Form 3160-3 (June 2015)

UNITED STATES

JAN 1 4 2019

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

DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGENETRICT II-ARTESIA O C.D.

5. Lease Serial No. NMNM125635

APPLICATION FOR PERMIT TO DE	6. If Indian, Allotee or	6. If Indian, Allotee or Tribe Name					
la. Type of work: DRILL REI DRILL Gas Well Oth	ENTER ner	7. If Unit or CA Agree 8. Lease Name and We					
Ic. Type of Completion: Hydraulia Fracturing Sing	gle Zone Multiple Zone	LUSITANO 27-34 FE	$\rangle \sim$				
2. Name of Operator DEVON ENERGY PRODUCTION COMPANY LP	Λ	9. API-Well No.	45634				
	3b. Phone No. (include area code) (800)583-3866	10. Field and Pool, or 1 PURPLE SAGE / WC					
 Location of Well (Report location clearly and in accordance wi At surface NENW / 235 FNL / 1672 FWL / LAT 32.1085. At proposed prod. zone SESW / 20 FSL / 1650 FWL / LAT 	528 / LONG -103.7659126	11. Sec., T. R. M. of B SEC 27 / T25S. / R31					
14. Distance in miles and direction from nearest town or post office	e*	12. County or Parish EDDY	13. State NM				
location to nearest	16. No of acres in lease 17. Spo	acing. Unit dedicated to this	well				
to nearest well drilling completed	7//						
	22. Approximate date work will start* 02/04/2019 24. Attachments	23. Estimated duration 45 days	23. Estimated duration 45 days				
The following, completed in accordance with the requirements of (as applicable) 1. Well plat certified by a registered surveyor. 2. A Drilling Plan. 3. A Surface Use Plan (if the location is on National Forest System SUPO must be filed with the appropriate Forest Service Office):	Onshore Oil and Gas Order No. 1, and the 4. Bond to cover the operat Item 20 above). 5. Operator certification.	tions unless covered by an experimental state of the stat	xisting bond on file (see				
25. Signature (Electronic Submission)	Name (Printed/Typed) Linda Good / Ph: (405)552-6558	1	Date 09/19/2018				
Title Regulatory Compliance Professional							
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-595	l	ate 1/11/2019				
Title Assistant Field Manager Lands & Minerals	Office CARLSBAD						
Application approval does not warrant or certify that the applicant applicant to conduct operations thereon. Conditions of approval, if any, are attached.	holds legal or equitable title to those righ	nts in the subject lease whic	h would entitle the				
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, ma of the United States any false, fictitious or fraudulent statements or			department or agency				

NSP Reguired

pproval Date: 01/11/2019

RW1-16-19.

INSTRUCTIONS

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

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

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

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

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

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

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

NOTICES

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

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

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

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

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

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

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

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

Additional Operator Remarks

Location of Well

1. SHL: NENW / 235 FNL / 1672 FWL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.1085528 / LONG: -103.7659126 (TVD30 feet, MD30 feet)

PPP: NENW / 100 FNL / 1650 FWL / TWSP: 25S / RANGE: 31E / SECTION: 27 / LAT: 32.10828 / LONG: -103.769152 (TVD: 11625 feet, MD: 11934 feet)

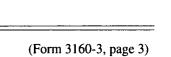
BHL: SESW / 20 FSL / 1650 FWL / TWSP: 25S / RANGE: 31E / SECTION: 34 / LAT: 32.0794914 / LONG: -103.7692786 (TVD: 11962 feet, MD: 22241 feet)

BLM Point of Contact

Name: Tenille Ortiz

Title: Legal Instruments Examiner

Phone: 5752342224 Email: tortiz@blm.gov



Approval Date: 01/11/2019

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.



(Form 3160-3, page 4)

PECOS DISTRICT DRILLING OPERATIONS CONDITIONS OF APPROVAL

OPERATOR'S NAME: DEVON ENERGY PRODUCTION COMPANY LP

LEASE NO.: | NMNM125635

WELL NAME & NO.: LUSITANO 27-34 FED COM 733H

SURFACE HOLE FOOTAGE: 235'/N & 1672'/W BOTTOM HOLE FOOTAGE 20'/S & 1640/W

LOCATION: | SECTION 27, T25S, R31E, NMPM

COUNTY: | EDDY

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

A. Hydrogen Sulfide

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

B. CASING

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

- 2. The 7-5/8" intermediate casing shall be set at approximately 12293' and cemented to surface.
 - a. If cement does not circulate to surface, see B.1.a, b, c & d.
 - b. Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.
 - i. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with the second stage.
 - ii. Second stage via DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
- 3. The minimum required fill of cement behind the 5-1/2" production casing is:
 - a. Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Alternate Intermediate Casing Design:

- 4. The 13-3/8" surface casing shall be set at approximately 928' (a minimum of 25' into the Rustler Anhydrite and above the salt) and cemented to surface.
 - a. If cement does not circulate to surface, see B.1.a, b, c & d.
- 5. The 8-5/8" intermediate casing shall be set at approximately 12293' and cemented to surface.
 - a. If cement does not circulate to surface, see B.1.a, b, c & d.
 - b. Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.
 - i. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with the second stage.
 - ii. Second stage via DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
- 6. The minimum required fill of cement behind the 5-1/2" production casing is:
 - a. Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

- 1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
- 2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
- 3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the intermediate casing shoe shall be 10,000 (10M) psi. Variance approved to use a 5M annular. The annular must be tested to full working pressure (5000 psi).
- 4. Variance approved to run intermediate casing which does not meet BLM standards for collapse rating. **Operator will keep pipe full while running intermediate casing.**

DR 1/10/2019

GENERAL REQUIREMENTS

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

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

A. CASING

- 1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
- 2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.
- 3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.
- 4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
- 5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
- 6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
- 7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a

larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

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

B. PRESSURE CONTROL

- 1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
- 2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
- 3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
- 4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
- 5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done.

The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
- c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.
- g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

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

Page 7 of 8

D. WASTE MATERIAL AND FLUIDS

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

Page 8 of 8

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 733H

SURFACE HOLE FOOTAGE: 235'/N & 1672'/W BOTTOM HOLE FOOTAGE 20'/S & 1650'/W

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

Page 1 of 20

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.

Page 2 of 20

V. SPECIAL REQUIREMENT(S)

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

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

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

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

Temporary Fence Crossing Requirement

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

Cattle Guard Requirement

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

Livestock Watering Requirement

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

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

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

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

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

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

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

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

Construction Mitigation

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

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

Drilling Mitigation

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

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

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

Production Mitigation

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

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

Residual and Cumulative Mitigation

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

Plugging and Abandonment Mitigation

<u>Abandonment Cementing</u>: 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.

Page 5 of 20

Approval Date: 01/11/2019

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)

Page 7 of 20

Exclosure Fencing

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

G. ON LEASE ACCESS ROADS

Road Width

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

Surfacing

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

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

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

Crowning

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

Ditching

Ditching shall be required on both sides of the road.

Turnouts

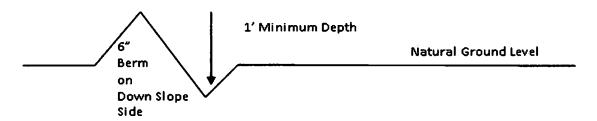
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

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

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

Cross Section of a Typical Lead-off Ditch



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

Formula for Spacing Interval of Lead-off Ditches

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

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

Cattle guards

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

Fence Requirement

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

Public Access

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

Page 9 of 20

Construction Steps

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

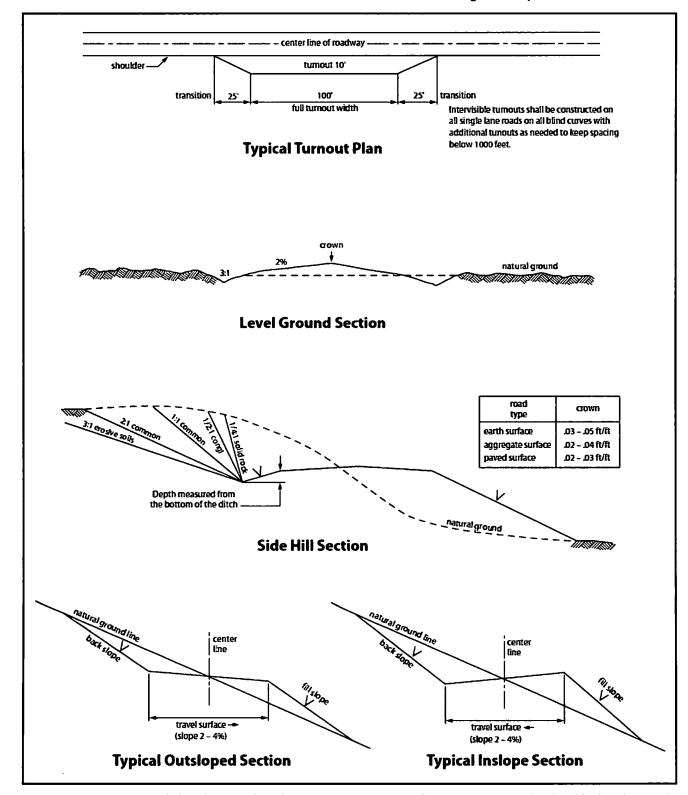


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

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

Page 11 of 20

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, dispose pollutant, wherever found, shall be the responsibilit of holder to control, dispose of, or clean up such dis repair all damages resulting therefrom, on the Feder such measures as he deems necessary to control and including where appropriate, the aquatic environme expense of the holder. Such action by the Authorizaresponsibility as provided herein.	y of holder, reg charge on or a al lands, the A clean up the d nt and fish and	gardless of fault. Upon failure ffecting Federal lands, or to uthorized Officer may take ischarge and restore the area, wildlife habitats, at the full
5. All construction and maintenance activity will be	e confined to th	ne authorized right-of-way.
The pipeline will be buried with a minimum cov pipe and ground level.	er of <u>36</u>	inches between the top of the

- 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.

Page 13 of 20

- 10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.
- 11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.
- 12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

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

- 13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" **Shale Green**, Munsell Soil Color No. 5Y 4/2.
- 14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.
- 15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.
- 16. Any cultural and/or paleontological resources (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the Authorized Officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

- 17. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.
- 18. <u>Escape Ramps</u> 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
- 4. There will be no clearing or blading of the right-of-way unless otherwise agreed to inwriting 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

Page 18 of 20

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.

Page 19 of 20

Approval Date: 01/11/2019

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 <u>no</u> primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed shall be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed shall be either certified or registered seed. The seed container shall be tagged in accordance with State law(s) and available for inspection by the Authorized Officer.

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

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

Species	<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

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

NAME: Linda Good Signed on: 09/19/2018

Title: Regulatory Compliance Professional

Street Address: 333 West Sheridan Avenue

City: Oklahoma City State: OK Zip: 73102

Phone: (405)552-6558

Email address: Linda.Good@dvn.com

Field Representative

Representative Name: Ray Vaz

Street Address: 6488 Seven Rivers Hwy

City: Artesia State: NM Zip: 88210

Phone: (575)748-1871

Email address: ray.vaz@dvn.com



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



APD ID: 10400033922 Submission Date: 09/19/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 733H

Well Type: OIL WELL

Well Work Type: Drill

reflects the most recent changes

lighlighted data

Show Final Text

Section 1 - General

APD ID: 10400033922 Tie to previous NOS?

Submission Date: 09/19/2018

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

Operator PO Box:

Zip: 73102

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: 733H

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: 733H

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: 3

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: 1750 FT Distance to lease line: 235 FT

Reservoir well spacing assigned acres Measurement: 320 Acres

Well plat: Lusitano_27_34_Fed_Com_733H_C_102_signed_20180919052547.pdf

Lusitano_27_34_Fed_Com_733H_Additional_points_required_20180919052606.pdf

Well work start Date: 02/04/2019 Duration: 45 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83 Vertical Datum: NAVD88

Survey number: 6430

	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	167 2	FWL	258	31E	27	Aliquot NENW	32.10855 28	- 103.7659 126	EDD Y	NEW MEXI CO	NEW MEXI CO	F		333 5	0	0
KOP Leg #1	50	FNL	165 0	FWL	25\$	31E	27	Aliquot NENW	32.10641	- 103.7691 52	EDD Y	NEW MEXI CO	NEW MEXI CO	F	NMNM 125635	- 805 6	113 93	113 91
PPP Leg #1	100	FNL	165 0	FWL	258	31E	27	Aliquot NENW	32.10828	- 103.7691 52	EDD Y		NEW MEXI CO	F	NMNM 125635	- 829 0	119 34	116 25

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
EXIT Leg #1	20	FSL	165 0	FWL	258	31E	34	Aliquot SESW	32.07949 14	- 103.7692 786	EDD Y	MEXI	NEW MEXI CO	F	NMLC0 061672 A	l .	222 41	119 64
BHL Leg #1	20	FSL	165 0	FWL	25S	31E	34	Aliquot SESW	32.07949 14	- 103.7692 786	EDD Y	MEXI	NEW MEXI CO	F	NMLC0 061672 A	l .		119 64



SITEMAP

NOTE: LATITUDE AND LONGITUDE COORDINATES ARE SHOWN USING THE NORTH AMERICAN DATUM OF 1983 (NAD83) LISTED NEW MEXICO STATE PLANE EAST COORDINATES ARE CRID (NAD83). BASIS OF BEARING AND DISTANCES, USED ARE NEW MEXICO STATE PLANE EAST COORDINATES MODIFIED TO THE SURFACE. VERTICAL DATUM NAVOR8.

- LUSITANO 27-22 FED COM 232H - LUSITANO 27-34 FED COM 7.33H В - LUSITANO 27-34 FED COM 622H

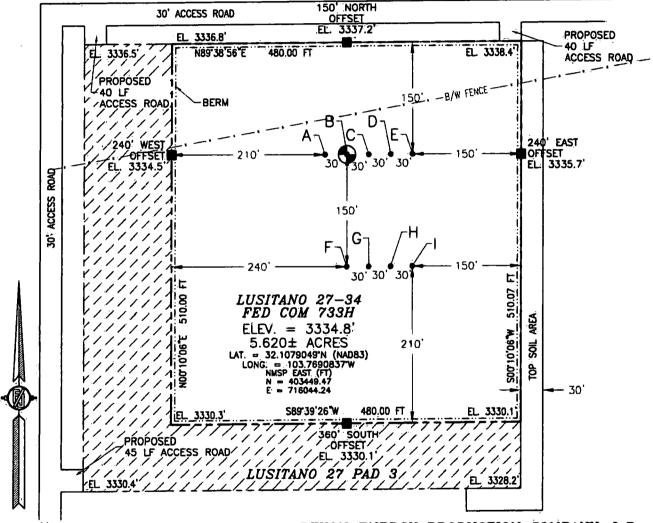
- LUSITANO 27-34 FED COM 233H - LUSITANO 27-34 FED COM 533H H - LUSITANO 27-34 FED COM 523H

D - LUSITANO 27-34 FED COM 333H - LUSITANO 27-34 FED COM 713H

I - LUSITANO 27-34 FED COM 534H

SEC. 22 SEC. 27

- SURVEYED ELEC. UNE- -- -- --



120 SCALE 1" = 120' DIRECTIONS TO LOCATION

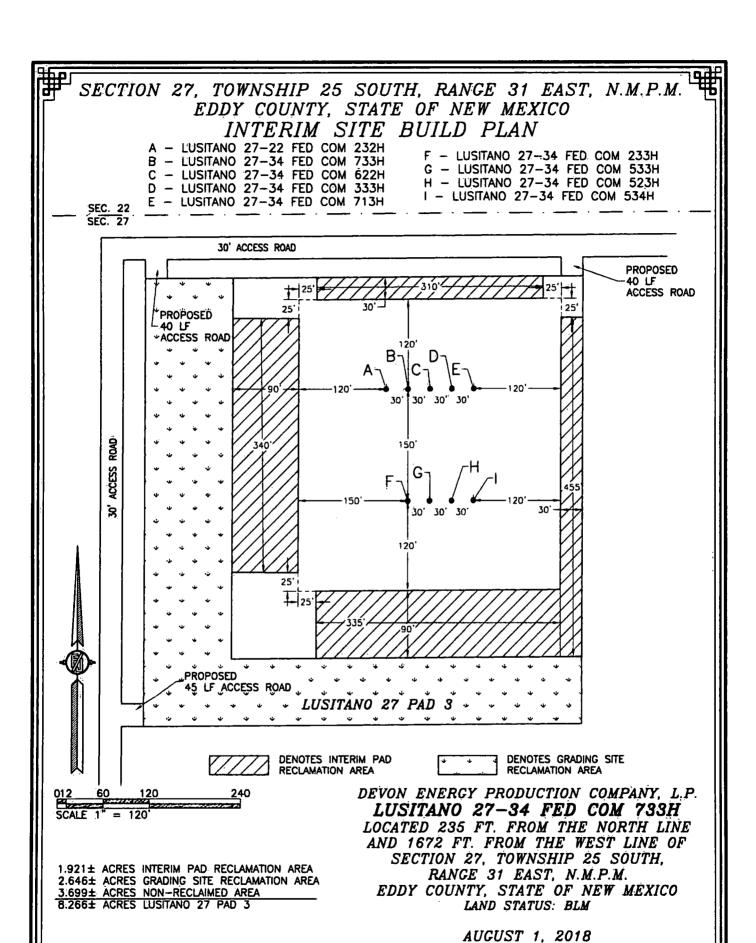
FROM STATE HIGHWAY 128 AND CR 1 (ORLA HIGHWAY) GO SOUTH ON CR 1 6.5 MILES TO MONSANTO ROAD, TURN RIGHT GO WEST 2.1 MILES, TURN RIGHT GO NORTH 0.8 OF A MILE, TURN LEFT GO WEST 2.1 MILES, BEND LEFT GO SOUTHWEST 1.3 MILES, TURN LEFT GO SOUTH 1.0 MILE TO BEGIN ROAD LIBERT OF THE SOUTH AND THE SOUTH SURVEY, GO WEST 3437' (0.65 MILE), THEN SOUTH 40' TO THE NORTHEAST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P. LUSITANO 27-34 FED COM 733H LOCATED 235 FT. FROM THE NORTH LINE AND 1672 FT. FROM THE WEST LINE OF SECTION 27, TOWNSHIP 25 SOUTH, RANCE 31 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO LAND STATUS: BLM

AUGUST 1, 2018

SURVEY NO. 6430

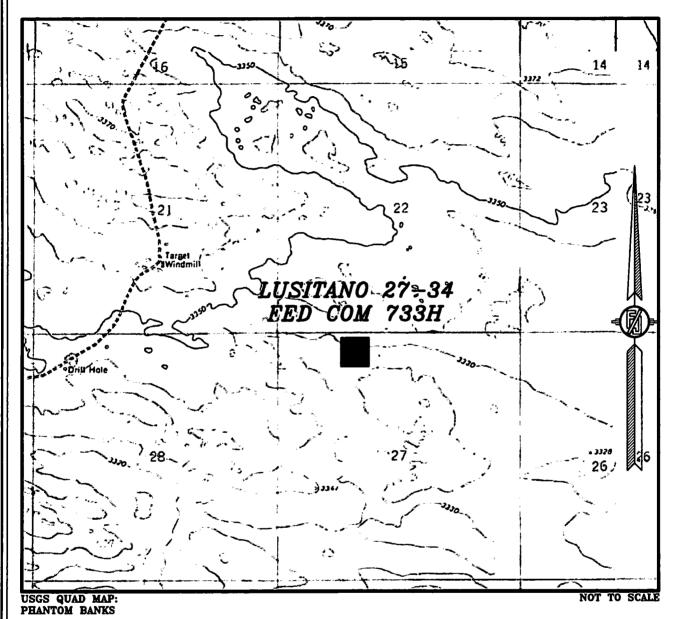
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO



SURVEY NO. 6430 RLSBAD. NEW MEXICO

MADRON SURVEYING, INC. 301 SOUTH CARLSBAD, NEW MEXICO

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



DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 733H

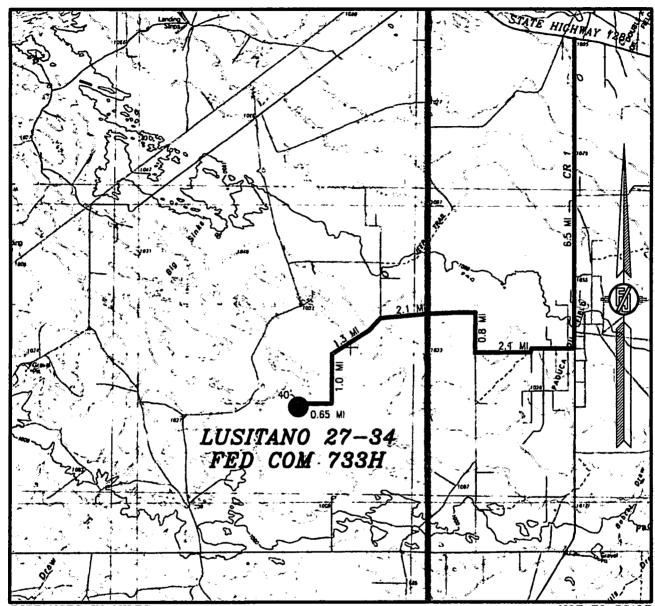
LOCATED 235 FT. FROM THE NORTH LINE
AND 1672 FT. FROM THE WEST LINE OF
SECTION 27, TOWNSHIP 25 SOUTH,
RANGE 31 EAST, N.M.P.M.
EDDY COUNTY, STATE OF NEW MEXICO
LAND STATUS: BLM

AUGUST 1, 2018

SURVEY NO. 6430

MADRON SURVEYING, INC. 501 SOUTH CANAL CARLSBAD, NEW MEXICO

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



DISTANCES IN MILES

NOT TO SCALE

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 3437' (0.65 MILE), THEN SOUTH 40' TO
THE NORTHEAST PAD CORNER FOR THIS LOCATION.

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 733H

LOCATED 235 FT. FROM THE NORTH LINE

AND 1672 FT. FROM THE WEST LINE OF

SECTION 27, TOWNSHIP 25 SOUTH,

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

EDDY COUNTY, STATE OF NEW MEXICO

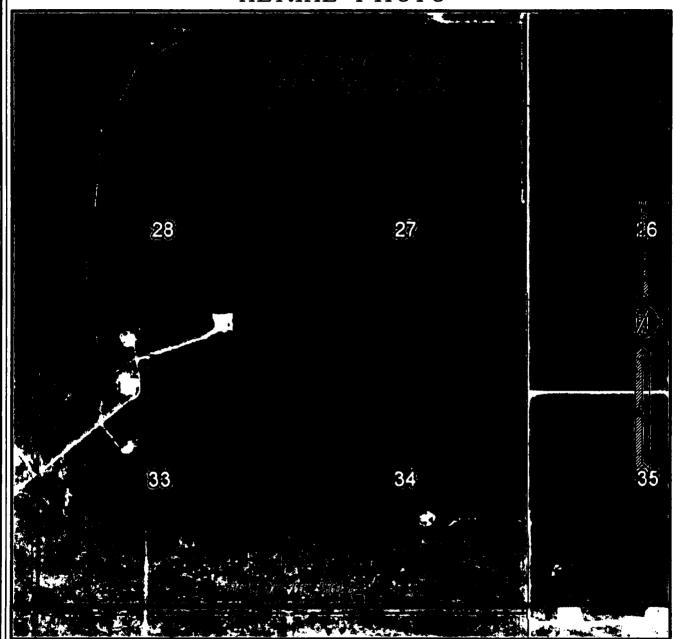
LAND STATUS: BLM

AUGUST 1, 2018

SURVEY NO. 6430

MADRON SURVEYING, INC. 301 SOUTH 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 733H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1672 FT. FROM THE WEST LINE OF

SECTION 27, TOWNSHIP 25 SOUTH,

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

EDDY COUNTY, STATE OF NEW MEXICO

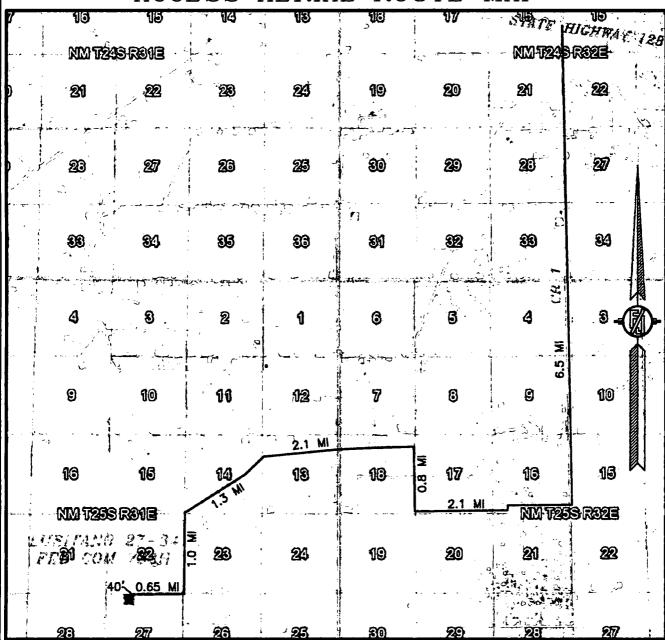
LAND STATUS: BLM

AUGUST 1, 2018

SURVEY NO. 6430 JEW MEXICO -

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





NOT TO SCALE ABRIAL PHOTO: GOOGLE EARTH NOVEMBER 2017 DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 733H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1672 FT. FROM THE WEST LINE OF

SECTION 27, TOWNSHIP 25 SOUTH,

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

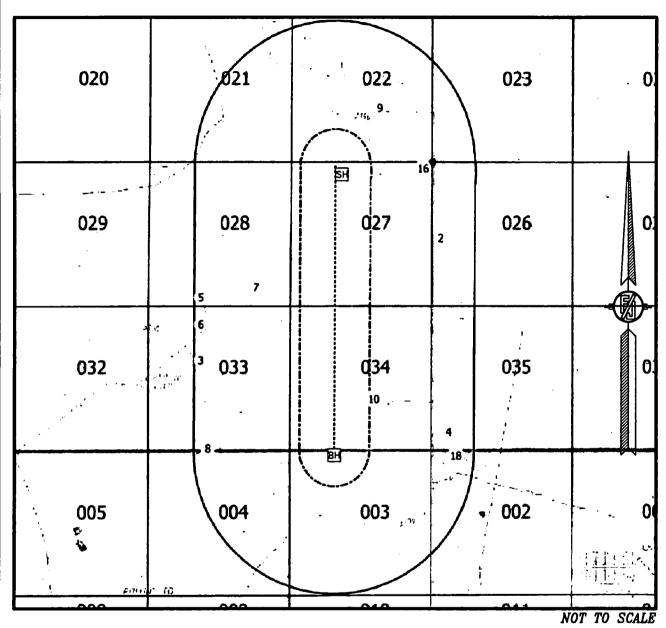
EDDY COUNTY, STATE OF NEW MEXICO LAND STATUS: BLM

AUGUST 1, 2018

SURVEY NO. 6430

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





WELL DATA FROM NMOCD GIS - 8/1/18

SH SURFACE LOCATION

BH BOTTOM OF HOLE

(XX) WELLS WITHIN 1 MILE

DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 733H

LOCATED 235 FT. FROM THE NORTH LINE

AND 1672 FT. FROM THE WEST LINE OF

SECTION 27, TOWNSHIP 25 SOUTH,

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

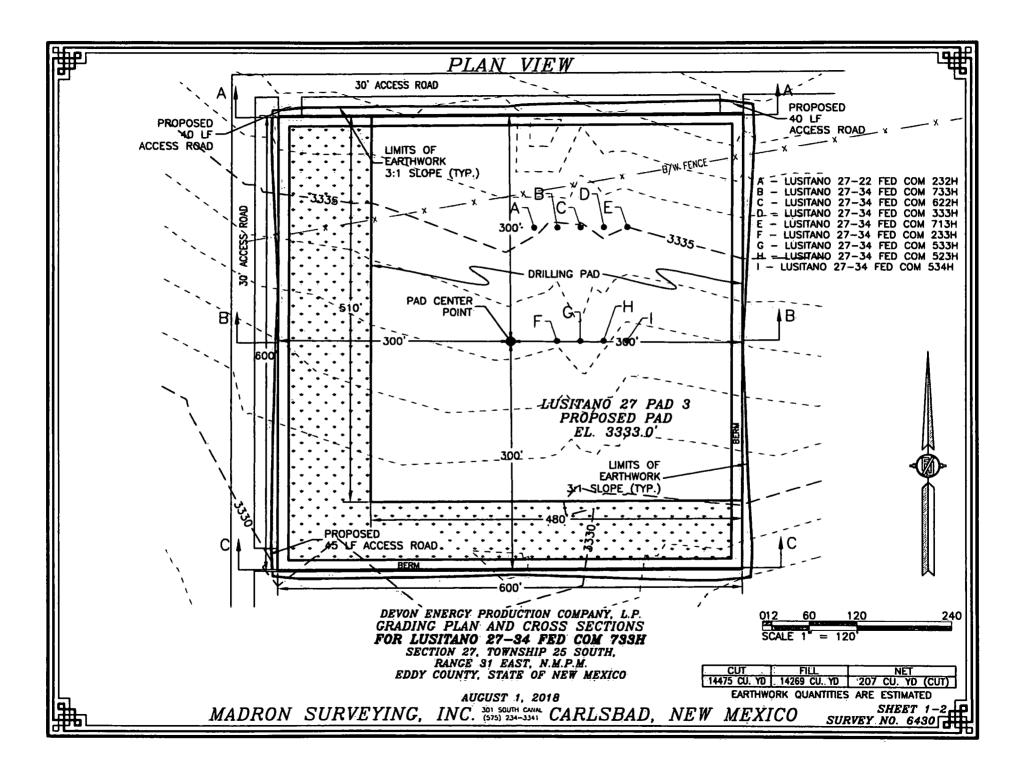
EDDY COUNTY, STATE OF NEW MEXICO

LAND STATUS: BLM

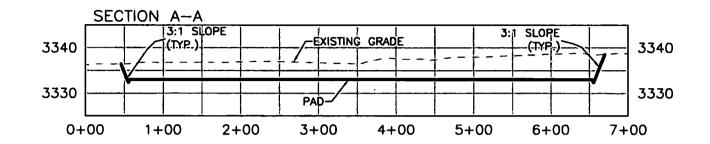
AUGUST 1, 2018

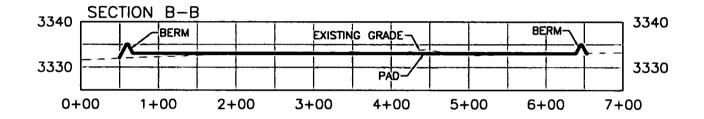
SURVEY NO. 6430

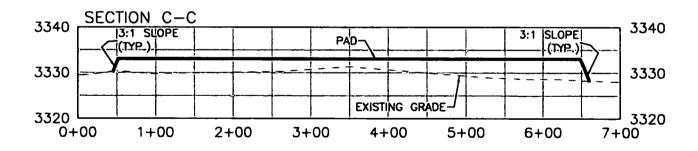
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO



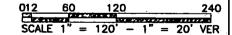
CROSS SECTIONS







DEVON ENERGY PRODUCTION COMPANY, L.P. GRADING PLAN AND CROSS SECTIONS FOR LUSITANO 27-34 FED COM 733H SECTION 27, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO



CUT FILL NET

14475 CU. YD 14269 CU. YD 207 CU. YD (CUT)

EARTHWORK QUANTITIES ARE ESTIMATED

AUGUST 1, 2018

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

SHEET 2-2.
SURVEY NO. 6430

ACCESS ROAD PLAT ACCESS ROAD TO THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H) 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 1, 2018 N21'37'35"W 48.29 FT 23 22 N89'49'25"E N89"49"25"E 2658.24 FT 2658.24 FT BC 1939 26 25 (TIE) 45.00 FT EXISTING 20' CALICHE LEASE RD. 2643 SEC 26 T.25S. + R.31E BC 1939 BC 1939 36^{BC} 1939 S89'47'30"W 2667.72 FT S89"39'26"W 2666.80 FT 35 SEE NEXT SHEET (2-4) FOR DESCRIPTION SURVEYOR CERTIFICATE **=** 1000 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 **CENERAL NOTES** 1.) THE INTENT OF THIS ROUTE SURVEY IS TO SURVEYING IN THE STATE OF NEW MEXICO.

IN WITHERS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD. ACQUIRE AN EASEMENT. 2.) BASIS OF BEARING AND DISTANCE IS NMSP EAST (NAD83) MODIFIED TO SURFACE MADRON SURVEYING, INC. COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE SYSTEMS USED IN THE CARLSBAD, NEW MEXICO 88220 SURVEY. Phone (575) 234-3341 SURVEY NO. 6430 SHEET: 1-4 MADRON SURVEYING *NEW MEXICO*

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H)

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 1, 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:

SOUTHWEST 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 NOO'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

GENERAL NOTES

- 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE ÀN 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 SURVÉY.

SHEET: 2-4

MADRON SURVEYIN

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.

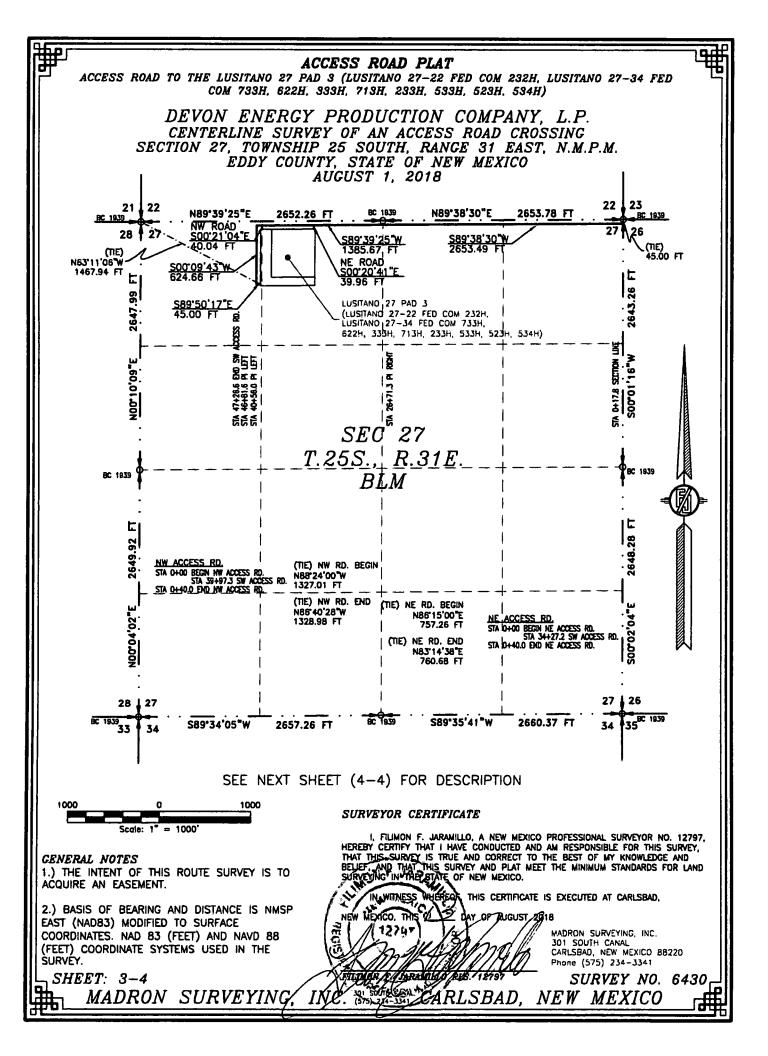
IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD.

WIENESS MEXICO AUGUST 2016

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

SURVEY NO. 6430

NEW MEXICO



ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H. 622H. 333H. 713H. 233H. 533H. 523H. 534H)

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 1. 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:

SOUTHWEST 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 NOO'01'16"E, A DISTANCE OF 45.00

THENCE SB9'38'30'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

NORTHEAST 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 NB6'15'00"E, A DISTANCE OF

THENCE SOU'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

NORTHWEST 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 NBB'24'00'W, A DISTANCE OF

THENCE SOU"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

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

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797, HEREBY CERTIFY THAT L HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY, THAT THIS SURVEY 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,

MEXICO, TRISCA DAY OF AUGUST 2018 VEW. MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220 Phone (575) 234-3341

SURVEY NO. 6430

CARLSBAD. *NEW MEXICO*



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



APD ID: 10400033922 Submission Date: 09/19/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

Well Type: OIL WELL Well Work Type: Drill

ar Athara en Chaile Bhara tha ceann

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name UNKNOWN	Elevation 3338	True Vertical Depth 0	Measured Depth 0	Lithologies ALLUVIUM	Mineral Resources NONE	Producing Formation No
2	RUSTLER	2498	840	840	SALT	NONE	No
3	BASE OF SALT	-872	4210	4210	SALT	NONE	No
4	DELAWARE	-927	4265	4265	SANDSTONE	NATURAL GAS,OIL	No
5	BONE SPRING	-4862	8200	8200	LIMESTONE,SANDSTO NE	NATURAL GAS,OIL	No
6	WOLFCAMP	-8302	11640	11640	SANDSTONE	NATURAL GAS,OIL	Yes

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M Rating Depth: 11964

i de la companya de A societa de la companya de la Componya de la companya de la companya de la companya de la companya de la comp

Requesting Variance? YES

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

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

Choke Diagram Attachment:

Lusitano_27_34_Fed_Com_733H_WLFMP_10M_BOPE_Double_Ram_and_CLS_Schematic_Remote_Kill_Line_201812100 95803.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_733H_WLFMP_10M_BOPE_Double_Ram_and_CLS_Schematic_Remote_Kill_Line_201812100 95814.pdf

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

Pressure Rating (PSI): 5M

Rating Depth: 11964

and de strong a gett film been nave dan beske beske beske beske nave et beske britiske til et bet beske beske miliet para bett beske nav grap program traktion til kan av et da de da etsember med kan fytiskletet takkup bed a kress Therrapien endenja jakens, hellin av skommi myogradisk, allikh nammingem mikelm talk movillike inne homsel emellændisk.

Requesting Variance? YES

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

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

Choke Diagram Attachment:

Lusitano_27_34_Fed_Com_733H_5M_BOPE_CK_20180919053231.pdf

BOP Diagram Attachment:

Lusitano_27_34_Fed_Com_733H_5M_BOPE_CK_20180919053247.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	14.7 5	10.75	NEW	API	2	0	928	0	928	-6993	-7781	928	J-55	40.5	STC	1.12 5	1.25	BUOY	1.6	BUOY	1.6
	INTERMED IATE	9.87 5	7.625	NEW	API	N	0	11393	0	11391	-6993		11393	P- 110		OTHER - BTC	1.12 5	1.25	BUOY	1.6	BUOY	1.6
1	INTERMED IATE	8.75	7.625	NEW	API	N	11393	12293	11391	11964			900	P- 110		OTHER - FLUSHMAX		1.25	BUOY	1.6	BUOY	1.6
1	PRODUCTI ON	6.75	5.5	NEW	API	N	0	22241	0	11964			22241	P- 110			1.12 5	1.25	BUOY	1.6	BUOY	1.6

Casing Attachments

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP Well Name: LUSITANO 27-34 FED COM Well Number: 733H **Casing Attachments** Casing ID: 1 String Type: SURFACE **Inspection Document: Spec Document: Tapered String Spec:** Casing Design Assumptions and Worksheet(s): Lusitano_27_34_Fed_Com_733H_Surf_Csg_Ass_20180919053453.pdf Casing ID: 2 String Type: INTERMEDIATE **Inspection Document: Spec Document: Tapered String Spec:** Casing Design Assumptions and Worksheet(s): Lusitano_27_34_Fed_Com_733H_Int_Csg_Ass_20180919053641.pdf String Type: INTERMEDIATE Casing ID: 3 **Inspection Document: Spec Document: Tapered String Spec:**

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_733H_Int_Csg_Ass_20181210084941.pdf

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

Casing Attachments

Casing ID: 4

String Type: PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Lusitano_27_34_Fed_Com_733H_Prod_Csg_Ass_20180919053741.pdf

Section 4 - Cement

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

SURFACE	Lead	1	· 0	928	599	1.33	13.2	797	50	С	Class C + adds
			٠.								

INTERMEDIATE	Lead	0	8293	1223	1.85	9	2263	30	TUNED	TUNED LIGHT
INTERMEDIATE	Tail	8293	1229 3	747	1.33	13.2	993	30	1	Poz (Fly Ash) + 0.5% bwoc HALAD-344 + 0.4% bwoc CFR-3 + 0.2% BWOC HR-601 + 2% bwoc Bentonite
PRODUCTION	Lead	1179 3	2224 1	661	1.33	13.2	965	10	Н	0.125 lbs/sack Poly-E- Flake

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

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)	ЬН	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
928	1229 3	OTHER: SATURATED BRINE	9	10		-					:
0	928	WATER-BASED MUD	8.5	9							
1229 3	2224 1	OIL-BASED MUD	10	10.5							

Section 6 - Test, Logging, Coring

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

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

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

CBL,DS,GR,MUDLOG

Coring operation description for the well:

N/A

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6532

Anticipated Surface Pressure: 3899.92

Anticipated Bottom Hole Temperature(F): 179

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

Describe:

Contingency Plans geoharzards description:

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Lusitano_27_34_Fed_Com_733H_H2S_Plan_20180911043445.pdf

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Lusitano_27_34_Fed_Com_733H_AC_Rpt_20180919054414.pdf Lusitano_27_34_Fed_Com_733H_Dir_Plan_20180919054553.pdf Lusitano_27_34_Fed_Com_733H_Plot_20180919054554.pdf

Other proposed operations facets description:



Other proposed operations facets attachment:

Lusitano_27_34_Fed_Com_733H_Clsd_Loop_20180919054758.pdf

Lusitano_27_34_Fed_Com_733H_7.625_29.70_P110_Flushmax_20180919054840.pdf

Lusitano_27_34_Fed_Com_733H_GasCapturePlan_20180919054856.pdf

Lusitano_27_34_Fed_Com_733H_8.625_32__P110EC_VAM_FJL_NA_7.875_SD_20181206125056.PDF

Lusitano_27_34_Fed_Com_733H_WLFMP_Wellhead_Schematic_10.75x7.625x5.5_20181210085944.pdf

Lusitano_27_34_Fed_Com_733H_WLFMP_Wellhead_Schematic_Contingency_13.375x8.625x5.5_20181210085945.pdf

Lusitano_27_34_Fed_Com_733H_5.5_x_20_P110_EC_VAMSG_20181212063548.pdf

Lusitano_27_34_Fed_Com_733H_Multibowl_Verb_5M_20181212070305.pdf

Lusitano_27_34_Fed_Com_733H_WLFMP_MB_Verb_5M_Alt_Design_20181212070305.pdf

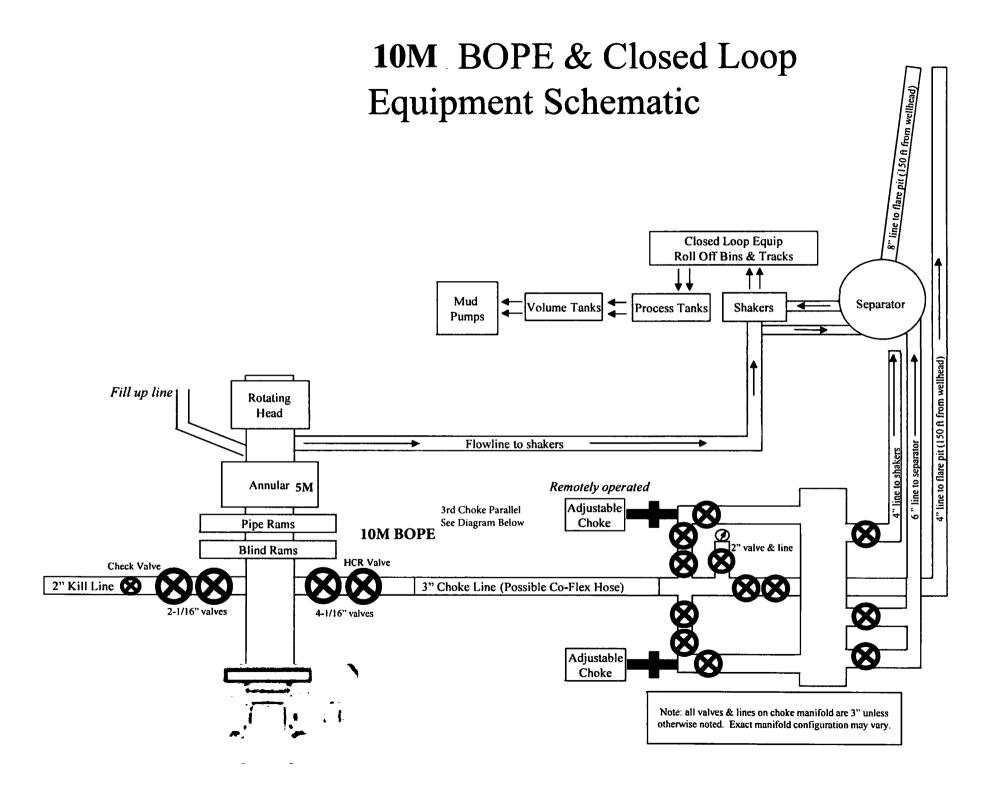
Lusitano_27_34_Fed_Com_733H_Drilling_Plan_rev2_20181212073825.pdf

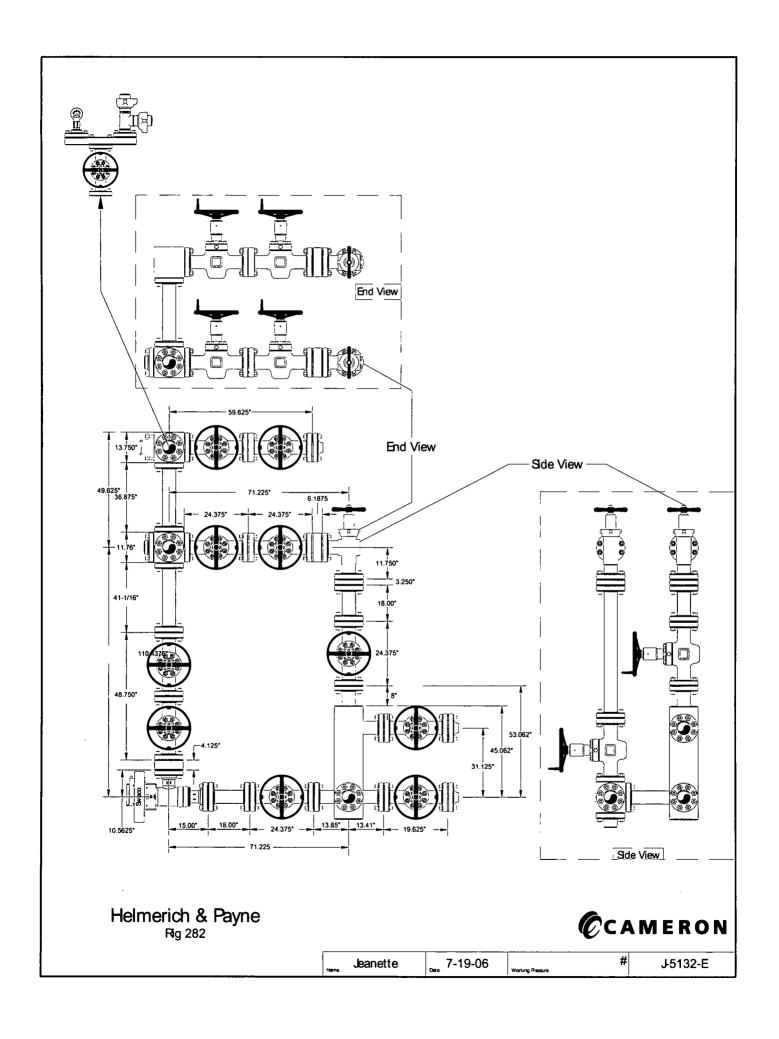
Well Name: LUSITANO 27-34 FED COM Well Number: 733H

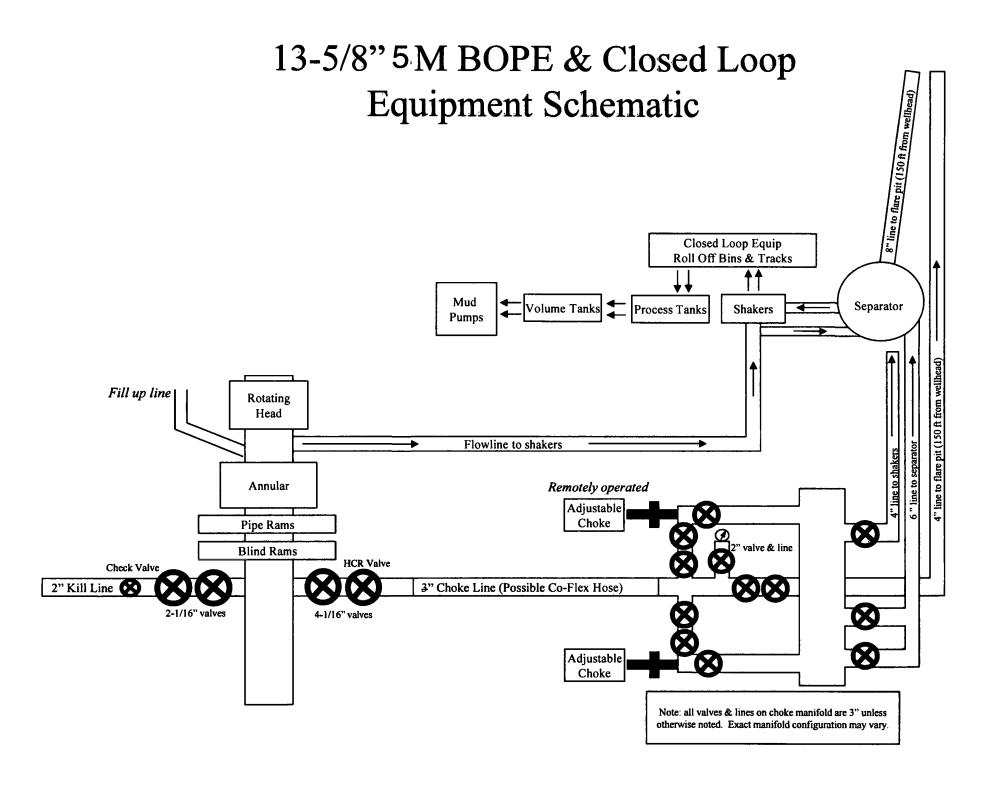
Lusitano_27_34_Fed_Com_733H_Annular_Preventer_Summary_20181212130935.pdf

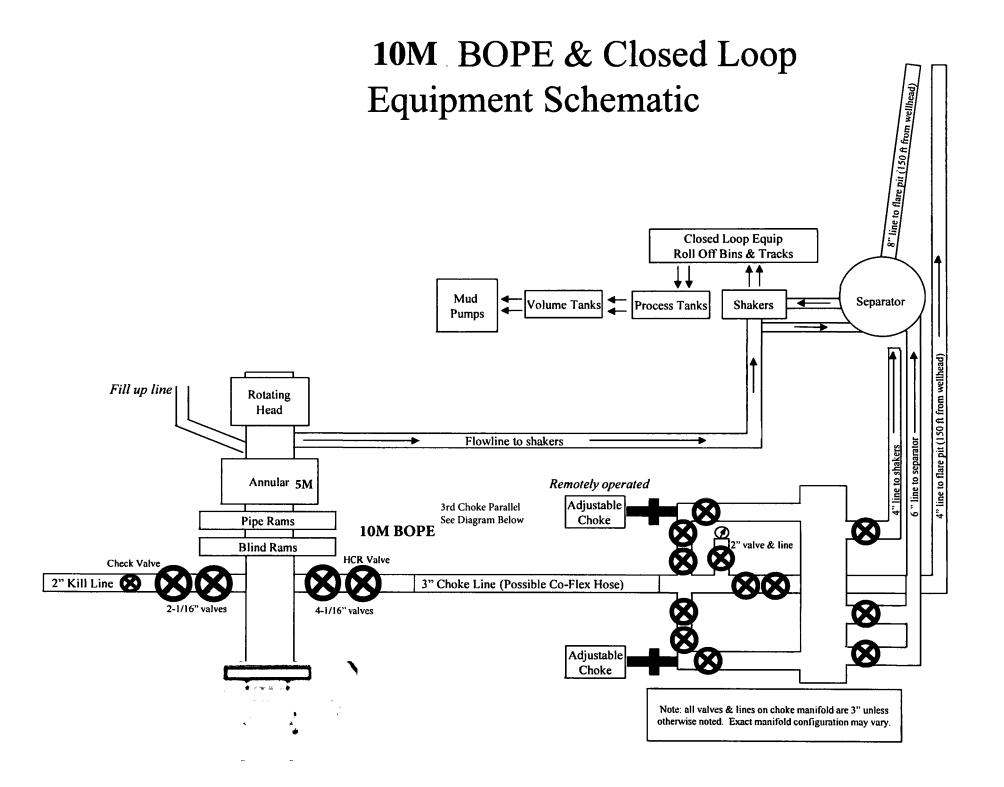
Other Variance attachment:

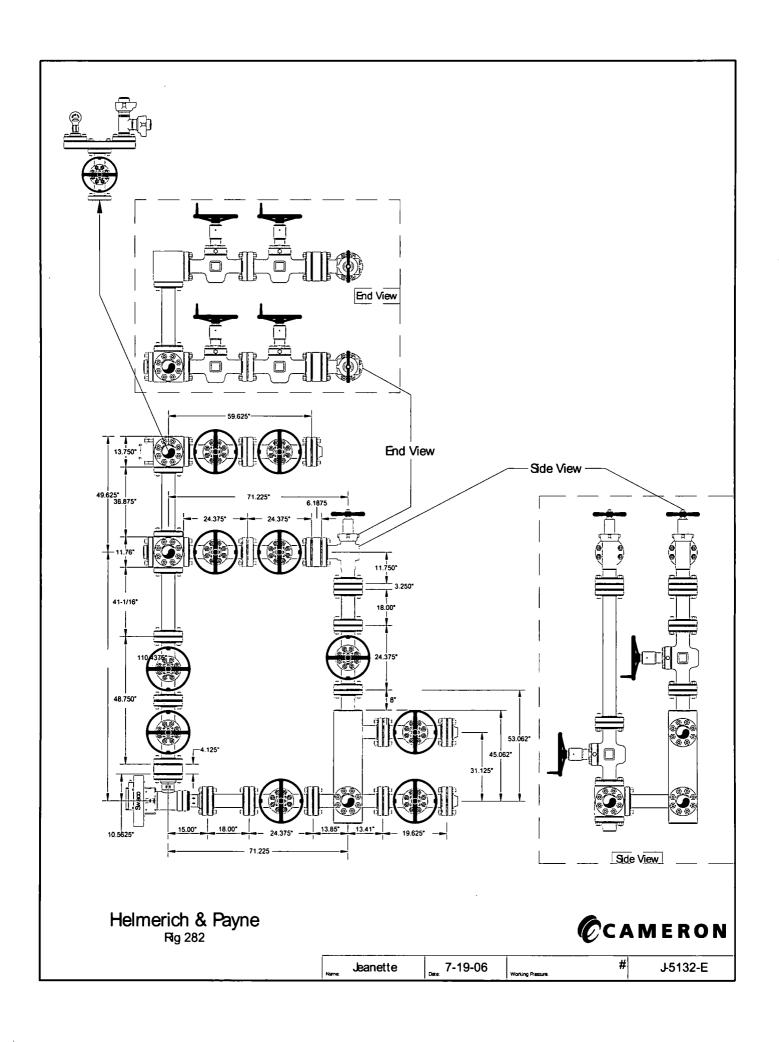
 $Lusitano_27_34_Fed_Com_733H_Co_flex_20180910090134.pdf$

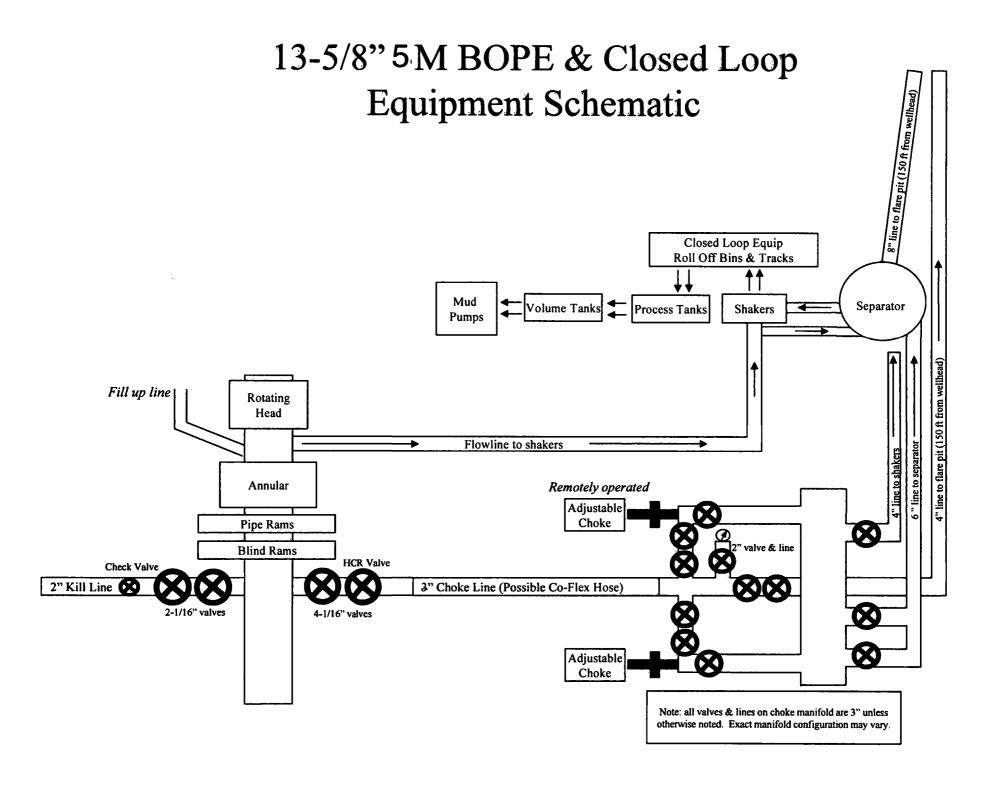












Surface Casing Burst Design							
Load Case External Pressure Internal Pressure							
Pressure Test	Formation Pore Pressure	Max mud weight of next hole- section plus Test psi					
Drill Ahead	Formation Pore Pressure	Max mud weight of next hole section					
Displace to Gas	Formation Pore Pressure	Dry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

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					

Production Casing Burst Design			
Load Case	External Pressure	Internal Pressure Fluid in hole (water or produced water) + test psi	
Pressure Test	Formation Pore Pressure		
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			

Intermediate

Intermediate Casing Burst Design			
Load Case	External Pressure	Internal Pressure Max mud weight of next hole- section plus Test psi	
Pressure Test	Formation Pore Pressure		
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 None	
Full Evacuation	Water gradient in cement, mud above TOC		
Cementing	Wet cement weight	Water (8.33ppg)	

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



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

Hydrogen Sulfide (H₂S) Contingency Plan

For

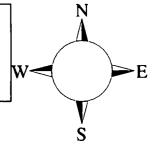
Lusitano 27-34 Fed Com 733H

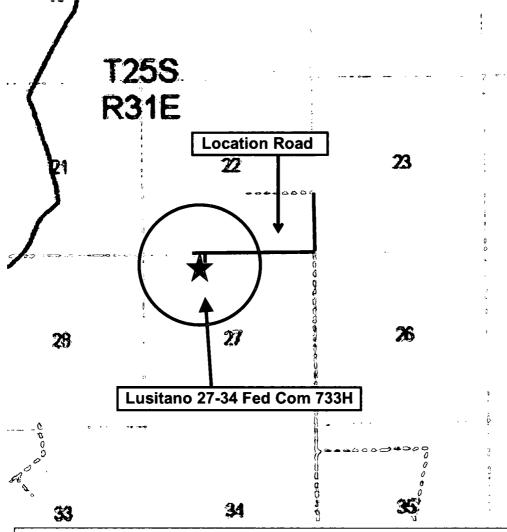
Sec-27 T-25S R-31E 235' FNL & 1672' FWL LAT. = 32.1079049' N (NAD83) LONG = 103.7690837' W

Eddy County NM

Lusitano 27-34 Fed Com 733H

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
 - o Detection of H₂S, and
 - o Measures for protection against the gas,
 - o 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	H ₂ S	1.189 Air = 1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air = 1	2 ppm	N/A	1000 ppm

Contacting Authorities

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

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE (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:

- 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 En	ergy Corp. Company Call List		
Drilling Su	pervisor – Basin – Mark Kramer		405-823-4796
EHS Profe	ssional – Laura Wright		405-439-8129
Agency	Call List		
Lea	Hobbs		
County	Lea County Communication Authority		393-3981
<u>(575)</u>	State Police		392-5588
	City Police		397-9265
	Sheriff's Office		393-2515
	Ambulance		911
	Fire Department		397-9308
	LEPC (Local Emergency Planning Commi	ttee)	393-2870
	NMOCD	············	393-6161
	US Bureau of Land Management		393-3612
	3		
Eddy	Carlsbad		
County	State Police		885-3137
<u>(575)</u>	City Police		885-2111
	Sheriff's Office		887-7551
	Ambulance		911
	Fire Department		885-3125
	LEPC (Local Emergency Planning Commi	ttee)	887-3798
	US Bureau of Land Management		887-6544
	NM Emergency Response Commission (S	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-	(915) 563-3356
		Ò139	· · ·
	Halliburton		(575) 746-2757
	B. J. Services		(575) 746-3569
Give	Native Air – Emergency Helicopter – Hobb	os	(575) 392-6429
GPS	Flight For Life - Lubbock, TX		(806) 743-9911
position:	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		



RECEIVED

JAN 1 4 2019

WCDSC Permian NM DISTRICT II-ARTESIA O.C.D.

