437.52	9,445.28	9,436.47	33.78	29.84	151.69	236.90	849.65	1,186.48	1,123.16	63.32	18.737	
9,500.00	9,487.40	9,493.55	9,484.73	33.96	30.01	151.75	237.14	849.66	1,189.55	1,125.88	63.67	18.684	
9,550.00	9,537.28	9,543.57	9,534.74	34.14	30.18	151.79	238.06	849.68	1,192.67	1,128.65	64.02	18.629	
9,600.00	9,587.17	9,595.26	9,586.42	34.33	30.37	151.81	239.33	849.61	1,195.73	1,131.35	64.39	18.572	
9,650.00	9,637.05	9,652.06	9,643.19	34.51	30.56	151.83	240.74	849.36	1,198.65	1,133.88	64.77	18.507	
9,700.00	9,686.93	9,711.31	9,702.45	34.69	30.77	151.89	241.31	848.73	1,201.20	1,136.04	65.16	18.435	
9,750.00	9,736.81	9,765.44	9,756.56	34.88	30.96	151.98	241.04	847.91	1,203.47	1,137.95	65.52	18.367	
9,800.00	9,786.69	9,817.35	9,808.46	35.06	31.13	152.10	240.13	846.99	1,205.58	1,139.70	65.88	18.300	
9,850.00	9,836.57	9,864.20	9,855.29	35.24	31.29	152.23	238.96	846.24	1,207.74	1,141.53	66.21	18.240	
9,900.00	9,886.45	9,910.60	9,901.66	35.43	31.45	152.36	237.56	845.63	1,210.05	1,143.50	66.55	18.183	
9,950.00	9,936.33	9,956.02	9,947.06	35.61	31.60	152.49	236.22	845.18	1,212.53	1,145.65	66.88	18.130	
10,000.00	9,986.21	10,001.62	9,992.65	35.79	31.75	152.62	235.01	844.89	1,215.19	1,147.98	67.21	18.080	
10,050.00	10,036.09	10,047.96	10,038.97	35.98	31.91	152.73	234.19	844.72	1,218.02	1,150.48	67.54	18.033	
10,100.00	10,085.97	10,094.71	10,085.72	36.16	32.06	152.81	233.89	844.65	1,221.00	1,153.12	67.88	17.988	
10,150.00	10,135.86	10,143.56	10,134.58	36.34	32.23	152.88	233.84	844.64	1,224.05	1,155.83	68.23	17.941	
10,200.00	10,185.74	10,196.54	10,187.55	36.53	32.42	152.96	233.89	844.65	1,227.14	1,158.55	68.59	17.891	

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDM													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)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,250.00	10,235.62	10,264.79	10,255.80	36.71	32.65	153.07		233.70	843.98	1,229.72	1,160.71	69.01	17.819	
10,300.00	10,285.50	10,328.28	10,319.27	36.89	32.87	153.18		233.16	842.54	1,231.64	1,162.23	69.41	17.745	
10,350.00	10,335.38	10,390.85	10,381.80	37.08	33.08	153.31		232.29	840.49	1,233.05	1,163.26	69.79	17.667	
10,400.00	10,385.26	10,436.84	10,427.76	37.26	33.24	153.38		232.01	838.91	1,234.39	1,164.25	70.14	17.600	
10,450.00	10,435.14	10,482.25	10,473.15	37.44	33.40	153.44		232.10	837.33	1,235.75	1,165.27	70.48	17.534	
10,500.00	10,485.02	10,520.85	10,511.73	37.63	33.54	153.47		232.57	836.26	1,237.48	1,166.69	70.79	17.480	
10,550.00	10,534.90	10,562.00	10,552.86	37.81	33.68	153.49		233.48	835.50	1,239.68	1,168.56	71.12	17.431	
10,600.00	10,584.78	10,609.43	10,600.25	37.99	33.85	153.47		235.28	834.80	1,242.11	1,170.65	71.47	17.380	
10,650.00	10,634.67	10,660.21	10,650.93	38.18	34.03	153.40		238.30	833.97	1,244.46	1,172.63	71.83	17.325	
10,700.00	10,684.59	10,706.22	10,696.85	38.36	34.20	153.34		241.16	833.28	1,246.36	1,174.19	72.17	17.269	
10,750.00	10,734.54	10,752.47	10,743.05	38.54	34.36	153.29		243.38	832.75	1,247.84	1,175.32	72.52	17.208	
10,800.00	10,784.52	10,804.02	10,794.55	38.72	34.54	153.24		245.23	832.23	1,248.78	1,175.90	72.88	17.135	
10,850.00	10,834.51	10,855.70	10,846.21	38.90	34.73	153.20		246.58	831.67	1,249.06	1,175.82	73.24	17.055	
10,900.00	10,884.51	10,907.68	10,898.18	39.07	34.91	87.12		247.73	831.04	1,248.70	1,175.10	73.60	16.966	
10,950.00	10,934.51	10,958.70	10,949.18	39.25	35.09	87.07		248.83	830.34	1,248.08	1,174.12	73.96	16.875	
11,000.00	10,984.51	11,007.68	10,998.15	39.42	35.26	87.02		249.81	829.69	1,247.47	1,173.16	74.31	16.788	
11,050.00	11,034.51	11,058.51	11,048.98	39.60	35.44	86.98		250.72	829.05	1,246.88	1,172.22	74.66	16.700	
11,100.00	11,084.51	11,112.34	11,102.78	39.77	35.63	86.94		251.54	828.25	1,246.18	1,171.15	75.03	16.609	
11,150.00	11,134.51	11,162.79	11,153.22	39.95	35.81	86.91		252.21	827.40	1,245.37	1,169.98	75.38	16.520	
11,200.00	11,184.51	11,210.96	11,201.38	40.12	35.98	86.88		252.80	826.63	1,244.61	1,168.88	75.73	16.435	
11,250.00	11,234.51	11,259.88	11,250.30	40.30	36.15	-93.01		253.38	825.92	1,243.92	1,167.84	76.08	16.351	
11,300.00	11,284.40	11,313.74	11,304.15	40.46	36.34	-93.25		253.95	825.10	1,243.36	1,166.93	76.43	16.268	
11,350.00	11,333.85	11,368.29	11,358.68	40.61	36.53	-93.65		253.51	824.10	1,242.85	1,166.08	76.77	16.189	
11,400.00	11,382.46	11,423.25	11,413.55	40.76	36.72	-94.16		250.77	823.02	1,242.48	1,165.37	77.11	16.113	
11,450.00	11,429.88	11,499.18	11,488.46	40.91	36.96	-94.81		239.00	821.11	1,241.85	1,164.37	77.48	16.028	
11,500.00	11,475.73	11,559.86	11,546.33	41.04	37.14	-95.21		220.99	819.33	1,240.80	1,163.02	77.78	15.953	
11,550.00	11,519.68	11,616.91	11,598.14	41.16	37.30	-95.49		197.23	817.96	1,239.86	1,161.80	78.06	15.883	
11,594.07	11,556.57	11,648.56	11,625.50	41.26	37.38	-95.60		181.35	817.61	1,239.52	1,161.25	78.27	15.836	
11,600.00	11,561.39	11,653.13	11,629.37	41.27	37.39	-95.62		178.90	817.60	1,239.53	1,161.22	78.30	15.830	
11,650.00	11,600.53	11,685.64	11,656.21	41.37	37.48	-95.65		160.56	817.84	1,240.18	1,161.66	78.52	15.794	
11,700.00	11,636.82	11,721.95	11,684.93	41.46	37.57	-95.64		138.38	818.86	1,241.98	1,163.24	78.74	15.774	
11,750.00	11,669.98	11,781.13	11,729.12	41.53	37.71	-95.73		99.10	821.16	1,244.46	1,165.48	78.98	15.756	
11,800.00	11,699.75	11,831.02	11,764.73	41.60	37.84	-95.83		64.21	822.79	1,246.82	1,167.61	79.21	15.741	
11,850.00	11,725.90	11,869.52	11,790.75	41.66	37.93	-95.84		35.90	824.57	1,250.05	1,170.84	79.41	15.742	
11,900.00	11,748.25	12,022.66	11,877.39	41.73	38.31	-96.60		-89.79	829.18	1,252.74	1,172.97	79.77	15.705	
11,950.00	11,766.61	12,111.81	11,915.76	41.82	38.54	-96.92		-170.22	827.94	1,252.33	1,172.29	80.04	15.647	
12,000.00	11,780.85	12,186.12	11,939.36	41.92	38.73	-97.17		-240.56	825.70	1,250.80	1,170.49	80.31	15.575	
12,050.00	11,790.86	12,213.00	11,945.19	42.03	38.80	-97.25		-266.79	825.22	1,250.02	1,169.53	80.50	15.529	
12,060.38	11,792.40	12,223.93	11,947.20	42.05	38.83	-97.27		-277.53	825.17	1,249.99	1,169.45	80.54	15.519	
12,100.00	11,796.57	12,241.24	11,950.08	42.14	38.88	-97.25		-294.60	825.39	1,250.68	1,170.02	80.67	15.504	
12,150.00	11,798.00	12,266.33	11,953.58	42.25	38.94	-97.20		-319.42	826.31	1,253.04	1,172.22	80.82	15.505	
12,200.00	11,798.00	12,306.06	11,958.35	42.37	39.06	-97.40		-358.81	828.34	1,256.23	1,175.21	81.01	15.506	
12,250.00	11,798.00	12,250.00	11,964.12	42.51	38.86	-97.64		-449.72	832.83	1,259.07	1,178.11	80.96	15.553	
12,300.00	11,798.00	12,519.78	11,962.97	42.65	39.75	-97.58		-571.98	834.05	1,259.34	1,177.31	82.02	15.353	
12,350.00	11,798.00	12,571.59	11,962.14	42.80	39.94	-97.55		-623.77	833.00	1,258.09	1,175.71	82.38	15.272	
12,400.00	11,798.00	12,615.99	11,961.37	42.96	40.12	-97.52		-668.16	832.27	1,257.02	1,174.31	82.71	15.198	
12,450.00	11,798.00	12,655.48	11,960.76	43.14	40.28	-97.50		-707.65	831.81	1,256.23	1,173.18	83.05	15.127	
12,496.62	11,798.00	12,688.55	11,961.05	43.31	40.43	-97.51		-740.72	831.68	1,255.98	1,172.63	83.35	15.070	
12,500.00	11,798.00	12,690.95	11,961.10	43.32	40.44	-97.51		-743.11	831.68	1,255.98	1,172.61	83.37	15.066	
12,550.00	11,798.00	12,731.00	11,962.67	43.53	40.62	-97.58		-783.13	831.88	1,256.32	1,172.59	83.73	15.005	
12,600.00	11,798.00	12,778.17	11,965.24	43.73	40.85	-97.70		-830.23	832.25	1,256.94	1,172.79	84.15	14.937	
12,650.00	11,798.00	12,834.37	11,968.24	43.95	41.14	-97.83		-886.35	832.51	1,257.40	1,172.75	84.65	14.855	

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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 718H - Wellbore #1 - Wellbore #1													Offset Site Error:	0 00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM													Offset Well Error:	0 50 ft
Reference		Offset		Semi Major Axis			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	
12,700.00	11,798.00	12,902.77	11,968.74	44.18	41.50	-97.86	-954.73	832.55	1,257.34	1,172.09	85.25	14.748		
12,750.00	11,798.00	12,965.66	11,965.41	44.42	41.86	-97.71	-1,017.53	832.28	1,256.64	1,170.75	85.89	14.631		
12,800.00	11,798.00	13,026.61	11,960.21	44.67	42.21	-97.48	-1,078.25	831.73	1,255.49	1,168.97	86.52	14.511		
12,850.00	11,798.00	13,052.02	11,958.68	44.93	42.38	-97.41	-1,103.62	831.71	1,254.77	1,167.85	86.92	14.436		
12,875.85	11,798.00	13,068.36	11,958.00	45.07	42.48	-97.38	-1,119.95	831.77	1,254.67	1,167.53	87.14	14.398		
12,900.00	11,798.00	13,083.65	11,957.64	45.20	42.57	-97.36	-1,135.23	831.92	1,254.76	1,167.40	87.35	14.364		
12,950.00	11,798.00	13,118.45	11,957.78	45.48	42.79	-97.36	-1,170.02	832.50	1,255.46	1,167.63	87.83	14.295		
13,000.00	11,798.00	13,163.68	11,958.40	45.77	43.08	-97.39	-1,215.24	833.50	1,256.51	1,168.12	88.39	14.215		
13,050.00	11,798.00	13,214.82	11,959.08	46.07	43.42	-97.41	-1,266.35	834.81	1,257.74	1,168.71	89.03	14.127		
13,100.00	11,798.00	13,298.72	11,958.17	46.38	43.99	-97.36	-1,350.23	835.88	1,258.17	1,168.20	89.97	13.984		
13,122.13	11,798.00	13,314.71	11,957.73	46.52	44.11	-97.34	-1,386.22	835.95	1,258.12	1,167.90	90.22	13.945		
13,150.00	11,798.00	13,336.03	11,957.22	46.70	44.26	-97.32	-1,387.53	836.13	1,258.19	1,167.65	90.54	13.896		
13,200.00	11,798.00	13,374.29	11,956.52	47.02	44.54	-97.29	-1,425.78	836.70	1,258.69	1,167.57	91.12	13.814		
13,250.00	11,798.00	13,415.33	11,955.94	47.36	44.84	-97.26	-1,466.81	837.65	1,259.62	1,167.87	91.74	13.730		
13,300.00	11,798.00	13,458.30	11,954.94	47.70	45.17	-97.20	-1,509.74	838.95	1,260.84	1,168.45	92.39	13.647		
13,350.00	11,798.00	13,507.93	11,953.30	48.06	45.55	-97.12	-1,559.31	840.74	1,262.29	1,169.15	93.14	13.553		
13,400.00	11,798.00	13,567.57	11,951.30	48.42	46.03	-97.02	-1,618.90	842.57	1,263.47	1,169.48	94.00	13.442		
13,450.00	11,798.00	13,625.71	11,949.80	48.79	46.50	-96.95	-1,677.00	843.89	1,264.30	1,169.44	94.87	13.327		
13,500.00	11,798.00	13,692.14	11,949.58	49.16	47.04	-96.93	-1,743.42	844.70	1,264.79	1,168.97	95.82	13.200		
13,550.00	11,798.00	13,791.90	11,949.85	49.55	47.88	-96.96	-1,843.16	842.93	1,263.76	1,166.64	97.12	13.012		
13,600.00	11,798.00	13,877.63	11,948.59	49.94	48.61	-96.92	-1,928.77	838.73	1,261.11	1,162.83	98.27	12.833		
13,650.00	11,798.00	13,906.83	11,948.04	50.34	48.87	-96.91	-1,957.94	837.34	1,258.35	1,159.43	98.92	12.720		
13,700.00	11,798.00	13,944.31	11,947.38	50.75	49.20	-96.89	-1,995.38	835.79	1,256.06	1,156.42	99.64	12.606		
13,750.00	11,798.00	13,990.14	11,946.87	51.16	49.61	-96.87	-2,041.17	834.23	1,254.16	1,153.70	100.47	12.483		
13,800.00	11,798.00	14,040.74	11,947.20	51.58	50.07	-96.90	-2,091.74	832.39	1,252.27	1,150.93	101.34	12.357		
13,850.00	11,798.00	14,082.73	11,948.13	52.01	50.45	-96.95	-2,133.69	830.87	1,250.48	1,148.34	102.14	12.243		
13,900.00	11,798.00	14,121.38	11,949.28	52.44	50.82	-97.01	-2,172.28	829.78	1,249.13	1,146.22	102.91	12.139		
13,950.00	11,798.00	14,159.42	11,950.63	52.89	51.17	-97.08	-2,210.32	829.02	1,248.23	1,144.56	103.67	12.040		
14,000.00	11,798.00	14,195.92	11,951.30	53.33	51.53	-97.11	-2,246.81	828.76	1,247.85	1,143.42	104.43	11.949		
14,010.01	11,798.00	14,203.23	11,951.32	53.42	51.60	-97.11	-2,254.12	828.77	1,247.84	1,143.26	104.59	11.931		
14,050.00	11,798.00	14,232.43	11,951.02	53.79	51.88	-97.09	-2,283.32	829.01	1,248.01	1,142.81	105.20	11.863		
14,100.00	11,798.00	14,272.54	11,949.92	54.25	52.28	-97.04	-2,323.40	829.79	1,248.67	1,142.65	106.02	11.777		
14,150.00	11,798.00	14,314.55	11,948.89	54.71	52.69	-96.99	-2,365.39	830.87	1,249.66	1,142.78	106.88	11.692		
14,200.00	11,798.00	14,352.84	11,948.14	55.18	53.08	-96.95	-2,403.65	832.08	1,251.00	1,143.31	107.69	11.617		
14,250.00	11,798.00	14,385.42	11,947.93	55.66	53.41	-96.93	-2,436.19	833.48	1,252.96	1,144.54	108.42	11.556		
14,300.00	11,798.00	14,417.95	11,948.19	56.14	53.74	-96.93	-2,468.68	835.28	1,255.62	1,146.48	109.14	11.504		
14,350.00	11,798.00	14,452.68	11,948.93	56.63	54.10	-96.95	-2,503.32	837.61	1,258.94	1,149.04	109.90	11.455		
14,400.00	11,798.00	14,489.55	11,949.92	57.12	54.49	-96.98	-2,540.06	840.46	1,262.81	1,152.12	110.69	11.409		
14,450.00	11,798.00	14,528.00	11,951.12	57.62	54.90	-97.02	-2,578.35	843.81	1,267.18	1,155.68	111.50	11.364		
14,500.00	11,798.00	14,717.00	11,947.19	58.11	56.92	-96.80	-2,766.92	852.87	1,270.11	1,155.46	114.65	11.078		
14,550.00	11,798.00	14,755.14	11,945.37	58.62	57.33	-96.72	-2,805.01	852.46	1,269.23	1,153.68	115.55	10.984		
14,576.99	11,798.00	14,771.18	11,944.88	58.90	57.50	-96.70	-2,821.04	852.50	1,269.12	1,153.15	115.97	10.943		
14,600.00	11,798.00	14,784.85	11,944.57	59.13	57.65	-96.68	-2,834.72	852.62	1,269.20	1,152.88	116.33	10.911		
14,650.00	11,798.00	14,864.74	11,943.45	59.65	58.51	-96.63	-2,914.58	853.48	1,269.85	1,152.06	117.79	10.781		
14,700.00	11,798.00	14,940.17	11,940.06	60.17	59.34	-96.49	-2,989.90	851.43	1,267.88	1,148.70	119.18	10.638		
14,750.00	11,798.00	14,978.88	11,938.38	60.69	59.76	-96.42	-3,028.57	850.49	1,266.30	1,146.17	120.12	10.542		
14,800.00	11,798.00	15,019.71	11,937.01	61.22	60.21	-96.36	-3,069.37	849.80	1,265.14	1,144.05	121.09	10.448		
14,850.00	11,798.00	15,063.08	11,937.02	61.75	60.70	-96.36	-3,112.73	849.16	1,264.27	1,142.18	122.09	10.355		
14,900.00	11,798.00	15,112.98	11,938.84	62.29	61.26	-96.45	-3,162.59	848.44	1,263.63	1,140.46	123.17	10.259		
14,950.00	11,798.00	15,179.31	11,939.32	62.83	62.01	-96.48	-3,228.90	847.15	1,262.57	1,138.09	124.48	10.143		
15,000.00	11,798.00	15,237.01	11,937.55	63.37	62.66	-96.41	-3,286.56	845.70	1,261.02	1,135.32	125.69	10.032		
15,050.00	11,798.00	15,293.35	11,934.94	63.92	63.30	-96.30	-3,342.81	844.10	1,259.21	1,132.31	126.90	9.923		

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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1													Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM													Offset Well Error:	0.50 ft
Reference		Offset		Semi Major Axis			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	
15,100.00	11,798.00	15,342.62	11,932.61	64.47	63.86	-96.20	-3,392.00	842.61	1,257.31	1,129.29	128.02	9.821		
15,150.00	11,798.00	15,388.51	11,930.68	65.02	64.39	-96.12	-3,437.83	841.19	1,255.43	1,126.32	129.11	9.724		
15,200.00	11,798.00	15,424.80	11,929.80	65.58	64.81	-96.09	-3,474.10	840.31	1,253.96	1,123.89	130.06	9.641		
15,250.00	11,798.00	15,461.12	11,929.70	66.14	65.23	-96.08	-3,510.41	839.74	1,253.03	1,122.02	131.02	9.564		
15,300.00	11,798.00	15,515.24	11,930.48	66.70	65.86	-96.12	-3,564.53	839.10	1,252.40	1,120.18	132.21	9.473		
15,350.00	11,798.00	15,575.99	11,931.65	67.27	66.57	-96.18	-3,625.24	837.88	1,251.37	1,117.87	133.50	9.373		
15,400.00	11,798.00	15,612.92	11,932.81	67.84	67.01	-96.24	-3,662.15	837.21	1,250.47	1,116.00	134.47	9.299		
15,450.00	11,798.00	15,653.46	11,934.64	68.42	67.49	-96.33	-3,702.65	836.68	1,249.94	1,114.45	135.49	9.226		
15,500.00	11,798.00	15,700.11	11,936.88	68.99	68.05	-96.43	-3,749.24	836.32	1,249.68	1,113.09	136.59	9.149		
15,550.00	11,798.00	15,748.00	11,938.33	69.57	68.62	-96.50	-3,797.11	836.13	1,249.52	1,111.80	137.72	9.073		
15,600.00	11,798.00	15,822.18	11,938.65	70.15	69.51	-96.52	-3,871.28	835.44	1,248.97	1,109.72	139.25	8.969		
15,650.00	11,798.00	15,872.60	11,937.80	70.74	70.12	-96.49	-3,921.68	834.39	1,247.70	1,107.26	140.44	8.884		
15,700.00	11,798.00	15,910.35	11,938.00	71.32	70.58	-96.50	-3,959.43	833.81	1,246.84	1,105.39	141.45	8.815		
15,750.00	11,798.00	15,942.00	11,938.88	71.91	70.96	-96.54	-3,991.06	833.53	1,246.49	1,104.14	142.35	8.756		
15,759.53	11,798.00	15,954.57	11,939.30	72.03	71.12	-96.56	-4,003.63	833.49	1,246.46	1,103.83	142.63	8.739		
15,800.00	11,798.00	15,983.54	11,939.84	72.50	71.47	-96.58	-4,032.59	833.64	1,246.65	1,103.24	143.41	8.693		
15,850.00	11,798.00	16,019.33	11,939.65	73.10	71.91	-96.57	-4,068.37	834.30	1,247.40	1,103.02	144.38	8.640		
15,900.00	11,798.00	16,054.14	11,938.82	73.70	72.34	-96.53	-4,103.16	835.42	1,248.72	1,103.40	145.32	8.593		
15,950.00	11,798.00	16,088.14	11,938.70	74.30	72.77	-96.52	-4,137.12	836.86	1,250.68	1,104.45	146.23	8.553		
16,000.00	11,798.00	16,130.00	11,939.75	74.90	73.29	-96.55	-4,178.91	839.10	1,253.32	1,106.03	147.29	8.509		
16,050.00	11,798.00	16,163.38	11,941.04	75.50	73.72	-96.60	-4,212.20	841.16	1,256.40	1,108.24	148.16	8.480		
16,100.00	11,798.00	16,206.90	11,942.52	76.11	74.27	-96.65	-4,255.60	844.08	1,259.79	1,110.54	149.24	8.441		
16,150.00	11,798.00	16,308.30	11,941.36	76.71	75.55	-96.57	-4,356.76	850.02	1,262.73	1,111.19	151.54	8.333		
16,200.00	11,798.00	16,351.02	11,938.27	77.32	76.10	-96.42	-4,399.33	851.76	1,264.23	1,111.57	152.67	8.281		
16,250.00	11,798.00	16,387.36	11,936.12	77.94	76.56	-96.32	-4,435.56	853.58	1,266.27	1,112.61	153.66	8.241		
16,300.00	11,798.00	16,424.92	11,934.42	78.55	77.04	-96.23	-4,473.01	855.81	1,268.84	1,114.18	154.67	8.204		
16,350.00	11,798.00	16,465.05	11,933.35	79.17	77.56	-96.17	-4,513.04	858.45	1,271.84	1,116.12	155.72	8.168		
16,400.00	11,798.00	16,506.00	11,933.10	79.78	78.08	-96.15	-4,553.89	861.37	1,275.21	1,118.44	156.78	8.134		
16,450.00	11,798.00	16,678.06	11,930.24	80.40	80.28	-96.00	-4,725.75	866.78	1,277.04	1,116.77	160.27	7.968		
16,500.00	11,798.00	16,734.49	11,926.97	81.02	81.00	-95.86	-4,782.08	865.47	1,275.42	1,113.79	161.63	7.891		
16,550.00	11,798.00	16,777.32	11,924.70	81.65	81.54	-95.76	-4,824.84	864.66	1,274.07	1,111.27	162.80	7.826		
16,600.00	11,798.00	16,600.00	11,925.54	82.27	79.63	-95.95	-5,104.38	832.22	1,267.78	1,108.05	159.72	7.937		
16,650.00	11,798.00	17,072.00	11,925.63	82.90	85.13	-95.97	-5,116.59	829.67	1,258.04	1,091.68	166.36	7.562		
16,700.00	11,798.00	17,110.62	11,926.21	83.53	85.59	-96.03	-5,154.41	821.92	1,248.30	1,080.72	167.58	7.449		
16,750.00	11,798.00	17,126.44	11,926.67	84.16	85.78	-96.07	-5,170.03	819.45	1,240.55	1,071.75	168.80	7.349		
16,800.00	11,798.00	17,166.00	11,928.35	84.79	86.26	-96.17	-5,209.30	815.07	1,234.83	1,064.84	169.99	7.264		
16,850.00	11,798.00	17,166.00	11,928.35	85.42	86.26	-96.17	-5,209.30	815.07	1,229.15	1,058.13	171.01	7.187		
16,900.00	11,798.00	17,166.00	11,928.35	86.05	86.26	-96.17	-5,209.30	815.07	1,225.47	1,053.64	171.83	7.132		
16,950.00	11,798.00	17,201.27	11,929.99	86.69	86.71	-96.25	-5,244.47	812.94	1,222.74	1,049.82	172.92	7.071		
17,000.00	11,798.00	17,224.46	11,930.86	87.33	87.01	-96.30	-5,267.63	812.20	1,221.23	1,047.41	173.82	7.026		
17,050.00	11,798.00	17,260.00	11,931.84	87.97	87.47	-96.35	-5,303.15	812.10	1,220.95	1,046.09	174.86	6.982		
17,058.99	11,798.00	17,260.00	11,931.84	88.08	87.47	-96.35	-5,303.15	812.10	1,220.92	1,045.98	174.94	6.979		
17,100.00	11,798.00	17,275.68	11,932.21	88.60	87.68	-96.36	-5,318.83	812.38	1,221.46	1,045.92	175.53	6.959		
17,150.00	11,798.00	17,309.03	11,933.11	89.25	88.12	-96.40	-5,352.15	813.29	1,222.83	1,046.35	176.48	6.929		
17,200.00	11,798.00	17,342.34	11,934.18	89.89	88.56	-96.44	-5,385.42	814.64	1,224.89	1,047.49	177.40	6.905		
17,250.00	11,798.00	17,413.53	11,935.20	90.53	89.50	-96.47	-5,456.52	817.82	1,227.15	1,047.99	179.16	6.849		
17,300.00	11,798.00	17,476.25	11,932.64	91.18	90.33	-96.35	-5,519.15	819.64	1,228.18	1,047.44	180.75	6.795		
17,350.00	11,798.00	17,519.86	11,930.41	91.82	90.91	-96.24	-5,562.69	821.01	1,229.33	1,047.39	181.95	6.757		
17,400.00	11,798.00	17,544.00	11,929.15	92.47	91.23	-96.17	-5,586.78	821.87	1,230.92	1,048.21	182.71	6.737		
17,450.00	11,798.00	17,582.75	11,927.45	93.12	91.75	-96.09	-5,625.44	823.79	1,233.13	1,049.35	183.77	6.710		
17,500.00	11,798.00	17,609.51	11,926.66	93.77	92.11	-96.04	-5,652.12	825.70	1,236.38	1,051.87	184.51	6.701		
17,550.00	11,798.00	17,638.00	11,926.16	94.42	92.49	-96.01	-5,680.49	828.24	1,240.57	1,055.32	185.25	6.697		