Eddy County (NAD 83 NM Eastern) Sec 27-T25S-R31E Lusitano 27-34 Fed Com 733H

Wellbore #1 Permit Plan 1

Anticollision Report

12 September, 2018

Company: Project:

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Reference Site: Site Error:

Reference Design:

0.00 ft

Reference Well: Lusitano 27-34 Fed Com 733H Well Error:

Reference Wellbore

0.50 ft

Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference:

MD Reference:

RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method:

Minimum Curvature 2.00 sigma

Output errors are at

EDM r5000.141_Prod US

Database: Offset TVD Reference:

Offset Datum

Reference Permit Plan 1

Filter type: Interpolation Method: NO GLOBAL FILTER: Using user defined selection & filtering criteria

MD Interval 50.00ft

Error Model:

ISCWSA

Depth Range:

Unlimited

Scan Method:

Closest Approach 3D

Results Limited by:

Maximum center-center distance of 1,500.00 ft

Error Surface:

Pedal Curve

Warning Levels Evaluated at:

2.00 Sigma

Casing Method:

Not applied

Survey Tool Program		Date 9/12/2018			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	22,241.	76 Permit Plan 1 (Wellbore #1)	MWD+HDGM	OWSG MWD + HDGM	

Summary						
Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Dista Between Centres (ft)	nce Between Ellipses (ft)	Separation Factor	Warning
Sec 27-T25S-R31E	ία	(it)	(11.)	(III)		-
Gunnison 34 Fed #001 (P&A) - Wellbore #1 - Wellbore #					_	out of range
Lusitano 27 34 Fed Com 523H - Wellbore #1 - Permit PI	2,500.00	2,501.60	161.03	143.52	9.197 0	•
Lusitano 27 34 Fed Com 523H - Wellbore #1 - Permit PI	2,550.00	2,548.40	161.24	143.39	9.030 E	
Lusitano 27 34 Fed Com 523H - Wellbore #1 - Permit PI	5,050.00	5,044.26	218.52	182.84	6.124 S	
Lusitano 27 34 Fed Com 534H - Wellbore #1 - Permit Pl	2,000.00	1,997.80	174.19	160.27	12.515 C	
Lusitano 27 34 Fed Com 534H - Wellbore #1 - Permit Pl	2,250.00	2,246.69	174.15	159.27	11.155 E	
Lusitano 27 34 Fed Com 534H - Wellbore #1 - Permit PI	2,800.00	2,789.82	193.28	173.73	9.887 S	
Lusitano 27 34 Fed Com 622H - Wellbore #1 - Permit PI	2,500.00	2,703.02	29.99	12.49		linor Risk, CC
Lusitano 27 34 Fed Com 622H - Wellbore #1 - Permit PI	2,850.00	2,850.10	31.34	11.33		linor Risk, ES
Lusitano 27 34 Fed Com 622H - Wellbore #1 - Permit PI	22,241.76	21,838.95	216.10	46.73		lajor Risk, SF
Lusitano 27 34 Fed Com 713H - Wellbore #1 - Permit PI	2,500.00	2,500.20	89.97	72.47	5.140 C	• '
Lusitano 27 34 Fed Com 713H - Wellbore #1 - Permit Pl	2,550.00	2,549.28	90.25	72.40	5.055 E	
Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit PI	22,241.76	22,083.77	682.98	377.11		linor Risk, SF
Lusitano 27 34 Fed Com 716H - Wellbore #1 - Permit PI	22,241.10	22,000.77	302.30	077.11		out of range
Lusitano 27 34 Fed Com 736H - Wellbore #1 - Permit Pl						out of range
Lusitano 27-34 Fed Com 232H - Wellbore #1 - Permit Pla						out of range
Lusitano 27-34 Fed Com 235H - Wellbore #1 - Wellbore						out of range
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	2,500.00	2,500.40	60.01	42.51	3.428 A	_
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	3,200.00	3,200,25	63.15	40.64	2.805 A	
Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Pla	4,500.00	4,499,93	77.49	45.67		linor Risk, SF
Lusitano 27-34 Fed Com 335H - Wellbore #1 - Permit Pla	,	,				out of range
Lusitano 27-34 Fed Com 336H - Wellbore #1 - Wellbore						out of range
Lusitano 27-34 Fed Com 528H - Wellbore #1 - Wellbore						out of range
Lusitano 27-34 Fed Com 536H - Wellbore #1 - Wellbore						out of range
Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Pla	8,975.54	8,993.53	1,344.21	1,280.46	21.085 C	c
Lusitano 27-34 Fed Com 624H - Wellbore #1 - Permit Pla	22,241.76	21,911.70	1,372.83	1,063.43	4.437 A	lert, ES, SF
Lusitano 27-34 Fed Com 626H - Wellbore #1 - Wellbore			•			out of range
Lusitano 27-34 Fed Com 718H - Wellbore #1 - Wellbore						out of range
Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Pla	11,350.00	11,363.88	1,346.08	1,265.28	16.659 C	•
Lusitano 27-34 Fed Com 734H - Wellbore #1 - Permit Pla	22,241.76	22,388.91	1,364.33	1,052.23		lert, ES, SF

Company: Project:

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error:

0.00 ft

Reference Well:

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore 0.50 ft Wellbore #1

Reference Design:

Permit Plan 1

Local Co-ordinate Reference:

TVD Reference:

RKB @ 3359.80ft

MD Reference: RKB @ 3359.80ft

North Reference:

Survey Calculation Method:

Minimum Curvature

Grid

2.00 sigma Output errors are at

Database:

EDM r5000.141_Prod US

Well Lusitano 27-34 Fed Com 733H

Offset TVD Reference: Offset Datum

urvey Prog	•	WD+HDGM											Offset Well Error:	0.5
Refer easured	rence Vertical	Offs: Measured	et Vertical	Semi Major Reference	Axis Offset	Highside	Offset Wellbor	e Centre	Dista Between	nce Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Tootface (*)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	_	
0.00	0.00	1.60	-1.60	0.50	0.50	158.29	-149.61	59.57	161.03					
50.00	50.00	48.40	48.40	0.50	0.50	158.29	-149.61	59.57	161.03	160.03	1.01	160.038		
100.00	100.00	101.60	98.40	0.52	0.52	158.29	-149.61	59.57	161.03	160.00	1.04	155.284		
150.00	150.00	148.40	148.40	0.59	0.59	158.29	-149.61	59.57	161.03	159.86	1.18	136.764		
200.00	200.00	201.60	198.40	0.70	0.71	158.29	-149.61	59.57	161.03	159.63	1.41	114.351		
250.00	250.00	248.40	248.40	0.84	0.83	158.29	-149.61	59.57	161.03	159.36	1.67	96.379		
300.00	300.00	301.60	298.40	0.99	0.99	158.29	-149.61	59.57	161.03	159.05	1.98	81.346		
350.00	350.00	348.40	348.40	1.15	1.14	158.29	-149.61	59.57	161.03	158.75	2.29	70.449		
400.00	400.00	401.60	398.40	1.31	1.31	158.29	-149.61	59.57	161.03	158.41	2.62	61.382		
450.00	450.00	448.40	448.40	1.48	1.47	158.29	-149.61	59.57	161.03	158.09	2.95	54.639		
500.00	500.00	501.60	498.40	1.65	1.65	158.29	-149.61	59.57	161.03	157.74	3.30	48.833		
550.00	550.00	548.40	548.40	1.82	1.81	158.29	-149.61	59.57	161.03	157.40	3.63	44.364		
600.00	600.00	601.60	598.40	1.99	2.00	158.29	-149.61	59.57	161.03	157.05	3.99	40.392		
650.00	650.00	648.40	648.40	2.16	2.16	158.29	-149.61	59.57	161.03	156.71	4.32	37.246		
700.00	700.00	701.60	698.40	2.34	2.34	158.29	-149.61	59.57	161.03	156.35	4.68	34.378		
750.00	750.00	748.40	748.40	2.51	2.51	158.29	-149.61	59.57	161.03	156.01	5.02	32.054		
800.00	800.00	801.60	798.40	2.69	2.70	158.29	-149.61	59.57	161.03	155.65	5.39	29.894		
850.00	850.00	848.40	848.40	2.87	2.86	158.29	-149.61	59.57	161.03	155.31	5.73	28.113		
900.00	900.00	901.60	898.40	3.04	3.05	158.29	-149.61	59.57	161.03	154.94	6.09	26.430		
950.00	950.00	948.40	948.40	3.22	3.21	158.29	-149.61	59.57	161.03	154.60	6.44	25.023		
1,000.00	1,000.00	1,001.60	998.40	3.40	3.40	158.29	-149.61	59.57	161.03	154.23	6.80	23.678		
1,050.00	1,050.00	1,048.40	1,048.40	3.58	3.57	158.29	-149.61	59.57	161.03	153.89	7.14	22.540		
1,100.00	1,100.00	1,101.60	1,098.40	3.75	3.76	158.29	-149.61	59.57	161.03	153.52	7.51	21.440		
1,150.00	1,150.00	1,148.40	1,148.40	3.93	3.92	158.29	-149.61	59.57	161.03	153.18	7.85	20.501		
1,200.00	1,200.00	1,201.60	1,198.40	4.11	4.11	158.29	-149.61	59.57	161.03	152.81	8.22	19.586		
1,250.00	1,250.00	1,248.40	1,248.40	4.29	4.28	158.29	-149.61	59.57	161.03	152.47	8.57	18.798		
1,300.00	1,300.00	1,301.60	1,298.40	4.46	4.47	158.29	-149.61	59.57	161.03	152.10	8.93	18.025		
1,350.00	1,350.00	1,348.40	1,348.40	4.64	4.64	158.29	-149.61	59.57	161.03	151.75	9.28	17.355		
1,400.00	1,400.00	1,401.60	1,398.40	4.82	4.83	158.29	-149.61	59.57	161.03	151.39	9.65	16.693		
1,450.00	1,450.00	1,448.40	1,448.40	5.00	4.99	158.29	-149.61	59.57	161.03	151.04	9.99	16.116		
1,500.00	1,500.00	1,501.60	1,498.40	5.18	5.18	158.29	-149.61	59.57	161.03	150.67	10.36	15.544		
1,550.00	1,550.00	1,548.40	1,548.40	5.36	5.35	158.29	-149.61	59.57	161.03	150.33	10.71	15.042		
1,600.00	1,600.00	1,601.60	1,598.40	5.53	5.54	158.29	-149.61	59.57	161.03	149.96	11.07	14.542		
1,650.00	1,650.00	1,648.40	1,648.40	5.71	5.71	158.29	-149.61	59.57	161.03	149.61	11.42	14.102		
1,700.00	1,700.00	1,701.60	1,698.40	5.89	5.90	158.29	-149.61	59.57	161.03	149.25	11.79	13.661		
1,750.00	1,750.00	1,748.40	1,748.40	6.07	6.06	158.29	-149.61	59.57	161.03	148.90	12.13	13.271		
1,800.00	1,800.00	1,801.60	1,798.40	6.25	6.25	158.29	-149.61	59.57	161.03	148.53	12.50	12.880		
1,850.00	1,850.00	1,848.40	1,848.40	6.43	6.42	158.29	-149.61	59.57	161.03	148.19	12.85	12.533		
1,900.00	1,900.00	1,901.60	1,898.40	6.61	6.61	158.29	-149.61	59.57	161.03	147.82	13.22	12.183		
1,950.00	1,950.00	1,948.40	1,948.40	6.78	6.78	158.29	-149.61	59.57	161.03	147.47	13.56	11.873		
2,000.00		2,001.60	1,998.40	6.96	6.97	158.29	-149.61	59.57	161.03	147.10	13.93	11.558		
2,050.00	2,050.00	2,048.40	2,048.40	7.14	7.14	158.29	-149.61	59.57	161.03	146.76	14.28	11.278		
2,100.00	2,100.00	2,101.60	2,098.40	7.32	7.33	158.29	-149.61	59.57	161.03	146.39	14.65	10.994		
2,150.00	2,150.00	2,148.40	2,148.40	7.50	7.49	158.29	-149.61	59.57	161.03	146.04	14.99	10.740		
2,200.00	2,200.00	2,201.60	2,198.40	7.68	7.68	158.29	-149.61	59.57	161.03	145.67	15.36	10.482		
2,250.00	2,250.00	2,248.40	2,248.40	7.86	7.85	158.29	-149.61	59.57	161.03	145.32	15.71	10.251		
2,300.00	2,300.00	2,301.60	2,298.40	8.04	8.04	158.29	-149.61	59.57	161.03	144.96	16.08	10.015		
2,350.00	2,350.00	2,348.40	2,348.40	8.22	8.21	158.29	-149.61	59.57	161.03	144.61	16.42	9.804		
2,400.00	2,400.00	2,401.60	2,398.40	8.39	8.40	158.29	-149.61	59.57	161.03	144.24	16.79	9.589		
2,450.00	2,450.00	2,448.40	2,448.40	8.57	8.57	158.29	-149.61	59.57	161.03	143.89	17.14	9.395		
_,-50.00	2,700.00	2,440.40	2,440.40	0.37	0.51	130.23	~140.01	35.31	101.03	140.05	17.14	0.000		

161.24

-149.61

2,550.00

8.93

8.93

165.09

2,550.00

9.030 ES

WCDSC Permian NM Company:

Eddy County (NAD 83 NM Eastern) Project:

Reference Site: Sec 27-T25S-R31E

Site Error: 0.00 ft

Lusitano 27-34 Fed Com 733H Reference Well:

Well Error: 0.50 ft

Reference Wellbore Wellbore #1

Reference Design: Permit Plan 1 Local Co-ordinate Reference:

TVD Reference: RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft MD Reference:

North Reference: Grid

Survey Calculation Method: Minimum Curvature

2.00 sigma Output errors are at

EDM r5000.141_Prod US Database:

Offset De	-	Sec 27- IWD+HDGM	-1255-R3	ic - Lusitan	0 2/_34	rea Com 52	3H - Wellbore	#1 - Permi	t Plan 1	*			Offset Site Error:	0.00 f
Survey Prog Refer		Offs	ot	Semi Major	Avia				Dista	nco			Offset Well Error:	0.50 f
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbor	e Centre	Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
			2,598.39										 	
2,600.00 2,650.00	2,599.99 2,649.98	2,601.61 2,648.38	2,598.39	9.11 9.29	9.12 9.28	165.15 165.24	-149.61 -149.61	59.57 50.57	161.88	143.65	18.23	8.882		
2,700.00	2,699.97	2,701.63	2,698.37	9.29 9.47	9.28	165.24	-149.61 -149.61	59.57 59.57	162.89 163.95	144.31	18.57 18.94	8.771 9.656		
2,750.00	2,749.96	2,748.36	2,748.36	9.47	9.64	165.44	-149.61	59.57 59.57	165.02	145.01 145.73	19.29	8.656 8.556		
2,800.00	2,799.95	2,801.65	2,798.35	9.83	9.83	165.53	-149.61	59.57	166.09	146.43	19.66	8.449		
2,850.00	2,849.94	2,848.34	2,848.34	10.00	10.00	165.63	-149.61	59.57	167.16	147.16	20.00	8.357		
2,900.00	2,899.92	2,901.68	2,898.32	10.18	10.19	165.72	-149.61	59.57	168.23	147.86	20.37	8.257		
2,950.00	2,949.91	2,948.31	2,948.31	10.36	10.36	165.81	-149.61	59.57	169.30	148.58	20.72	8.171		
3,000.00	2,999.90	3,001.70	2,998.30	10.54	10.55	165.90	-149.61	59.57	170.37	149.28	21.09	8.079		
3,050.00	3,049.89	3,048.29	3,048.29	10.72	10.71	165.99	-149.61	59.57	171.44	150.01	21.43	7.998		
3,100.00	3,099.87	3,101.73	3,098.27	10.90	10.91	166.08	-149.61	59.57	172.51	150.71	21.80	7.912		
3,150.00	3,149.86	3,148.26	3,148.26	11.08	11.07	166.17	-149.61	59.57	173.58	151.43	22.15	7.837		
3,200.00	3,199.85	3,201.75	3,198.25	11.26	11.26	166.26	-149.61	59.57	174.66	152.13	22.52	7.755		
3,250.00	3,249.84	3,248.24	3,248.24	11.44	11.43	166.34	-149.61	59.57	175.73	152.15	22.87	7.685		
3,300.00	3,299.83	3,301.77	3,298.23	11.62	11.62	166.43	-149.61	59.57	176.80	153.56	23.24	7.609		
3,350.00	3,349.81	3,348.21	3,348.21	11.79	11.79	166.51	-149.61	59.57	177.87	154.29	23.58	7.543		
3,400.00	3,399.80	3,401.80	3,398.20	11.97	11.98	166.59	-149.61	59.57	178.95	155.00	23.95	7,471		
3,450.00	3,449.79	3,448.19	3,448.19	12.15	12.15	166.67	-149.61	59.57	180.02	155.72	24.30	7.409		
3,500.00	3,499.78	3,501.82	3,498.18	12.33	12.34	166.75	-149.61	59.57	181.10	156.43	24.67	7.341		
3,550.00	3,549.76	3,548.16	3,548.16	12.51	12.51	166.83	-149.61	59.57	182.17	157.16	25.01	7.283		
3,600.00	3,599.75	3,601.85	3,598.15	12.69	12.70	166.91	-149.61	59.57	183.25	157.86	25.39	7.218		
3,650.00	3,649.74	3,648.14	3,648.14	12.87	12.86	166.99	-149.61	59.57	184.32	158.59	25.73	7.163		
3,700.00	3,699.73	3,701.87	3,698.13	13.05	13.06	167.07	-149.61	59.57	185.40	159.30	26.10	7.103		
3,750.00	3,749.72	3,748.12	3,748.12	13.23	13.22	167.14	-149.61	59.57	186.47	160.03	26.45	7.051		
3,800.00	3,799.70	3,801.90	3,798.10	13.41	13.41	167.22	-149.61	59.57	187.55	160.73	26.82	6.993		
3,850.00	3,849.69	3,848.09	3,848.09	13.59	13.58	167.29	-149.61	59.57	188.63	161.46	27.16	6.944		
3,900.00	3,899.68	3,901.92	3,898.08	13.76	13.77	167.37	-149.61	59.57	189.71	162.17	27.54	6.889		
3,950.00	3,949.67	3,948.07	3,948.07	13.94	13.94	167.44	-149.61	59.57	190.78	162.90	27.88	6.843		
4,000.00	3,999.65	4,001.95	3,998.05	14.12	14.13	167.51	-149.61	59.57	191.86	163.61	28.25	6.791		
4,050.00	4,049.64	4,048.04	4,048.04	14.30	14.30	167.58	-149.61	59.57	192.94	164.34	28.60	6.747		
4,100.00	4,099.63	4,101.97	4,098.03	14.48	14.49	167.65	-149.61	59.57	194.02	165.05	28.97	6.697		
4,150.00	4,149.62	4,148.02	4,148.02	14.66	14.65	167.72	-149.61	59.57	195.10	165.78	29.31	6.656		
4,200.00	4,199.61	4,201.99	4,198.01	14.84	14.85	167.79	-149.61	59.57	196.17	166.49	29.69	6.608		
4,250.00	4,249.59	4,247.99	4,247.99	15.02	15.01	167.86	-149.61	59.57	197.25	167.22	30.03	6.569		
4,300.00	4,299.58	4,302.02	4,297.98	15.20	15.21	167.92	-149.61	59.57	198.33	167.93	30.40	6.524		
4,350.00	4,349.57	4,347.97	4,347.97	15.38	15.37	167.99	-149.61	59.57	199.41	168.67	30.75	6.486		
4,400.00	4,399.56	4,402.04	4,397.96	15.56	15.56	168.06	-149.61	59.57	200.49	169.37	31.12	6.443		
4,450.00	4,449.55	4,447.95	4,447.95	15.74	15.73	168.12	-149.61	59.57	201.57	170.11	31.46	6.407		
4,500.00	4,499.53	4,497.93	4,497.93	15.91	15.91	168.18	-149.61	59.57	202.65	170.83	31.82	6.369		
4,550.00	4,549.52	4,547.74	4,547.74	16.09	16.08	168.19	-149.57	59.76	203.75	171.58	32.17	6.333		
4,600.00	4,599.51	4,597.54	4,597.54	16.27	16.26	168.08	-149.43	60.38	204.90	172.37	32.53	6.299		
4,650.00	4,649.50	4,647.33	4,647.31	16.45	16.43	167.85	-149.20	61.42	206.10	173.22	32.88	6.268		
4,700.00	4,699.48	4,697.09	4,697.05	16.63	16.60	167.50	-148.87	62.88	207.35	174.12	33.23	6.240		
4,750.00	4,749.47	4,746.83	4,746.75	16.81	16.77	167.04	-148.45	64.76	208.66	175.08	33.58	6.214		
4,800.00	4,799.46	4,796.53	4,796.40	16.99	16.95	166.47	-147.94	67.06	210.04	176.11	33.93	6.190		
4.850.00	4,849.45	4,846.19	4,845.98	17.17	17.12	165.79	-147.33	69.77	211.50	177.22	34.28	6.169		
4,900.00	4,899.44	4,895.80	4,895.49	17.35	17.29	165.01	-146.63	72.91	213.07	178.43	34.63	6.152		
4,950.00	4,949.42	4,895.80	4,895.49	17.53	17.46	164.13	-145.84	72.91 76.45	213.07	178.43	34.98	6.139		
5,000.00	4,999.41	4,994.84	4,994.23	17.33	17.40	163.15	-144.95	80.41	214.74	181.22	35.33	6.129		
5,050.00	5,049.40	5,044.26	5,043.44	17.89	17.81	162.08	-144.93	84.78	218.52	182.84	35.68	6.124 SI	=	
5,100.00	5,099.39	5,093.59	5,092.53	18.07	17.98	160.92	-142.91	89.55	220.66	184.63	36.03	6.124		
E 450 00	E 4 40 0=	£ 4 40 0 ·		40.00	40.00									
5,150.00	5,149.37	5,142.84	5,141.49	18.25	18.15	159.69	-141.75	94.73	222.99	186.62	36.38	6.130		

Company: WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Reference Site: Sec 27-T25S-R31E

Site Error:

Project:

Lusitano 27-34 Fed Com 733H Reference Well:

0.50 ft Well Error:

Reference Wellbore Wellbore #1 Permit Plan 1 Reference Design:

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H TVD Reference: RKB @ 3359.80ft

MD Reference: RKB @ 3359.80ft

North Reference: Grid

Minimum Curvature **Survey Calculation Method:**

2.00 sigma Output errors are at

EDM r5000.141_Prod US Database:

Survey Prog	ram: 0-M	WD+HDGM											Offset Well Error:	0.50
Refer Measured	rence Vertical	Offs: Measured	et Vertical	Semi Major Reference	Axis Offset	Highside	Offset Wellbon	e Centre	Dista Between	ince Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	vienning	
5,200.00	5,199.36	5,192.00	5,190.32	18.42	18.33	158.37	-140.51	100.30	225.55	188.83	36.72	6.142		
5,250.00		5,241.05	5,190.32	18.60	18.50	156.99	-139.17	106.27	228.35	191.29	37.07	6.161		
5,300.00	5,299.34	5,290.00	5,287.50	18.78	18.67	155.55	-137.75	112.64	231.43	194.02	37.41	6.186		
5,350.00	5,349.33	5,339.49	5,336.51	18.96	18.85	154.08	-136.26	119.30	234.73	196.97	37.76	6.217		
5,400.00	5,399.31	5,389.01	5,385.56	19.14	19.03	152.64	-134.77	125.97	238.18	200.08	38.11	6.251		
5,450.00	5,449.30	5,438.54	5,434.62	19.32	19.20	151.25	-133.28	132.64	241.78	203.33	38.45	6.288		
5,500.00	5,499.29	5,488.06	5,483.67	19.50	19.38	149.90	-131.79	139.31	245.53	206.72	38.80	6.328		
5,550.00	5,549.28	5,537.59	5,532.72	19.68	19.56	148.59	-130.30	145.98	249.40	210.25	39.15	6.370		
5,600.00	5,599.26	5,587.11	5,581.77	19.86	19.74	147.32	-128.81	152.65	253.40	213.90	39.50	6.415		
5,650.00	5,649.25	5,636.64	5,630.82	20.04	19.92	146.09	-127.32	159.32	257.53	217.68	39.85	6.463		
5,700.00	5,699.24	5,686.16	5,679.87	20.22	20.09	144.90	-125.83	165.99	261.76	221.57	40.20	6.512		
5,750.00	5,749.23	5,735.69	5,728.92	20.40	20.27	143.74	-124.34	172.66	266.11	225.57	40.55	6.563		
5,800.00	5,799.22	5,785.21	5,777.98	20.58	20.45	142.63	-122.85	179.33	270.57	229.67	40.90	6.616		
5,850.00	5,849.20	5,834.74	5,827.03	20.76	20.63	141.55	-121.36	186.00	275.12	233.88	41.25	6.670		
5,900.00	5,899.19	5,884.26	5,876.08	20.93	20.82	140.50	-119.87	192.66	279.77	238.17	41.59	6.726		
5,950.00	5,949.18	5,933.79	5,925.13	21.11	21.00	139.49	-118.38	199.33	284.51	242.56	41.94	6.783		
6,000.00	5,999.17	5,983.31	5,974.18	21.29	21.18	138.51	-116.89	206.00	289.33	247.04	42.29	6.841		
6,050.00	6,049.16	6,032.84	6,023.23	21.47	21.36	137.57	-115.40	212.67	294.24	251.59	42.65	6.900		
6,100.00	6,099.14	6,082.36	6,072.28	21.65	21.54	136.65	-113.91	219.34	299.22	256.23	43.00	6.959		
6,150.00	6,149.13	6,131.89	6,121.33	21.83	21.73	135.77	-112.42	226.01	304.28	260.93	43.35	7.020		
6,200.00	6,199.12	6,181.41	6,170.39	22.01	21.91	134.91	-110.93	232.68	309.41	265.71	43.70	7.081		
8,250.00	6,249.11	6,230.94	6,219.44	22.19	22.09	134.08	-109.44	239.35	314.60	270.55	44.05	7.142		
6,300.00	6,299.09	6,280.46	6,268.49	22.37	22.27	133.28	-107.95	246.02	319.86	275.46	44.40	7.204		
6,350.00	6,349.08	6,329.99	6,317.54	22.55	22.46	132.51	-106.46	252.69	325.18	280.42	44.75	7.266		
6,400.00	6,399.07	6,379.51	6,366.59	22.73	22.64	131.75	-104.96	259.36	330.55	285.45	45.10	7.329		
6,450.00	6,449.06	6,429.04	6,415.64	22.91	22.83	131.03	-103.47	266.03	335.98	290.53	45.45	7.392		
6,500.00	6,499.05	6,478.56	6,464.69	23.09	23.01	130.32	-101.98	272.70	341.46	295.66	45.81	7.454		
6,550.00	6,549.03	6,528.09	6,513.74	23.27	23.20	129.64	-100.49	279.37	346.99	300.84	46.16	7.517		
6,600.00	6,599.02	6,577.61	6,562.80	23.45	23.38	128.98	-99.00	286.04	352.57	306.06	46.51	7.580		
6,650.00	6,649.01	6,627.14	6,611.85	23.63	23.57	128.34	-97.51	292.70	358.20	311.33	46.86	7.643		
6,700.00	6,699.00	6,676.66	6,660.90	23.80	23.75	127.72	-96.02	299.37	363.86	316.65	47.22	7.706		
6,750.00	6,748.98	6,726.19	6,709.95	23.98	23.94	127.12	-94.53	306.04	369.57	322.00	47.57	7.769		
6,800.00	6,798.97	6,775.71	6,759.00	24.16	24.13	126.54	-93.04	312.71	375.32	327.40	47.92	7.832		
6,850.00	6,848.96	6,825.24	6,808.05	24.34	24.31	125.97	-91.55	319.38	381.10	332.83	48.28	7.894		
6,900.00	6,898.95	6,874.76	6,857.10	24.52	24.50	125.43	-90.06	326.05	386.92	338.30	48.63	7.957		
6.950.00	6,948.94	6,924.29	6,906.15	24.70	24.69	124.89	-88.57	332.72	392.78	343.80	48.98	8.019		
7,000.00	6,998.92	6,973.81	6,955.21	24.88	24.87	124.38	-87.08	339.39	398.67	349.33	49.34	8.081		
7,050.00	7,048.91	7,023.34	7,004.26	25.06	25.06	123.88	-85.59	346.06	404.58	354.89	49.69	8.142		
7,100.00	7,098.90	7,072.86	7,053.31	25.24	25.25	123.39	-84.10	352.73	410.53	360.49	50.04	8.203		
7,150.00	7,148.89	7,122.39	7,102.36	25.42	25.43	122.92	-82.61	359.40	416.51	366.11	50.40	8.264		
7,200.00	7,198.87	7,171.91	7,151.41	25.60	25.62	122.46	-81.12	366.07	422.51	371.76	50.75	8.325		
7,250.00	7,248.86	7,221.44	7,200.46	25.78	25.81	122.01	-79.63	372.74	428.54	377.44	51.11	8.385		
7,300.00	7,298.85	7,270.96	7,249.51	25.96	26.00	121.57	-78.14	379.41	434.60	383.14	51.46	8.445		
7,350.00	7,348.84	7,323.64	7,301.70	26.14	26.20	121.14	-76.59	386.35	440.57	388.71	51.85	8.496		
7,400.00	7,398.83	7,378.36	7,356.02	26.32	26.41	120.75	-75.13	392.87	446.03	393.76	52.27	8.533		
7,450.00	7,448.81	7,433.26	7,410.60	26.50	26.61	120.43	-73.84	398.65	450.93	398.25	52.68	8.560		
7,500.00	7,498.80	7,488.32	7,465.41	26.67	26.81	120.18	-72.72	403.67	455.26	402.17	53.09	8.576		
7,550.00	7,548.79	7,543.51	7,520.43	26.85	27.02	119.99	-71.77	407.93	459.02	405.53	53.49	8.582		
7,600.00	7,598.78	7,598.81	7,575.62	27.03	27.22	119.86	-70.99	411.42	462.19	408.31	53.88	8.578		
7,650.00	7,648.77	7,654.20	7,630.94	27.21	27.42	119.79	-70.38	414.13	464.78	410.51	54.27	8.564		
7,700.00	7,698.75	7,709.66	7,686.36	27.39	27.61	119.78	-69.95	416.06	466.78	412.12	54.65	8.541		
7,750.00	7,748.74	7,765.16	7,741.85	27.57	27.81	119.83	-69.69	417.21	468.19	413.16	55.03	8.508		

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 733H

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

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 733H

 TVD Reference:
 RKB @ 3359.80ft

 MD Reference:
 RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

urvey Prog		WD+HDGM	_										Offset Well Error:	0.50
Refer		Offse		Semi Major		Ulabalda	Office A Michigan	- C	Dista		Minimum	Camandian		
Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbor	+E/-W	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	(ft)	(ft)						
7,800.00	7,798.73	7,820.68	7,797.36	27.75	28.00	119.93	-69.61	417.57	469.01	413.61	55.40	8.466		
7,850.00	7,848.72	7,870.43	7,847.12	27.93	28.18	120.05	-69.61	417.57	469.56	413.80	55.76	8.422		
7,900.00	7,898.70	7,920.42	7,897.10	28.11	28.35	120.16	-69.61	417.57	470.11	414.00	56.11	8.378		
7,950.00	7,948.69	7,970.41	7,947.09	28.29	28.53	120.28	-69.61	417.57	470.67	414.20	56.47	8.335		
8,000.00	7,998.68	8,020.40	7,997.08	28.47	28.70	120.40	-69.61	417.57	471.23	414.40	56.83	8.292		
8,050.00	8,048.67	8,070.38	8,047.07	28.65	28.88	120.51	-69.61	417.57	471.79	414.60	57.18	8.250		
8,100.00	8,098.66	8,120.37	8,097.06	28.83	29.05	120.63	-69.61	417.57	472.35	414.81	57.54	8.209		
8,150.00	8,148.64	8,170.36	8,147.04	29.01	29.23	120.74	-69.61	417.57	472.91	415.02	57.90	8.168		
8,200.00	8,198.63	8,207.14	8,183.80	29.19	29.35	120.97	-70.92	417.57	474.20	416.00	58.20	8.148		
8,250.00	8,248.62	8,244.00	8,220.47	29.37	29.47	121.46	-74.60	417.58	476.86	418.40	58.46	8.157		
8,300.00	8,298.61	8,280.14	8,256.11	29.55	29.58	122.18	-80.48	417.59	480.95	422.27	58.68	8.197		
8,350.00	8,348.59	8,315.30	8,290.38	29.72	29.69	123.10	-88.35	417.60	486.57	427.73	58.84	8.269		
8,400.00	8,398.58	8,350.00	8,323.66	29.90	29.79	124.20	-98.16	417.61	493.82	434.87	58.95	8.377		
8,450.00	8,448.57	8,381.88	8,353.66	30.08	29.89	125.38	-108.94	417.63	502.82	443.87	58.95	8.529		
8,500.00	8,498.56	8,413.02	8,382.34	30.26	29.97	126.66	-121.06	417.65	513.67	454.79	58.88	8.724		
8,550.00	8,548.55	8,442.61	8,408.94	30.44	30.05	127.98	-134.01	417.67	526.44	467.73	58.72	8.966		
8,600.00	8,598.53	8,470.62	8,433.48	30.62	30.13	129.32	-147.51	417.69	541.21	482.76	58.45	9.259		
8,650.00	8,648.52	8,500.00	8,458.47	30.80	30.20	130.79	-162.94	417.72	558.00	499.83	58.17	9.592		
8,700.00	8,698.51	8,521.92	8,476.59	30.98	30.25	131.93	-175.28	417.74	576.77	519.12	57.65	10.005		
8,750.00	8,748.50	8,550.00	8,499.08	31.16	30.32	133.42	-192.08	417.76	597.56	540.31	57.25	10.437		
8,800.00	8,798.48	8,567.21	8,512.46	31.34	30.35	134.35	-202.92	417.78	620.21	563.69	56.52	10.973		
8,850.00	8,848.47	8,587.76	8,527.98	31.52	30.40	135.48	-216.38	417.80	644.74	588.87	55.87	11.540		
8,900.00	8,898.46	8,600.00	8,537.00	31.70	30.42	136.15	-224.66	417.81	671.08	616.12	54.96	12.210		
8,950.00	8,948.45	8,625.05	8,554.89	31.88	30.47	137.53	-242.19	417.84	698.93	644.46	54.47	12.831		
9,000.00	8,998.44	8,650.00	8,571.93	32.06	30.52	138.91	-260.41	417.87	728.49	674.49	54.00	13.491		
9,050.00	9,048.42	8,650.00	8,571.93	32.24	30.52	138.91	-260.41	417.87	759.39	706.62	52.77	14.390		
9,100.00	9,098.41	8,672.64	8.586.70	32.42	30.56	140.15	-277.57	417.90	791.54	739.25	52.29	15.137		
9,150.00	9,148.40	8,686.58	8,595.44	32.60	30.59	140.13	-288.42	417.91	825.01	773.42	51.59	15.992		
9,200.00	9,198.39	8,700.00	8,603.61	32.78	30.62	141.63	-299.07	417.93	859.61	808.69	50.92	16.881		
9,250.00	9,248.38	8,700.00	8,603.61	32.95	30.62	141.63	-299.07	417.93	895.45	845.55	49.90	17.944		
9,300.00	9,298.36	8,723.56	8,617.35	33.13	30.66	142.89	-318.21	417.96	931.86	882.24	49.62	18.778		
9,350.00	9,348.35	8,734.47	8,623.43	33.31	30.68	143.47	-327.26	417.97	969.34	920.32	49.03	19.772		
9,400.00	9,398.34	8,750.00	8,631.81	33.49	30.72	144.28	-340.34	417.99	1,007.67	959.07	48.60	20.733		
9,450.00	9,448.33	8,750.00	8,631.81	33.67	30.72	144.28	-340.34	417.99	1,046.69	998.88	47.81	21.894		
9,500.00 9,550.00	9,498.31 9,548.30	8,750.00 8,772.30	8,631.81 8,643.20	33.85 34.03	30.72 30.76	144.28 145.42	-340.34 -359.51	417.99	1,086.61 1,126.72	1,039.54 1,079.76	47.07 46.95	23.083 23.997		
9,000.00	9,348.30	0,772.30	0.043.20	34.03	30.76	145.42	-359.51	418.02	1,120.72	1,079.76	40.95	23.997		
9,600.00	9,598.29	8,780.51	8,647.20	34.21	30.78	145.83	-366.68	418.03	1,167.63	1,121.12	46.51	25.103		
9,650.00	9,648.28	8,800.00	8,656.29	34.39	30.82	146.80	-383.92	418.06	1,209.24	1,162.86	46.38	26.073		
9,700.00	9,698.27	8,800.00	8,656.29	34.57	30.82	146.80	-383.92	418.06	1,251.03	1,205.21	45.82	27.301		
9,750.00	9,748.25	8,800.00	8,656.29	34.75	30.82	146.80	-383.92	418.06	1,293.40	1,248.08	45.32	28.541		
9,800.00	9,798.24	8,800.00	8,656.29	34.93	30.82	146.80	-383.92	418.06	1,336.30	1,291.45	44.85	29.793		
9,850.00	9,848.23	8,800.00	8,656.29	35.11	30.82	146.80	-383.92	418.06	1,379.68	1,335.25	44.43	31.052		
9,900.00	9,898.22	8,821.77	8,665.75	35.29	30.87	140.85	-363.92 -403.52	418.09	1,422.93	1,335.25	44.48	31.992		
9,950.00	9,948.20	8,827.53	8,668.13	35.29 35.47	30.87	147.85	-403.52 -408.77	418.09	1,422.93	1,378.45	44.48	31.992 33.166		

Company: Project:

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error:

0.00 ft

Reference Well:

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft

Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference: MD Reference:

North Reference:

Survey Calculation Method:

Output errors are at

Database: Offset TVD Reference: Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft RKB @ 3359.80ft

Grid

Minimum Curvature

2.00 sigma

EDM r5000.141_Prod US

Offset De	•		125S-R31	IE - Lusitar	10 27_34	Fed Com 53	34H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00
Survey Prog	gram: 0-M rence	WD+HDGM	-•	Comi Malos	Auta				Block				Offset Well Error:	0.50
rtere Measured	rence Vertical	Offs: Measured	et Vertical	Semi Major		Makalda	Office A Modelle and	. 0	Dista		B61 - 1			
Depth	Depth	Depth	Depth	Reference	Offset	Highside Toolface	Offset Wellbor +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
0.00		2.20	-2.20	0.50	0.50	149.08	-149.43	89.52	174.19					
50.00		47.80	47.80	0.50	0.50	149.08	-149.43	89.52	174.19	173.19	1.01	173.134		
100.00		102.20	97.80	0.52	0.52	149.08	-149.43	89.52	174.19	173.16	1.04	167.879		
150.00		147.80	147.80	0.59	0.59	149.08	-149.43	89.52	174.19	173.02	1.18	148.082		
200.00		202.20	197.80	0.70	0.71	149.08	-149.43	89.52	174.19	172.78	1,41	123.562		
250.00	250.00	247.80	247.80	0.84	0.83	149.08	-149.43	89.52	174.19	172.52	1.67	104.363		
300.00	300.00	302.20	297.80	0.99	0.99	149.08	-149.43	89.52	174.19	172.21	1.98	87.911		
350.00		347.80	347.80	1.15	1.14	149.08	-149.43	89.52	174.19	171.91	2.28	76.270		
400.00	400.00	402.20	397.80	1.31	1.32	149.08	-149.43	89.52	174.19	171.57	2.63	66.347		
450.00	450.00	447.80	447.80	1.48	1,47	149.08	-149.43	89.52	174.19	171.25	2.95	59.144		
500.00	500.00	502.20	497.80	1.65	1.65	149.08	-149.43	89.52	174.19	170.89	3.30	52.791		
550.00		547.80	547.80	1.82	1.81	149.08	-149.43	89.52	174.19	170.57	3.63	48.017		
600.00		602.20	597.80	1.99	2.00	149.08	-149.43	89.52	174.19	170.20	3.99	43.670		
650.00		647.80	647.80	2.16	2.16	149.08	-149.43	89.52	174.19	169.87	4.32	40.309		
700.00		702.20	697.80	2.34	2.35	149.08	-149.43	89.52	174.19	169.51	4.69	37.170		
750.00	750.00	747.80	747.80	2.51	2.51	149.08	-149.43	89.52	174.19	169.17	5.02	34.688		
800.00	800.00	802.20	797.80	2.69	2.70	149.08	-149.43	89.52	174.19	168.80	5.39	32.324		
850.00		847.80	847.80	2.87	2.86	149.08	-149.43	89.52	174.19	168.47	5.73	30.421		
900.00		902.20	897.80	3.04	3.05	149.08	-149.43	89.52	174.19	168.10	6.09	28.580		
950.00		947.80	947.80	3.22	3.21	149.08	-149.43	89.52	174.19	167.76	6.43	27.077		
1,000.00		1,002.20	997.80	3.40	3.41	149.08	-149.43	89.52	174.19	167.39	6.80	25.605		
								******		,,,,,,,	0.00	20.000		
1,050.00	1,050.00	1,047.80	1,047.80	3.58	3.57	149.08	-149.43	89.52	174.19	167.05	7.14	24.389		
1,100.00	1,100.00	1,102.20	1,097.80	3.75	3.76	149.08	-149.43	89.52	174.19	166.68	7.51	23.186		
1,150.00	1,150.00	1,147.80	1,147.80	3.93	3.92	149.08	-149.43	89.52	174.19	166.34	7.85	22.182		
1,200.00		1,202.20	1,197.80	4.11	4.12	149.08	-149.43	89.52	174.19	165.97	8.22	21.181		
1,250.00	1,250.00	1,247.80	1,247.80	4.29	4.28	149.08	-149.43	89.52	174.19	165.63	8.56	20.339		
1,300.00	1,300.00	1,302.20	1,297.80	4.46	4.47	149.08	-149.43	89.52	174.19	165.26	8.94	19.493		
1,350.00	1,350.00	1,347.80	1,347.80	4.64	4.63	149.08	-149.43	89.52	174.19	164.92	9.28	18.777		
1,400.00	1,400.00	1,402.20	1,397.80	4.82	4.83	149.08	-149.43	89.52	174.19	164.54	9.65	18.053		
1,450.00	1,450.00	1,447.80	1,447.80	5.00	4.99	149.08	-149.43	89.52	174.19	164.20	9.99	17.437		
1,500.00	1,500.00	1,502.20	1,497.80	5.18	5.19	149.08	-149.43	89.52	174.19	163.83	10.36	16.810		
1,550.00	1,550.00	1,547.80	1,547.80	5.36	5.35	149.08	-149.43	89.52	174.19	163.49	10.70	16.274		
1,600.00		1,602.20	1,597.80	5.53	5.54	149.08	-149.43	89.52	174.19	163.12	11.08	15.727		
1,650.00		1,647.80	1,647.80	5.71	5.70	149.08	-149.43	89.52	174.19	162.78	11.42	15.257		
1,700.00		1,702.20	1,697.80	5.89	5.90	149.08	-149.43	89.52	174.19	162.40	11.79	14.774		
1,750.00		1,747.80	1,747.80	6.07	6.06	149.08	-149.43	89.52	174.19	162.06	12.13	14.358		
1,800.00		1,802.20	1,797.80	6.25	6.26	149.08	-149.43	89.52	174.19	161.69	12.50	13.930		
1,850.00		1,847.80	1,847.80	6.43	6.42	149.08	-149.43	89.52	174.19	161.35	12.85	13.560		
1,900.00		1,902.20	1,897.80	6.61	6.61	149.08	-149.43	89.52	174.19	160.97	13.22	13.177		
1,950.00		1,947.80	1,947.80	6.78	6.78	149.08	-149.43	89.52	174.19	160.63	13.56	12.845		
2,000.00	2,000.00	1,997.80	1,997.80	6.96	6.96	149.08	-149.43	89.52	174.19	160.27	13.92	12.515 C	C	
2,050.00	2,050.00	2,047.61	2,047.61	7.14	7.13	149.01	-149.35	89.70	174.22	159.95	14.27	12.206		
2,100.00		2,097.41	2,097.41	7.32	7.31	148.81	-149.10	90.28	174.30	159.67	14.63	11.916		
2,150.00		2,147.19	2,147.18	7.50	7.48	148.46	-148.67	91.25	174.45	159.47	14.98	11.646		
2,200.00		2,196.96	2,196.92	7.68	7.65	147.97	-148.08	92.62	174.66	159.33	15.33	11.392		
2,250.00		2,246.69	2,246.61	7.86	7.83	147.35	-147.31	94.39	174.96	159.27	15.68	11.155 E	S	
2,300.00	2,300.00	2,296.38	2,296.25	8.04	8.00	146.59	-146.37	96.54	175.35	159.31	16.04	10.935		
2,350.00		2,346.03	2,295.25	8.22	8.18	145.70	-145.25	96.54 99.09	175.85	159.31	16.39	10.935	•	
2,400.00		2,395.63	2,395.31	8.39	8.35	144.67	-143.23	102.03	175.65	159.74	16.74	10.730		
2,450.00		2,445.17	2,444.72	8.57	8.52	143.52	-143.57	105.36	177.26	160.17	17.09	10.342		
2,500.00	2,500.00	2,494.64	2,494.02	8.75	8.70	142.25	-142.52	109.08	177.26	160.17	17.09	10.216		
	_,	_,	_,	00	55		1-0.00	.05.00	.10,23	.00.70	17.43	13.210		
2,550.00	2,550.00	2,544.04	2,543.22	8.93	8.87	147.68	-139.11	113.18	179.58	161.78	17.80	10.090		

Company: Project:

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error: Reference Well:

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1

Survey Calculation Method:

MD Reference: North Reference:

Local Co-ordinate Reference:

RKB @ 3359.80ft RKB @ 3359.80ft Grid

Well Lusitano 27-34 Fed Com 733H

TVD Reference:

Output errors are at

Minimum Curvature 2.00 sigma

Database:

EDM r5000.141_Prod US

Offset Datum Offset TVD Reference:

	sign		200-K3	IE - Lusitan	0 21_34	rea Com 53	4H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00
urvey Prog Refer		WD+HDGM Offse		Semi Major	Axis				Dista	ance			Offset Well Error:	0.50
leasured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbor	e Centre	Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
2,600.00		2,593.37	2,592.31	9.11	9.05	146.29	-137.16	117.66	181.52	163.37	18.15	10.002		
2,650.00	2,649.98	2,642.63	2,641.28	9.29	9.23	144.88	-135.04	122.52	184.01	165.51	18.50	9.946		
2,700.00	2,699.97	2,691.79	2,690.11	9.47	9.40	143.40	-132.75	127.75	186.81	167.96	18.85	9.910		
2,750.00	2,749.96	2,740.86	2,738.79	9.65	9.58	141.86	-130.31	133.36	189.89	170.69	19.20	9.890		
2,800.00	2,799.95	2,789.82	2,787.32	9.83	9.76	140.25	-127.70	139.34	193.28	173.73	19.55	9.887 SF		
2,850.00	2,849.94	2,838.67	2,835.68	10.00	9.94	138.59	-124.93	145.68	196.99	177.09	19.90	9.901		
2,900.00	2,899.92	2,887.41	2,883.87	10.18	10.12	136.89	-122.01	152.38	201.06	180.81	20.24	9.932		
2,950.00		2,936.68	2,932.53	10.36	10.30	135,17	-118.94	159.42	205.44	184.84	20.59	9.976		
3,000.00		2,986.10	2,981.35	10.54	10.48	133,51	-115.86	166.49	210.00	189.05	20.95	10.026		
3,050.00		3,035.53	3,030.17	10.72	10.67	131.92	-112.77	173.55	214.73	193.43	21.30	10.082		
3,100.00		3,084.96	3,079.00	10.90	10.85	130.41	-109.69	180.62	219.62	197.97	21.65	10.143		
3,150.00	3,149.86	3,134.38	3,127.82	11.08	11.04	128.96	-106.61	187.69	224.66	202.65	22.01	10.209		
									229.83					
3,200.00 3,250.00		3,183.81 3,233.23	3,176.64	11.26	11.22 11.41	127.57 126.24	-103.53 -100.44	194.76	229.83	207.48 212.43	22.36 22.71	10.279		
			3,225.46	11.44				201.82				10.353		
3,300.00 3,350.00		3,282.66 3,332.08	3,274.28 3,323.10	11.62 11.79	11.60 11.79	124.98 123.76	-97.36 -94.28	208.89 215.96	240.57 246.10	217.50 222.68	23.07 23.42	10.429 10.507		
0,000.00	5,5-6,61			******			-44.54							
3,400.00		3,381.51	3,371.92	11.97	11.98	122.60	-91.20	223.02	251.75	227.97	23.78	10.588		
3,450.00	3,449.79	3,430.94	3,420.74	12.15	12.17	121.50	-88.11	230.09	257.49	233.36	24.13	10.670		
3,500.00		3,480.36	3,469.56	12.33	12.36	120.44	-85.03	237.16	263.32	238.83	24.49	10.754		
3,550.00	3,549.76	3,529.79	3,518.38	12.51	12.55	119.42	-81.95	244.22	269.24	244.40	24.84	10.838		
3,600.00	3,599.75	3,579.21	3,567.20	12.69	12.74	118.45	-78.87	251.29	275.24	250.04	25.20	10.924		
3,650.00	3,649.74	3,628.64	3,616.02	12.87	12.93	117.52	-75.78	258.36	281.31	255.76	25.55	11.009		
3,700.00		3,678.06	3,664.84	13.05	13.12	116.64	-72.70	265.42	287.46	261.55	25.91	11.095		
3,750.00		3,727.49	3,713.66	13.23	13.32	115.78	-69.62	272.49	293.67	267.40	26.26	11,182		
3,800.00		3,776.91	3,762.48	13,41	13.51	114.97	-66.54	279.56	299.94	273.32	26.62	11.268		
3,850.00		3,826.34	3,811.30	13.59	13.70	114.18	-63.45	286.63	306.27	279.29	26.98	11.353		
	.,.													
3,900.00	3,899.68	3,875.77	3,860.12	13.76	13.90	113.43	-60.37	293.69	312.65	285.32	27.33	11.439		
3,950.00	3,949.67	3,925.19	3,908.95	13.94	14.09	112.71	-57.2 9	300.76	319.09	291.40	27.69	11.524		
4,000.00	3,999.65	3,974.62	3,957.77	14.12	14.29	112.01	-54.21	307.83	325.57	297.53	28.05	11.609		
4,050.00	4,049.64	4,024.04	4,006.59	14.30	14.48	111.35	-51.12	314.89	332.10	303.70	28.40	11.693		
4,100.00	4,099.63	4,073.47	4,055.41	14.48	14.68	110.71	-48.04	321.96	338.68	309.92	28.76	11.776		
4,150.00	4,149.62	4,122.89	4,104.23	14.66	14.87	110.09	-44.96	329.03	345.29	316.17	29.12	11.859		
4,200.00	4,199.61	4,172.32	4,153.05	14.84	15.07	109.50	-41.88	336.09	351.94	322.46	29.47	11.941		
4,250.00		4,221.75	4,201.87	15.02	15.26	108.92	-38.79	343.16	358.62	328.79	29.83	12.022		
4,300.00		4,271.17	4,250.69	15.20	15.46	108.37	-35.71	350.23	365.34	335.16	30.19	12.102		
4,350.00		4,320.60	4,299.51	15.38	15.66	107.84	-32.63	357.29	372.10	341.55	30.55	12.181		
4 400 00	4 300 Ee	4,370.02	V 3V0 33	18 50	15.05	107.22	20.55	364 30	270 00	247.00	20.00	12 260		
4,400.00 4,450.00	4,399.56 4,449.55	4,370.02 4,419.45	4,348.33 4,397.15	15.56	15.85	107.33	-29.55	364.36 371.43	378.88 385.69	347.98	30.90	12.260 12.337		
				15.74 15.91	16.05	106.84	-26.46 -23.38			354.43	31.26			
4,500.00		4,468.87	4,445.97	15.91	16.25	106.36	-23.38	378.49 385.56	392.53 399.40	360.91	31.62 31.98	12.414		
4,550.00 4,600.00	4,549.52 4,599.51	4,518.30 4,567.72	4,494.79 4,543.61	16.09 16.27	16.45 16.64	105.90 105.45	-20.30 -17.21	385.56 392.63	399.40 406.28	367.42 373.95	31.98 32.34	12.489 12.564		
4,000.00	-,555.51	4,501.12	4,040.01	10.27	.0.04	,00.40	-17.21	332.03	400.20	313.83	32.34	12.504		
4,650.00	4,649.50	4,617.15	4,592.43	16.45	16.84	105.02	-14.13	399.70	413.20	380.50	32.70	12.638		
4,700.00	4,699.48	4,666.58	4.641.25	16.63	17.04	104.61	-11.05	406.76	420.13	387.08	33.05	12.710		
4,750.00	4,749.47	4,716.00	4,690.07	16.81	17.24	104.20	-7.97	413.83	427.09	393.67	33.41	12.782		
4,800.00	4,799.46	4,765.43	4,738.89	16.99	17.44	103.81	-4.88	420.90	434.06	400.29	33.77	12.853		
4,850.00	4,849.45	4,814.85	4,787.72	17.17	17.64	103.44	-1.80	427.96	441.06	406.93	34.13	12.923		
4,900.00	4,899.44	4,864.28	4,836.54	17.35	17.83	103.07	1.28	435.03	448.07	413.58	34.49	12.991		
4,950.00	4,949.42	4,913.70	4.885.36	17.53	18.03	102.72	4.36	442.10	455.10	420.25	34.85	13.059		
5,000.00	4,999.41	4,963.13	4,934.18	17.71	18.23	102.37	7.45	449.16	462.15	426.94	35.21	13.126		
5,050.00	5,049.40	5,012.56	4,983.00	17.89	18.43	102.04	10.53	456.23	469.21	433.65	35.57	13.120		
5,100.00	5,049.40	5,012.98	5,031.82	18.07	18.63	102.04	13.61	463.30	476.29	440.37	35.93	13.192		
2,.30.00	2,200.00	2,251.00	2,001.02	10.07	. 5.55		70.01	.00.00	1,0.23		00.00			
5,150.00	5,149.37	5,111.41	5,080.64	18.25	18.83	101.40	16.69	470.36	483.39	447.10	36.29	13.322		

Company: WCDSC Permian NM

Project: Eddy County (NAD 83 NM Eastern)

Reference Site: Site Error:

Reference Well:

Sec 27-T25S-R31E

Sec 27

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design: 0.50 ft

Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Output errors are at

Database:

Offset TVD Reference:

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

RKB @ 3359.80ft

Grid

Minimum Curvature

2.00 sigma

EDM r5000.141_Prod US

Offset Des	sign	Sec 27-	T25S-R31	1E - Lusitan	27_34	Fed Com 53	4H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00 ft
Survey Progr	-	WD+HDGM											Offset Well Error:	0.50 ft
Refere		Offse		Semi Major					Dista					
Measured Depth	Vertical Depth	Measured	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbor		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	Depth (ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)	ractor		
5,200.00	5,199.36	5,160.83	5,129.46	18.42	19.03	101.10	19.78	477.43	490.49	453.85	36.65	13.385		
5,250.00	5,249.35	5,210.26	5,178.28	18.60	19.23	100.80	22.86	484.50	497.61	460.61	37.01	13.447		
5,300.00	5,299.34	5,259.68	5,227.10	18.78	19.43	100.51	25.94	491.57	504.75	467.38	37.36	13.509		
5,350.00	5,349.33	5,309.11	5,275.92	18.96	19.63	100.23	29.02	498.63	511.89	474.17	37.72	13.569		
5,400.00	5,399.31	5,358.53	5,324.74	19.14	19.83	99.96	32.11	505.70	519.05	480.96	38.08	13.629		
5,450.00	5,449.30	5,407.96	5,373.56	19.32	20.03	99.70	35.19	512.77	526.22	487.77	38.44	13.688		
5,500.00	5,499.29	5,457.39	5,422.38	19.50	20.23	99.44	38.27	519.83	533.39	494.59	38.80	13.746		
5,550.00	5,549.28	5,506.81	5,471.20	19.68	20.43	99.19	41.35	526.90 633.07	540.58	501.42	39.16	13.803		
5,600.00 5,650.00	5,599.26 5,649.25	5,556.24 5,605.66	5,520.02 5,568.84	19.86 20.04	20.64 20.84	98.94 98.70	44.44 47.52	533.97 541.03	547.78 554.99	508.26 515.11	39.52 39.88	13.859 13.915		
5,700.00	5,699.24	5,655.09	5,617.67	20.04	21.04	98.47	50.60	548.10	562.21	521.96	40.25	13.970		
3,700.00	3,038.24	3,033.09	3,017.07	20.22	21.04	30.41	30.00	340.10	302.21	321.90	40.23	13.970		
5,750.00	5,749.23	5,704.51	5,666.49	20.40	21.24	98.25	53.68	555.17	569.43	528.83	40.61	14.024		
5,800.00	5,799.22	5,753.94	5,715.31	20.58	21.44	98.03	56.77	562.23	576.67	535.70	40.97	14.077		
5,850.00	5,849.20	5,803.36	5,764.13	20.76	21.64	97.81	59.85	569.30	583.91	542.59	41.33	14.129		
5,900.00	5,899.19	5,852.79	5,812.95	20.93	21.84	97.60	62.93	576.37	591.16	549.48	41.69	14.181		
5,950.00	5,949.18	5,902.22	5,861.77	21.11	22.04	97.40	66.01	583.43	598.42	556.37	42.05	14.232		
6,000.00	5,999.17	5,951.64	5,910.59	21.29	22.25	97.20	69.10	590.50	605.69	563.28	42,41	14.282		
6,050.00	6,049.16	6,001.07	5,959.41	21.29	22.25	97.20 97.00	72.18	590.50	612.96	570.19	42.41	14.202		
6,100.00	6,099.14	6,050.49	6,008.23	21.65	22.65	96.81	75.26	604.64	620.24	577.11	43.13	14.332		
6,150.00	6,149.13	6,100.08	6,057.05	21.83	22.85	96.63	78.34	611.70	627.52	584.03	43.49	14.429		
6,200.00	6,199.12	6,149.34	6,105.87	22.01	23.05	96.44	81.43	618.77	634.82	590.97	43.85	14.477		
-,	-,	-,	-,,,-,				•	*	******	*****				
6,250.00	6,249.11	6,201.23	6,154.69	22.19	23.27	96.27	84.51	625.84	642.12	597.89	44.22	14.521		
6,300.00	6,299.09	6,248.20	6,203.51	22.37	23.46	96.09	87.59	632.90	649.42	604.85	44.57	14.570		
6,350.00	6,349.08	6,302.38	6,252.33	22.55	23.68	95.92	90.67	639.97	656.73	611.78	44.95	14.610		
6,400.00	6,399.07	6,347.05	6,301.15	22.73	23.86	95.76	93.76	647.04	664.05	618.75	45.29	14.660		
6,450.00	6,449.06	6,403.53	6,349.97	22.91	24.09	95.59	96.84	654.10	671.37	625.68	45.68	14.696		
6,500.00	6,499.05	6,445.90	6,398.79	23.09	24.27	95.44	99.92	661.17	678.69	632.68	46.02	14.749		
6,550.00	6,549.03	6,504.68	6,447.62	23.27	24.51	95.28	103.01	668.24	686.02	639.61	46.41	14.781		
6,600.00	6,599.02	6,544.75	6,496.44	23.45	24.67	95.13	106.09	675.30	693.36	646.62	46.74	14.835		
6,650.00	6,649.01	6,594.17	6,545.26	23.63	24.87	94.98	109.17	682.37	700.70	653.60	47.10	14.877		
6,700.00	6,699.00	6,643.60	6,594.08	23.80	25.08	94.83	112.25	689.44	708.05	660.58	47.46	14.918		
6,750.00	6,748.98	6,706.97	6,642.90	23.98	25.34	94.69	115.34	696.51	715.40	667.52	47.88	14.943		
6,800.00	6,798.97	6,742.45	6,691.72	24.16	25.48	94.55	118.42	703.57	722.75	674.57	48.19	14.999		
6,850.00 6,900.00	6,848.96 6,898.95	6,808.12	6,740.54	24.34	25.75 25.89	94.41	121.50 124.58	710.64 717.71	730.11	681.50 688.56	48.61	15.020		
6,950.00	6,898.95	6,841.30 6,890.73	6,789.36 6,838.18	24.52 24.70	25.89 26.09	94.28 94.15	124.58 127.67	717.71 724.77	737.47 744.84	688.56 695.57	48.91 49.27	15.079 15.118		
0,830.00	0,540.54	0,080.13	0,030.10	24.10	20.08	Ø 4. 10	127.07	124.11	r==.04	050.07	45.21	13,110		
7,000.00	6,998.92	6,940.15	6,887.00	24.88	26.29	94.02	130.75	731.84	752.21	702.58	49.63	15.156		
7,050.00	7,048.91	6,989.58	6,935.82	25.06	26.50	93.89	133.83	738.91	759.58	709.59	49.99	15.194		
7,100.00	7,098.90	7,039.01	6,984.64	25.24	26.70	93.77	136.91	745.97	766.96	716.60	50.35	15.231		
7,150.00	7,148.89	7,088.43	7,033.46	25.42	26.90	93.64	140.00	753.04	774.34	723.62	50.72	15.268		
7,200.00	7,198.87	7,137.86	7,082.28	25.60	27.11	93.52	143.08	760.11	781.72	730.64	51.08	15.304		
7 250 00	7 240 00	7 107 20	7 124 40	26.76	27.24	02.44	140 40	707 47	780 **	707.07	F4 44	45.040		
7,250.00	7,248.86	7,187.28	7,131.10	25.78 25.06	27.31	93.41	146.16	767.17	789.11	737.67	51.44	15.340 15.376		
7,300.00 7,350.00	7,298.85 7,348.84	7,236.71 7,286.13	7,179.92 7,228.74	25.96 26.14	27.51 27.72	93.29 93.18	149.24 152.33	774.24 781.31	796.50 803.89	744.70 751.73	51.80 52.16	15.376		
7,350.00	7,348.84	7,285.13	7,228.74	26.14 26.32	27.92	93.18	152.33	781.31 788.37	811.29	751.73 758.76	52.16	15.411 15.446		
7,450.00	7,448.81	7,335.56	7,326.39	26.52	28.12	92.96	158,49	795.44	818.69	765.80	52.89	15.446		
,,,,,,,,,	,,-70.01	.,504.33	7,020.03	20.50	20.12	JZ.30	130.79	, 33.74	310.03	, 03.00	32.09	13.400		
7,500.00	7,498.80	7,434.41	7,375.21	26.67	28.33	92.85	161.57	802.51	826.09	772.84	53.25	15.514		-
7,550.00	7,548.79	7.483.84	7,424.03	26.85	28.53	92.75	164.66	809.58	833.50	779.89	53.61	15.547		
7,600.00	7,598.78	7,536.89	7,476.44	27.03	28.75	92.64	167.95	817.13	840.87	786.87	54.00	15.570		
7,650.00	7,648.77	7,599.46	7,538.36	27.21	29.00	92.53	171.54	825.35	847.69	793.22	54.47	15.562		
7,700.00	7,698.75	7,662.29	7,600.68	27.39	29.25	92.44	174.73	832.67	853.74	798.81	54.93	15.543		
3 300 00	33463:	7 70- 00	7.000.00	A	00	00.00	.== ==	000.00						
7,750.00	7.748.74	7,725.36	7,663.36	27.57	29.49	92.38	177.52	839.07	859.01	803.64	55.38	15.512		

Company: WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Reference Site: Sec 27-T25S-R31E

Site Error: 0.00 ft

Project:

Reference Well: Lusitano 27-34 Fed Com 733H

Well Error: 0.50 ft
Reference Wellbore #1

Reference Design: Permit Plan 1

Local Co-ordinate Reference:

TVD Reference: RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset De	sign	Sec 27-	T25S-R3	1E - Lusitan	0 27_34	Fed Com 53	4H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00 ft
Survey Progr		WD+HDGM											Offset Well Error:	0.50 ft
Refere		Offs		Semi Major					Dist					
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbon	e Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			_
7,800.00	7,798.73	7,788.63	7,726.35	27.75	29.73	92.34	179.91	844.54	863.51	807.70	55.81	15.472		
7,850.00	7,848.72	7,852.07	7,789.59	27.93	29.97	92.33	181.88	849.06	867.23	810.99	56.24	15.421		
7,900.00	7,898.70	7,915.64	7,853.05	28.11	30.20	92.33	183.43	852.62	870.17	813.52	56.65	15.361		
7,950.00	7,948.69	7,979.31	7,916.65	28.29	30.42	92.37	184.57	855.22	872.32	815.27	57.05	15.291		
8,000.00	7,998.68	8,043.04	7,980.36	28.47	30.64	92.42	185.28	856.85	873.68	816.24	57.44	15.211		
8,050.00	8,048.67	8,106.80	8,044.12	28.65	30.85	92.50	185.56	857.51	874.25	816.44	57.81	15.122		
8,100.00	8,098.66	8,159.14	8,096.46	28.83	31.03	92.57	185.57	857.52	874.31	816.15	58.17	15.032		
8,150.00	8,148.64	8,209.13	8,146.44	29.01	31.19	92.64	185.57	857.52	874.37	815.85	58.52	14.942		
8,200.00	8,198.63	8,259.12	8,196.43	29.19	31.35	92.72	185.57	857.52	874.42	815.55	58.87	14.854		
8,250.00	8,248.62	8,309.11	8,246.42	29.37	31.52	92.79	185.57	857.52	874.47	815.25	59.22	14.767		
8,300.00	8,298.61	8,359.09	8,296.41	29.55	31.68	92.86	185.57	857.52	874.52	814.95	59.57	14.681		
8,350.00	8,348.59	8,409.08	8,346.39	29.72	31.84	92.93	185.57	857.52	874.58	814.66	59.92	14.595		
8,400.00	8,398.58	8,459.07	8,396.38	29.90	32.01	93.01	185.57	857.52	874.64	814.36	60.27	14.511		
8,450.00	8,448.57	8,513.37	8,450.63	30.08	32.18	93.20	183.75	857.52	874.59	813.97	60.62	14.427		
8,500.00	8,498.56	8,567.54	8,504.35	30.26	32.33	93.73	176.90	857.53	874.30	813.34	60.96	14.342		
8,550.00	8,548.55	8,619.76	8,555.29	30.44	32.47	94.55	165.52	857.55	873.88	812.58	61.30	14.256		
8,600.00	8,598.53	8,669.32	8,602.50	30.62	32.59	95.60	150.47	857.57	873.52	811.89	61.64	14.172		
8,631.94	8,630.46	8,699.35	8,630.40	30.74	32.66	96.37	139.39	857.59	873.44	811.59	61.85	14.122		
8,650.00	8,648.52	8,715.73	8,645.37	30.80	32.70	96.83	132.73	857.60	873.47	811.50	61.97	14.095		
8,700.00	8,698.51	8,758.75	8,683.71	30.98	32.79	98.16	113.24	857.63	873.98	811.69	62.30	14.030		
8,750.00	8,748.50	8,798.29	8,717.57	31.16	32.86	99.54	92.83	857.66	875.31	812.71	62.60	13.982		
8,800.00	8,798.48	8,834.43	8,747.22	31.34	32.92	100.94	72.17	857.69	877.71	814.83	62.88	13.959		
8,850.00	8,848.47	8,867.34	8,773.04	31.52	32.96	102.30	51.77	857.72	881.39	818.28	63.11	13.966		
8,900.00	8,898.46	8,897.25	8,795.45	31.70	33.00	103.61	31.97	857.75	886.55	823.26	63.28	14.009		
8,950.00	8.948.45	8,924.40	8,814.87	31.88	33.03	104.86	13.01	857.78	893.33	829.94	63.39	14.094		
9,000.00	8,998.44	8,950.00	8,832.35	32.06	33.06	106.08	-5.70	857.81	901.85	838.43	63.42	14.221		
9,050.00	9,048.42	8,971.46	8,846.34	32.24	33.08	107.14	-21.96	857.84	912.19	848.84	63.35	14.398		
9,100.00	9,098.41	8,991.85	8,859.06	32.42	33.09	108.16	-37.90	857.86	924.41	861.20	63.21	14.624		
9,150.00	9,148.40	9,010.44	8,870.16	32.60	33.11	109.11	-52.81	857.88	938.52	875.53	62.99	14.901		
9,200.00	9,198.39	9,027.43	8,879.88	32.78	33.12	109.99	-66.75	857.90	954.51	891.83	62.68	15.228		
9,250.00	9,248.38	9,050.00	8,892.14	32.95	33.13	111.18	-85.69	857.93	972.41	910.02	62.38	15.588		
9,300.00	9,298.36	9,050.00	8,892.14	33.13	33.13	111.18	-85.69	857.93	992.07	930.30	61.78	16.059		
9,350.00	9,348.35	9,070.40	8,902.57	33.31	33.14	112.26	-103.22	857.96	1,013.44	952.07	61.37	16.514		
9,400.00	9,398.34	9,082.51	8,908.46	33.49	33.15	112.91	-113.80	857.98	1,036.53	975.70	60.83	17.040		
9,450.00	9,448.33	9,100.00	8,916.58	33.67	33.16	113.85	-129.30	858.00	1,061.26	1,000.93	60.34	17.589		
9,500.00	9,498.31	9,100.00	8,916.58	33.85	33.16	113.85	-129.30	858.00	1,087.46	1,027.85	59.61	18.244		
		0.440.00			20.40									
9,550.00	9,548.30	9,113.69	8,922.60	34.03	33.16	114.59	-141.59	858.02	1,115.10	1,056.05	59.04	18.887		
9,600.00	9,598.29	9,122.65	8,926.38	34.21	33.16	115.08	-149.71 157.33	858.03	1,144.10	1,085.68	58.42 57.70	19.585		
9,650.00	9,648.28	9,130.99 9,150.00	8,929.78	34.39	33.16	115.53	-157.33	858.04	1,174.37	1,116.58	57.79 57.31	20.321		
9,700.00	9,698.27		8,937.12 8,937.12	34.57	33.17	116.56	-174.86	858.07	1,205.96	1,148.65	57.31	21.042		
9,750.00	9,748.25	9,150.00	8,937.12	34.75	33.17	116.56	-174.86	858.07	1,238.41	1,181.81	56.60	21.879		
9,800.00	9,798.24	9,150.00	8,937.12	34.93	33.17	116.56	-174.86	858.07	1,272.01	1,216.09	55.92	22.749		
9,850.00	9,848.23	9,150.00	8,937.12	35.11	33.17	116.56	-174.86	858.07	1,306.65	1,251.40	55.25	23.650		
9,900.00	9,898.22	9,165.39	8,942.64	35.29	33.18	117.40	-189.23	858.09	1,342.01	1,287.22	54.80	24.490		
9,950.00	9,948.20	9,171.08	8,944.58	35.47	33.18	117.71	-194.58	858.10	1,378.30	1,324.05	54.25	25.405		
10,000.00	9,998.19	9,176.45	8,946.37	35.65	33.18	118.00	-199,64	858.11	1,415.37	1,361.64	53.73	26.341		
10,050.00	10,048,18	9,181.53	8,948.01	35.83	33.18	118.27	-204.45	858.11	1,453.15	1,399.92	53.23	27.298		
		9,200.00							1,453.15					
10,100.00	10,090.17	0 ,200.00	8,953.62	36.01	33.19	119.27	-222.04	858.14	1,491.80	1.438.88	52.92	28.190		

WCDSC Permian NM Company:

Eddy County (NAD 83 NM Eastern)

Project: Sec 27-T25S-R31E Reference Site:

Site Error: 0.00 ft

Reference Well: Lusitano 27-34 Fed Com 733H

Well Error: 0.50 ft Reference Wellbore Wellbore #1

Permit Plan 1 Reference Design:

Local Co-ordinate Reference:

RKB @ 3359.80ft TVD Reference:

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft MD Reference:

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset Des	sign	Sec 27-	T25S-R31	IE - Lusitan	27_34	Fed Com 62	2H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00 ft
Survey Progr Refere	ram: 0-M	WD+HDGM Offse		Semi Major					Dist	ınce			Offset Well Error:	0.50 ft
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbon	e Centre	Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
0.00	0.00	0.10	0.10	0.50	0.50	89.66	0.18	29.99	29.99					~
50.00	50.00	50.10	50.10	0.50	0.50	89.66	0.18	29.99	29.99	28.98	1.01	29.796		
100.00	100.00	100.10	100.10	0.52	0.52	89.66	0.18	29.99	29.99	28.95	1.04	28.960		
150.00	150.00	150.10	150.10	0.59	0.59	89.66	0.18	29.99	29.99	28.81	1.18	25.401		
200.00	200.00	200.10	200.10	0.70	0.70	89.66	0.18	29.99	29.99	28.59	1.40	21.354		
250.00	250.00	250.10	250.10	0.84	0.84	89.66	0.18	29.99	29.99	28.31	1.68	17.897		
300.00	300.00	300.10	300.10	0.99	0.99	89.66	0.18	29.99	29.99	28.02	1.97	15.185		
350.00	350.00	350.10	350.10	1.15	1.15	89.66	0.18	29.99	29.99	27.70	2.29	13.089		
400.00	400.00	400.10	400.10	1.31	1.31	89.66	0.18	29.99	29.99	27.37	2.62	11.453		
450.00	450.00	450.10	450.10	1.48	1.48	89.66	0.18	29.99	29.99	27.04	2.95	10.156		
500.00	500.00	500.10	500.10	1.65	1,65	89.66	0.18	29.99	29.99	26.70	3.29	9.109		
550.00	550.00	550.10	550.10	1.82	1.82	89.66	0.18	29.99	29.99	26.35	3.64	8.249		
600.00	600.00	600.10	600.10	1.99	1.99	89.66	0.18	29.99	29.99	26.01	3.98	7.532		
650.00	650.00	650.10	650.10	2.16	2.16	89.66	0.18	29.99	29.99	25.66	4.33	6.927		
700.00	700.00	700.10	700.10	2.34	2.34	89.66	0.18	29.99	29.99	25.31	4.68	6.410		
750.00	750.00	750.10	750.10	2.51	2.52	89.66	0.18	29.99	29.99	24.96	5.03	5.963		
800.00	800.00	800.10	800.10	2.69	2.69	89.66	0.18	29.99	29.99	24.61	5.38	5.573		
850.00	850.00	850.10	850.10	2.87	2.87	89.66	0.18	29.99	29.99	24.26	5.73	5.230		
900.00	900.00	900.10	900.10	3.04	3.04	89.66	0.18	29.99	29.99	23.90	6.09	4.927 Ale	ert	
950.00	950.00	950.10	950.10	3.22	3.22	89.66	0.18	29.99	29.99	23.55	6.44	4.656 Ale	ert	
1,000.00	1,000.00	1,000.10	1,000.10	3.40	3.40	89.66	0.18	29.99	29.99	23.19	6.80	4.413 Ale	ert	
1,050.00	1,050.00	1,050.10	1,050.10	3.58	3.58	89.66	0.18	29.99	29.99	22.84	7.15	4.194 Ale	ert	
1,100.00	1,100.00	1,100.10	1,100.10	3.75	3.75	89.66	0.18	29.99	29.99	22.49	7.51	3.996 Ale		
1,150.00	1,150.00	1,150.10	1,150.10	3.93	3.93	89.66	0.18	29.99	29.99	22.13	7.86	3.815 Ale		
1,200.00	1,200.00	1,200.10	1,200.10	4.11	4,11	89.66	0.18	29.99	29.99	21,77	8.22	3.650 Ale	ert	
1,250.00	1,250.00	1,250.10	1,250.10	4.29	4.29	89.66	0.18	29.99	29.99	21.42	8.57	3.498 Ale	ert	
1,300.00	1,300.00	1,300.10	1,300.10	4.46	4.46	89.66	0.18	29.99	29.99	21.06	8.93	3.359 Ale	ert	
1,350.00	1,350.00	1,350.10	1,350.10	4.64	4.64	89.66	0.18	29.99	29.99	20.71	9.29	3.230 Ale	ert	
1,400.00	1,400.00	1,400.10	1,400.10	4.82	4.82	89.66	0.18	29.99	29.99	20.35	9.64	3.111 Ale	ert	
1,450.00	1,450.00	1,450.10	1,450.10	5.00	5.00	89.66	0.18	29.99	29.99	19.99	10.00	3.000 Ale	ert	
1,500.00	1,500.00	1,500.10	1,500.10	5.18	5.18	89.66	0.18	29.99	29.99	19.64	10.35	2.896 Ale	ert	
1,550.00	1,550.00	1,550.10	1,550.10	5.36	5.36	89.66	0.18	29.99	29.99	19.28	10.71	2.800 Ale	ert	
1,600.00	1,600.00	1,600.10	1,600.10	5.53	5.53	89.66	0.18	29.99	29.99	18.92	11.07	2.710 Ale	ert	
1,650.00	1,650.00	1,650.10	1,650.10	5.71	5.71	89.66	0.18	29.99	29.99	18.56	11.43	2.625 Ale	ert	
1,700.00	1,700.00	1,700.10	1,700.10	5.89	5.89	89.66	0.18	29.99	29.99	18.21	11.78	2.545 Ale	ert	
1,750.00	1,750.00	1,750.10	1,750.10	6.07	6.07	89.66	0.18	29.99	29.99	17.85	12.14	2.470 Mi	nor Risk	
1,800.00	1,800.00	1,800.10	1,800.10	6.25	6.25	89.66	0.18	29.99	29.99	17.49	12.50	2.400 Mi	nor Risk	
1,850.00	1,850.00	1,850.10	1,850.10	6.43	6.43	89.66	0.18	29.99	29.99	17.14	12.85	2.333 Mi		
1,900.00	1,900.00	1,900.10	1,900.10	6.61	6.61	89.66	0.18	29.99	29.99	16.78	13.21	2.270 Mi		
2,050.00	2,050.00	2,050.10	2,050.10	7.14	7.14	89.66	0.18	29.99	29.99	15.71	14.28	2.099 Mi	nor Risk	
2,100.00	2,100.00	2,100.10	2,100.10	7.32	7.32	89.66	0.18	29.99	29.99	15.35	14.64	2.048 Mi	nor Risk	
2,150.00	2,150.00	2,150.10	2,150.10	7.50	7.50	89.66	0.18	29.99	29.99	14.99	15.00	1.999 Mi	nor Risk	
2,200.00	2,200.00	2,200.10	2,200.10	7.68	7.68	89.66	0.18	29.99	29.99	14.63	15.36	1.953 Mi	nor Risk	
2,250.00	2,250.00	2,250.10	2,250.10	7.86	7.86	89.66	0.18	29.99	29.99	14.28	15.72	1.908 Mi	nor Risk	
2,300.00	2,300.00	2,300.10	2,300.10	8.04	8.04	89.66	0.18	29.99	29.99	13.92	16.07	1.866 Mi	nor Risk	
2,350.00	2,350.00	2,350.10	2,350.10	8.22	8.22	89.66	0.18	29.99	29.99	13.56	16.43	1.825 Mi	nor Risk	
2,400.00	2,400.00	2,400.10	2,400.10	8.39	8.39	89.66	0.18	29.99	29.99	13.20	16.79	1.786 M i		
2,450.00	2,450.00	2,450.10	2,450.10	8.57	8.57	89.66	0.18	29.99	29.99	12.84	17.15	1.749 Mi	nor Risk	
2,500.00	2,500.00	2,500.10	2,500.10	8.75	8.75	89.66	0.18	29.99	29.99	12.49	17.50	1.713 Mi	nor Risk, CC	
2,550.00	2,550.00	2,550.10	2,550.10	8.93	8.93	96.85	0.18	29.99	30.02	12.15	17.86	1.680 Mi	nor Risk	
2,600.00	2,599.99	2,600.10	2,600.09	9.11	9.11	98.09	0.18	29.99	30.10	11.88	18.22	1.652 M i	nor Risk	
2,650.00	2,649.98	2,650.09	2,650.08	9.29	9.29	100.04	0.18	29.99	30.27	11.69	18.58	1.629 M i	nor Risk	

Company: WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Reference Site: Sec 27-T25S-R31E

Site Error:

Project:

Lusitano 27-34 Fed Com 733H Reference Well:

0.50 ft Well Error:

Reference Wellbore Wellbore #1 Permit Plan 1 Reference Design:

Local Co-ordinate Reference:

TVD Reference: RKB @ 3359.80ft MD Reference:

North Reference: Grid

Survey Calculation Method:

Output errors are at

Database: Offset TVD Reference: Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

Minimum Curvature

2.00 sigma EDM r5000.141_Prod US

Depth (ft) C (ft	O-MWD+HI tical ppth Psi	DGM Offset sured V (5 th) 1 (1	Vertical Depth (ft) 2,700.07 2,750.06 2,800.05 2,850.04 2,900.02 2,950.01 3,000.00 3,049.99 3,149.95 3,149.95 3,249.94 3,249.94 3,349.91 3,399.90 3,449.89	Semi Major Reference (ft) 9.47 9.65 9.83 10.00 10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79 11.97		Highside Toolface (*) 102.08 104.10 106.08 108.01 109.91 111.77 113.57 115.33 117.04 118.70 120.30	Offset Wellbore Offset Wellbore +N/-S (ft) 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.1		Dista Between Centres (ft) 30.48 30.73 31.01 31.34 31.70 32.09 32.52 32.97 33.46 33.98 34.52	11.54 11.33 11.33 11.37 11.43 11.33 11.37 11.43 11.53 11.66 11.82	Minimum Separation (ft) 18.93 19.29 19.65 20.01 20.37 20.72 21.08 21.44 21.80 22.15 22.51	Separation Factor 1.610 Minor Risk 1.593 Minor Risk 1.578 Minor Risk 1.566 Minor Risk 1.556 Minor Risk 1.549 Minor Risk 1.542 Minor Risk 1.538 Minor Risk 1.535 Minor Risk 1.535 Minor Risk 1.535 Minor Risk 1.533 Minor Risk 1.533 Minor Risk	0.50 ft
Measured (ft) Vert Depth (ft) 2,700.00 2,6 2,750.00 2,2 2,850.00 2,2 2,950.00 2,2 2,950.00 2,3 3,050.00 3,3 3,150.00 3,3 3,250.00 3,3 3,250.00 3,3 3,300.00 3,3 3,450.00 3,4 3,550.00 3,5 3,550.00 3,5 3,550.00 3,5	tical phth (fi) 699.97 2.7,749.96 2.7,799.95 2.6,849.94 2.6,849.91 2.6,949.91 2.6,949.91 2.6,949.91 3.6,049.89 3.6,199.85 3.6,249.84 3.3,349.81 3.3,349.81 3.3,399.80 3.4,449.79 3.4,449.78 3.5,549.76 3.5,549.76 3.5,549.76	yeth (1) 700.07 2 750.06 2 850.05 2 850.04 2 900.02 2 950.01 2 000.00 3 049.99 3 100.02 3 149.96 3 200.05 3 249.94 3 300.07 3 349.91 3 449.89 3	Depth (ft) 2,700.07 2,750.06 2,800.05 2,850.04 2,900.02 2,950.01 3,000.00 3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	Reference (ft) 9.47 9.65 9.83 10.00 10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79	9.47 9.67 9.83 10.01 10.18 10.36 10.54 10.72 10.90 11.08 11.26	Toolface (*) 102.08 104.10 106.08 108.01 109.91 111.77 113.57 115.33 117.04 118.70 120.30	+N/-S (ft) 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.1	+E/-W (ft) 29.99 29.99 29.99 29.99 29.99 29.99 29.99 29.99 29.99	30.48 30.73 31.01 31.34 31.70 32.09 32.52 32.97 33.46 33.98	Between Ellipses (ft) 11.54 11.43 11.36 11.33 11.37 11.43 11.53 11.66 11.82	Separation (ft) 18.93 19.29 19.65 20.01 20.37 20.72 21.08 21.44 21.80 22.15	1.610 Minor Risk 1.593 Minor Risk 1.578 Minor Risk 1.576 Minor Risk, ES 1.556 Minor Risk 1.549 Minor Risk 1.542 Minor Risk 1.538 Minor Risk 1.538 Minor Risk 1.535 Minor Risk	9
Depth (ft) C (ft	pth (fi) (fi) (fi) (fi) (fi) (fi) (fi) (fi)	pth (1) 700.07 2 750.06 2 800.05 2 850.04 2 9900.02 2 9900.02 2 9900.02 3 149.96 3 200.05 3 249.94 3 300.07 3 349.91 3 449.89 3	Depth (ft) 2,700.07 2,750.06 2,800.05 2,850.04 2,900.02 2,950.01 3,000.00 3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	9.47 9.65 9.83 10.00 10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79	9.47 9.65 9.83 10.01 10.18 10.36 10.54 10.72 10.90 11.08 11.26	Toolface (*) 102.08 104.10 106.08 108.01 109.91 111.77 113.57 115.33 117.04 118.70 120.30	+N/-S (ft) 0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.1	+E/-W (ft) 29.99 29.99 29.99 29.99 29.99 29.99 29.99 29.99 29.99	30.48 30.73 31.01 31.34 31.70 32.09 32.52 32.97 33.46 33.98	Elilpses (ft) 11.54 11.43 11.36 11.33 11.37 11.43 11.53 11.66 11.82	Separation (ft) 18.93 19.29 19.65 20.01 20.37 20.72 21.08 21.44 21.80 22.15	1.610 Minor Risk 1.593 Minor Risk 1.578 Minor Risk 1.576 Minor Risk, ES 1.556 Minor Risk 1.549 Minor Risk 1.542 Minor Risk 1.538 Minor Risk 1.538 Minor Risk 1.535 Minor Risk	9
2,750.00 2,750.00 2,750.00 2,850.00 2,850.00 2,850.00 2,950.00 3,050.00 3,150.00 3,350.00 3,350.00 3,350.00 3,400.00 3,550.00 3,5	,749.96 2.7,799.95 2.6,849.94 2.6,899.92 2.6,949.91 2.6,999.90 3.0,049.89 3.0,099.87 3.7,149.86 3.7,199.85 3.3,349.81 3.3,399.80 3.4,449.79 3.4,449.78 3.5,549.76 3.5,549.76 3.5,549.76 3.5,549.76 3.5,549.76 3.5,549.76 3.5	750.06 2 800.05 2 850.04 2 990.02 2 950.01 2 000.00 3 049.99 3 100.02 3 149.94 3 300.07 3 349.91 3 449.89 3 3	2,750.06 2,800.05 2,850.04 2,900.02 2,950.01 3,000.00 3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	9.65 9.83 10.00 10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79	9.65 9.83 10.01 10.18 10.36 10.54 10.72 10.90 11.08 11.26	104.10 106.08 108.01 109.91 111.77 113.57 115.33 117.04 118.70 120.30	0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18	29.99 29.99 29.99 29.99 29.99 29.99 29.99 29.99	30.73 31.01 31.34 31.70 32.09 32.52 32.97 33.46 33.98	11.43 11.36 11.33 11.37 11.43 11.53 11.66 11.82	19.29 19.65 20.01 20.37 20.72 21.08 21.44 21.80 22.15	1.593 Minor Risk 1.578 Minor Risk 1.566 Minor Risk, ES 1.556 Minor Risk 1.549 Minor Risk 1.542 Minor Risk 1.538 Minor Risk 1.535 Minor Risk 1.534 Minor Risk	
2,800.00 2,7 2,850.00 2,8 2,900.00 2,9 3,000.00 3,0 3,100.00 3,0 3,150.00 3,0 3,250.00 3,3 3,200.00 3,3 3,250.00 3,3 3,450.00 3,4 3,550.00 3,5 3,550.00 3,5 3,550.00 3,5	,799.95 2,6,849.94 2,6,899.92 2,6,949.91 2,6,999.90 3,0,049.89 3,0,099.87 3,149.86 3,4,199.85 3,349.81 3,399.80 3,449.79 3,4,499.78 3,5,549.76 3,5,549.76 3,5	800.05 2850.04 2900.02 2950.01 2000.00 3049.99 3100.02 3249.94 3300.07 3349.91 3449.89 33	2,800.05 2,850.04 2,900.02 2,950.01 3,000.00 3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91	9.83 10.00 10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79	9.83 10.01 10.18 10.36 10.54 10.72 10.90 11.08 11.26	106.08 108.01 109.91 111.77 113.57 115.33 117.04 118.70 120.30	0.18 0.18 0.18 0.18 0.18 0.18 0.18 0.18	29.99 29.99 29.99 29.99 29.99 29.99 29.99	31.01 31.34 31.70 32.09 32.52 32.97 33.46 33.98	11.36 11.33 11.33 11.37 11.43 11.53 11.66 11.82	19.65 20.01 20.37 20.72 21.08 21.44 21.80 22.15	1.578 Minor Risk 1.566 Minor Risk, ES 1.556 Minor Risk 1.549 Minor Risk 1.542 Minor Risk 1.538 Minor Risk 1.535 Minor Risk 1.534 Minor Risk	
2,850.00 2,4 2,900.00 2,9 2,950.00 2,9 3,000.00 2,9 3,050.00 3,0 3,100.00 3,0 3,150.00 3,0 3,250.00 3,0 3,250.00 3,0 3,350.00 3,0 3,450.00 3,0 3,550.00 3,0 3,550.00 3,0 3,550.00 3,0 3,550.00 3,0 3,550.00 3,0	.849.94 2.6899.92 2.69949.91 2.6999.90 3.6099.87 3.7149.86 3.7149.86 3.7249.84 3.3249.84 3.3299.83 3.3349.81 3.3399.80 3.4449.79 3.4.	850.04 2 900.02 2 950.01 2 000.00 3 049.99 3 100.02 3 149.96 3 200.05 3 249.94 3 300.07 3 349.91 3 449.89 3	2,850.04 2,900.02 2,950.01 3,000.00 3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91	10.00 10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79	10.01 10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62	108.01 109.91 111.77 113.57 115.33 117.04 118.70 120.30	0.18 0.18 0.18 0.18 0.18 0.18 0.18	29.99 29.99 29.99 29.99 29.99 29.99 29.99	31.34 31.70 32.09 32.52 32.97 33.46 33.98	11.33 11.33 11.37 11.43 11.53 11.66 11.82	20.01 20.37 20.72 21.08 21.44 21.80 22.15	1.566 Minor Risk, ES 1.556 Minor Risk 1.549 Minor Risk 1.542 Minor Risk 1.538 Minor Risk 1.535 Minor Risk 1.534 Minor Risk	
2,900.00 2,4 2,950.00 2,5 3,000.00 2,3 3,050.00 3,4 3,150.00 3,3 3,250.00 3,3 3,350.00 3,3 3,450.00 3,4 3,550.00 3,550.0	.899.92 2.6, 949.91 2.6	900.02 2 950.01 2 000.00 3 049.99 3 100.02 3 149.96 3 200.05 3 249.94 3 349.91 3 449.89 3	2,900.02 2,950.01 3,000.00 3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79	10.18 10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62	109.91 111.77 113.57 115.33 117.04 118.70 120.30	0.18 0.18 0.18 0.18 0.18 0.18	29.99 29.99 29.99 29.99 29.99	31.70 32.09 32.52 32.97 33.46 33.98	11.33 11.37 11.43 11.53 11.66 11.82	20.37 20.72 21.08 21.44 21.80 22.15	1.556 Minor Risk 1.549 Minor Risk 1.542 Minor Risk 1.538 Minor Risk 1.535 Minor Risk 1.534 Minor Risk	
2,950.00 2,9 3,000.00 2,3 3,050.00 3,0 3,100.00 3,0 3,150.00 3,3 3,200.00 3,3 3,250.00 3,3 3,350.00 3,4 3,450.00 3,4 3,550.00 3,5	.999.90 3.6 .049.89 3.6 .099.87 3.1 .149.86 3. .199.85 3.2 .249.84 3.3 .249.81 3.3 .349.81 3.3 .399.80 3.4 .449.79 3.4	950.01 2 000.00 3 049.99 3 100.02 3 149.96 3 200.05 3 249.94 3 300.07 3 349.91 3 440.10 3	2,950.01 3,000.00 3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79	10.36 10.54 10.72 10.90 11.08 11.26 11.44 11.62	111.77 113.57 115.33 117.04 118.70 120.30	0.18 0.18 0.18 0.18 0.18	29.99 29.99 29.99 29.99 29.99	32.09 32.52 32.97 33.46 33.98	11.37 11.43 11.53 11.66 11.82	20.72 21.08 21.44 21.80 22.15	1.549 Minor Risk 1.542 Minor Risk 1.538 Minor Risk 1.535 Minor Risk 1.534 Minor Risk	
3,000.00 2,1 3,050.00 3,1 3,150.00 3,3 3,200.00 3,3 3,200.00 3,3 3,350.00 3,3 3,400.00 3,4 3,550.00 3,5	.999.90 3,0 .049.89 3,0 .099.87 3, .149.86 3, .199.85 3,2 .249.84 3,2 .299.83 3,3 .349.81 3,3 .399.80 3,4 .449.79 3,4 .499.78 3,5 .549.76 3,5	000.00 3 049.99 3 100.02 3 149.96 3 200.05 3 249.94 3 300.07 3 349.91 3 449.89 3	3,000.00 3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	10.54 10.72 10.90 11.08 11.26 11.44 11.62 11.79	10.54 10.72 10.90 11.08 11.26 11.44 11.62	113.57 115.33 117.04 118.70 120.30	0.18 0.18 0.18 0.18 0.18	29.99 29.99 29.99 29.99	32.52 32.97 33.46 33.98	11.43 11.53 11.66 11.82	21.08 21.44 21.80 22.15	1.542 Minor Risk 1.538 Minor Risk 1.535 Minor Risk 1.534 Minor Risk	
3,050.00 3,0 3,100.00 3,0 3,150.00 3,0 3,200.00 3,0 3,250.00 3,0 3,350.00 3,0 3,450.00 3,0 3,550.00 3,0 3,550.00 3,0	,049.89 3,099.87 3,149.86 3,199.85 3,249.84 3,399.80 3,449.79 3,649.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76 3,549.76	049.99 3 100.02 3 149.96 3 200.05 3 249.94 3 300.07 3 349.91 3 400.10 3 449.89 3	3,049.99 3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	10.72 10.90 11.08 11.26 11.44 11.62 11.79	10.72 10.90 11.08 11.26 11.44 11.62	115.33 117.04 118.70 120.30	0.18 0.18 0.18 0.18	29.99 29.99 29.99	32.97 33.46 33.98	11.53 11.66 11.82	21.44 21.80 22.15	1.538 Minor Risk 1.535 Minor Risk 1.534 Minor Risk	
3,100.00 3,4 3,150.00 3, 3,200.00 3, 3,250.00 3, 3,300.00 3, 3,450.00 3, 3,550.00 3, 3,550.00 3,	.099.87 3149.86 3199.85 3249.84 3299.83 3349.81 3399.80 3449.79 3499.78 3.5, .549.76 3.5	100.02 3 149.96 3 200.05 3 249.94 3 300.07 3 349.91 3 400.10 3 449.89 3	3,099.97 3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	10.90 11.08 11.26 11.44 11.62 11.79	10.90 11.08 11.26 11.44 11.62	117.04 118.70 120.30 121.86	0.18 0.18 0.18	29.99 29.99	33.46 33.98	11.66 11.82	21.80 22.15	1.535 Minor Risk 1.534 Minor Risk	
3,150.00 3, 3,200.00 3, 3,250.00 3, 3,300.00 3, 3,400.00 3, 3,450.00 3,4 3,550.00 3,5	,149.86 3, ,199.85 3, ,249.84 3, ,299.83 3, ,349.81 3, ,399.80 3, ,449.79 3, ,499.78 3,5,	149.96 3 200.05 3 249.94 3 300.07 3 349.91 3 400.10 3 449.89 3	3,149.96 3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	11.08 11.26 11.44 11.62 11.79	11.08 11.26 11.44 11.62	118.70 120.30 121.86	0.18 0.18	29.99	33.98	11.82	22.15	1.534 Minor Risk	
3,250.00 3, 3,250.00 3. 3,300.00 3. 3,350.00 3. 3,450.00 3, 3,550.00 3,	.199.85 3,4 .249.84 3,2 .299.83 3,3 .349.81 3,3 .399.80 3,4 .449.79 3,4 .499.78 3,5 .549.76 3,5	200.05 3 249.94 3 300.07 3 349.91 3 400.10 3 449.89 3	3,199.95 3,249.94 3,299.93 3,349.91 3,399.90	11.26 11.44 11.62 11.79	11.26 11.44 11.62	120.30 121.86	0.18						
3,250.00 3,300.00 3,350.00 3,350.00 3,450.00 3,5	.249.84 3.2 .299.83 3.3 .349.81 3.3 .399.80 3.4 .449.79 3.4 .499.78 3.5 .549.76 3.5	249.94 3 300.07 3 349.91 3 400.10 3 449.89 3	3,249.94 3,299.93 3,349.91 3,399.90	11.44 11.62 11.79	11.44 11.62	121.86		29.99	34.52	12.01	22.51	1.533 Minor Risk	
3,300.00 3,350.00 3,400.00 3,450.00 3,500.00 3,550.00 3,550.00 3,6	.299.83 3,3 .349.81 3,3 .399.80 3,4 .449.79 3,4 .499.78 3,5 .549.76 3,5	300.07 3 349.91 3 400.10 3 449.89 3	3,299.93 3,349.91 3,399.90	11.62 11.79	11.62		0.18						
3,350.00 3, 3,400.00 3, 3,450.00 3, 3,500.00 3,	.349.81 3,3 ,399.80 3,4 ,449.79 3,4 ,499.78 3,5 ,549.76 3,5	349.91 3 400.10 3 449.89 3	3,349.91 3,399.90	11.79		122 27		29.99	35.09	12.22	22.87	1.534 Minor Risk	
3,400.00 3,450.00 3,500.00 3,550.00 3,550.00 3,650.00 3,650.00 3,650.00 3,650.00	,399.80 3,4 ,449.79 3,4 ,499.78 3,5 ,549.76 3,5	400.10 3 449.89 3	3,399.90		11 80	123.37	0.18	29.99	35.69	12.46	23.23	1.536 Minor Risk	
3,450.00 3,4 3,500.00 3,4 3,550.00 3,5	,449.79 3,4 ,499.78 3,5 ,549.76 3,5	449.89 3		11.97		124.82	0.18	29.99	36.30	12.72	23.59	1.539 Minor Risk	
3,500.00 3,4 3,550.00 3,8	,499.78 3,5 ,549.76 3,5		3,449.89		11.97	126.23	0.18	29.99	36.95	13.00	23.95	1.543 Minor Risk	
3,550.00 3,5	,549.76 3,5	500.12 3		12.15	12.15	127.58	0.18	29.99	37.61	13.31	24.30	1.548 Minor Risk	
			3,499.88	12.33	12.33	128.89	0.18	29.99	38.29	13.63	24.66	1.553 Minor Risk	
3,600.00 3,5	.599.75 3,6	549.87 3	3,549.86	12.51	12.51	130.15	0.18	29.99	39.00	13.98	25.02	1.559 Minor Risk	
		600.15 3	3,599.85	12.69	12.69	131.37	0.18	29.99	39.72	14.34	25.38	1.565 Minor Risk	
3,650.00 3,6	649.74 3,6	649.84 3	3,649.84	12.87	12.87	132.55	0.18	29.99	40.45	14.72	25.73	1.572 Minor Risk	
3,700.00 3,6	,699.73 3,7	700.17 3	3,699.83	13.05	13.05	133.68	0.18	29.99	41.21	15.12	26.09	1.579 Minor Risk	
3,750.00 3,7	,749.72 3,7	749.82 3	3,749.82	13.23	13.23	134.77	0.18	29.99	41.98	15.53	26.45	1.587 Minor Risk	
			3,799.80	13,41	13.41	135.82	0.18	29.99	42.76	15.95	26.81	1,595 Minor Risk	
3,850.00 3,8	,849.69 3,6	849.79 3	3,849.79	13.59	13.59	136.83	0.18	29.99	43.56	16.40	27.17	1.603 Minor Risk	
3,900.00 3,8	,899.68 3,9	900.22 3	3,899.78	13.76	13.77	137.80	0.18	29.99	44.37	16.85	27.53	1.612 Minor Risk	
3,950.00 3,9	,949.67 3,9	949.77 3	3,949.77	13.94	13.94	138.74	0.18	29.99	45.20	17.31	27.88	1.621 Minor Risk	
4,000.00 3,9	,999.65 4,0	000.24 3	3,999.75	14.12	14.12	139.65	0.18	29.99	46.03	17.79	28.24	1.630 Minor Risk	
4,050.00 4,0	,049.64 4,0	049.74 4	4,049.74	14.30	14.30	140.52	0.18	29.99	46.88	18.28	28.60	1.639 Minor Risk	
4,100.00 4,0	,099.63 4,1	100.27 4	4,099.73	14.48	14.48	141.37	0.18	29.99	47.74	18.78	28.96	1.648 Minor Risk	
			4,149.72	14.66	14.66	142.18	0.18	29.99	48.61	19.29	29.32	1.658 Minor Risk	
4,200.00 4,	,199.61 4,2	200.29 4	4,199.71	14.84	14.84	142.96	0.18	29.99	49.48	19.81	29.68	1.667 Minor Risk	
4,250.00 4,2	,249.59 4,2	249.70 4	4,249.69	15.02	15.02	143.72	0.18	29.99	50.37	20.34	30.03	1.677 Minor Risk	
4,300.00 4.3	.299.58 4,3	300.32 4	4,299.68	15.20	15.20	144.45	0.18	29.99	51.26	20.87	30.39	1.687 Minor Risk	
			4,349.67	15.38	15.38	145.15	0.18	29.99	52.16	21.41	30.75	1.696 Minor Risk	
			4,399.66	15.56	15.56	145.83	0.18	29.99	53.07	21.96	31.11	1.706 Minor Risk	
4,450.00 4,4	,449.55 4,4	449.65 4	4,449.65	15.74	15.73	146.49	0.18	29.99	53.99	22.53	31.47	1,716 Minor Risk	
			4,499.63	15.91	15.92	147.13	0.18	29.99	54.92	23.09	31.83	1.725 Minor Risk	
			4,549.62	16.09	16.09	147.74	0.18	29.99	55.85	23.66	32.18	1.735 Minor Risk	
			4,599.61	16.27	16.27	148.34	0.18	29.99	56.78	24.24	32.54	1.745 Minor Risk	
4,650.00 4,6	,649.50 4,6	649.60 4	4,649.60	16.45	16.45	148.91	0.18	29.99	57.73	24.83	32.90	1.755 Minor Risk	
4,700.00 4,6	,699.48 4,7	700.41 4	4,699.58	16.63	16.63	149.47	0.18	29.99	58.67	25.41	33.26	1.764 Minor Risk	
4,750.00 4,7	,749.47 4,7	749.57 4	4,749.57	16.81	16.81	150.01	0.18	29.99	59.63	26.01	33.62	1.774 Minor Risk	
4,800.00 4.7	.799.46 4.8	800.44 4	4,799.56	16.99	16.99	150.53	0.18	29.99	60.59	26.61	33.98	1.783 Minor Risk	
4,850.00 4,8	.849.45 4,8	849.55 4	4,849.55	17.17	17.17	151.04	0.18	29.99	61.55	27.22	34.33	1.793 Minor Risk	
4,900.00 4,8	,899.44 4,9	900.46 4	4,899.54	17.35	17.35	151.53	0.18	29.99	62.52	27.82	34.69	1.802 Minor Risk	
4,950.00 4,9	,949.42 4,9	949.52 4	4,949.52	17.53	17.53	152.00	0.18	29.99	63.49	28.44	35.05	1.811 Minor Risk	
5,000.00 4,9	,999.41 5,0	000.49 4	4,999.51	17.71	17.71	152.46	0.18	29.99	64.47	29.06	35.41	1.821 Minor Risk	
5,050.00 5,0	,049.40 5,0	049.50 5	5,049.50	17.89	17.88	152.91	0.18	29.99	65.45	29.68	35.77	1.830 Minor Risk	
5,100.00 5,0	,099.39 5,1	100.51 5	5,099.49	18.07	18.07	153.34	0.18	29.99	66.43	30.30	36.13	1.839 Minor Risk	
5,150.00 5.1	.149.37 5,1	149.48 5	5,149.47	18.25	18.24	153.76	0.18	29.99	67.42	30.94	36.48	1.848 Minor Risk	
5,200.00 5,1	,199.36 5,2	200.54 5	5,199.46	18.42	18.43	154.17	0.18	29.99	68.41	31.57	36.85	1.857 Minor Risk	
5,250.00 5,2	,249.35 5,2	249.45 5	5,249.45	18.60	18.60	154.57	0.18	29.99	69.41	32.21	37.20	1.866 Minor Risk	

Company: Project:

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Reference Site: Reference Well: Sec 27-T25S-R31E

Site Error:

0.00 ft

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore

0.50 ft

Wellbore #1 Reference Design: Permit Plan 1 Local Co-ordinate Reference:

TVD Reference:

RKB @ 3359.80ft **MD Reference:** RKB @ 3359.80ft

North Reference:

Survey Calculation Method:

Offset TVD Reference:

Output errors are at

Database:

Minimum Curvature

2.00 sigma

EDM r5000.141_Prod US

Well Lusitano 27-34 Fed Com 733H

Offset Datum

Grid

Offset De	_		T25S-R3	1E - Lusitan	10 27_34	rea Com 62	2H - Wellbore	#1 - Pemi	it Plan 1			Oliset	Site Error:	0.00
urvey Prog Refe		IWD+HDGM Offse	et	Semi Major	Axis				Dist	ance		Offset	Well Error:	0.50
leasured Depth	Vertical Depth	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface	Offset Wellbor	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)			(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
5,300.00 5,350.00		5,300.56	5,299.44	18.78	18.78	154.95 155.33	0.18	29.99	70.41	32.85	37.56	1.874 Minor Risk		
5,400.00		5,349.43 5,400.59	5,349.43 5,399.41	18.96 19.14	18.96 19.14	155.69	0.18 0.18	29.99 29.99	71.41 72.41	33.49 34.14	37.92 38.28	1.883 Minor Risk 1.892 Minor Risk		
5,450.00		5,449.40	5,449.40	19.32	19.32	156.05	0.18	29.99	73.42	34.79	38.63	1.900 Minor Risk		
5,500.00		5,500.61	5,499.39	19.50	19.50	156.39	0.18	29.99	74.43	35.44	39.00	1.909 Minor Risk		
5,550.00		5,549.38	5,549.38	19.68	19.68	156.73	0.18	29.99	75.45	36.10	39.35	1,917 Minor Risk		
5,600.00	5,599.26	5,600.63	5,599.36	19.86	19.86	157.06	0.18	29.99	76.46	36.75	39.71	1.925 Minor Risk		
5,650.00		5,649.35	5,649.35	20.04	20.03	157.37	0.18	29.99	77.48	37.41	40.07	1.934 Minor Risk		
5,700.00	5,699.24	5,700.66	5,699.34	20.22	20.22	157.68	0.18	29.99	78.50	38.07	40.43	1.942 Minor Risk		
5,750.00	5,749.23	5,749.33	5,749.33	20.40	20.39	157.99	0.18	29.99	79.52	38.74	40.78	1.950 Minor Risk		
5,800.00	5,799.22	5,800.68	5,799.32	20.58	20.58	158.28	0.18	29.99	80.55	39.40	41.15	1.958 Minor Risk		
5,850.00	5,849.20	5,849.30	5,849.30	20.76	20.75	158.57	0.18	29.99	81.57	40.07	41.50	1.966 Minor Risk		
5,900.00	5,899.19	5,900.71	5,899.29	20.93	20.93	158.85	0.18	29.99	82.60	40.74	41.86	1.973 Minor Risk		
5,950.00	5,949.18	5,949.28	5,949.28	21.11	21.11	159.12	0.18	29.99	83.63	41,41	42.22	1.981 Minor Risk		
6,000.00		6,000.73	5,999.27	21.29	21.29	159.39	0.18	29.99	84.66	42.08	42.58	1.988 Minor Risk		
6,050.00	6,049.16	6,049.26	6,049.26	21.47	21.47	159.65	0.18	29.99	85.70	42.76	42.93	1.996 Minor Risk		
6,100.00	6,099.14	6,100.76	6,099.24	21.65	21.65	159.90	0.18	29.99	86.73	43.44	43.30	2.003 Minor Risk		
6,150.00		6,149.23	6,149.23	21.83	21.82	160.15	0.18	29.99	87.77	44.12	43.65	2.011 Minor Risk		
6,200.00		6,200.78	6,199.22	22.01	22.01	160.39	0.18	29.99	88.81	44.80	44.02	2.018 Minor Risk		
6,250.00		6,249.21	6,249.21	22.19	22.18	160.63	0.18	29.99	89.85	45.48	44.37	2.025 Minor Risk		
6,300.00	6,299.09	6,300.80	6,299.19	22.37	22.37	160.86	0.18	29.99	90.89	46.16	44.73	2.032 Minor Risk		
6,350.00	6,349.08	6,349.18	6,349.18	22.55	22.54	161.08	0.18	29.99	91.94	46.85	45.09	2.039 Minor Risk		
6,400.00	6,399.07	6,400.83	6,399.17	22.73	22.73	161.30	0.18	29.99	92.98	47.53	45.45	2.046 Minor Risk		
6,450.00		6,449.16	6,449.16	22.91	22.90	161.52	0.18	29.99	94.03	48.23	45.80	2.053 Minor Risk		
6,500.00		6,500.85	6,499.15	23.09	23.09	161.73	0.18	29.99	95.08	48.91	46.17	2.059 Minor Risk		
6,550.00	6,549.03	6,549.13	6,549.13	23.27	23.26	161.94	0.18	29.99	96.13	49.61	46.52	2.066 Minor Risk		
6,600.00	6,599.02	6,600.88	6,599.12	23.45	23.44	162.14	0.18	29.99	97.18	50.29	46.88	2.073 Minor Risk		
6,650.00	6,649.01	6,649.11	6,649.11	23.63	23.62	162.33	0.18	29.99	98.23	50.99	47.24	2.080 Minor Risk		
6,700.00	6,699.00	6,700.90	6,699.10	23.80	23.80	162.53	0.18	29.99	99.28	51.68	47.60	2.086 Minor Risk		
6,750.00		6,749.09	6,749.08	23.98	23.97	162.72	0.18	29.99	100.33	52.38	47.95	2.092 Minor Risk		
6,800.00	6,798.97	6,800.93	6,799.07	24.16	24.16	162.90	0.18	29.99	101.39	53.07	48.32	2.098 Minor Risk		
6,850.00	6,848.96	6,849.06	6,849.06	24.34	24.33	163.08	0.18	29.99	102.44	53.78	48.67	2.105 Minor Risk		
6,900.00	6,898.95	6,900.95	6,899.05	24.52	24.52	163.26	0.18	29.99	103.50	54.47	49.04	2.111 Minor Risk		
6,950.00		6,949.04	6,949.04	24.70	24.69	163.44	0.18	29.99	104.56	55.17	49.39	2.117 Minor Risk		
7,000.00		7,000.98	6,999.02	24.88	24.88	163.61	0.18	29.99	105.62	55.87	49.75	2.123 Minor Risk		
7,050.00	7,048.91	7,049.01	7,049.01	25.06	25.05	163.77	0.18	29.99	106.68	56.57	50.10	2.129 Minor Risk		
7,100.00	7,098.90	7,101.00	7,099.00	25.24	25.24	163.94	0.18	29.99	107.74	57.27	50.47	2.135 Minor Risk		
7,150.00	7,148.89	7,148.99	7,148.99	25.42	25.41	164.10	0.18	29.99	108.80	57.98	50.82	2.141 Minor Risk		
7,200.00		7,201.02	7,198.97	25.60	25.59	164.26	0.18	29.99	109.86	58.68	51.19	2.146 Minor Risk		
7,250.00		7,248.96	7,248.96	25.78	25.77	164.41	0.18	29.99	110.92	59.39	51.54	2.152 Minor Risk		
7,300.00	7,298.85	7,301.05	7,298.95	25.96	25.95	164.56	0.18	29.99	111.99	60.08	51.90	2.158 Minor Risk		
7,350.00		7,348.94	7,348.94	26.14	26.12	164.71	0.18	29.99	113.05	60.80	52.25	2.164 Minor Risk		
7,400.00		7,401.07	7,398.93	26.32	26.31	164.86	0.18	29.99	114.12	61.50	52.62	2.169 Minor Risk		
7,450.00	7,448.81	7,448.91	7,448.91	26.50	26.48	165.00	0.18	29.99	115.18	62.21	52.97	2.174 Minor Risk		
7,500.00	7,498.80	7,501.10	7,498.90	26.67	26.67	165.14	0.18	29.99	116.25	62.91	53.34	2.180 Minor Risk		
7,550.00	7,548.79	7,548.89	7,548.89	26.85	26.84	165.28	0.18	29.99	117.32	63.63	53.69	2.185 Minor Risk		
7,600.00	7,598.78	7,601.12	7,598.88	27.03	27.03	165.42	0.18	29.99	118.39	64.33	54.05	2.190 Minor Risk		
7,650.00	7,648.77	7,648.87	7,648.87	27.21	27.20	165.55	0.18	29.99	119.46	65.05	54.41	2.196 Minor Risk		
7,700.00	7,698.75	7,701.15	7,698.85	27.39	27.39	165.68	0.18	29.99	120.53	65.75	54.77	2.200 Minor Risk		
7,750.00	7,748.74	7,748.84	7,748.84	27.57	27.56	165.81	0.18	29.99	121.60	66.47	55.12	2.206 Minor Risk		
7,800.00	7,798.73	7,801.17	7,798.83	27.75	27.75	165.94	0.18	29.99	122.67	67.18	55.49	2.211 Minor Risk		
7,850.00	7,848.72	7,848.82	7,848.82	27.93	27.92	166.06	0.18	29.99	123.74	67.90	55.84	2.216 Minor Risk		

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 733H

Well Error: 0.50 ft Wellbore #1 Reference Wellbore

Permit Plan 1 Reference Design:

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Minimum Curvature **Survey Calculation Method:**

Output errors are at 2.00 sigma

EDM r5000.141_Prod US Database:

Offset Datum Offset TVD Reference:

(ft) (ff) 7,900.00 7,8 7,950.00 7,8 8,000.00 7,8 8,050.00 8,6 8,100.00 8,6 8,150.00 8,6		VD+HDGM Offse Measured Depth (ft)	t Vertical Depth	Semi Major /	Axis Offset				Dista	ince		Offset V	Vell Error:	0.56
Depth (ft) C (ft	pth ft) ,898.70	Depth		Reference	Office									
7,900.00 7,8 7,950.00 7,8 8,000.00 7,8 8,050.00 8,6 8,150.00 8,6	,898.70	(R)		***		Highside Toolface	Offset Wellbore +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
7,950.00 7,8 8,000.00 7,8 8,050.00 8,0 8,100.00 8,0 8,150.00 8,7			(ft)	(ft)	(ft)	(*)	(ft)	(ft)	(ft)	(ft)	(ft)			
8,000.00 7,8 8,050.00 8,0 8,100.00 8,0 8,150.00 8,0	,948.69	7,901.20	7,898.80	28.11	28.10	166.18	0.18	29.99	124.81	68.60	56.21	2.221 Minor Risk		
8,050.00 8,0 8,100.00 8,0 8,150.00 8,0	000.00	7,948.79	7,948.79	28.29	28.27	166.30	0.18	29.99	125.88	69.32	56.56	2.226 Minor Risk		
8,100.00 8,0 8,150.00 8,1	,998.68	8,001.22	7,998.78	28.47	28.46	166.42	0.18	29.99	126.95	70.03	56.92	2.230 Minor Risk		
8,150.00 8,	,048.67	8,048.77	8,048.77	28.65	28.63	166.54	0.18	29.99	128.03	70.75	57.27	2.235 Minor Risk		
	,098.66	8,101.24	8,098.76	28.83	28.82	166.65	0.18	29.99	129.10	71.46	57.64	2.240 Minor Risk		
8 200 00 0	,148.64	8,148.74	8,148.74	29.01	28.99	166.76	0.18	29.99	130.18	72.19	57.99	2.245 Minor Risk		
	,198.63	8,201.27	8,198.73	29.19	29.18	166.87	0.18	29.99	131.25	72.89	58.36	2.249 Minor Risk		
	,248.62	8,248.72	8,248.72	29.37	29.35	166.98	0.18	29.99	132.33	73.62	58.71	2.254 Minor Risk		
	,298.61	8,301.29	8,298.71	29.55	29.54	167.09	0.18	29.99	133.40	74.33	59.08	2.258 Minor Risk		
	,348.59	8,348.70	8,348.69	29.72	29.71	167.19	0.18	29.99	134.48	75.05	59.42	2.263 Minor Risk		
8,400.00 8,3	,398.58	8,401.32	8,398.68	29.90	29.90	167.30	0.18	29.99	135.56	75.76	59.79	2.267 Minor Risk		
	,448.57	8,448.67	8,448.67	30.08	30.07	167.40	0.18	29.99	136.63	76.49	60.14	2.272 Minor Risk		
	,498.56	8,501.34	8,498.66	30.26	30.25	167.50	0.18	29.99	137.71	77.20	60.51	2.276 Minor Risk		
	,548.55	8,548.65	8,548.65	30.44	30.42	167.60	0.18	29.99	138.79	77.93	60.86	2.281 Minor Risk		
	,598.53	8,601.37	8,598.63	30.62	30.61	167.69	0.18	29.99	139.87	78.64	61.23	2.284 Minor Risk		
8,650.00 8,6	,648.52	8,648.62	8,648.62	30.80	30.78	167.79	0.18	29.99	140.95	79.37	61.58	2.289 Minor Risk		
8,700.00 8,6	698.51	8,701.39	8,698.61	30.98	30.97	167.88	0.18	29.99	142.02	80.08	61.94	2.293 Minor Risk		
8,750.00 8,7	748.50	8,748.60	8,748.60	31.16	31.14	167.98	0.18	29.99	143.10	80.81	62.29	2.297 Minor Risk		
8,800.00 8,7	798.48	8,801.41	8,798.58	31,34	31.33	168.07	0.18	29.99	144.18	81.52	62.66	2.301 Minor Risk		
	848.47	8,848.57	8,848.57	31.52	31.50	168.16	0.18	29.99	145.26	82.26	63.01	2.305 Minor Risk		
	898.46	8,901.44	8,898.56	31.70	31.69	168.25	0.18	29.99	146.35	82.97	63.38	2.309 Minor Risk		
8,950.00 8,9	948.45	8,948.55	8,948.55	31.88	31.86	168.33	0.18	29.99	147.43	83.70	63.73	2.313 Minor Risk		
9,000.00 8,9	998.44	9,001.46	8,998.54	32.06	32.05	168.42	0.18	29.99	148.51	84.41	64.10	2.317 Minor Risk		
9,050.00 9,0	048.42	9,048.52	9,048.52	32.24	32.22	168.51	0.18	29.99	149.59	85.15	64.44	2.321 Minor Risk		
9,100.00 9,0	098.41	9,101.49	9,098.51	32.42	32.41	168.59	0.18	29.99	150.67	85.86	64.81	2.325 Minor Risk		
9,150.00 9,1	148.40	9,148.50	9,148.50	32.60	32.57	168.67	0.18	29.99	151.75	86.59	65.16	2.329 Minor Risk		
9,200.00 9,1	198.39	9,201.51	9,198.49	32.78	32.76	168.75	0.18	29.99	152.84	87.31	65.53	2.332 Minor Risk		
9,250.00 9,2	248.38	9,248.48	9,248.48	32.95	32.93	168.83	0.18	29.99	153.92	88.04	65.88	2.336 Minor Risk		
9,300.00 9,2	298.36	9,301.54	9,298.46	33.13	33.12	168.91	0.18	29.99	155.00	88.76	66.25	2.340 Minor Risk		
9,350.00 9,3	348.35	9,348.45	9,348.45	33.31	33.29	168.99	0.18	29.99	156.09	89.49	66.59	2.344 Minor Risk		
9,400.00 9,3	398.34	9,401.56	9,398.44	33.49	33.48	169.07	0.18	29.99	157.17	90.21	66.96	2.347 Minor Risk		
9,450.00 9,4	448.33	9,448.43	9,448.43	33.67	33.65	169.14	0.18	29.99	158.25	90.94	67.31	2.351 Minor Risk		
9,500.00 9,4	498.31	9,501.59	9,498.41	33.85	33.84	169.22	0.18	29.99	159.34	91.66	67.68	2.354 Minor Risk		
9,550.00 9,5	548.30	9,548.40	9,548.40	34.03	34.01	169.29	0.18	29.99	160.42	92.39	68.03	2.358 Minor Risk		
9,600.00 9,5	598.29	9,601.61	9,598.39	34.21	34.20	169.36	0.18	29.99	161.51	93.11	68.40	2.361 Minor Risk		
9,650.00 9,6	,648.28	9,648.38	9,648.38	34.39	34.37	169.44	0.18	29.99	162.59	93.85	68.75	2.365 Minor Risk		
9,700.00 9,6	698.27	9,701.63	9,698.37	34.57	34.56	169.51	0.18	29.99	163.68	94.56	69.12	2.368 Minor Risk		
9,750.00 9,7	748.25	9,748.35	9,748.35	34.75	34.72	169.58	0.18	29.99	164.76	95.30	69.46	2.372 Minor Risk		
9,800.00 9,7	798.24	9,801.66	9,798.34	34.93	34.92	169.65	0.18	29.99	165.85	96.02	69.83	2.375 Minor Risk		
9,850.00 9,8	848.23	9,848.33	9,848.33	35.11	35.08	169.71	0.18	29.99	166.94	96.76	70.18	2.379 Minor Risk		
9,900.00 9,8	898.22	9,901.68	9,898.32	35.29	35.27	169.78	0.18	29.99	168.02	97.47	70.55	2.382 Minor Risk		
9,950.00 9,9	948.20	9,948.31	9,948.30	35.47	35.44	169.85	0.18	29.99	169.11	98.21	70.90	2.385 Minor Risk		
10,000.00 9,9	,998.19	10,001.71	9,998.29	35.65	35.63	169.91	0.18	29.99	170.20	98.93	71.27	2.388 Minor Risk		
10,050.00 10,0	048.18	10,048.28	10,048.28	35.83	35.80	169.98	0.18	29.99	171.28	99.67	71.61	2.392 Minor Risk		
10,100.00 10,0	098.17	10,101.73	10,098.27	36.01	35.99	170.04	0.18	29.99	172.37	100.39	71.98	2.395 Minor Risk		
	148.16	10,148.26	10,148.26	36.18	36.16	170.10	0.18	29.99	173.46	101.13	72.33	2.398 Minor Risk		
10,200.00 10,1	198.14	10,201.76	10,198.24	36.36	36.35	170.17	0.18	29.99	174.55	101.84	72.70	2.401 Minor Risk		
	248.13		10,248.23	36.54	36.52	170.23	0.18	29.99	175.63	102.59	73.05	2.404 Minor Risk		
	298.12	10,301.78	10,298.22	36.72	36.71	170.29	0.18	29.99	176.72	103.30	73.42	2.407 Minor Risk		
	348.11	10,348.21	10,348.21	36.90	36.87	170.35	0.18	29.99	177.81	104.04	73.77	2,410 Minor Risk		
	398.09	10,401.80	10,398.19	37.08	37.07	170.41	0.18	29.99	178.90	104.76	74.14	2.413 Minor Risk		
10,450.00 10,4	448.08	10.448.18	10 44R 1R	37.26	37.23	170.47	0.18	29.99	179.99	105.50	74.48	2.417 Minor Risk		

Company: WCDSC Permian NM

Project: Eddy County (NAD 83 NM Eastern)

Reference Site: Sec 27-T25S-R31E

Site Error: 0.00 ft

Lusitano 27-34 Fed Com 733H Reference Well:

Well Error: 0.50 ft Wellbore #1 Reference Wellbore

Reference Design: Permit Plan 1 Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H TVD Reference: RKB @ 3359.80ft

MD Reference: RKB @ 3359.80ft

North Reference: Grid

Minimum Curvature **Survey Calculation Method:**

Output errors are at 2.00 sigma

EDM r5000.141_Prod US Database:

Survey Prog	ram: 0-Mi	WD+HDGM										Offset	Well Error:	0.50
Refer	ence	Offs		Semi Major	-				Dista					0.00
leasured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellborn	e Centre +E/-W	Between Centres	Between Eilipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
10,500.00	10,498.07	10,501.83	10,498.17	37.44	37.43	170.52	0.18	29.99	181.08	106.22	74.85	2.419 Minor Risk		
10,550.00	10,548.06	10,548.16	10,548.16	37.62	37.59	170.58	0.18	29.99	182.17	106.97	75.20	2.422 Minor Risk		
10,600.00	10,598.05	10,601.85	10,598.15	37.80	37.78	170.64	0.18	29.99	183.25	107.68	75.57	2.425 Minor Risk		
10,650.00		10,648.13	10,648.13	37.98	37.95	170.69	0.18	29.99	184.34	108.43	75.92	2.428 Minor Risk		
10,700.00	10,698.02	10,701.88	10,698.12	38.16	38.14	170.75	0.18	29.99	185.43	109.14	76.29	2.431 Minor Risk		
10,750.00	10,748.01	10,748.11	10,748.11	38.34	38.31	170.80	0.18	29.99	186.52	109.89	76.63	2.434 Minor Risk		
10,800.00		10,801.90	10,798.10	38.52	38.50	170.86	0.18	29.99	187.61	110.61	77.01	2.436 Minor Risk		
10,900.00		10,901.93	10,898.07	38.88	38.86	170.96	0.18	29.99	189.79	112.07	77.72	2.442 Minor Risk		
10,950.00	10,947.96	10,948.06	10,948.06	39.06	39.02	171.02	0.18	29.99	190.88	112.82	78.07	2.445 Minor Risk		
11,000.00	10,997.95	11,001.95	10,998.05	39.24	39.22	171.06	0.18	29.99	191.75	113.31	78.44	2.445 Minor Risk		
11,050.00	11,047.95	11,048.05	11,048.05	39.41	39.38	164.29	0.18	29.99	191.99	113.21	78.78	2.437 Minor Risk		
11,100.00	11,097.95	11,101.95	11,098.05	39.59	39.58	164.29	0.18	29.99	191.99	112.84	79.16	2.425 Minor Risk		
11,150.00	11,147.95	11,148.05	11,148.05	39.77	39.74	164.29	0.18	29.99	191.99	112.49	79.50	2.415 Minor Risk		
11,154.12	11,152.07	11,152.17	11,152.17	39.79	39.76	164.29	0.18	29.99	191.99	112.46	79.53	2.414 Minor Risk		
11,200.00	11,197.95	11,192.44	11,192.44	39.95	39.90	164.31	-0.08	29.99	192.33	112.53	79.80	2.410 Minor Risk		
11,250.00	11,247.95	11,230.09	11,230.00	40.13	40.02	164.50	-2.46	29.98	195.37	115.50	79.87	2.446 Minor Risk		
11,300.00	11,297.95	11,267.27	11,266.87	40.31	40.14	164.87	-7.23	29.96	201.55	121.83	79.73	2.528 Alert		
11,350.00	11,347.95	11,303.68	11,302.60	40.49	40.25	165.39	-14.20	29.94	210.82	131,43	79.38	2.656 Alert		
11,400.00	11,397.95	11,339.08	11,336.84	40.67	40.38	-13.87	-23.14	29.91	223.04	144.18	78.86	2.828 Alert		
11,450.00	11,447.86	11,373.84	11,369.87	40.82	40.46	-13.02	-33.96	29.87	235.59	157.45	78.14	3.015 Alert		
11,500.00	11,497.33	11,408.30	11,401.91	40.98	40.56	-12.32	-46.65	29.83	246.90	169.64	77.26	3.196 Alert		
11,550.00	11,546.00	11,442.52	11,432.91	41.13	40.66	-11.75	-61.13	29.77	256.93	180.70	76.23	3.371 Alert		
11,600.00	11,593.48	11,476.52	11,462.80	41.27	40.76	-11.29	-77.32	29.72	265.64	190.59	. 75.05	3.540 Alert		
11,650.00	11,639.43	11,510.35	11,491.53	41.41	40.86	-10.92	-95.16	29.66	272.99	199.25	73.74	3.702 Alert		
11,700.00	11,683,48	11,544.03	11,519.05	41.54	40.95	-10.62	-114,59	29.59	278.98	206.65	72.32	3.857 Alert		
11,750.00	11,725.31	11,577.60	11,545.29	41.65	41.04	-10.40	-135.52	29.51	283.56	212.77	70.80	4.005 Alert		
11,800.00	11,764.60	11,611.10	11,570.21	41.77	41.13	-10.24	-157.90	29.44	286.74	217.55	69.19	4.144 Alert		
11,850.00	11,801.04	11,644.54	11,593.74	41.88	41.22	-10.14	-181.66	29.35	288.50	220.98	67.53	4.272 Alert		
11,900.00	11,834.36	11,677.97	11,615.83	42.00	41.31	-10.11	-206.73	29.26	288.84	223.02	65.81	4.389 Alert		
11,950.00	11,864.31	11,711.39	11,636.42	42.10	41.40	-10.12	-233.06	29.17	287.75	223.66	64.09	4.490 Alert		
12,000.00	11,890.66	11,744.86	11,655.47	42.21	41.48	-10.20	-260.57	29.07	285.24	222.87	62.37	4.573 Alert		
12,050.00	11,913.20	11,778.39	11,672.90	42.32	41.57	-10.34	-289.20	28.97	281.31	220.62	60.69	4.635 Alert		
12,100.00	11,931.77	11,812.01	11,688.68	42.42	41.66	-10.54	-318.89	28.87	275.98	216.90	59.08	4.671 Alert		
12,150.00	11,946.22	11,850.00	11,704.37	42.52	41.76	-10.84	-353.48	28.75	269.31	211.28	58.03	4.641 Alert		
12,200.00	11,956.45	11,879.67	11,715.01	42.62	41.84	-11,17	-381.17	28.65	261.18	204.93	56.25	4.643 Alert		
12,250.00	11,962.38	11,913.77	11,725.45	42.73	41.92	-11.61	-413.62	28.54	251.75	196.65	55.11	4.569 Alert		
12,300.00	11,964.00	11,950.00	11,734.41	42.82	42.02	-12.15	-448.72	28.41	241.07	186.73	54.34	4.436 Alert		
12,350.00	11,964.00	11,983.09	11,740.64	42.02	42.02	-12.15 -12.44	-446.72 -481.22	28.30	241.07	178.18	53.54	4.436 Alert		
12,400.00			11,745.24	43.05	42.20	-12.65	-516.60	28.18	225.36	172.24	53.12	4.242 Alert		
12,450.00	11,964.00	12,054.91	11,747.65	43.19	42.29	-12.74	-552.65	28.05	222.06	169.07	52.98	4.191 Alert		
	11,964.00		11,748.00	43.32	42.41	-12.71	-595.04	27.90	221.53	168.45	53.08	4.173 Alert		
12 550 00	11 064 00	12 147 24	11,748.00	42.40	43.54	-12.65	.64E.04	27.72	224 47	100.00	E2 24	4 162 Alam		
12,550.00	11,964.00 11,964.00		11,748.00	43.48 43.64	42.54 42.71	-12.65 -12.58	-645.04 -695.04	27.73 27.55	221.47 221.42	168.26 168.06	53.21 53.36	4.162 Alert		
	11,964.00		11,748.00	43.82	42.71	-12.56 -12.52	-095.04 -745.04	27.55 27.37	221.42	167.85	53.56	4.150 Alert 4.137 Alert		
	11,964.00		11,748.00	43.82	43.04	-12.52	-745.04 -795.04	27.37	221.36	167.63	53.68	4.137 Alert 4.123 Alert		
	11,964.00		11,748.00	44.00 44.21	43.04	-12.46 -12.39	-795.04 -845.03	27.20	221.31	167.40	53.86	4.123 Alert 4.108 Alert		
	11,964.00		11,748.00	44,41	43.43	-12.33	-895.03	26.85	221.20	167.15	54.05	4.092 Alert		
12,850.00			11,748.00	44.64	43.62	-12.27	-945.03	26.67	221.15	166.90	54.25	4.076 Alert		
12,900.00		12,502.70		44.87	43.86	-12.20	-995.03	26.50	221.10	166.62	54.47	4.059 Alert		
	11,964.00		11,748.00	45.11	44.07	-12.14	-1,045.03	26.32	221.04	166.35	54.69	4.042 Alert		
13,000.00	11,964.00	12,602.70	11,748.00	45.36	44.33	-12.08	-1,095.03	26.15	220.99	166.05	54.94	4.023 Alert		
13,050.00		12,647.30		45.63										