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 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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 718H - Wellbore #1 - Wellbore #1												Offset Site Error:	0 00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM												Offset Well Error:	0 50 ft
Reference		Offset		Semi Major Axis			Distance						Warning
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	
17,600.00	11,798.00	17,724.59	11,923.65	95.07	93.87	-95.88	-5,766.73	835.54	1,244.53	1,056.95	187.58	6.635	
17,650.00	11,798.00	17,794.40	11,920.65	95.72	94.61	-95.70	-5,836.34	839.79	1,247.21	1,057.79	189.41	6.585	
17,700.00	11,798.00	17,853.91	11,918.84	96.38	95.41	-95.61	-5,895.76	842.59	1,249.25	1,058.28	190.97	6.542	
17,750.00	11,798.00	17,906.08	11,917.00	97.03	96.11	-95.51	-5,947.85	844.89	1,251.14	1,058.78	192.36	6.504	
17,800.00	11,798.00	17,938.94	11,915.84	97.69	96.56	-95.45	-5,980.65	846.43	1,253.23	1,059.92	193.31	6.483	
17,850.00	11,798.00	17,964.75	11,915.57	98.35	96.91	-95.43	-6,006.41	848.09	1,256.24	1,062.19	194.05	6.474	
17,900.00	11,798.00	17,990.50	11,915.95	99.00	97.26	-95.44	-6,032.07	850.17	1,260.21	1,065.49	194.72	6.472	
17,950.00	11,798.00	18,022.19	11,917.24	99.66	97.69	-95.49	-6,063.58	853.30	1,265.12	1,069.61	195.51	6.471	
18,000.00	11,798.00	18,137.77	11,918.96	100.32	99.27	-95.53	-6,178.79	861.92	1,268.49	1,069.87	198.62	6.387	
18,050.00	11,798.00	18,197.25	11,919.13	100.99	100.08	-95.52	-6,238.20	864.91	1,270.87	1,070.70	200.18	6.349	
18,100.00	11,798.00	18,282.80	11,920.38	101.65	101.24	-95.57	-6,323.69	867.66	1,272.44	1,070.19	202.25	6.291	
18,150.00	11,798.00	18,150.00	11,921.12	102.31	99.47	-95.61	-6,413.25	868.92	1,271.52	1,070.25	201.28	6.317	
18,200.00	11,798.00	18,429.43	11,920.73	102.97	103.20	-95.60	-6,470.27	865.68	1,270.22	1,064.55	205.67	6.176	
18,250.00	11,798.00	18,458.92	11,920.44	103.64	103.60	-95.58	-6,499.76	865.41	1,269.59	1,062.90	206.69	6.142	
18,263.98	11,798.00	18,467.17	11,920.38	103.82	103.71	-95.58	-6,508.00	865.42	1,269.56	1,062.59	206.97	6.134	
18,300.00	11,798.00	18,489.67	11,920.23	104.30	104.01	-95.57	-6,530.50	865.64	1,269.77	1,062.08	207.69	6.114	
18,350.00	11,798.00	18,350.00	11,916.02	104.97	102.13	-95.39	-6,606.07	865.48	1,269.00	1,062.38	206.61	6.142	
18,400.00	11,798.00	18,653.12	11,910.11	105.64	108.20	-95.13	-6,693.56	863.60	1,267.26	1,055.87	211.40	5.995	
18,450.00	11,798.00	18,769.00	11,907.72	106.30	107.72	-95.06	-6,809.07	855.33	1,262.79	1,049.56	213.23	5.922	
18,500.00	11,798.00	18,769.00	11,907.72	106.97	107.72	-95.06	-6,809.07	855.33	1,259.22	1,045.00	214.22	5.878	
18,550.00	11,798.00	18,812.83	11,907.35	107.64	108.31	-95.05	-6,852.74	851.68	1,255.13	1,039.64	215.49	5.825	
18,600.00	11,798.00	18,828.13	11,907.51	108.31	108.51	-95.06	-6,868.02	851.21	1,253.48	1,037.09	216.39	5.793	
18,616.56	11,798.00	18,833.20	11,907.60	108.53	108.58	-95.07	-6,873.09	851.14	1,253.24	1,036.58	216.66	5.784	
18,650.00	11,798.00	18,864.00	11,908.48	108.98	108.99	-95.11	-6,903.87	851.69	1,253.77	1,036.26	217.51	5.764	
18,659.81	11,798.00	18,864.00	11,908.48	109.11	108.99	-95.11	-6,903.87	851.69	1,253.73	1,036.13	217.61	5.761	
18,700.00	11,798.00	18,864.00	11,908.48	109.65	108.99	-95.11	-6,903.87	851.69	1,254.38	1,036.48	217.90	5.757	
18,750.00	11,798.00	18,924.46	11,909.54	110.33	109.82	-95.15	-6,964.28	853.87	1,256.19	1,036.72	219.47	5.724	
18,800.00	11,798.00	18,999.43	11,907.73	111.00	110.85	-95.06	-7,039.22	855.14	1,256.75	1,035.42	221.33	5.678	
18,850.00	11,798.00	19,064.41	11,904.91	111.67	111.73	-94.93	-7,104.13	855.43	1,256.64	1,033.68	222.96	5.636	
18,871.59	11,798.00	19,075.94	11,904.42	111.96	111.89	-94.91	-7,115.65	855.52	1,256.62	1,033.24	223.38	5.625	
18,900.00	11,798.00	19,097.78	11,903.49	112.35	112.19	-94.87	-7,137.47	855.71	1,256.69	1,032.65	224.04	5.609	
18,950.00	11,798.00	19,136.23	11,902.03	113.02	112.72	-94.80	-7,175.88	856.32	1,257.19	1,031.99	225.19	5.583	
19,000.00	11,798.00	19,178.26	11,900.98	113.70	113.29	-94.75	-7,217.90	857.28	1,258.09	1,031.68	226.40	5.557	
19,050.00	11,798.00	19,221.54	11,901.17	114.37	113.89	-94.75	-7,261.15	858.40	1,259.26	1,031.64	227.62	5.532	
19,100.00	11,798.00	19,288.97	11,902.57	115.05	114.82	-94.81	-7,328.55	859.96	1,260.42	1,031.10	229.33	5.496	
19,150.00	11,798.00	19,150.00	11,902.21	115.73	112.91	-94.79	-7,377.73	860.40	1,260.71	1,032.61	228.10	5.527	
19,200.00	11,798.00	19,375.76	11,902.16	116.40	116.01	-94.79	-7,415.32	860.87	1,261.30	1,029.51	231.79	5.442	
19,250.00	11,798.00	19,404.04	11,903.13	117.08	116.41	-94.83	-7,443.58	861.76	1,262.87	1,030.20	232.66	5.428	
19,300.00	11,798.00	19,435.75	11,905.12	117.76	116.85	-94.91	-7,475.19	863.23	1,265.29	1,031.73	233.55	5.418	
19,350.00	11,798.00	19,494.87	11,906.99	118.44	117.67	-94.99	-7,534.19	866.24	1,267.83	1,032.68	235.15	5.392	
19,400.00	11,798.00	19,542.21	11,905.93	119.12	118.33	-94.93	-7,581.46	868.64	1,270.13	1,033.66	236.47	5.371	
19,450.00	11,798.00	19,578.83	11,905.47	119.80	118.84	-94.90	-7,618.01	870.78	1,272.85	1,035.36	237.50	5.359	
19,500.00	11,798.00	19,617.00	11,905.80	120.48	119.38	-94.91	-7,656.09	873.35	1,276.10	1,037.56	238.54	5.350	
19,550.00	11,798.00	19,768.98	11,910.05	121.16	121.49	-95.08	-7,807.89	878.32	1,278.06	1,035.92	242.14	5.278	
19,600.00	11,798.00	19,847.59	11,912.70	121.85	122.56	-95.21	-7,886.41	876.07	1,276.48	1,032.63	243.86	5.235	
19,650.00	11,798.00	19,897.59	11,913.39	122.53	123.25	-95.25	-7,936.38	874.48	1,274.82	1,029.61	245.21	5.199	
19,700.00	11,798.00	19,941.23	11,913.86	123.21	123.84	-95.27	-7,980.01	873.20	1,273.28	1,026.79	246.49	5.166	
19,750.00	11,798.00	19,984.68	11,914.99	123.90	124.43	-95.33	-8,023.42	872.09	1,271.99	1,024.24	247.75	5.134	
19,800.00	11,798.00	20,052.32	11,916.17	124.58	125.36	-95.39	-8,091.02	870.22	1,270.59	1,021.28	249.31	5.096	
19,850.00	11,798.00	20,113.75	11,914.52	125.27	126.19	-95.33	-8,152.37	867.86	1,268.40	1,017.59	250.81	5.057	
19,900.00	11,798.00	20,163.33	11,912.62	125.95	126.87	-95.25	-8,201.89	865.88	1,266.11	1,013.92	252.18	5.021	
19,950.00	11,798.00	20,207.99	11,910.82	126.64	127.48	-95.18	-8,246.48	864.18	1,263.89	1,010.38	253.51	4.986 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 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore #1												Offset Site Error:	0.00 ft
Survey Program: 148-GYRO-NS-CT, 1069-MWD+HDGM												Offset Well Error:	0.50 ft
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
20,000.00	11,798.00	20,249.72	11,909.44	127.32	128.05	-95.12	-8,288.16	862.81	1,261.98	1,007.18	254.80	4.953	Alert
20,050.00	11,798.00	20,294.11	11,908.32	128.01	128.65	-95.07	-8,332.52	861.60	1,260.37	1,004.26	256.11	4.921	Alert
20,100.00	11,798.00	20,342.98	11,907.27	128.70	129.32	-95.03	-8,381.36	860.35	1,258.87	1,001.39	257.48	4.889	Alert
20,150.00	11,798.00	20,390.76	11,906.25	129.38	129.98	-94.99	-8,429.11	859.18	1,257.42	998.59	258.83	4.858	Alert
20,200.00	11,798.00	20,437.00	11,904.22	130.07	130.62	-94.90	-8,475.30	858.25	1,256.10	995.92	260.18	4.828	Alert
20,250.00	11,798.00	20,485.95	11,900.81	130.76	131.29	-94.75	-8,524.12	857.51	1,254.91	993.34	261.57	4.798	Alert
20,300.00	11,798.00	20,539.15	11,896.50	131.45	132.02	-94.56	-8,577.15	856.66	1,253.65	990.62	263.03	4.766	Alert
20,350.00	11,798.00	20,559.00	11,894.79	132.14	132.30	-94.48	-8,596.92	856.32	1,252.69	988.72	263.97	4.746	Alert
20,391.61	11,798.00	20,597.86	11,891.96	132.71	132.84	-94.35	-8,635.67	856.11	1,252.16	987.06	265.10	4.723	Alert
20,400.00	11,798.00	20,602.34	11,891.71	132.83	132.90	-94.34	-8,640.14	856.15	1,252.17	986.91	265.26	4.720	Alert
20,450.00	11,798.00	20,629.07	11,890.54	133.52	133.27	-94.29	-8,666.84	856.64	1,252.79	986.60	266.19	4.706	Alert
20,500.00	11,798.00	20,657.42	11,889.88	134.21	133.67	-94.25	-8,695.16	857.66	1,254.34	987.27	267.07	4.697	Alert
20,550.00	11,798.00	20,699.46	11,889.11	134.90	134.26	-94.21	-8,737.15	859.60	1,256.45	988.18	268.27	4.683	Alert
20,600.00	11,798.00	20,741.46	11,888.11	135.59	134.86	-94.16	-8,779.08	861.83	1,258.87	989.41	269.46	4.672	Alert
20,650.00	11,798.00	20,996.94	11,889.25	136.28	138.36	-94.24	-9,033.64	855.08	1,257.64	984.41	273.22	4.603	Alert
20,700.00	11,798.00	21,030.00	11,889.59	136.97	138.80	-94.26	-9,066.53	851.78	1,252.52	977.90	274.62	4.561	Alert
20,750.00	11,798.00	21,030.00	11,889.59	137.67	138.80	-94.26	-9,066.53	851.78	1,248.62	972.74	275.88	4.526	Alert
20,800.00	11,798.00	21,073.39	11,890.67	138.36	139.39	-94.33	-9,109.79	848.67	1,245.12	967.92	277.20	4.492	Alert
20,850.00	11,798.00	21,096.96	11,891.58	139.05	139.72	-94.37	-9,133.32	847.67	1,243.01	964.69	278.32	4.466	Alert
20,900.00	11,798.00	21,124.00	11,892.90	139.74	140.09	-94.43	-9,160.33	847.12	1,241.97	962.59	279.38	4.445	Alert
20,929.90	11,798.00	21,137.62	11,893.65	140.16	140.28	-94.47	-9,173.93	847.05	1,241.82	961.89	279.93	4.436	Alert
20,950.00	11,798.00	21,149.76	11,894.34	140.44	140.45	-94.50	-9,186.05	847.06	1,241.88	961.55	280.34	4.430	Alert
21,000.00	11,798.00	21,179.94	11,896.15	141.13	140.87	-94.58	-9,216.17	847.44	1,242.61	961.31	281.29	4.417	Alert
21,050.00	11,798.00	21,218.00	11,898.60	141.83	141.41	-94.69	-9,254.13	848.58	1,244.17	961.79	282.38	4.406	Alert
21,100.00	11,798.00	21,255.04	11,901.00	142.52	141.93	-94.80	-9,291.06	850.06	1,246.23	962.82	283.42	4.397	Alert
21,150.00	11,798.00	21,305.30	11,904.01	143.22	142.65	-94.93	-9,341.19	852.08	1,248.36	963.57	284.79	4.383	Alert
21,200.00	11,798.00	21,351.20	11,906.52	143.91	143.30	-95.03	-9,386.98	853.99	1,250.55	964.49	286.05	4.372	Alert
21,250.00	11,798.00	21,396.43	11,908.80	144.61	143.94	-95.13	-9,432.11	856.07	1,252.92	965.63	287.29	4.361	Alert
21,300.00	11,798.00	21,446.97	11,911.08	145.30	144.66	-95.22	-9,482.54	858.52	1,255.41	966.72	288.68	4.349	Alert
21,350.00	11,798.00	21,498.97	11,913.03	146.00	145.40	-95.30	-9,534.44	860.99	1,257.82	967.70	290.12	4.335	Alert
21,400.00	11,798.00	21,533.82	11,914.34	146.69	145.90	-95.36	-9,569.22	862.82	1,260.48	969.41	291.07	4.331	Alert
21,450.00	11,798.00	21,568.25	11,915.93	147.39	146.39	-95.42	-9,603.54	865.03	1,263.75	971.79	291.96	4.328	Alert
21,500.00	11,798.00	21,615.28	11,918.27	148.09	147.06	-95.51	-9,650.36	868.55	1,267.58	974.34	293.24	4.323	Alert
21,550.00	11,798.00	21,700.38	11,917.77	148.79	148.28	-95.46	-9,735.28	873.96	1,270.58	974.83	295.75	4.296	Alert
21,600.00	11,798.00	21,748.99	11,915.03	149.48	148.98	-95.33	-9,783.73	876.73	1,273.02	975.87	297.15	4.284	Alert
21,650.00	11,798.00	21,800.84	11,910.66	150.18	149.72	-95.12	-9,835.31	879.67	1,275.34	976.67	298.67	4.270	Alert
21,700.00	11,798.00	21,850.56	11,906.13	150.88	150.42	-94.91	-9,884.74	882.50	1,277.65	977.52	300.13	4.257	Alert, SF
21,750.00	11,798.00	21,852.00	11,906.00	151.58	150.44	-94.90	-9,886.18	882.58	1,280.89	980.89	300.00	4.270	Alert
21,800.00	11,798.00	21,852.00	11,906.00	152.28	150.44	-94.90	-9,886.18	882.58	1,286.06	986.65	299.41	4.295	Alert
21,850.00	11,798.00	21,852.00	11,906.00	152.98	150.44	-94.90	-9,886.18	882.58	1,293.15	994.72	298.43	4.333	Alert
21,900.00	11,798.00	21,852.00	11,906.00	153.67	150.44	-94.90	-9,886.18	882.58	1,302.12	1,005.05	297.07	4.383	Alert
21,950.00	11,798.00	21,852.00	11,906.00	154.37	150.44	-94.90	-9,886.18	882.58	1,312.94	1,017.58	295.36	4.445	Alert
22,000.00	11,798.00	21,852.00	11,906.00	155.07	150.44	-94.90	-9,886.18	882.58	1,325.55	1,032.24	293.31	4.519	Alert
22,050.00	11,798.00	21,852.00	11,906.00	155.77	150.44	-94.90	-9,886.18	882.58	1,339.91	1,048.95	290.96	4.605	Alert
22,087.66	11,798.00	21,852.00	11,906.00	156.30	150.44	-94.90	-9,886.18	882.58	1,351.85	1,062.84	289.01	4.678	Alert

Anticollision Report

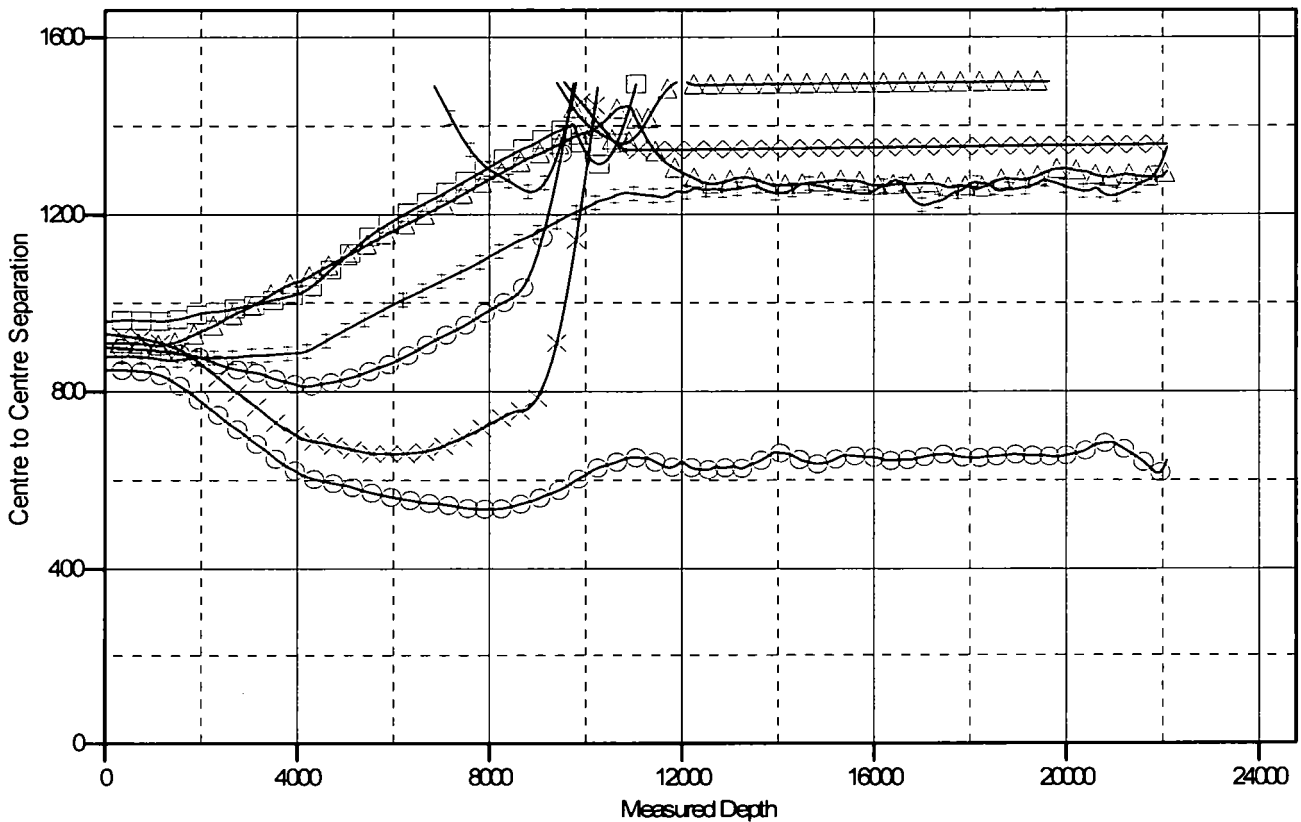
Company: WCDSC Permian NM
Project: Eddy County (NAD 83 NM Eastern)
Reference Site: Sec 27-T25S-R31E
Site Error: 0.00 ft
Reference Well: Lusitano 27_34 Fed Com 716H
Well Error: 0.50 ft
Reference Wellbore: Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27_34 Fed Com 716H
TVD Reference: RKB @ 3363.10ft
MD Reference: RKB @ 3363.10ft
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 @ 3363.10ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.333334

Coordinates are relative to: Lusitano 27_34 Fed Com 716H
 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 713H, Wellbore #1, Permit Plan 1 V0
 Lusitano 27_34 Fed Com 235H, Wellbore #1, Wellbore #1 V0
 Lusitano 27_34 Fed Com 333H, Wellbore #1, Permit Plan 1 V0
 Lusitano 27_34 Fed Com 338H, Wellbore #1, Wellbore #1 V0
 Lusitano 27_34 Fed Com 528H, Wellbore #1, Wellbore #1 V0
 Lusitano 27_34 Fed Com 536H, Wellbore #1, Wellbore #1 V0
 Lusitano 27_34 Fed Com 626H, Wellbore #1, Wellbore #1 V0
 Lusitano 27_34 Fed Com 716H, Wellbore #1, Wellbore #1 V0

Anticollision Report

Company:	WCDSC Permian NM	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Project:	Eddy County (NAD 83 NM Eastern)	TVD Reference:	RKB @ 3363.10ft
Reference Site:	Sec 27-T25S-R31E	MD Reference:	RKB @ 3363.10ft
Error:	0.00 ft	North Reference:	Grid
Reference Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Error:	0.50 ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	EDM r5000.141_Prod US
Reference Design:	Permit Plan 1	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB @ 3363.10ft

Offset Depths are relative to Offset Datum

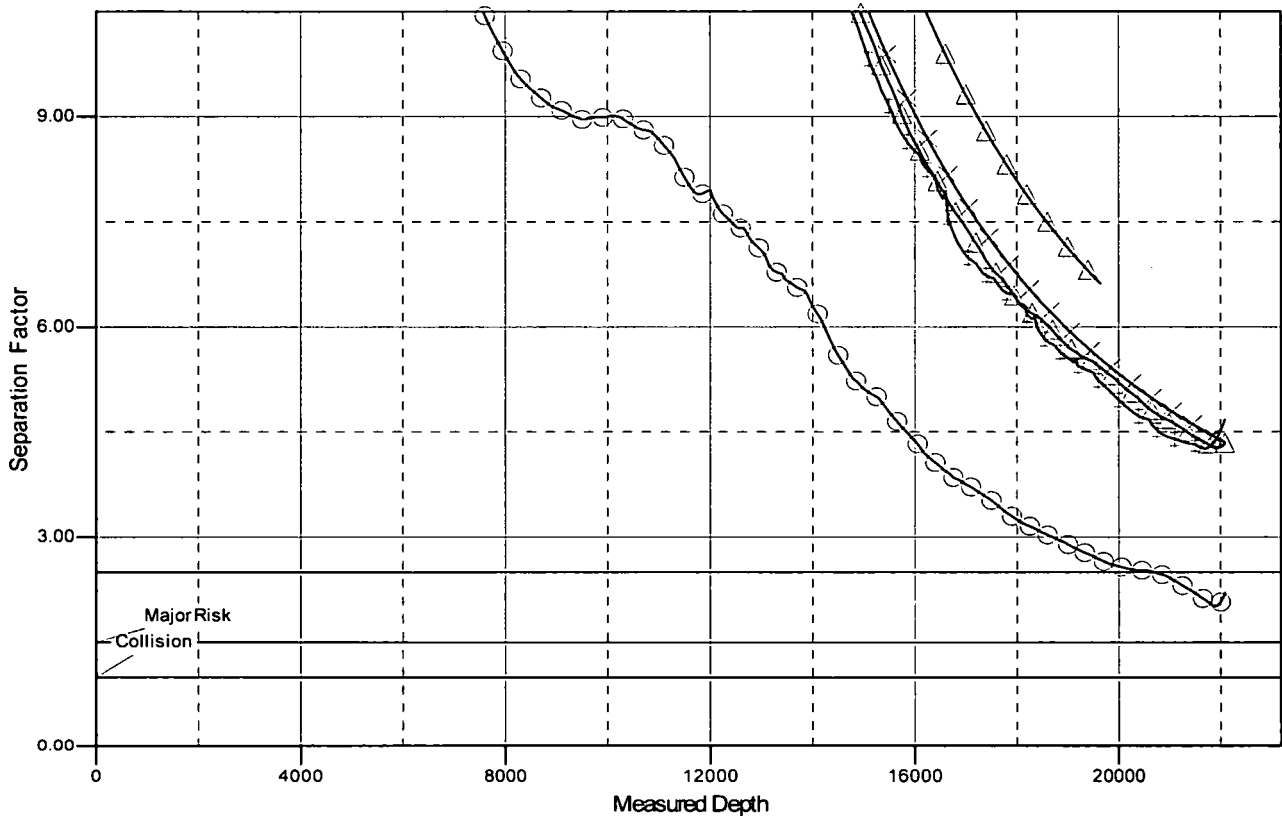
Central Meridian is -104.333334

Coordinates are relative to: Lusitano 27_34 Fed Com 716H

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 333H, Wellbore #1, Permit Plan 1 V0		Lusitano 27_34 Fed Com 536H, Wellbore #1, Wellbore #1 V0
	Lusitano 27_34 Fed Com 713H, Wellbore #1, Permit Plan 1 V0		Lusitano 27_34 Fed Com 336H, Wellbore #1, Wellbore #1 V0		Lusitano 27_34 Fed Com 626H, Wellbore #1, Wellbore #1 V0
	Lusitano 27_34 Fed Com 735H, Wellbore #1, Wellbore #1 V0		Lusitano 27_34 Fed Com 526H, Wellbore #1, Wellbore #1 V0		Lusitano 27_34 Fed Com 716H, Wellbore #1, Wellbore #1 V0

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Lusitano 27_34 Fed Com 716H

Wellbore #1

Plan: Permit Plan 1

Standard Planning Report - Geographic

21 August, 2018

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3363.10ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3363.10ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

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

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

Well	Lusitano 27_34 Fed Com 716H			
Well Position	+N/-S	0.00 ft	Northing:	403,464.19 usft
	+E/-W	0.00 ft	Easting:	718,444.14 usft
Position Uncertainty		0.50 ft	Wellhead Elevation:	Ground Level: 3,338.10 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	8/20/2018	6.91	59.91	47,729.08829849

Design	Permit Plan 1			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	182.15

Plan Survey Tool Program	Date	8/21/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	22,087.66 Permit Plan 1 (Wellbore #1)	MWD+HDGM	
			OWSG MWD + HDGM	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
4,316.42	3.96	293.98	4,316.16	4.44	-9.97	1.25	1.25	0.00	293.98	
10,626.81	3.96	293.98	10,611.53	181.30	-407.69	0.00	0.00	0.00	0.00	
10,890.49	0.00	0.00	10,875.00	185.00	-416.00	1.50	-1.50	0.00	180.00	
11,240.53	0.00	0.00	11,225.04	185.00	-416.00	0.00	0.00	0.00	0.00	
12,140.53	90.00	179.85	11,798.00	-387.96	-414.47	10.00	10.00	0.00	179.85	PBHL - Lusitano 27-3
22,087.66	90.00	179.85	11,798.00	-10,335.05	-387.90	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 716H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3363.10ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3363.10ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
100.00	0.00	0.00	100.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
200.00	0.00	0.00	200.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
300.00	0.00	0.00	300.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
400.00	0.00	0.00	400.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
500.00	0.00	0.00	500.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
600.00	0.00	0.00	600.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
700.00	0.00	0.00	700.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
800.00	0.00	0.00	800.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
900.00	0.00	0.00	900.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,000.00	0.00	0.00	1,000.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,100.00	0.00	0.00	1,100.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,200.00	0.00	0.00	1,200.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,300.00	0.00	0.00	1,300.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,400.00	0.00	0.00	1,400.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,500.00	0.00	0.00	1,500.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,600.00	0.00	0.00	1,600.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,700.00	0.00	0.00	1,700.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,800.00	0.00	0.00	1,800.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
1,900.00	0.00	0.00	1,900.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,000.00	0.00	0.00	2,000.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,100.00	0.00	0.00	2,100.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,200.00	0.00	0.00	2,200.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,300.00	0.00	0.00	2,300.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,400.00	0.00	0.00	2,400.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,500.00	0.00	0.00	2,500.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,600.00	0.00	0.00	2,600.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,700.00	0.00	0.00	2,700.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,800.00	0.00	0.00	2,800.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
2,900.00	0.00	0.00	2,900.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,000.00	0.00	0.00	3,000.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,100.00	0.00	0.00	3,100.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,200.00	0.00	0.00	3,200.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,300.00	0.00	0.00	3,300.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,400.00	0.00	0.00	3,400.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,500.00	0.00	0.00	3,500.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,600.00	0.00	0.00	3,600.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,700.00	0.00	0.00	3,700.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,800.00	0.00	0.00	3,800.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
3,900.00	0.00	0.00	3,900.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
4,000.00	0.00	0.00	4,000.00	0.00	0.00	403,464.19	718,444.14	32.107911	-103.761333
4,100.00	1.25	293.98	4,099.99	0.44	-1.00	403,464.63	718,443.14	32.107912	-103.761336
4,200.00	2.50	293.98	4,199.94	1.77	-3.99	403,465.96	718,440.15	32.107916	-103.761346
4,300.00	3.75	293.98	4,299.79	3.99	-8.97	403,468.18	718,435.17	32.107922	-103.761362
4,316.42	3.96	293.98	4,316.16	4.44	-9.97	403,468.63	718,434.16	32.107923	-103.761365
4,400.00	3.96	293.98	4,399.55	6.78	-15.24	403,470.97	718,428.89	32.107930	-103.761382
4,500.00	3.96	293.98	4,499.31	9.58	-21.55	403,473.77	718,422.59	32.107937	-103.761402
4,600.00	3.96	293.98	4,599.07	12.38	-27.85	403,476.57	718,416.29	32.107945	-103.761423
4,700.00	3.96	293.98	4,698.84	15.19	-34.15	403,479.38	718,409.99	32.107953	-103.761443
4,800.00	3.96	293.98	4,798.60	17.99	-40.45	403,482.18	718,403.68	32.107961	-103.761463
4,900.00	3.96	293.98	4,898.36	20.79	-46.76	403,484.98	718,397.38	32.107969	-103.761484
5,000.00	3.96	293.98	4,998.12	23.60	-53.06	403,487.78	718,391.08	32.107976	-103.761504
5,100.00	3.96	293.98	5,097.88	26.40	-59.36	403,490.59	718,384.78	32.107984	-103.761524
5,200.00	3.96	293.98	5,197.64	29.20	-65.66	403,493.39	718,378.47	32.107992	-103.761545
5,300.00	3.96	293.98	5,297.41	32.00	-71.97	403,496.19	718,372.17	32.108000	-103.761565

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3363.10ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3363.10ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,400.00	3.96	293.98	5,397.17	34.81	-78.27	403,499.00	718,365.87	32.108007	-103.761585
5,500.00	3.96	293.98	5,496.93	37.61	-84.57	403,501.80	718,359.57	32.108015	-103.761606
5,600.00	3.96	293.98	5,596.69	40.41	-90.87	403,504.60	718,353.26	32.108023	-103.761626
5,700.00	3.96	293.98	5,696.45	43.22	-97.18	403,507.40	718,346.96	32.108031	-103.761646
5,800.00	3.96	293.98	5,796.22	46.02	-103.48	403,510.21	718,340.66	32.108039	-103.761666
5,900.00	3.96	293.98	5,895.98	48.82	-109.78	403,513.01	718,334.36	32.108046	-103.761687
6,000.00	3.96	293.98	5,995.74	51.62	-116.08	403,515.81	718,328.05	32.108054	-103.761707
6,100.00	3.96	293.98	6,095.50	54.43	-122.39	403,518.62	718,321.75	32.108062	-103.761727
6,200.00	3.96	293.98	6,195.26	57.23	-128.69	403,521.42	718,315.45	32.108070	-103.761748
6,300.00	3.96	293.98	6,295.02	60.03	-134.99	403,524.22	718,309.15	32.108078	-103.761768
6,400.00	3.96	293.98	6,394.79	62.83	-141.29	403,527.02	718,302.84	32.108085	-103.761788
6,500.00	3.96	293.98	6,494.55	65.64	-147.60	403,529.83	718,296.54	32.108093	-103.761809
6,600.00	3.96	293.98	6,594.31	68.44	-153.90	403,532.63	718,290.24	32.108101	-103.761829
6,700.00	3.96	293.98	6,694.07	71.24	-160.20	403,535.43	718,283.94	32.108109	-103.761849
6,800.00	3.96	293.98	6,793.83	74.05	-166.50	403,538.23	718,277.63	32.108117	-103.761870
6,900.00	3.96	293.98	6,893.60	76.85	-172.81	403,541.04	718,271.33	32.108124	-103.761890
7,000.00	3.96	293.98	6,993.36	79.65	-179.11	403,543.84	718,265.03	32.108132	-103.761910
7,100.00	3.96	293.98	7,093.12	82.45	-185.41	403,546.64	718,258.73	32.108140	-103.761930
7,200.00	3.96	293.98	7,192.88	85.26	-191.71	403,549.45	718,252.42	32.108148	-103.761951
7,300.00	3.96	293.98	7,292.64	88.06	-198.02	403,552.25	718,246.12	32.108156	-103.761971
7,400.00	3.96	293.98	7,392.40	90.86	-204.32	403,555.05	718,239.82	32.108163	-103.761991
7,500.00	3.96	293.98	7,492.17	93.67	-210.62	403,557.85	718,233.52	32.108171	-103.762012
7,600.00	3.96	293.98	7,591.93	96.47	-216.92	403,560.66	718,227.21	32.108179	-103.762032
7,700.00	3.96	293.98	7,691.69	99.27	-223.23	403,563.46	718,220.91	32.108187	-103.762052
7,800.00	3.96	293.98	7,791.45	102.07	-229.53	403,566.26	718,214.61	32.108195	-103.762073
7,900.00	3.96	293.98	7,891.21	104.88	-235.83	403,569.07	718,208.31	32.108202	-103.762093
8,000.00	3.96	293.98	7,990.98	107.68	-242.13	403,571.87	718,202.00	32.108210	-103.762113
8,100.00	3.96	293.98	8,090.74	110.48	-248.44	403,574.67	718,195.70	32.108218	-103.762134
8,200.00	3.96	293.98	8,190.50	113.28	-254.74	403,577.47	718,189.40	32.108226	-103.762154
8,300.00	3.96	293.98	8,290.26	116.09	-261.04	403,580.28	718,183.10	32.108234	-103.762174
8,400.00	3.96	293.98	8,390.02	118.89	-267.34	403,583.08	718,176.79	32.108241	-103.762194
8,500.00	3.96	293.98	8,489.78	121.69	-273.65	403,585.88	718,170.49	32.108249	-103.762215
8,600.00	3.96	293.98	8,589.55	124.50	-279.95	403,588.68	718,164.19	32.108257	-103.762235
8,700.00	3.96	293.98	8,689.31	127.30	-286.25	403,591.49	718,157.89	32.108265	-103.762255
8,800.00	3.96	293.98	8,789.07	130.10	-292.55	403,594.29	718,151.58	32.108273	-103.762276
8,900.00	3.96	293.98	8,888.83	132.90	-298.86	403,597.09	718,145.28	32.108280	-103.762296
9,000.00	3.96	293.98	8,988.59	135.71	-305.16	403,599.90	718,138.98	32.108288	-103.762316
9,100.00	3.96	293.98	9,088.36	138.51	-311.46	403,602.70	718,132.68	32.108296	-103.762337
9,200.00	3.96	293.98	9,188.12	141.31	-317.76	403,605.50	718,126.37	32.108304	-103.762357
9,300.00	3.96	293.98	9,287.88	144.12	-324.07	403,608.30	718,120.07	32.108312	-103.762377
9,400.00	3.96	293.98	9,387.64	146.92	-330.37	403,611.11	718,113.77	32.108319	-103.762398
9,500.00	3.96	293.98	9,487.40	149.72	-336.67	403,613.91	718,107.47	32.108327	-103.762418
9,600.00	3.96	293.98	9,587.17	152.52	-342.97	403,616.71	718,101.16	32.108335	-103.762438
9,700.00	3.96	293.98	9,686.93	155.33	-349.28	403,619.52	718,094.86	32.108343	-103.762458
9,800.00	3.96	293.98	9,786.69	158.13	-355.58	403,622.32	718,088.56	32.108351	-103.762479
9,900.00	3.96	293.98	9,886.45	160.93	-361.88	403,625.12	718,082.26	32.108358	-103.762499
10,000.00	3.96	293.98	9,986.21	163.74	-368.18	403,627.92	718,075.95	32.108366	-103.762519
10,100.00	3.96	293.98	10,085.97	166.54	-374.49	403,630.73	718,069.65	32.108374	-103.762540
10,200.00	3.96	293.98	10,185.74	169.34	-380.79	403,633.53	718,063.35	32.108382	-103.762560
10,300.00	3.96	293.98	10,285.50	172.14	-387.09	403,636.33	718,057.05	32.108390	-103.762580
10,400.00	3.96	293.98	10,385.26	174.95	-393.39	403,639.13	718,050.74	32.108397	-103.762601
10,500.00	3.96	293.98	10,485.02	177.75	-399.70	403,641.94	718,044.44	32.108405	-103.762621
10,600.00	3.96	293.98	10,584.78	180.55	-406.00	403,644.74	718,038.14	32.108413	-103.762641
10,626.81	3.96	293.98	10,611.53	181.30	-407.69	403,645.49	718,036.45	32.108415	-103.762647
10,700.00	2.86	293.98	10,684.59	183.07	-411.66	403,647.26	718,032.48	32.108420	-103.762659

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3363.10ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3363.10ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,800.00	1.36	293.98	10,784.52	184.56	-415.02	403,648.75	718,029.12	32.108424	-103.762670
10,890.49	0.00	0.00	10,875.00	185.00	-416.00	403,649.19	718,028.14	32.108425	-103.762673
10,900.00	0.00	0.00	10,884.51	185.00	-416.00	403,649.19	718,028.14	32.108425	-103.762673
11,000.00	0.00	0.00	10,984.51	185.00	-416.00	403,649.19	718,028.14	32.108425	-103.762673
11,100.00	0.00	0.00	11,084.51	185.00	-416.00	403,649.19	718,028.14	32.108425	-103.762673
11,200.00	0.00	0.00	11,184.51	185.00	-416.00	403,649.19	718,028.14	32.108425	-103.762673
11,240.53	0.00	0.00	11,225.04	185.00	-416.00	403,649.19	718,028.14	32.108425	-103.762673
KOP @ 11241' MD, 50' FNL, 1650' FEL									
11,300.00	5.95	179.85	11,284.40	181.92	-415.99	403,646.11	718,028.15	32.108417	-103.762673
11,400.00	15.95	179.85	11,382.46	162.95	-415.94	403,627.14	718,028.20	32.108365	-103.762674
11,481.67	24.11	179.85	11,459.12	135.00	-415.87	403,599.19	718,028.27	32.108288	-103.762674
FTP @ 11482' MD, 100' FNL, 1650' FEL									
11,500.00	25.95	179.85	11,475.73	127.25	-415.85	403,591.43	718,028.29	32.108267	-103.762674
11,600.00	35.95	179.85	11,561.39	75.89	-415.71	403,540.08	718,028.43	32.108125	-103.762674
11,700.00	45.95	179.85	11,636.82	10.43	-415.53	403,474.62	718,028.60	32.107945	-103.762675
11,800.00	55.95	179.85	11,699.75	-67.12	-415.33	403,397.07	718,028.81	32.107732	-103.762676
11,900.00	65.95	179.85	11,748.25	-154.43	-415.09	403,309.76	718,029.04	32.107492	-103.762676
12,000.00	75.95	179.85	11,780.85	-248.83	-414.84	403,215.36	718,029.30	32.107233	-103.762677
12,100.00	85.95	179.85	11,796.57	-347.46	-414.58	403,116.73	718,029.56	32.106962	-103.762678
12,140.53	90.00	179.85	11,798.00	-387.96	-414.47	403,076.23	718,029.67	32.106850	-103.762678
12,200.00	90.00	179.85	11,798.00	-447.42	-414.31	403,016.77	718,029.83	32.106687	-103.762679
12,300.00	90.00	179.85	11,798.00	-547.42	-414.04	402,916.77	718,030.09	32.106412	-103.762680
12,400.00	90.00	179.85	11,798.00	-647.42	-413.78	402,816.77	718,030.36	32.106137	-103.762680
12,500.00	90.00	179.85	11,798.00	-747.42	-413.51	402,716.77	718,030.63	32.105862	-103.762681
12,600.00	90.00	179.85	11,798.00	-847.42	-413.24	402,616.77	718,030.89	32.105587	-103.762682
12,700.00	90.00	179.85	11,798.00	-947.42	-412.98	402,516.77	718,031.16	32.105312	-103.762683
12,800.00	90.00	179.85	11,798.00	-1,047.42	-412.71	402,416.77	718,031.43	32.105038	-103.762684
12,900.00	90.00	179.85	11,798.00	-1,147.42	-412.44	402,316.77	718,031.70	32.104763	-103.762685
13,000.00	90.00	179.85	11,798.00	-1,247.42	-412.17	402,216.77	718,031.96	32.104488	-103.762686
13,100.00	90.00	179.85	11,798.00	-1,347.42	-411.91	402,116.77	718,032.23	32.104213	-103.762686
13,200.00	90.00	179.85	11,798.00	-1,447.42	-411.64	402,016.77	718,032.50	32.103938	-103.762687
13,300.00	90.00	179.85	11,798.00	-1,547.42	-411.37	401,916.77	718,032.76	32.103663	-103.762688
13,400.00	90.00	179.85	11,798.00	-1,647.42	-411.11	401,816.77	718,033.03	32.103388	-103.762689
13,500.00	90.00	179.85	11,798.00	-1,747.42	-410.84	401,716.77	718,033.30	32.103113	-103.762690
13,600.00	90.00	179.85	11,798.00	-1,847.42	-410.57	401,616.77	718,033.57	32.102838	-103.762691
13,700.00	90.00	179.85	11,798.00	-1,947.42	-410.30	401,516.77	718,033.83	32.102564	-103.762691
13,800.00	90.00	179.85	11,798.00	-2,047.42	-410.04	401,416.77	718,034.10	32.102289	-103.762692
13,900.00	90.00	179.85	11,798.00	-2,147.42	-409.77	401,316.77	718,034.37	32.102014	-103.762693
14,000.00	90.00	179.85	11,798.00	-2,247.42	-409.50	401,216.78	718,034.63	32.101739	-103.762694
14,100.00	90.00	179.85	11,798.00	-2,347.42	-409.24	401,116.78	718,034.90	32.101464	-103.762695
14,200.00	90.00	179.85	11,798.00	-2,447.42	-408.97	401,016.78	718,035.17	32.101189	-103.762696
14,300.00	90.00	179.85	11,798.00	-2,547.42	-408.70	400,916.78	718,035.44	32.100914	-103.762697
14,400.00	90.00	179.85	11,798.00	-2,647.42	-408.43	400,816.78	718,035.70	32.100639	-103.762697
14,500.00	90.00	179.85	11,798.00	-2,747.42	-408.17	400,716.78	718,035.97	32.100364	-103.762698
14,600.00	90.00	179.85	11,798.00	-2,847.42	-407.90	400,616.78	718,036.24	32.100090	-103.762699
14,700.00	90.00	179.85	11,798.00	-2,947.42	-407.63	400,516.78	718,036.50	32.099815	-103.762700
14,800.00	90.00	179.85	11,798.00	-3,047.42	-407.37	400,416.78	718,036.77	32.099540	-103.762701
14,900.00	90.00	179.85	11,798.00	-3,147.42	-407.10	400,316.78	718,037.04	32.099265	-103.762702
15,000.00	90.00	179.85	11,798.00	-3,247.41	-406.83	400,216.78	718,037.30	32.098990	-103.762702
15,100.00	90.00	179.85	11,798.00	-3,347.41	-406.56	400,116.78	718,037.57	32.098715	-103.762703
15,200.00	90.00	179.85	11,798.00	-3,447.41	-406.30	400,016.78	718,037.84	32.098440	-103.762704
15,300.00	90.00	179.85	11,798.00	-3,547.41	-406.03	399,916.78	718,038.11	32.098165	-103.762705
15,400.00	90.00	179.85	11,798.00	-3,647.41	-405.76	399,816.78	718,038.37	32.097891	-103.762706
15,500.00	90.00	179.85	11,798.00	-3,747.41	-405.50	399,716.78	718,038.64	32.097616	-103.762707

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3363.10ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3363.10ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
15,600.00	90.00	179.85	11,798.00	-3,847.41	-405.23	399,616.78	718,038.91	32.097341	-103.762708	
15,700.00	90.00	179.85	11,798.00	-3,947.41	-404.96	399,516.78	718,039.17	32.097066	-103.762708	
15,800.00	90.00	179.85	11,798.00	-4,047.41	-404.70	399,416.79	718,039.44	32.096791	-103.762709	
15,900.00	90.00	179.85	11,798.00	-4,147.41	-404.43	399,316.79	718,039.71	32.096516	-103.762710	
16,000.00	90.00	179.85	11,798.00	-4,247.41	-404.16	399,216.79	718,039.98	32.096241	-103.762711	
16,100.00	90.00	179.85	11,798.00	-4,347.41	-403.89	399,116.79	718,040.24	32.095966	-103.762712	
16,200.00	90.00	179.85	11,798.00	-4,447.41	-403.63	399,016.79	718,040.51	32.095691	-103.762713	
16,300.00	90.00	179.85	11,798.00	-4,547.41	-403.36	398,916.79	718,040.78	32.095417	-103.762713	
16,400.00	90.00	179.85	11,798.00	-4,647.41	-403.09	398,816.79	718,041.04	32.095142	-103.762714	
16,500.00	90.00	179.85	11,798.00	-4,747.41	-402.83	398,716.79	718,041.31	32.094867	-103.762715	
16,600.00	90.00	179.85	11,798.00	-4,847.41	-402.56	398,616.79	718,041.58	32.094592	-103.762716	
16,700.00	90.00	179.85	11,798.00	-4,947.41	-402.29	398,516.79	718,041.85	32.094317	-103.762717	
16,800.00	90.00	179.85	11,798.00	-5,047.41	-402.02	398,416.79	718,042.11	32.094042	-103.762718	
16,900.00	90.00	179.85	11,798.00	-5,147.41	-401.76	398,316.79	718,042.38	32.093767	-103.762719	
17,000.00	90.00	179.85	11,798.00	-5,247.41	-401.49	398,216.79	718,042.65	32.093492	-103.762719	
17,100.00	90.00	179.85	11,798.00	-5,347.41	-401.22	398,116.79	718,042.91	32.093217	-103.762720	
17,200.00	90.00	179.85	11,798.00	-5,447.41	-400.96	398,016.79	718,043.18	32.092943	-103.762721	
17,300.00	90.00	179.85	11,798.00	-5,547.41	-400.69	397,916.79	718,043.45	32.092668	-103.762722	
17,400.00	90.00	179.85	11,798.00	-5,647.41	-400.42	397,816.79	718,043.72	32.092393	-103.762723	
17,500.00	90.00	179.85	11,798.00	-5,747.41	-400.15	397,716.79	718,043.98	32.092118	-103.762724	
17,600.00	90.00	179.85	11,798.00	-5,847.41	-399.89	397,616.80	718,044.25	32.091843	-103.762724	
17,700.00	90.00	179.85	11,798.00	-5,947.41	-399.62	397,516.80	718,044.52	32.091568	-103.762725	
17,800.00	90.00	179.85	11,798.00	-6,047.40	-399.35	397,416.80	718,044.78	32.091293	-103.762726	
17,900.00	90.00	179.85	11,798.00	-6,147.40	-399.09	397,316.80	718,045.05	32.091018	-103.762727	
18,000.00	90.00	179.85	11,798.00	-6,247.40	-398.82	397,216.80	718,045.32	32.090743	-103.762728	
18,100.00	90.00	179.85	11,798.00	-6,347.40	-398.55	397,116.80	718,045.59	32.090469	-103.762729	
18,200.00	90.00	179.85	11,798.00	-6,447.40	-398.28	397,016.80	718,045.85	32.090194	-103.762730	
18,300.00	90.00	179.85	11,798.00	-6,547.40	-398.02	396,916.80	718,046.12	32.089919	-103.762730	
18,400.00	90.00	179.85	11,798.00	-6,647.40	-397.75	396,816.80	718,046.39	32.089644	-103.762731	
18,500.00	90.00	179.85	11,798.00	-6,747.40	-397.48	396,716.80	718,046.65	32.089369	-103.762732	
18,600.00	90.00	179.85	11,798.00	-6,847.40	-397.22	396,616.80	718,046.92	32.089094	-103.762733	
18,700.00	90.00	179.85	11,798.00	-6,947.40	-396.95	396,516.80	718,047.19	32.088819	-103.762734	
18,800.00	90.00	179.85	11,798.00	-7,047.40	-396.68	396,416.80	718,047.45	32.088544	-103.762735	
18,900.00	90.00	179.85	11,798.00	-7,147.40	-396.42	396,316.80	718,047.72	32.088270	-103.762735	
19,000.00	90.00	179.85	11,798.00	-7,247.40	-396.15	396,216.80	718,047.99	32.087995	-103.762736	
19,100.00	90.00	179.85	11,798.00	-7,347.40	-395.88	396,116.80	718,048.26	32.087720	-103.762737	
19,200.00	90.00	179.85	11,798.00	-7,447.40	-395.61	396,016.80	718,048.52	32.087445	-103.762738	
19,300.00	90.00	179.85	11,798.00	-7,547.40	-395.35	395,916.80	718,048.79	32.087170	-103.762739	
19,400.00	90.00	179.85	11,798.00	-7,647.40	-395.08	395,816.81	718,049.06	32.086895	-103.762740	
19,500.00	90.00	179.85	11,798.00	-7,747.40	-394.81	395,716.81	718,049.32	32.086620	-103.762741	
19,600.00	90.00	179.85	11,798.00	-7,847.40	-394.55	395,616.81	718,049.59	32.086345	-103.762741	
19,700.00	90.00	179.85	11,798.00	-7,947.40	-394.28	395,516.81	718,049.86	32.086070	-103.762742	
19,800.00	90.00	179.85	11,798.00	-8,047.40	-394.01	395,416.81	718,050.13	32.085796	-103.762743	
19,900.00	90.00	179.85	11,798.00	-8,147.40	-393.74	395,316.81	718,050.39	32.085521	-103.762744	
20,000.00	90.00	179.85	11,798.00	-8,247.40	-393.48	395,216.81	718,050.66	32.085246	-103.762745	
20,100.00	90.00	179.85	11,798.00	-8,347.40	-393.21	395,116.81	718,050.93	32.084971	-103.762746	
20,200.00	90.00	179.85	11,798.00	-8,447.40	-392.94	395,016.81	718,051.19	32.084696	-103.762746	
20,300.00	90.00	179.85	11,798.00	-8,547.40	-392.68	394,916.81	718,051.46	32.084421	-103.762747	
20,400.00	90.00	179.85	11,798.00	-8,647.40	-392.41	394,816.81	718,051.73	32.084146	-103.762748	
20,500.00	90.00	179.85	11,798.00	-8,747.40	-392.14	394,716.81	718,052.00	32.083871	-103.762749	
20,600.00	90.00	179.85	11,798.00	-8,847.40	-391.87	394,616.81	718,052.26	32.083596	-103.762750	
20,700.00	90.00	179.85	11,798.00	-8,947.39	-391.61	394,516.81	718,052.53	32.083322	-103.762751	
20,800.00	90.00	179.85	11,798.00	-9,047.39	-391.34	394,416.81	718,052.80	32.083047	-103.762752	
20,900.00	90.00	179.85	11,798.00	-9,147.39	-391.07	394,316.81	718,053.06	32.082772	-103.762752	
21,000.00	90.00	179.85	11,798.00	-9,247.39	-390.81	394,216.81	718,053.33	32.082497	-103.762753	

Planning Report - Geographic

Database:	EDM r5000.141_Prod US	Local Co-ordinate Reference:	Well Lusitano 27_34 Fed Com 716H
Company:	WCDSC Permian NM	TVD Reference:	RKB @ 3363.10ft
Project:	Eddy County (NAD 83 NM Eastern)	MD Reference:	RKB @ 3363.10ft
Site:	Sec 27-T25S-R31E	North Reference:	Grid
Well:	Lusitano 27_34 Fed Com 716H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Permit Plan 1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
21,100.00	90.00	179.85	11,798.00	-9,347.39	-390.54	394,116.81	718,053.60	32.082222	-103.762754
21,200.00	90.00	179.85	11,798.00	-9,447.39	-390.27	394,016.81	718,053.87	32.081947	-103.762755
21,300.00	90.00	179.85	11,798.00	-9,547.39	-390.00	393,916.82	718,054.13	32.081672	-103.762756
21,400.00	90.00	179.85	11,798.00	-9,647.39	-389.74	393,816.82	718,054.40	32.081397	-103.762757
21,500.00	90.00	179.85	11,798.00	-9,747.39	-389.47	393,716.82	718,054.67	32.081123	-103.762757
21,600.00	90.00	179.85	11,798.00	-9,847.39	-389.20	393,616.82	718,054.93	32.080848	-103.762758
21,700.00	90.00	179.85	11,798.00	-9,947.39	-388.94	393,516.82	718,055.20	32.080573	-103.762759
21,800.00	90.00	179.85	11,798.00	-10,047.39	-388.67	393,416.82	718,055.47	32.080298	-103.762760
21,900.00	90.00	179.85	11,798.00	-10,147.39	-388.40	393,316.82	718,055.73	32.080023	-103.762761
22,000.00	90.00	179.85	11,798.00	-10,247.39	-388.13	393,216.82	718,056.00	32.079748	-103.762762
22,007.66	90.00	179.85	11,798.00	-10,255.05	-388.11	393,209.16	718,056.02	32.079727	-103.762762
LTP @ 22008' MD, 100' FSL, 1650' FEL									
22,087.66	90.00	179.85	11,798.00	-10,335.05	-387.90	393,129.16	718,056.24	32.079507	-103.762762
PBHL; 20' FSL, 1650' FEL									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL - Lusitano 27-34 F	0.00	0.00	0.00	-10,335.05	-387.90	393,129.16	718,056.24	32.079507	-103.762762
- plan misses target center by 10342.33ft 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)	
11,240.53	11,225.04	185.00	-416.00	KOP @ 11241' MD, 50' FNL, 1650' FEL
11,481.67	11,459.12	135.00	-415.87	FTP @ 11482' MD, 100' FNL, 1650' FEL
22,007.66	11,798.00	-10,255.05	-388.11	LTP @ 22008' MD, 100' FSL, 1650' FEL
22,087.66	11,798.00	-10,335.05	-387.90	PBHL; 20' FSL, 1650' FEL

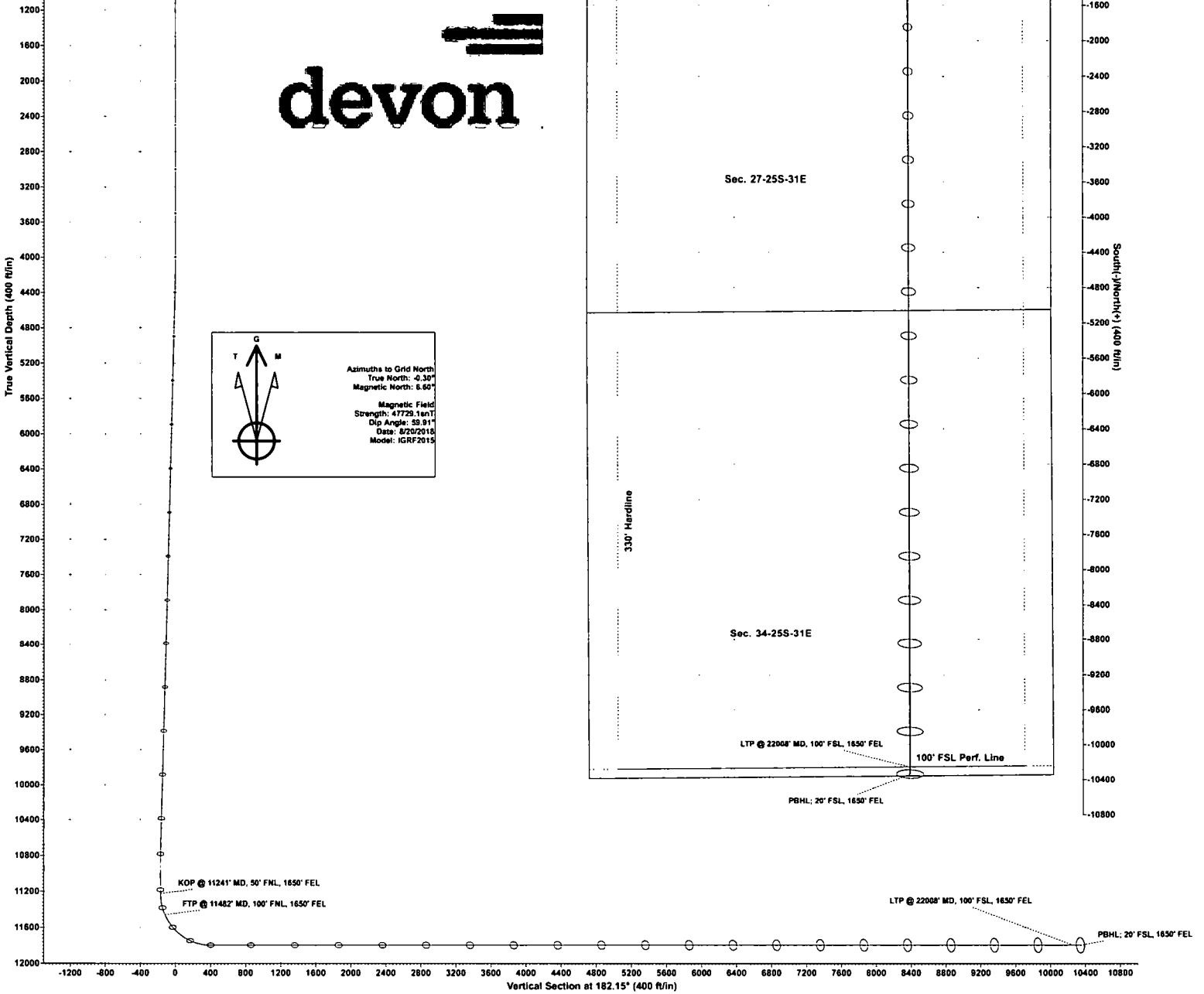
Devon Energy

WELL DETAILS: Lusitano 27_34 Fed Com 716H

RKB @ 3363.10R
3338.10
Northing 403464.19 Easting 718444.14 Latitude 32.107911 Longitude -103.761333

SECTION DETAILS Permit Plan 1

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	
4316.42	3.96	293.98	4316.16	4.44	-9.97	1.25	-4.06	
10626.81	3.96	293.98	10611.53	181.30	-407.69	0.00	-165.88	
10890.49	0.00	0.00	10875.00	185.00	-416.00	1.50	-169.27	
11240.53	0.00	0.00	11225.04	185.00	-416.00	0.00	-169.27	KOP @ 11241' MD, 50' FNL, 1650' FEL
12140.53	90.00	179.85	11798.00	-387.96	-414.47	10.00	403.23	
22087.66	90.00	179.85	11798.00	-10335.05	-387.90	0.00	10342.33	PBHL: 20' FSL, 1650' FEL



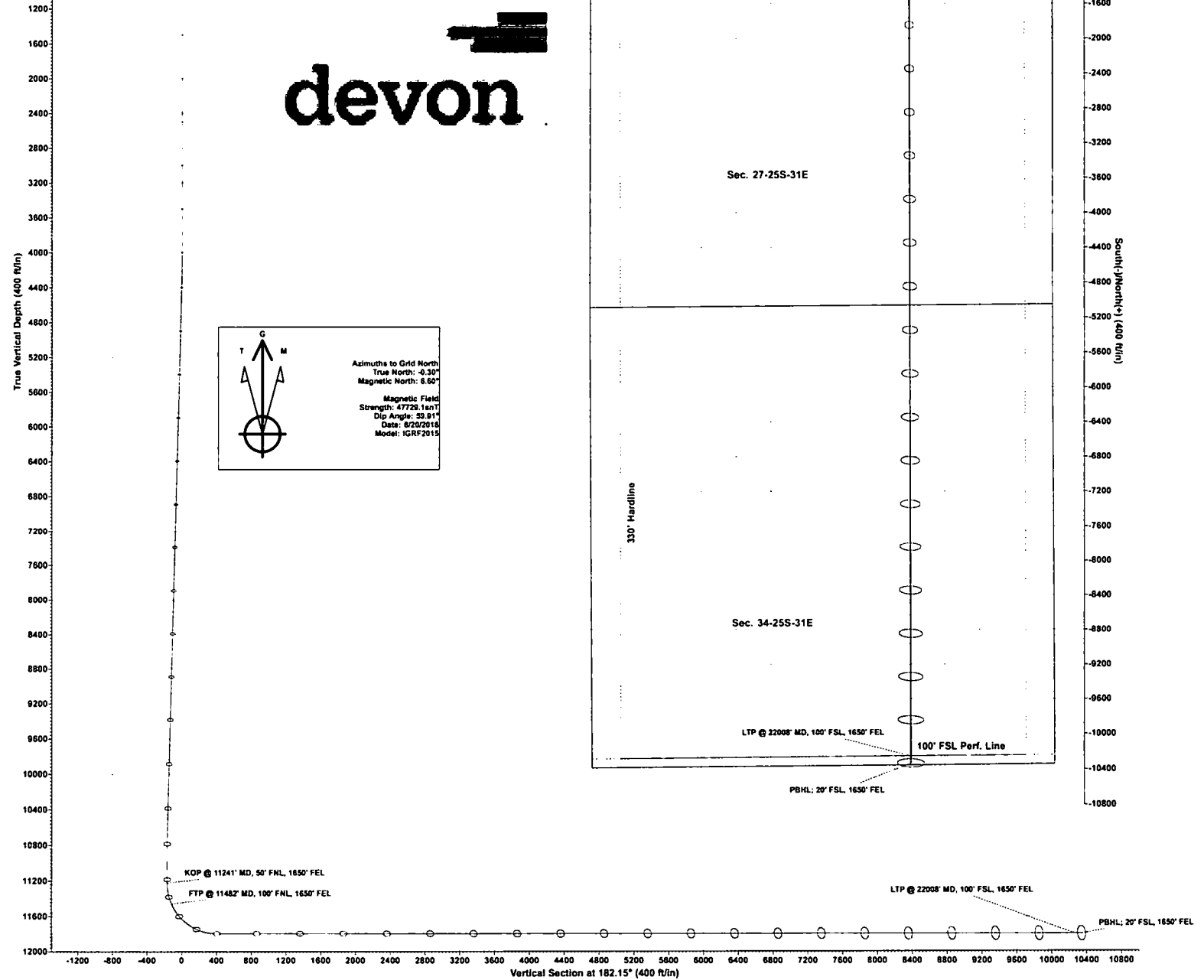
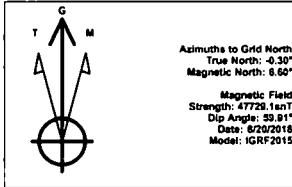
Devon Energy

WELL DETAILS: Lusitano 27_34 Fed Com 716H

RKB @ 3363.10R 3338.10
 Northing 403464.19 Easting 718444.14 Latitude 32.107911 Longitude -103.761333

SECTION DETAILS Permit Plan 1

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect	Annotation
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
4000.00	0.00	0.00	4000.00	0.00	0.00	0.00	0.00	
4316.42	3.96	293.98	4316.16	4.44	-9.97	1.25	-4.06	
10626.81	3.96	293.98	10611.53	181.30	-407.69	0.00	-165.88	
10890.49	0.00	0.00	10875.00	185.00	-416.00	1.50	-169.27	
11240.53	0.00	0.00	11225.04	185.00	-416.00	0.00	-169.27	KOP @ 11241' MD, 50' FNL, 1850' FEL
12140.53	90.00	179.85	11798.00	-387.96	-414.47	10.00	403.23	
22087.66	90.00	179.85	11798.00	-10335.05	-387.90	0.00	10342.33	PBHL: 20' FSL, 1650' FEL





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.

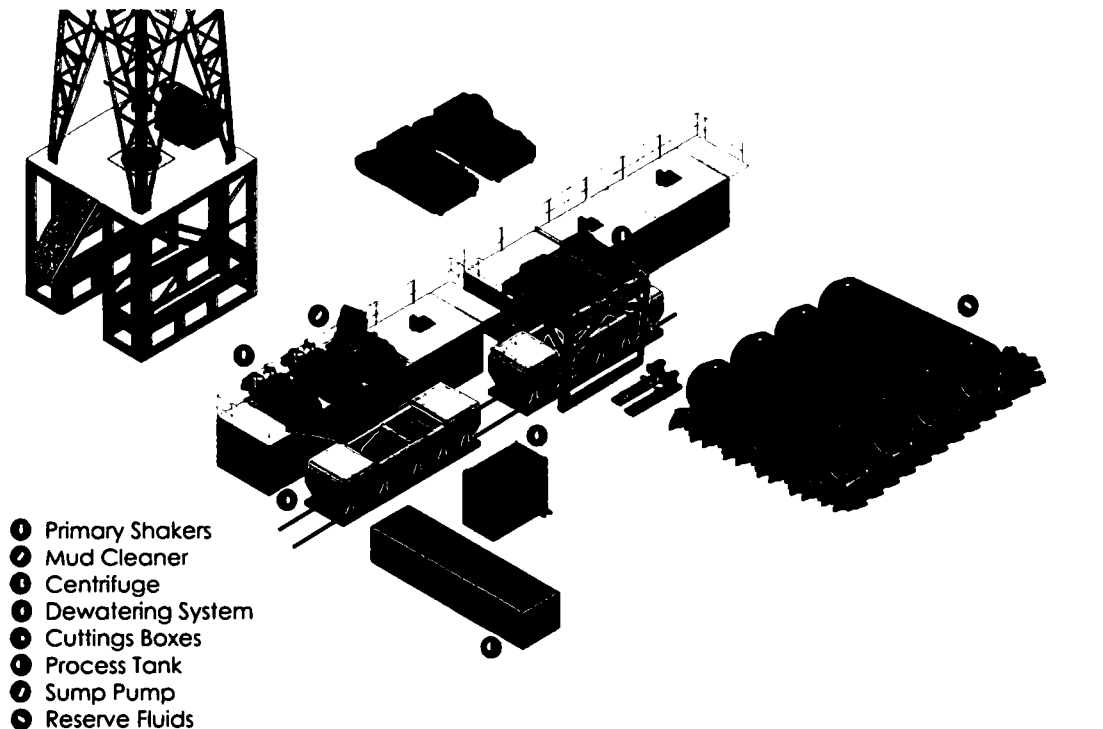
II. Operations and Maintenance Plan

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.

FLUSHMAX-III

Geometry

Imperial

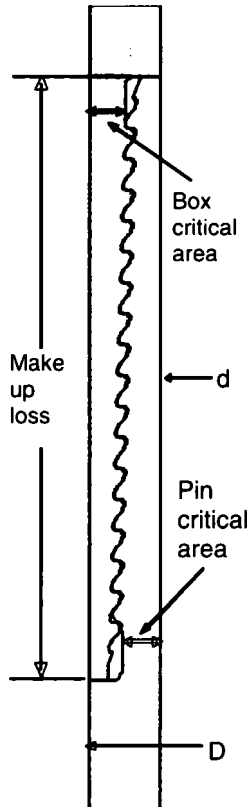
S.I.

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.mto.co.jp/mo-con/images/top/WebsiteTerms_Active_20333287_1.pdf the contents of which are incorporated by reference into this Connection Data Sheet.

Lusitano 27-34 Fed Com 716H

Casing Program (Alternate Design)

Hole Size	Casing Interval		Csg. Size	Wt. (PPF)	Grade	Conn	Min SF Collapse	Min SF Burst	Min SF Tension
	From	To							
17.5"	0	928	13.375"	48	H-40	STC	1.125	1.25	1.6
10.625"	0	5000	8.625"	32	P110EC	BTC	1.125	1.25	1.6
9.875"	5000	12140				VAM FJL			
7.875"	0	TD	5.5"	20	P110	BTC	1.125	1.25	1.6
				BLM Minimum Safety Factor			1.125	1.00	1.6 Dry 1.8 Wet

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

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y

Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	
Is well within the designated 4 string boundary.	

Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 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?	

Lusitano 27-34 Fed Com 716H

Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

3. Cementing Program (Primary Design)

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	599	Surf	13.2	1.33	Lead: Class C Cement + additives
Int 1	1200	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	610	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
	1200	Surf	9	3.31	Lead: Class C Cement + additives
	747	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	661	500' tieback	13.2	1.33	Lead: Class H / C + additives

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

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

Lusitano 27-34 Fed Com 716H

Cementing Program (Alternate Design)

Casing	# Sk	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	768	Surf	13.2	1.33	Lead: Class C Cement + additives
Int 1	1296	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	648	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 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
	1296	Surf	9	3.31	Lead: Class C Cement + additives
	834	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Production	1208	500' tieback	13.2	1.33	Lead: Class H / C + additives

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

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

4. Pressure Control Equipment (Three String Design)

Pressure Control Equipment (Pressure Control 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"	5M	Annular (5M)	X	50% of rated working pressure	
			Blind Ram	X	5M	
			Pipe Ram			
			Double Ram	X		
			Other *			
			Annular			
			Blind Ram			
			Pipe Ram			
			Double Ram			
			Other *			
N	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					

5. Mud Program (3 String Design)

Depth		Type	Weight (ppg)	Vis	Water Loss
From	To				
0	928	FW Gel	8.5 - 9	28-34	N/C
928	12140	DBE / Saturated Brine	9 - 10	28-34	N/C
12140	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

Lusitano 27-34 Fed Com 716H

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

7. Drilling Conditions

Condition	Specify what type and where?
BH Pressure at deepest TVD	6442 psi
Abnormal Temperature	No

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

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

N	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.
 - 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.

Lusitano 27-34 Fed Com 716H

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

MB Verb 5M WLFMP Alt Design

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

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

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

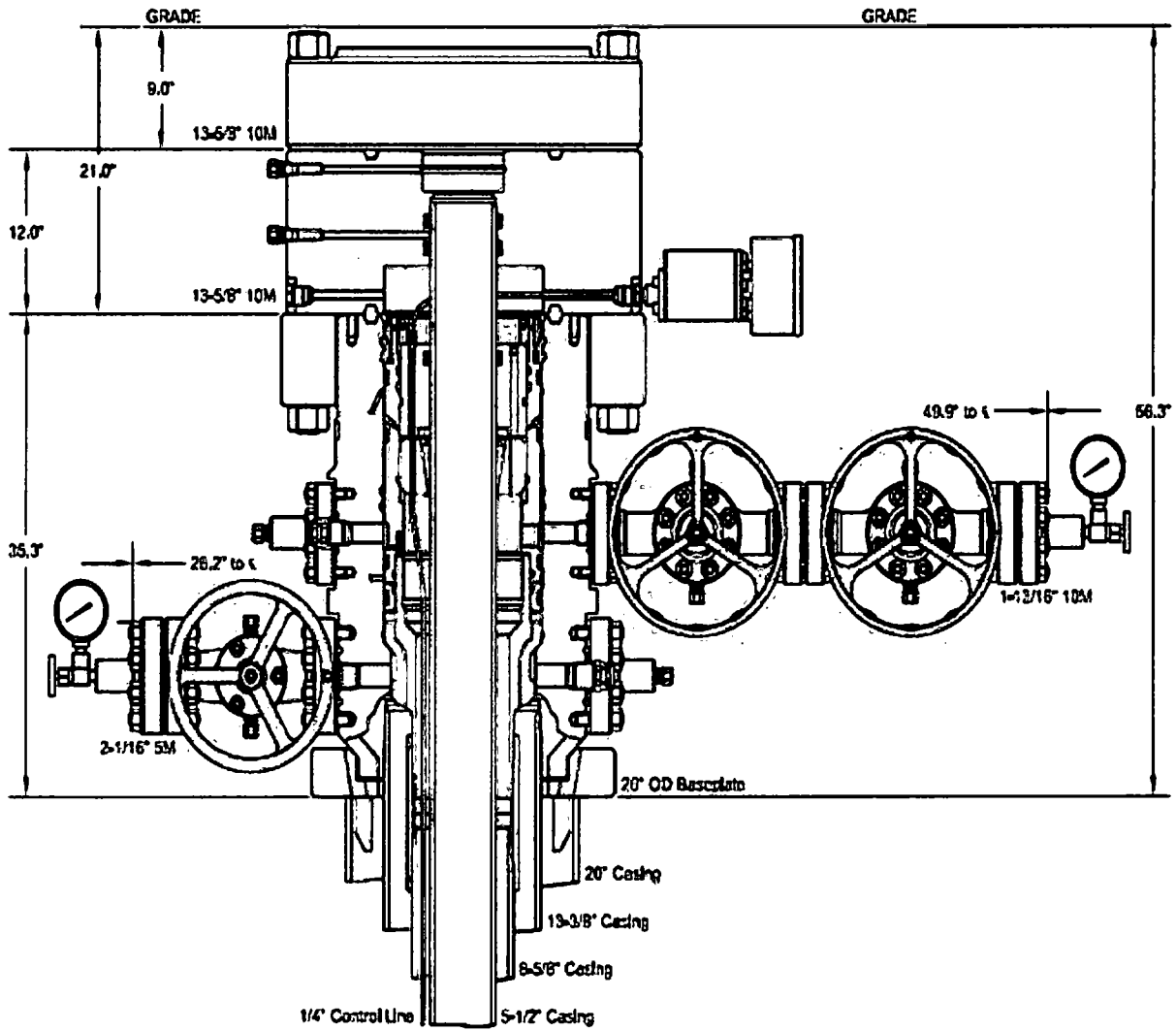
After running the surface casing, a BOP/BOPE system with a minimum rating of 5M will be installed on the wellhead system and will undergo a 250 psi low pressure test followed by a 5,000 psi high pressure test. The 5,000 psi high and 250 psi low test will cover testing requirements a maximum of 30 days,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

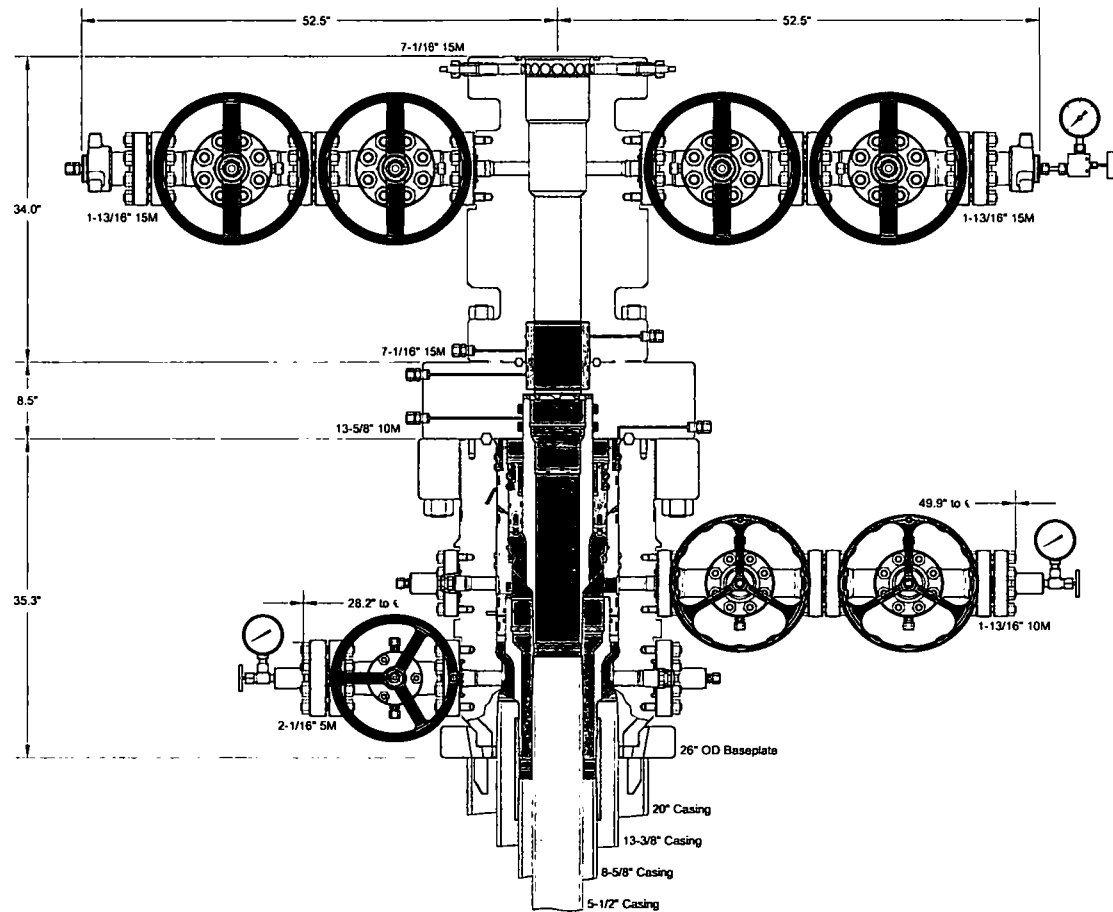
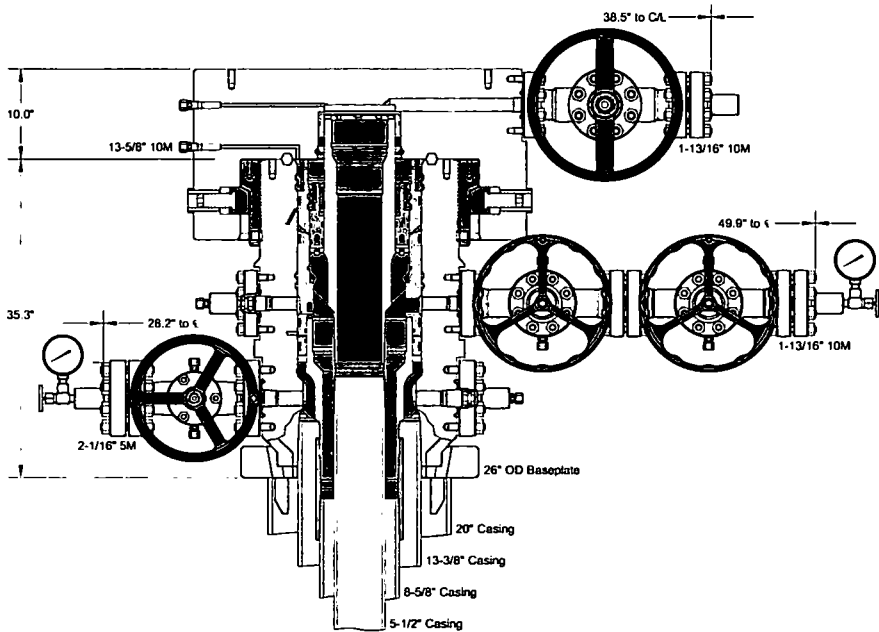
After running the intermediate casing with a mandrel hanger, the BOP/BOPE system with a minimum rating of 5M will already be installed on the wellhead.