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 733H

Well Error: 0.50 ft

Reference Wellbore Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset Des	sign	Sec 27-	T25S-R3	1E - Lusitano	27_34	Fed Com 62	2H - Wellbore	#1 - Permi	it Plan 1				Offset Site Error:	0.00 ft
Survey Progr		WD+HDGM	-4	Camil Malaa	\I.a				Disa				Offset Well Error:	0.50 ft
Refere Measured		Offs		Semi Major / Reference	Axis Offset	Highside	Office A Date liber	- 0	Dista Between	ance Between	Minimum	CN		
Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	(ft)	(ft)	Toolface (°)	Offset Wellbor +N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Separation Factor	Warning	
13,100.00	11,964.00	12,702.70	11,748.00	45.90	44.84	-11.95	-1,195.03	25.80	220.89	165.44	55.45	3.984 Ale	1	
13,150.00	11,964.00	12,747.30	11,748.00	46.18	45.09	-11.89	-1,245.03	25.62	220.83	165.13	55.70	3.964 Ale		
13,200.00	11,964.00	12,802.70	11,748.00	46.47	45.40	-11.82	-1,295.03	25.44	220.78	164.79	56.00	3.943 Ale		
13,250.00	11,964.00	12,847.30	11,748.00	46.78	45.66	-11.76	-1,345.02	25.27	220.73	164.46	56.27	3.922 Ale	rt .	
13,300.00	11,964.00	12,902.70	11,748.00	47.08	45.99	-11.70	-1,395.02	25.09	220.68	164.10	56.59	3.900 Ale	rt	
13,350.00	11,964.00	12,947.30	11,748.00	47.41	46.27	-11.63	-1,445.02	24.92	220.63	163.75	56.88	3.879 Ale	ıt	
13,400.00	11,964.00	13,002.71	11,748.00	47.73	46.62	-11.57	-1,495.02	24.74	220.58	163.36	57.22	3.855 Ale	n	
13,450.00	11,964.00	13,047.29	11,748.00	48.07	46.92	-11.50	-1,545.02	24.57	220.53	163.00	57.53	3.833 Ale	rt	
13,500.00	11,964.00	13,102.71	11,748.00	48.42	47.29	-11.44	-1,595.02	24.39	220.48	162.60	57.88	3.809 Ale	rt	
13,550.00	11,964.00	13,147.29	11,748.00	48.77	47.60	-11.38	-1,645.02	24.22	220.43	162.22	58.22	3.786 Ale	t .	
13,600.00	11,964.00	13,202.71	11,748.00	49.13	47.99	-11.31	-1,695.02	24.04	220.38	161.80	58.59	3.762 Ale	ı	
13,650.00	11,964.00	13,247.29	11,748.00	49.51	48.32	-11.25	-1,745.02	23.86	220.33	161.40	58.94	3.739 Ale	1	
13,700.00	11,964.00	13,302.71	11,748.00	49.88	48.73	-11.19	-1,795.02	23.69	220.28	160.96	59.33	3.713 Ale	rt	
13,750.00	11,964.00	13,347.29	11,748.00	50.27	49.07	-11,12	-1,845.02	23.51	220.24	160.55	59.69	3.690 Ale	rt	
13,800.00	11,984.00	13,402.71	11,748.00	50.66	49.50	-11.06	-1,895.01	23.34	220.19	160.09	60.10	3.664 Ale	rt	
13,850.00	11,964.00	13,447.29	11,748.00	51.07	49.85	-10.99	-1,945.01	23.16	220.14	159.66	60.48	3.640 Ale	1	
13,900.00	11,964.00	13,502.71	11,748.00	51.47	50.29	-10.93	-1,995.01	22.99	220.09	159.19	60.90	3.614 Ale	nt	
13,950.00	11,964.00	13,547.29	11,748.00	51.89	50.66	-10.87	-2,045.01	22.81	220.05	158.75	61.29	3.590 Ale	t	
14,000.00	11,964.00	13,602.71	11,748.00	52.31	51.12	-10.80	-2,095.01	22.64	220.00	158.26	61.73	3.564 Ale	rt	
14,050.00	11,964.00	13,647.29	11,748.00	52.74	51.50	-10.74	-2,145.01	22.46	219.95	157.81	62.14	3.540 Ale	t	
14,100.00	11,964.00	13,702.71	11,748.00	53.17	51.97	-10.67	-2,195.01	22.29	219.91	157.31	62.60	3.513 Ale	t	
14,150.00	11,964.00	13,747.29	11,748.00	53.62	52.36	-10.61	-2,245.01	22.11	219.86	156.84	63.02	3.489 Ale	t .	
14,200.00	11,964.00	13,802.72	11,748.00	54.06	52.85	-10.55	-2,295.01	21.93	219.81	156.33	63.49	3.462 Ale	t	
14,250.00	11,964.00	13,847.28	11,748.00	54.52	53.25	-10.48	-2,345.01	21.76	219.77	155.85	63.92	3.438 Ale	rt	
14,300.00	11,964.00	13,902.72	11,748.00	54.97	53.75	-10.42	-2,395.01	21.58	219.72	155.32	64.40	3.412 Ale	1	
14,350.00	11,964.00	13,947.28	11,748.00	55.44	54.17	-10.35	-2,445.00	21.41	219.68	154.83	64.85	3.388 Ale	1	
14,400.00	11,964.00	14,002.72	11,748.00	55.91	54.68	-10.29	-2,495.00	21.23	219.63	154.29	65.34	3.361 Ale	1	
14,450.00	11,964.00	14,047.28	11,748.00	56.39	55.10	-10.23	-2,545.00	21.06	219.59	153.79	65.80	3.337 Ale	rt .	
14,500.00	11,964.00	14,102.72	11,748.00	56.87	55.63	-10.16	-2,595.00	20.88	219.54	153.23	66.31	3.311 Ale	rt	
14,550.00	11,964.00	14,147.28	11,748.00	57.36	56.06	-10.10	-2,645.00	20.71	219.50	152.72	66.78	3.287 Ale	rt	
14,600.00	11,964.00	14,202.72	11,748.00	57.84	56.60	-10.03	-2,695.00	20.53	219.46	152.16	67.30	3.261 Ale	rt	
14,650.00	11,964.00	14,247.28	11,748.00	58.34	57.04	-9.97	-2,745.00	20.36	219.41	151.64	67.77	3.237 Ale	rt	
14,700.00	11,964.00	14,302.72	11,748.00	58.84	57.59	-9.90	-2,795.00	20.18	219.37	151.06	68.31	3.212 Ale	t	
14,750.00	11,964.00	14,347.28	11,748.00	59.35	58.04	-9.84	-2,845.00	20.00	219.33	150.53	68.79	3.188 Ale	t	
14,800.00	11,964.00	14,402.72	11,748.00	59.86	58.60	-9.77	-2,895.00	19.83	219.28	149.95	69.34	3.163 Ale	t .	
14,850.00	11,964.00	14,447.28	11,748.00	60.38	59.06	-9.71	-2,945.00	19.65	219.24	149.41	69.83	3.140 Ale	1	
14,900.00	11,964.00	14,502.72	11,748.00	60.89	59.63	-9.65	-2,994.99	19.48	219.20	148.81	70.38	3.114 Ale	rt	
14,950.00	11,964.00	14,547.28	11,748.00	61.42	60.10	-9.58	-3,044.99	19.30	219.16	148.27	70.89	3.092 Ale	nt .	
15,000.00	11,964.00	14,602.73	11,748.00	61.94	60.68	-9.52	-3,094.99	19.13	219.12	147.66	71.45	3.067 Ale	rt .	
15,050.00	11,964.00	14,647.27	11,748.00	62.48	61.15	-9.45	-3,144.99	18.95	219.07	147,11	71.96	3.044 Ale	n	
15,100.00	11,964.00	14,702.73	11,748.00	63.01	61.74	-9.39	-3,194.99	18.78	219.03	146.50	72.54	3.020 Ale	rt	
15,150.00	11,964.00	14,747.27	11,748.00	63.55	62.22	-9.32	-3,244.99	18.60	218.99	145.94	73.06	2.998 Ale	rt	
15,200.00	11,964.00	14,802.73	11,748.00	64.09	62.82	-9.26	-3,294.99	18.42	218.95	145.31	73.64	2.973 Ale	rt	
15,250.00	11,964.00	14,847.27	11,748.00	64.64	63.31	-9.19	-3,344.99	18.25	218.91	144.75	74.17	2.952 Ale	rt	
15,300.00	11,964.00	14,902.73	11,748.00	65.19	63.91	-9.13	-3,394.99	18.07	218.87	144.12	74.76	2.928 Ale	rt	
15,350.00	11,964.00	14,947.27	11,748.00	65.74	64.40	-9.06	-3,444.99	17.90	218.83	143.54	75.29	2.907 Ale	1	
15,400.00	11,964.00	15,002.73	11,748.00	66.30	65.02	-9.00	-3,494.98	17.72	218.79	142.91	75.89	2.883 Ale	п	
15,450.00	11,964.00	15,047.27	11,748.00	66.86	65.52	-8.94	-3,544.98	17.55	218.75	142.33	76.43	2.862 Ale	rt	
15,500.00	11,964.00	15,102.73	11,748.00	67.42	66.14	-8.87	-3,594.98	17.37	218.72	141.68	77.03	2.839 Ale	nt	
15,550.00	11,964.00	15,147.27	11,748.00	67.99	66.64	-8.81	-3,644.98	17.20	218.68	141.10	77.58	2.819 Ale	rt	
15,600.00	11,964.00	15,202.73	11,748.00	68.56	67.27	-8.74	-3,694.98	17.02	218.64	140.45	78.19	2.796 Ale	n	
15,650.00	11,964.00	15,247.27	11,748.00	69.13	67.78	-8.68	-3,744.98	16.85	218.60	139.86	78.75	2.776 Ale	п	

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error:

Offset Design

0.00 ft

Reference Well: Lusitano 27-34 Fed Com 733H

Well Error:

0.50 ft

Reference Wellbore Wellbore #1 Reference Design:

Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 622H - Wellbore #1 - Permit Plan 1

Permit Plan 1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

0.00 ft

Offset Site Error:

RKB @ 3359.80ft TVD Reference:

MD Reference:

RKB @ 3359.80ft Grid

North Reference:

Minimum Curvature

Survey Calculation Method:

2.00 sigma Output errors are at

Database: Offset TVD Reference:

EDM r5000.141_Prod US Offset Datum

Survey Progr	ram: 0-M	WD+HDGM			_		.ZII - WCIIDOIC					Of	faet Well Error:	0.50 ft
Refere		Offse		Semi Major					Dista					
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore		Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	(ft)	Factor		
15,700.00	11,964.00	15,302.74	11,748.00	69.71	68.42	-8.61	-3,794.98	16.67	218.56	139.20	79.37	2.754 Alert		
15,750.00	11,964.00	15,347.27	11,748.00	70.29	68.93	-8.55	-3,794.98	16.49	218.53	138.60	79.92	2.734 Alert		
15,800.00	11,964.00	15,402.74	11,748.00	70.87	69.57	-8.48	-3,894.98	16.32	218.49	137.94	80.55	2.712 Alert		
15,850.00	11,964.00	15,447.26	11,748.00	71.45	70.09	-8.42	-3,944.98	16.14	218.45	137.34	81.11	2.693 Alert		
15,900.00	11,964.00	15,502.74	11,748.00	72.03	70.74	-8.35	-3,994.98	15.97	218.42	136.67	81.75	2.672 Alert		
15,950.00	11,964.00	15,547.26	11,748.00	72.62	71.26	-8.29	-4,044.97	15.79	218.38	136.06	82.32	2.653 Alert		
16,000.00	11,964.00	15,602.74	11,748.00	73.21	71.92	-8.22	-4,094.97	15.62	218.34	135.39	82.95	2.632 Alert		
16,050.00 16,100.00	11,964.00 11,964.00	15,647.26 15,702.74	11,748.00 11,748.00	73.81 74.40	72.44 73.10	-8.16 -8.09	-4,144.97 4.104.07	15.44 15.27	218.31 218.27	134.78 134.10	83.53 84.17	2.614 Alert 2.593 Alert		
16,150.00	11,964.00	15,702.74	11,748.00	75.00	73.63	-8.03	-4,194.97 -4,244.97	15.27	218.24	133.49	84.75	2.575 Alert		
16,200.00	11,964.00	15.802.74	11,748.00	75.60	74.30	-7.96	-4,294.97	14.91	218.20	132.80	85.40	2.555 Alert		
10,200.00	11,004.00	10,002.14	11,140.00	70.00	14,55	-1.50	7,254.07	14.01	210.20	102.00	00.40	2.555 74610		
16,250.00	11,964.00	15,847.26	11,748.00	76.21	74.84	-7.90	-4,344.97	14.74	218.17	132.19	85.98	2.537 Alert		
16,300.00	11,984.00	15,902.74	11,748.00	76.81	75.50	-7.83	-4,394.97	14.56	218.13	131.50	86.64	2.518 Alert		
16,350.00	11,964.00	15,947.26	11,748.00	77.42	76.04	-7.77	-4,444 .97	14.39	218.10	130.88	87.23	2.500 Alert		
16,400.00	11,964.00	16,002.74	11,748.00	78.03	76.72	-7.70	-4,494.97	14.21	218.07	130.18	87.88	2.481 Minor F		
16,450.00	11,964.00	16,047.26	11,748.00	78.64	77.26	-7.64	-4,544.97	14,04	218.03	129.56	88.48	2.464 Minor F	Risk	
16,500.00	11,964.00	16,102.75	11,748.00	79.25	77.94	-7.57	-4,594.96	13.86	218.00	128.86	89.14	2,446 Minor R	Risk	
16,550.00	11,964.00	16,147.26	11,748.00	79.86	78.49	-7.51	-4,644.96	13.69	217.97	128.23	89.74	2.429 Minor F		
16,600.00	11,964.00	16,202.75	11,748.00	80.48	79.17	-7.44	-4,694.96	13.51	217.94	127.53	90.40	2.411 Minor F		
16,650.00	11,984.00	16,247.25	11,748.00	81.10	79.72	-7.38	-4,744.96	13.34	217.90	126.90	91.00	2.394 Minor F		
16,700.00	11,964.00	16,302.75	11,748.00	81.72	80.41	-7.31	-4,794.96	13.16	217.87	126.20	91.68	2.377 Minor F		
16,750.00	11,984.00	16,347.25	11,748.00	82.34	80.96	-7.25	-4,844.96	12.98	217.84	125.56	92.28	2.361 Minor F		
16,800.00	11,964.00	16,402.75	11,748.00	82,96	81.65	-7.18	-4,894.96	12.81	217.81	124.85	92.95	2.343 Minor F		
16,850.00	11,964.00	16,447,25 16,502.75	11,748.00	83.59	82.21	-7.11 7.05	-4,944.96 4,004.08	12.63	217.78	124.22	93.56	2.328 Minor F		
16,900.00 16,950.00	11,964.00 11,964.00	16,547.25	11,748.00 11,748.00	84.22 84.85	82.90 83.46	-7.05 -6.98	-4,994.96 -5,044.96	12.46 12.28	217.75 217.72	123.51 122.86	94.24 94.85	2.311 Minor F 2.295 Minor F		
10,000.00	11,504.00	10,547.25	11,140.00	04.03	05.40	-0.50	-5,01.50	12.20	217.72	122.00	34.03	2.233 (4.110)	uan.	
17,000.00	11,964.00	16,602.75	11,748.00	85.48	84.16	-6.92	-5,094.95	12.11	217.69	122.15	95.53	2.279 Minor F	Risk	
17,050.00	11,964.00	16,647.25	11,748.00	86.11	84.72	-6.85	-5,144.95	11.93	217.66	121.51	96.15	2.264 Minor F	Risk	
17,100.00	11,964.00	16,702.75	11,748.00	86.74	85.42	-6.79	-5,194.95	11.76	217.63	120.79	96.83	2.247 Minor F	Risk	
17,150.00	11,964.00	16,747.25	11,748.00	87.38	85.99	-6.72	-5.244.95	11.58	217.60	120.15	97.45	2.233 Minor F	Risk	
17,200.00	11,964.00	16,802.75	11,748.00	88.01	86.69	-6.66	-5,294.95	11,41	217.57	119.43	98.14	2.217 Minor F	Risk	
17,250.00	11,964.00	16,847.25	11,748.00	88.65	87.26	-6.59	-5,344.95	11.23	217.54	118.78	98.76	2.203 Minor F	Risk	
17,300.00	11,964.00	16,902.76	11,748.00	89.29	87.97	-6.53	-5,394.95	11.05	217.51	118.06	99.45	2.187 Minor F		
17,350.00	11,964.00	16,947.25	11,748.00	89.93	88.54	-6.46	-5,444.95	10.88	217.48	117.41	100.07	2.173 Minor F	Risk	
17,400.00	11,964.00	17,002.76	11,748.00	90.57	89.25	-6.40	-5,494.95	10.70	217.45	116.68	100.77	2.158 Minor F	Risk	
17,450.00	11,964.00	17,047.24	11,748.00	91.21	89.82	-6.33	-5,544.95	10.53	217.43	116.03	101.40	2.144 Minor F	Risk	
17 500 00	11 004 00	17 100 70	11 740 00	04.05	00.52		E E04 0E	40.35	247.40	115.00	400.40	2 420 14: 5	Diale	
17,500.00	11,964.00	17,102.76	11,748.00	91.85	90.53	-6.26 -6.20	-5,594.95 -5,644.94	10.35	217.40	115.30	102.10	2.129 Minor F		
17,550.00 17,600.00	11,964.00 11,964.00	17,147.24 17,202.76	11,748.00 11,748.00	92.50 93.15	91.10 91.82	-6.20 -6.13	-5,644.94 -5,694.94	10.18 10.00	217.37 217.34	114.65 113.92	102.72 103.43	2.116 Minor F 2.101 Minor F		
17,650.00	11,964.00	17,202.76	11,748.00	93.15	91.82	-6.13 -6.07	-5,744.94	9.83	217.34	113.92	103.43	2.101 Minor F 2.088 Minor F		
17,700.00	11,964.00		11,748.00	94.44	93.12	-6.00	-5,794.94 -5,794.94	9.65	217.32	112.53	104.05	2.074 Minor F		
,. 00.00	,554.66	,5020	,. 70,00	V-1	JJ. 12	0.00	5,105-	0.00	23	.,2.55	104.70	5.57 HILLOI I		
17,750.00	11,964.00	17,347.24	11,748.00	95.09	93.69	-5.94	-5,844.94	9.47	217.27	111.87	105.39	2.061 Minor F	Risk	
17,800.00	11,964.00	17,402.76	11,748.00	95.74	94.42	-5.87	-5,894.94	9.30	217.24	111.14	106.10	2.047 Minor F	Risk	
17,850.00	11,964.00	17,447.24	11,748.00	96.40	95.00	-5.81	-5,944.94	9.12	217.21	110.48	106.73	2.035 Minor F	Risk	
17,900.00	11,964.00	17,502.76	11,748.00	97.05	95.72	-5.74	-5,994.94	8.95	217.19	109.74	107.45	2.021 Minor F		
17,950.00	11,964.00	17,547.24	11,748.00	97.70	96.30	-5.67	-6,044.94	8.77	217.16	109.08	108.08	2.009 Minor F	Risk	
18,000.00	11,964.00	17,602.76	11,748.00	98.36	97.03	-5.61	-6,094.94	8.60	217.14	108.34	108.80	1.996 Minor F	Risk	
18,050.00	11,964.00	17,647.24	11,748.00	99.01	97.61	-5.54	-6,144.94	8.42	217.12	107.68	109.43	1.984 Minor F		
18,100.00	11,964.00	17,702.77	11,748.00	99.67	98.34	-5.48	-6,194.93	8.25	217.09	106.94	110.15	1.971 Minor F		
18,150.00	11,964.00	17,747.24	11,748.00	100.33	98.92	-5.41	-6,244.93	8.07	217.07	106.28	110.79	1.959 Minor F		
18,200.00	11,964.00	17,802.77		100.99	99.66	-5.35	-6,294.93	7.90	217.04	105.54	111.51	1,946 Minor F		
18,250.00	11,964.00	17,847.23	11,748.00	101.65	100.24	-5.28	-6,344.93	7.72	217.02	104.87	112.15	1.935 Minor F	lisk	

TVD Reference:

MD Reference:

North Reference:

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 733H

Well Error: Reference Wellbore Wellbore #1 Reference Design: Permit Plan 1

0.50 ft

Survey Calculation Method: Output errors are at

Local Co-ordinate Reference:

Database: EDM r5000.141_Prod US

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

RKB @ 3359.80ft

Minimum Curvature

Grid

2.00 sigma

Offset De	sign	Sec 27-	-T25S-R3	1E - Lusitan	o 27_34	Fed Com 62	2H - Wellbore	#1 - Permi	t Plan 1			Offset	Site Error:	0.00 ft
Survey Progr Refere		WD+HDGM Offs	et	Semi Major	Avia				Dist	anco		Offset	Well Error:	0.50 ft
Measured	ence Vertical	Measured	et Vertical	Reference	Offset	Highside	Offset Wellborn	e Centre	Disti Between	ence Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (*)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	valining	
18,300.00	11,964.00	17,902.77	11,748.00	102.31	100.98	-5.21	-6,394.93	7.54	217.00	104.13	112.87	1.923 Minor Risk		
18,350.00	11,964.00	17,947.23	11,748.00	102.97	101.56	-5.15	-6,444.93	7.37	216.98	103.46	113.52	1.911 Minor Risk		
18,400.00	11,964.00	18,002.77	11,748.00	103.63	102.30	-5.08	-6,494.93	7.19	216.95	102.71	114.24	1.899 Minor Risk		
18,450.00	11,964.00	18,047.23	11,748.00	104.30	102.89	-5.02	-6,544.93	7.02	216.93	102.05	114.89	1.888 Minor Risk		
18,500.00	11,964.00	18,102.77	11,748.00	104.96	103.62	-4.95	-6,594.93	6.84	216.91	101.30	115.61	1.876 Minor Risk		
18,550.00	11,964.00	18,147.23	11,748.00	105.62	104.22	-4.88	-6,644.93	6.67	216.89	100.63	116.26	1.866 Minor Risk		
18,600.00	11,964.00	18,202.77	11,748.00	106.29	104.95	-4.82	-6,694.93	6.49	216.87	99.88	116.99	1.854 Minor Risk		
18,650.00	11,964.00	18,247.23	11,748.00	106.96	105.55	-4.75	-6,744.92	6.32	216.85	99.21	117.64	1.843 Minor Risk		
18,700.00	11,964.00	18,302.77	11,748.00	107.62	106.29	-4.69	-6,794.92	6.14	216.83	98.46	118.37	1,832 Minor Risk		
18,750.00	11,964.00	18,347.23	11,748.00	108.29	106.88	-4.62	-6,844.92	5.97	216.80	97.79	119.02	1.822 Minor Risk		
18,800.00	11,964.00	18,402.77	11,748.00	108.96	107.62	-4.56	-6,894.92	5.79	216.78	97.04	119.75	1.810 Minor Risk		
18,850.00	11,964.00	18,447.23	11,748.00	109.63	108.22	-4.49	-6,944.92	5.61	216.77	96.36	120.40	1.800 Minor Risk		
18,900.00	11,964.00	18,502.78	11,748.00	110.30	108.96	-4.42	-6,994.92	5.44	216.75	95.61	121.14	1.789 Minor Risk		
18,950.00	11,964.00	18,547.23	11,748.00	110.97	109.56	-4.36	-7,044.92	5.26	216.73	94.94	121.79	1.779 Minor Risk		
19,000.00	11,964.00	18,602.78	11,748.00	111.64	110.30	-4.29 4.23	-7,094.92	5.09	216.71	94.18	122.53	1.769 Minor Risk		
19,050.00	11,964.00	18,647.22	11,748.00	112.32	110.90	-4.23	-7,144.92	4.91	216.69	93.51	123.18	1.759 Minor Risk		
19,100.00	11,964.00	18,702.78	11,748.00	112.99	111.65	-4.16	-7,194.92	4.74	216.67	92.75	123.92	1.748 Minor Risk		
19,150.00	11,964.00	18,747.22	11,748.00	113.66	112.25	-4.09	-7,244.91	4.56	216.65	92.07	124.58	1,739 Minor Risk		
19,200.00	11,964.00	18,802.78	11,748.00	114.34	113.00	-4.03	-7,294.91	4.39	216.64	91.32	125.32	1.729 Minor Risk		
19,250.00	11,964.00	18,847.22	11,748.00	115.01	113.60	-3.96	-7,344.91	4.21	216.62	90.64	125.98	1.719 Minor Risk		
19,300.00	11,964.00	18,902.78	11,748.00	115.69	114.35	-3.90	-7,394.91	4.03	216.60	89.88	126.72	1.709 Minor Risk		
19,350.00	11,964.00	18,947.22	11,748.00	116.37	114.95	-3.83	-7,444.91	3.86	216.58	89.20	127.38	1.700 Minor Risk		
19,400.00	11,964.00	19,002.78	11,748.00	117.04	115.70	-3.76	-7,494.91	3.68	216.57	88.44	128.13	1,690 Minor Risk		
19,450.00	11,964.00	19,047.22	11,748.00	117.72	116.30	-3.70	-7,544.91	3.51	216.55	87.76	128.79	1.681 Minor Risk		
19,500.00	11,964.00	19,102.78	11,748.00	118.40	117.05	-3.63	-7,594.91	3.33	216.53	87.00	129.53	1.672 Minor Risk		
19,550.00	11,964.00	19,147.22	11,748.00	119.08	117.66	-3.57	-7, 644 .91	3.16	216.52	86.32	130.20	1.663 Minor Risk		
19,600.00	11,964.00	19,202.78	11,748.00	119.76	118.41	-3.50	-7,694.91	2.98	216.50	85.56	130.95	1.653 Minor Risk		
19,650.00	11,964.00	19,247.22	11,748.00	120.44	119.01	-3.43	-7,744.91	2.81	216.49	84.88	131.61	1.645 Minor Risk		
19,700.00	11,964.00	19,302.79	11,748.00	121.12	119.77	-3.37	-7,794.90	2.63	216.47	84.11	132.36	1.635 Minor Risk		
19,750.00	11,964.00	19,347.22	11,748.00	121.80	120.37	-3.30	-7,844.90	2.46	216.46	83.43	133.03	1.627 Minor Risk		
19,800.00	11,964.00	19,402.79	11,748.00	122.48	121.13	-3.24	-7,894.90	2.28	216.45	82.67	133.78	1.618 Minor Risk		
19,850.00	11,964.00	19,447.21	11,748.00	123.16	121.73	-3.17	-7,944.90	2.10	216.43	81.98	134.45	1.610 Minor Risk		
19,900.00	11,964.00	19,502.79	11,748.00	123.84	122.49	-3.10	-7,994.90	1.93	216.42	81.22	135.20	1.601 Minor Risk		
19,950.00	11,964.00	19,547.21	11,748.00	124.53	123.10	-3.04	-8,044.90	1.75	216.40	80.53	135.87	1.593 Minor Risk		
20,000.00	11,964.00	19,602.79	11,748.00	125.21	123.86	-2.97	-8,094.90	1.58	216.39	79.76	136.63	1.584 Minor Risk		
20,050.00	11,964.00	19,647.21	11,748.00	125.89	124.46	-2.90	-8,144.90	1.40	216.38	79.08	137.30	1.576 Minor Risk		
20,100.00	11,964.00	19,702.79	11,748.00	126.58	125.22	-2.84	-8,194.90	1,23	216.37	78.31	138.05	1.567 Minor Risk		ļ
20,150.00	11,964.00	19,747.21	11,748.00	127.26	125.83	-2.77	-8,244.90	1.05	216.35	77.62	138.73	1.560 Minor Risk		
20,200.00	11,964.00	19,802.79	11,748.00	127.95	126.59	-2.71	-8,294.90	0.88	216.34	76.86	139.49	1.551 Minor Risk		
20,250.00	11,964.00	19,847.21	11,748.00	128.63	127.20	-2.64	-8,344.89	0.70	216.33	76.17	140.16	1.543 Minor Risk		
20,300.00	11,964.00	19,902.79	11,748.00	129.32	127.96	-2.57	-8,394.89	0.53	216.32	75.40	140.92	1.535 Minor Risk		
20,350.00	11,964.00	19,947.21	11,748.00	130.01	128.57	-2.51	-8,444.89	0.35	216.31	74.71	141.60	1.528 Minor Risk		
20,400.00	11,964.00	20,002.79	11,748.00	130.69	129.34	-2.44	-8,494.89	0.17	216.30	73.94	142.36	1.519 Minor Risk		
20,450.00	11,964.00	20,047.21	11,748.00	131.38	129.95	-2.38	-8,544.89	0.00	216.29	73.25	143.04	1.512 Minor Risk		
20,500.00	11,964.00	20,102.80	11,748.00	132.07	130.71	-2.31	-8,594.89	-0.18	216.28	72.48	143.80	1.504 Minor Risk		
20,550.00	11,964.00	20,147.21	11,748.00	132.76	131.32	-2.24	-8,644.89	-0.35	216.27	71.79	144.48	1.497 Major Risk		
20,600.00	11,964.00	20,202.80	11,748.00	133.45	132.09	-2.18	-8,694.89	-0.53	216.26	71.01	145.24	1.489 Major Risk	•	
20,650.00	11,964.00	20,247.20	11,748.00	134.13	132.70	-2.11	-8,744.89	-0.70	216.25	70.32	145.93	1.482 Major Risk		
20,700.00	11,964.00	20,302.80	11,748.00	134.82	133.46	-2.04	-8,794.89	-0.88	216.24	69.55	146.69	1.474 Major Risk		
20,750.00	11,964.00	20,347.20	11,748.00	135.51	134.08	-1.98	-8,844.88	-1.05	216.23	68.85	147.37	1.467 Major Risk		
20,800.00	11,964.00	20,402.80	11,748.00	136.20	134.84	-1.91	-8,894.88	-1.23	216.22	68.08	148.14	1.460 Major Risk		
20,850.00	11,964.00	20,447.20	11,748.00	136.90	135.46	-1.85	-8,944.88	-1.41	216.21	67.39	148.83	1.453 Major Risk		

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 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference:

MD Reference:

RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

North Reference:

Grid

Survey Calculation Method:

Minimum Curvature

Output errors are at

2.00 sigma

Database:

EDM r5000.141_Prod US

Offset TVD Reference:

Offset De	sign	Sec 27-	-T25S-R31	E - Lusitan	0 27_34	Fed Com 62	2H - Wellbore	#1 - Permi	it Plan 1			Offset	Site Error:	0.00 f
Survey Prog	ram: 0-M	WD+HDGM										Offset \	Vell Error:	0.50 f
Refer	ence	Offs	et	Semi Major	Axis				Dist	ance				
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbor	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft) 	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
20,900.00	11,964.00	20,502.80	11,748.00	137.59	136.22	-1.78	-8,994.88	-1.58	216.20	66.61	149.60	1.445 Major Risk		
20,950.00	11,964.00	20,547.20	11,748.00	138.28	136.84	-1.71	-9,044.88	-1.76	216.20	65.91	150.28	1.439 Major Risk		
21,000.00	11,964.00	20,602.80	11,748.00	138.97	137.61	-1.65	-9,094.88	-1.93	216.19	65.14	151.05	1.431 Major Risk		
21,050.00	11,964.00	20,647.20	11,748.00	139.66	138.22	-1.58	-9,144.88	-2.11	216.18	64.44	151.74	1.425 Major Risk		
21,100.00	11,964.00	20,702.80	11,748.00	140.35	138.99	-1.51	-9,194.88	-2.28	216.18	63.66	152.51	1.417 Major Risk		
21,150.00	11,964.00	20,747.20	11,748.00	141.05	139.60	-1.45	-9,244.88	-2.46	216.17	62.97	153.20	1.411 Major Risk		
21,200.00	11,964.00	20,802.80	11,748.00	141.74	140.37	-1.38	-9,294.88	-2.63	216.16	62.19	153.98	1.404 Major Risk		
21,250.00	11,964.00	20,847.20	11,748.00	142.43	140.99	-1.32	-9,344.88	-2.81	216.16	61.49	154.67	1.398 Major Risk		
21,300.00	11,964.00	20,902.81	11,748.00	143.13	141.76	-1.25	-9,394.87	-2.98	216.15	60.71	155.44	1.391 Major Risk		
21,350.00	11,964.00	20,947.20	11,748.00	143.82	142.38	-1.18	-9,444.87	-3.16	216.15	60.01	156.13	1.384 Major Risk		
21,400.00	11,964.00	21,002.81	11,748.00	144.52	143.15	-1.12	-9,494.87	-3.34	216.14	59.23	156.91	1.377 Major Risk		
21,450.00	11,964.00	21,047.19	11,748.00	145.21	143.76	-1.05	-9,544.87	-3.51	216.14	58.53	157.61	1.371 Major Risk		
21,500.00	11,964.00	21,102.81	11,748.00	145.91	144.54	-0.98	-9,594.87	-3.69	216.13	57.75	158.38	1.365 Major Risk		
21,550.00	11,964.00	21,147.19	11,748.00	146.60	145.15	-0.92	-9,644.87	-3.86	216.13	57.05	159.08	1.359 Major Risk		
21,600.00	11,964.00	21,202.81	11,748.00	147.30	145.92	-0.85	-9,694.87	-4.04	216.12	56.26	159.86	1.352 Major Risk		
21,650.00	11,964.00	21,247.19	11,748.00	147.99	146.54	-0.78	-9,744.87	-4.21	216.12	55.56	160.56	1.346 Major Risk		
21,700.00	11,964.00	21,302.81	11,748.00	148.69	147.32	-0.72	-9,794.87	-4.39	216.12	54.78	161.34	1.340 Major Risk		
21,750.00	11,964.00	21,347.19	11,748.00	149.39	147.93	-0.65	-9,844.87	-4.56	216.11	54.07	162.04	1.334 Major Risk		
21,800.00	11,964.00	21,402.81	11,748.00	150.08	148.71	-0.59	-9,894.87	-4.74	216.11	53.29	162.82	1.327 Major Risk		
21,850.00	11,964.00	21,447.19	11,748.00	150.78	149.33	-0.52	-9,944.86	-4.92	216.11	52.59	163.52	1.322 Major Risk		
21,900.00	11,964.00	21,502.81	11,748.00	151.48	150.10	-0.45	-9,994.86	-5.09	216.11	51.80	164.31	1.315 Major Risk		
21,950.00	11,964.00	21,547.19	11,748.00	152.17	150.72	-0.39	-10,044.86	-5.27	216.10	51.09	165.01	1.310 Major Risk		
22,000.00	11,964.00	21,602.81	11,748.00	152.87	151.50	-0.32	-10,094.86	-5.44	216.10	50.31	165.80	1.303 Major Risk		
22,050.00	11,964.00	21,647.19	11,748.00	153.57	152.11	-0.25	-10,144.86	-5.62	216.10	49.60	166.50	1.298 Major Risk		
22,100.00	11,964.00	21,702.82	11,748.00	154.27	152.89	-0.19	-10,194.86	-5.79	216.10	48.81	167.29	1.292 Major Risk		
22,150.00	11,964.00	21,747.19	11,748.00	154.97	153.51	-0.12	-10,244.86	-5.97	216.10	48.10	168.00	1.286 Major Risk		
22,200.00	11,964.00	21,802.82	11,748.00	155.67	154.29	-0.06	-10,294.86	-6.14	216.10	47.31	168.79	1.280 Major Risk		
22,241.76	11,964.00	21,838.95	11,748.00	156.25	154.79	0.00	-10,336.62	-6.29	216.10	46.73	169.37	1.276 Major Risk	:F	

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 733H

Error: 0.50 ft

Reference Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset De			T25S-R31	IE - Lusitan	o 27_34	Fed Com 71	3H - Wellbore	#1 - Permi	t Plan 1	- 1			Offset Site Error:	0.00 (
Survey Progr		WD+HDGM		Semi Major	Avia				Dice				Offset Well Error:	0.50
Refero Measured	ence Vertical	Offse Measured	vertical	Semi Major i Reference	Axis Offset	Highside	Offset Wellbor	re Centre	Dista Between	ence Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
0.00	0.00	0.20	0.20	0.50	0.50	89.64	0.57	89.97	89.97					
50.00	50.00	50.20	50.20	0.50	0.50	89.64	0.57	89.97	89.97	88.97	1.01	89.388		
100.00	100.00	100.20	100.20	0.52	0.52	89.64	0.57	89.97	89.97	88.94	1.04	86.871		
150.00	150.00	150.20	150.20	0.59	0.59	89.64	0.57	89.97	89.97	88.79	1.18	76.192		
200.00	200.00	200.20	200.20	0.70	0.70	89.64	0.57	89.97	89.97	88.57	1.40	64.050		
250.00	250.00	250.20	250.20	0.84	0.84	89.64	0.57	89.97	89.97	88.30	1.68	53.682		
300.00	300.00	300.20	300.20	0.99	0.99	89.64	0.57	89.97	89.97	88.00	1.98	45.549		
350.00	350.00	350.20	350.20	1.15	1.15	89.64	0.57	89.97	89.97	87.68	2.29	39.261		
400.00	400.00	400.20	400.20	1.31	1.31	89.64	0.57	89.97	89.97	87.35	2.62	34.356		
450.00	450.00	450.20	450.20	1.48	1.48	89.64	0.57	89.97	89.97	87.02	2.95	30.465		
500.00	500.00	500.20	500.20	1.65	1.65	89.64	0.57	89.97	89.97	86.68	3.29	27.323		
550.00	550.00	550.20	550.20	1.82	1.82	89.64	0.57	89.97	89.97	86.34	3.64	24.745		
600.00	600.00	600.20	600.20	1.99	1.99	89.64	0.57	89.97	89.97	85.99	3.98	22.595		
650.00	650.00	650.20	650.20	2.16	2.17	89.64	0.57	89.97	89.97	85.64	4.33	20.780		
700.00	700.00	700.20	700.20	2.34	2.34	89.64	0.57	89.97 80.07	89.97	85.29 84.04	4.68	19.228		
750.00	750.00	750.20	750.20	2.51	2.52	89.64	0.57	89.97	89.97	84.94	5.03	17.887		
800.00	800.00	800.20	800.20	2.69	2.69	89.64	0.57	89.97	89.97	84.59	5.38	16.718		
850.00	850.00	850.20	850.20	2.87	2.87	89.64	0.57	89.97	89.97	84.24	5.73	15.690		
900.00	900.00	900.20	900.20	3.04	3.04	89.64	0.57	89.97	89.97	83.88	6.09	14.779		
950.00	950.00	950.20	950.20	3.22	3.22	89.64	0.57	89.97	89.97	83.53	6.44	13.967		
1,000.00	1,000.00	1,000.20	1,000.20	3.40	3.40	89.64	0.57	89.97	89.97	83.18	6.80	13.239		
1,050.00	1,050.00	1,050.20	1,050.20	3.58	3.58	89.64	0.57	89.97	89.97	82.82	7.15	12.582		
1,100.00	1,100.00	1,100.20	1,100.20	3.75	3.75	89.64	0.57	89.97	89.97	82.47	7.51	11.987		
1,150.00	1,150.00	1,150.20	1,150.20	3.93	3.93	89.64	0.57	89.97	89.97	82.11	7.86	11.445		
1,200.00	1,200.00	1,200.20	1,200.20	4.11	4.11	89.64	0.57	89.97	89.97	81.75	8.22	10.949		
1,250.00	1,250.00	1,250.20	1,250.20	4.29	4.29	89.64	0.57	89.97	89.97	81.40	8.57	10.495		
1,300.00	1,300.00	1,300.20	1,300.20	4.46	4.46	89.64	0.57	89.97	89.97	81.04	8.93	10.076		
1,350.00	1,350.00	1,350.20	1,350.20	4.64	4.64	89.64	0.57	89.97	89.97	80.69	9.29	9.690		
1,400.00	1,400.00	1,400.20	1,400.20	4.82	4.82	89.64	0.57	89.97	89.97	80.33	9.64	9.331		
1,450.00	1,450.00	1,450.20	1,450.20	5.00	5.00	89.64	0.57	89.97	89.97	79.97	10.00	8.999		
1,500.00	1,500.00	1,500.20	1,500.20	5.18	5.18	89.64	0.57	89.97	89.97	79.62	10.36	8.689		
1,550.00	1,550.00	1,550.20	1,550.20	5.36	5.36	89.64	0.57	89.97	89.97	79.26	10.71	8.399		
1,600.00	1,600.00	1,600.20	1,600.20	5.53	5.53	89.64	0.57	89.97	89.97	78.90	11.07	8.128		
1,650.00	1,650.00	1,650.20	1,650.20	5.71	5.71	89.64	0.57	89.97	89.97	78.55	11.43	7.874		
1,700.00	1,700.00	1,700.20	1,700.20	5.89	5.89	89.64	0.57	89.97	89.97	78.19	11.78	7.636		
1,750.00	1,750.00	1,750.20	1,750.20	6.07	6.07	89.64	0.57	89.97	89.97	77.83	12.14	7.411		
1,800.00	1,800.00	1,800.20	1,800.20	6.25	6.25	89.64	0.57	89.97	89.97	77.47	12.50	7.199		
1,850.00	1,850.00	1,850.20	1,850.20	6.43	6.43	89.64	0.57	89.97	89.97	77.12	12.86	6.999		
1,900.00	1,900.00	1,900.20	1,900.20	6.61	6.61	89.64	0.57	89.97	89.97	76.76	13.21	6.810		
1,950.00	1,950.00	1,950.20	1,950.20	6.78	6.79	89.64	0.57	89.97	89.97	76.40	13.57	6.630		
2,000.00	2,000.00	2,000.20	2,000.20	6.96	6.96	89.64	0.57	89.97	89.97	76.04	13.93	6.460		
2,050.00	2,050.00	2,050.20	2,050.20	7.14	7.14	89.64	0.57	89.97	89.97	75.69	14.29	6.298		
2,100.00	2,100.00	2,100.20	2,100.20	7.32	7.32	89.64	0.57	89.97	89.97	75.33	14.64	6.145		
2,150.00	2,150.00	2,150.20	2,150.20	7.50	7.50	89.64	0.57	89.97	89.97	74.97	15.00	5.998		
2,200.00	2,200.00	2,200.20	2,200.20	7.68	7.68	89.64	0.57	89.97	89.97	74.61	15.36	5.858		
2,250.00	2,250.00	2,250.20	2,250.20	7.86	7.86	89.64	0.57	89.97	89.97	74.26	15.72	5.725		
2,300.00	2,300.00	2,300.20	2,300.20	8.04	8.04	89.64	0.57	89.97	89.97	73.90	16.07	5.598		
2,350.00	2,350.00	2,350.20	2,350.20	8.22	8.22	89.64	0.57	89.97	89.97	73.54	16.43	5.476		
2,400.00	2,400.00	2,400.20	2,400.20	8.39	8.39	89.64	0.57	89.97	89.97	73.18	16.79	5.359		
2,450.00	2,450.00	2,450.20	2,450.20	8.57	8.57	89.64	0.57	89.97	89.97	72.83	17.15	5.247		
2,500.00	2,500.00	2,500.20	2,500.20	8.75	8.75	89.64	0.57	89.97	89.97	72.47	17.50	5.140 C	С	
2,550.00	2,550.00	2,549.28	2,549.28	8.93	8.93	96.50	0.65	90.22	90.25	72.40	17.86	5.055 E	s	

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 733H

Error: 0.50 ft
Reference Wellbore #1

Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 733H

 TVD Reference:
 RKB @ 3359.80ft

 MD Reference:
 RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset De	sign	Sec 27-	T25S-R3	1E - Lusitan	0 27_34	Fed Com 71	3H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00 ft
Survey Prog		WD+HDGM											Offset Well Error:	0.50 ft
Refer		Offse		Semi Major		10-6-14-	O# - 4 18/- III	0	Dista			0		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
2,600.00	2,599.99	2,598.35	2,598.34	9.11	9.10	96.73	0.91	90.97	91.09	72.89	18.20	5.004		
2,650.00	2,649.98	2,647.40	2,647.37	9.29	9.27	97.10	1.33	92.22	92.49	73.94	18.55	4.986 Ale	t	
2,700.00	2,699.97	2,696.42	2,696.36	9.47	9.44	97.39	1.92	93.96	94.40	75.51	18.89	4.997 Ale	t	
2,750.00	2,749.96	2,745.39	2,745.28	9.65	9.61	97.56	2.67	96.19	96.81	77.58	19.23	5.034		
2,800.00	2,799.95	2,794.32	2,794.12	9.83	9.78	97.62	3.59	98.92	99.73	80.16	19.57	5.096		
2,850.00	2,849.94	2,843.50	2,843.18	10.00	9.95	97.59	4.68	102.14	103.13	83.22	19.91	5.179		
2,900.00	2,899.92	2,906.62	2,892.93	10.18	10.17	97.54	5.82	105.52	106.65	86.34	20.31	5.251		
2,950.00 3,000.00	2,949.91 2,999.90	2,943.25 2,993.13	2,942.68 2,992.43	10.36 10.54	10.30 10.48	97.49 97.44	6.96 8.10	108.90 112.28	110.17 113.68	89.55 92.72	20.62 20.97	5.344 5.422		
3,050.00	3,049.89	3,043.00	3,042.17	10.72	10.46	97.40	9.24	115.66	117.20	95.88	21.32	5.422		
3,100.00	3,099.87	3,107.12	3,091.92	10.90	10.88	97.35	10.38	119.04	120.72	99.00	21.72	5.557		
3,150.00	3,149.86	3,142.76	3,141.67	11.08	11.01	97.31	11.52	122.42	124.24	102.21	22.03	5.640		
3,200.00	3,199.85	3,207.37	3,191.42	11.26	11.23	97.28	12.67	125.80	127.76	105.33	22.43	5.696		
3,250.00	3,249.84	3,242.51	3,241.17	11.44	11.36	97.24	13.81	129.18	131.28	108.54	22.73	5.775		
3,300.00	3,299.83	3,307.62	3,290.91	11.62	11.59	97.21	14.95	132.56	134.80	111.66	23.14	5.825		
3,350.00	3,349.81	3,342.26	3,340.66	11.79	11,71	97.18	16.09	135.94	138.31	114.87	23.44	5.901		
3,400.00	3,399.80	3,407.86	3,390.41	11.97	11.95	97.15	17.23	139.32	141.83	117.98	23.85	5.947		
3,450.00	3,449.79	3,442.01	3,440.16	12.15	12.07	97.12	18.37	142.70	145.35	121.20	24.15	6.019		
3,500.00	3,499.78	3,508.11	3,489.91	12.33	12.31	97.09	19.51	146.08	148.87	124.31	24.56	6.062		
3,550.00	3,549.76	3,541.76	3,539.66	12.51	12.43	97.06	20.65	149.46	152.39	127.53	24.86	6.131		
3,600.00	3,599.75	3,591.64	3,589.40	12.69	12.60	97.04	21.80	152.85	155.91	130.70	25.21	6.184		
3,650.00	3,649.74	3,641.52	3,639.15	12.87	12.78	97.02	22.94	156.23	159.43	133.86	25.57	6.236		
3,700.00	3,699.73	3,708.61	3,688.90	13.05	13.02	96.99	24.08	159.61	162.95	136.96	25.98	6.272		
3,750.00	3,749.72	3,741.27	3,738.65	13.23	13.14	96.97	25.22	162.99	166.47	140.19	26.28	6.335		
3,800.00	3,799.70	3,808.86	3,788.40	13.41	13.38	96.95	26.36	166.37	169.98	143.29	26.69	6.368		
3,850.00	3,849.69	3,841.02	3,838.14	13.59	13.50	96.93	27.50	169.75	173.50	146.52	26.99	6.429		
3,900.00	3,899.68	3,909.10	3,887.89	13.76	13.74	96.91	28.64	173.13	177.02	149.62	27.41	6.459		
3,950.00	3,949.67	3,940.77	3,937.64	13.94	13.86	96.89	29.79	176.51	180.54	152.84	27.70	6.518		
4,000.00	3,999.65	4,009.35	3,987.39	14.12	14.11	96.87	30.93	179.89	184.06	155.94	28.12	6.546		
4,050.00	4,049.64	4,040.52	4,037.14	14.30	14.22	96.86	32.07	183.27	187.58	159.17	28.41	6.603		
4,100.00	4,099.63	4,109.60	4,086.89	14.48	14.47	96.84	33.21	186.65	191,10	162.27	28.83	6.628		
4,150.00	4,149.62	4,140.28	4,136.63	14.66	14.58	96.82	34.35	190.03	194.62	165.50	29.12	6.683		
4,200.00	4,199.61	4,209.85	4,186.38	14.84	14.83	96.81	35.49	193.41	198.14	168.59	29.55	6.706		
4,250.00	4,249.59	4,240.03	4,236.13	15.02	14.94	96.79	36.63	196.79	201.66	171.82	29.83	6.760		
4,300.00 4,350.00	4,299.58 4,349.57	4,289.90 4,339.78	4,285.88 4,335.63	15.20 15.38	15.12 15.30	96.78 96.77	37.77 38.92	200.18 203.56	205.18 208.69	174.99 178.15	30.19 30.54	6.796 6.832		
4,400.00 4,450.00	4,399.56 4,449.55	4,389.66 4,439.53	4,385.37 4,435.12	15.56 15.74	15.48 15.66	96.75 96.74	40.06 41.20	206.94 210.32	212.21 215.73	181.31 184.48	30.90 31.26	6.867 6.902		
4,500.00	4,449.53	4,489.41	4,484.87	15.74	15.84	96.73	42.34	213.70	219.25	187.64	31.61	6.935		
4,550.00	4,549.52	4,539.28	4,534.62	16.09	16.02	96.72	43.48	217.08	222.77	190.80	31.97	6.968		
4,600.00	4,599.51	4,589.16	4,584.37	16.27	16.20	96.70	44.62	220.46	226.29	193.96	32.33	7.000		
4,650.00	4,649.50	4,639.04	4,634.12	16.45	16.39	96.69	45.76	223.84	229.81	197.13	32.68	7.031		
4,700.00	4,699.48	4,688.91	4,683.86	16.63	16.57	96.68	46.90	227.22	233.33	200.29	33.04	7.062		
4,750.00	4,749.47	4,738.79	4,733.61	16.81	16.75	96.67	48.05	230.60	236.85	203.45	33.40	7.092		
4,800.00	4,799.46	4,788.66	4,783.36	16.99	16.93	96.66	49.19	233.98	240.37	206.61	33.75	7.121		
4,850.00	4,849.45	4,838.54	4,833.11	17.17	17.11	96.65	50.33	237.36	243.89	209.77	34.11	7.150		
4,900.00	4,899.44	4,888.42	4,882.86	17.35	17.29	96.64	51.47	240.74	247.41	212.94	34.47	7.178		
4,950.00	4,949.42	4,938.29	4,932.60	17.53	17.47	96.63	52.61	244.12	250.93	216.10	34.83	7.205		
5,000.00	4,999.41	4,988.17	4,982.35	17.71	17.66	96.62	53.75	247.51	254.44	219.26	35.18	7.232		
5,050.00	5,049.40	5,038.04	5,032.10	17.89	17.84	96.61	54.89	250.89	257.96	222.42	35.54	7.258		Ţ
5,100.00	5,099.39	5,087.92	5,081.85	18.07	18.02	96.60	56.03	254.27	261.48	225.59	35.90	7.284		
5,150.00	5,149.37	5,137.80	5,131.60	18.25	18.20	96.59	57.18	257.65	265.00	228.75	36.26	7.309		

TVD Reference:

MD Reference:

Company: WCDSC Permian NM

Eddy County (NAD 83 NM Eastern) Project:

Reference Site: Sec 27-T25S-R31E

Site Error: 0.00 ft

Lusitano 27-34 Fed Com 733H Reference Well:

Well Error: 0.50 ft

Reference Wellbore Wellbore #1 Reference Design: Permit Plan 1

North Reference: **Survey Calculation Method:**

Local Co-ordinate Reference:

RKB @ 3359.80ft Grid Minimum Curvature

RKB @ 3359.80ft

2.00 sigma Output errors are at

Database:

Offset TVD Reference:

EDM r5000.141_Prod US

Well Lusitano 27-34 Fed Com 733H

Offset De	•		-1255-R3	ıc - Lusitar	10 27_34	rea com /1	3H - Wellbore	#1 - Permi	i Plan 1				Offset Site Error:	0.00 f
Survey Prog Refei		WD+HDGM Offs	et	Semi Major	Axis				Dista	ince			Offset Well Error:	0.50 1
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore	Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	(ft)	(ft)	(ft)	(ft)	(ft)	1 40101		
5,200.00	5,199.36	5,187.67	5,181.35	18.42	18.38	96.59	58.32	261.03	268.52	231.91	36.61	7.334		
5,250.00	5,249.35	5,237.55	5,231.09	18.60	18.57	96.58	. 59.46	264.41	272.04	235.07	36.97	7.358		
5,300.00	5,299.34	5,287.42	5,280.84	18.78	18.75	96.57	60.60	267.79	275.56	238.23	37.33	7.382		
5,350.00	5,349.33	5,337.30	5,330.59	18.96	18.93	96.56	61.74	271.17	279.08	241.39	37.69	7.406		
5,400.00	5,399.31	5,387.18	5,380.34	19.14	19.11	96.56	62.88	274.55	282.60	244.56	38.04	7.428		
5,450.00	5,449.30	5,437.05	5,430.09	19.32	19.29	96.55	64.02	277.93	286.12	247.72	38.40	7,451		
5,500.00	5,499.29	5,486.93	5,479.83	19.50	19.48	96.54	65.17	281.31	289.64	250.88	38.76	7.473		
5,550.00		5,536.80	5,529.58	19.68	19.66	96.53	66.31	284.69	293.16	254.04	39.12	7.495		
5,600.00		5,586.68	5,579.33	19.86	19.84	96.53	67.45	288.07	296.68	257.20	39.47	7.516		
5,650.00		5,636.56	5,629.08	20.04	20.02	96.52	68.59	291.45	300.20	260.36	39.83	7.537		
5,700.00		5,686.43	5,678.83	20.22	20.21	96.51	69.73	294.83	303.72	263.53	40.19	7.557		
5,750.00		5,736.31	5,728.58	20.40	20.39	96.51	70.87	298.22	307.23	266.69	40.55	7.577		
5,800.00		5,786.18	5,778.32	20.58	20.57	96.50	72.01	301.60	310.75	269.85	40.90	7.597		
5,850.00		5,836.06	5,828.07	20.76	20.75	96.50	73.15	304.98	314.27	273.01	41.26	7.616	:	
5,900.00		5,885.93 5,935,81	5,877.82	20.93	20.94	96.49	74.30 75.44	308.36	317.79	276.17	41.62	7.635 7.654		
5,950.00	5,949.18	5,935.81	5,927.57	21.11	21.12	96.48	75.44	311.74	321.31	279.33	41.98	7.654		
6,000.00	5,999.17	5,985.69	5,977.32	21.29	21.30	96.48	76.58	315.12	324.83	282.49	42.34	7.673		
6,050.00		6,035.56	6,027.06	21.47	21.48	96.47	77.72	318.50	328.35	285.66	42.69	7.691		
6,100.00	6,099.14	6,085.44	6,076.81	21.65	21.67	96.47	78.86	321.88	331.87	288.82	43.05	7.708		
6,150.00	6,149.13	6,135.31	6,126.56	21.83	21.85	96.46	80.00	325.26	335.39	291.98	43.41	7.726		
6,200.00	6,199.12	6,185.19	6,176.31	22.01	22.03	96.46	81.14	328.64	338.91	295.14	43.77	7.743		
6,250.00	6,249.11	6,235.07	6,226.06	22.19	22.21	96.45	82.28	332.02	342.43	298.30	44.13	7.760		
6,300.00		6,284.94	6,275.81	22.37	22.40	96.45	83.43	335.40	345.95	301.46	44.49	7.777		
6,350.00		6,334.82	6,325.55	22.55	22.58	96.44	84.57	338.78	349.47	304.62	44.84	7.793		
6,400.00		6,384.69	6,375.30	22.73	22.76	96.44	85.71	342.16	352.99	307.78	45.20	7.809		
6,450.00		6,434.57	6,425.05	22.91	22.95	96.43	86.85	345.55	356.51	310.95	45.56	7.825		
6,500.00	6,499.05	6,484.45	6,474.80	23.09	23.13	96.43	87.99	348.93	360.03	314.11	45.92	7.840		
6,550.00		6,534.32	6,524.55	23.27	23.31	96.42	89.13	352.31	363.54	317.27	46.28	7.856		
6,600.00		6,584.20	6,574.29	23.45	23.50	96.42	90.27	355.69	367.06	320.43	46.64	7.871	•	
6,650.00		6,634.07	6,624.04	23.63	23.68	96.41	91.42	359.07	370.58	323.59	46.99	7.886		
6,700.00		6,683.95	6,673.79	23.80	23.86	96.41	92.56	362.45	374.10	326.75	47.35	7.900		
e 750.00	8 749 00	6 722 62	6 700 64	22.08	24.05	00.44	03.70	205.02	277.62	220.04	47.74	7.045		
6,750.00		6,733.83	6,723.54	23.98	24.05	96.41	93.70	365.83	377.62	329.91	47.71	7.915		
6,800.00 6,850.00		6,783.70 6,833.58	6,773.29 6,823.04	24.16 24.34	24.23 24.41	96.40 96.40	94.84 95.98	369.21 372.59	381.14 384.66	333.07 336.23	48.07 48.43	7.929 7.943		
6,900.00		6,883.45	6,872.78	24.52	24.41	96.39	95.98 97.12	372.59	388.18	339.39	48.79	7.943 7.957		
6,950.00		6,933.33	6,922.53	24.70	24.78	96.39	98.26	379.35	391.70	342.56	49.14	7.970		
-,-50.50	5,5.0.0	2,300.00	-,	2		30.00	00.20	2.0.00	300		-0.77			
7,000.00		6,983.21	6,972.28	24.88	24.96	96.39	99.40	382.73	395.22	345.72	49.50	7.984		
7,050.00	7,048.91	7,033.08	7,022.03	25.06	25.14	96.38	100.55	386.11	398.74	348.88	49.86	7.997		
7,100.00		7,082.96	7,071.78	25.24	25.33	96.38	101.69	389.49	402.26	352.04	50.22	8.010		
7,150.00		7,132.83	7,121.52	25.42	25.51	96.37	102.83	392.87	405.78	355.20	50.58	8.023		
7,200.00	7,198.87	7,182.71	7,171.27	25.60	25.69	96.37	103.97	396.26	409.30	358.36	50.94	8.035		
7,250.00	7,248.86	7,232.59	7,221.02	25.78	25.88	.96.37	105.11	399.64	412.82	361.52	51.30	8.048		
7,300.00		7,282.46	7,270.77	25.96	26.06	96.36	106.25	403.02	416.34	364.68	51.66	8.060		
7,350.00		7,332.34	7,320.52	26.14	26.25	96.36	107.39	406.40	419.86	367.84	52.01	8.072		
7,400.00		7,382.21	7,370.27	26.32	26.43	96.36	108.53	409.78	423.37	371.00	52.37	8.084		
7,450.00		7,432.09	7,420.01	26.50	26.61	96.35	109.68	413.16	426.89	374.16	52.73	8.096		
7 500 00	7 400 00	7 404 07	7 400 70	20.07	20.00	00.05	440.00	440 5 4	420.44	277.00	50.00	. 0.407		
7,500.00 7,550.00		7,481.97 7,531.84	7,469.76 7,519.51	26.67 26.85	26.80 26.98	96.35 96.35	110.82 111.96	416.54 419.92	430.41 433.93	377.32 380.48	53.09 53.45	8.107 8.119		
7,600.00		7,581.72	7,569.26	27.03	27.16	96.34	113.10	423.30	433.93	383.64	53.45	8.130		
7,650.00		7,561.72	7,619.01	27.03	27.16	96.34 96.34	114.24	425.50	440.97	386.81	54,17	8.130		
7,700.00	7,698.75	7,681.47	7,668.75	27.21	27.53	96.34	115.38	430.06	444.49	389.97	54.17	8.152		
. ,, 50.00	.,550.15	7,001,77	1,000.70	21.53	27,50	30.54	115.50	-30.00		505.37	54.55	0.132		
7,750.00	7,748.74	7,731.35	7,718.50	27.57	27.71	96.34	116.52	433.44	448.01	393.13	54.88	8.163		

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 733H

Well Error: 0.50 ft

Reference Wellbore Wellbore #1

Reference Design: Permit Plan 1 Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H RKB @ 3359.80ft TVD Reference:

RKB @ 3359.80ft MD Reference:

Grid North Reference:

Minimum Curvature **Survey Calculation Method:**

2.00 sigma Output errors are at

Database: EDM r5000.141_Prod US

Offset Des	sign	Sec 27-	T25S-R3	IE - Lusitan	0 27_34	Fed Com 71	3H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00 ft
Survey Progr	ram: 0-M\	WD+HDGM											Offset Well Error:	0.50 ft
Refere		Offs		Semi Major		Minhelds	Offset Wellbore	Contro	Dista		Minimum	Concentian		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (*)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
7,800.00	7,798.73	7,781.22	7,768.25	27.75	27.90	96.33	117.66	438.82	451.53	396.29	55.24	8.173		
7,850.00	7,848.72	7,831.10	7,818.00	27.93	28.08	96.33	118.81	440.20	455.05	399.45	55.60	8.184		
7,900.00	7,898.70	7,880.97	7,867.75	28.11	28.26	96.33	119.95	443.59	458.57	402.61	55.96	8.194		
7,950.00	7,948.69	7,930.85	7,917.50	28.29	28.45	96.32	121.09	446.97	462.09	405.77	56.32	8.205		
8,000.00	7,998.68	7,980.73	7,967.24	28.47	28.63	96.32	122.23	450.35	465.61	408.93	56.68	8.215		
8,050.00	8,048.67	8,030.60	8,016.99	28.65	28.82	96.32	123.37	453.73	469.13	412.09	57.04	8.225		
8,100.00	8,098.66	8,080.48	8,066.74	28.83	29.00	96.32	124.51	457.11	472.65	415.25	57.40	8.235		
8,150.00 8,200.00	8,148.64 8,198.63	8,130.35 8,180.23	8,116.49 8,166.24	29.01 29.19	29.18 29.37	96.31 96.31	125.65 126.80	460.49 463.87	476.17 479.69	418.41 421.57	57.76 58.11	8.244 8.254		
8,250.00	8,248.62	8,230.11	8,215.98	29.37	29.55	96.31	127.94	467.25	483.21	424.73	58.47	8.264		
8,300.00	8,298.61	8,279.98	8,265.73	29.55	29.73	96.31	129.08	470.63	486.72	427.89	58.83	8.273		
8,350.00	8,348.59	8,329.86	8,315.48	29.72	29.92	96.30	130.22	474.01	490.24	431.05	59.19	8.282		
8,400.00	8,398.58	8,379.73	8,365.23	29.90	30.10	96.30	131.36	477.39	493.76	434.21	59.55	8.291		
8,450.00	8,448.57	8,429.61	8,414.98	30.08	30.10	96.30	132.50	480.77	497.28	434.21	59.91	8.301		
8,500.00	8,498.56	8,479.49	8,464.73	30.26	30.47	96.30	133.64	484.15	500.80	440.53	60.27	8.309		
8,550.00	8,548.55	8,529.36	8,514.47	30.44	30.65	96.29	134.78	487.53	504.32	443.69	60.63	8.318		
8,600.00	8,598.53	8,579.24	8,564.22	30.62	30.84	96.29	135.93	490.92	507.84	446.85	60.99	8.327		
8,650.00	8,648.52	8,629.11	8,613.97	30.80	31.02	96.29	137.07	494.30	511.36	450.01	61.35	8.336		
8,700.00	8,698.51	8,678.99	8,663.72	30.98	31.20	96.29	138.21	497.68	514.88	453.18	61.71	8.344		
8,750.00	8,748.50	8,728.87	8,713.47	31.16	31.39	96.28	139.35	501.06	518.40	456.34	62.06	8.353		
8,800.00	8,798.48	8,778.74	8,763.21	31.34	31.57	96.28	140.49	504.44	521.92	459.50	62.42	8.361		
8,850.00	8,848.47	8,828.62	8,812.96	31.52	31.76	96.28	141.63	507.82	525.44	462.66	62.78	8.369		
8,900.00	8.898.46	8,878.49	8,862.71	31.70	31.94	96.28	142.77	511.20	528.96	465.82	63.14	8.377		
8,950.00	8,948.45	8,928.37	8,912.46	31.88	32,12	96.28	143.91	514.58	532.48	468.98	63.50	8.385		
9,000.00	8,998.44	8,978.25	8,962.21	32.06	32.31	96.27	145.06	517.96	536.00	472.14	63.86	8.393		
9,050.00	9,048.42	9,028.12	9,011.96	32.24	32.49	96.27	146.20	521.34	539.52	475.30	64.22	8.401		
9,100.00	9,098.41	9,078.00	9,061.70	32.42	32.68	96.27	147.34	524.72	543.04	478.46	64.58	8.409		
9,150.00	9,148.40	9,127.87	9,111.45	32.60	32.86	96.27	148.48	528.10	546.56	481.62	64.94	8.417		
9,200.00	9,198.39	9,177.75	9,161.20	32.78	33.04	96.27	149.62	531.48	550.08	484.78	65.30	8.424		
9,250.00 9,300.00	9,248.38 9,298.36	9,227.63 9,277.50	9,210.95 9,260.70	32.95 33.13	33.23 33.41	96.26 96.26	150.76 151.90	534.86 538.24	553.59 557.11	487.94 491.10	65.66 66.02	8.432 8.439		
9,350.00	9,348.35	9,327.38	9,310.44	33.31	33.60	96.26	153.04	541.63	560.63	494.26	66.37	8.446		
9,400.00	9,398.34	9,377.25	9,360.19	33.49	33.78	96.26	154.19	545.01	564.15	494.26	66.73	8.454		
9,450.00	9,448.33	9,427.13	9,409.94	33.67	33.96	96.26	155.33	548.39	567.67	500.58	67.09	8.461		
9,500.00	9,498.31	9,477.01	9,459.69	33.85	34.15	96.25	158.47	551.77	571.19	503.74	67.45	8.468		
9,550.00	9,548.30	9,526.88	9,509.44	34.03	34.33	96.25	157.61	555.15	574.71	506.90	67.81	8.475		
9,600.00	9,598.29	9,578.76	9,559.19	34.21	34.52	96.25	158.75	558.53	578.23	510.06	68.17	8.482		
9,650.00	9,648.28	9,626.63	9,608.93	34.39	34.70	96.25	159.89	561.91	581.75	513.22	68.53	8.489		
9,700.00	9,698.27	9,676.51	9,658.68	34.57	34.88	96.25	161.03	565.29	585.27	516.38	68.89	8.496		
9,750.00	9,748.25	9,726.39	9,708.43	34.75	35.07	96.25	162.18	568.67	588.79	519.54	69.25	8.502		
9,800.00	9,798.24	9,776.26	9,758.18	34.93	35.25	96.24	163.32	572.05	592.31	522.70	69.61	8.509		
9,850.00	9,848.23	9,826.14	9,807.93	35.11	35.44	96.24	164.46	575.43	595.83	525.86	69.97	8.516		
9,900.00	9,898.22	9,876.01	9,857.67	35.29	35.62	96.24	165.60	578.81	599.35	529.02	70.33	8.522		
9,950.00	9,948.20	9,925.89	9,907.42	35.47	35.81	96.24	166.74	582.19	602.87	532.18	70.69	8.529		
10,000.00	9,998.19	9,975.77	9,957.17	35.65	35.99	96.24	167.88	585.57	606.39	535.34	71.05	8.535		
10,050.00	10,048.18	10,025.64	10,006.92	35.83	36.17	96.24	169.02	588.96	609.91	538.50	71.41	8.541		
10,100.00	10,098.17	10,075.52	10,056.67	36.01	36.36	96.23	170.16	592.34	613.43	541.66	71.77	8.548	•	
10,150.00	10,148.16	10,125.39	10,106.42	36.18	36.54	96.23	171.31	595.72	616.95	544.82	72.12	8.554		
10,200.00	10,198.14	10,175.27	10,156.16	36.36	36.73	96.23	172.45	599.10	620.46	547.98	72.48	8.560		
10,250.00	10,248.13	10,225.14	10,205.91	36.54	36.91	96.23	173.59	602.48	623.98	551.14	72.84	8.566		
10,300.00	10,298.12	10,275.02	10,255.66	36.72	37.09	96.23	174.73	605.86	627.50	554.30	73.20	8.572		
10,350.00	10,348.11	10,324.90	10,305.41	36.90	37.28	96.23	175.87	609.24	631.02	557.46	73.56	8.578		

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 733H

Well Error: 0.50 ft

Reference Wellbore Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset De	•		-1255-R3	1E - Lusitan	0 2/_34	Fed Com /1	3H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00
Burvey Progr Refer		WD+HDGM Offs	et	Semi Major	Axis				Dista	ince			Offset Well Error:	0.50
fleasured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbor +N/-S (ft)	e Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
10,400.00	10,398.09	10,374.77	10,355.16	37.08	37.46	96.23	177.01	612.62	634.54	560.62	73.92	8.584		
10,450.00	10,448.08	10,424.65	10,404.90	37.26	37.65	96.22	178.15	616.00	638.06	563.78	74.28	8.590		
10,500.00	10,498.07	10,474.52	10,454.65	37.44	37.83	96.22	179.29	619.38	641.58	566.94	74.64	8.596		
10,550.00	10,548.06	10,524.40	10,504.40	37.62	38.02	96.22	180.44	622.76	645.10	570.10	75.00	8.601		
10,600.00	10,598.05	10,574.28	10,554.15	37.80	38.20	96.22	181.58	626.14	648.62	573.26	75.36	8.607		
10,650.00	10,648.03	10,626.51	10,606.25	37.98	38.39	96.22	182.76	629.66	652.12	576.38	75.74	8.610		
10,700.00	10,698.02	10,686.12	10,665.75	38.16	38.61	96.24	183.91	633.04	655.09	578.93	76.16	8.602		
10,750.00	10,748.01	10,745.81	10,725.38	38.34	38.83	96.28	184.75	635.55	657.32	580.75	76.56	8.585		
10,800.00	10,798.00	10,805.56	10,785.11	38.52	39.04	96.35	185.30	637.18	658.80	581.84	76.96	8.560		
10,850.00		10,865.35	10,844.89	38.70	39.25	96.44	185.55	637.92	659.55	582.20	77.34	8.528		
10,900.00		10,918.63	10,898.17	38.88	39.43	96.54	185.57	637.97	659.71	582.01	77.70	8.490		
10,950.00	10,947.96	10,968.62	10,948.16	39.06	39.61	96.63	185.57	637.97	659.84	581.78	78.06	8.453		
11,000.00	10,997.95	11,018.61	10,998.15	39.24	39.78	96.71	185.57	637.97	659.94	581.53	78.41	8.416		
11,050.00	11,047.95	11,068.61	11,048.15	39.41	39.95	89.95	185.57	637.97	659.97	581.21	78.76	8.379		
11,100.00	11,097.95	11,118.61	11,098.15	39.59	40.12	89.95	185.57	637.97	659.97	580.85	79.12	8.342		
11,150.00	11,147,95	11,168.61	11,148.15	39.77	40.30	89.95	185.57	637.97	659.97	580.50	79.47	8.305		
11,200.00	11,197.95	11,218.61	11,198.15	39.95	40.47	89.95	185.57	637.97	659.97	580.15	79.82	8.268		
11,200.73	11,198.68	11,219.34	11,198.88	39.95	40.47	89.95	185.57	637.97	659.97	580.14	79.83	8.267		
11,250.00	11,247.95	11,268.55	11,248.07	40.13	40.64	90.03	184.62	637.97	659.97	579.80	80.17	8.232		
11,300.00	11,297.95	11,317.98	11,297.23	40.31	40.79	90.46	179.64	637.98	660.00	579.49	80.51	8.198		
11,350.00	11,347.95	11,366.20	11,344.61	40.49	40.94	91.24	170.73	637.99	660.16	579.31	80.85	8.165		
11,400.00	11,397.95	11,412.63	11,389.36	40.67	41.08	-87.60	158.41	638.01	660.60	579.43	81.17	8.138		
11,450.00	11,447.86	11,412.65	11,431.67	40.82	41.20	-86.40	143.04	638.03	661.39	579.43	81.47	8.118		
11,500.00	11,497.33	11,501.78	11,471.84	40.98	41.32		124.80	638.06	662.45			8.105		
11,550.00	11,548.00	11,545.10	11,509.79	41.13	41.43	-85.23 -84.09	103.94	638.09	663.75	580.72 581.77	81.74 81.98	8.096		
11,600.00	11,593.48	11,587.68	11,545.46	41.13	41.52	-83.01	80.70	638.13	665.25	583.05	82.19	8.094		
,555.55	,000.10	**,20**.00	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	· <u>.</u> .	*****		•	000.10	000.20	000.00	52.15	0.004		
11,650.00	11,639.43	11,629.59	11,578.79	41.41	41.61	-81.97	55.30	638.16	666.89	584.52	82.37	8.096		
11,700.00	11,683.48	11,670.92	11,609.75	41.54	41.68	-80.99	27.93	638.20	668.64	586.12	82.52	8.103		
11,750.00	11,725.31	11,711.73	11,638.30	41.65	41.75	-80.07	-1.21	638.25	670.45	587.81	82.63	8.113		
11,800.00	11,764.60	11,752.07	11,664.42	41.77	41.82	-79.22	-31.94	638.29	672.26	589.54	82.72	8.127		
11,850.00	11,801.04	11,792.00	11,688.08	41.88	41.88	-78.44	-64.09	638.34	674.05	591.26	82.79	8.142		
11,900.00	11,834.38	11,831.56	11,709.26	42.00	41.93	-77.73	-97.51	638.39	675.77	592.93	82.84	8.157		
11,950.00	11,864.31	11,870.82	11,727.94	42.10	41.99	-77.10	-132.02	638.44	677.37	594.48	82.89	8.172		
12,000.00	11,890.68	11,909.81	11,744.12	42.21	42.05	-76.55	-167.49	638.49	678.83	595.90	82.93	8.185		
12,050.00	11,913.20	11,950.00	11,758.23	42.32	42.11	-76.07	-205.11	638.55	680.11	597.11	83.00	8.194		
12,100.00	11,931.77	11,987.17	11,768.91	42.42	42.18	-75.70	-240.71	638.60	681.18	598.12	83.08	8.201		
12,150.00	11,946.22	12,025.61	11,777.49	42.52	42.26	-75.41	-278.17	638.66	682.03	598.88	83.15	8.202		
12,200.00	11,956.45	12,063.95	11,783.54	42.62	42.34	-75.20	-316.03	638.71	682.64	599.36	83.28	8.197		
12,250.00	11,962.38	12,102.23	11,787.03	42.73	42.42	-75.08	-354.14	638.77	682.99	599.56	83.43	8.187		
12,300.00	11,964.00		11,788.00	42.82	42.51	-75.05	-393.89	638.83	683.08	599.47	83.61	8.169		
12,350.00	11,964.00	12,208.00	11,788.00	42.94	42.68	-75.05	-443.89	638.90	683.08	599.20	83.88	8.143		
12,400.00	11,964.00	12,242.00	11,788.00	43.05	42.77	-75.05	-493.89	638.98	683.08	598.99	84.09	8.124		
12,450.00	11,964.00	12,308.00	11,788.00	43.19	42.96	-75.05	-543.89	639.05	683.08	598.68	84.40	8.093		
12,500.00	11,964.00	12,342.00	11,788.00	43.32	43.07	-75.05	-593.89	639.13	683.08	598.43	84.65	8.070		
12,550.00	11,964.00	12,408.00	11,788.00	43.48	43.29	-75.05	-643.89	639.20	683.08	598.06	85.02	8.035		
12,600.00	11,964.00	12,442.00	11,788.00	43.64	43.41	-75.05	-693.89	639.27	683.08	597.78	85.30	8.008		
12 550 00	11 004 00	12 500 00	44 700 00	40.00	. 40.00	70.00	747.00	600.05		£07.00	00.00	3 000		
12,650.00	11,964.00 11,964.00	12,508.00	11,788.00	43.82 44.00	43.66 43.80	-75.05 -75.05	-743.89 -793.80	639.35	683.08 683.08	597.36 597.04	85.72 86.03	7.969		
12,700.00		12,542.00	11,788.00		43.80	-75.05	-793.89	639.42	683.08	597.04	86.03	7.940		
12,750.00	11,964.00	12,608.00	11,788.00	44.21	44.07	-75.05 76.06	-843.89	639.50	683.08	596.57	86.51	7.896		
12,800.00 12,850.00	11,964.00	12,642.00	11,788.00	44.41	44.22 44.52	-75.05 76.05	-893.89 043.89	639.57	683.08	596.22	86.86	7.864 7.917		
12,030.00	11,964.00	12,708.00	11,788.00	44.64	44.02	-75.05	-943.89	639.64	683.07	595.69	87.38	7.817		
12,900.00	11,964.00	12 742 00	11,788.00	44.87	44.69	-75.05	-993.89	639.72	683.07	595.31	87.77	7.783		

Database:

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 733H

0.50 ft Well Error: Reference Wellbore Wellbore #1 Reference Design: Permit Plan 1 Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H RKB @ 3359.80ft

TVD Reference: MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma EDM r5000.141_Prod US

Offset Datum Offset TVD Reference:

urvey Prog	ıram: 0-M	WD+HDGM											Offset Well Error:	0.50
Refer		Offse		Semi Major					Dista					
Reasured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbon	e Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	· · · · · · · · · · · · · · · · · · ·	(ft)	(ft)	(ft)	(ft)	(ft)			
12,950.00		12,808.00	11,788.00	45.11	45.02	-75.05	-1,043.89	639.79	683.07	594.74	88.34	7.733		
13,000.00		12,842.00	11,788.00	45.36	45.20	-75.05	-1,093.89	639.87	683.07	594.32	88.76	7.696		
13,050.00		12,908.00	11,788.00	45.63	45.56	-75.05	-1,143.89	639.94	683.07	593.70	89.37	7.643		
13,100.00		12,942.00	11,788.00	45.90	45.75	-75.05	-1,193.89	640.02	683.07	593.25	89.83	7.604		
13,150.00		13,008.00	11,788.00	46.18	46.13	-75.05	-1,243.89	640.09	683.07	592.59	90.49	7.549		
13,200.00	11,964.00	13,042.00	11,788.00	46.47	46.34	-75.05	-1,293.89	640.16	683.07	592.10	90.97	7.509		
13,250.00	11,964.00	13,108.00	11,788.00	46.78	46.74	-75.05	-1,343.89	640.24	683.07	591.40	91.67	7.451		
13,300.00	11,964.00	13,142.00	11,788.00	47.08	46.96	-75.05	-1,393.89	640.31	683.07	590.88	92.19	7.409		
13,350.00	11,964.00	13,208.00	11,788.00	47.41	47.39	-75.05	-1,443.89	640.39	683.07	590.14	92.93	7.350		
13,400.00	11,964.00	13,242.00	11,788.00	47.73	47.62	-75.05	-1,493.89	640.46	683.07	589.59	93.48	7.307		
13,450.00	11,964.00	13,308.00	11,788.00	48.07	48.08	-75.05	-1,543.89	640.53	683.07	588.81	94.26	7.247		
13 500 00	11,964.00	13 242 00	11 700 00	49.42	48.22	75.05	1 502 90	640.61	602.07	500.22	04.04	7 202		
13,500.00 13,550.00		13,342.00	11,788.00 11,788.00	48.42 48.77	48.32 48.70	-75.05 -75.05	-1,593.89 -1,643.89	640.61	683.07	588.23	94.84	7.203		
13,550.00		13,408.00 13,442.00	11,788.00	48.77 49.13	48.79 49.05	-75.05 -75.05	-1,643.89	640.68 640.76	683.07 683.07	587.41	95.65 96.36	7,141		
13,650.00		13,508.00			49.05 49.54	-75.05 -75.05	-1,693.89 -1,743.80	640.76 640.83	683.07 683.07	586.81	96.26	7.096		
13,700.00		13,542.00	11,788.00 11,788.00	49.51 49.88	49.54	-75.05 -75.05	-1,743.89 -1,793.89	640.83 640.90	683.07 683.07	585.96 585.33	97.11 97.74	7.034 6.989		
.0,700.00	,504.00	10,042.00	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	45.00	78.00	-, 3.03	-1,750.05	J40.30	Q03.07	JOJ.JJ	91.14	3,505		
13,750.00	11,964.00	13,608.00	11,788.00	50.27	50.32	-75.05	-1,843.89	640.98	683.07	584.44	98.63	6.926		
13,800.00	11,964.00	13,642.00	11,788.00	50.66	50.59	-75.05	-1,893.89	641.05	683.07	583.79	99.28	6.880		
13,850.00	11,964.00	13,692.00	11,788.00	51.07	51.00	-75.05	-1,943.89	641.13	683.06	582.99	100.07	6.826		
13,900.00	11,964.00	13,742.00	11,788.00	51.47	51.41	-75.05	-1,993.89	641.20	683.06	582.19	100.88	6.771		
13,950.00	11,964.00	13,808.00	11,788.00	51.89	51.97	-75.05	-2,043.89	641.28	683.06	581.23	101.83	6.708		
14,000.00	11,964.00	13,842.00	11,788.00	52.31	52.26	-75.05	-2,093.89	641.35	683.06	580.53	102.53	6.662		
14,050.00		13,908.00	11,788.00	52.74	52.83	-75.05	-2,093.89	641.42	683.06	579.55	102.53	6.599		
14,100.00		13,942.00	11,788.00	53.17	53.13	-75.05	-2,193.89	641.50	683.06	578.83	104.23	6.553		
14,150.00		14,008.00	11,788.00	53.62	53.72	-75.05	-2,243.89	641.57	683.06	577.82	105.24	6.490		
14,200.00		14,042.00	11,788.00	54.06	54.03	-75.05	-2,293.89	641.65	683.06	577.08	105.98	6.445		
	,						-,					•		
14,250.00	11,964.00	14,108.00	11,788.00	54.52	54.63	-75.05	-2,343.89	641.72	683.06	576.04	107.02	6.382		
14,300.00	11,964.00	14,142.00	11,788.00	54.97	54.95	-75.05	-2,393.89	641.79	683.06	575.28	107.78	6.338		
14,350.00	11,964.00	14,208.00	11,788.00	55.44	55.57	-75.05	-2,443.89	641.87	683.06	574.22	108.84	6.276		
14,400.00	11,964.00	14,242.00	11,788.00	55.91	55.89	-75.05	-2,493.89	641.94	683.06	573.44	109.62	6.231		
14,450.00	11,964.00	14,308.00	11,788.00	56.39	56.52	-75.05	-2,543.89	642.02	683.06	572.35	110.71	6.170		
14,500.00	11,964.00	14,342.00	11,788.00	56.87	56.85	-75.05	-2,593.89	642.09	683.06	571.55	111.50	6.126		
14,550.00	•	14,408.00	11,788.00	57.36	57.50	-75.05	-2,643.89	642.16	683.06	570.44	112.62	6.065		
14,600.00		14,442.00	11,788.00	57.84	57.84	-75.05	-2,693.89	642.24	683.06	569.63	113.43	6.022		
14,650.00	-	14,508.00	11,788.00	58.34	58.50	-75.05	-2,743.89	642.31	683.06	568.50	114.56	5.962		
14,700.00	-	14,542.00	11,788.00	58.84	58.84	-75.05	-2,793.89	642.39	683.06	567.67	115.39	5.920		

14,750.00	11,964.00	14,608.00	11,788.00	59.35	59.51	-75.05	-2,843.89	642.46	683.06	566.51	116.54	5.861		
14,800.00		14,642.00	11,788.00	59.86	59.87	-75.05	-2,893.89	642.54	683.05	565.67	117.38	5.819		
14,850.00		14,708.00	11,788.00	60.38	60.55	-75.05	-2,943.89	642.61	683.05	564.50	118.56	5.761		
14,900.00		14,742.00	11,788.00	60.89	60.91	-75.05	-2,993.89	642.68	683.05	563.64	119.41	5.720		
14,950.00	11,964.00	14,808.00	11,788.00	61.42	61.60	-75.05	-3,043.89	642.76	683.05	562.45	120.61	5.663		
15,000.00	11,964.00	14,842.00	11,788.00	61.94	61.96	-75.05	-3,093.89	642.83	683.05	561.58	121.48	5.623		
15,050.00		14,908.00	11,788.00	62.48	62.67	-75.05	-3,143.89	642.91	683.05	560.36	122.69	5.567		
15,100.00		14,942.00	11,788.00	63.01	63.03	-75.05	-3,193.89	642.98	683.05	559.48	123.57	5.528		
15,150.00		15,008.00	11,788.00	63.55	63.75	-75.05	-3.243.89	643.05	683.05	558.25	124.80	5.473		
15,200.00	•	15,042.00	11,788.00	64.09	64.12	-75.05	-3,293.89	643.13	683.05	557.36	125.69	5.434		
												** =		
15,250.00	11,964.00	15,108.00	11,788.00	64.64	64.85	-75.05	-3,343.89	643.20	683.05	556.11	126.94	5.381		
15,300.00	11,964.00	15,142.00	11,788.00	65.19	65.22	-75.05	-3,393.89	643.28	683.05	555.21	127.84	5.343		
15,350.00		15,208.00	11,788.00	65.74	65.96	-75.05	-3,443.89	643.35	683.05	553.95	129.10	5.291		
15,400.00		15,242.00	11,788.00	66.30	66.34	-75.05	-3,493.89	643.42	683.05	553.03	130.02	5.253		
15,450.00	11,964.00	15,308.00	11,788.00	66.86	67.08	-75.05	-3.543.89	643.50	683.05	551.75	131.30	5.202		

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 733H

Well Error: 0.50 ft
Reference Wellbore #1

Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

urvey Prog	ram: 0-Mi	WD+HDGM											Officet Wall E	U EU
Refer	*	Offse	et	Semi Major	Axis				Dista	nce			Offset Well Error:	0.50
leasured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbon		Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (*)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
15,550.00	11,964.00	15,408.00	11,788.00	67.99	68.22	-75.05	-3,643.89	643.65	683.05	549.54	133.51	5.116		
15,600.00		15,442.00	11,788.00	68.56	68.61	-75.05	-3,693.89	643.72	683.05	548.60	134.45	5.080		
15,650.00		15,508.00	11,788.00	69.13	69.37	-75.05	-3,743.89	643.80	683.05	547.30	135.75	5.032		
15,700.00		15,542.00	11,788.00	69.71	69.76	-75.05	-3,793.89	643.87	683.05	546.35	136.70	4.997 Aleri	1	
15,750.00	11,964.00	15,608.00	11,788.00	70.29	70.52	-75.05	-3,843.89	643.94	683.05	545.03	138.01	4.949 Aleri	1	
15,800.00		15,642.00	11,788.00	70.87	70.92	-75.05	-3,893.89	644.02	683.04	544.08	138.97	4.915 Aleri		
15,850.00	11,964.00	15,708.00	11,788.00	71.45	71.69	-75.05	-3,943.89	644.09	683.04	542.75	140.29	4.869 Alen	<u>t</u>	
15,900.00		15,742.00	11,788.00	72.03	72.10	-75.05	-3,993.89	644.17	683.04	541.79	141.26	4.835 Aleri		
15,950.00		15,808.00	11,788.00	72.62	72.87	-75.05	-4,043.89	644.24	683.04	540.45	142.60	4.790 Aleri		
16,000.00		15,842.00	11,788.00	73.21	73.28	-75.05	-4,093.89	644.31	683.04	539.48	143.57	4.758 Aleri		
16,050.00		15,908.00	11,788.00	73.81	74.06	-75.05	-4,143.89	644.39	683.04	538.13	144.92	4.713 Aleri		
16,100.00	11,964.00	15,942.00	11,788.00	74.40	74.47	-75.05	-4,193.89	644.46	683.04	537.15	145.90	4.682 Aleri	•	
16,150.00		16,008.00	11,788.00	75.00	75.26	-75.05	-4,243.89	644.54	683.04	535.79	147.26	4.638 Aleri		
16,200.00		16,042.00	11,788.00	75.60	75.67	-75.05	-4,293.89	644.61	683.04	534.80	148.24	4.608 Aleri		
16,250.00		16,108.00	11,788.00	76.21	76.47	-75.05	-4,343.89	644.68	683.04	533.43	149.61	4.565 Aleri		
16,300.00		16,142.00	11,788.00	76.81	76.88	-75.05	4,393.89	644.76	683.04	532.43	150.61	4.535 Aleri		
16,350.00	11,964.00	16,192.00	11,788.00	77.42	77.49	-75.05	-4,443.89	644.83	683.04	531.25	151.79	4.500 Aleri	•	
16,400.00		16,192.00	11,788.00	78.03	78.10	-75.05 -75.05	-4,443.89 -4,493.89	644.91	683.04	530.05	152.98	4.300 Alen		
16,450.00		16,308.00	11,788.00	78.64	78.91	-75.05	-4,543.89	644.98	683.04	528.67	154.37	4.425 Aleri		
16,500.00		16,342.00	11,788.00	79.25	79.33	-75.05	-4,593.89	645.06	683.04	527.66	155.38	4.396 Aleri		
16,550.00		16,408.00	11,788.00	79.86	80.14	-75.05	-4,643.89	645.13	683.04	526.26	156.78	4.357 Aleri		
16,600.00	11,964.00	16,442.00	11,788.00	80.48	80.56	-75.05	-4,693.89	645.20	683.04	525.25	157.79	4.329 Alen	•	
16,650.00	=	16,508.00	11,788.00	81.10	81.38	-75.05	-4,743.88	645.28	683.04	523.84	159.19	4.291 Alen		
16,700.00	=	16,542.00	11,788.00	81.72	81.81	-75.05	-4,793.88	645.35	683.04	522.82	160.21	4.263 Alen		
16,750.00		16,608.00	11,788.00	82.34	82.63	-75.05	-4,843.88	645.43	683.03	521.41	161.63	4.226 Aleri		
16,800.00		16,642.00	11,788.00	82.96	83.05	-75.05	4,893.88	645.50	683.03	520.38	162.65	4.199 Aleri		
16,850.00	11,964.00	16,708.00	11,788.00	83.59	83.88	-75.05	-4,943.88	645.57	683.03	518.96	164.07	4.163 Aleri	•	
16,900.00		16,742.00	11,788.00	84.22	84.31	-75.05 -75.05	-4,943.88 -4,993.88	645.65	683.03	517.93	165.10	4.103 Alen		
16,950.00		16,808.00	11,788.00	84.85	85.14	-75.05	-5,043.88	645.72	683.03	516.51	166.53	4.102 Aleri		
17,000.00		16,842.00	11,788.00	85.48	85.57	-75.05	-5,093.88	645.80	683.03	515.47	167.56	4.076 Alen		
17,050.00		16,908.00	11,788.00	86.11	86.41	-75.05	-5,143.88	645.87	683.03	514.04	169.00	4.042 Aleri		
17 100 00	44 004 00	10 042 00	44 700 00	96.74	00.04	75.05	5 403 99	645.04	co2 62	540.00	470.00	4 047 41-4		
17,100.00		16,942.00 17,008.00	11,788.00 11,788.00	86.74 87.38	86.84 87.68	-75.05 -75.05	-5,193.88	645.94	683.03	513.00	170.03	4.017 Aler		
17,150.00 17,200.00		17,008.00	11,788.00	88.01	88.11	-75.05 -75.05	-5,243.88 -5,293.88	646.02 646.09	683.03 683.03	511.56 510.51	171.48 172.52	3.983 Aleri 3.959 Aleri		
17,250.00		17,108.00	11,788.00	88.65	88.95	-75.05	-5,343.88	646.17	683.03	509.06	173.97	3.926 Aleri		
17,300.00		17,142.00	11,788.00	89.29	89.39	-75.05	-5,393.88	646.24	683.03	508.01	175.02	3.903 Aleri		
17 250 00	11 064 00	47 209 00	11 700 00	90.03	00.24	75.05	6 443 90	646 33	693.03	506 56	176 47	2 074 41-4		
17,350.00		17,208.00 17,242.00	11,788.00 11,788.00	89.93 90.57	90.24 90.67	-75.05 -75.05	-5,443.88 -5,493.88	646.32 646.39	683.03 683.03	506.56 505.51	176.47 177.52	3.871 Aleri		
17,400.00 17,450.00		17,242.00	11,788.00	91.21	91.52	-75.05 -75.05	-5,493.88 -5,543.88	646.46	683.03	504.05	177.52	3.848 Alen 3.816 Alen		
17,500.00		17,308.00	11,788.00	91.21	91.52	-75.05 -75.05	-5,543.88 -5,593.88	646.54	683.03	502.99	180.04	3.794 Aler		
	11,964.00	17,408.00	11,788.00	92.50	92.82	-75.05	-5,643.88	646.61	683.03	501.53	181.50	3.763 Alen		
			44 700 00	07.45	02.25	75.05				500.40				
17,600.00		17,442.00	11,788.00	93.15	93.26	-75.05	-5,693.88 6.743.88	646.69	683.03	500.46	182.56	3.741 Aleri		
17,650.00		17,508.00	11,788.00	93.79	94.11	-75.05 -75.05	-5,743.88	646.76	683.03	498.99	184.03	3.711 Aler		
17,700.00		17,542.00	11,788.00	94.44	94.55	-75.05	-5,793.88 5.943.88	646.83	683.02	497.93	185.10	3.690 Alen		
17,750.00 17,800.00		17,608.00 17,642.00	11,788.00 11,788.00	95.09 95.74	95.41 95.86	-75.05 -75.05	-5,843.88 -5,893.88	646.91 646.98	683.02 683.02	496.45 495.38	186.57 187.64	3.661 Aleri 3.640 Aleri		
17,850.00	-	17,708.00	11,788.00	96.40	96.72	-75.05	-5,943.88	647.06	683.02	493.90	189.12	3.612 Alen		
17,900.00		17,742.00	11,788.00	97.05	97.16	-75.05	-5,993.88	647.13	683.02	492.83	190.19	3.591 Alen		
17,950.00		17,808.00	11,788.00	97.70	98.03	-75.05	-6,043.88	647.21	683.02	491.35	191.67	3.563 Alen		
	11,964.00	17,842.00	11,788.00	98.36	98.48	-75.05 -75.05	-6,093.88 -6.143.88	647.28 647.25	683.02	490.27	192.75	3.544 Aleri		
18,050.00	11,964.00	17,908.00	11,788.00	99.01	99.34	-75.05	-6,143.88	647.35	683.02	488.78	194.24	3.516 Aler	ı	
18.100.00	11,964.00	17,942.00	11,788.00	99.67	99.79	-75.05	-6,193.88	647.43	683.02	487.70	195.32	3.497 Aleri	t	

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 733H

Well Error: Reference Wellbore 0.50 ft

Wellbore #1 Reference Design: Permit Plan 1 Local Co-ordinate Reference:

RKB @ 3359.80ft

TVD Reference: MD Reference:

RKB @ 3359.80ft

North Reference:

Survey Calculation Method:

Minimum Curvature 2.00 sigma

Grid

Output errors are at

EDM r5000.141_Prod US

Well Lusitano 27-34 Fed Com 733H

Database: Offset TVD Reference:

Offset Datum

Offset Site Error: Sec 27-T25S-R31E - Lusitano 27_34 Fed Com 713H - Wellbore #1 - Permit Plan 1 Offset Design 0-MWD+HDGM Survey Program: 0.50 ft Offset Well Error: Offset Semi Major Axis Reference Distance

	Relet		Olise		Seini majoi	MAIS			_	_ Dista	-			i
1,994 00 1,994 00 1,994 00 1,994 00 1,796 00 1,796 00 1,796 00 1,796 00 1,994 00	-				Reference (ft)	Offset (ft)		+N/-S	+E/-W			•	Separation Factor	Warning
1,994 00 1,994 00 1,994 00 1,994 00 1,796 00 1,796 00 1,796 00 1,796 00 1,994 00	18 150 00	11 964 00	18 008 00	11 788 00	100 33	100.66	-75.05		647 50	683.02	486.21	196.81	3 470 Alert	•
119800 119800 119900 119900 119900 119900 119900 11990 10990 10990 11990														
1.194.00 11.94.00 11.94.00 11.94.00 11.94.00 11.94.00 11.92.00 11.94.00 11.														
1.584.00 1.584.00 1.584.00 1.784.00 1.784.00 1.01.00		-												
18,4000 11,9400 12,9200 11,7800 10,035 10,076 75.05 4.69.08 97.75 60.00 479.66 20.06 3354 Arts 18,4000 11,9400 18,3420 11,7800 10,045 105.06 75.05 4.543.88 647.95 680.02 478.66 204.97 30566 3321 Arts 18,4000 11,9400 18,3420 11,7800 10,052 105.05 75.05 4.543.88 640.07 680.02 477.36 20566 3321 Arts 18,4000 11,9400 18,5420 11,7800 10,052 107.07 75.05 4.543.88 640.07 680.07 473.65 20.05 320 Arts 18,4000 11,9400 18,5420 11,7800 10,052 107.07 75.05 4.543.88 640.07 680.07 473.65 20.05 320 Arts 18,4000 11,9400 18,5420 11,7800 10,052 107.07 75.05 4.543.88 640.07 680.07 473.55 20.05 320 Arts 18,4000 11,9400 18,5420 11,7800 10,052 107.75 75.05 4.543.88 640.07 680.07 473.55 20.05 320 Arts 18,4000 11,9400 18,5420 11,7800 10,052 100.04 75.05 4.543.88 640.07 680.07 473.55 20.05 320 Arts 18,4000 11,9400 18,5420 11,7800 10,052 100.04 75.05 4.543.88 640.07 680.07 473.55 20.05 320 Arts 18,4000 11,9400 18,5420 11,7800 10,052 100.04 75.05 4.543.88 640.07 680.07 470.07 10.00 10.0														
14,60.00 11,664.00 18,000 11,788.00 104.00 104.60 175.05 4,643.88 647.95 661.00 477.36 204.57 3.339 Alert 14,500.00 11,64.00 18,000 11,788.00 106.20 105.92 -75.05 4,653.88 640.02 683.00 477.36 205.66 3.22 Alert 14,500.00 11,64.00 18,000 11,788.00 105.20 105.22 -75.05 4,643.88 640.09 683.00 477.36 205.66 3.22 Alert 14,500.00 11,64.00 18,500.00 11,788.00 105.20 105.20 105.20 -75.05 4,643.88 641.00 18,000 11,64.00 18,500.00 11,788.00 105.20 105.20 105.20 -75.05 4,643.88 641.00 18,000 11,64.00 18,600.00 11,68.00 11														
1.85000 11.86400 18.6000 11.86400 11.8600 11.8	10,400.00	11,304.00	10,242.00	11,700.00	103.03	100.70	-73.03	-0,430.00	047.07	000.02	410.00	200.00	0.004 /401	
18,500.0 11,500.0 18,640.0 11,780.0 10,780.0 10,980 10,900 10,900 10,900 11,500.0 11	18,450.00	11,964.00	18,308.00	11,788.00	104.30	104.63	-75.05	-6,543.88	647.95	683.02	478.45	204.57	3.339 Alert	
188000 189400 18,94200 11,78000 100 29 10642 75.05 4.853.88 648.27 633.02 472.76 200.26 3280 Alert 18,95000 11,96000 11,76000 100 20 10,752 107.75 7.75.05 4.873.88 648.27 683.02 472.75 210.86 3.299 Alert 18,75000 11,96000 11,77000 11,770	18,500.00	11,964.00	18,342.00	11,788.00	104.96	105.09	-75.05	-6,593.88	648.02	683.02	477.36	205.66	3.321 Alert	
18,850.00 11,984.00 11,984.00 11,984.00 11,788	18,550.00	11,964.00	18,408.00	11,788.00	105.62	105.97	-75.05	-6,643.88	648.09	683.02	475.85	207.16	3.297 Alert	
18,700.00 11,984.00 18,642.00 11,788.00 107.62 107.75 75.05 4,793.88 648.32 683.01 472.15 210.88 3.239 Alert 18,750.00 11,986.00 11,788.00 108.29 108.24 75.05 6.843.88 648.37 683.01 470.83 212.38 3.249 Alert 18,850.00 11,986.00 11,780.00 109.80 109.80 75.05 6.863.28 648.77 683.01 469.02 215.00 3.177 Alert 18,850.00 11,986.00 11,780.00	18,600.00	11,964.00	18,442.00	11,788.00	106.29	106.42	-75.05	-6,693.88	648.17	683.02	474.76	208.26	3.280 Alert	
18,7500 11,984,00 18,640,00 11,788,00 10,920 100,64 75,05 4,843,88 483,74 470,83 213,83 3,716 Awri 18,8500 11,984,00 11,786,00 10,963 109,98 75,05 4,843,88 483,61 483,01 480,02 215,00 3,177 Awri 18,800,00 11,984,00 18,760,00 11,788,00 10,00 11,00 11,788,00 10,00 11,00 11,788,	18,650.00	11,964.00	18,508.00	11,788.00	106.96	107.30	-75.05	-6,743.88	648.24	683.02	473.25	209.77	3.256 Alert	
18,7500 11,984,00 18,640,00 11,788,00 10,920 100,64 75,05 4,843,88 483,74 470,83 213,83 3,716 Awri 18,8500 11,984,00 11,786,00 10,963 109,98 75,05 4,843,88 483,61 483,01 480,02 215,00 3,177 Awri 18,800,00 11,984,00 18,760,00 11,788,00 10,00 11,00 11,788,00 10,00 11,00 11,788,														
18,85000 18,6400 18,74200 11,788.00 108,95 109.09 7-70.05 4-8,893.88 648.47 683.01 449.54 213.48 3.199 Alart 18,85000 18,6400 18,74200 11,788.00 110.03 110.44 7-75.05 4-9,993.88 648.61 683.01 446.52 216.0 3.161 Alart 18,6500 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,788.00 11,22 211.22 11.267 7-70.05 7-70.93.88 648.68 683.01 485.39 21.76 23.139 Alart 19,100.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,650.00 11,788.00 11	18,700.00	11,964.00	18,542.00	11,788.00	107.62	107.75	-75.05	-6,793.88	648.32	683.01	472.15	210.86	3.239 Alert	
18,850.00 11,864.00 18,768.00 11,788.00 17,800.00 10,983 075.05 4.983.80 445.4 883.01 486.92 215.00 3.177.Aer. 18,800.00 11,864.00 18,808.00 11,788.00 110.97 111.32 75.05 4.983.80 446.86 883.01 465.39 216.01 3.191.Aer. 18,900.00 11,864.00 18,808.00 11,788.00 111.64 111.78 75.05 7.093.88 648.69 883.01 465.39 217.62 3.139.Aer. 19,000.00 18,804.00 18,808.00 11,788.00 112.22 112.67 75.05 7.093.88 648.76 883.01 462.20 12.87 3.123.Aer. 19,100.00 18,804.00 18,808.00 11,788.00 112.29 112.31 75.05 7.763.81 648.69 883.01 462.20 21.87 3.123.Aer. 19,100.00 18,804.00 18,802.00 11,788.00 112.99 113.13 75.05 7.763.81 648.91 883.01 481.80 22.13 5.3068.Aer. 19,150.00 18,804.00 18,002.00 11,788.00 113.66 114.02 7.75.05 7.743.88 648.91 883.01 480.13 222.88 3.066.Aer. 19,250.00 18,804.00 18,002.00 11,788.00 115.01 115.15 75.05 7.734.88 648.91 883.01 480.13 222.88 3.066.Aer. 19,250.00 18,804.00 18,002.00 11,788.00 115.01 115.15 75.05 7.734.88 648.13 883.01 459.02 223.98 3.049.Aer. 19,250.00 18,804.00 18,002.00 11,788.00 115.01 115.01 115.16 175.05 7.75.05 7.743.88 648.13 883.01 459.02 223.98 3.049.Aer. 19,250.00 18,804.00 18,202.00 11,788.00 116.37 116.72 75.05 7.744.88 649.20 883.01 459.02 223.98 3.049.Aer. 19,250.00 18,804.00 18,202.00 11,788.00 116.37 116.72 75.05 7.7543.88 648.13 883.01 455.20 23.02 8.00 2.959.Aer. 19,450.00 18,804.00 18,204.00 18,204.00 11,780.00 116.37 116.72 75.05 7.7543.88 649.50 883.01 455.20 230.80 2.959.Aer. 19,450.00 18,804.00 18,202.00 11,780.00 116.00 116.54 7.75.05 7.7543.88 649.50 883.01 452.20 230.80 2.959.Aer. 19,450.00 18,804.00 18,804.00 18,804.00 117.70 117.18 91.18 91.75 75.05 7.7543.88 649.50 883.01 452.20 230.80 2.959.Aer. 19,500.00 18,804.00 18,804.00 18,804.00 117.70 117.80 111.80 77.70 77.70 77.743.88 649.50 883.01 452.20 230.80 2.959.Aer. 19,500.00 18,804.00 18,804.00 18,804.00 117.70 117.80 111.80 11.64 77.70 117.74 117.80 117.8	18,750.00	11,964.00	18,608.00	11,788.00	108.29	108.64	-75.05	-6,843.88	648.39	683.01	470.63	212.38	3.216 Alert	
18,800.00 11,964.00 10,742.00 11,788.00 110,30 110,44 -75.05 -7.043.88 648.9 683.01 465.9 216.10 3.151 Aeri 18,000.00 11,964.00 11,788.00 11,788.00 11,788.00 11,788.00 11,788.00 11,788.00 11,788.00 11,788.00 11,788.00 11,788.00 11,789.0	18,800.00	11,964.00	18,642.00	11,788.00	108.96	109.09	-75.05	-6,893.88	648.47	683.01	469.54	213.48	3.199 Alert	
18,850.00 11,964.00 18,808.00 11,788.00 110,97 111.32 .75.05 .7,043.88 648.69 683.01 465.39 217.62 3.139 Alert 19,000.00 11,664.00 18,642.00 11,788.00 11,788.00 11,789.00 11,745.05 .70.05 .7,143.88 648.69 683.01 462.20 218.72 3.123 Alert 19,000.00 11,664.00 18,640.00 11,789.0	18,850.00	11,964.00	18,708.00	11,788.00	109.63	109.98	-75.05	-6,943.88	648.54	683.01	468.02	215.00	3.177 Alert	
19,000.00 11,984.00 11,986.00 11,788.00 11,788.00 113.20 112.20 11.78.00 11,788.00 11,	18,900.00	11,964.00	18,742.00	11,788.00	110.30	110.44	-75.05	-6,993.88	648.61	683.01	466.92	216.10	3.161 Alert	
19,000.00 11,984.00 11,986.00 11,788.00 11,788.00 113.20 112.20 11.78.00 11,788.00 11,							_	_						
19,950.00 11,984.00 18,908.00 11,788														
18,100.00 11,984.00 19,000.00 11,788.00 11,788.00 113,66 114.02 75.05 7,783.88 649.91 683.01 451.66 221.35 3,086 Alert 119,200.00 11,984.00 19,000.00 11,788.00 114.04 75.05 7,783.88 649.91 683.01 451.02 222.88 3,065 Alert 119,200.00 11,984.00 19,000.00 11,788.00 115.01 115.15 75.05 7,783.88 649.13 683.01 457.0 223.90 3,033 Alert 119,200.00 11,984.00 19,000.00 11,788.00 115.00 1														
19,150,00 11,984,00 19,000 00 11,788,00 11,788								•						
19,200.00 11,984.00 19,042.00 11,788.00 114.34 114.48 75.05 7.7393.88 649.06 683.01 459.02 223.98 3.049 Alert 19,200.00 11,984.00 19,092.00 11,788.00 115.01 115.15 75.05 7.7393.88 649.13 683.01 459.03 225.03 3.031 Alert 19,300.00 11,984.00 19,202.00 11,788.00 116.37 116.72 75.05 7.7393.88 649.13 683.01 459.03 226.52 3.014 Alert 19,300.00 11,984.00 19,202.00 11,788														
19,250,00 11,964,00 19,022,00 11,788,00 115,01 115,15 17,343,88 649.13 683.01 457.70 225.30 3.03.1 Alert 19,300,00 11,964,00 19,42,00 11,788,00 115,86 115,83 47.50 5 7,343,88 649.28 683.01 458.88 228.28 230.1 Alert 19,300,00 11,964,00 19,242,00 11,788,00 110,44 17,04 117,18 17,505 7,743,88 649.28 683.01 458.85 228.18 2,994 Alert 19,400,00 11,964,00 19,242,00 11,788,00 118,00 118,00 118,00 11,0	19,150.00	11,964.00	19,008.00	11,788.00	113.66	114.02	-75.05	-7,243.88	648.98	683.01	460.13	222.88	3.065 Alert	
19,250,00 11,964,00 19,022,00 11,788,00 115,01 115,15 17,343,88 649.13 683.01 457.70 225.30 3.03.1 Alert 19,300,00 11,964,00 19,42,00 11,788,00 115,86 115,83 47.50 5 7,343,88 649.28 683.01 458.88 228.28 230.1 Alert 19,300,00 11,964,00 19,242,00 11,788,00 110,44 17,04 117,18 17,505 7,743,88 649.28 683.01 458.85 228.18 2,994 Alert 19,400,00 11,964,00 19,242,00 11,788,00 118,00 118,00 118,00 11,0	40 000 00	44 004 00	40.040.00	44 700 00	444.34	444.40	75.05	7 202 88	640.06	602.04	450.00	222.00	2.040.4104	
19,300.00 11,964.00 19,242.00 11,788.00 115,83 15,83 -75.05 7,343.88 649.21 683.01 456.38 228.62 3,014.Alert 19,350.00 11,964.00 19,208.00 11,788.00 117,04 117.18 75.05 7,443.88 649.25 683.01 457.14 228.27 2,77 2,77 2,77 2,77 2,77 2,77 2,77 2														
19,350.00 11,964.00 19,206.00 11,788.00 116,37 116,72 -75.05 -7,433.88 649.25 683.01 454.85 228.16 2.994 Alert 19,400.00 11,964.00 19,242.00 11,788.00 117.04 117.18 -75.05 -7,433.88 649.35 683.01 453.74 229.27 2.979 Alert 19,500.00 11,964.00 19,308.00 11,788.00 119,600.00 11,964.00 19,342.00 11,788.00 119.08 119.44 -75.05 -7,533.88 649.50 683.01 450.09 231.92 2.945 Alert 19,550.00 11,964.00 19,409.00 11,788.00 119.08 119.44 -75.05 -7,543.88 649.50 683.01 451.09 231.92 2.945 Alert 19,550.00 11,964.00 19,409.00 11,788.00 119.08 119.44 -75.05 -7,643.88 649.50 683.01 449.55 233.46 2.926 Alert 19,550.00 11,964.00 19,500.00 11,788.00 119.08 119.04 175.05 -7,743.88 649.50 683.01 449.55 233.46 2.926 Alert 19,550.00 11,964.00 19,500.00 11,788.00 120.44 120.80 -75.05 -7,633.88 649.56 683.01 446.83 234.57 2.912 Alert 19,550.00 11,964.00 19,500.00 11,788.00 120.44 120.80 -75.05 -7,743.88 649.57 683.00 446.89 238.11 2.833 Alert 19,700.00 11,964.00 19,500.00 11,788.00 122.46 122.60 -75.05 -7,743.88 649.80 683.00 445.78 237.23 2.879 Alert 19,500.00 11,964.00 19,500.00 11,788.00 122.48 123.52 -75.05 -7,843.88 649.80 683.00 444.23 238.77 2.912 Alert 19,500.00 11,964.00 19,700.00 11,788.00 122.48 123.52 -75.05 -7,843.88 649.80 683.00 444.23 238.77 2.912 Alert 19,500.00 11,964.00 19,700.00 11,788.00 122.48 123.52 -75.05 -7,843.88 649.80 683.00 444.23 238.77 2.880 Alert 19,500.00 11,964.00 19,742.00 11,788.00 123.84 123.52 -75.05 -7,843.88 650.02 683.00 441.57 241.44 2.828 Alert 19,500.00 11,964.00 19,742.00 11,788.00 123.84 123.52 -75.05 -7,943.88 650.02 683.00 441.57 241.44 2.828 Alert 19,500.00 11,964.00 19,940.00 11,788.00 123.84 123.52 -75.05 -7,943.88 650.02 683.00 441.57 241.44 2.778 Alert 19,500.00 11,964.00 19,940.00 11,788.00 123.84 123.52 -75.05 -7,943.88 650.02 683.00 441.57 241.44 2.778 Alert 19,500.00 11,500.00	1													
19,400.00 11,964.00 19,242.00 11,768.00 117.04 117.18 -75.05 -7,493.88 649.35 683.01 453.74 229.27 2.979 Alert 19,450.00 11,964.00 19,342.00 11,768.00 118.40 118.40 -75.05 -7,593.88 649.50 683.01 452.20 230.80 2.959 Alert 19,550.00 11,964.00 19,442.00 11,768.00 119.	•													
19,450 00 11,984 00 19,342 00 11,788 00 117,72 118 08 -75 05 -7,543 88 649.50 683.01 452.20 230.80 2.959 Alert 19,500.00 11,984 00 19,442 00 11,788 00 118 08 119.44 -75 05 -7,543.88 649.50 683.01 451.09 231.92 2.945 Alert 19,550 01 11,984 00 19,408 00 11,788 00 119.08 119.44 -75 05 -7,643.88 649.50 683.01 451.09 231.92 2.945 Alert 19,550 01 11,984 00 19,508 00 11,788 00 120.44 120.80 -75 05 -7,643.88 649.50 683.01 448.55 233.46 2.926 Alert 19,550 00 11,984 00 19,508 00 11,788 00 120.44 120.80 -75 05 -7,743.88 649.50 683.00 448.89 236.11 2.893 Alert 19,750 00 11,984 00 19,508 00 11,788 00 121.80 122.16 -75 05 -7,843.88 649.73 683.00 448.89 236.11 2.893 Alert 19,750 00 11,984 00 19,508 00 11,788 00 122.16 122.16 -75 05 -7,843.88 649.73 683.00 448.78 237.23 2879 Alert 19,850 00 11,984 00 19,608 00 11,788 00 122.16 122.16 -75 05 -7,843.88 649.87 683.00 444.73 233.77 2.860 Alert 19,850 00 11,984 00 19,760 00 11,788 00 122.16 122.15 123.52 -75 05 -7,843.88 649.87 683.00 443.11 239.89 2.847 Alert 19,850 00 11,984 00 19,768 00 123.84 123.99 -75 05 -7,943.88 650 02 683.00 443.11 239.89 2.847 Alert 19,850 00 11,984 00 19,768 00 123.84 123.99 -75 05 -7,943.88 650 02 683.00 443.11 239.89 2.847 Alert 19,850 00 11,864 00 19,808 00 11,788 00 123.16 123.52 -75 05 -7,943.88 650 02 683.00 443.17 239.89 2.847 Alert 19,850 00 11,864 00 19,808 00 11,788 00 123.84 123.99 -75 05 -7,943.88 650 10 683.00 436.90 244.10 2.788 Alert 20,050 00 11,864 00 18,842 00 11,788 00 125.21 123.36 -75 05 -8,043.88 650.39 683.00 435.10 244.02 2.786 Alert 20,050 00 11,864 00 18,842 00 11,788 00 125.21 123.36 -75 05 -8,043.88 650.39 683.00 435.10 247.90 2.755 Alert 20,050 00 11,964 00 20,008 00 11,788 00 125.51 125.36 -75 05 -8,143.88 650.39 683.00 435.10 247.90 2.755 Alert 20,050 00 11,964 00 20,008 00 11,788 00 125.51 125.36 -75 05 -8,143.88 650.39 683.00 435.10 247.90 2.755 Alert 20,050 00 11,964 00 20,042 00 11,788 00 126.55 126.75 -75 05 -8,243.88 650.39 683.00 425.19 245.41 2.50 2.799 Alert 20,050 00 11,964 00 20,042 00 11,788 00 126.55 125.05 125														
19,500.00 11,984.00 19,342.00 11,788.00 118.40 118.54 75.05 7.693.88 649.50 683.01 451.09 231.92 2.945.Alert 19,550.00 11,984.00 19,442.00 11,788.00 119.08 119.44 75.05 7.693.88 649.56 683.01 449.55 233.46 2.926.Alert 19,650.00 11,984.00 19,540.00 11,788.00 120.44 120.80 75.05 7.693.88 649.56 683.01 448.43 234.57 2.912.Alert 19,750.00 11,984.00 19,542.00 11,788.00 120.44 120.80 75.05 7.7,743.88 649.73 683.00 446.89 236.11 2.893.Alert 19,750.00 11,984.00 19,640.00 19,640.00 11,788.00 121.80 122.16 75.05 7.7,843.88 649.80 683.00 445.78 237.23 2.879.Alert 19,750.00 11,984.00 19,640.00 11,788.00 122.84 122.62 7.75.05 7.7,843.88 649.80 683.00 444.23 238.77 2.8680.Alert 19,850.00 11,984.00 19,706.00 11,788.00 122.84 122.62 7.75.05 7.7,843.88 650.02 683.00 444.13 239.89 2.447.Alert 19,850.00 11,984.00 19,706.00 11,788.00 123.18 122.52 7.75.05 7.7,943.88 650.02 683.00 443.11 239.89 2.447.Alert 19,950.00 11,964.00 19,742.00 11,788.00 123.84 123.99 7.75.05 7.9,43.88 650.02 683.00 441.57 241.44 2.829.Alert 19,950.00 11,964.00 19,808.00 11,788.00 123.84 123.99 7.75.05 7.9,43.88 650.17 683.00 440.45 242.56 2.816.Alert 19,950.00 11,964.00 19,808.00 11,788.00 125.89 126.26 7.75.05 8.8,043.88 650.17 683.00 440.45 242.56 2.816.Alert 19,950.00 11,964.00 19,808.00 11,788.00 125.89 126.26 7.75.05 8.8,043.88 650.17 683.00 435.76 245.22 2.785.Alert 20,500.00 11,964.00 19,942.00 11,788.00 125.89 126.28 7.75.05 8.8,043.88 650.17 683.00 435.76 245.22 2.785.Alert 20,500.00 11,964.00 19,942.00 11,788.00 125.89 126.28 7.75.05 8.8,043.88 650.02 683.00 435.76 245.22 2.785.Alert 20,500.00 11,964.00 20,040.00 11,788.00 125.89 126.73 7.75.05 8.8,43.88 650.17 683.00 430.87 252.13 2.709.Alert 20,500.00 11,964.00 20,040.00 11,788.00 125.89 126.73 7.75.05 8.8,43.88 650.17 683.00 430.87 252.13 2.709.Alert 20,500.00 11,964.00 20,040.00 11,788.00 127.95 128.10 7.75.05 8.8,43.88 650.19 683.00 425.81 267.3 2.755.41 2.689.Alert 20,500.00 11,964.00 20,400.00 11,788.00 130.89 130.85 7.75.05 8.8,43.88 650.19 683.00 425.81 266.33 2.641.Alert 20,500.00 11,96	19,400.00	11,964.00	19,242.00	11,788.00	117.04	117.18	-/5.05	-7,493.88	649.35	683.01	453.74	229.27	2.979 AIBR	
19,500.00 11,984.00 19,342.00 11,788.00 118.40 118.54 75.05 7.693.88 649.50 683.01 451.09 231.92 2.945.Alert 19,550.00 11,984.00 19,442.00 11,788.00 119.08 119.44 75.05 7.693.88 649.56 683.01 449.55 233.46 2.926.Alert 19,650.00 11,984.00 19,540.00 11,788.00 120.44 120.80 75.05 7.693.88 649.56 683.01 448.43 234.57 2.912.Alert 19,750.00 11,984.00 19,542.00 11,788.00 120.44 120.80 75.05 7.7,743.88 649.73 683.00 446.89 236.11 2.893.Alert 19,750.00 11,984.00 19,640.00 19,640.00 11,788.00 121.80 122.16 75.05 7.7,843.88 649.80 683.00 445.78 237.23 2.879.Alert 19,750.00 11,984.00 19,640.00 11,788.00 122.84 122.62 7.75.05 7.7,843.88 649.80 683.00 444.23 238.77 2.8680.Alert 19,850.00 11,984.00 19,706.00 11,788.00 122.84 122.62 7.75.05 7.7,843.88 650.02 683.00 444.13 239.89 2.447.Alert 19,850.00 11,984.00 19,706.00 11,788.00 123.18 122.52 7.75.05 7.7,943.88 650.02 683.00 443.11 239.89 2.447.Alert 19,950.00 11,964.00 19,742.00 11,788.00 123.84 123.99 7.75.05 7.9,43.88 650.02 683.00 441.57 241.44 2.829.Alert 19,950.00 11,964.00 19,808.00 11,788.00 123.84 123.99 7.75.05 7.9,43.88 650.17 683.00 440.45 242.56 2.816.Alert 19,950.00 11,964.00 19,808.00 11,788.00 125.89 126.26 7.75.05 8.8,043.88 650.17 683.00 440.45 242.56 2.816.Alert 19,950.00 11,964.00 19,808.00 11,788.00 125.89 126.26 7.75.05 8.8,043.88 650.17 683.00 435.76 245.22 2.785.Alert 20,500.00 11,964.00 19,942.00 11,788.00 125.89 126.28 7.75.05 8.8,043.88 650.17 683.00 435.76 245.22 2.785.Alert 20,500.00 11,964.00 19,942.00 11,788.00 125.89 126.28 7.75.05 8.8,043.88 650.02 683.00 435.76 245.22 2.785.Alert 20,500.00 11,964.00 20,040.00 11,788.00 125.89 126.73 7.75.05 8.8,43.88 650.17 683.00 430.87 252.13 2.709.Alert 20,500.00 11,964.00 20,040.00 11,788.00 125.89 126.73 7.75.05 8.8,43.88 650.17 683.00 430.87 252.13 2.709.Alert 20,500.00 11,964.00 20,040.00 11,788.00 127.95 128.10 7.75.05 8.8,43.88 650.19 683.00 425.81 267.3 2.755.41 2.689.Alert 20,500.00 11,964.00 20,400.00 11,788.00 130.89 130.85 7.75.05 8.8,43.88 650.19 683.00 425.81 266.33 2.641.Alert 20,500.00 11,96	19 450 00	11 984 00	19 308 00	11 788 00	117 72	118 08	-75.05	-7 543 88	649 43	683 01	452 20	230.80	2 959 Alert	
19,550 00 11,984 00 19,405 00 11,788 00 119,08 119 44 -75,05 -76,03 86 649,58 683,01 449,55 233,46 2,926 Alert 19,600 00 11,984 00 19,442 00 11,788 00 120,44 120,80 75,05 -76,03 88 649,65 683,01 448,43 234,57 2,912 Alert 19,600 00 11,984 00 19,542 00 11,788 00 121,12 121,26 75,05 -76,03 88 649,87 683,00 446,89 236,11 2,893 Alert 19,700 00 11,984 00 19,600 00 11,788 00 121,80 122,16 75,05 -78,43,88 649,87 683,00 444,23 238,77 2,850 Alert 19,800 00 11,984 00 19,600 00 11,788 00 122,18 123,52 -75,05 -78,93,88 649,87 683,00 444,23 238,77 2,850 Alert 19,800 00 11,984 00 19,700 00 11,788 00 122,18 123,52 -75,05 -78,93,88 649,87 683,00 441,57 241,44 2,829 Alert 19,800 00 11,984 00 19,700 00 11,788 00 123,18 123,59 -75,05 -79,93,88 650,10 683,00 440,45 242,59 2,816 Alert 19,900 00 11,984 00 19,742 00 11,788 00 123,84 123,399 -75,05 -79,93,88 650,10 683,00 440,45 242,59 2,816 Alert 19,900 00 11,984 00 19,800 00 11,788 00 124,53 124,89 -75,05 -8,093,88 650,10 683,00 440,45 242,59 2,816 Alert 19,900 00 11,984 00 19,900 00 11,788 00 124,53 124,89 -75,05 -8,093,88 650,10 683,00 437,78 245,22 2,785 Alert 20,050 00 11,984 00 19,900 00 11,788 00 125,89 126,26 -75,05 -8,093,88 650,10 683,00 437,78 245,22 2,785 Alert 20,050 00 11,984 00 19,900 00 11,788 00 125,89 126,26 -75,05 -8,143,88 650,32 683,00 437,78 245,22 2,785 Alert 20,150 00 11,984 00 19,900 00 11,788 00 126,58 126,73 -75,05 -8,143,88 650,39 683,00 437,78 245,22 2,785 Alert 20,150 00 11,984 00 20,042 00 11,788 00 126,58 126,73 -75,05 -8,243,88 650,49 683,00 430,67 252,13 2,799 Alert 20,500 00 11,984 00 20,042 00 11,788 00 126,58 126,73 -75,05 -8,243,88 650,49 683,00 430,67 252,13 2,799 Alert 20,500 00 11,984 00 20,042 00 11,788 00 126,58 126,73 -75,05 -8,243,88 650,59 683,00 430,67 252,13 2,799 Alert 20,500 00 11,984 00 20,042 00 11,788 00 126,58 129,47 -75,05 -8,243,88 650,69 683,00 430,67 252,13 2,799 Alert 20,500 00 11,984 00 20,042 00 11,788 00 130,69 130,85 -75,05 -8,243,88 650,69 683,00 42,76 853,00 42,76 853,00 42,76 853,00 42,76 853,00 42,76 853,00 42,76 853,0														
19,600 00 11,964 00 19,442 00 11,768 00 120 44 120 80 75.05 7,7693.88 649.65 683.01 448.43 234.57 2.912 Alert 19,500 00 11,964 00 19,508 00 11,768 00 120 44 120.80 75.05 7,743.88 649.73 683.00 446.89 236.11 2.983 Alert 19,500 00 11,964 00 19,542 00 11,768 00 121 12 12 12.66 75.05 7,743.88 649.73 683.00 445.78 237.23 2.879 Alert 19,500 00 11,964 00 19,642 00 11,768 00 122 48 122.62 75.05 7,843.88 649.87 683.00 444.23 238.77 2.860 Alert 19,800 00 11,964 00 19,708.00 11,768 00 123 16 123.52 75.05 7,943.88 650.02 683.00 443.11 239.89 2.847 Alert 19,900 00 11,964 00 19,708.00 11,768 00 123 48 123.52 75.05 7,943.88 650.02 683.00 441.57 241.44 2.829 Alert 19,900 00 11,964 00 19,708.00 11,768 00 123 48 123.52 75.05 7,943.88 650.10 683.00 440.52 242.56 2.816 Alert 19,900 00 11,964 00 19,808.00 11,768 00 125.81 125.36 75.05 8,043.88 650.10 683.00 440.52 242.56 2.816 Alert 10,000 00 11,964 00 19,808.00 11,768 00 125.51 125.36 75.05 8,043.88 650.10 683.00 437.78 245.22 2.785 Alert 20,050.00 11,964 00 19,908.00 11,768 00 125.69 126.26 75.05 8,143.88 650.39 683.00 432.32 246.78 2.768 Alert 20,050.00 11,964 00 19,908.00 11,768 00 125.69 126.26 75.05 8,143.89 650.37 683.00 432.32 246.78 2.768 Alert 20,050.00 11,964 00 20,008.00 11,768 00 125.69 127.63 75.05 8,143.89 650.37 683.00 432.42 250.57 2.726 Alert 20,500.00 11,964 00 20,008.00 11,768 00 127.26 127.63 75.05 8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,500.00 11,964 00 20,008.00 11,768 00 129.32 129.47 75.05 8,243.88 650.61 683.00 432.42 250.57 2.726 Alert 20,350.00 11,964 00 20,042.00 11,768 00 129.32 129.47 75.05 8,343.88 650.61 683.00 422.42 250.57 2.726 Alert 20,350.00 11,964 00 20,042.00 11,768 00 129.32 129.47 75.05 8,343.88 650.61 683.00 422.74 253.26 2697 Alert 20,350.00 11,964 00 20,042.00 11,768 00 130.01 130.38 75.05 8,443.88 650.61 683.00 422.70 255.59 4 2669 Alert 20,350.00 11,964 00 20,042.00 11,768.00 130.01 130.01 130.38 75.05 8,443.88 650.61 683.00 422.70 255.59 4 2669 Alert 20,550.00 11,964 00 20,042.00 11,768.00 130.01 130.01 130.88 75.05 8,443.														
19,650.00 11,964.00 19,508.00 11,768.00 120.44 120.80 -75.05 -7,743.88 649.73 683.00 446.89 236.11 2.893 Alert 19,700.00 11,964.00 19,508.00 11,768.00 121.12 121.26 -75.05 -7,793.88 649.80 683.00 445.78 237.23 2.879 Alert 19,800.00 11,964.00 19,608.00 11,768.00 121.80 122.16 -75.05 -7,843.88 649.87 683.00 444.23 238.77 2.860 Alert 19,800.00 11,964.00 19,708.00 11,768.00 122.48 122.62 -75.05 -7,893.88 649.87 683.00 444.23 238.77 2.860 Alert 19,800.00 11,964.00 19,708.00 11,768.00 123.16 122.52 -75.05 -7,943.88 650.02 683.00 441.57 241.44 2.829 Alert 19,900.00 11,964.00 19,742.00 11,768.00 123.84 123.99 -75.05 -7,993.88 650.10 683.00 440.45 242.56 2.816 Alert 19,950.00 11,964.00 19,800.00 11,768.00 124.53 124.89 -75.05 -8,043.88 650.10 683.00 440.45 242.56 2.816 Alert 19,950.00 11,964.00 19,842.00 11,768.00 125.21 125.36 -75.05 -8,043.88 650.17 683.00 438.90 244.10 2.798 Alert 20,050.00 11,964.00 19,842.00 11,768.00 125.51 125.36 -75.05 -8,043.88 650.24 683.00 437.78 245.22 2.765 Alert 20,050.00 11,964.00 19,942.00 11,768.00 126.58 126.73 -75.05 -8,143.88 650.32 683.00 435.10 247.90 2.755 Alert 20,150.00 11,964.00 20,042.00 11,768.00 126.58 126.73 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,200.00 11,964.00 20,042.00 11,768.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 432.42 250.57 2.738 Alert 20,200.00 11,964.00 20,042.00 11,768.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 432.42 250.57 2.738 Alert 20,200.00 11,964.00 20,042.00 11,768.00 127.26 127.63 -75.05 -8,343.88 650.69 683.00 422.42 250.57 2.759 Alert 20,350.00 11,964.00 20,042.00 11,768.00 130.85 130.85 -75.05 -8,433.88 650.99 683.00 422.42 250.57 2.759 Alert 20,350.00 11,964.00 20,042.00 11,768.00 130.01 130.38 -75.05 -8,433.88 650.69 683.00 422.42 250.57 2.759 Alert 20,350.00 11,964.00 20,042.00 11,768.00 130.01 130.38 -75.05 -8,433.88 650.99 683.00 426.43 255.25 26.697 Alert 20,550.00 11,964.00 20,042.00 11,768.00 130.01 130.38 -75.05 -8,643.88 650.99 683.00 426.43 255.25 26.697 Alert 20,550.00 11,964.00 20,042.0														
18,700.00 11,964.00 19,542.00 11,788.00 121.12 121.26 -75.05 -7,783.88 649.80 683.00 445.78 237.23 2.879 Alert 19,750.00 11,964.00 19,608.00 11,768.00 122.16 -75.05 -7,843.88 649.87 683.00 444.23 238.77 2.860 Alert 19,800.00 11,964.00 19,642.00 11,768.00 122.48 122.62 -75.05 -7,843.88 649.95 683.00 444.21 239.89 2.847 Alert 19,800.00 11,964.00 19,742.00 11,768.00 123.84 123.99 -75.05 -7,943.88 650.02 683.00 441.57 241.44 2.829 Alert 19,900.00 11,964.00 19,742.00 11,768.00 123.84 123.99 -75.05 -7,943.88 650.10 683.00 440.45 242.56 2.816 Alert 19,950.00 11,964.00 19,808.00 11,768.00 125.84 123.99 -75.05 -7,943.88 650.10 683.00 440.45 242.56 2.816 Alert 19,950.00 11,964.00 19,808.00 11,768.00 125.51 125.36 -75.05 -8,043.88 650.10 683.00 440.45 242.56 2.816 Alert 19,950.00 11,964.00 19,808.00 11,768.00 125.21 125.36 -75.05 -8,043.88 650.10 683.00 437.78 245.22 2.768 Alert 20,050.00 11,964.00 19,942.00 11,768.00 125.81 126.26 -75.05 -8,143.88 650.30 430.00 437.78 245.22 2.768 Alert 20,150.00 11,964.00 19,942.00 11,768.00 126.58 126.73 -75.05 -8,143.88 650.32 683.00 435.10 247.90 2.755 Alert 20,150.00 11,964.00 19,942.00 11,768.00 126.58 126.73 -75.05 -8,193.88 650.30 683.00 435.10 247.90 2.755 Alert 20,250.00 11,964.00 20,008.00 11,768.00 127.95 128.10 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,250.00 11,964.00 20,042.00 11,768.00 127.95 128.10 -75.05 -8,243.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,142.00 11,768.00 127.95 128.10 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,142.00 11,768.00 130.61 130.89 -75.05 -8,493.88 650.99 683.00 425.50 25.59 4 2.669 Alert 20,450.00 11,964.00 20,208.00 11,768.00 130.01 130.89 -75.05 -8,493.88 650.99 683.00 425.50 25.59 4 2.669 Alert 20,550.00 11,964.00 20,408.00 11,768.00 130.01 130.89 -75.05 -8,693.88 650.99 683.00 425.50 25.59 4 2.669 Alert 20,550.00 11,964.00 20,408.00 11,768.00 132.76 133.65 -75.05 -8,693.88 650.99 683.00 424.73 256.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,768.00 132.76 133.6														
19,750.00 11,964.00 19,608.00 11,768.00 121.80 122.16 75.05 7,843.88 649.87 683.00 444.23 238.77 2.860 Alert 19,800.00 11,964.00 19,708.00 11,768.00 122.48 122.62 75.05 7.893.88 649.95 683.00 443.11 239.89 2.647 Alert 19,900.00 11,964.00 19,742.00 11,768.00 123.84 123.99 75.05 7.993.88 650.10 683.00 440.45 242.56 2.818 Alert 19,900.00 11,964.00 19,742.00 11,768.00 123.84 123.99 75.05 7.993.88 650.10 683.00 440.45 242.56 2.818 Alert 19,900.00 11,964.00 19,842.00 11,768.00 125.21 125.36 75.05 8.8043.88 650.17 683.00 436.30 244.10 2.798 Alert 20,000.00 11,964.00 19,842.00 11,768.00 125.21 125.36 75.05 8.8043.88 650.24 683.00 437.78 245.22 2.765 Alert 20,000.00 11,964.00 19,908.00 11,768.00 125.89 126.26 75.05 8.143.88 650.32 683.00 436.23 246.78 2.768 Alert 20,000.00 11,964.00 19,942.00 11,768.00 125.89 126.26 75.05 8.8143.88 650.32 683.00 436.23 246.78 2.768 Alert 20,150.00 11,964.00 19,942.00 11,768.00 127.26 127.63 775.05 8.8243.88 650.47 683.00 435.10 247.90 2.755 Alert 20,250.00 11,964.00 20,008.00 11,768.00 127.25 128.10 75.05 8.8243.88 650.47 683.00 435.10 247.90 2.755 Alert 20,250.00 11,964.00 20,108.00 11,768.00 127.95 128.10 75.05 8.243.88 650.47 683.00 430.87 252.13 2.709 Alert 20,250.00 11,964.00 20,108.00 11,768.00 129.32 129.47 75.05 8.393.88 650.69 683.00 430.87 252.13 2.709 Alert 20,250.00 11,964.00 20,108.00 11,768.00 129.32 129.47 75.05 8.393.88 650.69 683.00 429.74 253.26 2.697 Alert 20,350.00 11,964.00 20,242.00 11,768.00 130.69 130.08 75.05 8.433.88 650.69 683.00 427.06 255.94 2.669 Alert 20,350.00 11,964.00 20,242.00 11,768.00 130.69 130.68 75.05 8.433.88 650.89 683.00 427.06 255.94 2.669 Alert 20,350.00 11,964.00 20,308.00 11,768.00 130.69 130.68 75.05 8.433.88 650.69 683.00 427.06 255.94 2.669 Alert 20,350.00 11,964.00 20,342.00 11,768.00 130.69 130.68 75.05 8.843.88 650.86 650.99 683.00 427.06 255.94 2.669 Alert 20,550.00 11,964.00 20,342.00 11,768.00 130.69 130.65 75.05 8.693.88 650.69 683.00 422.81 260.19 2.625 Alert 20,550.00 11,964.00 20,442.00 11,768.00 133.45 133.60 75.05 8.693.88 65	10,000.00	11,001.00	10,000.00	,		.20.00		1,1 10.00	•	***************************************		200	2.000 / 0011	
19,800.00 11,984.00 19,642.00 11,788.00 122.48 122.62 -75.05 -7.893.88 649.95 683.00 443.11 239.89 2.847 Alert 19,805.00 11,984.00 19,708.00 11,788.00 123.16 123.52 -75.05 -7.943.88 650.02 683.00 441.57 241.44 2.829 Alert 19,900.00 11,964.00 19,742.00 11,788.00 123.84 123.99 -75.05 -7.993.88 650.10 683.00 440.45 242.56 2.816 Alert 19,950.00 11,964.00 19,808.00 11,788.00 124.53 124.89 -75.05 -8.043.88 650.17 683.00 440.45 242.56 2.816 Alert 20,050.00 11,964.00 19,942.00 11,788.00 125.89 126.26 -75.05 -8.143.88 650.24 683.00 437.78 245.22 2.785 Alert 20,100.00 11,964.00 19,942.00 11,788.00 125.89 126.26 -75.05 -8.143.88 650.39 683.00 435.10 247.90 2.755 Alert 20,150.00 11,964.00 20,042.00 11,788.00 127.26 127.63 -75.05 -8.243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,250.00 11,964.00 20,042.00 11,788.00 125.63 128.00 -75.05 -8.243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,250.00 11,964.00 20,042.00 11,788.00 125.63 129.00 -75.05 -8.343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,108.00 11,788.00 126.63 129.00 -75.05 -8.343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,020.00 11,788.00 126.63 129.00 -75.05 -8.343.88 650.61 683.00 427.06 255.94 2.568 Alert 20,350.00 11,964.00 20,242.00 11,788.00 130.01 130.38 -75.05 -8.443.88 650.76 683.00 427.06 255.94 2.680 Alert 20,450.00 11,964.00 20,242.00 11,788.00 130.01 130.38 -75.05 -8.443.88 650.76 683.00 427.06 255.94 2.680 Alert 20,450.00 11,964.00 20,308.00 11,788.00 132.07 132.22 -75.05 -8.43.88 650.96 683.00 427.06 255.94 2.680 Alert 20,450.00 11,964.00 20,308.00 11,788.00 132.76 133.13 -75.05 -8.643.88 650.96 683.00 427.06 255.94 2.680 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8.643.88 650.96 683.00 427.06 255.94 2.680 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8.693.88 650.99 683.00 427.06 255.94 2.680 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8.693.88 651.06 683.00 427.66 255.94 2.614 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 13	19,700.00	11,964.00	19,542.00	11,788.00	121.12	121.26	-75.05	-7,793.88	649.80	683.00	445.78	237.23	2.879 Alert	
19,850,00 11,964,00 19,708,00 11,788,00 123,18 123,52 -75,05 -7,943,88 650,02 683,00 441,57 241,44 2,829 Alert 19,900,00 11,964,00 19,742,00 11,788,00 124,53 124,89 -75,05 -8,043,88 650,10 683,00 436,40 140,45 242,56 2,816 Alert 19,950,00 11,964,00 19,942,00 11,788,00 125,21 125,36 -75,05 -8,043,88 650,17 683,00 437,78 245,22 2,785 Alert 20,050,00 11,964,00 19,942,00 11,788,00 125,89 126,26 -75,05 -8,143,88 650,32 683,00 437,78 245,22 2,785 Alert 20,100,00 11,964,00 19,942,00 11,788,00 127,26 127,63 -75,05 -8,143,88 650,32 683,00 436,23 246,78 2,768 Alert 20,150,00 11,964,00 20,008,00 11,788,00 127,26 127,63 -75,05 -8,243,88 650,47 683,00 435,10 247,90 2,755 Alert 20,250,00 11,964,00 20,042,00 11,788,00 127,26 127,63 -75,05 -8,243,88 650,47 683,00 435,55 249,45 2,738 Alert 20,250,00 11,964,00 20,042,00 11,788,00 127,95 128,10 -75,05 -8,243,88 650,47 683,00 430,87 252,13 2,709 Alert 20,350,00 11,964,00 20,142,00 11,788,00 128,83 129,00 -75,05 -8,343,88 650,61 683,00 430,87 252,13 2,709 Alert 20,350,00 11,964,00 20,142,00 11,788,00 128,32 129,47 -75,05 -8,343,88 650,61 683,00 429,74 253,26 2,697 Alert 20,350,00 11,964,00 20,208,00 11,788,00 130,01 130,38 -75,05 -8,443,88 650,61 683,00 429,74 253,26 2,697 Alert 20,350,00 11,964,00 20,242,00 11,788,00 130,68 -75,05 -8,443,88 650,66 683,00 429,74 253,26 2,697 Alert 20,450,00 11,964,00 20,242,00 11,788,00 130,68 -75,05 -8,443,88 650,66 683,00 429,74 253,26 2,697 Alert 20,450,00 11,964,00 20,242,00 11,788,00 130,68 -75,05 -8,443,88 650,96 683,00 427,06 255,94 2,669 Alert 20,550,00 11,964,00 20,242,00 11,788,00 132,76 133,13 -75,05 -8,643,88 651,13 683,00 421,42 260,19 2,625 Alert 20,550,00 11,964,00 20,442,00 11,788,00 133,45 133,60 -75,05 -8,643,88 651,13 683,00 421,68 261,32 2,614 Alert 20,550,00 11,964,00 20,442,00 11,788,00 133,45 133,60 -75,05 -8,643,88 651,13 683,00 421,68 261,32 2,614 Alert 20,550,00 11,964,00 20,442,00 11,788,00 133,45 133,60 -75,05 -8,643,88 651,13 683,00 421,68 261,32 2,614 Alert 20,550,00 11,964,00 20,442,00 11,788,00 134,13 134,51 -75,05 -	19,750.00	11,964.00	19,608.00	11,788.00	121.80	122.16	-75.05	-7,843.88	649.87	683.00	444.23	238.77	2.860 Alert	
19,900.00 11,964.00 19,742.00 11,788.00 123.84 123.99 -75.05 -7,993.88 650.10 683.00 440.45 242.56 2.816 Alert 19,950.00 11,964.00 19,808.00 11,788.00 124.53 124.89 -75.05 -8,043.88 650.17 683.00 438.90 244.10 2.798 Alert 20,000.00 11,964.00 19,942.00 11,788.00 125.21 125.36 -75.05 -8,093.88 650.24 683.00 437.78 245.22 2.785 Alert 20,050.00 11,964.00 19,908.00 11,788.00 125.89 126.26 -75.05 -8,143.88 650.32 683.00 436.23 246.78 2.768 Alert 20,150.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,143.88 650.39 683.00 435.10 247.90 2.755 Alert 20,200.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,200.00 11,964.00 20,008.00 11,788.00 128.63 129.00 -75.05 -8,243.88 650.64 683.00 430.87 252.13 2.709 Alert 20,200.00 11,964.00 20,142.00 11,788.00 129.32 129.47 -75.05 -8,393.88 650.64 683.00 429.74 253.26 2.697 Alert 20,300.00 11,964.00 20,242.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.64 683.00 429.74 253.26 2.697 Alert 20,300.00 11,964.00 20,242.00 11,788.00 130.01 130.38 -75.05 -8,493.88 650.64 683.00 429.74 253.26 2.697 Alert 20,450.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.64 683.00 429.74 253.26 2.697 Alert 20,450.00 11,964.00 20,242.00 11,788.00 130.85 130.85 -75.05 -8,493.88 650.64 683.00 429.74 255.25 2.669 Alert 20,450.00 11,964.00 20,242.00 11,788.00 130.85 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,450.00 11,964.00 20,242.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,693.88 651.13 683.00 421.68 261.99 420.12 262.88 2.598 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,693.88 651.21 682.99 420.12 262.88 2.598 Alert	19,800.00	11,964.00	19,642.00	11,788.00	122.48	122.62	-75.05	-7,893.88	649.95	683.00	443.11	239.89	2.847 Alert	
19,950.00 11,964.00 19,808.00 11,788.00 124.53 124.89 -75.05 -8,043.88 650.17 683.00 438.90 244.10 2.798 Alert 20,000.00 11,964.00 19,842.00 11,788.00 125.21 125.36 -75.05 -8,093.88 650.24 683.00 437.78 245.22 2.785 Alert 20,100.00 11,964.00 19,908.00 11,788.00 125.89 126.26 -75.05 -8,143.88 650.32 683.00 436.23 246.78 2.768 Alert 20,100.00 11,964.00 19,942.00 11,788.00 126.58 126.73 -75.05 -8,193.88 650.39 683.00 435.10 247.90 2.755 Alert 20,150.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,200.00 11,964.00 20,008.00 11,788.00 127.95 128.10 -75.05 -8,293.88 650.61 683.00 430.87 252.13 2.709 Alert 20,250.00 11,964.00 20,108.00 11,788.00 129.32 129.47 -75.05 -8,393.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,108.00 11,788.00 129.32 129.47 -75.05 -8,493.88 650.69 683.00 429.74 253.26 2697 Alert 20,450.00 11,964.00 20,208.00 11,788.00 130.69 130.69 130.85 -75.05 -8,443.88 650.69 683.00 429.74 253.26 2669 Alert 20,450.00 11,964.00 20,208.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.69 683.00 429.74 253.26 2669 Alert 20,450.00 11,964.00 20,208.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.69 683.00 429.74 253.26 2669 Alert 20,450.00 11,964.00 20,308.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.69 683.00 429.74 253.26 2669 Alert 20,550.00 11,964.00 20,308.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 422.81 26.01 26.69 Alert 20,550.00 11,964.00 20,308.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 422.81 26.01 26.25 Alert 20,550.00 11,964.00 20,442.00 11,788.00 132.67 133.13 -75.05 -8,643.88 651.06 683.00 422.81 26.01 26.25 Alert 20,550.00 11,964.00 20,442.00 11,788.00 132.67 133.13 -75.05 -8,643.88 651.06 683.00 42.81 26.01 26.25 Alert 20,550.00 11,964.00 20,442.00 11,788.00 132.67 133.13 -75.05 -8,643.88 651.06 683.00 42.81 26.01 26.25 Alert 20,550.00 11,964.00 20,550.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,550.00 11,788.00 133.45 133.60	19,850.00	11,964.00	19,708.00	11,788.00	123.16	123.52	-75.05	-7,943.88	650.02	683.00	441.57	241,44	2.829 Alert	
20,000.00 11,964.00 19,842.00 11,788.00 125.21 125.36 -75.05 -8,093.88 650.24 683.00 437.78 245.22 2.785 Alert 20,050.00 11,964.00 19,908.00 11,788.00 125.89 126.26 -75.05 -8,143.88 650.32 683.00 436.23 246.78 2.768 Alert 20,100.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,193.88 650.39 683.00 435.10 247.90 2.755 Alert 20,150.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,250.00 11,964.00 20,042.00 11,788.00 128.63 129.00 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,142.00 11,788.00 130.81 130.85 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,443.88 650.84 683.00 427.06 255.94 2.669 Alert 20,450.00 11,964.00 20,342.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.91 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.91 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.91 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 130.69 130.85 -75.05 -8,543.88 650.91 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,543.88 650.91 683.00 424.37 256.63 2.641 Alert 20,500.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 650.96 683.00 424.37 256.63 2.641 Alert 20,500.00 11,964.00 20,408.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.05 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,408.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,408.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,508.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,643.88 651.21 682.99 420.12 262.88 2.598 Alert	19,900.00	11,964.00	19,742.00	11,788.00	123.84	123.99	-75.05	-7,993.88	650.10	683.00	440.45	242.56	2,816 Alert	
20,000.00 11,964.00 19,842.00 11,788.00 125.21 125.36 -75.05 -8,093.88 650.24 683.00 437.78 245.22 2.785 Alert 20,050.00 11,964.00 19,908.00 11,788.00 125.89 126.26 -75.05 -8,143.88 650.32 683.00 436.23 246.78 2.768 Alert 20,100.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,193.88 650.39 683.00 435.10 247.90 2.755 Alert 20,150.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,250.00 11,964.00 20,042.00 11,788.00 128.63 129.00 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,142.00 11,788.00 130.81 130.85 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,443.88 650.84 683.00 427.06 255.94 2.669 Alert 20,450.00 11,964.00 20,342.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.91 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.91 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.91 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 130.69 130.85 -75.05 -8,543.88 650.91 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,543.88 650.91 683.00 424.37 256.63 2.641 Alert 20,500.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 650.96 683.00 424.37 256.63 2.641 Alert 20,500.00 11,964.00 20,408.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.05 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,408.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,408.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,508.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,643.88 651.21 682.99 420.12 262.88 2.598 Alert														
20,050.00 11,984.00 19,908.00 11,788.00 125.89 126.26 -75.05 -8,143.88 650.32 683.00 436.23 246.78 2.768 Alert 20,100.00 11,964.00 19,942.00 11,788.00 126.58 126.73 -75.05 -8,193.88 650.39 663.00 435.10 247.90 2.755 Alert 20,150.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,200.00 11,964.00 20,042.00 11,788.00 127.95 128.10 -75.05 -8,243.88 650.61 683.00 433.55 249.45 2.738 Alert 20,250.00 11,964.00 20,108.00 11,788.00 128.63 129.00 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,300.00 11,964.00 20,142.00 11,788.00 129.32 129.47 -75.05 -8,393.88 650.69 683.00 429.74 253.26 2.697 Alert 20,350.00 11,964.00 20,208.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,450.00 11,964.00 20,308.00 11,788.00 132.07 132.22 -75.05 -8,493.88 650.99 683.00 427.06 255.94 2.669 Alert 20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,543.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,543.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,550.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,550.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 421.68 261.32 2.641 Alert 20,550.00 11,964.00 20,442.00 11,788.00 132.45 133.60 -75.05 -8,643.88 651.10 682.99 420.12 262.88 2.598 Alert														
20,100.00 11,964.00 20,008.00 11,788.00 126.58 126.73 -75.05 -8,193.88 650.39 683.00 435.10 247.90 2.755 Alert 20,150.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,250.00 11,964.00 20,008.00 11,788.00 128.63 129.00 -75.05 -8,243.88 650.54 683.00 432.42 250.57 2.726 Alert 20,250.00 11,964.00 20,108.00 11,788.00 128.63 129.00 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,142.00 11,788.00 129.32 129.47 -75.05 -8,393.88 650.69 683.00 429.74 253.26 2.697 Alert 20,350.00 11,964.00 20,208.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,550.00 11,964.00 20,342.00 11,788.00 131.38 131.75 -75.05 -8,543.88 650.91 683.00 425.50 257.50 2.652 Alert 20,550.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,543.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.05 683.00 422.81 260.19 2.625 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.05 683.00 422.81 260.19 2.625 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.05 683.00 421.68 261.32 2.625 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.67 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.625 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.625 Alert 20,550.00 11,964.00 20,408.00 11,788.00 134.13 134.51 -75.05 -8,693.88 651.21 682.99 420.12 262.88 2598 Alert														
20,150.00 11,964.00 20,008.00 11,788.00 127.26 127.63 -75.05 -8,243.88 650.47 683.00 433.55 249.45 2.738 Alert 20,200.00 11,964.00 20,042.00 11,788.00 127.95 128.10 -75.05 -8,243.88 650.54 683.00 432.42 250.57 2.726 Alert 20,250.00 11,964.00 20,142.00 11,788.00 128.63 129.00 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,300.00 11,964.00 20,142.00 11,788.00 129.32 129.47 -75.05 -8,343.88 650.69 683.00 429.74 253.26 2.697 Alert 20,350.00 11,964.00 20,208.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,450.00 11,964.00 20,308.00 11,788.00 131.38 131.75 -75.05 -8,543.88 650.91 683.00 425.50 257.50 2.652 Alert 20,550.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,442.00 11,788.00 134.13 134.51 -75.05 -8,643.88 651.21 682.99 420.12 262.88 2.598 Alert														
20,200.00 11,964.00 20,042.00 11,788.00 127.95 128.10 -75.05 -8,293.88 650.54 683.00 432.42 250.57 2.726 Alert 20,250.00 11,964.00 20,108.00 11,788.00 128.63 129.00 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,350.00 11,964.00 20,142.00 11,788.00 129.32 129.47 -75.05 -8,343.88 650.61 683.00 429.74 253.26 2.697 Alert 20,350.00 11,964.00 20,208.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,450.00 11,964.00 20,342.00 11,788.00 131.38 131.75 -75.05 -8,543.88 650.91 683.00 425.50 257.50 2.652 Alert 20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.652 Alert 20,600.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.05 683.00 422.81 260.19 2.652 Alert 20,600.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.05 683.00 422.81 260.19 2.652 Alert 20,600.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,442.00 11,788.00 134.13 134.51 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,643.88 651.21 682.99 420.12 262.88 2.598 Alert	ſ													
20,250.00 11,964.00 20,108.00 11,788.00 128.63 129.00 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,300.00 11,964.00 20,142.00 11,788.00 129.32 129.47 -75.05 -8,393.88 650.69 683.00 429.74 253.26 2.697 Alert 20,350.00 11,964.00 20,208.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,400.00 11,964.00 20,308.00 11,788.00 131.38 131.75 -75.05 -8,543.88 650.91 683.00 425.50 257.50 2.652 Alert 20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,500.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,743.88 651.21 682.99 420.12 262.88 2.598 Alert	20,150.00	11,964.00	20,008.00	11,788.00	127.26	127.63	-75.05	-8,243.88	650.47	683.00	433.55	249.45	2.738 Alert	
20,250.00 11,964.00 20,108.00 11,788.00 128.63 129.00 -75.05 -8,343.88 650.61 683.00 430.87 252.13 2.709 Alert 20,300.00 11,964.00 20,142.00 11,788.00 129.32 129.47 -75.05 -8,393.88 650.69 683.00 429.74 253.26 2.697 Alert 20,350.00 11,964.00 20,208.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,400.00 11,964.00 20,308.00 11,788.00 131.38 131.75 -75.05 -8,543.88 650.91 683.00 425.50 257.50 2.652 Alert 20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,500.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,743.88 651.21 682.99 420.12 262.88 2.598 Alert	20,200.00	11,964.00	20,042.00	11,788.00	127.95	128.10	-75.05	-8,293.88	650.54	683.00	432.42	250.57	2.726 Alert	
20,300.00 11,964.00 20,142.00 11,788.00 129.32 129.47 -75.05 -8,393.88 650.69 683.00 429.74 253.26 2.697 Alert 20,350.00 11,964.00 20,208.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,400.00 11,964.00 20,308.00 11,788.00 131.38 131.75 -75.05 -8,543.88 650.91 683.00 425.50 257.50 2.652 Alert 20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,500.00 11,964.00 20,442.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,500.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,550.00 11,964.00 20,442.00 11,788.00 134.13 134.51 -75.05 -8,743.88 651.21 682.99 420.12 262.88 2.598 Alert					128.63	129.00		-8,343.88	650.61	683.00		252.13	2.709 Alert	
20,350.00 11,964.00 20,208.00 11,788.00 130.01 130.38 -75.05 -8,443.88 650.76 683.00 428.19 254.81 2.680 Alert 20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,450.00 11,964.00 20,342.00 11,788.00 131.38 131.75 -75.05 -8,543.88 650.91 683.00 425.50 257.50 2.652 Alert 20,550.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,693.88 651.21 682.99 420.12 262.88 2.598 Alert														
20,400.00 11,964.00 20,242.00 11,788.00 130.69 130.85 -75.05 -8,493.88 650.84 683.00 427.06 255.94 2.669 Alert 20,450.00 11,964.00 20,308.00 11,788.00 131.38 131.75 -75.05 -8,543.88 650.91 683.00 425.50 257.50 2.652 Alert 20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.05 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,743.88 651.21 682.99 420.12 262.88 2.598 Alert														
20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,743.88 651.21 682.99 420.12 262.88 2.598 Alert														
20,500.00 11,964.00 20,342.00 11,788.00 132.07 132.22 -75.05 -8,593.88 650.99 683.00 424.37 258.63 2.641 Alert 20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,743.88 651.21 682.99 420.12 262.88 2.598 Alert	20 450 00	11,964 00	20 308 00	11.788.00	131 38	131 75	-75.05	-8.543.88	650.91	683.00	425 50	257 50	2.652 Alert	
20,550.00 11,964.00 20,408.00 11,788.00 132.76 133.13 -75.05 -8,643.88 651.06 683.00 422.81 260.19 2.625 Alert 20,600.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8,693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,743.88 651.21 682.99 420.12 262.88 2.598 Alert														
20,600.00 11,964.00 20,442.00 11,788.00 133.45 133.60 -75.05 -8.693.88 651.13 683.00 421.68 261.32 2.614 Alert 20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8.743.88 651.21 682.99 420.12 262.88 2.598 Alert														
20,650.00 11,964.00 20,508.00 11,788.00 134.13 134.51 -75.05 -8,743.88 651.21 682.99 420.12 262.88 2.598 Alert		-												
20,700.00 11,964.00 20,542.00 11,788.00 134.82 134.98 -75.05 -8,793.88 651.28 682.99 418.98 264.01 2.587 Alert	20,030.00	11,804.00	20,300.00	11,700.00	134.13	1 G.PG 1	-73,03	-0,743.00	031,21	302.38	→20,12	202.00	2.350 AIRI	
	20,700.00	11,964.00	20,542.00	11,788.00	134.82	134.98	-75.05	-8,793.88	651.28	682.99	418.98	264.01	2.587 Alert	