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

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

MB Verb 5M WLFMP Alt Design

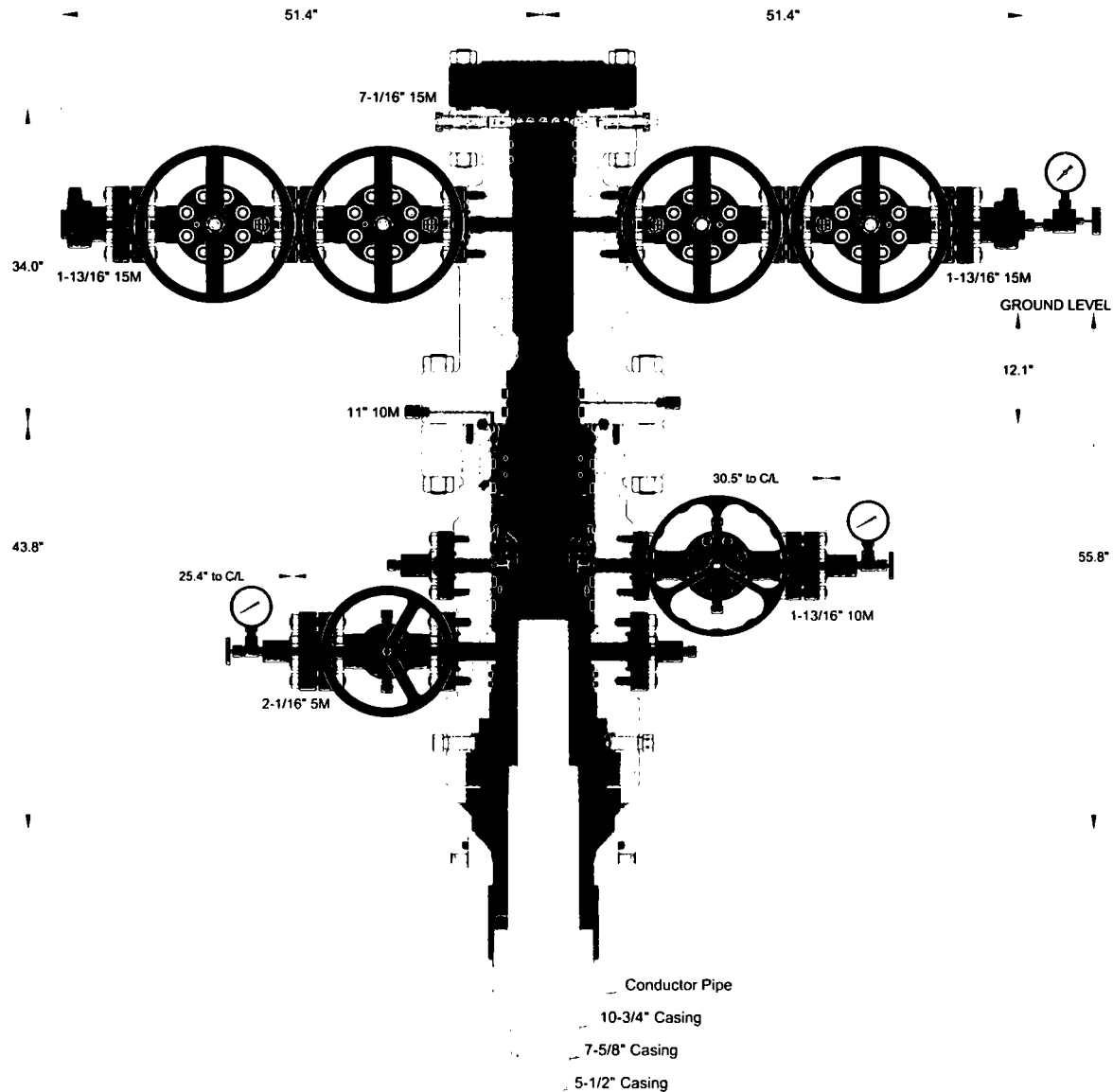
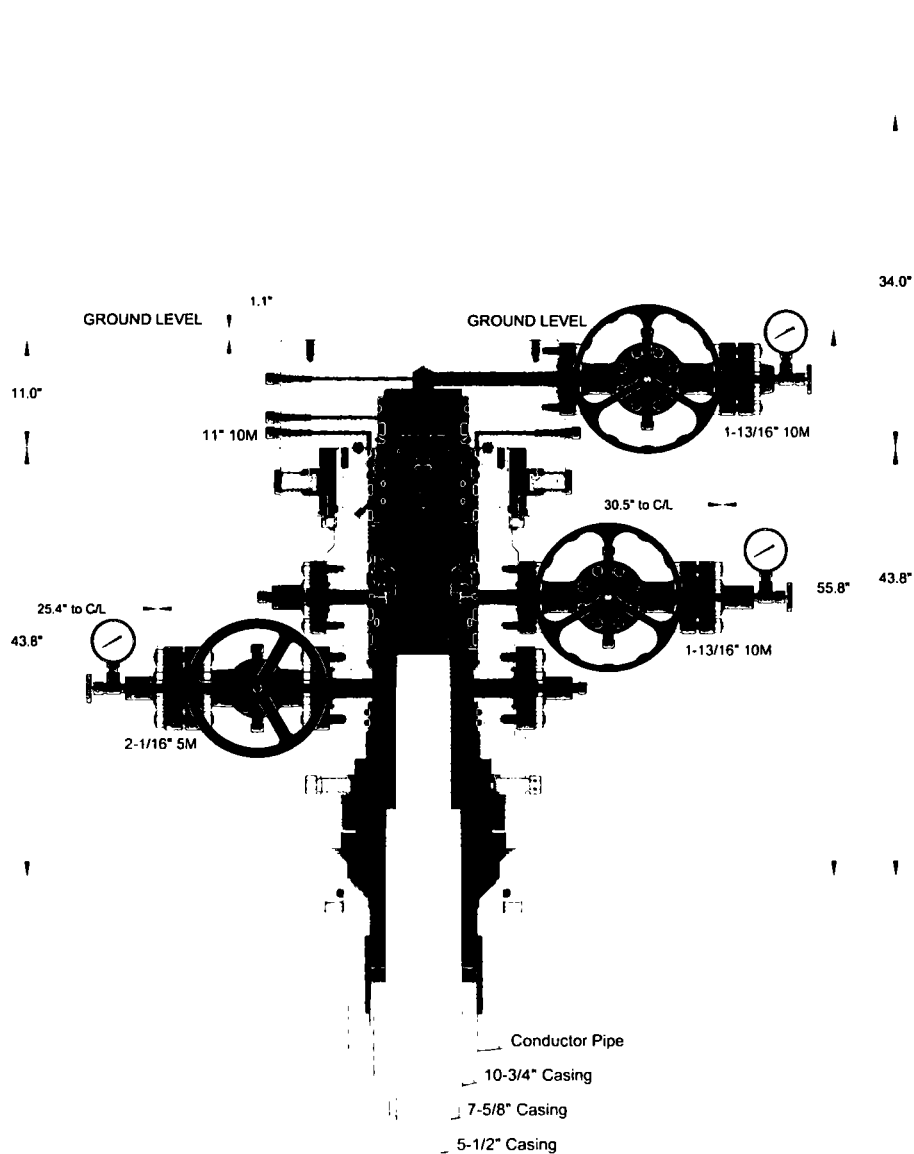




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ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC		DEVON ENERGY CORPORATION DELAWARE BASIN	
13-3/8" x 8-5/8" x 5-1/2" 10M MBU-3T Wellhead System With 8-5/8" And 5-1/2" Mandrel Casing Hangers And 7-1/16" 15M x 7-1/16" 15M CTH-EN Tubing Head		DRAWN	DLE
		APPRV	01NOV18
		DRAWING NO.	HBE0000013



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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.



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Page 2 of 8

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



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Page 3 of 8

		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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Date: 10/19/2018

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Page 4 of 8

	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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Page 5 of 8

		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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ODESSA TX 79765
Phone: 432-653-0306

Quote Number : ODE0001804

Date: 10/19/2018

Valid For 30 Days

Page 6 of 8

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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Valid For 30 Days

Page 7 of 8

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 8 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 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 BY NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.**

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

CASING PERFORMANCE Data Sheet



O.D.	PE LB/FT	T&C LB/FT	GRADE
8.625	31.13	32.00	P110EC

Grade - Material Properties

Minimum Yield Strength:	125	ksi
Maximum Yield Strength:	140	ksi
Minimum Tensile Strength:	135	ksi

Pipe Body Data (PE)

Geometry

Nominal ID:	7.921	inch
Wall:	0.352	inch
Min. Wall % (API = 87.5%):	87.5	%
API Drift:	7.796	inch
Special Drift*:	7.875	inch

Performance

Pipe Body Yield Strength:	1,144	kip
Collapse Resistance:	3,470	psi
Internal Yield Pressure (API Historical):	8,930	psi

API Connection Data

SC Internal Pressure:	8,930	psi
SC Joint Strength:	793	kip
LC Internal Pressure:	8,930	psi
LC Joint Strength:	887	kip
BC Internal Pressure:	8,930	psi
BC Joint Strength:	1,121	kip

SC Torque (ft-lbs)

minimum: 5,950	optimum: 7,933	maximum: 9,916
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LC Torque (ft-lbs)

minimum: 6,651	optimum: 8,868	maximum: 11,085
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*Special drift must be ordered or API drift will be used for actual drifting of product.

**If above API connections do not suit your needs, VAM® premium connections are available up to 100% of pipe body ratings.

This data sheet is for informational purposes only. While every effort has been made to ensure the accuracy of all data and that the information contained herein is correct, this material is presented as a reference guide only. Vallourec assumes no responsibility for the results obtained through the use of this material.



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.

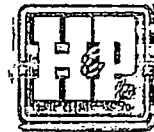
Should you have any questions or require any additional information/clarifications then please do not hesitate to contact us.

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





QUALITY DOCUMENT

**PHOENIX RUBBER
INDUSTRIAL LTD. ■**

6728 Szeged, Budapesti út 10. Hungary • H-6701 Szeged, P. O. Box 152
phone: (3662) 556-737 • Fax: (3662) 556-738

SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44, Hungary • H-1440 Budapest, P. O. Box 26
Phone: (361) 458-4200 • Fax: (361) 217-2972, 456-4273 • www.tamusemerge.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	
3" coupling with 4 1/16" Flange end		720 719		AISI 4130 AISI 4130	
				Heat N° C7626 47357	
API Spec 16 C Temperature rate: "B"					
All metal parts are flawless					
WE CERTIFY THAT THE ABOVE HOSE HAS BEEN MANUFACTURED IN ACCORDANCE WITH THE TERMS OF THE ORDER AND PRESSURE TESTED AS ABOVE WITH SATISFACTORY RESULT.					
Date: 29. April. 2002.		Inspector		Quality Control PHOENIX RUBBER Industrial Ltd. Hose Inspection and Verification Dept.	

40920-0-00015

8	GN↓ +0.000 PC	14:00		
	RD↓ +0.000 PC	14:00		
	BL ↓1044 bar	14:00		
7				
	GN↓ +0.000 PC	13:40	40	60
	RD↓ +0.000 PC	13:40		80
	BL ↓1047 bar	13:40		
6				
	GN↓ +0.000 PC	13:20		
	RD↓ +0.000 PC	13:20		
	BL ↓1050 bar	13:20		
5				
	GN↓ +0.000 PC	13:00		
	RD↓ +0.000 PC	13:00		
	BL ↓1056 bar	13:00		
4				
3				
	PROPERTY SH-122 (12-30)			
2				

GEMEX RUBBER
Industrial Ltd.
Hose Inspection and
Certification Dept.

VERIFIED TRUE CO.
PHOENIX RUBBER CO.



APD ID: 10400033365

Submission Date: 08/28/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

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_716H_Ex_Access_Rd_20180827090227.pdf

Existing Road Purpose: ACCESS, FLUID TRANSPORT

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_716H_Access_Rds_20180828122247.pdf

New road type: COLLECTOR, RESOURCE

Length: 1952 Feet Width (ft.): 30

Max slope (%): 6 Max grade (%): 4

Army Corp of Engineers (ACOE) permit required? NO

ACOE Permit Number(s):

New road travel width: 20

New road access erosion control: WATER DRAINAGE DITCH

New road access plan or profile prepared? NO

New road access plan attachment:

Access road engineering design? NO

Access road engineering design attachment:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

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_716H_1mile_Map_20180822111428.pdf

Existing Wells description:

Section 4 - Location of Existing and/or Proposed Production Facilities

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: All flowlines will be buried going to the Lusitano 27 CTB 6 (also known as Cotton Draw Unit CTB 6).

Section 5 - Location and Types of Water Supply

Water Source Table

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

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_716H_Wtr_Xfr_Map_20180822130433.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: 716H

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_716H_Caliche_Pit_20180822130502.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: DRILL CUTTINGS

Amount of waste: 1241 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: 716H

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: 716H

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_716H_Rig_Layout_20180822130717.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: LUSITANO 27 WELLPAD

Multiple Well Pad Number: 5

Recontouring attachment:

Lusitano_27_34_Fed_Com_716H_Reclamation_20180828123744.pdf

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

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

Well pad proposed disturbance (acres): 3.471

Well pad interim reclamation (acres): 1.479

Well pad long term disturbance (acres): 1.992

Road proposed disturbance (acres): 1.344

Road interim reclamation (acres): 0

Road long term disturbance (acres): 1.344

Powerline proposed disturbance (acres): 0.11

Powerline interim reclamation (acres): 0

Powerline long term disturbance (acres): 0.11

Pipeline proposed disturbance (acres): 0.978

Pipeline interim reclamation (acres): 0

Pipeline long term disturbance (acres): 0.978

Other proposed disturbance (acres): 0

Other interim reclamation (acres): 0

Other long term disturbance (acres): 0

Total proposed disturbance: 5.903

Total interim reclamation: 1.479

Total long term disturbance: 4.424

Disturbance Comments:

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

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

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

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Seed Management

Seed Table

Seed type:

Seed source:

Seed name:

Source address:

Source name:

Source phone:

Seed cultivar:

Seed use location:

PLS pounds per acre:

Proposed seeding season:

Seed Summary	
Seed Type	Pounds/Acre

Total pounds/Acre:

Seed reclamation attachment:

Operator Contact/Responsible Official Contact Info

First Name: JACOB

Last Name: OCHOA

Phone: (575)748-9934

Email: jacob.ochoa@dvn.com

Seedbed prep:

Seed BMP:

Seed method:

Existing invasive species? NO

Existing invasive species treatment description:

Existing invasive species treatment attachment:

Weed treatment plan description: MAINTAIN WEEDS ON AN AS NEED BASIS.

Weed treatment plan attachment:

Monitoring plan description: MONITOR AS NEEDED.

Monitoring plan attachment:

Success standards: N/A

Pit closure description: N/A

Pit closure attachment:

Section 11 - Surface Ownership

Disturbance type: NEW ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:**USFS Ranger District:**

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

Disturbance type: EXISTING ACCESS ROAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Disturbance type: WELL PAD

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 716H

Disturbance type: PIPELINE

Describe:

Surface Owner: BUREAU OF LAND MANAGEMENT

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Section 12 - Other Information

Right of Way needed? NO

Use APD as ROW?

ROW Type(s):

ROW Applications

SUPO Additional Information: CTB BATTERY CONNECT CTB ELECTRIC FLOWLINE

Use a previously conducted onsite? YES

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

Other SUPO Attachment

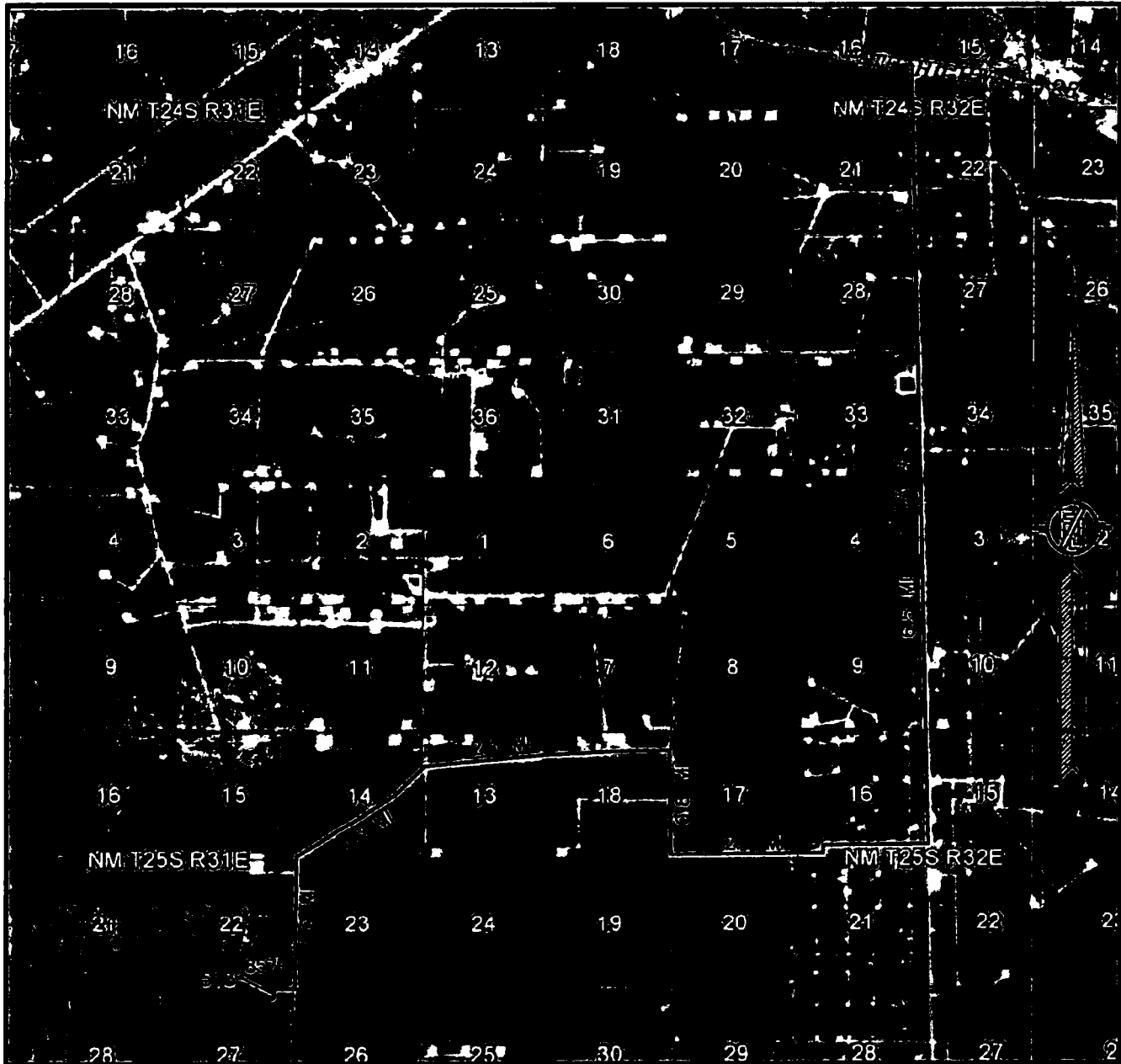
Lusitano_27_34_Fed_Com_716H_CTB_Battery_Connect_20180828122124.pdf

Lusitano_27_34_Fed_Com_716H_CTB_20180828122150.pdf

Lusitano_27_34_Fed_Com_716H_Electric_20180828122155.pdf

Lusitano_27_34_Fed_Com_716H_Flowline_20180828122158.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 716H
 LOCATED 235 FT. FROM THE NORTH LINE
 AND 1234 FT. FROM THE EAST LINE OF
 SECTION 27, TOWNSHIP 25 SOUTH,
 RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO
 LAND STATUS: BLM

AUGUST 3, 2018

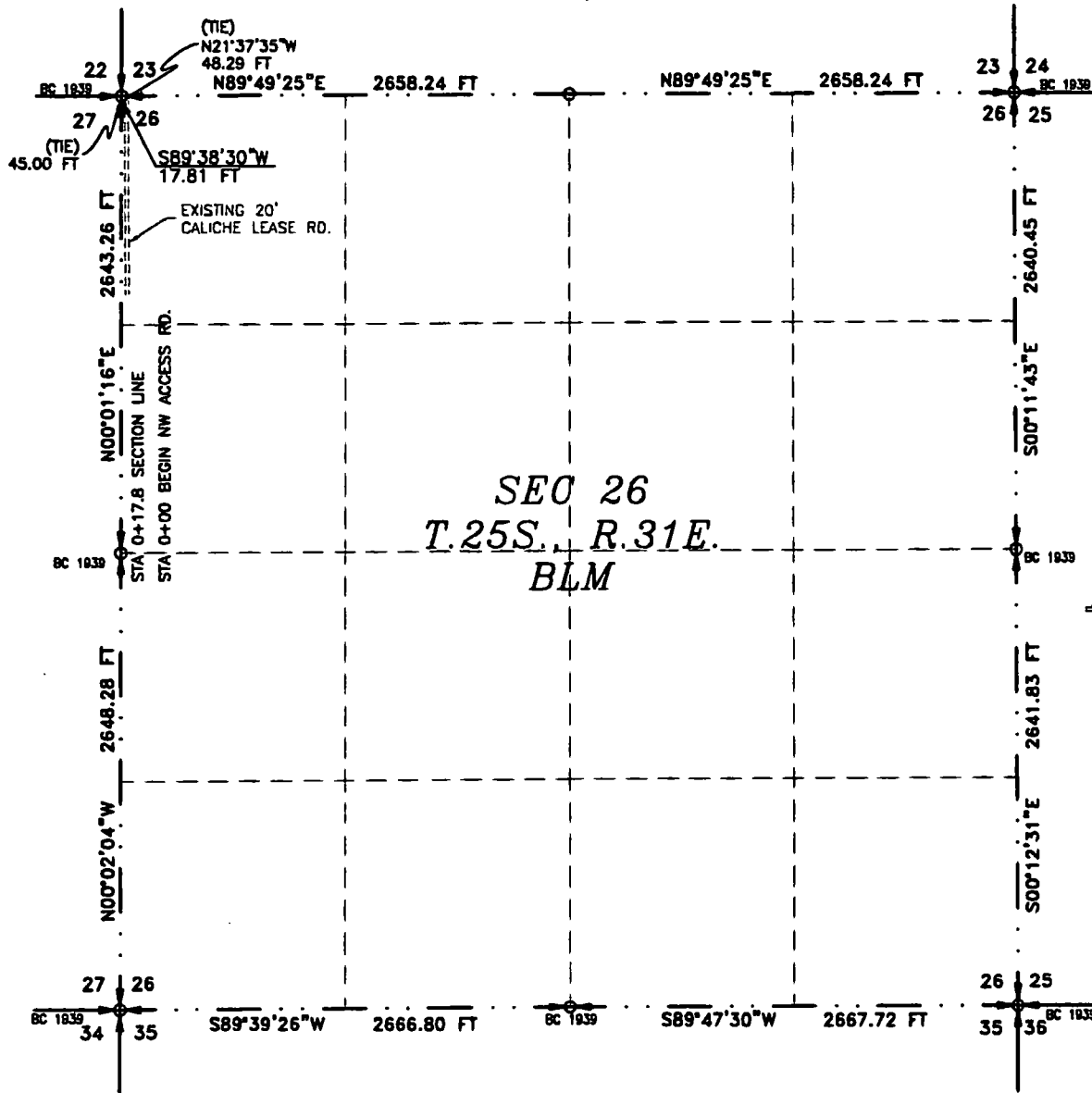
SURVEY NO. 6439

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

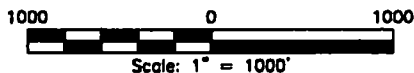
ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 6 (LUSITANO 27-34 FED COM 335H, 716H, 736H)

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 3, 2018



SEE NEXT SHEET (2-4) FOR DESCRIPTION



GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 1-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

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 03 DAY OF AUGUST 2018

FILMON F. JARAMILLO, P.S. 12797
12797

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

SURVEY NO. 6439

ACCESS ROAD PLAT

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

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 3, 2018

DESCRIPTION

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

NORTHWEST ACCESS ROAD

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

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

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

NW/4 NW/4 17.81 LF. 1.08 RODS 0.012 ACRES

GENERAL NOTES

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

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

SHEET: 2-4

MADRON SURVEYING, INC.

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 3 DAY OF AUGUST 2018

FILMON F. JARAMILLO, 12797

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

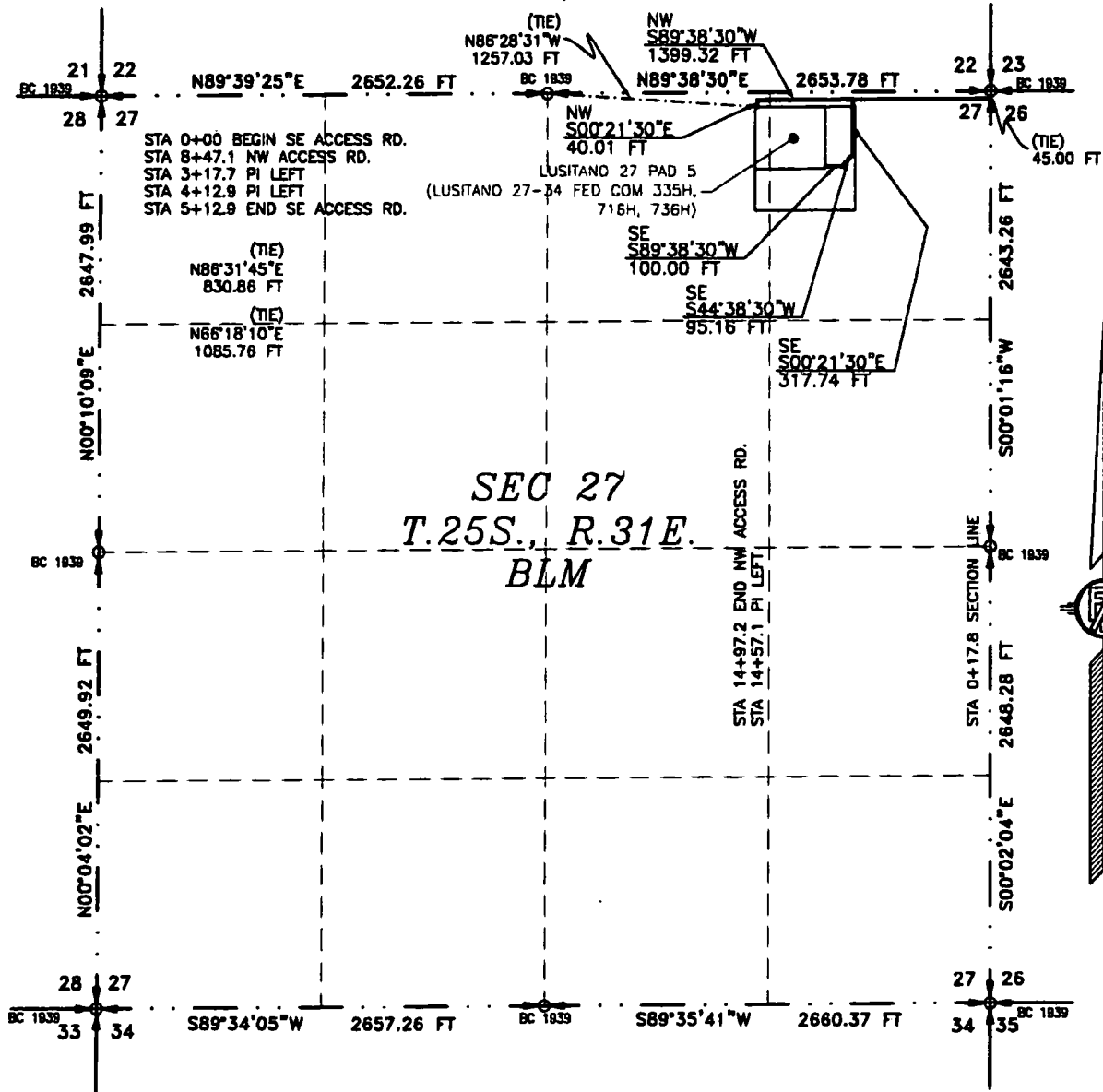
SURVEY NO. 6439

CARLSBAD, NEW MEXICO

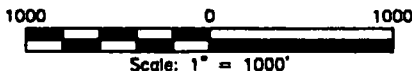
ACCESS ROAD PLAT

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

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 3, 2018



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. 301 SOUTH CANAL (575) 234-3341

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 3 DAY OF AUGUST 2018

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

SURVEY NO. 6439

CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 6 (LUSITANO 27-34 FED COM 336H, 716H, 736H)

**DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 3, 2018**

DESCRIPTION

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

NORTHWEST ACCESS ROAD

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

THENCE S89°38'30"W A DISTANCE OF 1399.32 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S00°21'30"E A DISTANCE OF 40.01 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°28'31"W, A DISTANCE OF 1257.03 FEET;

SAID STRIP OF LAND BEING 1439.33 FEET OR 87.23 RODS IN LENGTH, CONTAINING 0.991 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4 1326.90 L.F. 80.42 RODS 0.914 ACRES
NW/4 NE/4 112.43 L.F. 6.81 RODS 0.077 ACRES

NORTHWEST ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°31'45"E, A DISTANCE OF 830.86 FEET;

THENCE S00°21'30"E A DISTANCE OF 317.74 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S44°38'30"W A DISTANCE OF 95.16 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S89°38'30"W A DISTANCE OF 100.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N66°18'10"E, A DISTANCE OF 1085.76 FEET;

SAID STRIP OF LAND BEING 512.90 FEET OR 31.08 RODS IN LENGTH, CONTAINING 0.353 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4 512.90 L.F. 31.08 RODS 0.353 ACRES

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 1ST DAY OF AUGUST 2018

[Signature]
FILIMON F. JARAMILLO, P.S. 12797

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

SURVEY NO. 6439

GENERAL NOTES

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

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

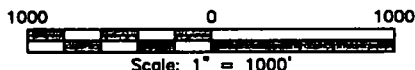
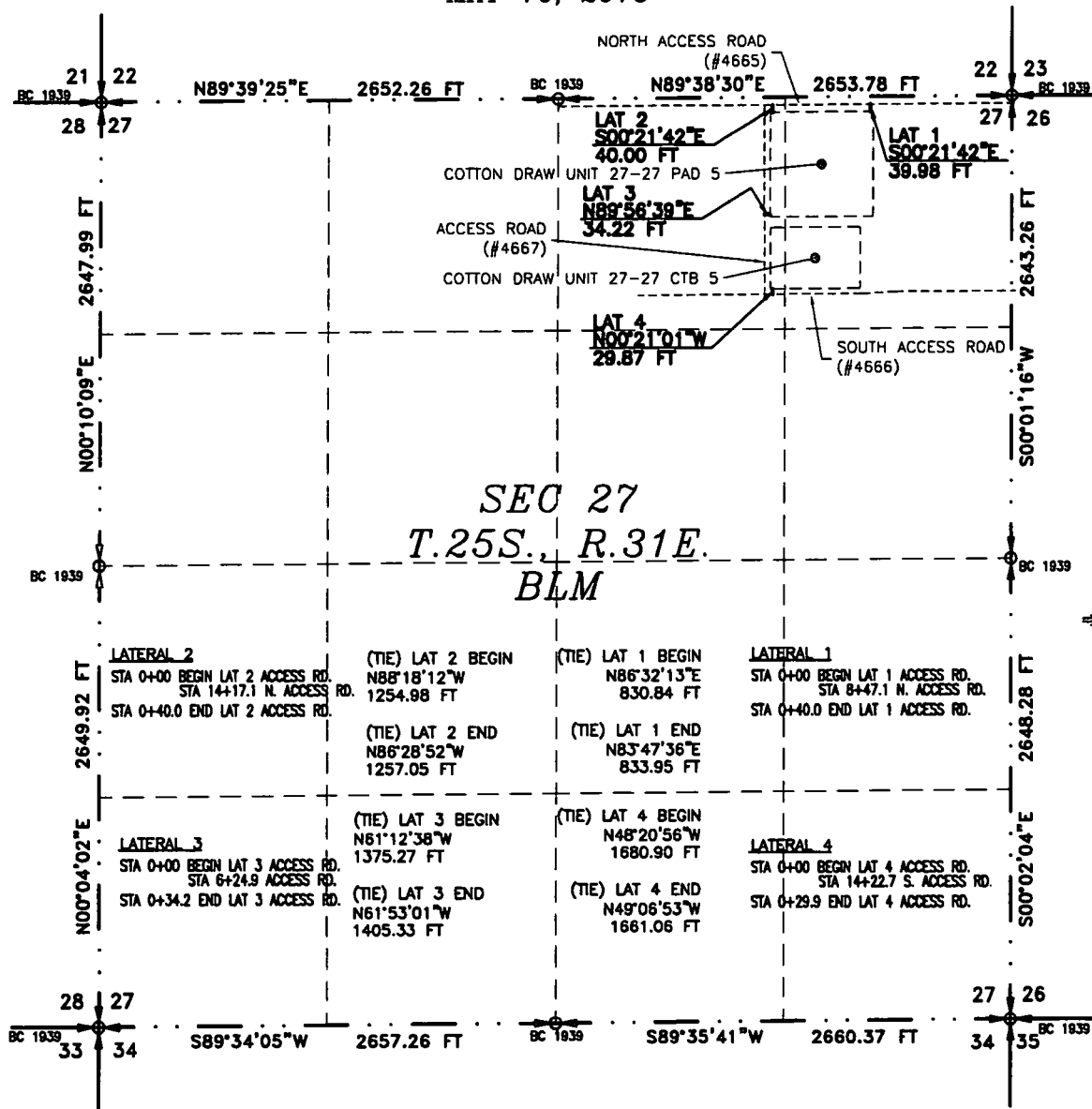
SHEET: 4-4

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 5 & TO THE COTTON DRAW UNIT 27-27 CTB 5

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



GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 10th DAY OF MAY 2016.

FILIMON F. JARAMILLO, SLS 12797
NEW MEXICO

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

SHEET: 1-4

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

SURVEY NO. 4668

ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 6 & TO THE COTTON DRAW UNIT 27-27 CTB 5

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

DESCRIPTION

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

LATERAL 1 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°32'13"E, A DISTANCE OF 830.84 FEET;

THENCE S00°21'42"E A DISTANCE OF 39.98 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N83°47'36"E, A DISTANCE OF 833.95 FEET;

SAID STRIP OF LAND BEING 39.98 FEET OR 2.42 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NE/4 39.98 L.F. 2.42 RODS 0.028 ACRES

LATERAL 2 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N88°18'12"W, A DISTANCE OF 1254.98 FEET;

THENCE S00°21'42"E A DISTANCE OF 40.00 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°28'52"W, A DISTANCE OF 1257.05 FEET;

SAID STRIP OF LAND BEING 40.00 FEET OR 2.42 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 40.00 L.F. 2.42 RODS 0.028 ACRES

LATERAL 3 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N61°12'38"W, A DISTANCE OF 1375.27 FEET;

THENCE N89°56'39"E A DISTANCE OF 34.22 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N61°53'01"W, A DISTANCE OF 1405.33 FEET;

SAID STRIP OF LAND BEING 34.22 FEET OR 2.07 RODS IN LENGTH, CONTAINING 0.024 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 34.22 L.F. 2.07 RODS 0.024 ACRES

LATERAL 4 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N48°20'56"W, A DISTANCE OF 1680.90 FEET;

THENCE N00°21'01"W A DISTANCE OF 29.87 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTH QUARTER CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N49°06'53"W, A DISTANCE OF 1661.06 FEET;

SAID STRIP OF LAND BEING 29.87 FEET OR 1.81 RODS IN LENGTH, CONTAINING 0.021 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NE/4 29.87 L.F. 1.81 RODS 0.021 ACRES

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

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

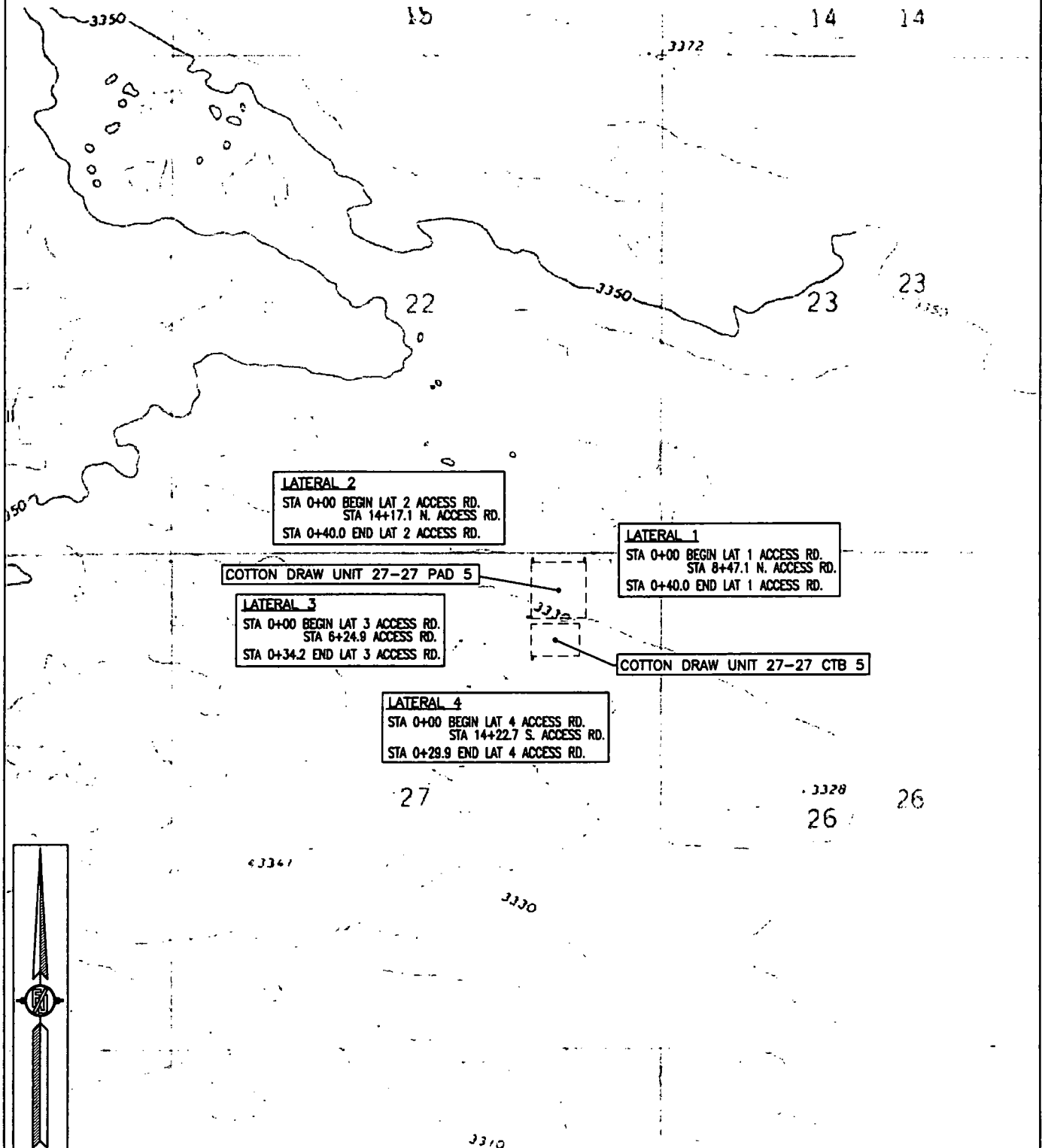
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

SURVEY NO. 4668

ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 5 & TO THE COTTON DRAW UNIT 27-27 CTB 5

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



ACCESS ROAD PLAT (AA000055128)

ACCESS ROAD TO THE COTTON DRAW UNIT 27-27 PAD 5 & TO THE COTTON DRAW UNIT 27-27 CTB 5

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

NM T25S R31E

22

23

LATERAL 2

STA 0+00 BEGIN LAT 2 ACCESS RD.
STA 14+17.1 N. ACCESS RD.
STA 0+40.0 END LAT 2 ACCESS RD.

COTTON DRAW UNIT 27-27 PAD 5

LATERAL 3

STA 0+00 BEGIN LAT 3 ACCESS RD.
STA 6+24.9 ACCESS RD.
STA 0+34.2 END LAT 3 ACCESS RD.

LATERAL 1

STA 0+00 BEGIN LAT 1 ACCESS RD.
STA 8+47.1 N. ACCESS RD.
STA 0+40.0 END LAT 1 ACCESS RD.

COTTON DRAW UNIT 27-27 CTB 5

LATERAL 4

STA 0+00 BEGIN LAT 4 ACCESS RD.
STA 14+22.7 S. ACCESS RD.
STA 0+29.9 END LAT 4 ACCESS RD.

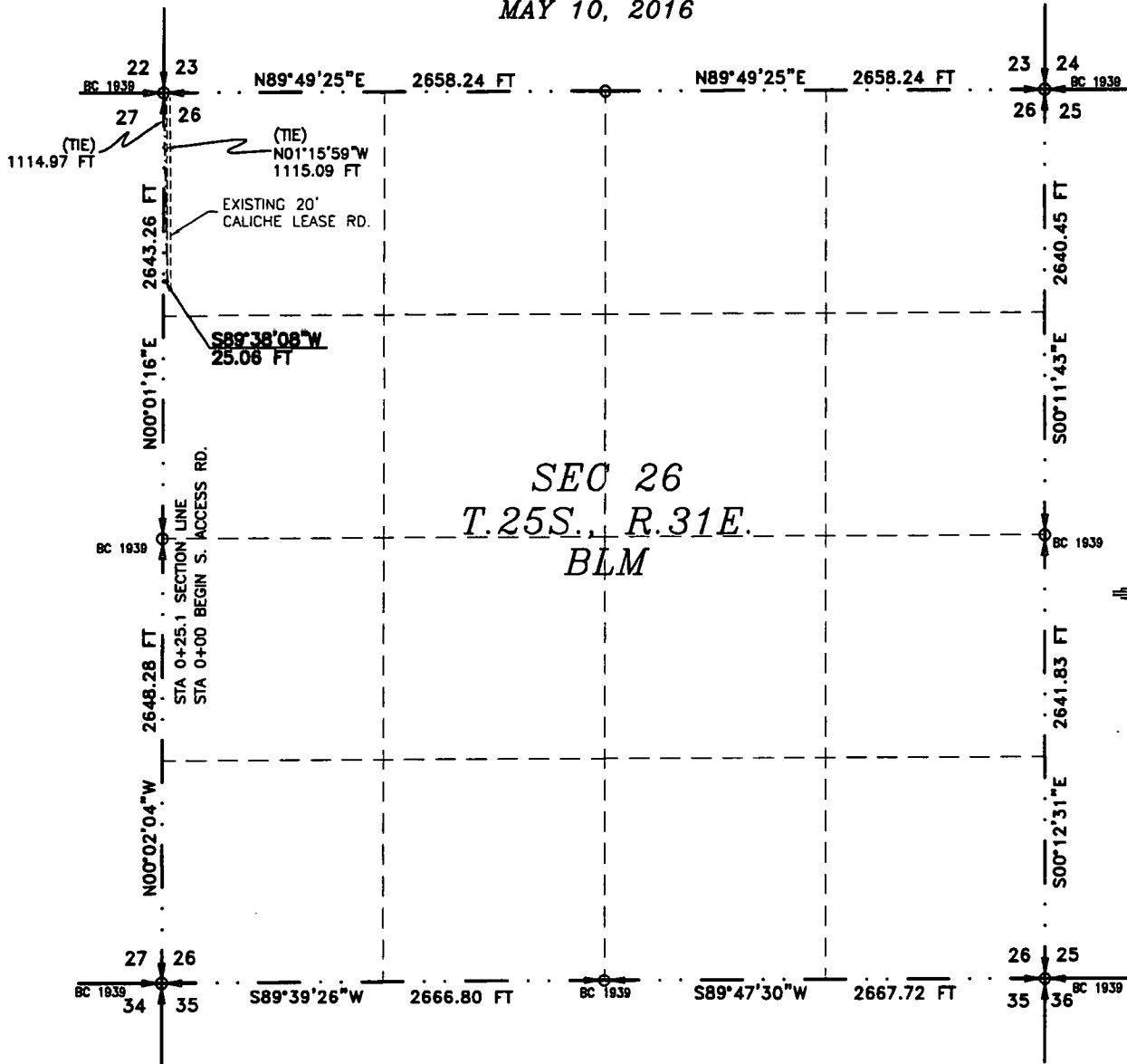
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26

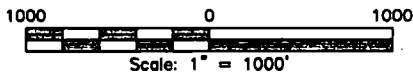


ACCESS ROAD PLAT (AA000055110)
SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE
COTTON DRAW UNIT 27-34 CTB 3

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

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

SHEET: 1-6

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

SURVEY NO. 4666

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

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

DESCRIPTION

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

BEGINNING AT A POINT WITHIN THE NW/4 NW/4 OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N01°15'59"W, A DISTANCE OF 1115.09 FEET;

THENCE S89°38'08"W A DISTANCE OF 25.06 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N00°01'16"E, A DISTANCE OF 1114.97 FEET;

SAID STRIP OF LAND BEING 25.06 FEET OR 1.52 RODS IN LENGTH, CONTAINING 0.017 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NW/4 NW/4 25.06 L.F. 1.52 RODS 0.017 ACRES

GENERAL NOTES

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

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

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 11 DAY OF MAY 2016.

Filimon F. Jaramillo
FILIMON F. JARAMILLO
12797

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

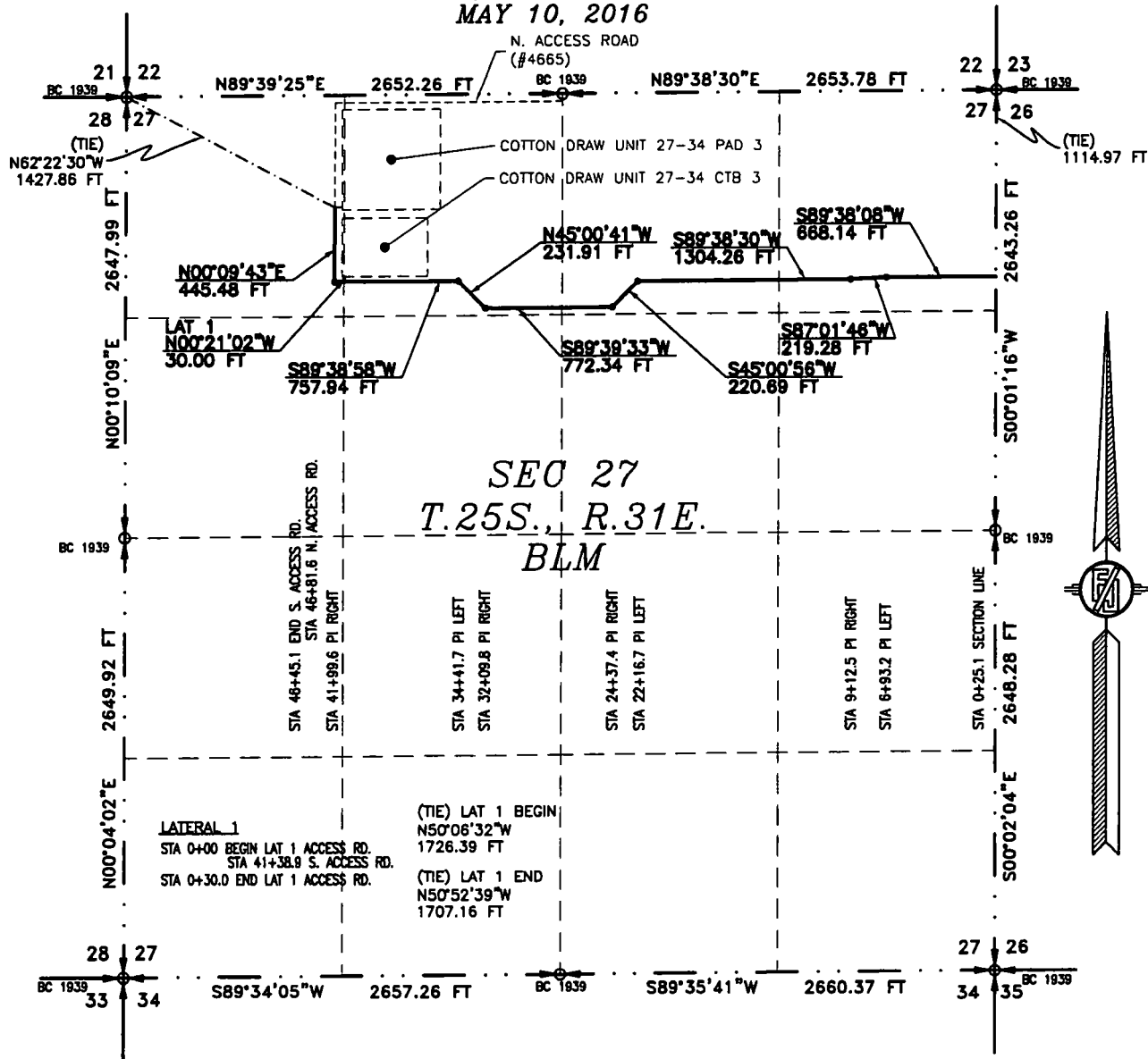
SHEET: 2-6

MADRON SURVEYING, INC. CARLSBAD, NEW MEXICO

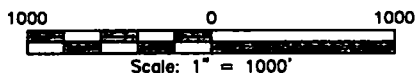
SURVEY NO. 4666

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 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, 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
 PROFESSIONAL SURVEYOR
 NO. 12797
 STATE OF NEW MEXICO

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

SHEET: 3-6

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

SURVEY NO. 4666

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

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

[Signature]
FILIMON F. JARAMILLO, PLS. 12797
301 SOUTH CANAL
CARLSBAD, NEW MEXICO 88220
(575) 234-3341

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

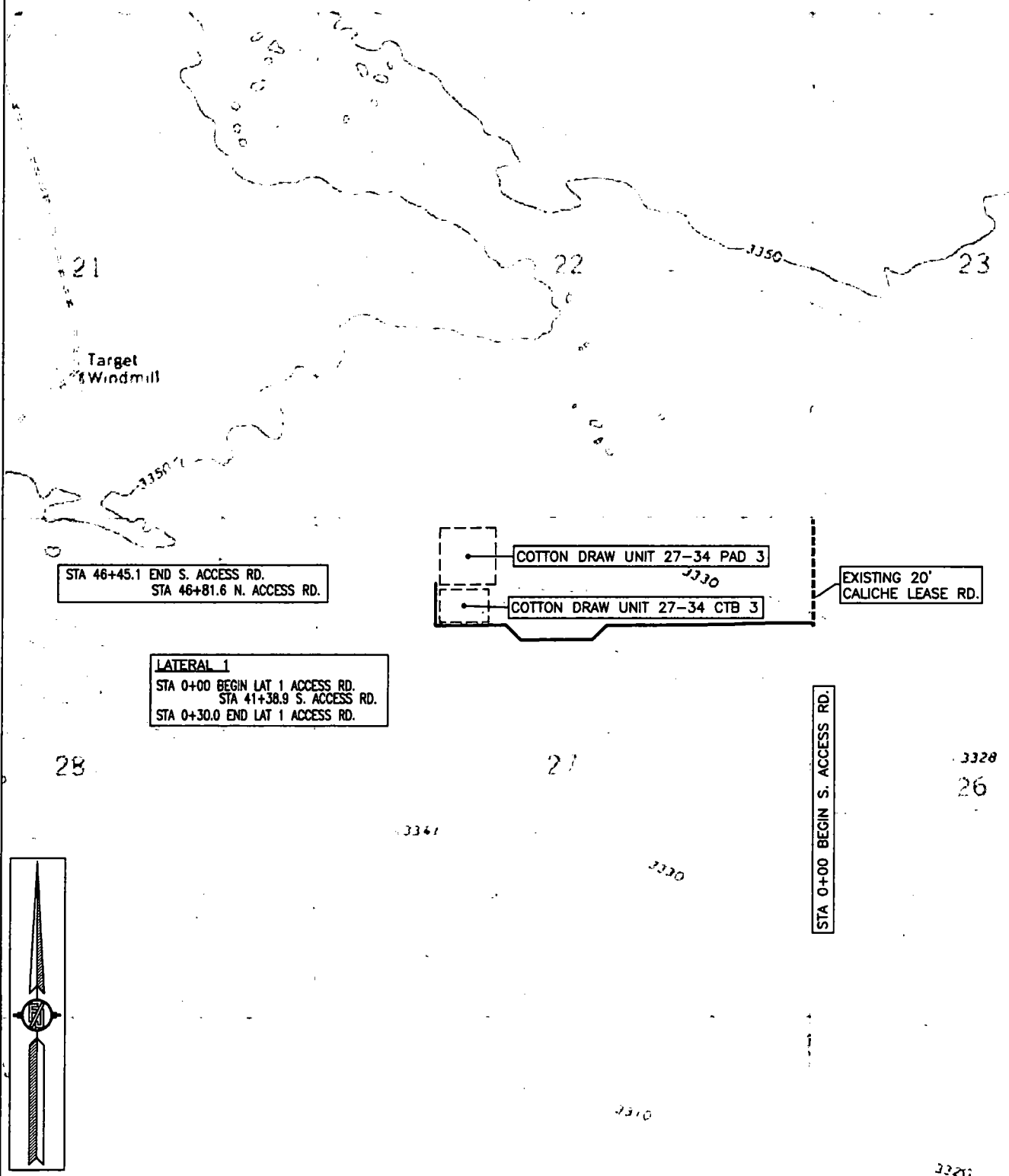
SHEET: 4-6

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

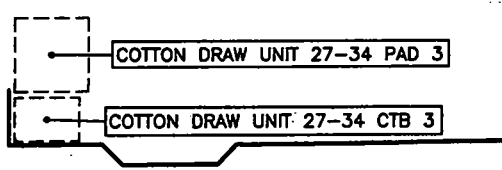
NM T25S R31E

21

22

2

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



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

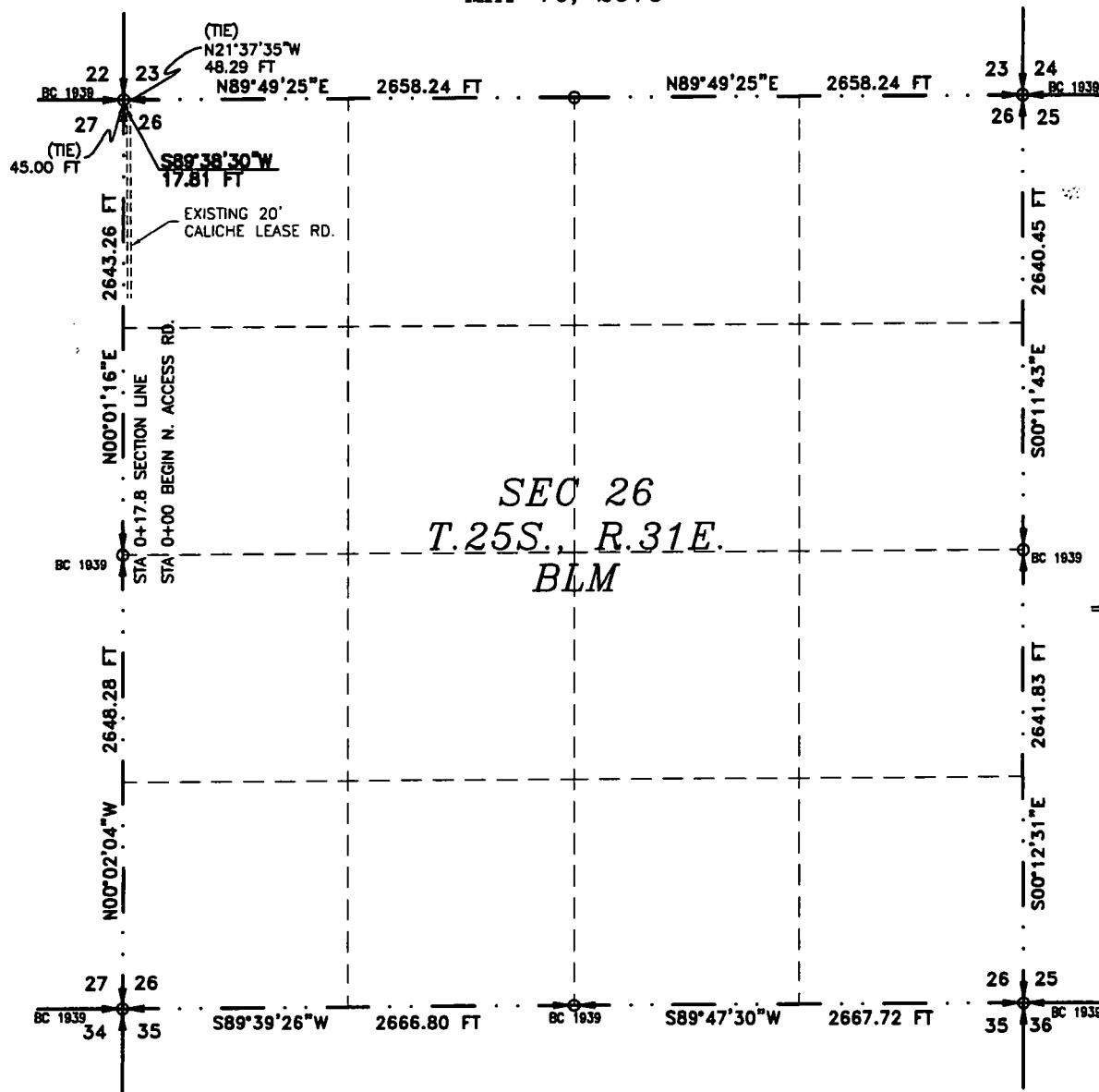
27

STA 0+00 BEGIN S. ACCESS RD.

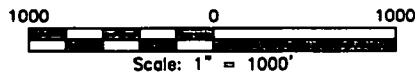


ACCESS ROAD PLAT (AA000055110)
NORTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3

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, P.E.S. 12797
REGISTERED PROFESSIONAL SURVEYOR

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. 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 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, 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 14TH 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.

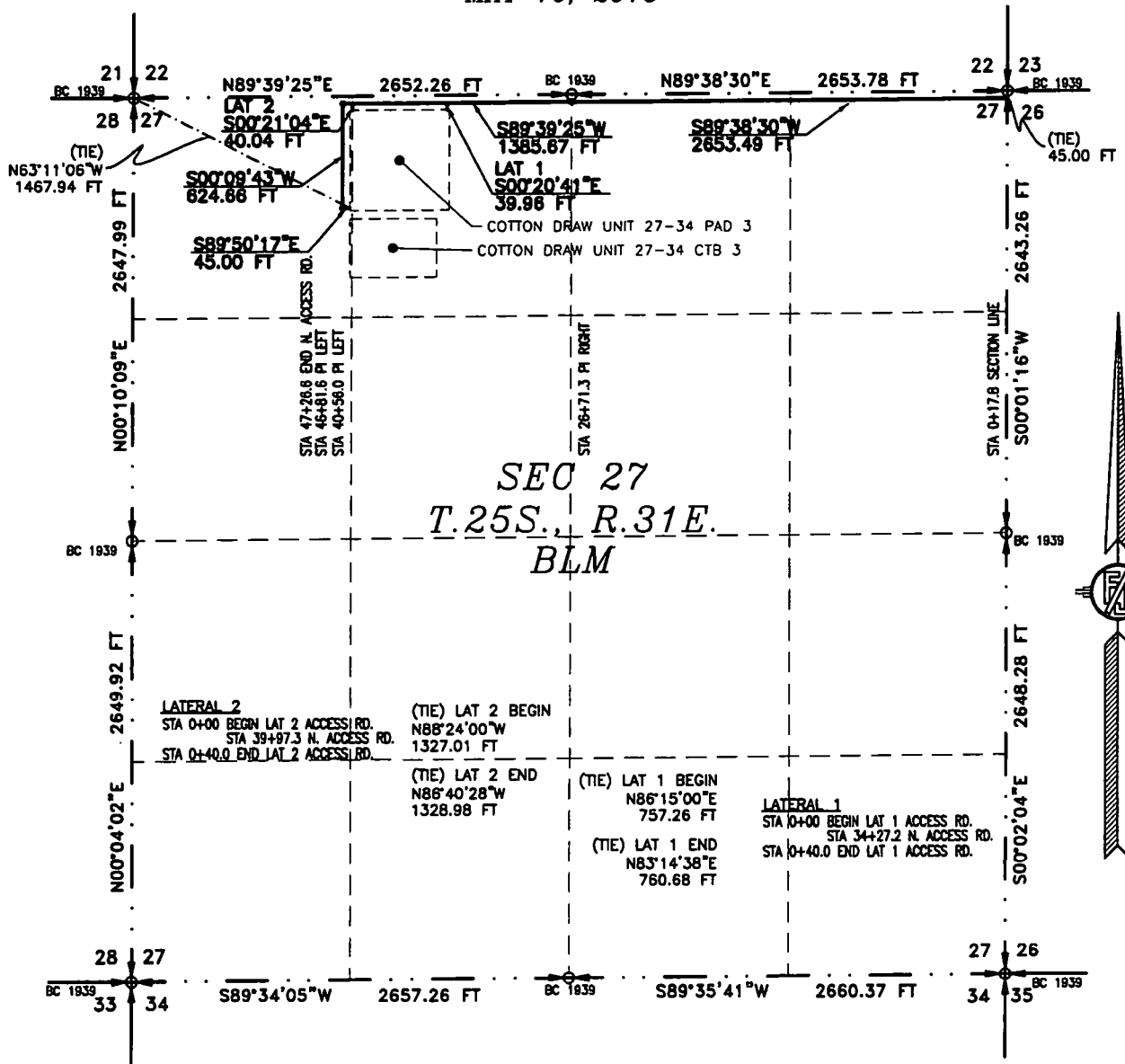
SHEET: 2-6

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

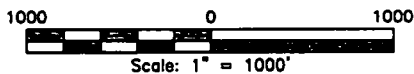
SURVEY NO. 4665

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

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



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 12TH DAY OF MAY 2016.

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

SHEET: 3-6

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

DESCRIPTION

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

NORTH ACCESS ROAD

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

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

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

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

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

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

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

LATERAL 1 ACCESS ROAD

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

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

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

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

LATERAL 2 ACCESS ROAD

BEGINNING AT A POINT WITHIN THE NE/4 NW/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N88°24'00"W, A DISTANCE OF 1327.01 FEET;

THENCE S00°21'04"E A DISTANCE OF 40.04 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHWEST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N86°40'28"W, A DISTANCE OF 1328.98 FEET;

SAID STRIP OF LAND BEING 40.04 FEET OR 2.43 RODS IN LENGTH, CONTAINING 0.028 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NW/4	40.04 L.F.	2.43 RODS	0.028 ACRES
-----------	------------	-----------	-------------

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 10 DAY OF MAY 2016

GENERAL NOTES

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

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

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

SHEET: 4-6

MADRON SURVEYING, INC.

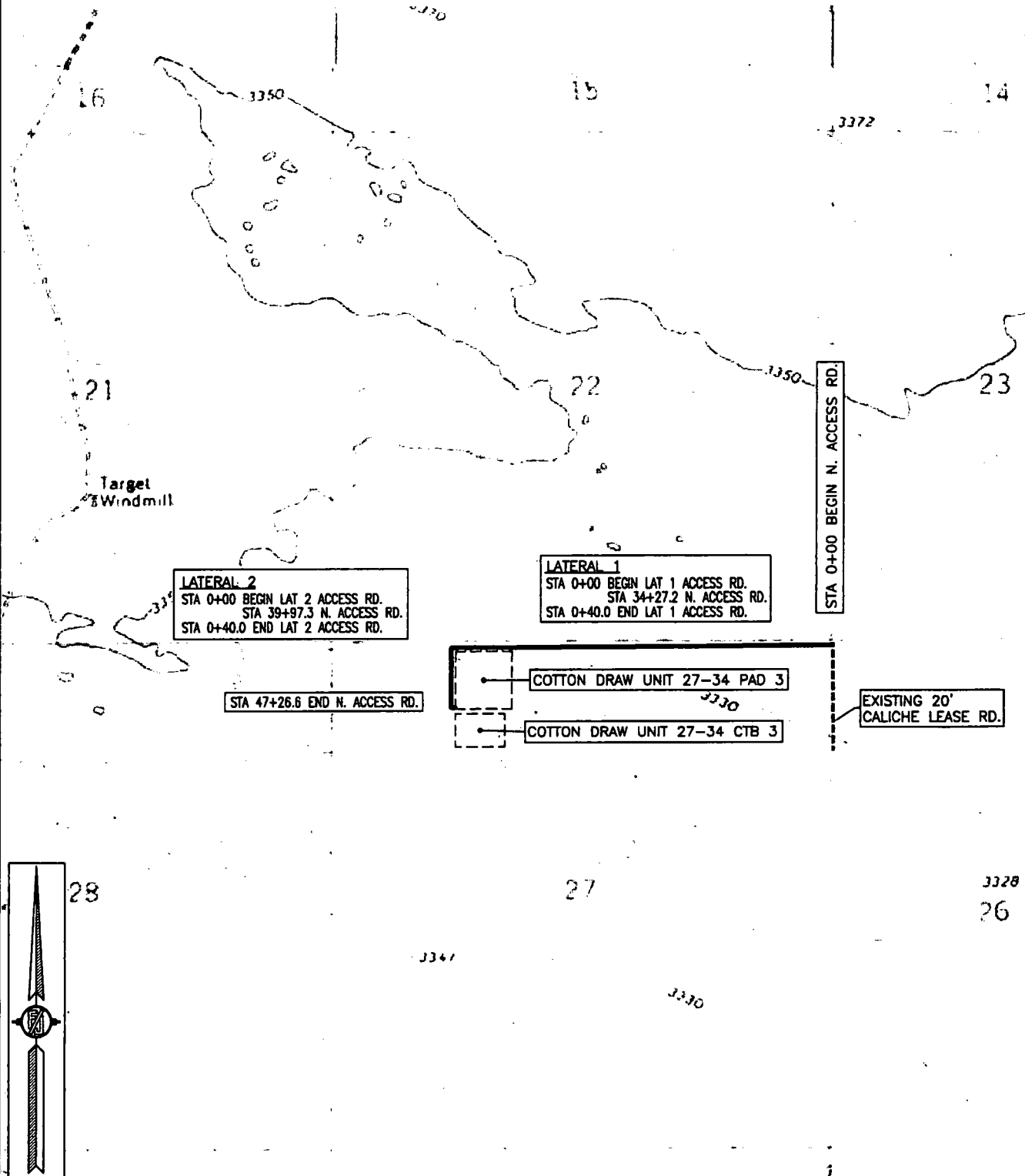
301 SOUTH CANAL
(575) 234-3341

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 0+00 BEGIN N. ACCESS RD.