TVD Reference:

MD Reference:

Company: WCDSC Permian NM

Project: Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E Reference Site:

Site Error: 0.00 ft

Lusitano 27-34 Fed Com 733H Reference Well:

Well Error: 0.50 ft

Reference Wellbore Wellbore #1 Reference Design: Permit Plan 1

North Reference: **Survey Calculation Method:** Output errors are at

Database:

Offset TVD Reference:

Offset Datum

Well Lusitano 27-34 Fed Com 733H Local Co-ordinate Reference:

RKB @ 3359.80ft

RKB @ 3359.80ft

Grid Minimum Curvature

2.00 sigma

EDM r5000.141_Prod US

Offset De	sign	Sec 27-	T25S-R31	IE - Lusitan	o 27_34	Fed Com 71	3H - Wellbore	#1 - Permi	t Plan 1			Offset	Site Error:	0.00 f
urvey Prog	ram: 0-M	WD+HDGM			_							Offset	Well Error:	0.50 f
Refer	ence	Offse	et	Semi Major	Axis				Dist	ance				
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbor	e Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+NU-5 (ft)	(ft)	(ft)	(ft)	(ft)	, 40101		
20,750.00	11,964.00	20,608.00	11,788.00	135.51	135.89	-75.05	-8,843.88	651.36	682.99	417.42	265.57	2.572 Alert		
20,800.00	11,964.00	20,642.00	11,788.00	136.20	136.36	-75.05	-8,893.88	651.43	682.99	416.29	266.71	2.561 Alert		
20,850.00	11,964.00	20,708.00	11,788.00	136.90	137.27	-75.05	-8,943.88	651.50	682.99	414.72	268.27	2.546 Alert		
20,900.00	11,964.00	20,742.00	11,788.00	137.59	137.74	-75.05	-8,993.88	651.58	682.99	413.59	269.40	2.535 Alert		
20,950.00	11,964.00	20,808.00	11,788.00	138.28	138.66	-75.05	-9,043.88	651.65	682.99	412.02	270.97	2.521 Alert		
21,000.00	11,964.00	20,842.00	11,788.00	138.97	139.13	-75.05	-9,093.88	651.73	682.99	410.88	272.11	2.510 Alert		
21,050.00	11,964.00	20,908.00	11,788.00	139.66	140.04	-75.05	-9,143.88	651.80	682.99	409.31	273.68	2.496 Minor Risk		
21,100.00	11,964.00	20,942.00	11,788.00	140.35	140.51	-75.05	-9,193.88	651.87	682.99	408.18	274.81	2,485 Minor Risk		
21,150.00	11,964.00	21,008.00	11,788.00	141.05	141.43	-75.05	-9,243.88	651.95	682.99	406.61	276.38	2.471 Minor Risk		
21,200.00	11,964.00	21,042.00	11,788.00	141,74	141.90	-75.05	-9,293.88	652.02	682.99	405.47	277.52	2.461 Minor Risk		
21,250.00	11,964.00	21,108.00	11,788.00	142.43	142.82	-75.05	-9,343.88	652.10	682.99	403.90	279.09	2.447 Minor Risk		
21,300.00	11,964.00	21,142.00	11,788.00	143.13	143.29	-75.05	-9,393.88	652.17	682.99	402.76	280.23	2.437 Minor Risk		
21,350.00	11,964.00	21,208.00	11,788.00	143.82	144.20	-75.05	-9,443.88	652.25	682.99	401.19	281.80	2.424 Minor Risk		
21,400.00	11,964.00	21,242.00	11,788.00	144.52	144.68	-75.05	-9,493.88	652.32	682.99	400.05	282.94	2.414 Minor Risk		
21,450.00	11,964.00	21,308.00	11,788.00	145.21	145.59	-75.05	-9,543.88	652.39	682.99	398.47	284.52	2.401 Minor Risk		
21,500.00	11,964.00	21,342.00	11,788.00	145.91	146.07	-75.05	-9,593.88	652.47	682.99	397.33	285.66	2.391 Minor Risk		
21,550.00	11,964.00	21,408.00	11,788.00	146.60	146.99	-75.05	-9,643.88	652.54	682.99	395.75	287.23	2.378 Minor Risk		
21,600.00	11,964.00	21,442.00	11,788.00	147.30	147.46	-75.05	-9,693.88	652.62	682.98	394.61	288.37	2.368 Minor Risk		
21,650.00	11,964.00	21,508.00	11,788.00	147.99	148.38	-75.05	-9,743.88	652.69	682.98	393.03	289.95	2.356 Minor Risk		
21,700.00	11,964.00	21,542.00	11,788.00	148.69	148.85	-75.05	-9,793.88	652.76	682.98	391.89	291.09	2.346 Minor Risk		
21,750.00	11,964.00	21,608.00	11,788.00	149.39	149.77	-75.05	-9,843.88	652.84	682.98	390.31	292.67	2.334 Minor Risk		
21,800.00	11,964.00	21,642.00	11,788.00	150.08	150.25	-75.05	-9,893.88	652.91	682.98	389.17	293.81	2.325 Minor Risk		
21,850.00	11,964.00	21,708.00	11,788.00	150.78	151.17	-75.05	-9,943.88	652.99	682.98	387.59	295.39	2.312 Minor Risk		
21,900.00	11,964.00	21,742.00	11,788.00	151.48	151.64	-75.05	-9,993.88	653.06	682.98	386.44	296.54	2.303 Minor Risk		
21,950.00	11,964.00	21,808.00	11,788.00	152.17	152.56	-75.05	-10,043.88	653.13	682.98	384.86	298.12	2.291 Minor Risk		
22,000.00	11,964.00	21,842.00	11,788.00	152.87	153.04	-75.05	-10,093.88	653.21	682.98	383.72	299.26	2.282 Minor Risk		
22.050.00	11,964.00	21,908.00	11,788.00	153.57	153.96	-75.05	-10,143.88	653.28	682.98	382.13	300.85	2.270 Minor Risk		
22,100.00	11,964.00	21,942.00	11,788.00	154.27	154,44	-75.05	-10,193.88	653.36	682.98	380.99	301.99	2.262 Minor Risk		
22,150.00	11,964.00	21,992.00	11,788.00	154.97	155.13	-75.05	-10,243.88	653.43	682.98	379.62	303.36	2.251 Minor Risk		
22,200.00	11,964.00	22,042.00	11,788.00	155.67	155.83	-75.05	-10,293.88	653.51	682.98	378.26	304.72	2.241 Minor Risk		
22,241.76	11,964.00	22,083.77	11,788.00	156.25	156.42	-75.05	-10,335.64	653.57	682.98	377.11	305.86	2.233 Minor Risk.	SF	

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site: Site Error:

Sec 27-T25S-R31E

Reference Well-

Well Error

0.00 ft

Lusitano 27-34 Fed Com 733H

Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

Survey Calculation Method:

Output errors are at

Database:

Offset TVD Reference:

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

RKB @ 3359.80ft

Grid

Offset Datum

Minimum Curvature

2.00 sigma

EDM r5000.141_Prod US

0.00 6 Offset Design Sec 27-T25S-R31E - Lusitano 27-34 Fed Com 333H - Wellbore #1 - Permit Plan 1 Offset Site Error 0-MWD+HDGM Survey Program: Offset Well Error: 0.50 ft Reference Offset Semi Major Axis Distance Measured Vertical Measured Vertical Reference Offset Highside Offset Wellbore Centre Ret Minimum Separation Warning Depth Denth Toolface Centres Filipses Depth Denth +N/-S Separation Factor (ft) (ft) (ft) (ft) (ft) (ft) (°) (ft) (ft) (ft) (ft) (ft) 0.00 0.40 0.40 0.50 89 65 0.37 60.01 60.01 0.00 0.50 50.00 50.00 50.40 50.40 0.50 0.50 89.65 0.37 60.01 60.01 59.00 1.01 59.619 100.00 100 00 100 40 100 40 0.52 0.52 89 65 0.37 60.01 60.01 58.98 1.04 57 932 150.00 150.00 150.40 150.40 0.59 0.59 89.65 0.37 60.01 60.01 58.83 1.18 50.803 0.70 200.00 200.00 200.40 200.40 0.70 89.65 0.37 60.01 60.01 58.61 1.41 42,706 250.00 250.00 250.40 250.40 0.84 0.84 89.65 0.37 60 D1 60.01 58 33 1 68 35 794 300.00 300.40 300.40 0.99 0.37 60.01 60.01 58.04 1.98 30.371 300.00 0.99 89.65 350 00 350.00 350.40 350 40 1 15 1 15 89 65 0.37 60.01 60.01 57.72 2 29 26 180 400.00 400.00 400.40 400.40 1.31 1.31 89.65 0.37 60.01 60.01 57.39 2.62 22.909 450.00 450.00 450.40 450.40 1.48 1.48 89.65 0.37 60.01 60.01 57.06 2.95 20.315 500.00 500.00 500.40 500.40 1.65 1.65 89.65 0.37 60.01 60.01 56 72 3.29 18,221 550.00 550.00 550.40 550.40 1.82 1.82 89.65 0.37 60.01 60.01 56.37 3.64 16.501 600.40 600.40 600.00 600.00 1.99 89.65 0.37 60.01 60.01 56.03 3.98 15.068 1.99 650.00 650.00 650.40 650.40 2.16 2.17 89.65 0.37 60.01 60.01 55.68 4.33 13.858 700.00 700.00 700.40 700.40 2.34 2.34 89.65 0.37 60.01 60.01 55.33 4.68 12.823 750.00 750.00 750.40 750.40 2.51 2.52 89.65 0.37 60.01 54.98 5.03 11.929 60.01 800.00 800.00 800.40 800.40 2.69 2.69 89.65 0.37 60.01 60.01 54.63 5.38 11,149 850.00 850.00 850.40 850.40 2.87 2.87 89.65 0.37 60.01 60.01 54.28 5.74 10.464 900 00 900 00 900 40 900 40 3 04 3 04 89 65 0.37 60 01 60 01 53 92 6.09 9 856 950.00 950.00 950.40 950.40 3.22 3.22 89.65 0.37 60.01 60.01 53 57 6 44 9.315 1,000.00 1,000.00 1,000.40 1,000.40 3.40 3.40 89.65 0.37 60.01 60.01 53.21 6.80 8.829 1.050.00 1.050.00 1.050.40 1.050.40 3.58 3.58 89 65 0.37 60 01 60.01 52 86 7 15 8 391 1,100.40 3.75 0.37 1,100.00 1,100.00 1,100.40 3.75 89.65 60.01 60.01 52.50 7.51 7.994 1,150.00 1,150.00 1,150.40 1 150.40 3.93 3.93 89.65 0.37 60.01 60 01 52.15 7.86 7 633 1,200,40 1,200,40 4.11 0.37 60.01 60.01 51.79 8.22 1,200,00 1,200,00 4.11 89.65 7.303 1,250.00 1,250.00 1.250.40 1,250.40 4 29 4 29 89 65 0.37 60.01 60.01 51 44 8.57 6 999 0.37 60.01 51.08 1,300.00 1,300.00 1,300.40 1,300.40 4.46 4.47 89.65 60.01 8.93 6.720 1.350.00 1.350.00 1 350 40 1.350.40 4 64 4 64 89 65 0.37 60.01 60.01 50.73 9 29 6 462 1,400.00 1,400.00 1,400.40 1,400.40 4.82 4.82 89.65 0.37 60.01 60.01 50.37 9.64 6.224 1,450.00 1,450.00 1,450.40 1,450,40 5.00 5.00 89.65 0.37 10.00 6.002 60.01 60.01 50.01 1.500.00 1.500.00 1.500.40 1 500.40 5.18 5.18 89.65 0.37 60.01 60 01 49.66 10 36 5 795 1,550.00 1,550.00 1,550.40 1,550.40 5.36 5.36 89.65 0.37 60.01 60.01 49.30 10.71 5.602 1,600.00 1,600.00 1,600.40 1,600.40 5.53 89.65 0.37 60.01 60.01 48.94 11.07 5.54 5.421 1.650.00 1.650.00 1.650.40 1.650.40 5.71 5.71 89.65 0.37 60.01 60.01 48.58 11.43 5.252 1,700.00 1,700.00 1,700.40 1,700.40 5.89 5.89 89.65 0.37 60.01 60.01 48.23 11.78 5.093 1,750.00 1,750.00 1,750,40 1,750,40 6.07 6.07 89.65 0.37 60.01 60.01 47.87 12.14 4.943 Alen 1,800.00 1,800.00 1,800.40 1 800 40 6 25 6 25 89 65 0.37 60.01 60.01 47.51 12 50 4 802 Alert 1,850.00 1,850.40 1,850.40 89.65 0.37 60.01 47.16 4.668 Alert 1,850.00 6.43 6.43 60.01 12.86 1,900.00 1,900.00 1,900.40 1,900.40 6.61 6.61 89.65 0.37 60.01 60.01 46.80 13.21 4.542 Alert 1.950.00 1.950.00 1.950.40 1,950.40 6.78 6.79 89.65 0.37 60.01 60.01 46.44 13.57 4.422 Alert 2.000.00 2.000.00 2.000.40 2.000.40 6.96 6.96 89.65 0.37 60 01 60 01 46 08 13.93 4 309 Aleri 2.050.00 2.050.00 2.050.40 2.050.40 7.14 89.65 0.37 60.01 60.01 45.73 7.14 14.29 4.201 Alert 2,100.00 2,100.00 2,100.40 2,100.40 7.32 7.32 89 65 0.37 60.01 60.01 45 37 14.64 4.098 Alert 2,150.00 2.150.00 2.150.40 2.150.40 7.50 7.50 89.65 0.37 60.01 60.01 45.01 15.00 4.000 Alert 2.200.40 2,200,00 2.200.00 2.200.40 7.68 7.68 89.65 0.37 60.01 60.01 44.65 15.36 3.907 Aleri 2,250.00 2.250.00 2.250.40 2.250.40 7.86 7.86 89 65 0.37 60.01 60.01 15.72 3.818 Aleri 44 29 2.300.00 2.300.00 2.300.40 2.300.40 8.04 8.04 89.65 0.37 60 01 60 01 43.94 16.07 3 733 Alert 2,350.00 2,350.00 2,350.40 2,350.40 8.22 8.22 89.65 0.37 60.01 60.01 43.58 16.43 3.652 Alert 2,400.40 2,400.00 2,400.40 8.39 8.40 89.65 0.37 3.574 Alert 2,400.00 60.01 60.01 43.22 16.79 2.450.00 2 450 00 2 450 40 2 450.40 8 57 8.57 89 65 0.37 60.01 60 01 42 86 17.15 3 500 Alert 2,500.00 2,500.00 2,500.40 2,500.40 8.75 8.75 89.65 0.37 60.01 60.01 42.51 17.51 3.428 Alert, CC 2,550.00 2,550.00 2,550.40 2,550.40 8 93 8.93 96.64 0.37 60.01 60.04 42.17 17.86 3.361 Alert

Company: WCDSC Permian NM

Project: Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E Reference Site:

Site Error: 0.00 ft

Lusitano 27-34 Fed Com 733H Reference Well:

Well Error: 0.50 ft Reference Wellbore Wellbore #1

Reference Design: Permit Plan 1 Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference:

Survey Calculation Method: Minimum Curvature

2.00 sigma Output errors are at

EDM r5000.141_Prod US Database:

urvey Progr	ram: 0-Mi	WD+HDGM											Offset Well Error:	0.5
Refer		Offs	et	Semi Major	Axis				Dista	псе		'	onest vien ENOI.	0.5
leasured Depth	Vertical	Measured Depth	Vertical Depth	Reference	Offset	Highside	Offset Wellborn		Between	Between	Minimum	Separation	Warning	
(ft)	Depth (ft)	(ft)	(ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
2,600.00	2,599.99	2,600.39	2,600.39	9.11	9,11	97.25	0.37	60.01	60.12	41.89	18.22	3.299 Alert		
2,650.00	2,649.98	2,650.38	2,650.38	9.29	9.29	98.24	0.37	60.01	60.26	41.68	18.58	3.243 Alert		
2,700.00	2,699.97	2,700.37	2,700.37	9.47	9.47	99.27	0.37	60.01	60.42	41.49	18.94	3.191 Alert		
2,750.00	2,749.96	2,750.36	2,750.36	9.65	9.65	100.30	0.37	60.01	60.61	41.32	19.29	3.142 Alert		
2,800.00	2,799.95	2,800.35	2,800.35	9.83	9.83	101.33	0.37	60.01	60.82	41.17	19.65	3.095 Alert		
2,850.00	2,849.94	2,850.34	2,850.34	10.00	10.01	102.34	0.37	60.01	61.05	41.04	20.01	3.051 Alert		
2,900.00	2,899.92	2,900.32	2,900.32	10.18	10.19	103.35	0.37	60.01	61.29	40.92	20.37	3.009 Alert		
2,950.00	2,949.91	2,950.31	2,950.31	10.36	10.36	104.35	0.37	60.01	61.56	40.83	20.72	2.970 Alert		
3,000.00	2,999.90	3,000.30	3,000.30	10.54	10.54	105.34	0.37	60.01	61.84	40.76	21.08	2.933 Alert		
3,050.00	3,049.89	3,050.29	3,050.29	10.72	10.72	106.32	0.37	60.01	62.14	40.70	21,44	2.898 Alert		
3,100.00	3,099.87	3,100.27	3,100.27	10.90	10.90	107.29	0.37	60.01	62.46	40.66	21.80	2.865 Alert		
3,150.00	3,149.86	3,150.26	3,150.26	11.08	11.08	108.25	0.37	60.01	62.80	40.64	22.16	2.834 Alert		
3,200.00	3,199.85	3,200.25	3,200.25	11.26	11.26	109.21	0.37	60.01	63.15	40.64	22.51	2.805 Alert,	ES	
3,250.00	3,249.84	3,250.24	3,250.24	11,44	11.44	110.15	0.37	60.01	63.52	40.65	22.87	2.777 Alert		
3,300.00	3,299.83	3,300.23	3,300.23	11.62	11.62	111.07	0.37	60.01	63.91	40.68	23.23	2.751 Alert		
3,350.00	3,349.81	3,350.21	3,350.21	11.79	11.80	111.99	0.37	60.01	64.32	40.73	23.59	2.727 Alert		
3,400.00	3,399.80	3,400.20	3,400.20	11.97	11.98	112.90	0.37	60.01	64.74	40.79	23.95	2.704 Alert		
3,450.00	3,449.79	3,450.19	3,450.19	12.15	12.15	113.79	0.37	60.01	65.18	40.87	24.30	2.682 Alert		
3,500.00	3,499.78	3,500.18	3,500.18	12.33	12.33	114.67	0.37	60.01	65.63	40.97	24.66	2.661 Alert		
3,550.00	3,549.76	3,550.16	3,550.16	12.51	12.51	115.54	0.37	60.01	66.10	41.08	25.02	2.642 Alert		
3,600.00	3,599.75	3,600.15	3,600.15	12.69	12.69	116.40	0.37	60.01	66.58	41.20	25.38	2.624 Alert		
3,650.00	3,649.74	3,650.14	3,650.14	12.87	12.87	117.24	0.37	60.01	67.08	41.34	25.74	2.607 Alert		
3,700.00	3,699.73	3,700.13	3,700.13	13.05	13.05	118.08	0.37	60.01	67.59	41.50	26.09	2.590 Alert		
3,750.00	3,749.72	3,750.12	3,750.12	13.23	13.23	118.90	0.37	60.01	68.12	41.67	26.45	2.575 Alert		
3,800.00	3,799.70	3,800.10	3,800.10	13.41	13.41	119.70	0.37	60.01	68.66	41.85	26.81	2.561 Alert		
3,850.00	3,849.69	3,850.09	3,850.09	13.59	13.59	120.50	0.37	60.01	69.21	42.04	27.17	2.548 Alert		
3,900.00	3,899.68	3,900.08	3,900.08	13.76	13.77	121.28	0.37	60.01	69.78	42.25	27.53	2.535 Alert		
3,950.00	3,949.67	3,950.07	3,950.07	13.94	13.94	122.05	0.37	60.01	70.36	42.47	27.88	2.523 Alert		
4,000.00	3,999.65	4,000.05	4,000.05	14.12	14.12	122.80	0.37	60.01	70.95	42.71	28.24	2.512 Alert		
4,050.00	4,049.64	4,050.04	4,050.04	14.30	14.30	123.54	0.37	60.01	71.56	42.95	28.60	2.502 Alert		
4,100.00	4,099.63	4,100.03	4,100.03	14,48	14.48	124.27	0.37	60.01	72.17	43.21	28.96	2.492 Minor	Risk	
4,150.00	4,149.62	4,150.02	4,150.02	14.66	14.66	124.99	0.37	60.01	72.80	43.48	29.32	2.483 Minor	Risk	
4,200.00	4,199.61	4,200.01	4,200.01	14.84	14.84	125.70	0.37	60.01	73.44	43.76	29.68	2.475 Minor	Risk	
4,250.00	4,249.59	4,249.99	4,249.99	15.02	15.02	126.39	0.37	60.01	74.09	44.05	30.03	2.467 Minor	Risk	
4,300.00	4,299.58	4,300.02	4,299.98	15.20	15.20	127.07	0.37	60.01	74.75	44.36	30.39	2.459 Minor		
4,350.00	4,349.57	4,349.97	4,349.97	15.38	15.38	127.74	0.37	60.01	75.42	44.67	30.75	2.453 Minor	Risk	
4,400.00	4,399.56	4,400.04	4,399.96	15.56	15.56	128.40	0.37	60.01	76.10	44.99	31.11	2.446 Minor	Risk	
4,450.00	4,449.55	4,449.95	4,449.95	15.74	15.74	129.04	0.37	60.01	76.79	45.32	31.47	2.440 Minor		
4,500.00	4,499.53	4,499.93	4,499.93	15.91	15.91	129.68	0.37	60.01	77.49	45.67	31.82	2.435 Minor	Risk, SF	
4,550.00	4,549.52	4,549.38	4,549.38	16.09	16.09	130.20	0.38	60.22	78.37	46.20	32.18	2.436 Minor		
4,600.00	4,599.51	4,598.82	4,598.82	16.27	16.26	130.52	0.42	60.86	79.60	47.08	32.53	2.447 Minor	Risk	
4,650.00	4,649.50	4.648.24	4,648.23	16.45	16.43	130.65	0.49	61.92	81.18	48.31	32.87	2.470 Minor	Risk	
4,700.00	4,699.48	4.697.64	4,697.60	16.63	16.60	130.60	0.58	63.41	83.10	49.89	33.21	2.502 Alert		
4,750.00	4,749.47	4,747.01	4,746.94	16.81	16.77	130.38	0.69	65.32	85.36	51.81	33.55	2.544 Alert		
4,800.00	4,799.46	4,796.35	4,796.21	16.99	16.94	130.00	0.83	67.66	87.97	54.07	33.89	2.595 Alert		
4,850.00	4,849.45	4,845.63	4,845.42	17.17	17.11	129.48	1.00	70.41	90.92	56.69	34.23	2.656 Alert		
4,900.00	4,899.44	4,894.87	4,894.55	17.35	17.28	128.85	1.19	73.59	94.24	59.67	34.57	2.726 Alert		
4,950.00	4,949.42	4,944.04	4,943.60	17.53	17.45	128.12	1,41	77.18	97.91	63.01	34.90	2.805 Alert		
5,000.00	4,999.41	4,993.15	4,992.54	17.71	17.62	127.31	1.65	81.18	101.96	66.73	35.23	2.894 Alert		
5,050.00	5,049.40	5,042.19	5,041.38	17.89	17.79	126.43	1.92	85.60	106,38	70.82	35.56	2.991 Alert		
5,100.00	5,099.39	5,091.14	5,090.09	18.07	17.96	125.51	2.21	90.42	111,19	75.30	35.89	3.098 Alert		

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 733H

Well Error: 0.50 ft

Reference Wellbore Wellbore #1

Reference Design: Permit Plan 1 Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft TVD Reference: RKB @ 3359.80ft MD Reference:

North Reference: Grid

Minimum Curvature Survey Calculation Method:

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset Design Sec 27-T255-R31E - Lusiano 27-34 Fed Corn 333H - Weilbore #1 - Permit Plan 1 Ordinate Survey Program: O-MWD-HDOM Reference Offset Measured Verifical Measured Verifical Depth (ft) (ft) (ft) (ft) (ft) (ft) (ft) (ft)	Well Error: Warning	0.50 f
Depth Depth Depth (Pt)	Warning	
Depth	waming	
5,226,000 5,229,34 5,239,49 18,60 18,68 122,79 3,19 106,63 127,16 90,25 38,91 3,445 Alert 5,300,00 5,299,34 5,289,18 18,78 18,65 122,01 3,53 112,12 132,58 95,33 37,61 3,671 Alert 5,400,00 5,399,31 5,388,68 5,385,60 19,14 19,00 120,63 4,19 123,10 143,50 105,55 37,95 3,761 Alert 5,450,00 5,449,30 5,438,13 5,434,97 19,32 19,18 120,02 4,52 128,59 148,59 110,69 38,30 3,890 Alert 5,500,00 5,499,29 5,487,80 5,484,34 19,50 19,35 119,45 4,85 134,07 154,49 115,84 38,65 3,997 Alert 5,550,00 5,492,28 5,587,48 5,533,70 19,86 19,31 118,45 4,85 134,07 154,49 115,84 38,55 39,97 Alert 5,550,00 5,693,28		
5,000,00 5,289,34 5,289,11 5,286,86 18,78 18,65 122,01 3,83 112,12 132,58 95,33 37,26 3,559,Alert 5,550,00 5,349,33 5,338,76 5,536,23 18,96 18,83 121,30 3,86 117,61 138,03 100,43 37,61 3,671 Alert 5,400,00 5,399,31 5,388,46 5,385,80 19,14 19,00 120,63 4,19 123,10 143,50 105,55 37,95 3,795 3,761 Alert 5,400,00 5,399,31 5,388,46 5,385,80 19,14 19,00 120,63 4,19 123,10 143,50 105,55 37,95 3,795 3,761 Alert 5,400,00 5,499,30 5,438,13 5,434,97 19,32 19,18 120,00 4,52 128,59 148,99 110,69 38,30 3,890 Alert 5,500,00 5,499,28 5,487,80 5,548,34 19,50 19,55 119,45 48,5 134,07 154,49 115,84 38,65 3,997 Alert 5,550,00 5,549,28 5,537,46 5,533,70 19,86 19,71 118,43 5,52 146,50 165,54 121,01 39,00 4,103 Alert 5,500,00 5,599,26 5,587,15 5,583,07 19,86 19,71 118,43 5,52 146,50 165,54 126,18 39,35 4,207 Alert 5,500,00 5,599,26 5,587,55 5,583,07 19,86 19,71 118,43 5,52 146,50 165,54 126,18 39,35 4,207 Alert 5,500,00 5,599,26 5,587,55 5,583,17 20,00 19,88 117,96 5,85 150,54 171,00 131,33 39,70 4,309 Alert 5,700,00 5,699,24 5,686,50 5,681,81 20,22 20,06 117,53 6,18 156,02 171,03 131,38 39,70 4,309 Alert 5,700,00 5,799,22 5,785,84 5,780,55 20,58 20,42 116,74 6,85 167,00 187,76 147,00 40,75 4,607 Alert 5,500,00 5,799,22 5,785,84 5,780,55 20,58 20,42 116,74 6,85 167,00 187,76 147,00 40,75 4,607 Alert 5,500,00 5,899,10 5,895,10 5		
5,350.00 5,349.33 5,338.78 5,336.23 18,96 18,83 121,30 3,86 117,61 138,03 100.43 37,61 3,671 Alert 5,400.00 5,399.31 5,388.46 5,385.60 19.14 19.00 120.63 4,19 123.10 143.50 105.55 37.85 3,785 1,781 Alert 5,450.00 5,499.29 5,487.80 5,484.34 19.50 19.35 119.45 4.85 134.07 154.49 110.69 38.30 3,890 Alert 5,550.00 5,499.28 5,871.80 5,484.34 19.50 19.35 119.45 4.85 134.07 154.49 115.84 38.65 3,997 Alert 5,550.00 5,549.28 5,537.48 5,533.70 19.88 19.53 118.92 5.19 139.56 160.01 121.01 39.00 4.103 Alert 5,550.00 5,549.28 5,587.15 5,583.07 19.86 19.71 118.43 5.52 145.05 165.54 126.18 39.35 4.207 Alert 5,650.00 5,549.28 5,587.15 5,583.07 19.86 19.71 118.43 5.52 145.05 165.54 126.18 39.35 4.207 Alert 5,650.00 5,699.24 5,686.50 5,681.81 20.22 20.06 117.53 6.18 156.02 176.63 136.58 40.05 4.410 Alert 5,700.00 5,799.22 5,785.84 5,780.55 20.58 20.42 116.74 6.85 167.00 167.76 147.00 40.05 4.607 Alert 5,850.00 5,849.25 5,585.55 2,585.92 20.58 20.42 116.74 6.85 167.00 167.76 147.00 40.75 4.607 Alert 5,850.00 5,849.29 5,585.52 2,585.84 5,780.55 20.58 20.42 116.74 6.85 167.00 167.76 147.00 40.75 4.607 Alert 5,850.00 5,849.29 5,585.52 2,585.92 20.70 20.60 116.38 7.18 177.97 198.92 157.46 41.46 4.798 Alert 5,850.00 5,849.21 5,363.52 5,529.29 20.70 20.60 116.38 7.18 177.97 198.92 157.46 41.46 4.798 Alert 5,850.00 5,849.18 5,934.87 5,928.85 21.11 20.95 115.71 7.85 183.48 20.45 11 16.795 42.18 4.892 Alert 6,000.00 5,849.18 5,934.87 5,928.85 21.11 20.95 115.71 7.85 183.48 20.45 11 16.795 42.18 4.994 Alert 6,000.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 21.32 178.45 42.86 5.163 6.100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 21.32 178.45 42.86 5.163 6.100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 221.32 178.45 42.86 5.163 6.100.00 6,499.05 6,489.06 6,331.00 6,422.34 22.91 22.77 113.55 11.40 9.84 216.39 238.17 194.24 43.92 5.251 6.200.00 6,499.05 6,490.00 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,490.06 6,49		
5,400.00 5,399.31 5,388.46 5,385.60 19.14 19.00 120.83 4.19 123.10 143.50 105.55 37.95 3,781 Alert 5,500.00 5,489.29 5,487.80 5,484.87 19.32 19.18 120.02 4.52 128.59 148.99 110.69 38.30 3,890 Alert 5,500.00 5,649.28 5,537.48 5,533.70 19.68 19.53 119.45 4.85 134.07 154.49 115.84 38.65 3.997 Alert 5,550.00 5,549.28 5,537.48 5,533.70 19.88 19.71 118.43 5.52 145.05 166.54 126.18 39.35 4.207 Alert 5,560.00 5,689.24 5,685.01 5,681.81 20.22 20.06 117.53 6.18 156.02 176.63 136.58 40.05 4.410 Alert 5,750.00 5,749.23 5,785.84 5,780.55 20.58 20.42 117.12 6.52 161.51 182.19 141.79 40.40 4.509 Alert		
5,450.00 5,448.30 5,438.13 5,438.497 19.32 19.18 120.02 4.52 128.59 148.99 110.69 38.30 3.890 Alert 5,500.00 5,499.29 5,487.80 5,584.34 19.50 19.35 119.45 4.85 134.07 154.49 115.84 38.65 3.997 Alert 5,550.00 5,549.28 5,537.48 5,533.70 19.68 19.53 119.69 5.19 139.56 160.01 121.01 39.00 4.103 Alert 5,600.00 5,549.28 5,537.48 5,533.78 19.88 117.96 5.85 150.54 171.08 131.38 39.70 4.309 Alert 5,600.00 5,684.25 5,636.82 5,632.44 20.04 19.88 117.96 5.85 150.54 171.08 131.38 39.70 4.309 Alert 5,760.00 5,789.22 5,785.17 5,731.18 20.04 20.24 117.12 6.52 161.51 182.19 141.79 40.40 4.509 Alert 5,800.00 <td></td> <td></td>		
5,500.00 5,499.29 5,497.80 5,537.46 1,533.70 19.68 19.53 119.95 119.95 119.95 119.95 119.95 119.95 119.95 119.95 119.95 119.95 119.95 119.95 120.00 121.01 39.00 4.103 Alert 5,550.00 5,549.28 5,537.48 5,533.70 19.68 19.71 118.43 5.52 145.05 165.54 128.18 39.35 4.207 Alert 5,650.00 5,649.25 5,636.82 5,632.44 20.04 19.88 117.96 5.85 150.54 171.08 131.38 39.70 4.309 Alert 5,700.00 5,699.24 5,686.50 5,681.81 20.22 20.06 117.53 6.18 156.02 176.63 136.58 40.05 4.410 Alert 5,700.00 5,799.22 5,785.84 5,780.55 20.58 20.42 116.74 6.85 167.00 187.76 147.00 40.75 4,607 Alert 5,850.00 5,849.20 5,835.52 5,829.92 20.76 20.50 118.38 7.18 172.49 193.34 152.23 41.11 4.703 Alert 5,850.00 5,849.90 5,889.91 5,885.19 5,879.28 20.93 20.77 116.03 7.51 177.97 198.92 157.46 41.46 4.798 Alert 5,950.00 5,949.18 5,934.87 5,928.65 21.11 20.95 115.71 7.85 183.46 204.51 162.70 41.81 4.892 Alert 6,050.00 6,049.16 6,034.21 6,027.39 21.47 21.31 115.12 8.51 194.44 215.71 173.20 42.51 5.074 6,100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 21.32 178.45 42.86 5.163 6,150.00 6,149.13 6,133.56 6,322.91 6,22.13 22.18 5 114.33 9.51 21.09 232.55 188.98 43.57 5.337 6,150.00 6,149.13 6,133.56 6,322.91 6,22.48 6 22.19 22.03 114.10 9.84 216.39 238.57 194.24 43.92 5.423 6,300.00 6,199.12 6,183.23 6,175.49 22.01 21.85 114.33 9.51 21.09 232.55 188.98 43.57 5.337 6,450.00 6,499.05 6,449.06 6,431.60 6,422.34 22.91 22.73 115.25 113.87 10.17 22.18 22.18 22.18 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5.423 6,300.00 6,499.05 6,449.06 6,431.60 6,422.34 22.91 22.75 113.25 111.367 10.17 22.18 22.18 22.18 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5.423 6,300.00 6,499.05 6,449.06 6,431.60 6,422.34 22.91 22.75 113.25 113.87 10.17 22.18 22.19 22.07 44.63 5.589 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.27 113.87 10.17 22.18 22.19 22.07 44.63 5.589 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 24.94 22.04.79 44.63 5.589 6,400.00 6,499.05 6,449.06 6,431.60 6,422.34 22.91 22.75 113.25 113.75 10.17 22.18 22.19 22.06 40		
5,550.00 5,549.28 5,537.48 5,533.70 19.68 19.53 118.92 5.19 139.56 160.01 121.01 39.00 4.103 Alert 5,600.00 5,599.26 5,587.15 5,583.07 19.86 19.71 118.43 5.52 145.05 165.54 126.18 39.35 4.207 Alert 5,600.00 5,699.24 5,686.50 5,681.81 20.22 20.06 117.53 6.18 156.02 176.63 136.58 40.05 4.410 Alert 5,700.00 5,699.24 5,686.50 5,681.81 20.22 20.06 117.53 6.18 156.02 176.63 136.58 40.05 4.410 Alert 5,700.00 5,799.22 5,785.84 5,780.55 20.58 20.42 116.74 6.85 167.00 187.76 147.00 40.75 4.607 Alert 5,800.00 5,799.22 5,785.84 5,780.55 20.58 20.42 116.74 6.85 167.00 187.76 147.00 40.75 4.607 Alert 5,800.00 5,809.20 5,803.52 5,829.92 20.76 20.60 116.38 7.18 172.49 199.34 152.23 41.11 4.703 Alert 5,800.00 5,809.10 5,8		
5,600.00 5,599.28 5,587.15 5,583.07 19.86 19.71 118.43 5,52 145.05 165.54 126.18 39.35 4.207 Alert 5,650.00 5,649.25 5,638.82 5,632.44 20.04 19.88 117.96 5.85 150.54 171.08 131.38 39.70 4.309 Alert 5,750.00 5,789.22 5,786.80 5,681.81 20.22 20.06 117.53 6.18 156.02 176.63 136.58 40.05 4.410 Alert 5,750.00 5,749.23 5,736.77 5,731.18 20.40 20.24 117.12 6.52 161.51 182.19 141.79 40.40 4.509 Alert 5,800.00 5,789.22 5,786.85 20.58 20.42 116.74 6.85 167.00 187.76 147.00 40.75 4.607 Alert 5,800.00 5,899.19 5,885.95 5,879.28 20.93 20.77 116.03 7.51 177.97 199.92 157.46 41.46 4.798 Alert 5,950.00		
5,650.00 5,649.25 5,636.82 5,632.44 20.04 19.88 117.96 5.85 150.54 171.08 131.38 39.70 4.309 Alert 5,700.00 5,689.24 5,686.50 5,681.81 20.22 20.06 117.53 6.18 156.02 176.63 136.58 40.05 4.410 Alert 5,750.00 5,749.23 5,736.17 5,731.18 20.40 20.24 117.12 6.52 161.51 182.19 141.79 40.40 4.509 Alert 5,850.00 5,799.22 5,785.54 5,780.55 20.88 20.42 116.74 6.85 167.00 187.76 147.00 40.75 4.607 Alert 5,850.00 5,899.20 5,885.59 20.20 20.60 116.38 7.18 172.49 193.34 152.23 41.11 4.703 Alert 5,950.00 5,899.19 5,885.59 5,892.86 20.93 20.77 116.03 7.51 177.97 188.92 157.46 41.46 4.798 Alert 5,950.00		
5,700.00 5,699.24 5,686.50 5,681.81 20.22 20.06 117.53 6.18 156.02 176.63 136.58 40.05 4.410 Alert 5,750.00 5,749.23 5,736.17 5,731.18 20.40 20.24 117.12 6.52 161.51 182.19 141.79 40.40 4.509 Alert 5,800.00 5,799.22 5,785.84 5,780.55 20.58 20.42 116.74 6.85 167.00 187.76 147.00 40.75 4.607 Alert 5,800.00 5,849.29 20.76 20.60 116.38 7.18 172.49 193.34 152.23 41.11 4.703 Alert 5,800.00 5,899.19 5,879.28 20.93 20.77 116.03 7.51 177.97 198.92 157.46 41.46 4.798 Alert 5,890.19 5,894.54 5,978.02 21.29 21.13 115.71 7.85 183.46 204.51 162.70 41.81 4.892 Alert 6,000.00 6,099.17 5,984.54 5,978.02		
5,750.00 5,749.23 5,736.17 5,731.18 20.40 20.24 117.12 6.52 161.51 182.19 141.79 40.40 4.509 Alert 5,800.00 5,799.22 5,785.84 5,780.55 20.58 20.42 116.74 6.85 167.00 187.76 147.00 40.75 4.607 Alert 5,800.00 5,849.20 5,835.52 5,829.92 20.76 20.60 116.38 7.18 172.49 193.34 152.23 41.11 4.703 Alert 5,800.00 5,899.19 5,885.19 5,879.28 20.93 20.77 116.03 7.51 177.97 198.92 157.46 41.46 4.798 Alert 5,950.00 5,949.18 5,934.87 5,928.65 21.11 20.95 115.71 7.85 183.46 204.51 162.70 41.81 4.892 Alert 6,000.00 5,999.17 5,984.54 5,978.02 21.29 21.13 115.41 8.18 188.95 210.11 167.95 42.16 4.984 Alert 6,000.00 6,049.16 6,034.21 6,027.39 21.47 21.31 115.12 8.51 194.44 215.71 173.20 42.51 5.074 6,100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 221.32 178.45 42.86 5.163 6,150.00 6,149.13 6,133.56 6,128.13 21.83 21.67 114.58 9.17 205.41 226.93 183.71 43.22 5.251 6,200.00 6,199.12 6,183.23 6,175.49 22.01 21.85 114.33 9.51 210.90 232.55 188.98 43.57 5.337 6,250.00 6,249.11 6,232.91 6,224.86 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5.423 6,300.00 6,299.09 6,282.58 6,274.23 22.37 22.21 113.87 10.17 221.87 243.79 199.52 44.27 5.506 6,350.00 6,449.08 6,332.25 6,332.60 22.55 22.39 113.65 10.50 227.38 249.42 204.79 44.63 5.589 6,400.00 6,999.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,449.08 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,550.00 6,549.03 6,530.95 6,521.07 23.27 22.71 113.86 11.50 243.82 266.32 20.64 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.21 113.88 118.3 249.31 271.96 225.92 46.04 5.907 6,550.00 6,549.03 6,560.00 6,549.03 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 11.50 260.29 283.25 236.50 46.75 6,059		
5,800.00 5,799.22 5,785.84 5,780.55 20.58 20.42 116.74 6.85 167.00 187.76 147.00 40.75 4.607 Alert 5,850.00 5,899.20 5,835.52 5,829.92 20.76 20.60 116.38 7.18 172.49 193.34 152.23 41.11 4,703 Alert 5,900.00 5,899.19 5,855.19 5,879.28 20.93 20.77 116.03 7.51 177.97 198.92 157.46 41.46 4.798 Alert 5,950.00 5,949.18 5,934.87 5,928.65 21.11 20.95 115.71 7.85 183.46 204.51 167.70 41.81 4.892 Alert 6,050.00 6,949.18 5,934.54 5,978.02 21.29 21.13 115.41 8.18 188.95 210.11 167.95 42.16 4.984 Alert 6,050.00 6,049.16 6,034.21 6,027.39 21.47 21.31 115.12 8.51 194.44 215.71 173.20 42.51 5.074		
5,850.00 5,849.20 5,835.52 5,829.92 20.76 20.60 116.38 7.18 172.49 193.34 152.23 41.11 4,703 Alert 5,800.00 5,899.19 5,885.19 5,879.28 20.93 20.77 116.03 7.51 177.97 198.92 157.46 41.46 4,798 Alert 5,950.00 5,949.18 5,934.87 5,928.65 21.11 20.95 115.71 7.85 183.46 204.51 162.70 41.81 4.892 Alert 6,000.00 5,999.17 5,984.54 5,978.02 21.29 21.13 115.41 8.18 188.95 210.11 167.95 42.16 4.984 Alert 6,050.00 6,049.16 6,034.21 6,027.39 21.47 21.31 115.12 8.51 194.44 215.71 173.20 42.51 5.074 6,100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 221.32 178.45 42.86 5.163 6		
5,900.00 5,899.19 5,885.19 5,879.28 20.93 20.77 116.03 7.51 177.97 198.92 157.46 41.46 4,798 Alert 5,950.00 5,849.18 5,934.87 5,928.65 21.11 20.95 115.71 7.85 183.46 204.51 162.70 41.81 4.892 Alert 6,000.00 5,999.17 5,984.54 5,978.02 21.29 21.13 115.41 8.18 188.95 210.11 167.95 42.16 4.984 Alert 6,050.00 6,049.16 6,034.21 6,027.39 21.47 21.31 115.12 8.51 194.44 215.71 173.20 42.51 5.074 6,100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 22.132 178.45 42.86 5.163 6,150.00 6,149.13 6,133.25 6,1613 21.83 21.67 114.58 9.17 205.41 226.93 183.71 43.22 5.251 6,250.00<		
5,950.00 5,949.18 5,934.87 5,928.65 21.11 20.95 115.71 7.85 183.46 204.51 162.70 41.81 4.892 Alert 6,000.00 5,999.17 5,984.54 5,978.02 21.29 21.13 115.41 8.18 188.95 210.11 167.95 42.16 4.984 Alert 6,050.00 6,049.16 6,034.21 6,027.39 21.47 21.31 115.12 8.51 194.44 215.71 173.20 42.51 5.074 6,150.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 221.32 178.45 42.86 5.163 6,150.00 6,149.13 6,133.56 6,126.13 21.83 21.67 114.58 9.17 205.41 226.93 183.71 43.22 5.251 6,200.00 6,199.12 6,183.23 6,175.49 22.01 21.85 114.33 9.51 210.90 232.55 188.98 43.57 5.337 6,250.00		
8,000.00 5,999.17 5,984.54 5,978.02 21.29 21.13 115.41 8.18 188.95 210.11 167.95 42.16 4.984 Alert 6,050.00 6,049.16 6,034.21 6,027.39 21.47 21.31 115.12 8.51 194.44 215.71 173.20 42.51 5.074 6,100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 221.32 178.45 42.86 5.163 6,150.00 6,149.13 6,133.56 6,126.13 21.83 21.67 114.58 9.17 205.41 226.93 183.71 43.22 5.251 6,200.00 6,199.12 6,183.23 6,175.49 22.01 21.85 114.33 9.51 210.90 232.55 188.98 43.57 5.337 6,250.00 6,249.11 6,232.91 6,224.86 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5.423 6,300.00 6,299.09 6,282.58 6,274.23 22.37 22.21 113.87 10.17 221.87 243.79 199.52 44.27 5.506 6,350.00 6,349.08 6,332.25 6,323.60 22.55 22.39 113.65 10.50 227.36 249.42 204.79 44.63 5.889 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,449.08 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.807 6,650.00 6,549.01 6,630.30 6,619.81 23.63 23.48 112.54 112.50 260.29 283.25 236.50 46.75 6.059		
6,050.00 6,049.16 6,034.21 6,027.39 21.47 21.31 115.12 8.51 194.44 215.71 173.20 42.51 5.074 6,100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 221.32 176.45 42.86 5.163 6,150.00 6,149.13 6,133.56 6,126.13 21.83 21.67 114.58 9.17 205.41 226.93 183.71 43.22 5.251 6,200.00 6,199.12 6,183.23 6,175.49 22.01 21.85 114.33 9.51 210.90 232.55 188.98 43.57 5.337 6,250.00 6,249.11 6,232.91 6,224.86 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5.423 6,300.00 6,299.09 6,282.58 6,274.23 22.37 22.21 113.87 10.17 221.87 243.79 199.52 44.27 5.506 6,350.00 6,349.08 6,332.25 6,323.60 22.55 22.39 113.65 10.50		
6,100.00 6,099.14 6,083.89 6,076.76 21.65 21.49 114.84 8.84 199.92 221.32 178.45 42.86 5.163 6,150.00 6,149.13 6,133.56 6,126.13 21.83 21.67 114.58 9.17 205.41 226.93 183.71 43.22 5.251 6,200.00 6,199.12 6,183.23 6,175.49 22.01 21.85 114.33 9.51 210.90 232.55 188.98 43.57 5.337 6,250.00 6,249.11 6,232.91 6,224.86 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5.423 6,300.00 6,299.09 6,282.58 6,274.23 22.37 22.21 113.87 10.17 221.87 243.79 199.52 44.27 5.506 6,350.00 6,349.08 6,332.25 6,323.60 22.55 22.39 113.65 10.50 227.36 249.42 204.79 44.63 5.589 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,449.06 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,550.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 20.64 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,150.00 6,149.13 6,133.56 6,126.13 21.83 21.67 114.58 9.17 205.41 226.93 183.71 43.22 5.251 6.200.00 6,199.12 6,183.23 6,175.49 22.01 21.85 114.33 9.51 210.90 232.55 188.98 43.57 5.337 6,250.00 6,249.11 6,232.91 6,224.86 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5.423 6,300.00 6,299.09 6,282.58 6,274.23 22.37 22.21 113.87 10.17 221.87 243.79 199.52 44.27 5.506 6,350.00 6,349.08 6,332.25 6,323.60 22.55 22.39 113.65 10.50 227.36 249.42 204.79 44.63 5.589 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,499.06 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,500.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 20.64 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,200.00 6,199.12 6,183.23 6,175.49 22.01 21.85 114.33 9.51 210.90 232.55 188.98 43.57 5.337 6,250.00 6,249.11 6,232.91 6,224.86 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5.423 6,300.00 6,299.09 6,282.58 6,274.23 22.37 22.21 113.87 10.17 221.87 243.79 199.52 44.27 5.506 6,350.00 6,349.08 6,332.25 6,323.60 22.55 22.39 113.65 10.50 227.36 249.42 204.79 44.63 5.589 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,449.08 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,500.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 220.84 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,250.00 6,249.11 6,232.91 6,224.86 22.19 22.03 114.10 9.84 216.39 238.17 194.24 43.92 5,423 6,300.00 6,299.09 6,282.58 6,274.23 22.37 22.21 113.87 10.17 221.87 243.79 199.52 44.27 5.506 6,350.00 6,349.08 6,332.25 6,323.60 22.55 22.39 113.65 10.50 227.36 249.42 204.79 44.63 5.589 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,449.06 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,500.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 20.64 45.69 5.829 6,550.00		
6,300.00 6,299.09 6,282.58 6,274.23 22.37 22.21 113.67 10.17 221.87 243.79 199.52 44.27 5.506 6,350.00 6,349.08 6,332.25 6,323.60 22.55 22.39 113.65 10.50 227.36 249.42 204.79 44.63 5.589 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,449.08 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,500.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 20.64 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 <td></td> <td></td>		
6,350.00 6,349.08 6,332.25 6,323.60 22.55 22.39 113.65 10.50 227.36 249.42 204.79 44.63 5.589 6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,449.08 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,500.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 20.64 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,400.00 6,399.07 6,381.93 6,372.97 22.73 22.57 113.45 10.84 232.85 255.05 210.07 44.98 5.670 6,450.00 6,490.06 6,439.06 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,500.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 220.64 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,450.00 6,449.06 6,431.60 6,422.34 22.91 22.75 113.25 11.17 238.34 260.68 215.35 45.33 5.750 6,500.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 220.64 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,500.00 6,499.05 6,481.28 6,471.71 23.09 22.93 113.06 11.50 243.82 266.32 220.64 45.69 5.829 6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,550.00 6,549.03 6,530.95 6,521.07 23.27 23.12 112.88 11.83 249.31 271.96 225.92 46.04 5.907 6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,600.00 6,599.02 6,580.62 6,570.44 23.45 23.30 112.71 12.17 254.80 277.61 231.21 46.39 5.984 6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,650.00 6,649.01 6,630.30 6,619.81 23.63 23.48 112.54 12.50 260.29 283.25 236.50 46.75 6.059		
6,700.00 6,699.00 6,679.97 6,669.18 23.80 23.66 112.38 12.83 265.77 288.90 241.80 47.10 6.134		
6,750.00 6,748.98 6,729.64 6,718.55 23.98 23.84 112.23 13.16 271.26 294.55 247.09 47.46 6.207		
6,800.00 6,798.97 6,779.32 6,767.92 24.16 24.03 112.08 13.49 276.75 300.20 252.39 47.81 6,279		
6,850.00 6,848.96 6,828.99 6,817.29 24.34 24.21 111.93 13.83 282.24 305.85 257.69 48.16 6,350		
6,900.00 6,898.95 6,878.66 6,866.65 24.52 24.39 111.80 14.16 287.72 311.51 262.99 48.52 6.420		
6,950.00 6,948.94 6,928.34 6,916.02 24.70 24.57 111.66 14.49 293.21 317.17 268.29 48.87 6.490		
7,000.00 6,998.92 6,978.01 6,965.39 24.88 24.76 111.54 14.82 298.70 322.83 273.60 49.23 6.558		
7,050.00 7,048.91 7,027.69 7,014.76 25.06 24.94 111.41 15.16 304.19 328.49 278.90 49.58 6.625		
7,100.00 7,098.90 7,077.36 7,064.13 25.24 25.12 111.29 15.49 309.67 334.15 284.21 49.94 6.691		
7,150.00 7,148.89 7,127.03 7,113.50 25.42 25.31 111.18 15.82 315.16 339.81 289.52 50.29 6.757		
7,200.00 7,198.87 7,176.71 7,162.86 25.60 25.49 111.06 16.15 320.65 345.48 294.83 50.65 6.821		
7,250.00 7,248.86 7,226.38 7,212.23 25.78 25.67 110.96 16.48 326.14 351.14 300.14 51.00 6.885		
7,300.00 7,298.85 7,276.05 7,261.60 25.96 25.86 110.85 16.82 331.62 356.81 305.45 51.36 6.948		
7,350.00 7,348.84 7,325.73 7,310.97 26.14 26.04 110.75 17.15 337.11 362.48 310.76 51.71 7.010		
7,400.00 7,398.83 7,375.40 7,360.34 26.32 26.23 110.65 17.48 342.60 368.15 316.08 52.07 7,071		
7,450.00 7,448.81 7,425.07 7,409.71 26.50 26.41 110.56 17.81 348.09 373.82 321.39 52.42 7.131		
7,500.00 7,498.80 7,474.75 7,459.08 26.67 26.60 110.46 18.15 353.58 379.49 326.71 52.78 7,190		
7,550.00 7,548.79 7,524.42 7,508.44 26.85 26.78 110.37 18.48 359.06 385.16 332.03 53.13 7,249		
7,600.00 7,598.78 7,574.10 7,557.81 27.03 26.96 110.29 18.81 364.55 390.83 337.34 53.49 7,307		
7,650,00 7,648.77 7,623.77 7,607.18 27.21 27.15 110.20 19.14 370.04 396.51 342.66 53.85 7.364		
7,700.00 7,698.75 7,673.44 7,656.55 27.39 27.33 110.12 19.48 375.53 402.18 347.98 54.20 7.420		
7,750.00 7,748.74 7,723.12 7,705.92 27.57 27.52 110.04 19.81 381.01 407.86 353.30 54.56 7.476		

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 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference: MD Reference:

RKB @ 3359.80ft

RKB @ 3359.80ft

North Reference:

Survey Calculation Method:

Minimum Curvature 2.00 sigma

Grid

Output errors are at

EDM r5000.141_Prod US

Well Lusitano 27-34 Fed Com 733H

Database: Offset TVD Reference:

Offset De	_	Sec 27- WD+HDGM	T25S-R3	IE - Lusitar	10 27-34	Fed Com 33	3H - Wellbore	#1 - Permi	t Plan 1				Offset Site Error:	0.00 ft
Survey Prog Refer		WD+HDGM Offs:	et	Semi Maior	Axis				Dist	ance			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 Wellbor +N/-S (ft)	e Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
7,800.00	7,798.73	7,772,79	7,755.29	27.75	27.70	109.96	20.14	386.50	413.53	358.62	54.91	7.531		
7,850.00	7,848.72	7,822.46	7,804.66	27.93	27.89	109.89	20.47	391.99	419.21	363.94	55.27	7.585		
7,900.00	7,898.70	7,872.14	7,854.02	28.11	28.08	109.81	20.80	397.48	424.89	369.26	55.62	7.638		
7,950.00	7,948.69	7,921.81	7,903.39	28.29	28.26	109.74	21.14	402.96	430.57	374.59	55.98	7.691		
8,000.00	7,998.68	7,971.49	7,952.76	28.47	28.45	109.67	21.47	408.45	436.25	379.91	56.34	7.743		
8,050.00	8,048.67	8,021.16	8,002.13	28.65	28.63	109.60	21.80	413.94	441.93	385.23	56.69	7.795		
8,100.00	8,098.66	8,070.83	8,051.50	28.83	28.82	109.54	22.13	419.43	447.61	390.56	57.05	7.846		
8,150.00	8,148.64	8,120.51	8,100.87	29.01	29.00	109.47	22.47	424.91	453.29	395.88	57.41	7.896		
8,200.00	8,198.63	8,170.18	8,150.23	29.19	29.19	109.41	22.80	430.40	458.97	401.21	57.76	7.946		
8,250.00	8,248.62	8,219.85	8,199.60	29.37	29.38	109.35	23.13	435.89	464.65	406.53	58.12	7.995		
8,300.00	8,298.61	8,269.53	8,248.97	29.55	29.56	109.29	23.46	441.38	470.33	411.86	58.48	8.043		
8,350.00	8,348.59	8,319.20	8,298.34	29.72	29.75	109.23	23.80	446.86	476.02	417.18	58.83	8.091		
8,400.00	8,398.58	8,368.87	8,347.71	29.90	29.93	109.17	24.13	452.35	481.70	422.51	59.19	8.138		
8,450.00	8,448.57	8,418.55	8,397.08	30.08	30.12	109.12	24.46	457.84	487.38	427.84	59.55	8.185		
8,500.00 8,550.00	8,498.56 8,548.55	8,468.22 8,517.90	8,446.45 8,495.81	30.26 30.44	30.31 30.49	109.06 109.01	24.79 25.12	463.33 468.81	493.07 498.75	433.16 438.49	59.90 60.26	8.231 8.277		
8,600.00	8,598.53	8,567.57	8,545.18	30.62	30.68	108.96	25.46	474.30	504.44	443.82	60.62	8.322		
8,650.00	8,648.52	8,617.24	8,594.55	30.80	30.87	108.90	25.79	479.79	510.12	449.15		8.366		
8,700.00	8,698.51	8,666.92	8,643.92	30.98	31.05	108.85	26.12	485.28	515.81	454.48	61.33	8.410		
8,750.00	8,748.50	8,716.59	8,693.29	31.16	31.24	108.81	26.45	490.76	521.50	459.81	61.69	8.454		
8,800.00	8,798.48	8,766.26	8,742.66	31.34	31,43	108.76	26.79	496.25	527.18	465.14	62.05	8.497		
8,850.00	8,848.47	8,815.94	8,792.02	31.52	31.62	108.71	27.12	501.74	532.87	470.47	62.40	8.539		
8,900.00	8,898.46	8,865.61	8,841.39	31.70	31.80	108.67	27.45	507.23	538.56	475.80	62.76	8.581		
8,950.00	8,948.45	8,915.28	8,890.76	31.88	31.99	108.62	27.78	512.71	544.25	481.13	63.12	8.623		
9,000.00	8,998.44	8,964.96	8,940.13	32.06	32.18	108.58	28.12	518.20	549.93	486.46	63.48	8.664		
9,050.00	9,048.42	9,014.63	8,989.50	32.24	32.37	108.53	28.45	523.69	555.62	491.79	63.83	8.704		
9,100.00	9,098.41	9,064.31	9,038.87	32.42	32.55	108.49	28.78	529.18	561.31	497.12	64.19	8.744		
9,150.00	9,148.40	9,113.98	9,088.24	32.60	32.74	108.45	29.11	534.66	567.00	502.45		8.784		
9,200.00	9,198.39	9,163.65	9,137.60	32.78	32.93	108.41	29.44	540.15	572.69	507.78		8.823		
9,250.00	9,248.38	9,213.33	9,186.97	32.95	33.12	108.37	29.78	545.64	578.38	513.12		8.862		
9,300.00	9,298.36	9,263.00	9,236.34	33.13	33.30	108.33	30.11	551.13	584.07	518.45	65.62	8.900		
9,350.00	9,348.35	9,312.67	9,285.71	33.31	33.49	108.29	30.44	556.62	589.76	523.78		8.938		
9,400.00	9,398.34	9,382.35	9,335.08	33.49	33.68	108.26	30.77	562.10	595.45	529.11	66.34	8.976		
9,450.00	9,448.33	9,412.02	9,384.45	33.67	33.87	108.22	31.11	567.59	601.14	534.44	66.70	9.013		
9,500.00 9,550.00	9,498.31 9,548.30	9,461.69 9,511.37	9,433.82 9,483.18	33.85 34.03	34.06 34.24	108.18 108.15	31.44 31.77	573.08 578.57	606.83 612.52	539.78 545.11	67.05 67.41	9.050 9.086		
9,600.00	9,598.29 9.648.28	9,561.04	9,532.55	34.21	34.43	108.11	32.10	584.05 589.54	618.21	550.44 555.78	67.77	9.122		
9,650.00 9,700.00	9,648.28	9,610.72 9,660.39	9,581.92 9,631.29	34.39 34.57	34.62 34.81	108.08 108.05	32.43 32.77	589.54 595.03	623.91 629.60	555.78 561.11	68.13 68.49	9.158 9.193		
9,750.00	9,748.25	9,710.06	9,680.66	34.75	35.00	108.05	33.10	600.52	635.29	566.45		9.193		
9,800.00	9,798.24	9,759.74	9,730.03	34.93	35.18	107.98	33.43	606.00	640.98	571.78		9.262		
9,850.00	9,848.23	9,809.41	9,779.39	35.11	35.37	107.95	33.76	611.49	646.67	577.11	69.56	9.297		
9,900.00	9,898.22	9,863.37	9,833.03	35.29	35.58	107.92	34.12	617.36	652.30	582.33		9.324		
9,950.00	9,948.20	9,923.01	9,892.40	35.47	35.80	107.90	34,47	623.09	657.29	586.88		9.335		
10,000.00	9,998.19	9,982.82	9,952.01	35.65	36.02	107.90	34.76	627.90	661.52	590.68	70.85	9.338		
10,050.00	10,048.18	10,042.77	10,011.83	35.83	36.24	107.93	34.99	631.79	665.01	593.73	71.27	9.331		
10,100.00	10,098.17	10,102.83	10,071.82	36.01	36.46	107.97	35.17	634.74	667.73	596.04	71.68	9.315		
10,150.00		10,162.97	10,131.93	36.18	36.67	108.04	35.29	636.75	669.69	597.61	72.08			
10,200.00		10,223.16	10,192.11	36.36	36.88	108.12	35.36	637.82	670.90	598.42				
10,250.00	10,248.13	10,279.59	10,248.53	36.54	37.08	108.22	35.37	638.01	671.39	598.55	72.84	9.217		
10,300.00	10,298.12	10,329.57	10,298.52	36.72	37.25	108.31	35.37	638.01	671.74	598.54	73.20	9.177		
10,350.00	10,348.11	10,379.56	10,348.51	36.90	37.42	108.40	35.37	638.01	672.08	598.53	73.55	9.138		

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error: Reference Well: 0.00 ft

Lusitano 27-34 Fed Com 733H

Well Error: 0.50 ft Reference Wellbore Wellbore #1

Reference Design:

Permit Plan 1

Local Co-ordinate Reference:

TVD Reference:

MD Reference: North Reference:

RKB @ 3359.80ft

RKB @ 3359.80ft

Grid

Survey Calculation Method:

Minimum Curvature 2.00 sigma

Output errors are at

Database:

EDM r5000.141_Prod U\$

Well Lusitano 27-34 Fed Com 733H

Offset TVD Reference:

Offset De	_		-T25S-R31	IE - Lusitan	o 27-34 F	Fed Com 33	3H - Wellbore	#1 - Permit	Plan 1				Offset Site Error:	0.00 f
Survey Prog Refer		WD+HDGM Offs	at	Semi Major	Avia				Dist	ance			Offset Well Error:	0.50 f
Measured	Vertical	Measured	et Vertical	Reference	Offset	Highside	Offset Wellbor	e Centre	Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (*)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	warning	
10,400.00	10,398.09	10,429.55	10,398.49	37.08	37.60	108.49	35.37	638.01	672.43	598.53	73.91	9.098		
10,450.00	10,448.08	10,479.54	10,448.48	37.26	37.77	108.57	35.37	638.01	672.79	598.52	74.28	9.060		
10,500.00	10,498.07	10,529.53	10,498.47	37.44	37.94	108.66	35.37	638.01	673.14	598.52		9.021		
10,550.00	10,548.06	10,579.51	10,548.46	37.62	38.12	108.75	35.37	638.01	673.49	598.52		8.983		
10,600.00	10,598.05	10,625.85	10,594.79	37.80	38.27	108.85	35.18	638.01	673.90	598.58	75.32	8.947		
10,650.00	10,648.03	10,665.67	10,634.53	37.98	38.41	109.12	32.77	638.01	674.90	599.27	75.64	8.923		
,														
10,700.00	10,698.02	10,704.85	10,673,38	38.16	38.53	109.61	27.72	638.02	676.70	600.77	75.94	8.911		
10,750.00	10,748.01	10,743.06	10,710,84	38.34	38.65	110.29	20.24	638.03	679.38	603.16		8.914		
10,800.00	10,798.00	10,779.99	10,746.50	38.52	38.77	111.14	10.66	638.05	683.04	606.58		8,933		
10,850.00	10,847.99	10,815.43	10,780.07	38.70	38.87	112.11	-0.68	638.06	687.82	611.15		8,971		
10,900.00	10,897.97	10,850.00	10,812.08	38.88	38.97	113.22	-13.72	638.08	693.85	617.01	76.83	9.030		
10,950.00	10,947.96	10,881.23	10,840.27	39.06	39.06	114.33	-27.14	638.10	701.27	624.35	76.92	9.117		
11,000.00	10,997.95	10,911,51	10,866.88	39.24	39.14	115.60	-41.60	638.13	710.11	633.17	76.94	9.230		
11,050.00	11,047.95	10,940.21	10,891.35	39.41	39.22	110.10	-56.58	638.15	720.28	643.41	76.87	9.370		
11,100.00	11,097.95	10,967.24	10,913.69	39.59	39.28	111.26	-71.80	638.17	732.03	655.31	76.73	9.541		
11,150.00	11,147.95	10,992.56	10,933.94	39.77	39.35	112.39	-87.00	638.19	745.53	669.04	76.49	9.747		
14 200 00	44 407 05	44 040 0	10.050.00	20.05	20.40	112.40	402.00	626.20	700.00	604.04	70 40	0.000		
11,200.00	11,197.95	11,016.24	10,952.26	39.95	39.40	113.49	-102.00	638.22	760.80	684.64	76.16	9.989		
11,250.00	11,247.95	11,038.36	10,968.79	40.13	39.45	114.56	-116.69	638.24	777.87	702.12		10.269		
11,300.00	11,297.95	11,059.00	10,983.70	40.31	39.50	115.57	-130.97	638.26	796.73 817.35	721.47	75.26 74.71	10.586		
11,350.00	11,347.95	11,078.27	10,997.14	40.49	39.54 39.58	116.54	-144,77	638.28		742.64 765.50		10.941 11.319		
11,400.00	11,397.95	11,100.00	11,011.74	40.67	39.30	-61.96	-160.87	638.30	839.68	763.30	74.10	11.316		
11,450.00	11,447.86	11,114.12	11,020.89	40.82	39.61	-59.07	-171.62	638.32	862.46	789.02	73.43	11.745		
11,500.00	11,497.33	11,132.40	11,032.34	40.98	39.65	-56.18	-185.87	638.34	884.81	812.07	72.74	12.164		
11,550.00	11,546.00	11,150.00	11,042.93	41.13	39.68	-53.56	-199.93	638.36	906.48	834.46	72.01	12.587		
11,600.00	11,593.48	11,170.02	11,054.44	41.27	39.72	-51.10	-216.30	638.39	927.25	855.92	71.33	13.000		
11,650.00	11,639.43	11,200.00	11,070.60	41.41	39.78	-48.63	-241.55	638.43	947.05	876.20	70.85	13.367		
										***	***			
11,700.00	11,683.48	11,200.00	11,070.60	41.54	39.78	-47.17	-241.55	638.43	965.43	895.70		13.847		
11,750.00	11,725.31	11,228.45	11,084.69	41.65	39.84	-45.26	-266.27	638.46	982.35	913.12		14.190		
11,800.00	11,764.60	11,250.00	11,094.53	41.77	39.88	-43.74	-285.43	638.49	997.83	929.23		14.544		
11,850.00	11,801.04	11,268.35	11,102.34	41.88	39.92	-42.48 41.27	-302.03	638.52	1,011.67	943.72		14.888		
11,900.00	11,834.36	11,300.00	11,114.55	42.00	39.99	-41.27	-331.23	638.56	1,023.92	956.34	67.58	15.151		
11,950.00	11,864.31	11,300.00	11,114.55	42.10	39.99	-40.58	-331.23	638.56	1,034.15	967.45	66.70	15.504		
12,000.00	11,890.66	11,329.08	11,124.33	42.21	40.05	-39.80	-358.61	638.60	1,042.47	976.09	66.39	15.703		
12,050.00	11,913.20	11,350.00	11,130.50	42.32	40.10	-39.26	-378.61	638.63	1,048.96	982.96	66.00	15.893		
12,100.00	11,931.77	11,369.92	11,135.69	42.42	40.15	-38.89	-397.84	638.66	1,053.48	987.80	65.68	16.040		
12,150.00	11,946.22	11,400.00	11,142.26	42.52	40.22	-38.67	-427.19	638.70	1,056.12	990.56	65.56	16.109		
40.05	44 8 :-	44	44 4					gan =-	4.000.00			40.000		
12,200.00	11,956.45	11,400.00	11,142.26	42.62	40.22	-38.64	-427.19	638.70	1,056.67	991.46		16.205		
12,250.00	11,962.38	11,431.37	11,147.46	42.73	40.30	-38.77	-458.11	638.75	1,055.04	989.76		16.163		
12,300.00	11,964.00	11,450.00	11,149.74	42.82	40.35	-39.00	-476.61	638.78	1,051.58	986.26		16.097		
12,350.00		11,472.37	11,151.69	42.94	40.41	-39.07	-498.89 536.40	638.81	1,048.26	982.79		16.013		
12,400.00	11,964.00	11,500.00	11,152.89	43.05	40.49	-39.11	-526.49	638.85	1,046.39	980.76	65.63	15,944		
12,434.82	11,964.00	11,519.99	11,153.00	43.14	40.54	-39.12	-528.70	638.86	1,045.80	980.02	65.77	15.900		
12,450.00	11,964.00	11,517.39	11,153.00	43.19	40.54	-39.12	-543.88	638.88	1,045.80	980.00		15.894		
12,500.00	11,964.00	11,567,39	11,153.00	43.32	40.68	-39.12	-593.88	638.95	1,045.80	979.77		15.838		
12,550.00	11,964.00	11,617.39	11,153.00	43.48	40.84	-39.12	-643.88	639.03	1,045.80	979.51		15.776		
12,600.00	11,964.00	11,667.39	11,153.00	43.64	41.02	-39.12	-693.88	639.10	1,045.80			15.713		
12,650.00	11,964.00	11,717.39	11,153.00	43.82	41.20	-39.12	-743.88	639.18	1,045.80	978.95		15.644		
12,700.00	11,964.00	11,767.39	11,153.00	44.00	41.39	-39.12	-793.88	639.25	1,045.80	978.65	67.15	15.574		
12,750.00	11,964.00	11,817.39	11,153.00	44.21	41.60	-39.12	-843.88	639.33	1,045.80	978.32	67.48	15.499		
12,800.00	11,964.00	11,867.39	11,153.00	44.41	41.82	-39.12	-893.88	639.40	1,045.80	977.99	67.81	15.422		
12,850.00	11,964.00	11,917.39	11,153.00	44.64	42.05	-39.12	-943.88	639.48	1,045.80	977.63	68.17	15.341		
12 000 00	11 004 00	11 007 30	44 450 00	44.07	40.00	20.40	000.00	600 55	1 645 65	677.00	20.51	15.050		
12,900.00	11,964.00	11,967.39	11,153.00	44.87	42.29	-39.12	-993.88	639.55	1,045.80	977.26	68.54	15.259		

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error: Well Error: 0.00 ft

Reference Well: Lusitano 27-34 Fed Com 733H

Reference Wellbore

0.50 ft

Wellbore #1 Reference Design:

Permit Plan 1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

TVD Reference: RKB @ 3359.80ft MD Reference:

Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database:

North Reference:

EDM r5000.141_Prod US

Offset De	-		T25S-R31	IE - Lusitan	io 27-34 F	Fed Com 333	H - Wellbore	#1 - Permit	Plan 1				Offset Site Error:	0.00 ft
Survey Progr		WD+HDGM		0	A1				DI-1-				Offset Well Error:	0.50 ft
Refer		Offse Measured		Semi Major		Liinka laia	Office Mallhous	Cambra	Dista Between		Minimum	Concention	1041	
Measured Depth	Vertical Depth	measureo Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore +N/-S	+E/-W	Centres	Between Ellipses	Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	(ft)	(ft)	(ft)	(ft)	(ft)			
12,950.00	11,964.00	12,017.39	11,153.00	45.11	42.54	-39.12	-1,043.88	639.63	1,045.80	976.88	68.92	15.173		
13,000.00	11,964.00	12,067.39	11,153.00	45.36	42.80	-39.12	-1,093.88	639.70	1,045.80	976.48	69.32	15.086		
13,050.00	11,964.00	12,117.39	11,153.00	45.63	43.07	-39.12	-1,143.88	639.78	1,045.80	976.06	69.74	14.995		
13,100.00	11,964.00	12,167.39	11,153.00	45.90	43.35	-39.12	-1,193.88	639.85	1,045.80	975.63	70.17	14.904		
13,150.00	11,964.00	12,217.39	11,153.00	46.18	43.65	-39.12	-1,243.88	639.93	1,045.80	975.18	70.62	14.809		
13,200.00	11,964.00	12,267.39	11,153.00	46.47	43.95	-39.12	-1,293.88	640.00	1.045.80	974.73	71.08	14.714		
13,250.00	11,964.00	12,317.39	11,153.00	46.78	44.26	-39.12	-1,343.88	640.08	1,045.80	974.25	71.55	14.616		
13,300.00	11,964.00	12,367.39	11,153.00	47.08	44.58	-39.12	-1,393.88	640.15	1,045.80	973.76	72.04	14,518		
13,350.00	11,964.00	12,417.39	11,153.00	47.41	44.91	-39.12	-1,443.88	640.23	1,045.80	973.26	72.54	14,417		
13,400.00	11,964.00	12,467.39	11,153.00	47.73	45.26	-39.12	-1,493.88	640.30	1,045.80	972.75	73.05	14.316		
13,450.00	11,964.00	12,517.39	11,153.00	48.07	45.60	-39.12	-1,543.88	640.38	1,045.80	972.22	73.58	14.213		
											2			
13,500.00	11,964.00	12,567.39	11,153.00	48.42	45.96	-39.12	-1,593.88	640.45	1,045.80	971.68	74.12	14.110		
13,550.00	11,964.00	12,617.39	11,153.00	48.77	46.33	-39.12	-1,643.88	640.53	1,045.80	971.13	74.67	14.005		
13,600.00	11,964.00	12,667.39	11,153.00 11,153.00	49.13 49.51	46.71 47.09	-39.12 -39.12	-1,693.88 -1,743.88	640.60 640.68	1,045.80 1,045.80	970.57 969.99	75.23 75.81	13.901 13.795		
13,650.00 13,700.00	11,964.00 11,964.00	12,717.39 12,767.39	11,153.00	49.51	47.09 47.48	-39.12 -39.12	-1,743.88 -1,793.88	640.75	1,045.80	969.99	76.40	13.795		
13,700.00	11,504.00	12,101,39	11,133.00	45.00	77.40	-35.12	-1,733.00	G40,73	1,040.00	303.41	70.40	13.005		
13,750.00	11,964.00	12,817.39	11,153.00	50.27	47.88	-39.12	-1,843.88	640.83	1,045.80	968.81	77.00	13.582		
13,800.00	11,964.00	12,867.39	11,153.00	50.66	48.29	-39.12	-1,893.88	640.90	1,045.80	968.20	77.61	13.476		
13,850.00	11,964.00	12,917.39	11,153.00	51.07	48.70	-39.12	-1,943.88	640.98	1,045.80	967.58	78.23	13.369		
13,900.00	11,964.00	12,967.39	11,153.00	51.47	49,12	-39.12	-1,993.88	641.05	1,045.80	966.95	78.86	13.262		
13,950.00	11,964.00	13,017.39	11,153.00	51.89	49.55	-39.12	-2,043.88	641.13	1,045.80	966.30	79.50	13.155		
14,000.00	11,964.00	13,067.39	11,153.00	52.31	49.99	-39.12	-2,093.88	641.20	1,045.80	965.66	80.15	13.048		
14,050.00	11,964.00	13,117.39	11,153.00	52.74	50.43	-39.12	-2,093.88	641.28	1,045.80	964.99	80.81	12.941		
14,100.00	11,964.00	13,167.39	11,153.00	53.17	50.88	-39.12	-2,193.88	641.35	1,045.80	964.33	81.48	12.835		
14,150.00	11,964.00	13,217.39	11,153.00	53.62	51.33	-39.12	-2,243.88	641.43	1,045.81	963.64	82.16	12.729		
14,200.00	11,964.00	13,267.39	11,153.00	54.06	51.79	-39.12	-2,293.88	641.50	1,045.81	962.96	82.85	12.623		
,							•							
14,250.00	11,964.00	13,317.39	11,153.00	54.52	52.26	-39.12	-2,343.88	641.58	1,045.81	962.26	83.55	12.518		
14,300.00	11,964.00	13,367.39	11,153.00	54.97	52.73	-39.12	-2,393.88	641.65	1,045.81	961.55	84.25	12.413		
14,350.00	11,964.00	13,417.39	11,153.00	55.44	53.21	-39.12	-2,443.88	641.73	1,045.81	960.84	84.97	12.308		
14,400.00	11,964.00	13,467.39	11,153.00	55.91	53.70	-39.12	-2,493.88	641.80	1,045.81	960.12	85.69	12.205		
14,450.00	11,964.00	13,517.39	11,153.00	56.39	54.18	-39.12	-2,543.88	641.88	1,045.81	959.39	86.42	12.101		
14,500.00	11,964.00	13,567.39	11,153.00	56.87	54.68	-39.12	-2,593.88	641.95	1,045.81	958.65	87.16	11.999		
14,550.00	11,964.00	13,617.39	11,153.00	57.36	55.18	-39.12	-2,643.88	642.03	1,045.81	957.90	87.90	11.897		
14,600.00	11,964.00	13,667.39	11,153.00	57.84	55.69	-39.12	-2,693.88	642.10	1,045.81	957.15	88.66	11.796		
14,650.00	11,964.00	13,717.39	11,153.00	58.34	56.19	-39.12	-2,743.88	642.18	1,045.81	956.39	89.42	11.696		
14,700.00	11,964.00	13,767.39	11,153.00	58.84	56.71	-39.12	-2,793.88	642.25	1,045.81	955.62	90.19	11.596		
14,750.00	11,964.00	13,817.39	11,153.00	59.35	57.23	-39.12	-2,843.88	642.33	1,045.81	954.85	90.96	11.497		
14,800.00	11,964.00	13,867.39	11,153.00	59.86	57.75 59.29	-39.12	-2,893.88 2,043.88	642.40	1,045.81	954.07	91.74	11.400		
14,850.00	11,964.00 11,964.00	13,917.39	11,153.00	60.38 60.89	58.28 58.81	-39.12 -39.12	-2,943.88 -2,993.88	642.48 642.55	1,045.81 1,045.81	953.28 952.49	92.53 93.32	11.302 11.206		
14,950.00		13,967.39 14,017.39	11,153.00 11,153.00	61.42	59.35	-39.12 -39.12	-2,993.88 -3,043.88	642.63	1,045.81	952.49 951.68	93.32	11.111		
1-,000.00	,504.00	17,517,55	, . 55.00	01.72	55.55	-90.12	.0,040.00	542.05	.,5-5.01	551.00	V-7.12			
15,000.00	11,964.00	14,067.39	11,153.00	61.94	59.89	-39.12	-3,093.88	642.70	1,045.81	950.88	94.93	11.017		
15,050.00	11,964.00	14,117.39	11,153.00	62.48	60.43	-39.12	-3,143.88	642.78	1,045.81	950.07	95.74	10.923		
15,100.00	11,964.00	14,167.39	11,153.00	63.01	60.98	-39.12	-3,193.88	642.85	1,045.81	949.25	96.56	10.831		
15,150.00	11,964.00	14,217.39	11,153.00	63.55	61.53	-39.12	-3,243.88	642.93	1,045.81	948.43	97.38	10.739		
15,200.00	11,964.00	14,267.39	11,153.00	64.09	62.09	-39.12	-3,293.88	643.00	1,045.81	947.60	98.21	10.649		
45 050 00	44 004 05	44 947 00	44 450 00		60.05	20.40	2 7 4 7 00	640.00	1 045 64	040.70	00.00	10 550		
15,250.00	11,964.00	14,317.39	11,153.00	64.64	62.65	-39.12	-3,343.88	643.08	1,045.81	946.76	99.05	10.559		
15,300.00	11,964.00	14,367.39	11,153.00	65.19	63.21	-39.12	-3,393.87	643.15	1,045.81	945.93	99.88	10.470		
15,350.00	11,964.00	14,417.39	11,153.00	65.74	63.77	-39.12	-3,443.87	643.23	1,045.81	945.08	100.73	10.382		
15,400.00 15,450.00	11,964.00	14,467.39	11,153.00	66.30	64.34	-39.12	-3,493.87 -3,543.87	643.30	1,045.81 1,045.81	944.23	101.58	10.296		
10,400.00	11,964.00	14,517.39	11,153.00	66.86	64.92	-39.12	-3,543.87	643.38	1,045.61	943.38	102.43	10.210		
		14,567.39	11,153.00	67.42	65.49	-39.12	-3,593.87	643.45	1,045.81	942.52	103.29	10.125		

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error:

0.00 ft

Lusitano 27-34 Fed Com 733H Reference Well:

Well Error: Reference Wellbore 0.50 ft

Wellbore #1 Reference Design:

Permit Plan 1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H RKB @ 3359.80ft

TVD Reference: MD Reference:

RKB @ 3359.80ft

North Reference:

Grid Minimum Curvature

Survey Calculation Method:

Output errors are at

2.00 sigma

Database:

EDM r5000.141_Prod US

Offset De	sign	Sec 27-	T25S-R3	1E - Lusitan	o 27-34 l	Fed Com 33	3H - Wellbore	#1 - Permit	Plan 1				Offset Site Error:	0.00 ft	1
Survey Prog		WD+HDGM											Offset Well Error:	0.50 ft	ı
Refer		Offs		Semi Major						ance					
Measured Depth	Vertical Depth	Measured Depth	Vertica! Depth	Reference	Offset	Highside Toolface	Offset Wellbor	e Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning		
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)				
15,550.00	11,964.00	14,617.39	11,153.00	67.99	66.07	-39.12	-3,643.87	643.53	1,045.81	941.66	104.15	10.041			1
15,600.00	11,964.00	14,667.39	11,153.00	68.56	66.65	-39.12	-3,693.87	643.60	1,045.81	940.79	105.02	9.958			į
15,650.00	11,964.00	14,717.39	11,153.00	69.13	67.23	-39.12	-3,743.87	643.68	1,045.81	939.92	105.89	9.876			
15,700.00	11,964.00	14,767.39	11,153.00	69.71	67.82	-39.12	-3,793.87	643.75	1,045.81	939.04	106.77	9.795			
15,750.00	11,964.00	14,817.39	11,153.00	70.29	68.41	-39.12	-3,843.87	643.83	1,045.81	938.16	107.65	9.715			
15,800.00	11,964.00	14,867.39	11,153.00	70.87	69.00	-39.12	-3,893.87	643.90	1,045.81	937.28	108.54	9.636			
15,850.00	11,964.00	14.917.39	11,153.00	71.45	69.59	-39.12	-3,943.87	643.98	1,045.81	936.39	109.42	9.557			1
15,900.00	11,964.00	14,967.39	11,153.00	72.03	70.19	-39.12	-3,993.87	644.05	1,045.81	935.50	110.32	9.480			
15,950.00	11,964.00	15,017.39	11,153.00	72.62	70.79	-39.12	-4,043.87	644.13	1,045.81	934.60	111.21	9.404			
16,000.00	11,964.00	15,067.39	11,153.00	73.21	71.39	-39.12	-4,093.87	644.20	1,045.81	933.70	112.11	9.328			
16,050.00	11,964.00	15,117.39	11,153.00	73.81	72.00	-39.12	-4,143.87	644.28	1,045.81	932.80	113.02	9.254			
16,100.00	11,964.00	15,167.39	11,153.00	74.40	72.60	-39.12	-4,193.87	644.35	1,045.81		113.92	9,180			
16,150.00	11,964.00	15,217.39	11,153.00	75.00	73.21	-39.12	-4,243.87	644.43	1,045.81	930.98	114.83	9.107			
16,200.00	11,964.00	15,267.39	11,153.00	75.60	73.82	-39.12	-4,293.87	644.50	1,045.81	930.07	115.74	9.036			
16,250.00	11,964.00	15,317.39	11,153.00	76.21	74.43	-39.12	-4,343.87 -4,303.87	644.58	1,045.81	929.15	116.66	8.964			
16,300.00	11,964.00	15,367.39	11,153.00	76.81	75.05	-39.12	-4,393.87	644.65	1,045.81	928.23	117.58	8.894			
16,350.00	11,964.00	15,417.39	11,153.00	77.42	75.66	-39.12	-4,443.87	644.73	1,045.81	927.31	118.50	8.825			
16,400.00	11,964.00	15,467.39	11,153.00	78.03	76.28	-39.12	-4,493.87	644.80	1,045.82	926.38	119.43	8.757			
16,450.00	11,964.00	15,517.39	11,153.00	78.64	76.90	-39.12	-4,543.87	644.88	1,045.82	925.46	120.36	8.689			
16,500.00	11,964.00	15,567.39	11,153.00	79.25	77.53	-39.12	-4,593.87	644.95	1,045.82	924.52	121.29	8.622			
16,550.00	11,964.00	15,617.39	11,153.00	79.86	78.15	-39.12	-4,643.87	645.03	1,045.82	923.59	122.23	8.556			١
40.000.00		45.007.00	44 450 00	22.42	70.70	20.40	4 000 07	045.40	4 0 45 00	000.05	400.40	0.404			
16,600.00	11,964.00 11,964.00	15,667.39	11,153.00	80.48	78.78 79.40	-39.12	-4,693.87 -4,743.87	645.10 645.18	1,045.82 1,045.82		123.16 124.10	8.491 8.427			
16,650.00 16,700.00	11,964.00	15,717.39 15,767.39	11,153.00 11,153.00	81.10 81.72	80.03	-39.12 -39.12	-4,743.87 -4,793.87	645.25	1,045.82		125.05	8.363			
16,750.00	11,964.00	15,817.39	11,153.00	82.34	80.66	-39.12	-4,843.87	645.33	1,045.82		125.99	8.301			
16,800.00	11,964.00	15,867.39	11,153.00	82.96	81.30	-39.12	-4,893.87	645.40	1,045.82		126.94	8.239			
		,	,				.,		.,						
16,850.00	11,964.00	15,917.39	11,153.00	83.59	81.93	-39.12	-4,943.87	645.48	1,045.82	917.93	127.89	8.178			
16,900.00	11,964.00	15,967.39	11,153.00	84.22	82.57	-39.12	-4,993.87	645.55	1,045.82	916.98	128.84	8.117			
16,950.00	11,964.00	16,017.39	11,153.00	84.85	83.20	-39.12	-5,043.87	645.63	1,045.82		129.80	8.057			
17,000.00	11,964.00	16,067.39	11,153.00	85.48	83.84	-39.12	-5,093.87	645.70	1,045.82		130.75	7.998			
17,050.00	11,964.00	16,117.39	11,153.00	86.11	84.48	-39.12	-5,143.87	645.78	1,045.82	914.10	131.71	7.940			
17,100.00	11,964.00	16,167.39	11,153.00	86.74	85.12	-39.12	-5,193.87	645.85	1,045.82	913.14	132.67	7.883			
17,150.00	11,964.00	16,217.39	11,153.00	87.38	85.76	-39.12	-5,243.87	645.93	1,045.82		133.64	7.826			
17,200.00	11,964.00	16,267.39	11,153.00	88.01	86.41	-39.12	-5,293.87	646.00	1,045.82	911.21	134.60	7.770			
17,250.00	11,964.00	16,317.39	11,153.00	88.65	87.05	-39.12	-5,343.87	646.08	1,045.82	910.25	135.57	7.714			
17,300.00	11,964.00	16,367.39	11,153.00	89.29	87.70	-39.12	-5,393.87	646.15	1,045.82	909.28	136.54	7.659			
17 250 00	44 004 00	16 417 20	41 153 00	90.02	90.25	20.40	E 442 07	g 40 00	1 045 00	000.00	107 50	7 605			
17,350.00 17,400.00	11,964.00 11,964.00	16,417.39 16,467.39	11,153.00 11,153.00	89.93 90.57	88.35 89.00	-39.12 -39.12	-5,443.87 -5,493.87	646.23 646.30	1,045.82 1,045.82		137.52 138.49	7.605 7.552			
17,450.00	11,964.00	16,467.39	11,153.00	91.21	89.65	-39.12	-5,493.87 -5,543.87	646.38	1,045.82		139.47	7.332			
17,500.00	11,964.00	16,567.39	11,153.00	91.85	90.30	-39.12	-5,593.87	646.45	1,045.82		140.44	7,447			
17,550.00		16,617.39	11,153.00	92.50	90.95	-39.12	-5,643.87	646.53	1,045.82		141.42	7.395			
							,								
17,600.00	11,964.00	16,667.39	11,153.00	93.15	91.61	-39.12	-5,693.87	646.60	1,045.82		142.40	7.344			
17,650.00	11,964.00	16,717.39	11,153.00	93.79	92.26	-39.12	-5,743.87	646.68	1,045.82		143.39	7.294			
17,700.00	11,964.00	16,767.39	11,153.00	94.44	92.92	-39.12	-5,793.87	646.75	1,045.82		144.37	7.244			
17,750.00	11,964.00	16,817.39	11,153.00	95.09	93.57	-39.12	-5,843.87	646.83	1,045.82		145.36	7.195			
17,800.00	11,964.00	16,867.39	11,153.00	95.74	94.23	-39.12	-5,893.87	646.90	1,045.82	899.48	146.35	7.146			
17,850.00	11,964.00	16,917.39	11,153.00	96.40	94.89	-39.12	-5,943.87	646.98	1,045.82	898.49	147.34	7.098			
17,900.00	11,964.00	16,967.39	11,153.00	97.05	95.55	-39.12	-5,993.87	647.05	1,045.82		148.33	7.051			
17,950.00	11,964.00	17,017.39	11,153.00	97.70	96.21	-39.12	-6,043.87	647.13	1,045.82		149.32	7.004			
18,000.00	11,964.00	17,067.39	11,153.00	98.36	96.87	-39.12	-6,093.87	647.20	1,045.82		150.31	6.958			
18,050.00	11,964.00	17,117.39	11,153.00	99.01	97.53	-39.12	-6,143.87	647.28	1,045.82		151.31	6.912			
							,								
18,100.00	11,964.00	17,167.39	11,153.00	99.67	98.20	-39.12	-6,193.87	647.35	1,045.82	893.52	152.31	6.867			
			00 14:-							F0					_

Company:

WCDSC Permian NM

Sec 27-T25S-R31E

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site: Site Error:

Reference Well:

0.00 ft

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference: MD Reference:

RKB @ 3359.80ft

RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

North Reference:

Survey Calculation Method:

Minimum Curvature

Output errors are at

2.00 sigma

Database:

EDM r5000.141_Prod US

Offset TVD Reference:

Offset Datum

Depth (ft) 18,150.00 1 18,200.00 1 18,250.00 1 18,300.00 1 18,350.00 1 18,450.00 1 18,450.00 1 18,550.00 1		MD+HDGM Offs/ Measured Depth (ft) 17,217.39 17,267.39 17,317.39 17,417.39 17,417.39 17,467.39 17,517.39 17,517.39 17,517.39	Vertical Depth (ft) 11,153.00 11,153.00 11,153.00 11,153.00 11,153.00	Semi Major Reference (ft) 100.33 100.99 101.65 102.31 102.97 103.63	Offset (ft) 98.86 99.53 100.19 100.86	Highside Toolface (°) -39.12 -39.12	Offset Wellbor +N/-S (ft) -6,243.87	+E/-W (ft)	Dista Between Centres (ft)	Between Ellipses	Minimum Separation	Separation Factor	Offset Well Error: Warning	0.50 fi
Depth (ft) 18,150.00 1 18,200.00 1 18,250.00 1 18,300.00 1 18,350.00 1 18,450.00 1 18,450.00 1 18,550.00 1	Depth (ft) 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00	Depth (ft) 17,217.39 17,267.39 17,317.39 17,367.39 17,467.39 17,517.39 17,567.39	Depth (ft) 11,153.00 11,153.00 11,153.00 11,153.00 11,153.00 11,153.00	100.33 100.99 101.65 102.31 102.97	98.86 99.53 100.19 100.86	Toolface (°) -39.12 -39.12	+N/-S (ft) -6,243.87	+E/-W (ft)	Centres	Ellipses		•	Warning	
18,150.00 1 18,200.00 1 18,250.00 1 18,300.00 1 18,350.00 1 18,450.00 1 18,450.00 1 18,550.00 1	11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00	17,217.39 17,267.39 17,317.39 17,367.39 17,417.39 17,517.39 17,517.39	11,153.00 11,153.00 11,153.00 11,153.00 11,153.00 11,153.00	100.33 100.99 101.65 102.31 102.97	98.86 99.53 100.19 100.86	-39.12 -39.12	-6,243.87	(ft)	(())					
18,200.00 1 18,250.00 1 18,300.00 1 18,350.00 1 18,450.00 1 18,500.00 1 18,550.00 1	11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00	17,267.39 17,317.39 17,367.39 17,417.39 17,467.39 17,517.39 17,567.39	11,153.00 11,153.00 11,153.00 11,153.00 11,153.00	100.99 101.65 102.31 102.97	99.53 100.19 100.86	-39.12	•		(14)	(ft)	(ft)			
18,200.00 1 18,250.00 1 18,300.00 1 18,350.00 1 18,450.00 1 18,500.00 1 18,550.00 1	11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00	17,267.39 17,317.39 17,367.39 17,417.39 17,467.39 17,517.39 17,567.39	11,153.00 11,153.00 11,153.00 11,153.00 11,153.00	100.99 101.65 102.31 102.97	99.53 100.19 100.86	-39.12	•	647.43	1,045.82	892.52	153.31	6.822		
18,300.00 1 18,350.00 1 18,400.00 1 18,450.00 1 18,500.00 1 18,550.00 1	11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00	17,367.39 17,417.39 17,467.39 17,517.39 17,567.39	11,153.00 11,153.00 11,153.00	102.31 102.97	100.86		-6,293.87	647.50	1,045.82	891.52	154.31	6.778		
18,350.00 1 18,400.00 1 18,450.00 1 18,500.00 1	11,964.00 11,964.00 11,964.00 11,964.00 11,964.00 11,964.00	17,417.39 17,467.39 17,517.39 17,587.39	11,153.00 11,153.00	102.97		-39.12	-6,343.87	647.58	1,045.82	890.52	155.31	6.734		
18,450.00 1 18,500.00 1 18,550.00 1	11,964.00 11,964.00 11,964.00 11,964.00 11,964.00	17,467.39 17,517.39 17,587.39	11,153.00			-39.12	-6,393.87	647.65	1,045.82	889.51	156.31	6.691		
18,450.00 1 18,500.00 1 18,550.00 1	11,964.00 11,964.00 11,964.00 11,964.00	17,517.39 17,567.39		102.02	101.53	-39.12	-6,443.87	647.73	1,045.82	888.51	157.31	6.648		
18,500.00 1 18,550.00 1	11,964.00 11,964.00 11,964.00	17,567.39	11 153 00	103.63	102.20	-39.12	-6,493.87	647.80	1,045.82	887.50	158.32	6.606		
18,550.00 1	11,964.00 11,964.00		11,153.00	104.30	102.87	-39.12	-6,543.87	647.88	1,045.82	886.50	159.33	6.564		
	11,964.00	17.617.39	11,153.00	104.96	103.54	-39.12	-6,593.87	647.95	1,045.82	885.49	160.33	6.523		
18,600.00 1		,	11,153.00	105.62	104.21	-39.12	-6,643.87	648.03	1,045.82	884.48	161.34	6.482		
	11.964.00	17,667.39	11,153.00	106.29	104.88	-39.12	-6,693.87	648.10	1,045.82	883.47	162.35	6.442		
18,650.00 1		17,717.39	11,153.00	106.96	105.55	-39.12	-6,743.87	648.18	1,045.82	882.46	163.36	6.402		
18,700.00 1	11,964.00	17,767.39	11,153.00	107.62	106.23	-39.12	-6,793.87	648.25	1,045.83	881.45	164.38	6.362		
18,750.00 1	11,964.00	17,817.39	11,153.00	108.29	106.90	-39.12	-6,843.87	648.33	1,045.83	880.43	165.39	6.323		
18,800.00 1	11,964.00	17,867.39	11,153.00	108.96	107.57	-39.12	-6,893.87	648.40	1,045.83	879.42	166.41	6.285		
18,850.00 1	11,964.00	17,917.39	11,153.00	109.63	108.25	-39.12	-6,943.87	648.48	1,045.83	878.40	167.42	6.247		
18,900.00 1	11,964.00	17,967.39	11,153.00	110.30	108.92	-39.12	-6,993.87	648.55	1,045.83	877.39	168.44	6.209		
18,950.00 1	11,964.00	18,017.39	11,153.00	110.97	109.60	-39.12	-7,043.87	648.63	1,045.83	876.37	169.46	6.172		
19,000.00 1	11,964.00	18,067.39	11,153.00	111.64	110.28	-39.12	-7,093.87	648.70	1,045.83	875.35	170.48	6.135		
19,050.00 1	11,964.00	18,117.39	11,153.00	112.32	110.96	-39.12	-7,143.87	648.78	1,045.83	874.33	171.50	6.098		
19,100.00 1	11,964.00	18,167.39	11,153.00	112.99	111.63	-39.12	-7,193.87	648.85	1,045.83	873.31	172.52	6.062		
19,150.00 1	11,964.00	18,217.39	11,153.00	113.66	112.31	-39.12	-7,243.87	648.93	1,045.83	872.29	173.54	6.026		
19,200.00 1	11,964.00	18,267.39	11,153.00	114.34	112.99	-39.12	-7,293.87	649.00	1,045.83	871.26	174.56	5.991		
19,250.00 1	11,964.00	18,317.39	11,153.00	115.01	113.67	-39.12	-7,343.87	649.08	1,045.83	870.24	175.59	5.956		
19,300.00 1	11,964.00	18,367.39	11,153.00	115.69	114.35	-39.12	-7,393.87	649.15	1,045.83	869.22	176.61	5.922		
19,350.00 1	11,964.00	18,417.39	11,153.00	116.37	115.03	-39.12	-7,443.87	649.23	1,045.83	868.19	177.64	5.887		
19,400.00 1	11,964.00	18,467.39	11,153.00	117.04	115.72	-39.12	-7,493.87	649.30	1,045.83	867.16	178.66	5.854		
19,450.00 1	11,964.00	18,517.39	11,153.00	117.72	116.40	-39.12	-7,543.87	649.38	1,045.83	866.14	179.69	5.820		
19,500.00 1	11,964.00	18,567.39	11,153.00	118.40	117.08	-39.12	-7,593.87	649.45	1,045.83	865.11	180.72	5.787		
19,550.00 1	11,964.00	18,617.39	11,153.00	119.08	117.77	-39.12	-7,643.87	649.53	1,045.83	864.08	181.75	5.754		
19,600.00 1	11,964.00	18,667.39	11,153.00	119.76	118.45	-39.12	-7,693.87	649.60	1,045.83	863.05	182.78	5.722		
19,650.00 1	11,964.00	18,717.39	11,153.00	120.44	119.13	-39.12	-7,743.87	649.68	1,045.83	862.02	183.81	5.690		
19,700.00 1	11,964.00	18,767.39	11,153.00	121,12	119.82	-39.12	-7,793.87	649.75	1,045.83	860.99	184.84	5.658		
	11,964.00	18,817.39	11,153.00	121.80	120.50	-39.12	-7,843.87	649.83	1,045.83	859.95	185.88	5.627		
	11,964.00	18,867.39	11,153.00	122.48	121.19	-39.12	-7,893.87	649.90	1,045.83	858.92	186.91	5.595		
19,850.00 1	11,964.00	18,917.39	11,153.00	123.16	121.88	-39.12	-7,943.87	649.98	1,045.83	857.89	187.94	5.565		
19,900.00 1	11,964.00	18,967.39	11,153.00	123.84	122.56	-39.12	-7,993.87	650.05	1,045.83	856.85	188.98	5.534		
19,950.00 1	11,964.00	19,017.39	11,153.00	124.53	123.25	-39.12	-8,043.87	650.13	1,045.83	855.82	190.01	5.504		
	11,964.00	19,067.39	11,153.00	125.21	123.94	-39.12	-8,093.87	650.20	1,045.83	854.78	191.05	5.474		
20,050.00 1	11,964.00	19,117.39	11,153.00	125.89	124.63	-39.12	-8,143.87	650.28	1,045.83	853.74	192.09	5.445		
20,100.00 1	11,964.00	19,167.39	11,153.00	126.58	125.32	-39.12	-8,193.87	650.35	1,045.83	852.71	193.13	5.415		
20,150.00 1	11,964.00	19,217.39	11,153.00	127.26	126.00	-39.12	-8,243.87	650.43	1,045.83	851.67	194.16	5.386		
20,200.00 1	11,964.00	19,267.39	11,153.00	127.95	126.69	-39.12	-8,293.87	650.50	1,045.83	850.63	195.20	5.358		
	11,964.00	19,317.39	11,153.00	128.63	127.38	-39.12	-8,343.87	650.58	1,045.83	849.59	196.24	5.329		
	11,964.00	19,367.39	11,153.00	129.32	128.07	-39.12	-8,393.87	650.65	1,045.83	848.55	197.28	5.301		
	11,964.00	19,417.39	11,153.00	130.01	128.76	-39.12	-8,443.87	650.73	1,045.83	847.51	198.33	5.273		
20,400.00 1	11,964.00	19,467.39	11,153.00	130.69	129.46	-39.12	-8,493.87	650.80	1,045.83	846.47	199.37	5.246		
20,450.00 1	11,964.00	19,517.39	11,153.00	131.38	130.15	-39.12	-8,543.87	650.88	1,045.83	845.42	200.41	5.218		
	11,964.00	19,567.39	11,153.00	132.07	130.84	-39.12	-8,593.87	650.95	1,045.83	844.38	201.45	5.191		
	11,964.00	19,617.39	11,153.00	132.76	131.53	-39.12	-8,643.87	651.03	1,045.83	843.34	202.50	5.165		
	11,964.00	19,667.39	11,153.00	133.45	132.22	-39.12	-8,693.87	651.10	1,045.83	842.29	202.50	5.138		
	11,964.00	19,717.39	11,153.00	134.13	132.92	-39.12	-8,743.87	651.18	1,045.83	841.25	204.59	5.112		
20,700.00 1	11,964.00	19,767.39	11,153.00	134.82	133.61	-39.12	-8,793.87	651.25	1,045.83	840.20	205.63	5.086		

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error: Reference Well: 0.00 ft

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

Survey Calculation Method:

TVD Reference:

MD Reference:

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

RKB @ 3359.80ft

North Reference:

Grid

Minimum Curvature

Output errors are at

2.00 sigma

Database:

EDM r5000.141_Prod US

Offset TVD Reference: Offset Datum

Survey Prog Refer		ND+HDGM Offs	••	Semi Major	Avio				Dista				Offset Well Error:	0.50
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbor	e Centre	Between	Between	Minimum	Separation	Manufer -	
Depth	Depth	Depth	Depth	Naturalica	011301	Toolface	+N/-S	+E/-W	Centres	Ellipses	Separation	Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	(ft)	(ft)	(ft)	(ft)	(ft)			
20,750.00	11,964.00	19,817.39	11,153.00	135.51	134.30	-39.12	-8,843.87	651.33	1,045.83	839.16	206.68	5.060	·	
20,800.00	11,964.00	19,867.39	11,153.00	136.20	135.00	-39.12	-8,893.87	651.40	1,045.83	838.11	207.72	5.035		
20,850.00	11,964.00	19,917.39	11,153.00	136.90	135.69	-39.12	-8,943.87	651.48	1,045.83	837.06	208.77	5.009		
20,900.00	11,964.00	19,967.39	11,153.00	137.59	136.39	-39.12	-8,993.87	651.55	1,045.83	836.02	209.82	4.984 Alert		
20,950.00	11,964.00	20,017.39	11,153.00	138.28	137.08	-39.12	-9,043.87	651.63	1,045.84	834.97	210.87	4.960 Alert		
21,000.00	11,964.00	20,067.39	11,153.00	138.97	137.78	-39.12	-9,093.87	651.70	1,045.84	833.92	211.92	4.935 Alert		
21,050.00	11,964.00	20,117.39	11,153.00	139.66	138.47	-39.12	-9,143.87	651.78	1,045.84	832.87	212.97	4.911 Alert		
21,100.00	11,964.00	20,167.39	11,153.00	140.35	139.17	-39.12	-9,193.87	651.85	1,045.84	831.82	214.02	4.887 Alert		
21,150.00	11,964.00	20,217.39	11,153.00	141.05	139.87	-39.12	-9,243.87	651.93	1,045.84	830.77	215.07	4.863 Alert		
21,200.00	11,964.00	20,267.39	11,153.00	141.74	140.56	-39.12	-9,293.87	652.00	1,045.84	829.72	216.12	4.839 Alert		
21,250.00	11,964.00	20,317.39	11,153.00	142.43	141.26	-39.12	-9,343.87	652.08	1,045.84	828.67	217.17	4.816 Alert		
21,300.00	11,964.00	20,367.39	11,153.00	143.13	141.96	-39.12	-9,393.87	652.15	1,045.84	827.62	218.22	4.793 Alert		
21,350.00	11,964.00	20,417.39	11,153.00	143.82	142.65	-39.12	-9,443.87	652.23	1,045.84	826.56	219.27	4.770 Alert		
21,400.00	11,964.00	20,467.39	11,153.00	144.52	143.35	-39.12	-9,493.87	652.30	1,045.84	825.51	220.33	4.747 Alert		
21,450.00	11,964.00	20,517.39	11,153.00	145.21	144.05	-39.12	-9,543.87	652.38	1,045.84	824.46	221.38	4.724 Alert		
21,500.00	11,964.00	20,567.39	11,153.00	145.91	144.75	-39.12	-9,593.87	652.45	1,045.84	823.40	222.43	4.702 Alert		
21,550.00	11,964.00	20,617.39	11,153.00	146.60	145,45	-39.12	-9.643.87	652.53	1,045.84	822.35	223.49	4.680 Alert		
21,600.00	11,964.00	20,667.39	11,153.00	147.30	146.15	-39.12	-9,693.87	652.60	1,045.84	821.30	224.54	4.658 Alert		
21,650.00	11,964.00	20,717.39	11,153.00	147.99	146.84	-39.12	-9,743.87	652.68	1,045.84	820.24	225.60	4.636 Alert		
21,700.00	11,964.00	20,767.39	11,153.00	148.69	147.54	-39.12	-9,793.87	652.75	1,045.84	819.18	226.65	4.614 Alert		
21,750.00	11,964.00	20,817.39	11,153.00	149.39	148.24	-39.12	-9,843.87	652.83	1,045.84	818.13	227.71	4.593 Alert		
21,800.00	11,964.00	20,867.39	11,153.00	150.08	148.94	-39.12	-9,893.87	652.90	1,045.84	817.07	228.77	4.572 Alert		
21,850.00	11,964.00	20,917.39	11,153.00	150.78	149.64	-39.12	-9,943.87	652.98	1,045.84	816.02	229.82	4.551 Alert		
21,900.00	11,964.00	20,967.39	11,153.00	151.48	150.34	-39.12	-9,993.87	653.05	1,045.84	814.96	230.88	4.530 Alert		
21,950.00	11,964.00	21,017.39	11,153.00	152.17	151.05	-39.12	-10,043.87	653.13	1,045.84	813.90	231.94	4.509 Alert		
22,000.00	11,964.00	21,067.39	11,153.00	152.87	151.75	-39.12	-10,093.87	653.20	1,045.84	812.84	233.00	4.489 Alert		
22,050.00	11,964.00	21,117.39	11,153.00	153.57	152.45	-39.12	-10,143.87	653.28	1,045.84	811.78	234.05	4.468 Alert		
22,100.00	11,964.00	21,167.39	11,153.00	154.27	153.15	-39.12	-10,193.87	653.35	1,045.84	810.73	235.11	4.448 Alert		
22,150.00	11,964.00	21,217.39	11,153.00	154.97	153.85	-39.12	-10,243.87	653.43	1,045.84	809.67	236.17	4.428 Alert	,	
22,200.00	11,964.00	21,267.39	11,153.00	155.67	154.55	-39.12	-10,293.87	653.50	1,045.84	808.61	237.23	4.408 Alert		
22,241.76	11,964.00	21,309.15	11,153.00	156.25	155.14	-39.12	-10,335.63	653.57	1,045.84	807.72	238.12	4.392 Alert		

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 733H

Well Error: 0.50 ft
Reference Wellbore #1

Reference Design: Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset TVD Reference: Offset Datum

Offset De	sign	Sec 27-	T25S-R3	1E - Lusitan	o 27-34 I	Fed Com 62	4H - Wellbore	#1 - Permit	Plan 2				Offset Site Error:	0.00 ft
Survey Prog	ram: 0-M	WD+HDGM											Offset Well Error:	0.50 ft
Refer		Offse		Semi Major					Dist					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellborn +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
6,100.00	6,099.14	6,201.60	6,192.01	21.65	21.98	98.67	30.18	1,487.05	1,499.77	1,456.37	43.40	34.554		
6,150.00	6,149.13	6,248.31	6,241.82	21.83	22.15	98.70	30.46	1,484.03	1,496.91	1,453.16	43.75	34.215		
6,200.00	6,199.12	6,301.78	6,291.64	22.01	22.34	98.74	30.74	1,481.01	1,494.05	1,449.93	44.12	33.863		
6,250.00	6,249.11	6,348.13	6,341.46	22.19	22.51	98.77	31.02	1,478.00	1,491.18	1,446.72	44,47	33.536		
6,300.00	6,299.09	6,401.96	6,391.28	22.37	22.71	98.81	31.30	1,474.98	1,488.32	1,443.49	44.84	33.194		
6,350.00	6,349.08	6,447.95	6,441.09	22.55	22.88	98.84	31.58	1,471.97	1,485.46	1,440.28	45.18	32.878		
6,400.00	6,399.07	6,502.14	6,490.91	22.73	23.07	98.88	31.86	1,468.95	1,482.60	1,437.05	45.55	32.546		
6,450.00	6,449.06	6,547.77	6,540.73	22.91	23.24	98.91	32.14	1,465.93	1,479.74	1,433.84	45.90	32.241		
6,500.00	6,499.05	6,602.32	6,590.55	23.09	23.44	98.95	32.42	1,462.92	1,476.88	1,430.61	46.27	31.918		
6,550.00 6,600.00	6,549.03 6,599.02	6,647.59	6,640.37	23.27	23.60 23.80	98.99	32.70	1,459.90	1,474.02	1,427.41	46.61	31.623		
		6,702.51	6,690.18	23.45		99.02	32.99	1,456.88	1,471.16	1,424.18	46.99	31.309		
6,650.00	6,649.01	6,747.40	6,740.00	23.63	23.97	99.06	33.27	1,453.87	1,468.31	1,420.98	47.33	31.024		
6,700.00 6,750.00	6,699.00 6,748.98	6,802.69 6,847.22	6,789.82 6,839.64	23.80 23.98	24.17 24.33	99.09 99.13	33.55 33.83	1,450.85 1,447.83	1,465.45 1,462.59	1,417.74 1,414.55	47.70 48.04	30.719 30.443		
6,800.00	6,798.97	6,902.87	6,889.45	23.96	24.53	99.13 99.17	33.63 34.11	1,444.82	1,459.74	1,411.31	48.42	30.443		
6,850.00	6,848.96	6,947.04	6,939.27	24.34	24.70	99.20	34.39	1,441.80	1,456.88	1,408.12	48.76	29.879		
5,555.55	0,0.000	0,0	0,000.27				0 100	1,111.00	1,100.00	.,100.12	10.70	20.0.0		
6,900.00	6,898.95	7,003.05	6,989.09	24.52	24.90	99.24	34.67	1,438.79	1,454.02	1,404.89	49.14	29.590		
6,950.00	6,948.94	7,046.86	7,038.91	24.70	25.06	99.28	34.95	1,435.77	1,451.17	1,401.69	49.48	29.331		
7,000.00	6,998.92	7,103.23	7,088.72	24.88	25.26	99.32	35.23	1,432.75	1,448.32	1,398.46	49.86	29.050		
7,050.00	7,048.91	7,146.68	7,138.54	25.06	25.42	99.35	35.51	1,429.74	1,445.46	1,395.27	50.19	28.799		
7,100.00	7,098.90	7,203.41	7,188.36	25.24	25.63	99.39	35.79	1,426.72	1,442.61	1,392.04	50.57	28.525		
7,150.00	7,148.89	7,246.50	7,238.18	25.42	25.79	99.43	36.07	1,423.70	1.439.76	1,388.85	50.91	28.282		
7,200.00	7,198.87	7,303.59	7,288.00	25.60	26.00	99.47	36.35	1,420.69	1,436.91	1,385.62	51.29	28.014		
7,250.00	7,248.86	7,346.32	7,337.81	25.78	26.15	99.50	36.64	1,417.67	1,434.06	1,382.43	51.62	27.779		
7,300.00 7,350.00	7,298.85 7,348.84	7,403.77 7,446.14	7,387.63 7,437.45	25.96	26.36 26.52	99.54 99.58	36.92 37.30	1,414.65	1,431.21 1,428.36	1,379.20	52.01	27.518		
				26.14			37.20	1,411.64		1,376.02	52.34	27.290		
7,400.00	7,398.83	7,503.95	7,487.27	26.32	26.73	99.62	37.48	1,408.62	1,425.51	1,372.78	52.73	27.035		
7,450.00	7,448.81 7,498.80	7,545.96 7,604.13	7,537.08 7,586.90	26.50 26.67	26.88 27.09	99.66 99.69	37.76 38.04	1,405.60 1,402.59	1,422.66 1,419.81	1,369.60 1,366.37	53.06 53.45	26.814 26.566		
7,550.00	7,548.79	7,645.78	7,636.72	26.85	27.25	99.73	38.32	1,399.57	1,416.97	1,363.19	53.77	26.350		
7,600.00	7,598.78	7,704.31	7,686.54	27.03	27.46	99.77	38.60	1,396.56	1,414.12	1,359.96	54.16	26.109		
7,650.00	7,648.77	7,745.60	7.736.35	27.21	27.61	99.81	38.88	1,393.54	1,411.27	1,356.78	54.49	25.899		
7,700.00	7,698.75	7,804.49	7,786.17	27.39	27.83	99.85	39.16	1,390.52	1,408.43	1,353.55	54.88	25.663		
7,750.00	7,748.74	7,845.42	7,835.99	27.57	27.98	99.89	39.44	1,387.51	1,405.59	1,350.38	55.21	25.460		
7,800.00	7,798.73	7,904.67	7,885.81	27.75	28.19	99.93	39.72	1,384.49	1,402.74	1,347.14	55.60	25.230		
7,850.00	7,848.72	7,945.24	7,935.62	27.93	28.34	99.97	40.01	1,381.47	1,399.90	1,343.98	55.92	25.032		
7,900.00	7,898.70	8,004.85	7,985.44	28.11	28.56	100.01	40.29	1,378.46	1,397.06	1,340.74	56.32	24.807		
7,950.00	7,948.69	8,045.06	8,035.26	28.29	28.71	100.05	40.57	1,375.44	1,394.22	1,337.57	56.64	24.615		
8,000.00	7,998.68	8,105.03	8,085.08	28.47	28.92	100.09	40.85	1,372.42	1,391.37	1,334.34	57.04	24.395		
8,050.00 8,100.00	8,048.67 8,098.66	8,144.88 8,205.21	8,134.90 8,184.71	28.65 28.83	29.07 29.29	100.13 100.17	41.13 41,41	1,369.41 1,366.39	1,388.53 1,385.70	1,331.18 1,327.94	57.36 57.75	24.208 23.993		
8,150.00	8,148.64	8,244.70	8,234.53	29.01	29.44	100.21	41.69	1,363.38	1,382.86	1,324.78	58.07	23.812		
8,200.00	8,198.63	8,305.40	8,284.35	29.19	29.66	100.25	41.97	1,360.36	1,380.02	1,321.55	58.47	23.601		
8,250.00	8,248.62	8,344.51	8,334.17	29.37	29.80	100.29	42.25	1,357.34	1,377.18	1,318.39	58.79	23.425		
8,300.00	8,298.61	8,405.58	8,383.98	29.55	30.02	100.33	42.53	1,354.33	1,374.34	1,315.15	59.19	23.219		
8,350.00	8,348.59	8,444.33	8,433.80	29.72	30.17	100.38	42.81	1,351.31	1,371.51	1,312.00	59.51	23.047		
8,400.00	8,398.58	8,505.76	8,483.62	29.90	30.39	100.42	43.09	1,348.29	1,368.67	1,308.76	59.91	22.846		
8,450.00	8,448.57	8,544.15	8,533.44	30.08	30.53	100.46	43.37	1,345.28	1,365.84	1,305.61	60.23	22.679		
8,500.00	8,498.56	8,594.06	8,583.25	30.26	30.71	100.50	43.66	1,342.26	1,363.00	1,302.42	60.58	22.498		
8,550.00	8,548.55	8,643.97	8,633.07	30.44	30.90	100.54	43.94	1,339.24	1,360.17	1,299.23	60.94	22.319		
8,600.00	8,598.53	8,693.88	8,682.89	30.62	31.08	100.58	44.22	1,336.23	1,357.34	1,296.04	61.30	22.142		
8,650.00	8,648.52	8,743.79	8,732.71	30.80	31.26	100.63	44.50	1,333.21	1,354.51	1,292.85	61.66	21.967		

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error: Reference Well: 0.00 ft

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1

Permit Plan 1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

TVD Reference: MD Reference:

RKB @ 3359.80ft RKB @ 3359.80ft

Minimum Curvature

Grid

North Reference:

Survey Calculation Method:

Output errors are at

2.00 sigma

Database:

EDM r5000.141_Prod US

Offset TVD Reference: Offset Datum

ırvey Progi Referi		WD+HDGM Offse		Semi Major	Avia				Dista	nco			Offset Well Error:	0.50
Refer leasured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbon	e Contro	Between	Between	Minimum	Separation	100	
Depth	Depth	Depth	Depth	Kolorelleo	Ollact	Toolface	+N/-S	+E/-W	Centres	Ellipses	Separation	Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	(ft)	(ft)	(ft)	(ft)	(ft)			
8,700.00	8,698.51	8,789.94	8,778.77	30.98	31.43	100.67	44.76	1,330.44	1,351.70	1,289.69	62.01	21.798		
8,750.00	8,748.50	8,826.83	8,815.61	31.16	31.56	100.70	44,94	1,328.49	1,349.25	1,286.91	62.34	21.645		
8,800.00	8,798.48	8,863.75	8,852.50	31.34	31.70	100.73	45.09	1,326.89	1,347.28	1,284.62	62.66	21.502		
8,850.00	8,848.47	8,900.00	8,888.72	31.52	31.83	100.76	45.20	1,325.67	1,345.80	1,282.82	62.97	21.371		
8,900.00	8,898.46	8,937.66	8,926.37	31.70	31.96	100.80	45.28	1,324.76	1,344.80	1,281.51	63.29	21.249		
8,950.00	8,948.45	8,974.64	8,963.35	31.88	32.09	100.83	45.33	1,324.23	1,344.28	1,280.69	63.60	21.138		
8,975.54	8,973.98	8,993.53	8,982.23	31.97	32.16	100.85	45.35	1,324.09	1,344.21	1,280.46	63.75	21.085 CC		
9,000.00	8,998.44	9,011.73	9,000.44	32.06	32.23	100.86	45.35	1,324.05	1,344.25	1,280.35	63.90	21.037		
9,050.00	9,048.42	9,061.72	9,050.42	32.24	32.40	100.91	45.35	1,324.05	1,344.46	1,280.21	64.25	20.925		
9,100.00	9,098.41	9,111.70	9,100.41	32.42	32.57	100.96	45.35	1,324.05	1,344.67	1,280.06	64.61	20.813		
9,150.00	9,148.40	9,161.69	9,150.40	32.60	32.74	101.00	45.35	1,324.05	1,344.88	1,279.92	64.96	20.703		
9,200.00	9,198.39	9,211.68	9,200.39	32.78	32.92	101.05	45.35	1,324.05	1,345.09	1,279.78	65.31	20.594		
9,250.00	9,248.38	9,261.67	9,250.38	32.95	33.09	101.10	45.35	1,324.05	1,345.30	1,279.64	65.67	20.487		
9,300.00	9,298.36	9,311.66	9,300.36	33.13	33.26	101.14	45.35	1,324.05	1,345.52	1,279.50	66.02	20.380		
9,350.00 9,400.00	9,348.35 9,398.34	9,361.64 9,411.63	9,350.35 9,400.34	33.31 33.49	33.44 33.61	101.19 101.23	45.35 45.35	1,324.05 1,324.05	1,345.73 1,345.95	1,279.36 1,279.22	66.37 66.73	20.275 20.171		
8,400.00	B,388.34	6,411.63	8,400.34	33.49	33.61	101.23	45.35	1,324.05	1,345.95	1,279.22	66.73	20.1/1		
9,450.00	9,448.33	9,461.62	9,450.33	33.67	33.78	101.28	45.35	1,324.05	1,346.16	1,279.08	67.08	20.067		
9,500.00	9,498.31	9,511.61	9,500.31	33.85	33.96	101.33	45.35	1,324.05	1,346.38	1,278.94	67.44	19.965		
9,550.00	9,548.30	9,561.59	9,550.30	34.03	34.13	101.37	45.35	1,324.05	1,346.60	1,278.81	67.79	19.864		
9,600.00	9,598.29	9,611.58	9,600.29	34.21	34.30	101.42	45.35	1,324.05	1,346.81	1,278.67	68.14	19.764		
9,650.00	9,648.28	9,661.57	9,650.28	34.39	34.48	101.46	45.35	1,324.05	1,347.03	1,278.53	68.50	19.665		
9,700.00	9,698.27	9,711.56	9,700.27	34.57	34.65	101.51	45.35	1,324.05	1,347.25	1,278.40	68.85	19.567		
9,750.00	9,748.25	9,761.55	9,750.25	34.75	34.82	101.56	45.35	1,324.05	1,347.47	1,278.27	69.21	19.470		
9,800.00	9,798.24	9,811.53	9,800.24	34.93	35.00	101.60	45.35	1,324.05	1,347.69	1,278.13	69.56	19.374		
9,850.00 9,900.00	9,848.23 9,898.22	9,861.52 9,911.51	9,850.23 9,900.22	35.11 35.29	35.17 35.35	101.65 101.69	45.35 45.35	1,324.05 1,324.05	1,347.92 1,348.14	1,278.00	69.91 70.27	19.279 19.185		
5,500.00	5,050.22	9,911.31	3,500.22	33.25	33.33	101.05	43.33	1,324.03	1,340.14	1,277.87	10.21	19.105		
9,950.00	9,948.20	9,961.50	9,950.20	35.47	35.52	101.74	45.35	1,324.05	1,348.37	1,277.74	70.62	19.092		
10,000.00	9,998.19	10,011.49	10,000.19	35.65	35.69	101.79	45.35	1,324.05	1,348.59	1,277.61	70.98	19.000		
10,050.00	10,048.18	10,061.47	10,050.18	35.83	35.87	101.83	45.35	1,324.05	1,348.82	1,277.48	71.33	18.909		
10,100.00	10,098.17	10,111.46	10,100.17	36.01	36.04	101.88	45.35	1,324.05	1,349.04	1,277.36	71.69	18.819		
10,150.00	10,148.16	10,161.45	10,150.16	36.18	36.22	101.92	45.35	1,324.05	1,349.27	1,277.23	72.04	18.729		
40.000.00	40.400.44	40.044.44	40 000 44	20.20	20.00	101.07	45.05	4 00 4 05	4 4 4 5 5 5	4 077 40	70.40			
10,200.00	10,198.14	10,211.44	10,200.14	36.36	36.39	101.97	45.35	1,324.05	1,349.50	1,277.10	72.40	18.641		
10,250.00	10,248.13 10,298.12	10,261.42 10,311.41	10,250.13 10,300.12	36.54 36.72	36.56 36.74	102.02 102.06	45.35 45.35	1,324.05 1,324.05	1,349.73 1,349.96	1,276.98	72.75 73.11	18.553 18.466		
10,350.00	10,298.12	10,311.41	10,300.12	36.72 36.90	36.74 36.91	102.06	45.35 45.35	1,324.05	1,349.96	1,276.85 1,276.73	73.11 73.46	18.466 18.380		
10,350.00	10,348.11	10,361.40	10,350.11	37.08	37.09	102.11	45.35 45.35	1,324.05	1,350.19	1,276.73	73.46	18.295		
. 5, .50.00	.0,000.00	,	. 5, .50,05	37.00	57.00		40.00	1,027.00	.,550.42	,,210.01	75.01	10.200		
10,450.00	10,448.08	10,461.38	10,450.08	37.26	37.26	102.20	45.35	1,324.05	1,350.66	1,276.49	74.17	18.210		
10,500.00	10,498.07	10,511.36	10,500.07	37.44	37.44	102.24	45.35	1,324.05	1,350.89	1,276.36	74.52	18.127		
10,550.00	10,548.06	10,561.35	10,550.06	37.62	37.61	102.29	45.35	1,324.05	1,351.12	1,276.24	74.88	18.044		
	10,598.05	10,611.34		37.80	37.78	102.34	45.35	1,324.05	1,351.36	1,276.13	75.23	17.962		
10,650.00	10,648.03	10,661.33	10,650.03	37.98	37.96	102.38	45.35	1,324.05	1,351.60	1,276.01	75.59	17.881		
10,700.00	10,698.02	10 711 21	10,700.02	20 12	30 13	102.43	4E 2F	1 324 05	1 251 02	1 275 00	75.04	17 800		
		10,711.31		38.16	38.13	102.43	45.35 45.35	1,324.05	1,351.83	1,275.89	75.94 76.30	17.800		
10,750.00	10,748.01 10,798.00	10,761.30 10,811.29	10,750.01	38.34 38.52	38.31 38.48	102.47 102.52	45.35 45.35	1,324.05	1,352.07	1,275.77	76.30	17.721		
10,850.00	10,798.00	10,861.28	10,800.00	38.52 38.70	38.66	102.52	45.35 45.35	1,324.05 1,324.05	1,352.31 1,352.55	1,275.66 1,275.54	76.65 77.01	17.642 17.564		
10,900.00	10,847.99	10,961.27	10,849.99	38.88	38.83	102.56	45.35 45.35	1,324.05	1,352.55	1,275.43	77.01	17.486		
.0,550.00	10,031.01	10,011.27	.0,000.01	30.00	55.65	102.01	45.55	1,024.00	1,332.13	1,213,73	77.30	11.400		
10,950.00	10,947.96	10,961.25	10,949.96	39.06	39.01	102.66	45.35	1,324.05	1,353.03	1,275.31	77.72	17.409		
11,000.00	10,997.95	11,011.25		39.24	39.18	102.69	45.35	1,324.05	1,353.22	1,275.15	78.07	17.333		
11,050.00	11,047.95	11,061.24	11,049.95	39.41	39.36	95.92	45.35	1,324.05	1,353.28	1,274.85	78.43	17.255		
11,100.00	11,097.95	11,111.24	11,099.95	39.59	39.53	95.92	45.35	1,324.05	1,353.28	1,274.49	78.78	17.177		
11,150.00	11,147.95	11,161.24	11,149.95	39.77	39.71	95.92	45.35	1,324.05	1,353.28	1,274.14	79.14	17.100		
,								.,						

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 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference:

Well Lusitano 27-34 Fed Com 733H RKB @ 3359.80ft

MD Reference:

RKB @ 3359.80ft

North Reference:

Grid

Survey Calculation Method:

Output errors are at

Minimum Curvature 2.00 sigma

Database:

EDM r5000.141_Prod US

Offset TVD Reference: Offset Datum

Survey Progr	am· fLAA	WD+HDGM											04	
urvey Progr Refere		WD+HDGM Offs:	et	Semi Major	Axis				Dista	ince			Offset Well Error:	0.5
leasured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbor	e Centre	Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor	•	
11,250.00	11,247.95	11,250.00	11,238.67	40.13	40.01	95.99	43.69	1,324.06	1,353.50	1,273.71	79.79	16.963		
11,300.00	11,297.95	11,289.66	11,278.08	40.31	40.14	96.18	39.30	1,324.07	1,354.11	1,274.02	80.09	16.907		
1,350.00	11,347.95	11,328.37	11,316.16	40.49	40.27	96.47	32.40	1,324.09	1,355.13	1,274.75	80.38	16.860		
11,400.00	11,397.95	11,365.99	11,352.64	40.67	40.39	-83.04	23.25	1,324.11	1,356.62	1,275.97	80.65	16.821		
11,450.00	11,447.86	11,402.89	11,387.76	40.82	40.50	-82.49	11.97	1,324.14	1,358.28	1,277.39	80.89	16.791		
11,500.00	11,497.33	11,439.41	11,421.74	40.98	40.61	-81.97	-1.41	1,324.18	1,359.90	1,278.78	81.12	16.765		
11,550.00	11,546.00	11,475.60	11,454.51	41.13	40.71	-81.51	-16.77	1,324.22	1,361.44	1,280.11	81.33	16.741		
11,600.00	11,593.48	11,511.52	11,486.00	41.27	40.81	-81.09	-34.03	1,324.27	1,362.87	1,281.36	81.52	16.719		
11,650.00	11,639.43	11,550.00	11,518.47	41.41	40.91	-80.71	-54.67	1,324.32	1,364.18	1,282.46	81.71	16.695		
11,700.00	11,683.48	11,582.70	11,544.92	41.54	40.99	-80.42	-73.89	1,324.38	1,365.31	1,283.45	81.86	16.679		
11,750.00	11,725.31	11,618.04	11,572.22	41.65	41.07	-80.17	-96.31	1,324.44	1,366.27	1,284.25	82.01	16.659		
11,800.00	11,764.60	11,650.00	11,595.68	41,77	41.15	-79.99	-118.01	1,324.50	1,367.03	1,284.89	82.14	16.643		
11,850.00	11,801.04	11,688.38	11,622.20	41.88	41.23	-79.84	-145.75	1,324.57	1,367.56	1,285.26	82.30	16.617		
11,900.00	11,834.36	11,723.45	11,644.76	42.00	41.31	-79.77	-172.59	1,324.64	1,367.88	1,285.44	82.44	16.592		
11,950.00	11,864.31	11,758.50	11,665.62	42.10	41.38	-79.75	-200.75	1,324.72	1,367.97	1,285.39	82.59	16.564		
12,000.00	11,890.66	11,793.56	11,684.73	42.21	41.46	-79.79	-230.14	1,324.80	1,367.84	1,285.10	82.74	16.533		
12,050.00	11,913.20	11,828.67	11,702.02	42.32	41.54	-79.90	-260.68	1,324.88	1,367.47	1,284.57	82.89	16.496		
12,100.00	11,931.77	11,863.85	11,717.45	42.42	41.63	-80.06	-292.29	1,324.97	1,366.89	1,283.82	83.07	16.455		
12,150.00	11,946.22	11,900.00	11,731.24	42.52	41.72	-80.29	-325.71	1,325.06	1,366.09	1,282.84	83.25	16.409		
12,200.00	11,956.45	11,934.56	11,742.44	42.62	41.81	-80.57	-358.40	1,325.15	1,365.11	1,281.66	83.45	16.359		
12,250.00	11,962.38	11,970.17	11,751.89	42.73	41.90	-80.90	-392.73	1,325.24	1,363.95	1,280.29	83.66	16.303		
12,300.00	11,964.00	12,006.01	11,759.24	42.82	42.00	-81.27	-427.80	1,325.34	1,362.65	1,278.76	83.89	16.244		
12,350.00	11,964.00	12,042.40	11,764.43	42.94	42.10	-81.49	-463.80	1,325.43	1,361.63	1,277.51	84.12	16.187		
12,400.00	11,964.00	12,079.31	11,767.36	43.05	42.20	-81. 6 1	-500.59	1,325.53	1,361.10	1,276.76	84.34	16.138		
12,432.13	11,964.00	12,110.59	11,768.00	43.14	42.28	-81.63	-523.35	1,325.59	1.361.02	1,276.51	84,51	16,106		
12,450.00	11,964.00	12,119.94	11,768.00	43.19	42.31	-81.63	-541.22	1,325.64	1,361.04	1,276.46	84.58	16.092		
12,500.00	11,964.00	12,169.94	11,768.00	43.32	42.45	-81.64	-591.22	1,325.78	1,361.10	1,276.25	84.85	16.041		
12,550.00	11,964.00	12,219.94	11,768.00	43.48	42.61	-81.64	-641.22	1,325.91	1,361.16	1,276.00	85.15	15.985		
12,600.00	11,964.00	12,269.94	11,768.00	43.64	42.78	-81.64	-691.22	1,326.05	1,361.22	1,275.75	85.47	15.926		
12,650.00	11,964.00	12,319.94	11,768.00	43.82	42.95	-81.64	-741.22	1,326.19	1,361.28	1,275.46	85.82	15.862		
12,700.00	11,964.00	12,369.94	11,768.00	44.00	43.14	-81.64	-791.22	1,326.32	1,361.34	1,275.15	86.19	15.796		
12,750.00	11,964.00	12,419.94	11,768.00	44.21	43.34	-81.64	-841.22	1,326.46	1,361.40	1,274.82	86.58	15.724		
12,800.00	11,964.00	12,469.94	11,768.00	44.41	43.55	-81.64	-891.22	1,326.59	1,361.46	1,274.47	86.99	15.651		
12,850.00	11,964.00	12,519.94	11,768.00	44,64	43.77	-81.64	-941.22	1,326.73	1,361.52	1,274.09	87.43	15.573		
12,900.00	11,964.00	12,569.94	11,768.00	44.87	44.01	-81.64	-991.22	1,326.86	1,361.58	1,273.70	87.88	15.494		
12,950.00	11,964.00	12,619.94	11,768.00	45.11	44.25	-81.64	-1,041.22	1,327.00	1,361.64	1,273.28	88.36	15.410		
13,000.00	11,964.00	12,669.94	11,768.00	45.36	44.50	-81.64	-1,091.22	1,327.13	1,361.70	1,272.85	88.85	15.325		
13,050.00	11,964.00	12,719.94	11,768.00	45.63	44.77	-81.64	-1,141.22	1,327.27	1,361.76	1,272.38	89.38	15.236		
13,100.00	11,964.00	12,769.94	11,768.00	45.90	45.04	-81.64	-1,191.22	1,327.40	1,361.82	1,271.91	89.91	15.146		
13,150.00	11,964.00	12,819.94	11,768.00	46.18	45.32	-81.64	-1,241.22	1,327.54	1,361.88	1,271.41	90.47	15.053		
13,200.00	11,964.00	12,869.94	11,768.00	46.47	45.62	-81.64	-1,291.22	1,327.68	1,361.94	1,270.89	91.05	14.959		
13,250.00	11,964.00	12,919.94	11,768.00	46.78	45.92	-81.64	-1,341.21	1,327.81	1,362.00	1,270.35	91.65	14.861		
13,300.00	11,964.00	12,969.94	11,768.00	47.08	46.23	-81.64	-1,391.21	1,327.95	1,362.06	1,269.80	92.26	14.763		
13,350.00	11,964.00	13,019.94	11,768.00	47.41	46.55	-81.64	-1,441.21	1,328.08	1,362.12	1,269.22	92.90	14.663		
13,400.00	11,964.00	13,069.94	11,768.00	47.73	46.88	-81.64	-1,491.21	1,328.22	1,362.18	1,268.64	93.55	14.562		
13,450.00	11,964.00	13,119.94	11,768.00	48.07	47.22	-81.64	-1,541.21	1,328.35	1,362.24	1,268.02	94.22	14.458		
13,500.00	11,964.00	13,169.94	11,768.00	48.42	47.57	-81.64	-1,591.21	1,328.49	1,362.30	1,267.40	94.90	14.355		
13,550.00	11,964.00	13,219.94	11,768.00	48.77	47.92	-81.64	-1,641.21	1,328.62	1,362.36	1,266.75	95.61	14.249		
13,600.00	11,964.00	13,269.94	11,768.00	49.13	48.29	-81.64	-1,691.21	1,328.76	1,362.42	1,266.10	96.33	14,144		
13,650.00	11,964.00	13,319.94	11,768.00	49.51	48.66	-81.64	-1,741.21	1,328.90	1,362.48	1,265.42	97.07	14.037		
13,700.00	11,964.00	13,369.94	11,768.00	49.88	49.04	-81.64	-1,791.21	1,329.03	1,362.54	1,264.73	97.81	13.930		
13,750.00	11 064 00	13,419.94	11,768.00	50.27	49.43	-81.64	-1,841.21	1,329.17	1,362.60	1,264.02	98.58	13.822		

Company:

WCDSC Permian NM

Sec 27-T25S-R31E

Project:

Reference Well:

Eddy County (NAD 83 NM Eastern)

Reference Site: Site Error:

0.00 ft

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference:

MD Reference:

RKB @ 3359.80ft

RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

North Reference:

Survey Calculation Method:

Minimum Curvature

Output errors are at

2.00 sigma

Grid

Database:

EDM r5000.141_Prod US

Offset TVD Reference:

Offset Datum

Offset Des	-		T25S-R31	IE - Lusitan	o 27-34 f	Fed Com 624	H - Wellbore #	‡1 - Permit	Plan 2				Offset Site Error:	0.00 ft
Survey Progr		WD+HDGM	-4	0	A 1				.				Offset Well Error:	0.50 ft
Refere		Offs		Semi Major			0.00 - 4.154 - 115	0	Dista		A01-1	0		
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore +N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft) 	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		 	
13,800.00	11,964.00	13,469.94	11,768.00	50.66	49.82	-81.65	-1,891.21	1,329.30	1,362.66	1,263.30	99.36	13.714		
13,850.00	11,964.00	13,519.94	11,768.00	51.07	50.23	-81.65	-1,941.21	1,329.44	1,362.72	1,262.56	100.16	13.605		
13,900.00	11,964.00	13,569.94	11,768.00	51.47	50.64	-81.65	-1,991.21	1,329.57	1,362.78	1,261.81	100.97	13.497		
13,950.00	11,964.00	13,619.94	11,768.00	51.89	51.05	-81.65	-2,041.21	1,329.71	1,362.84	1,261.04	101.80	13.387		
14,000.00	11,964.00	13,669.94	11,768.00	52.31	51.48	-81.65	-2,091.21	1,329.84	1,362.90	1,260.27	102.64	13.279		
14,050.00	11,964.00	13,719.94	11,768.00	52.74	51.91	-81.65	-2,141.21	1,329.98	1,362.96	1,259.47	103.49	13.170		
14,100.00	11,964.00	13,769.94	11,768.00	53.17	52.34	-81.65	-2,191.21	1,330.12	1,363.02	1,258.67	104.35	13.061		
14,150.00	11,964.00	13,819.94	11,768.00	53.62	52.79	-81.65	-2,241.21	1,330.25	1,363.09	1,257.85	105.24	12.953		
14,200.00	11,964.00	13,869.94	11,768.00	54.06	53.24	-81.65	-2,291.21	1,330.39	1,363.15	1,257.02	106.12	12.845		
14,250.00	11,964.00	13,919.94	11,768.00	54.52	53.69	-81.65	-2,341.21	1,330.52	1,363.21	1,256.18	107.03	12.737		
14,300.00	11,964.00	13,969.94	11,768.00	54.97	54.16	-81.65	-2,391.21	1,330.66	1,363.27	1,255.33	107.94	12.630		
14,350.00	11,964.00	14,019.94	11,768.00	55.44	54.62	-81.65	-2,441.21	1,330.79	1,363.33	1,254.46	108.87	12.523		
14,400.00	11,964.00	14,069.94	11,768.00	55.91	55.10	-81.65	-2,491.21	1,330.93	1,363.39	1,253.58	109.80	12.417		
14,450.00	11,964.00	14,119.94	11,768.00	56.39	55.57	-81.65	-2,541.21	1,331.06	1,363.45	1,252.69	110.75	12.311		
14,500.00	11,964.00	14,169.94	11,768.00	56.87	56.06	-81.65	-2,591.21	1,331.20	1,363.51	1,251.80	111.71	12.206		
14,550.00	11,964.00	14,219.94	11,768.00	57.36	56.55	-81.65	-2,641.21	1,331.33	1,363.57	1,250.89	112.68	12.101		
14,600.00	11,964.00	14,269.94	11,768.00	57.84	57.04	-81.65	-2,691,21	1,331.47	1,363.63	1,249.97	113,66	11.998		
14,650.00	11,964.00	14,319.94	11,768.00	58.34	57.54	-81.65	-2,741.21	1,331.61	1,363.69	1,249.04	114.65	11.895		
14,700.00	11,964.00	14,369.94	11,768.00	58.84	58.05	-81.65	-2,791.21	1,331.74	1,363.75	1,248.11	115.64	11.793		
14,750.00	11,964.00	14,419.94	11,768.00	59.35	58.55	-81.65	-2,841.21	1,331.88	1,363.81	1,247.16	116.65	11.691		
14,800.00	11,964.00	14,469.94	11,768.00	59.86	59.07	-81.65	-2,891.21	1,332.01	1,363.87	1,246.20	117.67	11.591		
14 950 00	11 064 00	14 510 04	44 769 00	EU 30	50.50	91.05	2.041.21	1 222 16	1,363,93	1 245 24	110 60	11 401		
14,850.00 14,900.00	11,964.00 11,964.00	14,519.94 14,569.94	11,768.00 11,768.00	60.38 60.89	59.59 60.11	-81.65 -81.65	-2,941.21 -2,991.21	1,332.15 1,332.28	1,363.99	1,245.24 1,244.26	118.69 119.72	11.491 11.393		
14,950.00	11,964.00	14,619.94	11,768.00	61.42	60.63	-81.65	-3,041.21	1,332.42	1,364.05	1,243.28	120.77	11.295		
15,000.00	11,964.00	14,669.94	11,768.00	61.94	61.16	-81.65	-3,041.21	1,332.42	1,364.05	1,243.26	121.82	11.198		
15,050.00	11,964.00	14,719.94	11,768.00	62.48	61.70	-81.65	-3,141.21	1,332.69	1,364.17	1,242.29	122.88	11,102		
15,100.00	11,964.00	14,769.94	11,768.00	63.01	62.24	-81.65	-3,191.21	1,332.83	1,364.23	1,240.29	123.94	11.007		
15,150.00	11,964.00	14,819.94	11,768.00	63.55	62.78	-81.66	-3,241.21	1,332.96	1,364.29	1,239.27	125.02	10.913		
15,200.00	11,964.00	14,869.94	11,768.00	64.09	63.32	-81.66	-3,291.21	1,333.10	1,364.35	1,238.25	126.10	10.820		
15,250.00	11,964.00	14,919.94	11,768.00	64.64	63.87	-81.66	-3,341.21	1,333.23	1,364.41	1,237.22	127.19	10.728		
15,300.00	11,964.00	14,969.94	11,768.00	65.19	64.43	-81.66	-3,391.21	1,333.37	1,364.47	1,236.19	128.28	10.637		
15,350.00	11,964.00	15,019.94	11,768.00	65.74	64.98	-81.66	-3,441.21	1,333.50	1,364.53	1,235.15	129.38	10.546		
15,400.00	11,964.00	15,069.94	11,768.00	66.30	65.54	-81.66	-3,491.21	1,333.64	1,364.59	1,234.10	130.49	10.457		
15,450.00	11,964.00	15,119.94	11,768.00	66.86	66.10	-81.66	-3,541,21	1,333.77	1,364.65	1,233.04	131.61	10.369		
15,500.00	11,964.00	15,169.94	11,768.00	67.42	66.67	-81.66	-3,591.20	1,333.91	1,364.71	1,231.98	132.73	10.282		
15,550.00	11,964.00	15,219.94	11,768.00	67.99	67.24	-81.66	-3,641.20	1,334.05	1,364.77	1,230.91	133.86	10.196		
15,600.00	11,964.00	15,269.94	11,768.00	68.56	67.81	-81.66	-3.691.20	1,334.18	1,364.83	1,229.84	134.99	10,111		
15,650.00	11,964.00	15,319.94	11,768.00	69.13	68.39	-81.66	-3,741.20	1,334.32	1,364.89	1,228.76	136.13	10.026		
15,700.00	11,964.00	15,369.94	11,768.00	69.71	68.97	-81.66	-3,791.20	1,334.45	1,364.95	1,227.68	137.27	9.943		
15,750.00	11,964.00	15,419.94	11,768.00	70.29	69.55	-81.66	-3,841.20	1,334.59	1,365.01	1,226.59	138.43	9.861		
	11,964.00	15,469.94	11,768.00	70.87	70.13	-81.66	-3,891.20	1,334.72	1,365.07	1,225.49	139.58	9.780		
15,850.00	11,964.00	15,519.94	11,768.00	71.45	70.72	-81.66	-3,941.20	1,334.86	1,365.13	1,224.39	140.74	9.699		
15,900.00	11,964.00	15,569.94	11,768.00	72.03	71.30	-81.66	-3,991.20	1,334.99	1,365.19	1,223.28	141.91	9.620		
15,950.00	11,964.00	15,619.94	11,768.00	72.62	71.90	-81.66	-4,041.20	1,335.13	1,365.25	1,222.17	143.08	9.542		
16,000.00	11,964.00	15,669.94	11,768.00	73.21	72.49	-81.66	-4,091.20	1,335.26	1,365.31	1,221.06	144.26	9.464		
16,050.00	11,964.00	15,719.94	11,768.00	73.81	73.09	-81.66	-4,141.20	1,335.40	1,365.37	1,219.93	145.44	9.388		
16,100.00	11,964.00	15,769.94	11,768.00	74.40	73.68	-81.66	-4,191.20	1,335.54	1,365.43	1,218.81	146.63	9.312		
16,150.00	11,964.00	15,819.94	11,768.00	75.00	74.28	-81.66	-4,241.20	1,335.67	1,365.49	1,217.68	147.82	9.238		
16,200.00	11,964.00	15,869.94	11,768.00	75.60	74.89	-81.66	-4,291.20	1,335.81	1,365.55	1,216.54	149.01	9.164		
16,250.00	11,964.00	15,919.94	11,768.00	76.21	75.49	-81.66	-4,341.20	1,335.94	1,365.61	1,215.40	150.21	9.091		
16,300.00	11,964.00	15,969.94	11,768.00	76.81	76.10	-81.66	4,391.20	1,336.08	1,365.67	1,214.26	151.41	9.019		
16.350.00	11,964.00	16,019.94	11,768.00	77.42	76.71	-81.66	-4,441.20	1,336.21	1,365.73	1,213.11	152.62	8.948		
10,000.00	11,504.00	10,010.04	11,730.00	77.42	70.71	-01.00	-7,741,2V	1,000.21	1,303.13	1,613.11	132.02	3.540		

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site: Site Error:

Sec 27-T25S-R31E

Reference Well:

0.00 ft

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft

Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

RKB @ 3359.80ft RKB @ 3359.80ft

Grid

TVD Reference: MD Reference:

North Reference:

Offset TVD Reference:

Survey Calculation Method:

Output errors are at

Database:

Minimum Curvature 2.00 sigma

EDM r5000.141_Prod US

Well Lusitano 27-34 Fed Com 733H

Offset Datum

	sign 0-M	WD+HDGM	T25S-R31										Officet Well Consu	0.50
rvey Prog Refer		Offs:	et	Semi Major	Axis				Dista	ince			Offset Well Error:	0.50
easured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellborn		Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Toolface (°)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
16,400.00	11,964.00	16,069.94	11,768.00	78.03	77.32	-81.66	-4,491.20	1,336.35	1,365.79	1,211.96	153.83	8.878		
6,450.00	11,964.00	16,119.94	11,768.00	78.64	77.93	-81.66	-4,541.20	1,336.48	1,365.86	1,210.80	155.05	8.809		
16,500.00	11,964.00	16,169.94	11,768.00	79.25	78.55	-81.67	-4,591.20	1,336.62	1,365.92	1,209.65	156.27	8.741		
16,550.00	11,964.00	16,219.94	11,768.00	79.86	79.17	-81.67	-4,641.20	1,336.76	1,365.98	1,208.48	157.49	8.673		
16,600.00	11,964.00	16,269.94	11,768.00	80.48	79.79	-81.67	-4,691.20	1,336.89	1,366.04	1,207.31	158.72	8.607		
16,650.00	11,964.00	16,319.94	11,768.00	81.10	80.41	-81.67	-4,741.20	1,337.03	1,366.10	1,206.14	159.95	8.541		
16,700.00	11,964.00	16,369.94	11,768.00	81.72	81.03	-81.67	-4,791.20	1,337.16	1,366.16	1,204.97	161.19	8.476		
16,750.00	11,964.00	16,419.94	11,768.00	82.34	81.65	-81.67	-4,841.20	1,337.30	1,366.22	1,203.79	162.42	8.411		
16,800.00	11,964.00	16,469.94	11,768.00	82.96	82.28	-81.67	-4,891.20	1,337.43	1,366.28	1,202.61	163.66	8.348		
16,850.00	11,964.00	16,519.94	11,768.00	83.59	82.91	-81.67	-4,941.20	1,337.57	1,366.34	1,201.43	164.91	8.285		
16,900.00	11,964.00	16,569.94	11,768.00	84.22	83.54	-81.67	-4,991.20	1,337.70	1,366.40	1,200.24	166.16	8.224		
16,950.00	11,964.00	16,619.94	11,768.00	84.85	84.17	-81.67	-5,041.20	1,337.84	1,366.46	1,199.05	167.41	8.162		
17,000.00	11,964.00	16,669.94	11,768.00	85.48	84.80	-81.67	-5.091.20	1,337.98	1,366.52	1,197.86	168.66	8.102		
17,050.00	11,964.00	16,719.94	11,768.00	86.11	85.43	-81.67	-5,141.20	1,338.11	1,366.58	1,196.66	169.92	8.043		
17,100.00	11,964.00	16,769.94	11,768.00	86.74	86.07	-81.67	-5,191.20	1,338.25	1,366.64	1,195.46	171.18	7.984		
17,150.00	11,964.00	16,819.94	11,768.00	87.38	86.71	-81.67	-5,241.20	1,338.38	1,366.70	1,194.26	172.44	7.926		
17,200.00	11,964.00	16,869.94	11,768.00	88.01	87.34	-81.67	-5,291.20	1,338.52	1,366.76	1,193.05	173.71	7.868		
17,250.00	11,964.00	16,919.94	11,768.00	88.65	87.98	-81.67	-5,341.20	1,338.65	1,366.82	1,191.84	174.98	7.811		
17,300.00	11,964.00	16,969.94	11,768.00	89.29	88.63	-81.67	-5,391.20	1,338.79	1,366.88	1,190.63	176.25	7.756		
17,350.00	11,964.00	17,019.94	11,768.00	89.93	89.27	-81.67	-5,441.20	1,338.92	1,366.94	1,189.42	177.52	7.700		
17,400.00		17,069.94	11,768.00	90.57	89.91	-81.67	-5,491.20	1,339.06	1,367.00	1,188.20	178.80	7.646		
17,450.00	11,964.00	17,119.94	11,768.00	91.21	90.56	-81.67	-5,541.20	1,339.19	1,367.06	1,186.98	180.07	7.592		
17,500.00	11,964.00	17,169.94	11,768.00	91.85	91.20	-81.67	-5,591.20	1,339.33	1,367.12	1,185.76	181.36	7.538		
17,550.00	11,964.00	17,219.94	11,768.00	92.50	91.85	-81.67	-5,641.20	1,339.47	1,367.18	1,184.54	182.64	7.486		
17,600.00	11,964.00	17,269.94	11,768.00	93.15	92.50	-81.67	-5,691.20	1,339.60	1,367.24	1,183.32	183.92	7.434		
17,650.00	11,964.00	17,319.94	11,768.00	93.79	93.15	-81.67	-5,741.20	1,339.74	1,367.30	1,182.09	185.21	7.382		
17,700.00	11,964.00	17,369.94	11,768.00	94.44	93.80	-81.67	-5,791.20	1,339.87	1,367.36	1,180.86	186.50	7.332		
17,750.00		17,419.94	11,768.00	95.09	94.45	-81.67	-5,841.20	1,340.01	1,367.42	1,179.62	187.80	7.281		
17,800.00	11,964.00	17,469.94	11,768.00	95.74	95.10	-81.67	-5,891.19	1,340.14	1,367.48	1,178.39	189.09	7.232		
17,850.00	11,964.00	17,519.94	11,768.00	96.40	95.76	-81.68	-5,941.19	1,340.28	1,367.54	1,177.15	190.39	7.183		
17,900.00	11,964.00	17,569.94	11,768.00	97.05	96.41	-81.68	-5,991.19	1,340.41	1,367.60	1,175.91	191.69	7.135		
17,950.00	11,964.00	17,619.94	11,768.00	97.70	97.07	-81.68	-6,041.19	1,340.55	1,367.66	1,174.67	192.99	7.087		
18,000.00	11,964.00	17,669.94	11,768.00	98.36	97.72	-81.68	-6,091.19	1,340.69	1,367.72	1,173.43	194.29	7.040		
18,050.00	11,964.00	17,719.94	11,768.00	99.01	98.38	-81.68	-6,141.19	1,340.82	1,367.78	1,172.18	195.60	6.993		
18,100.00		17,769.94	11,768.00	99.67	99.04	-81.68	-6,191.19	1,340.96	1,367.84	1,170.94	196.90	6.947		
18,150.00	11,964.00	17,819.94	11,768.00	100.33	99.70	-81.68	-6,241.19	1,341.09	1,367.90	1,169.69	198.21	6.901		
18,200.00	11,964.00	17,869.94	11,768.00	100.99	100.36	-81.68	-6,291.19	1,341.23	1,367.96	1,168.44	199.52	6.856		
18,250.00	11,964.00	17,919.94	11,768.00	101.65	101.02	-81.68	-6,341.19	1,341.36	1,368.02	1,167.19	200.84	6.812		
18,300.00		17,969.94	11,768.00	102.31	101.69	-81.68	-6,391.19	1,341.50	1,368.08	1,165.93	202.15	6.768		
18,350.00		18,019.94	11,768.00	102.97	102.35	-81.68	-6,441.19	1,341.63	1,368.14	1,164.68	203.47	6.724		
18,400.00	11,964.00	18,069.94	11,768.00	103.63	103.02	-81.68	-6,491.19	1,341.77	1,368.20	1,163.42	204.78	6.681		
18,450.00	11,964.00	18,119.94	11,768.00	104.30	103.68	-81.68	-6,541.19	1,341.90	1,368.26	1,162.16	206.10	6.639		
18,500.00	11,964.00	18,169.94	11,768.00	104.96	104.35	-81.68	-6,591.19	1,342.04	1,368.32	1,160.90	207.42	6.597		
18,550.00	11,964.00	18,219.94	11,768.00	105.62	105.01	-81.68	-6,641.19	1,342.18	1,368.38	1,159.64	208.75	6.555		
18,600.00	11,964.00	18,269.94	11,768.00	106.29	105.68	-81.68	-6,691,19	1,342.31	1,368.44	1,158.37	210.07	6.514		
18,650.00		18,319.94	11,768.00	106.96	106.35	-81.68	-6,741.19	1,342.45	1,368.50	1,157.11	211.40	6.474		
10 700 00	11 004 00	10 200 0 1	11 700 00	407.60	107.00	94.60	6 704 40	1 242 50	(200 50	1 155 04	242.72	£ 432		
18,700.00	11,964.00	18,369.94	11,768.00	107.62	107.02	-81.68 91.68	-6.791.19 6.841.19	1,342.58	1,368.56	1,155.84	212.73	6.433		
18,750.00		18,419.94	11,768.00	108.29	107.69	-81.68 -81.68	-6,841.19 -6,891.19	1,342.72 1,342.85	1,368.63 1,368.69	1,154.57 1,153.30	214.05 215.38	6.394 6.355		
18,800.00 18,850.00	11,964.00 11,964.00	18,469.94 18,519.94	11,768.00 11,768.00	108.96 109.63	108.36 109.03	-81.68 -81.68	-6,941.19 -6,941.19	1,342.85	1,368.75	1,152.03	216.72	6.316		
18,900.00	11,964.00	18,569.94	11,768.00	110.30	109.03	-81.68	-6,991.19 -6,991.19	1,342.99	1,368.81	1,152.03	218.05	6.277		
3,230.00	,5050	. 5,500.04					-,	.,	,	,,==				
18,950.00	11,964.00	18,619.94	11,768.00	110.97	110.38	-81.68	-7,041.19	1,343.26	1,368.87	1,149.48	219.38	6.240		

Company: WCDSC Permian NM

Project: Eddy County (NAD 83 NM Eastern)

Reference Site: Sec 27-T25S-R31E

Site Error: 0.00 ft

Reference Well:

Well Error: 0.50 ft

Reference Wellbore Reference Design:

Lusitano 27-34 Fed Com 733H

Wellbore #1 Permit Plan 1 Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft RKB @ 3359.80ft MD Reference:

Grid North Reference:

Minimum Curvature **Survey Calculation Method:**

2.00 sigma Output errors are at

EDM r5000.141_Prod US Database:

Offset TVD Reference: Offset Datum

Offset De	_		-T25S-R31	IE - Lusitan	0 27-34	Fed Com 624	H - Wellbore	#1 - Permit	Plan 2				Offset Site Error:	0.00 f
Survey Prog		WD+HDGM											Offset Well Error:	0.50 f
Refer		Offs		Semi Major					Dista					
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbon	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	(ft)	(ft)	(ft)	(ft)	(ft)			
19,000.00	11,964.00	18,669.94	11,768.00	111,64	111.05	-81.68	-7,091.19	1,343.40	1,368.93	1,148.21	220.72	6.202		
19,050.00	11,964.00	18,719.94	11,768.00	112.32	111.72	-81.68	-7,141.19	1,343.53	1,368.99	1,146.93	222.06	6.165		
19,100.00	11,964.00	18,769.94	11,768.00	112.99	112.40	-81.68	-7,191.19	1,343.67	1,369.05	1,145.65	223.40	6.128		
19,150.00	11,964.00	18,819.94	11,768.00	113.66	113.07	-81.68	-7,241.19	1,343.80	1,369.11	1,144.37	224,74	6.092		
19,200.00	11,964.00	18,869.94	11,768.00	114.34	113.75	-81.69	-7,291.19	1,343.94	1,369.17	1,143.09	226.08	6.056		
19,250.00	11,964.00	18,919.94	11,768.00	115.01	114.43	-81.69	-7,341.19	1,344.07	1,369.23	1,141.81	227.42	6.021		
10 200 00	11 064 00	10 000 04	11 769 00	115.60	115 10	01.60	7 201 10	1 244 21	1 200 20	1 140 52	220 70	E 000		
19,300.00 19,350.00	11,964.00 11,964.00	18,969.94 19,019.94	11,768.00 11,768.00	115.69 116.37	115.10 115.78	-81.69 -81.69	-7,391.19 -7,441.19	1,344.21 1,344.34	1,369.29 1,369.35	1,140.52 1,139.24	228.76 230.11	5.986 5.951		
19,400.00	11,964.00	19,069.94	11,768.00	117.04	116.46	-81.69	-7,491.19	1,344.48	1,369.41	1,137.95	231.45	5.917		
19,450.00		19,119.94	11,768.00	117.72	117.14	-81.69	-7,541.19	1,344.62	1,369.47	1,136.67	232.80	5.883		
19,500.00		19,169.94	11,768.00	118.40	117.82	-81.69	-7,591.19	1,344.75	1,369.53	1,135.38	234.15	5.849		
.0,000.00	,	15,145.51	,			000	7,001.10	1,511.10	1,000.00	1,100.00	204.10	0.040		
19,550.00	11,964.00	19,219.94	11,768.00	119.08	118.50	-81.69	-7,641.19	1,344.89	1,369.59	1,134.09	235.50	5.816		
19,600.00	11,964.00	19,269.94	11,768.00	119.76	119.18	-81.69	-7,691.19	1,345.02	1,369.65	1,132.80	236.85	5.783		
19,650.00	11,964.00	19,319.94	11,768.00	120.44	119.86	-81.69	-7,741.19	1,345.16	1,369.71	1,131.51	238.20	5.750		
19,700.00	11,964.00	19,369.94	11,768.00	121.12	120.54	-81.69	-7,791.19	1,345.29	1,369.77	1,130.21	239.56	5.718		
19,750.00	11,964.00	19,419.94	11,768.00	121.80	121.23	-81.69	-7,841.19	1,345.43	1,369.83	1,128.92	240.91	5.686		
19,800.00	11,964.00	19,469.94	11,768.00	122,48	121.91	-81.69	-7,891.19	1,345.56	1,369.89	1,127.63	242.26	5.655		
19,850.00	11,964.00	19,519.94	11,768.00	123.16	122.59	-81.69	-7,941.19	1,345.70	1,369.95	1,126.33	242.20	5.623		
19,900.00	11,964.00	19,569.94	11,768.00	123.84	123.28	-81.69	-7,991.19	1,345.83	1,370.01	1,125.03	244.98	5.592		
19,950.00	11,964.00	19,619.94	11,768.00	124.53	123.96	-81.69	-8,041.19	1,345.97	1,370.07	1,123.74	246.33	5.562		
20,000.00		19,669.94	11,768.00	125.21	124.65	-81.69	-8,091.19	1,346.11	1,370,13	1,122.44	247.69	5.532		
	,	,					0,000	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.,	.,		0.002		
20,050.00	11,964.00	19,719.94	11,768.00	125.89	125.33	-81.69	-8,141.18	1,346.24	1,370.19	1,121.14	249.05	5.502		
20,100.00	11,964.00	19,769.94	11,768.00	126.58	126.02	-81.69	-8,191.18	1,346.38	1,370.25	1,119.84	250.41	5.472		
20,150.00	11,964.00	19,819.94	11,768.00	127.26	126.70	-81.69	-8,241.18	1,346.51	1,370.31	1,118.54	251.78	5.443		
20,200.00	11,964.00	19,869.94	11,768.00	127.95	127.39	-81.69	-8,291.18	1,346.65	1,370.37	1,117.23	253.14	5.414		
20,250.00	11,964.00	19,919.94	11,768.00	128.63	128.08	-81.69	-8,341.18	1,346.78	1,370.43	1,115.93	254.50	5.385		
20,300.00	11,964.00	19,969.94	11,768.00	129.32	128.76	-81.69	-8,391.18	1,346.92	1,370.49	1,114.63	255.87	5.356		
20,350.00	11,964.00	20,019.94	11,768.00	130.01	129.45	-81.69	-8,441.18	1,347.05	1,370.55	1,113.32	257.23	5.328		
20,400.00	11,964.00	20,069.94	11,768.00	130.69	130.14	-81.69	-8,491.18	1,347.19	1,370.61	1,112.02	258.60	5.300		
20,450.00	11,964.00	20,119.94	11,768.00	131.38	130.83	-81.69	-8,541.18	1,347.33	1,370.67	1,110.71	259.96	5.273		
20,500.00	11,964.00	20,169.94	11,768.00	132.07	131.52	-81.69	-8,591.18	1,347.46	1,370.73	1,109.40	261.33	5.245		
							·							
20,550.00	11,964.00	20,219.94	11,768.00	132.76	132.21	-81.69	-8,641.18	1,347.60	1,370.79	1,108.09	262.70	5.218		
20,600.00	11,964.00	20,269.94	11,768.00	133.45	132.90	-81.70	-8,691.18	1,347.73	1,370.85	1,106.78	264.07	5.191		
20,650.00	11,964.00	20,319.94	11,768.00	134.13	133.59	-81.70	-8,741.18	1,347.87	1,370.91	1,105.47	265.44	5.165		
20,700.00	11,964.00	20,369.94	11,768.00	134.82	134.28	-81.70	-8,791.18	1,348.00	1,370.97	1,104.16	266.81	5.138		
20,750.00	11,964.00	20,419.94	11,768.00	135.51	134.97	-81.70	-8,841.18	1,348.14	1,371.03	1,102.85	268.18	5,112		
20,800.00	11,964.00	20,469.94	11,768.00	136.20	135.66	-81.70	-8,891.18	1,348.27	1,371.09	1,101.54	269.55	5.087		
20,850.00	11,964.00	20,519.94	11,768.00	136.90	136.35	-81.70	-8,941.18	1,348.41	1,371.15	1,100.23	270.93	5.061		
20,900.00	11,964.00	20,569.94	11,768.00	137.59	137.05	-81.70	-8,991.18	1,348.55	1,371.21	1,098.91	272.30	5.036		
20,950.00	11,964.00	20,619.94	11,768.00	138.28	137.74	-81.70	-9,041.18	1,348.68	1,371.27	1,097.60	273.68	5.011		
21,000.00	11,964.00	20,669.94	11,768.00	138.97	138.43	-81.70	-9,091.18	1,348.82	1,371.33	1,096.28	275.05	4.986 AI	lert	
				,		<u>.</u>								
21,050.00	11,964.00	20,719.94	11,768.00	139.66	139.13	-81.70	-9,141.18	1,348.95	1,371.40	1,094.97	276.43	4.961 A		
21,100.00	11,964.00	20,769.94	11,768.00	140.35	139.82	-81.70	-9,191.18	1,349.09	1,371.46	