STA 47+26.6 END N. ACCESS RD.

COTTON DRAW UNIT 27-34 PAD 3

COTTON DRAW UNIT 27-34 CTB 3

EXISTING 20'
CALICHE LEASE RD.

28

27



PLAT

One Mile Radius Map

devon

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

USA Contiguous Equidistant Conic
Datum: North American 1983
Created by: FME Server
Map is current as of 8/15/2018



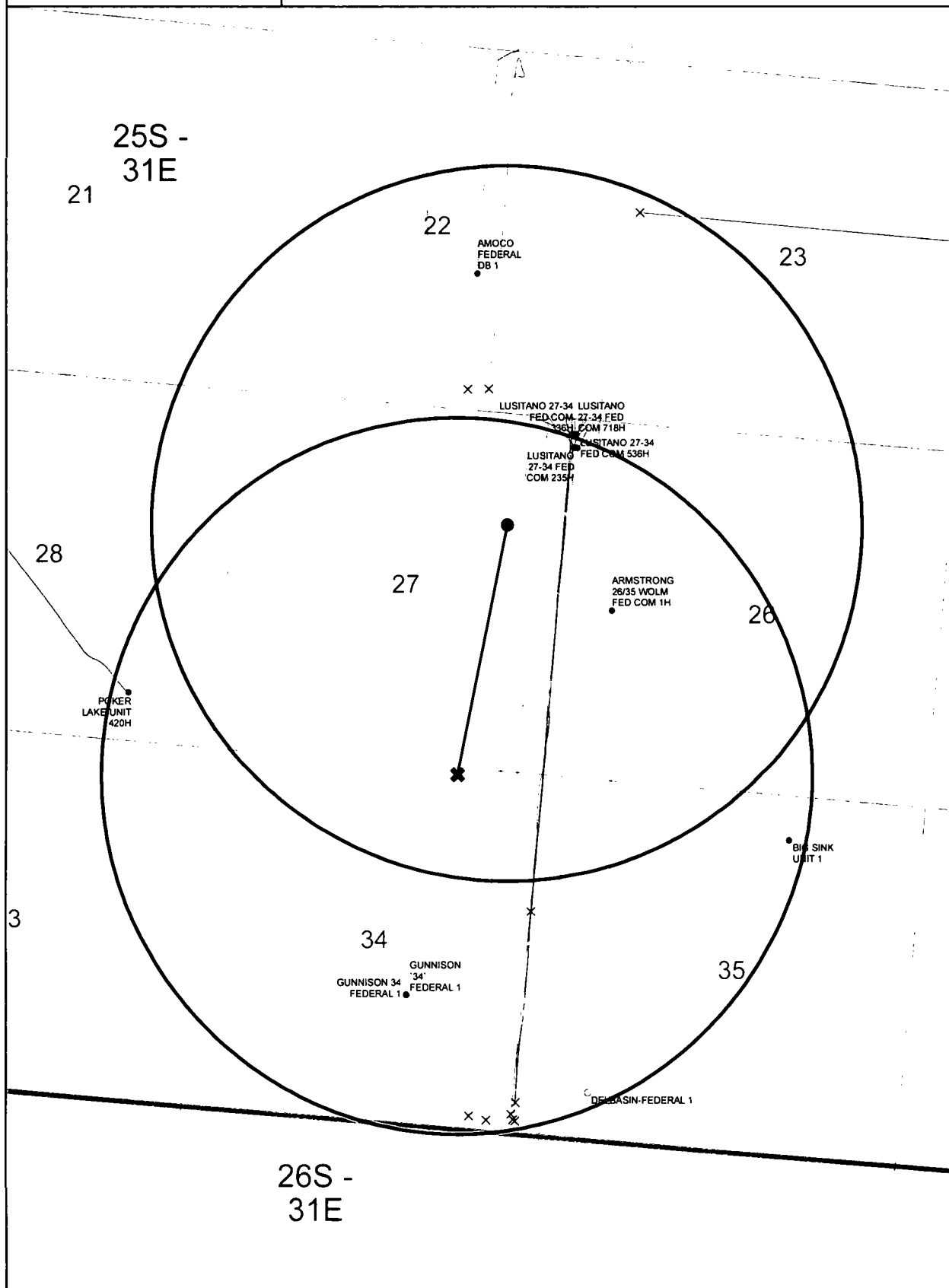
0 0.255 Miles 1 inch = 0.32 miles

LUSITANO 27-34 FED COM 716H
WA017161386

LUSITANO 27-34 FED COM 626H
Nearest wellbore to SHL: 216 ft.

LUSITANO 27-34 FED COM 626H
Nearest wellbore to BHL: 642 ft.

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





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

WGS_1984_Web_Mercator_Auxiliary_Sphere

Prepared by: _User

Map is current as of: 17-Aug-2018



Miles

0 0.14 0.28 0.56 1:28,457

26S - 31E - 10

26S - 31E - 11

26S - 31E - 12

26S - 32E - 7

26S - 32E - 8

26S - 31E - 15

26S - 31E - 16

26S - 31E - 18

26S - 32E - 10

26S - 32E - 11

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26S - 31E - 24

26S - 32E - 18

26S - 32E - 19

26S - 31E - 27

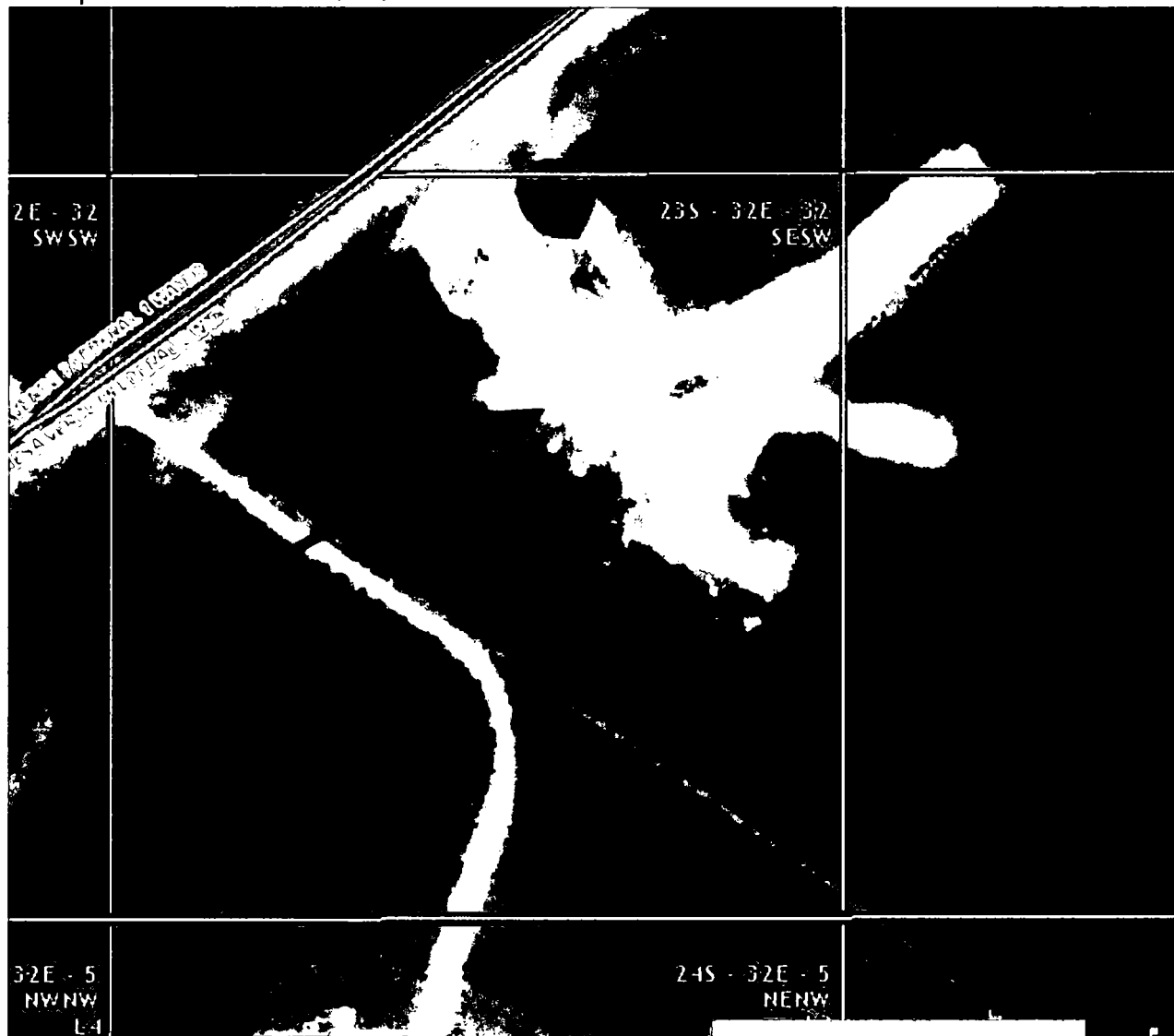
26S - 31E - 28

26S - 31E - 29

26S - 32E - 20

26S - 32E - 21

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



- Fed pit 25- 23S- 31E

31E - 25
NENW

23S - 31E - 25
NWNE

31E - 25
SENW

23S - 31E - 25
SWNE

- Private pit 26- 23S- 31E

27

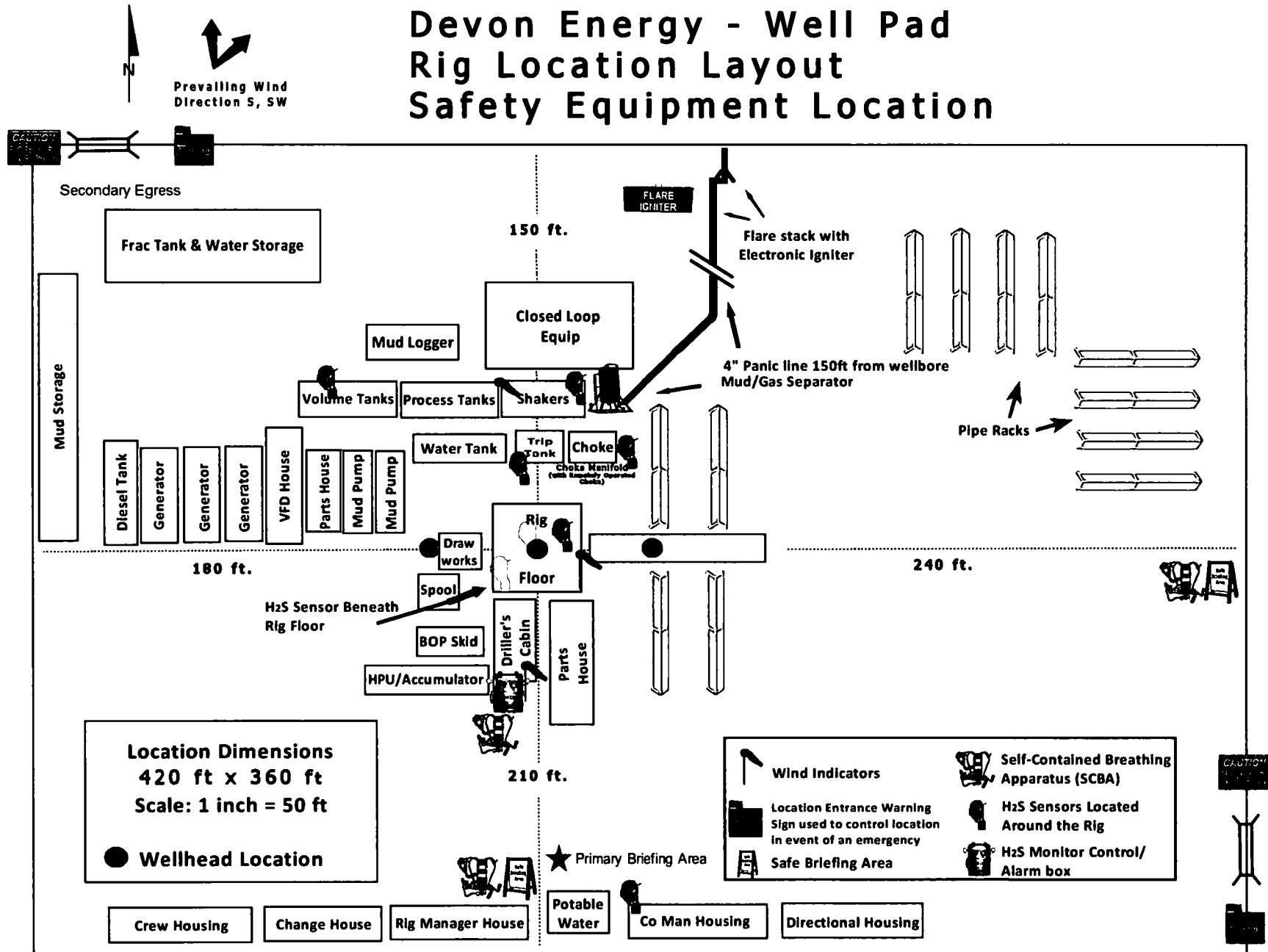
23S - 31E - 26

34

23S - 31E - 51

PLAT 2000-01-01-0000-0000

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

SEC. 22
SEC. 27

PROPOSED 40 LF
ACCESS ROAD

PROPOSED 40 LF
ACCESS ROAD

30' ACCESS ROAD

30' ACCESS ROAD

TOP SOIL AREA

TOP SOIL AREA

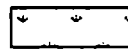
PROPOSED 473 LF
ACCESS ROAD

- A - LUSITANO 27-34 FED COM 335H
- B - LUSITANO 27-34 FED COM 716H
- C - LUSITANO 27-34 FED COM 736H

LUSITANO 27 PAD 5



DENOTES INTERIM PAD
RECLAMATION AREA



DENOTES GRADING SITE
RECLAMATION AREA

0 12 60 120 240
SCALE 1" = 120'

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

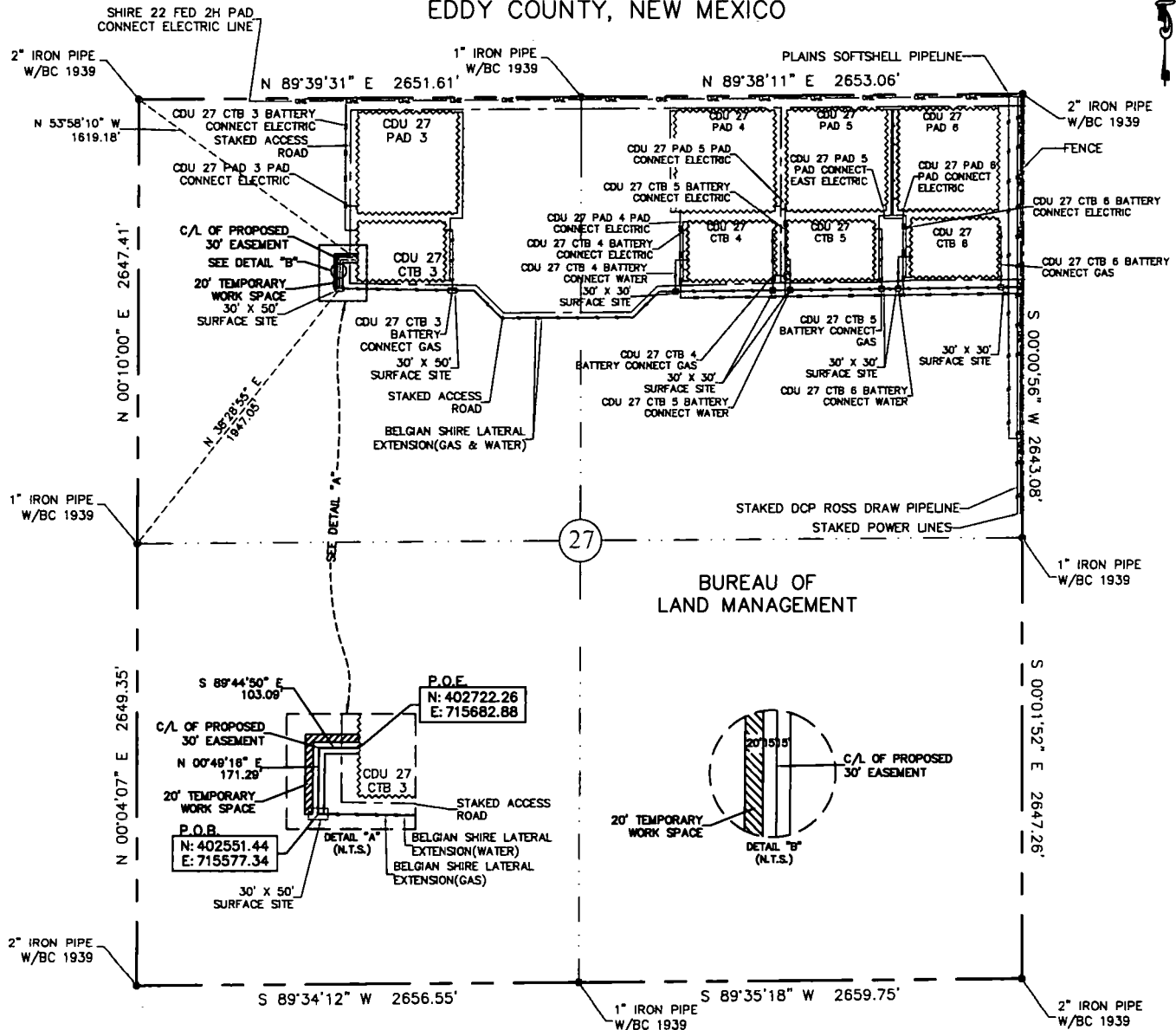
DEVON ENERGY PRODUCTION COMPANY, L.P.
LUSITANO 27-34 FED COM 716H
LOCATED 235 FT. FROM THE NORTH LINE
AND 1234 FT. FROM THE EAST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 3, 2018

SURVEY NO. 6439

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

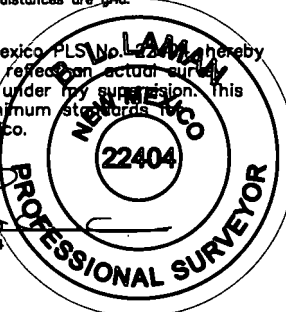
0+00.0 P.O.B./BELGIAN SHIRE LATERAL EXTENSION (WATER)
0+16.0 EXIT 30' X 50' SURFACE SITE
2+29.7 C/L STAKED ACCESS ROAD
2+74.4 P.O.E./CDU 27 CTB 3

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: 05-12-2016
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 3 BATTERY
CONNECT (WATER)

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

LINE NUMBER:
7600672

WBS NUMBER:
CC-110133.03

SCALE:
1" = 1000'

REVISIONS:

SHEET:
1 OF 18

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**.

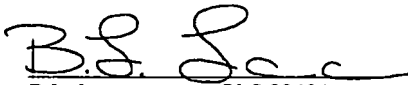
20' TEMPORARY WORK SPACE DESCRIPTION:

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:

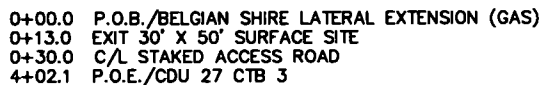
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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





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**.

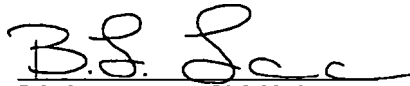
20' TEMPORARY WORK SPACE DESCRIPTION:

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





**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

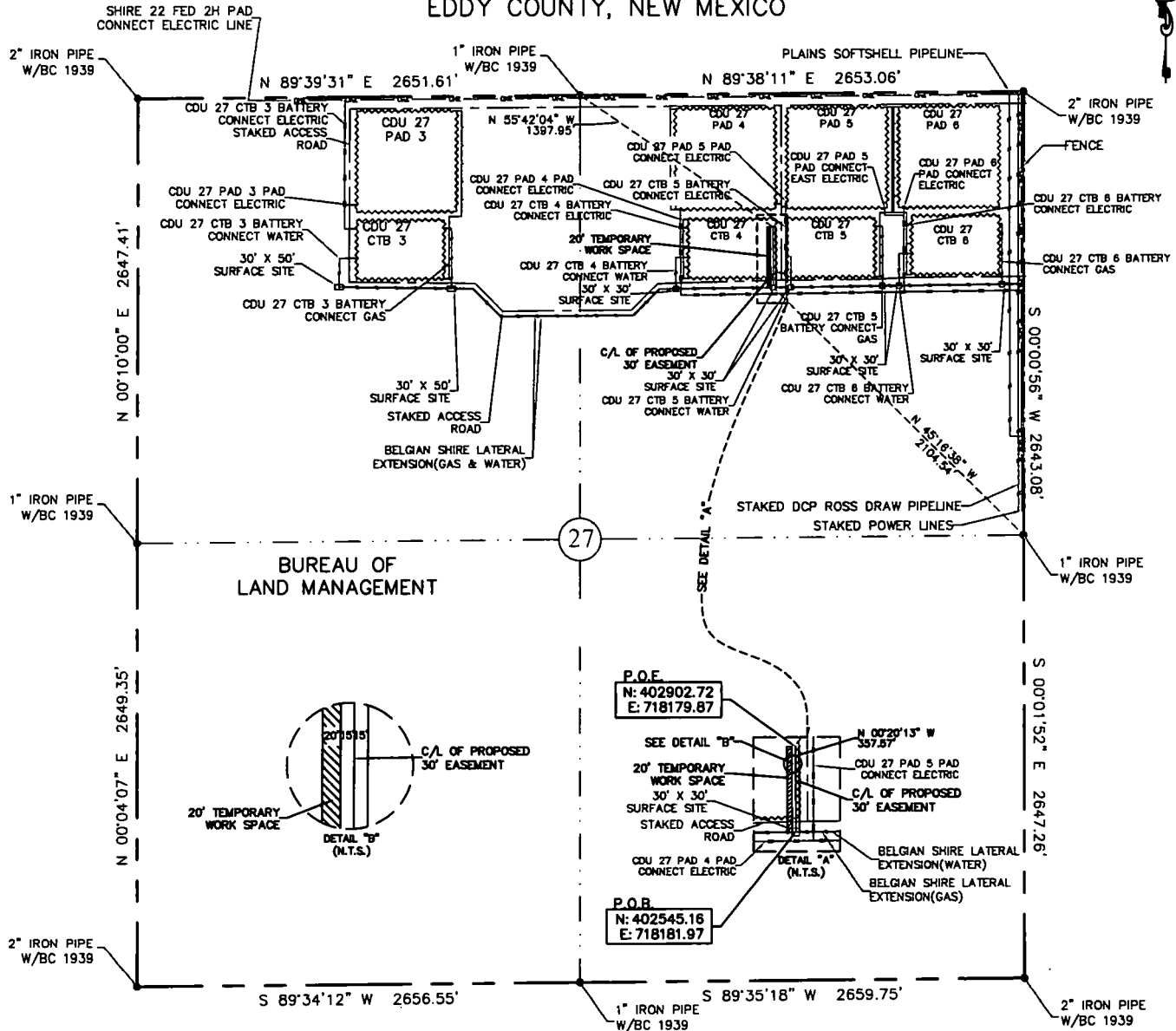
571 State Street, Jasper, TX

(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 Professional Surveyor, 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.

0 1000 2000



B.L. Laman, New Mexico Professional Surveyor, No. 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)	LINE NUMBER: 760068X WBS NUMBER: CC-110133.01 SCALE: 1" = 1000' REVISIONS:
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.	SHEET: 7 OF 18

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

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

20' TEMPORARY WORK SPACE DESCRIPTION:

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

NOTES:

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

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



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC





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

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

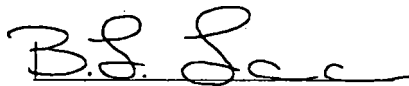
20' TEMPORARY WORK SPACE DESCRIPTION:

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

NOTES:

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

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



B.L. Laman PLS 22404

Date Signed: 05/12/2016

Horizon Row, LLC

571 State Street, Jasper, TX

(409) 202-5111 75951

Employee of Horizon Row, LLC





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

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

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

20' TEMPORARY WORK SPACE DESCRIPTION:

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

NOTES:

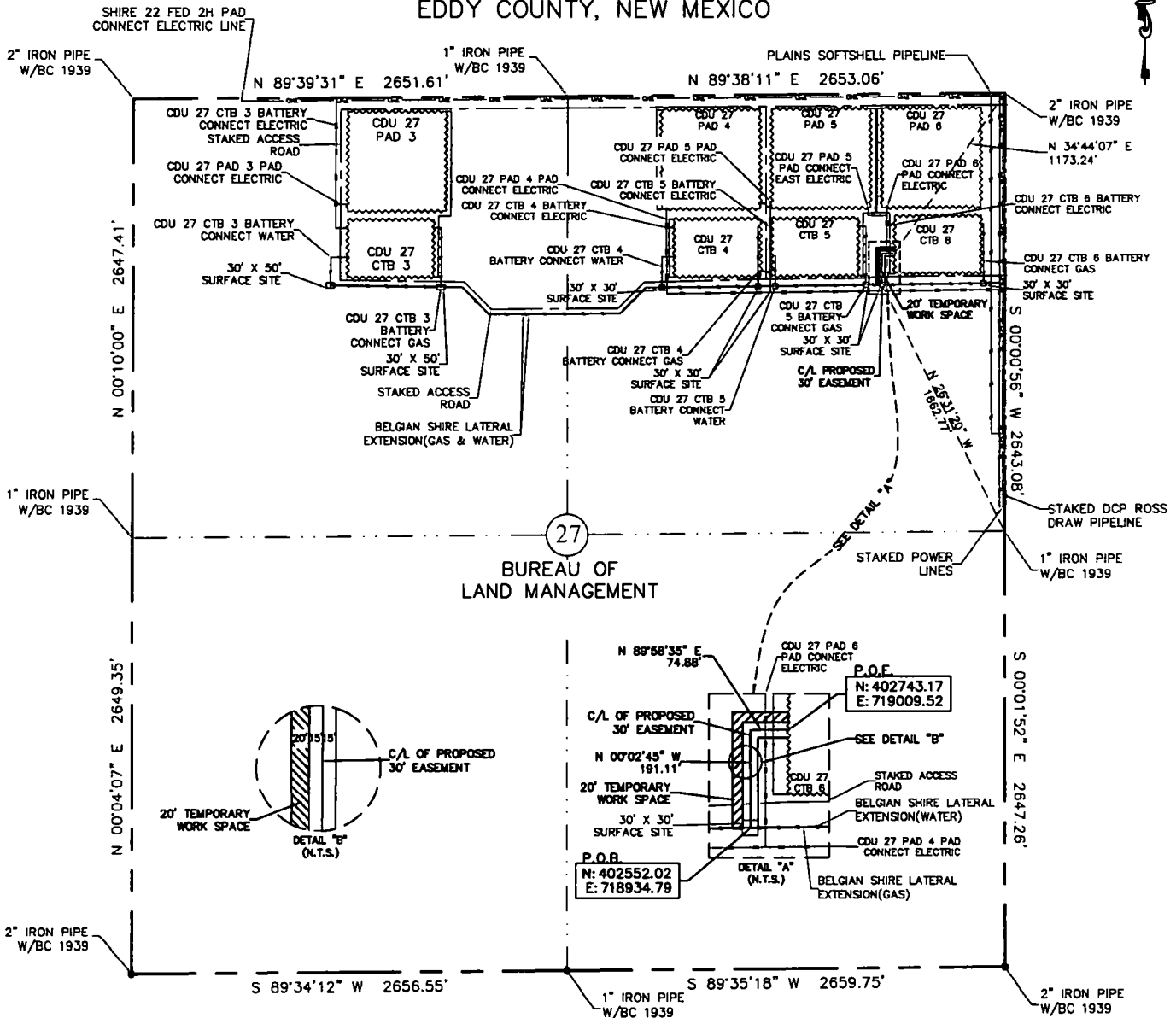
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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


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



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



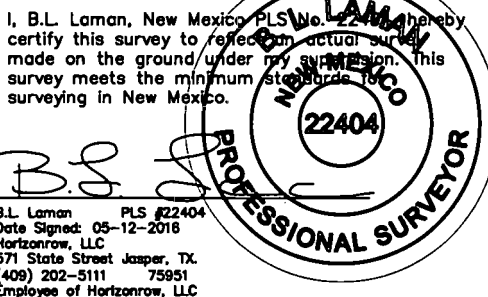
30' EASEMENT AREA = 0.183 ACRE(S)
 20' TEMPORARY WORK SPACE AREA = 0.145 ACRE(S)
 265.99 FEET OR 16.12 RODS

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

SEE THE ATTACHED LEGAL DESCRIPTION

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

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



HORIZON ROW LLC

Drawn for:

devon

Drawn by:
CHRIS MAAS

Date: 05/04/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 CTB 6 BATTERY
CONNECT (WATER)

PROPOSED 30' EASEMENT

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

LINE NUMBER:
760070Z

WBS NUMBER:
CC-110133.03

SCALE:
1" = 1000'

REVISIONS:

SHEET:
13 OF 18

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 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**.

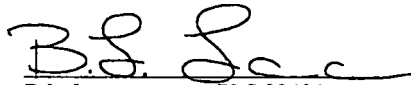
20' TEMPORARY WORK SPACE DESCRIPTION:

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

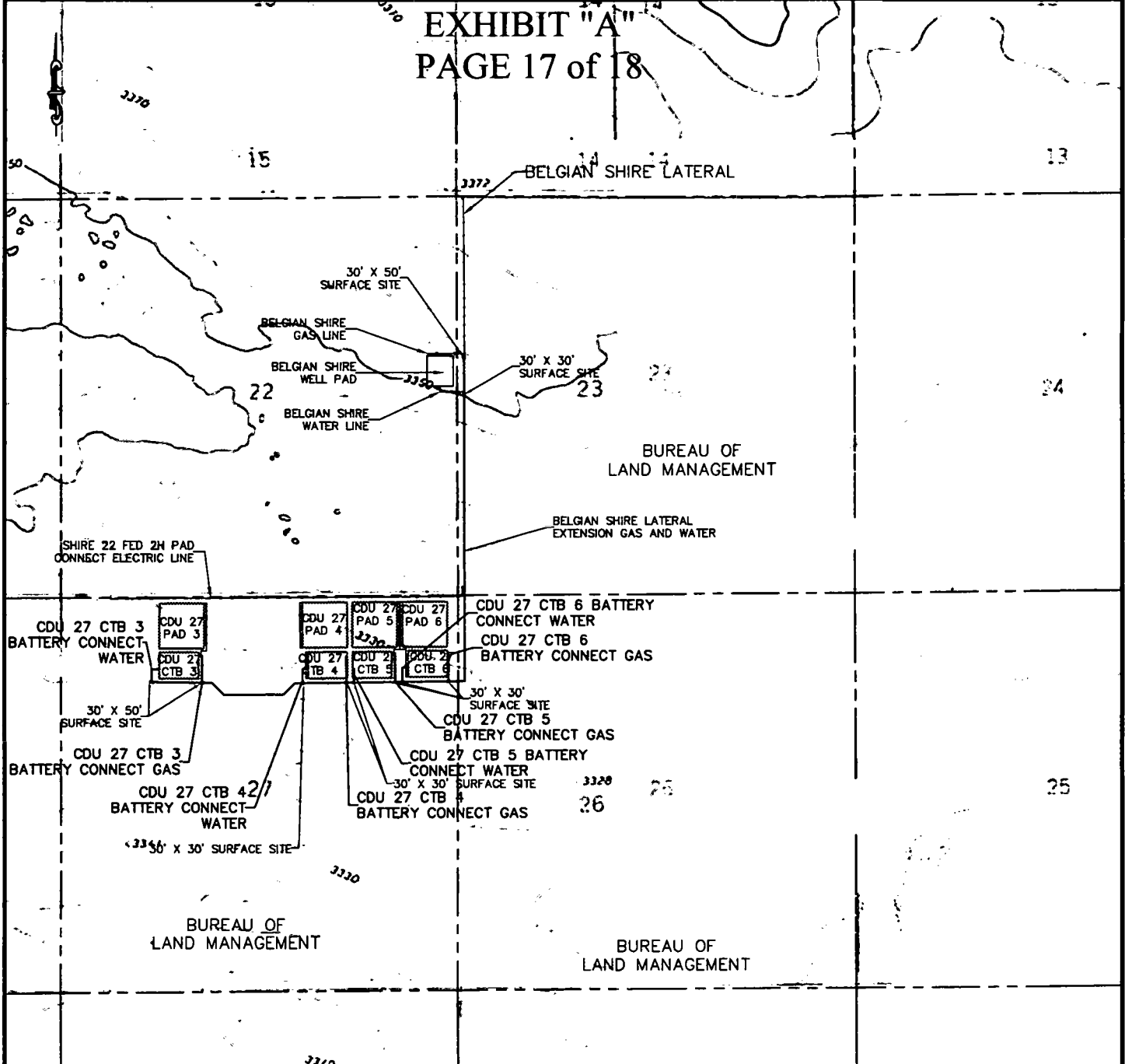
(409) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"

PAGE 17 of 18



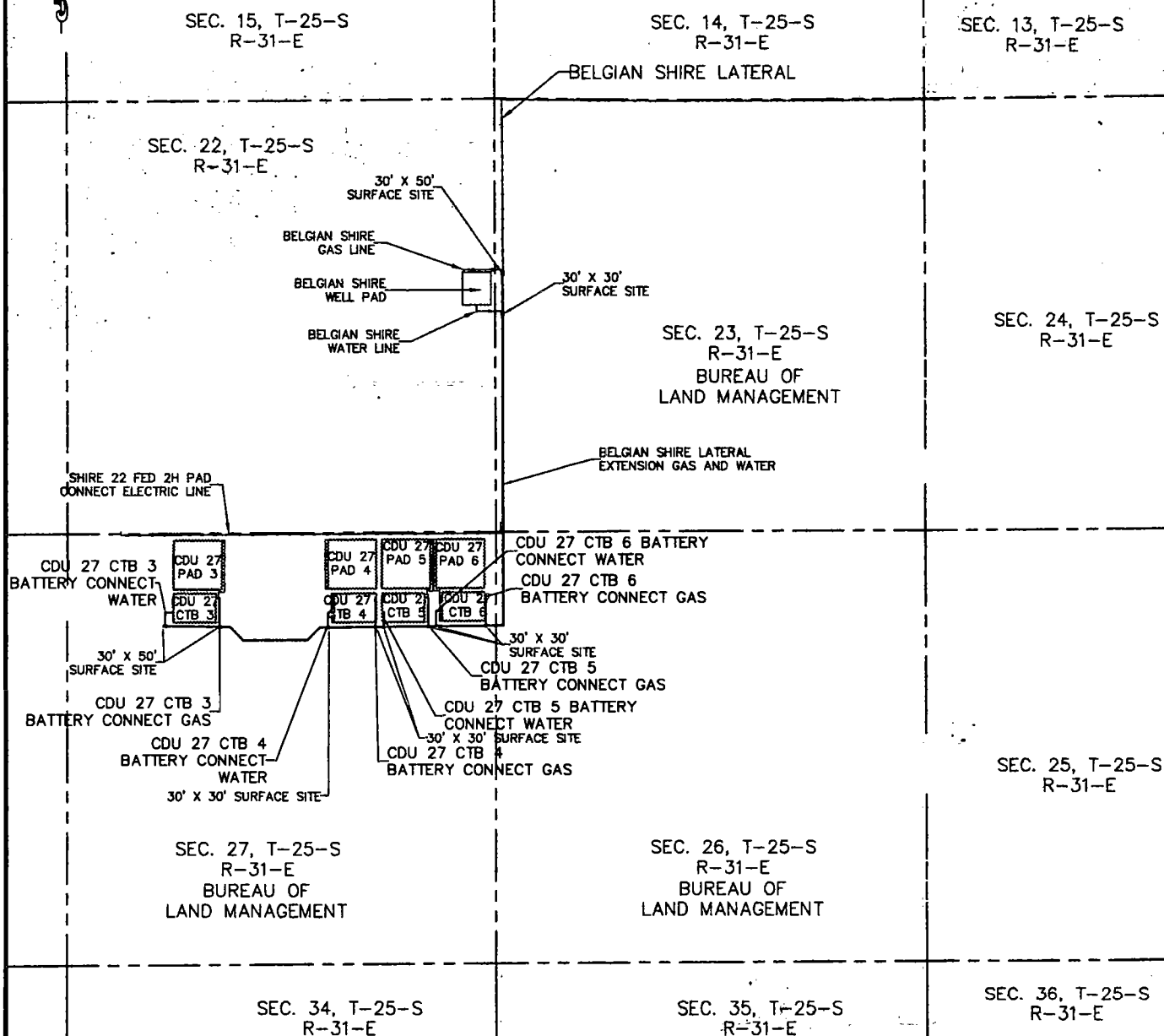
QUAD MAP

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

HORIZON ROW LLC		WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)		CC-110133.01	780067L2
CDU 27 CTB 4 BATTERY CONNECT (GAS & WATER)		CC-110133.01	780068L2
CDU 27 CTB 5 BATTERY CONNECT (GAS & WATER)		CC-110133.01	780069L2
CDU 27 CTB 6 BATTERY CONNECT (GAS & WATER)		CC-110133.01	780070L2
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: 17 OF 18	

EXHIBIT "A"

PAGE 18 of 18



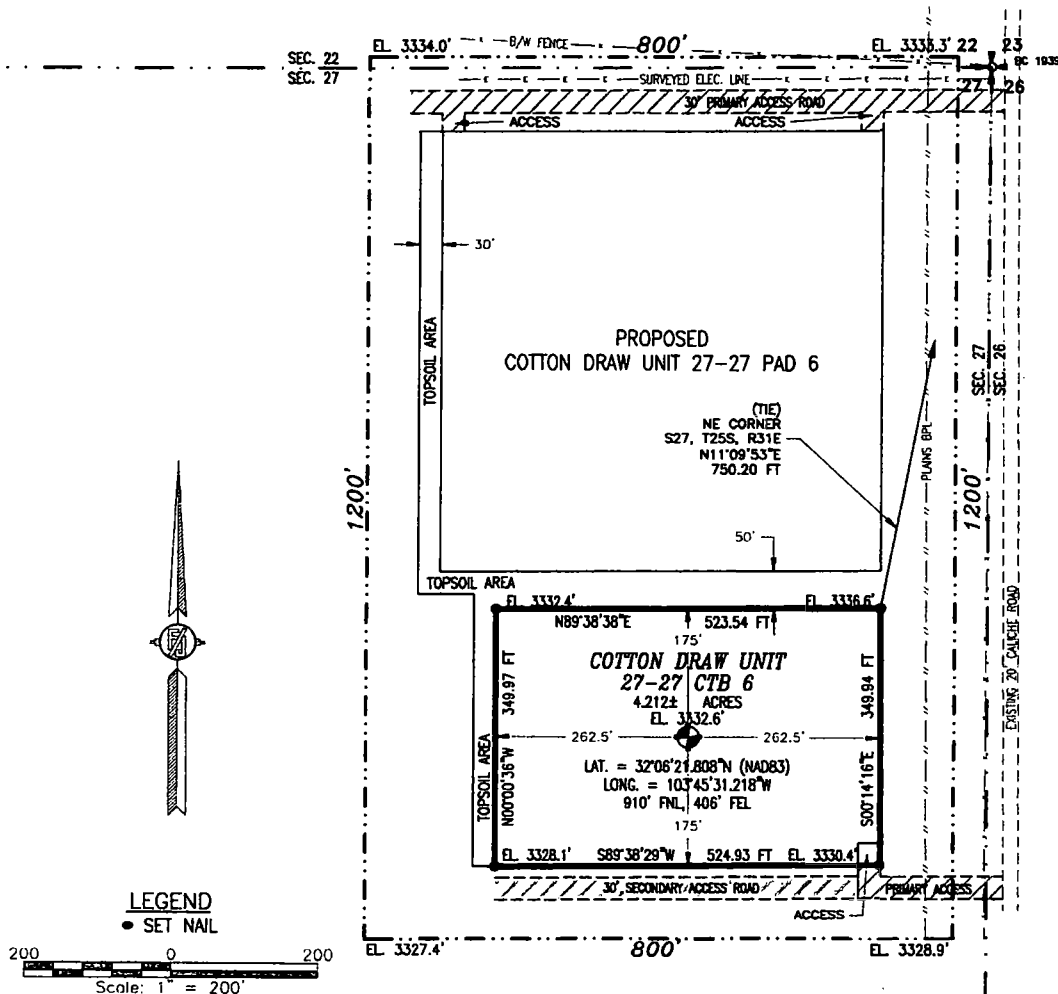
AERIAL MAP

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

HORIZON ROW LLC		WES NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)		00-110133.01	760067X.2
CDU 27 CTB 4 BATTERY CONNECT (GAS & WATER)		00-110133.01	760068X.2
CDU 27 CTB 5 BATTERY CONNECT (GAS & WATER)		00-110133.01	760069X.2
CDU 27 CTB 6 BATTERY CONNECT (GAS & WATER)		00-110133.01	760070X.2
Drawn for:		DEVON ENERGY PRODUCTION COMPANY, L.P.	
devon		PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT	
Drawn by: CHRIS MAAS	Date: 05/04/2016	SCALE: 1" = 2000'	REVISIONS:
		SHEET: 18 OF 18	

COTTON DRAW UNIT 27-27 CTB 6 (AA000056018)
DEVON ENERGY PRODUCTION COMPANY, L.P.
 IN THE NE/4 NE/4 OF
 SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
 EDDY COUNTY, STATE OF NEW MEXICO

JUNE 17, 2016



DESCRIPTION

A CERTAIN PIECE OR PARCEL OF LAND AND REAL ESTATE LYING IN THE NE/4 NE/4 OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST N.M.P.M., EDDY COUNTY, NEW MEXICO.

BEGINNING AT THE NORTHEAST CORNER OF THE PARCEL, WHENCE THE NORTHEAST CORNER OF SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N11°09'53"E, A DISTANCE OF 750.20 FEET;
 THENCE S00°14'16"E A DISTANCE OF 349.94 FEET TO THE SOUTHEAST CORNER OF THE PARCEL;
 THENCE S89°38'29"W A DISTANCE OF 524.93 FEET TO THE SOUTHWEST CORNER OF THE PARCEL;
 THENCE N00°00'36"W A DISTANCE OF 349.97 FEET TO THE NORTHWEST CORNER OF THE PARCEL;
 THENCE N89°38'38"E A DISTANCE OF 523.54 FEET TO THE NORTHEAST CORNER OF THE PARCEL, TO THE POINT OF BEGINNING;
 CONTAINING 4.212 ACRES MORE OR LESS.

GENERAL NOTES

- 1.) THE INTENT OF THIS SURVEY IS TO ACQUIRE A BUSINESS LEASE FOR THE PURPOSE OF BUILDING A CENTRAL TANK BATTERY
- 2.) BASIS OF BEARING IS NEW MEXICO STATE PLANE EAST ZONE MODIFIED TO THE SURFACE (NAD83)

DRIVING DIRECTION: FROM STATE HIGHWAY 128 AND CR 1 (ORLA HIGHWAY) GO SOUTH ON CR 1 6.5 MILES TO MONSANTO ROAD, TURN RIGHT GO WEST 2.1 MILES, TURN RIGHT GO NORTH 0.8 OF A MILE, TURN LEFT GO WEST 2.1 MILES, BEND LEFT GO SOUTHWEST 1.3 MILES, TURN LEFT GO SOUTH 1.2 MILE TO BEGIN ROAD SURVEY, GO WEST 178' TO THE SOUTHEAST CORNER FOR THIS LOCATION.

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 17th DAY OF JUNE 2016.

[Signature]
 FILIMON F. JARAMILLO, NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797
 MADRON SURVEYING, INC.
 301 SOUTH CANAL
 CARLSBAD, NEW MEXICO 88220
 Phone (575) 234-3341

SHEET: 1-3

MADRON SURVEYING, INC.

SURVEY NO. 4497B

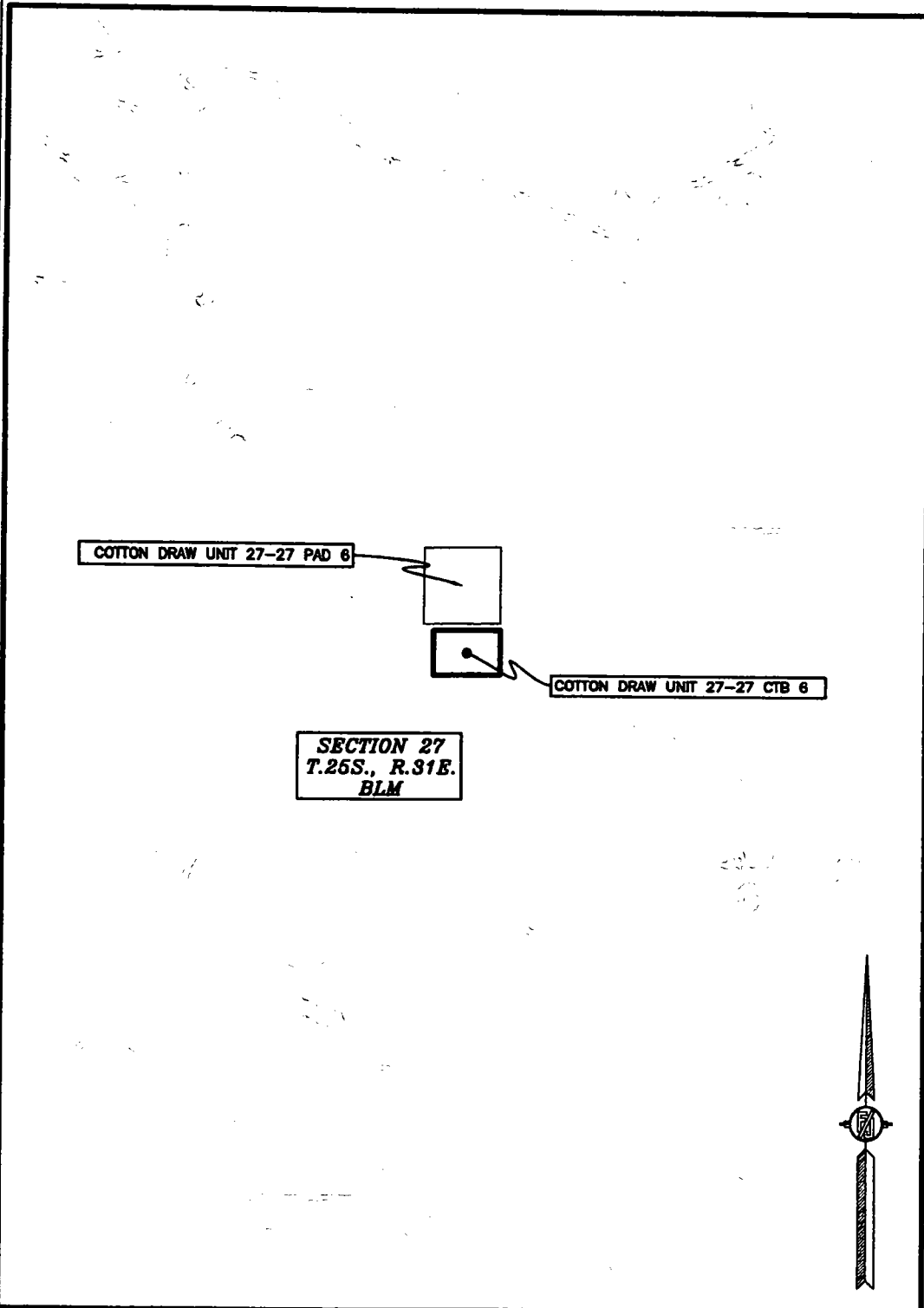
CARLSBAD, NEW MEXICO

COTTON DRAW UNIT 27-27 CTB 6 (AA000056018)

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

JUNE 17, 2016

QUAD MAP



COTTON DRAW UNIT 27-27 PAD 6

COTTON DRAW UNIT 27-27 CTB 6

SECTION 27
T.26S., R.31E.
BLM



SHEET: 2-3

MADRON SURVEYING, INC.

301 SOUTH CANAL
(575) 234-3341

CARLSBAD, NEW MEXICO

SURVEY NO. 4497B

COTTON DRAW UNIT 27-27 CTB 6 (AA000056018)

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

JUNE 17, 2016

AERIAL PHOTO

22

23

COTTON DRAW UNIT 27-27 PAD 6

COTTON DRAW UNIT 27-27 CTB 6

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

27

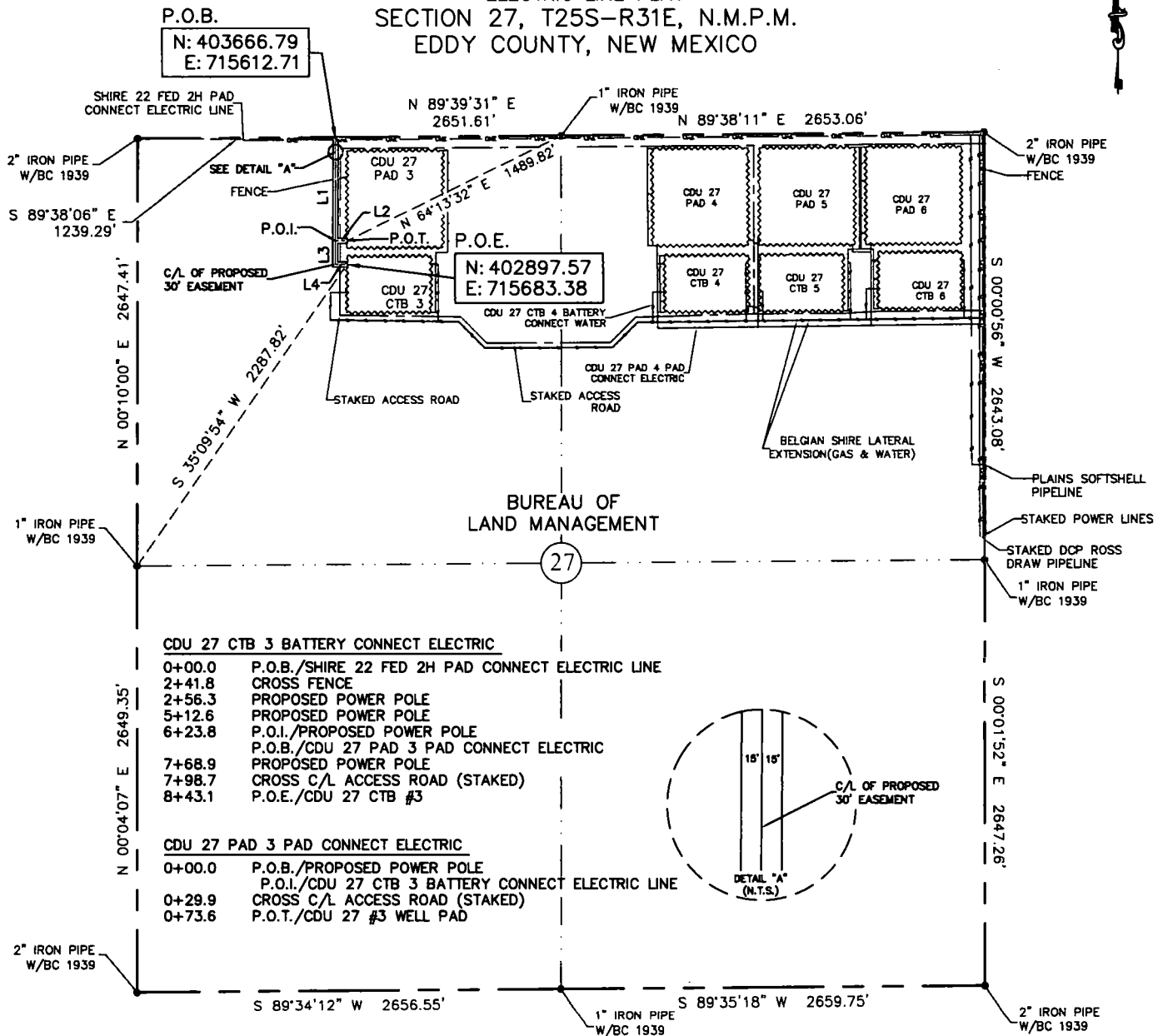
26

SHEET: 3-3

SURVEY NO. 4497B

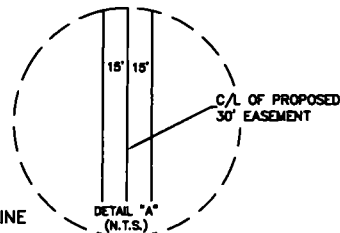
MADRON SURVEYING, INC. 301 SOUTH CANAL (575) 234-3341 CARLSBAD, NEW MEXICO

EXHIBIT "A"
PAGE 1 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



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

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

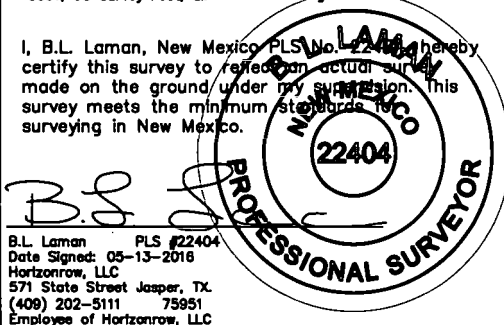


30' EASEMENT AREA = 0.621 ACRE(S)
916.72 FEET OR 55.56 RODS

SEE THE ATTACHED LEGAL DESCRIPTION

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

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



B.L. Laman PLS #22404
Date Signed: 05-13-2018
Horizonrow, LLC
571 State Street Jasper, TX
(409) 202-5111 75951
Employee of Horizonrow, LLC

0 1000 2000



LINE	BEARING	DISTANCE
L1	S 00°16'02" W	623.83'
L2	S 89°45'48" E	73.61'
L3	S 00°18'02" W	145.03'
L4	S 89°42'35" E	74.25'

WBS NUMBER:		LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL EL7794
CDU 27 PAD 3 PAD CONNECT ELECTRIC LINE		CC-112971.AL EL7800
HORIZON ROW LLC		DEVON ENERGY PRODUCTION COMPANY, L.P.
Drawn for:		CDU 27 CTB 3 BATTERY CONNECT AND CDU 27 PAD 3 PAD CONNECT ELECTRIC LINES
devon		SCALE: 1" = 1000'
Drawn by: WAYNE BEETS		REVISIONS:
Date: 05/09/2016		SHEET: 1 OF 17
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.		

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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

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

Thence continuing from said point of intersection the following courses;

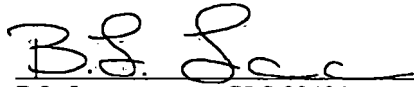
Thence S 00°16'02" W, a distance of 145.03' to an angle point;

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

NOTES:

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

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



B.L. Laman PLS 22404

Date Signed: 05/13/2016

Horizon Row, LLC

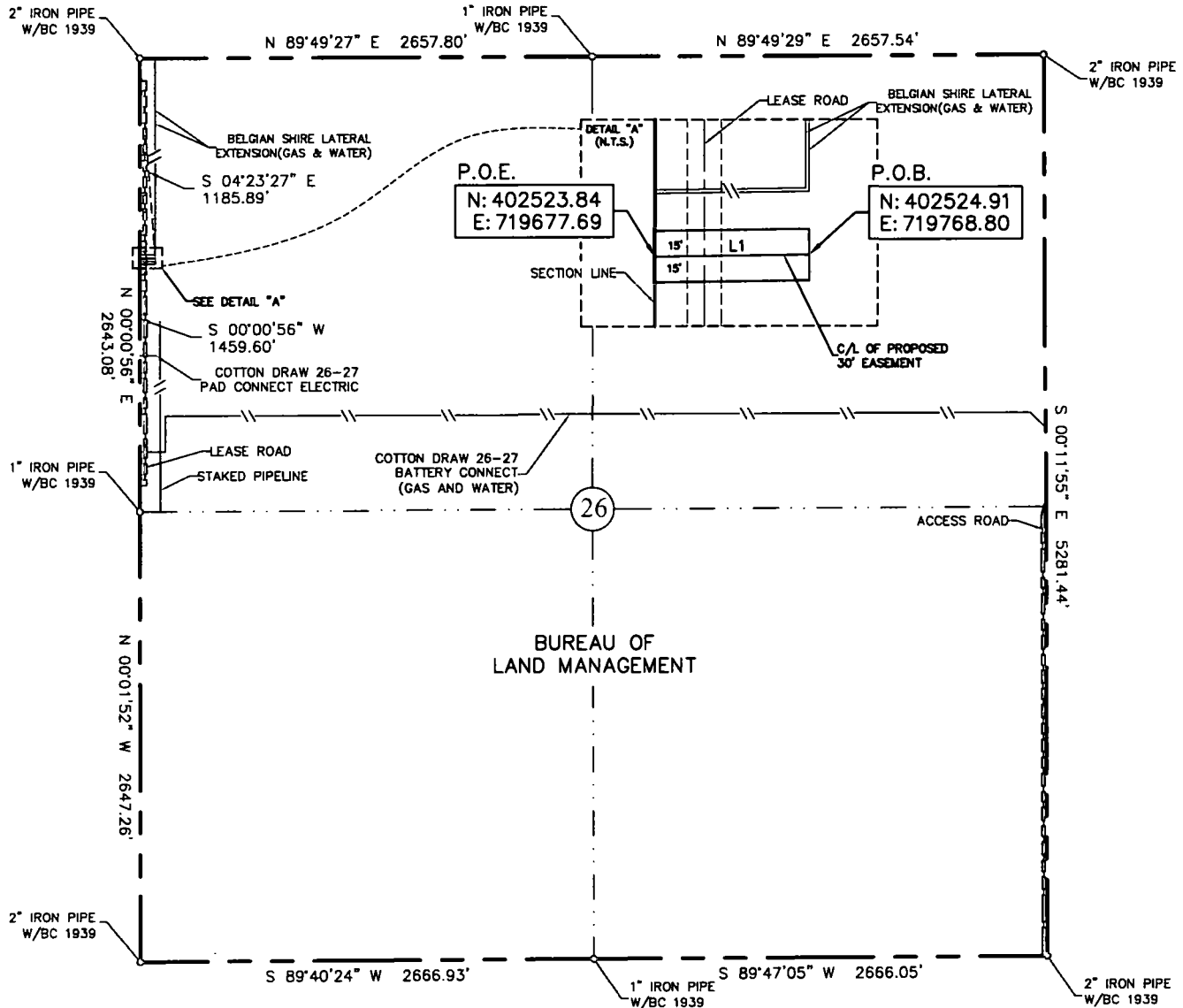
571 State Street, Jasper, TX

(402) 202-5111 75951

Employee of Horizon Row, LLC



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



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

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

SEE THE ATTACHED LEGAL DESCRIPTION

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

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

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

0 1000 2000



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

HORIZON ROW LLC

Drawn for:

devon

Drawn by:
WAYNE BEETS

Date: 05/05/2016

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 PAD 4 PAD
CONNECT-ELECTRIC LINE

PROPOSED 30' EASEMENT
ON THE PROPERTY OF
BUREAU OF LAND MANAGEMENT
SECTION 26, T25S-R31E, N.M.P.M.

LINE NUMBER:
EL7801

WBS NUMBER:
CC-112971.AL

SCALE:
1" = 1000'

REVISIONS:

SHEET:
4 OF 17

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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

NOTES:

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

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


B.L. Laman PLS 22404

Date Signed: 05/13/2016

Horizon Row, LLC

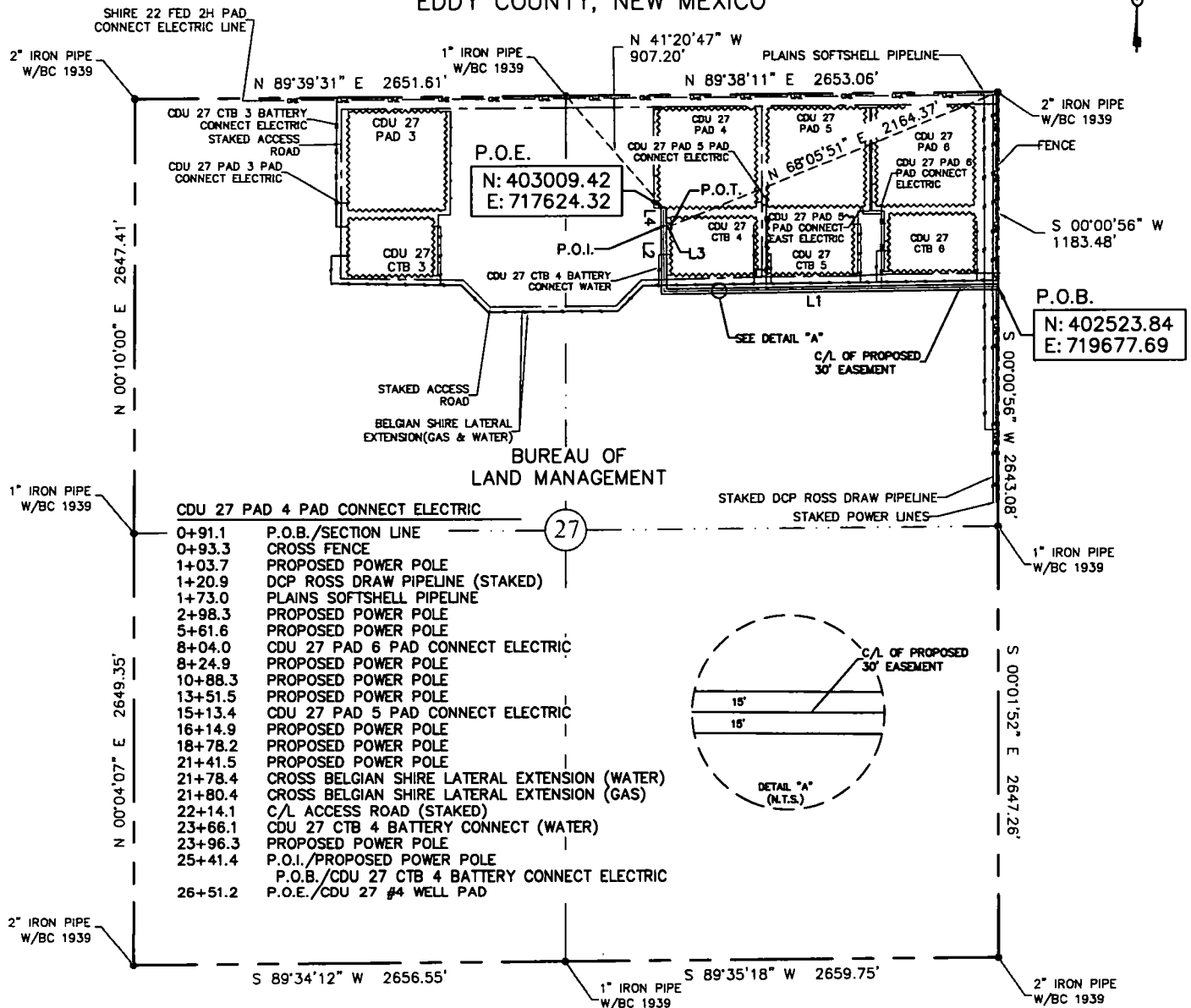
571 State Street, Jasper, TX

(402) 202-5111 75951

Employee of Horizon Row, LLC



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



CDU 27 CTB 4 BATTERY CONNECT ELECTRIC

0+00.0 P.O.B./PROPOSED POWER POLE

P.O.I./CDU 27 PAD 4 PAD CONNECT ELECTRIC

0+44.9 P.O.T./CDU 27 CTB 4 PAD

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

30' EASEMENT AREA = 1.784 ACRE(S)
2604.91 FEET OR 157.87 RODS

SEE THE ATTACHED LEGAL DESCRIPTION

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

I, B.L. Laman, New Mexico 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
Date Signed: 05-13-2018
Horizon Row, LLC
571 State Street Jasper, TX
(409) 202-5111 75951
Employee of Horizon Row, LLC



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.	
Drawn for:		CDU 27 PAD 4 PAD CONNECT AND CDU 27 CTB 4 BATTERY CONNECT ELECTRIC LINES	
		SCALE: 1" = 1000'	
Drawn by: WAYNE BEETS		REVISIONS:	
Date: 05/09/2016		SHEET: 6 OF 17	
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.			

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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

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

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

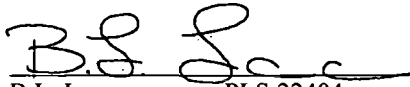
Thence continuing from said point of intersection the following courses;

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

NOTES:

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

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



B.L. Laman PLS 22404

Date Signed: 05/13/2016

Horizon Row, LLC

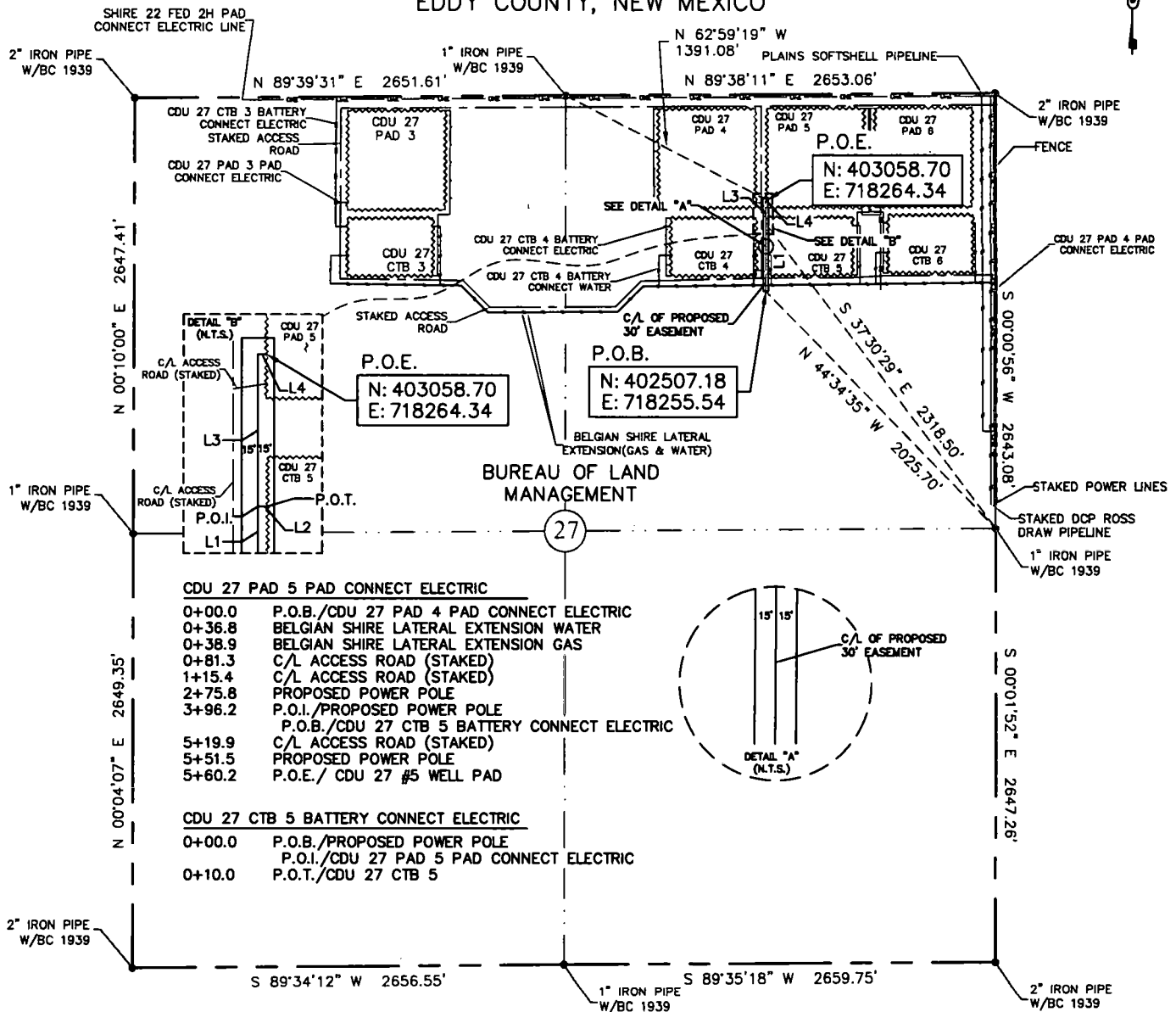
571 State Street, Jasper, TX

(402) 202-5111 75951

Employee of Horizon Row, LLC



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



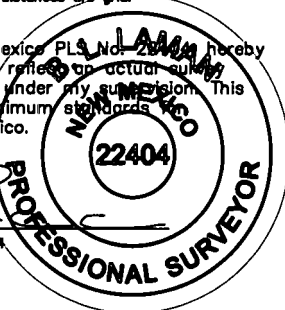
30' EASEMENT AREA = 0.390 ACRE(S)
 570.14 FEET OR 34.55 RODS

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



CDU 27 PAD 5 PAD CONNECT ELECTRIC LINE		CC-112971.AL	EL7802
CDU 27 CTB 5 BATTERY CONNECT ELECTRIC LINE		CC-112971.AL	EL7796
<i>HORIZON ROW LLC</i>		DEVON ENERGY PRODUCTION COMPANY, L.P. 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: 05/09/2018	PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.	

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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

Thence N 44°34'35" W a distance of 2025.70' to the **Point of Beginning** of this easement having coordinates of Northing=402507.18 feet, Easting=718255.54 feet, and continuing the following courses;

Thence N 00°00'59" E, a distance of 396.22' to the Point of Intersection;

Thence N 89°50'02" E, a distance of 9.97' to the point of termination of this portion of said easement, from said point a 1" iron pipe w/ BC1939 found for the east quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears S 37°30'29" E a distance of 2318.50';

Thence continuing from said point of intersection the following courses;

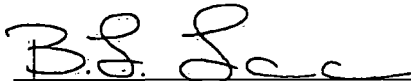
Thence N 00°00'59" E, a distance of 155.30' to an angle point;

Thence N 89°59'36" E, a distance of 8.65' to the **Point of Ending** having coordinates of Northing=403058.70 feet, Easting=718264.34 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 62°59'19" W a distance of 1391.08', covering **570.14' or 34.55 rods** and having an area of **0.390 acres**.

NOTES:

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

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



B.L. Laman PLS 22404

Date Signed: 05/13/2016

Horizon Row, LLC

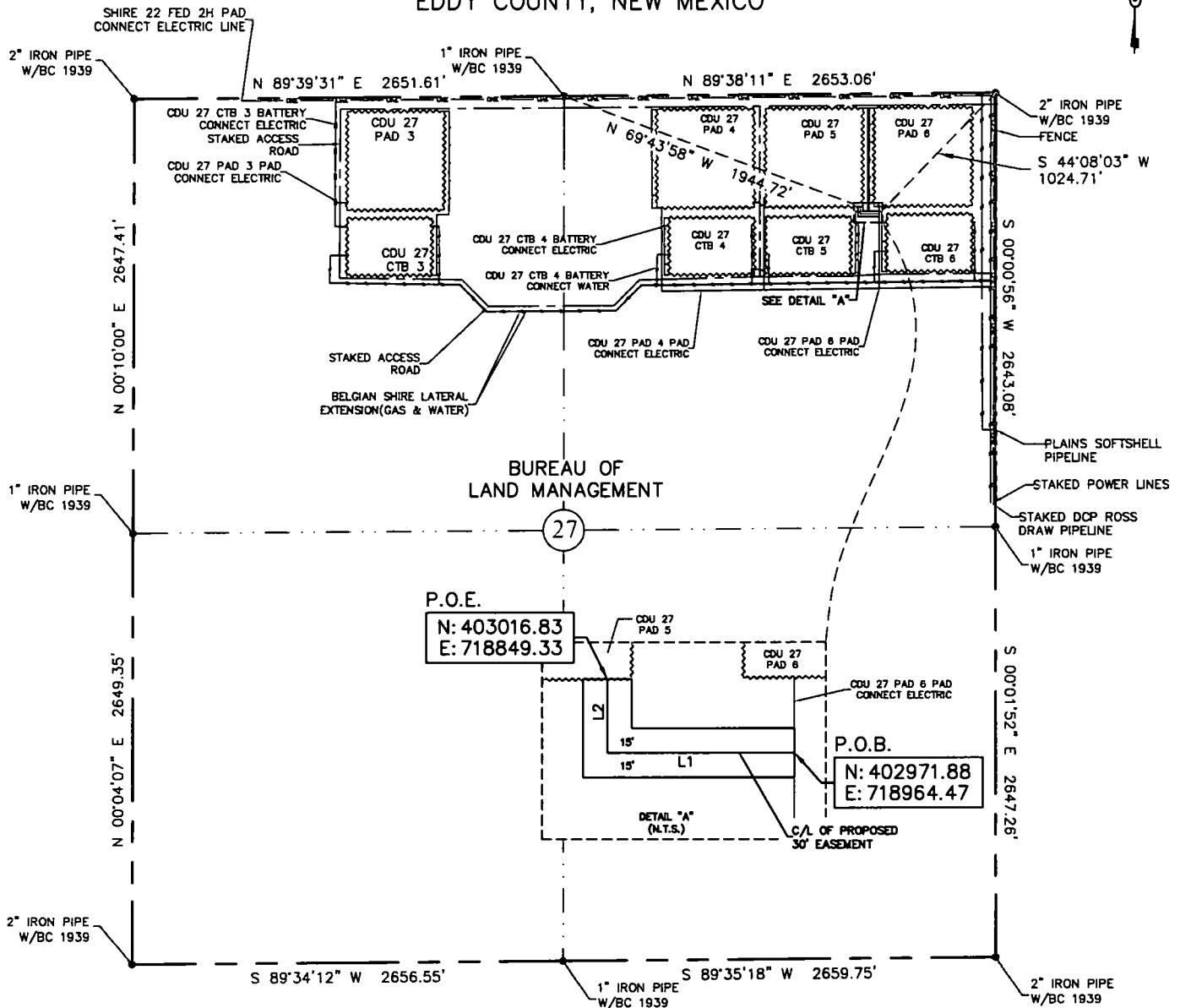
571 State Street, Jasper, TX

(402) 202-5111 75951

Employee of Horizon Row, LLC



EXHIBIT "A"
PAGE 12 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



30' EASEMENT AREA = 0.110 ACRE(S)
 160.17 FEET OR 9.71 RODS

0+00.0 P.O.B./CDU 27 PAD 6 PAD CONNECT ELECTRIC
 1+15.2 PROPOSED POWER POLE
 1+60.2 P.O.E./CDU 27 #5 WELL PAD

SEE THE ATTACHED LEGAL DESCRIPTION

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

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

B.L. Laman PLS #22404
 Date Signed: 05-13-2018
 Horizonrow, LLC
 571 State Street Jasper, TX
 (409) 202-5111 75951
 Employee of Horizonrow, LLC



HORIZON ROW LLC

Drawn for:

devon

Drawn by:
 WAYNE BEETS

Date: 05/10/2018

DEVON ENERGY PRODUCTION COMPANY, L.P.

CDU 27 PAD 5 PAD
 CONNECT EAST-ELECTRIC LINE

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

LINE NUMBER:
 EL7814

WBS NUMBER:
 CC-112871.AL

SCALE:
 1" = 1000'

REVISIONS:

SHEET:
 12 OF 17

LINE	BEARING	DISTANCE
L1	S 89°58'05" W	115.15'
L2	N 00°01'04" E	45.02'

0 1000 2000



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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

Thence S 44°08'03" W a distance of 1024.71' to the **Point of Beginning** of this easement having coordinates of Northing=402971.88 feet, Easting=718964.47 feet, and continuing the following courses;

Thence S 89°58'05" W, a distance of 115.15' to an angle point;

Thence N 00°01'04" E, a distance of 45.02' to the **Point of Ending** having coordinates of Northing=403016.83 feet, Easting=718849.33 feet, from said point a 1" iron pipe w/ BC1939 found for the north quarter corner of Section 27, T25S-R31E, N.M.P.M., Eddy County, New Mexico bears N 69°43'58" W a distance of 1944.72', covering **160.17' or 9.71 rods** and having an area of **0.110 acres**.

NOTES:

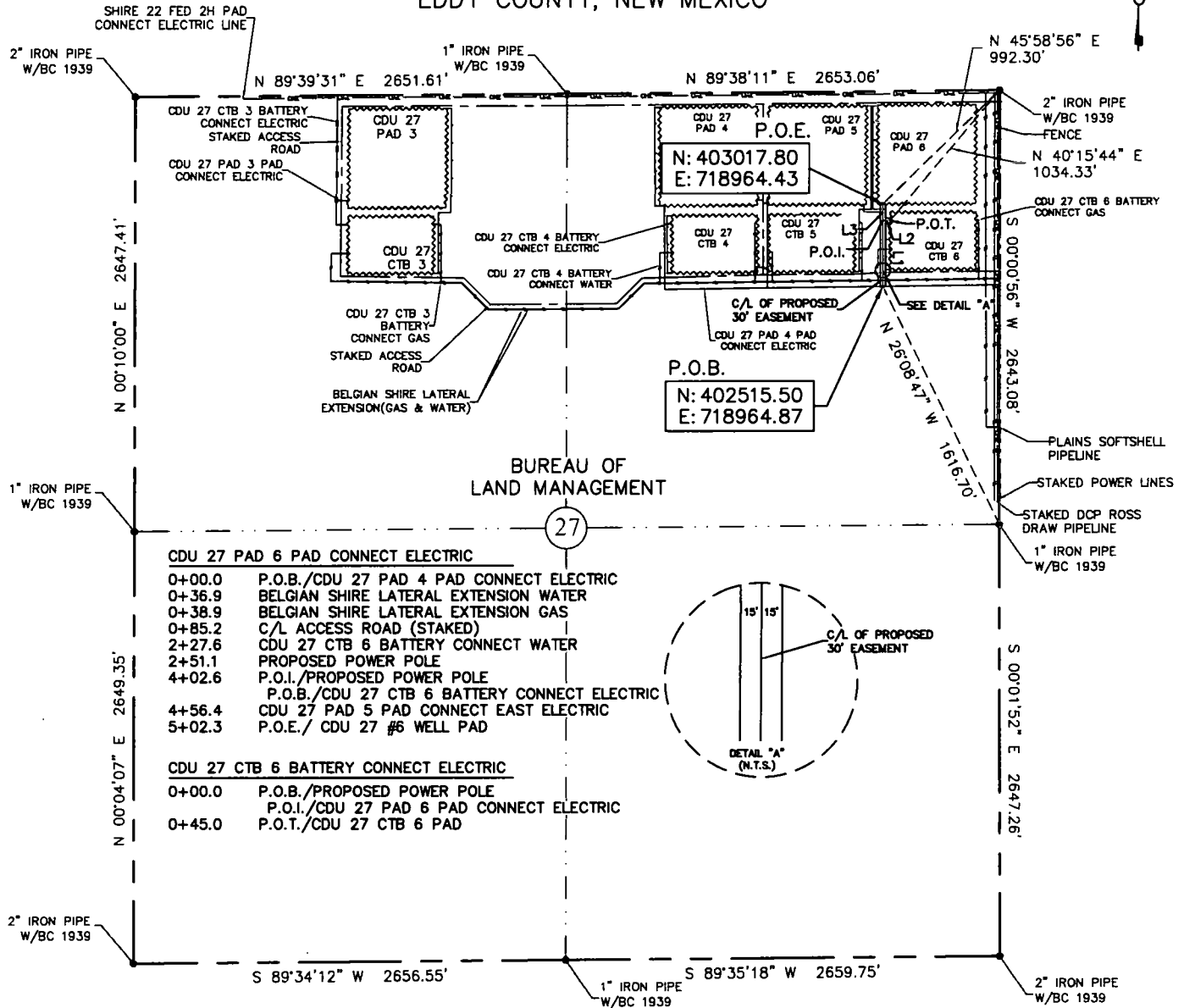
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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


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

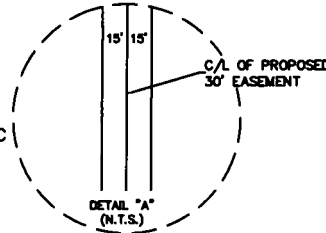


EXHIBIT "A"
PAGE 14 of 17
ELECTRIC LINE PLAT
SECTION 27, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



CDU 27 PAD 6 PAD CONNECT ELECTRIC
 0+00.0 P.O.B./CDU 27 PAD 4 PAD CONNECT ELECTRIC
 0+36.9 BELGIAN SHIRE LATERAL EXTENSION WATER
 0+38.9 BELGIAN SHIRE LATERAL EXTENSION GAS
 0+85.2 C/L ACCESS ROAD (STAKED)
 2+27.6 CDU 27 CTB 6 BATTERY CONNECT WATER
 2+51.1 PROPOSED POWER POLE
 4+02.6 P.O.I./PROPOSED POWER POLE
 P.O.B./CDU 27 CTB 6 BATTERY CONNECT ELECTRIC
 4+56.4 CDU 27 PAD 5 PAD CONNECT EAST ELECTRIC
 5+02.3 P.O.E./CDU 27 #6 WELL PAD

CDU 27 CTB 6 BATTERY CONNECT ELECTRIC
 0+00.0 P.O.B./PROPOSED POWER POLE
 P.O.I./CDU 27 PAD 6 PAD CONNECT ELECTRIC
 0+45.0 P.O.T./CDU 27 CTB 6 PAD



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

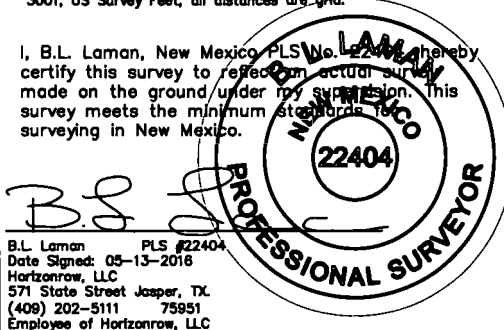
LINE	BEARING	DISTANCE
L1	N 00°03'00" W	402.56
L2	S 89°58'05" E	145.02
L3	N 00°03'00" W	99.74

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 Professional Surveyor, 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.



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:	
		SHEET: 14 OF 17	
Drawn by: WAYNE BEETS		Date: 05/09/2016	
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT SECTION 27, T25S-R31E, N.M.P.M.			

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

ELECTRIC LINE PLAT

LEGAL DESCRIPTION

FOR

DEVON ENERGY PRODUCTION COMPANY, L.P.

BUREAU OF LAND MANAGEMENT

30' EASEMENT DESCRIPTION:

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

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

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

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

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

Thence continuing from said point of intersection the following course;

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

NOTES:

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

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

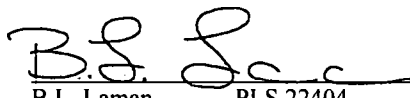
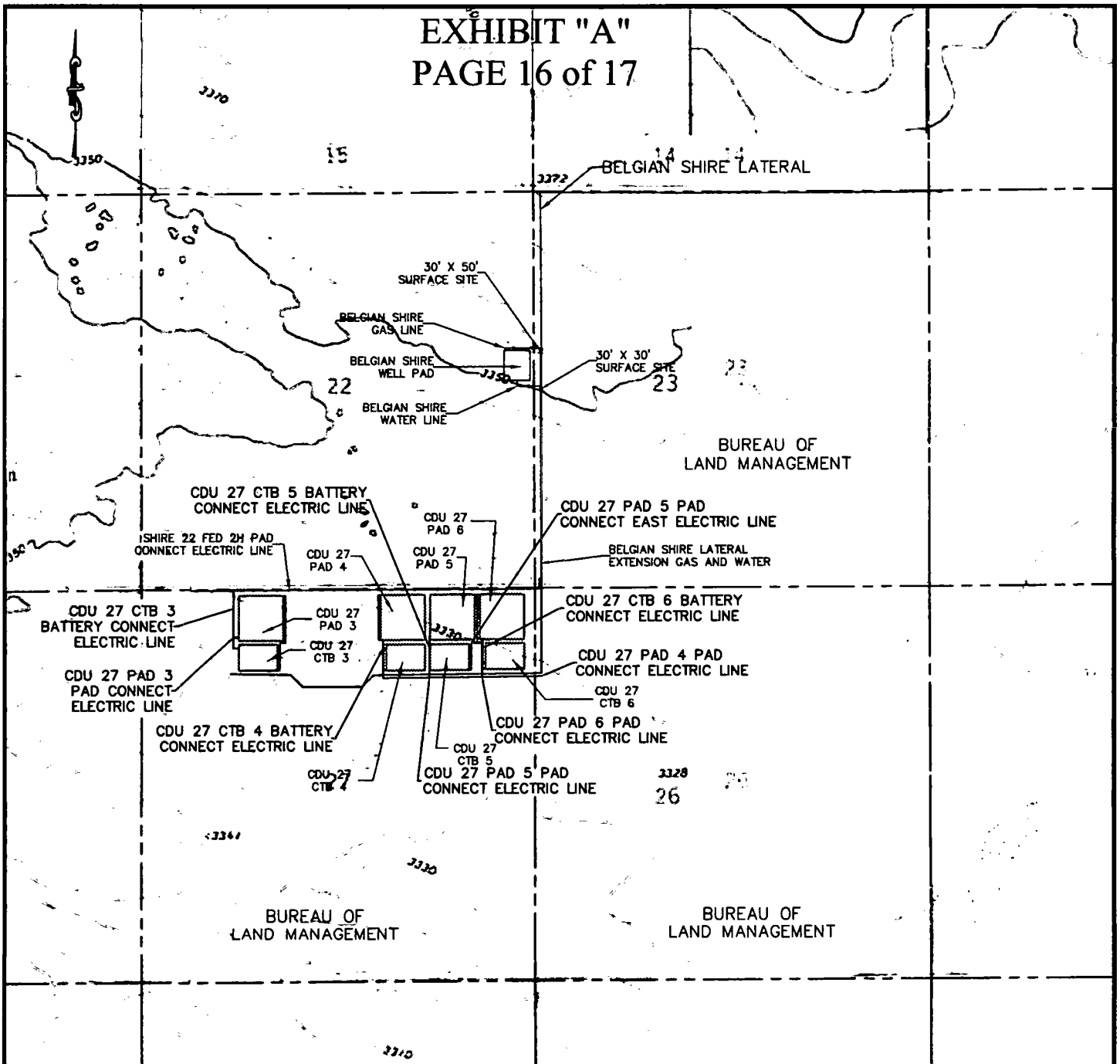

B.L. Laman PLS 22404
Date Signed: 05/13/2016
Horizon Row, LLC
571 State Street, Jasper, TX
(402) 202-5111 75951
Employee of Horizon Row, LLC



EXHIBIT "A"

PAGE 16 of 17



QUAD MAP

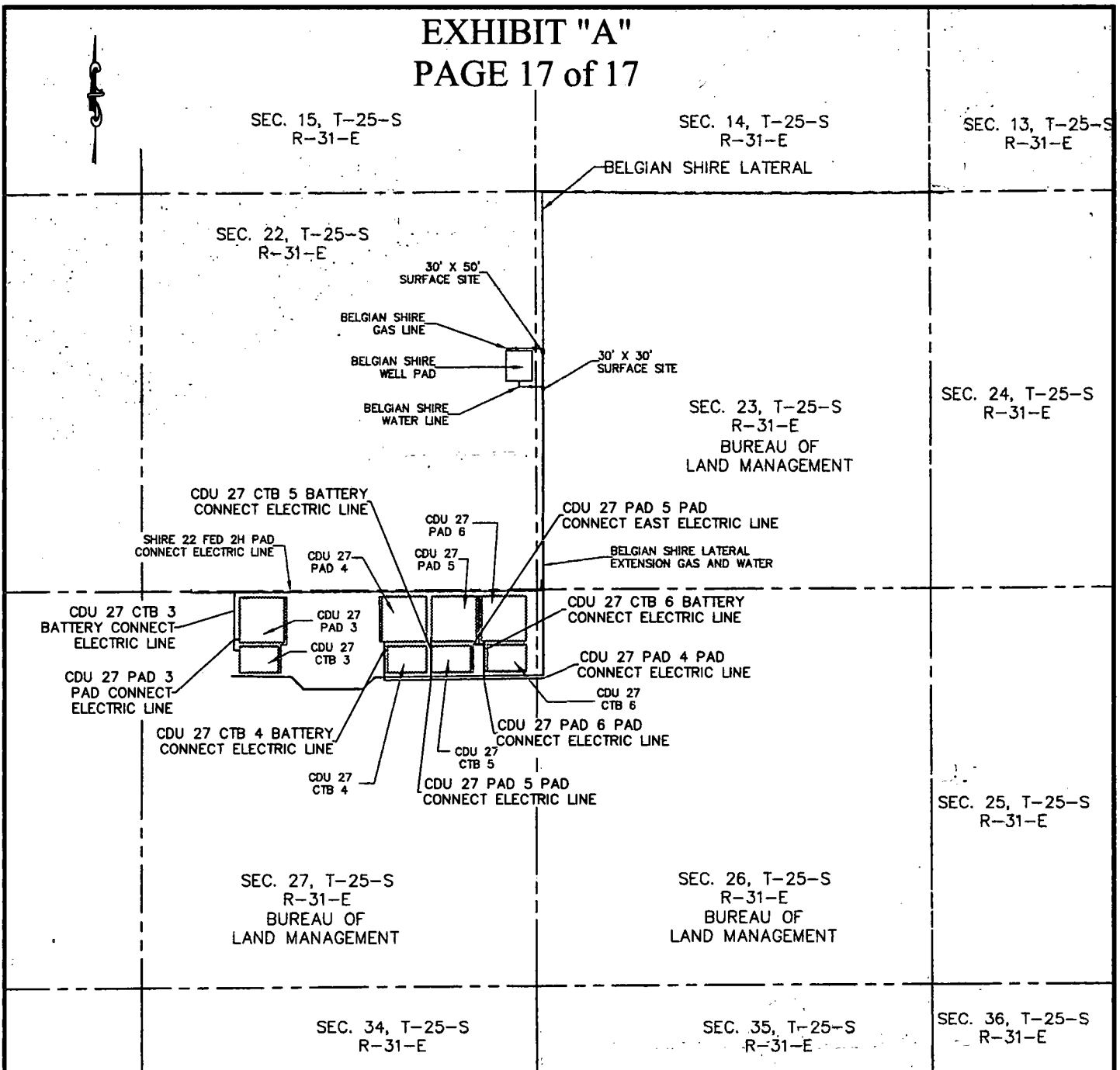
SECTION 27, T25S-R31E, N.M.P.M.
SECTION 26, T25S-R31E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

	WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT-ELECTRIC LINE	CD-112971.AL	EL7794
CDU 27 PAD 3 PAD CONNECT-ELECTRIC LINE	CD-112971.AL	EL7800
CDU 27 PAD 4 PAD CONNECT-ELECTRIC LINE	CD-112971.AL	EL7801
CDU 27 CTB 4 BATTERY CONNECT-ELECTRIC LINE	CD-112971.AL	EL7796
CDU 27 PAD 5 PAD CONNECT EAST-ELECTRIC LINE	CD-112971.AL	EL7814
CDU 27 PAD 5 PAD CONNECT-ELECTRIC LINE	CD-112971.AL	EL7802
CDU 27 CTB 5 BATTERY CONNECT-ELECTRIC LINE	CD-112971.AL	EL7798
CDU 27 PAD 6 PAD CONNECT-ELECTRIC LINE	CD-112971.AL	EL7803
CDU 27 CTB 6 BATTERY CONNECT-ELECTRIC LINE	CD-112971.AL	EL7797
Drawn for:		
 devon		
DEVON ENERGY PRODUCTION COMPANY, L.P.		
Drawn by: WAYNE BEETS Date: 08/10/2016		
PROPOSED 30' EASEMENT ON THE PROPERTY OF BUREAU OF LAND MANAGEMENT		
SCALE: 1" = 2000' REVISIONS: SHEET: 16 OF 17		

HORIZON ROW LLC

EXHIBIT "A"

PAGE 17 of 17



AERIAL MAP

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

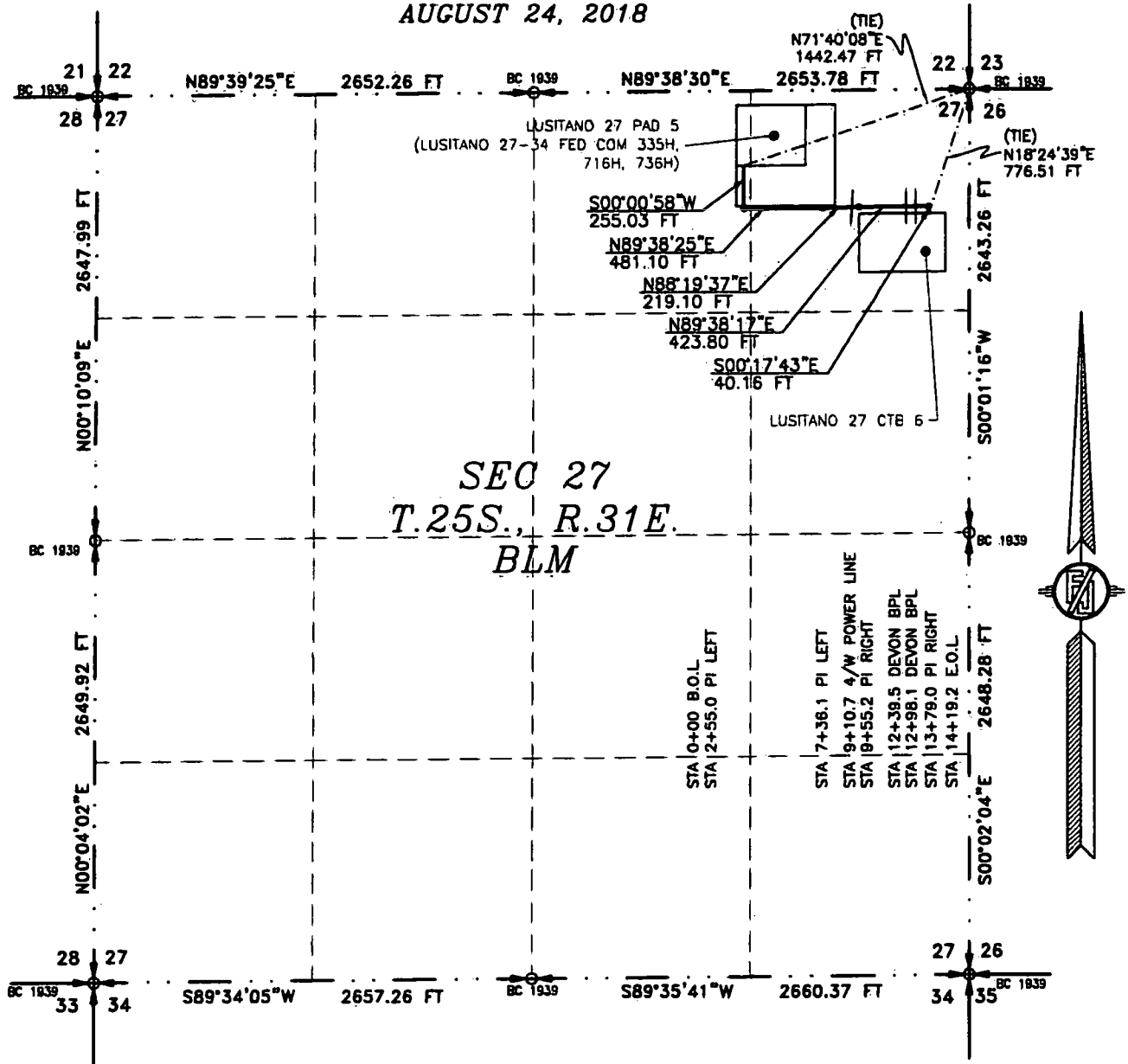
WBS NUMBER:	LINE NUMBER:
CDU 27 CTB 3 BATTERY CONNECT-ELECTRIC LINE	CD-112971.AL EL7794
CDU 27 PAD 3 PAD CONNECT-ELECTRIC LINE	CD-112971.AL EL7800
CDU 27 PAD 4 PAD CONNECT-ELECTRIC LINE	CD-112971.AL EL7801
CDU 27 CTB 4 BATTERY CONNECT-ELECTRIC LINE	CD-112971.AL EL7795
CDU 27 PAD 5 PAD CONNECT EAST-ELECTRIC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

HORIZON ROW LLC

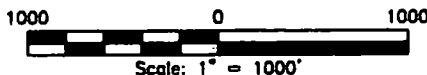
FLOWLINE PLAT

THREE 8" BURIED COMPOSITE FLOWLINES & ONE 8" GAS LIFT LINE FROM THE LUSITANO 27 PAD 5 (LUSITANO 27-34 FED COM 335H, 716H, 736H) TO THE LUSITANO 27 CTB 6

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 24, 2018



SEE NEXT SHEET (2-4) FOR DESCRIPTION



GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT.
- 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE SURVEY.

SHEET: 1-4

MADRON SURVEYING, INC.

SURVEYOR CERTIFICATE

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

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD, NEW MEXICO, THIS 27TH DAY OF AUGUST 2018

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

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

SURVEY NO. 6506

CARLSBAD, NEW MEXICO

FLOWLINE PLAT

THREE 8" BURIED COMPOSITE FLOWLINES & ONE 8" GAS LIFT LINE FROM THE LUSITANO 27 PAD 5
(LUSITANO 27-34 FED COM 335H, 716H, 736H) TO THE LUSITANO 27 CTB 6

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 24, 2018

DESCRIPTION

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

BEGINNING AT A POINT WITHIN THE NW/4 NE/4 OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M., WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N71°40'08"E, A DISTANCE OF 1442.47 FEET;

THENCE S00°00'58"W A DISTANCE OF 255.03 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE N89°38'25"E A DISTANCE OF 481.10 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE N88°19'37"E A DISTANCE OF 219.10 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE N89°38'17"E A DISTANCE OF 423.80 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED;

THENCE S00°17'43"E A DISTANCE OF 40.16 FEET THE TERMINUS OF THIS CENTERLINE SURVEY, WHENCE THE NORTHEAST CORNER OF SAID SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. BEARS N18°24'39"E, A DISTANCE OF 776.51 FEET;

SAID STRIP OF LAND BEING 1419.19 FEET OR 86.01 RODS IN LENGTH, CONTAINING 0.978 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

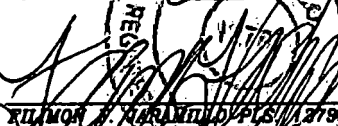
NW/4 NE/4 297.14 L.F. 18.01 RODS 0.205 ACRES

NE/4 NE/4 1122.05 L.F. 68.00 RODS 0.773 ACRES

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 22ND 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: 2-4

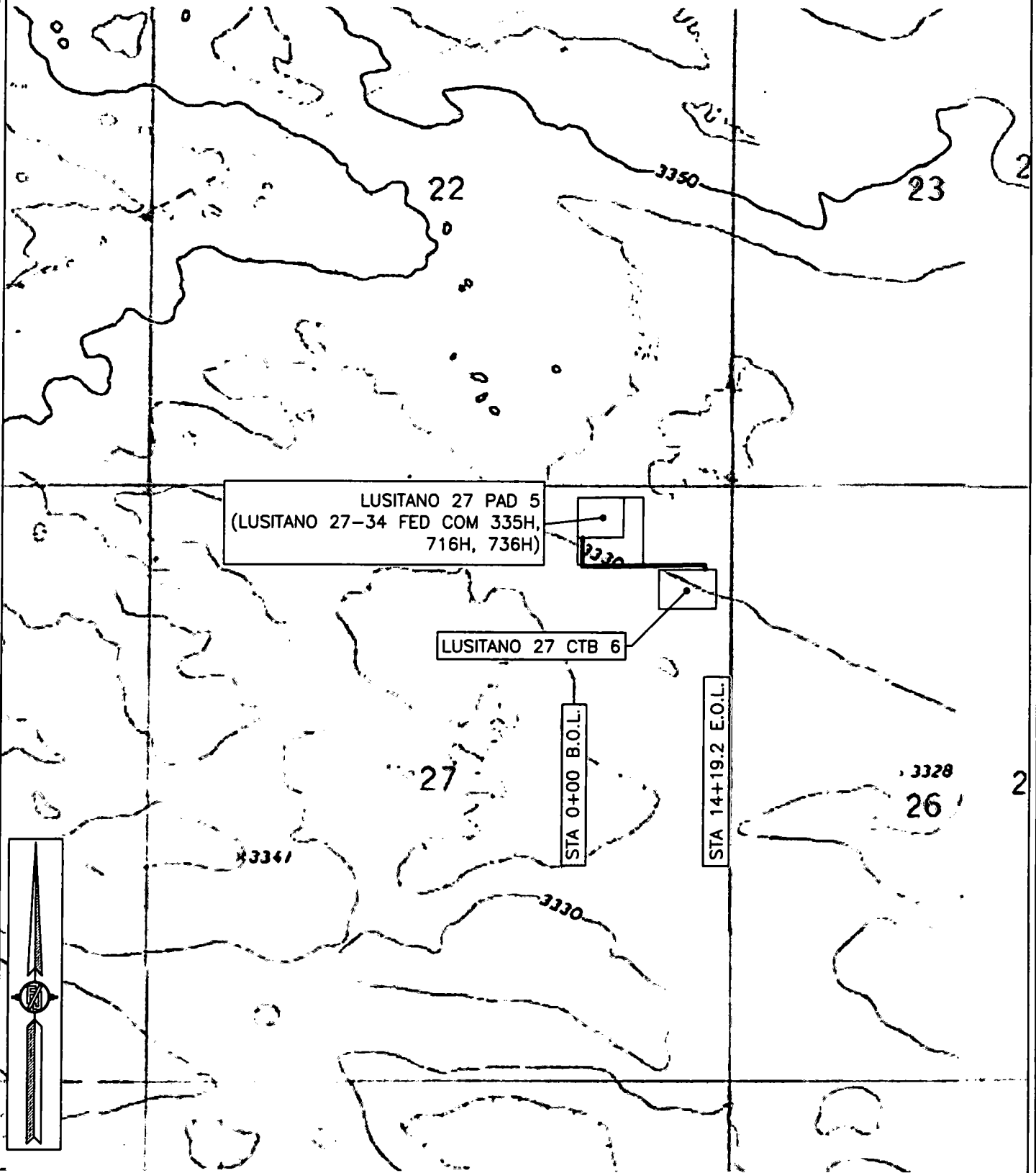
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO
(575) 234-3341

SURVEY NO. 6506

FLOWLINE PLAT

THREE 8" BURIED COMPOSITE FLOWLINES & ONE 8" GAS LIFT LINE FROM THE LUSITANO 27 PAD 5
(LUSITANO 27-34 FED COM 335H, 716H, 736H) TO THE LUSITANO 27 CTB 6

DEVON ENERGY PRODUCTION COMPANY, L.P.
CENTERLINE SURVEY OF A PIPELINE CROSSING
SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
AUGUST 24, 2018



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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

2

LUSITANO 27 PAD 5
(LUSITANO 27-34 FED COM 335H,
716H, 736H)

LUSITANO 27 CTB 6

27

STA 0+00 B.O.L.

STA 14+19.2 E.O.L.





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

01/18/2019

Bond Information

Federal/Indian APD: FED

BLM Bond number: CO1104

BIA Bond number:

Do you have a reclamation bond? NO

Is the reclamation bond a rider under the BLM bond?

Is the reclamation bond BLM or Forest Service?

BLM reclamation bond number:

Forest Service reclamation bond number:

Forest Service reclamation bond attachment:

Reclamation bond number:

Reclamation bond amount:

Reclamation bond rider amount:

Additional reclamation bond information attachment: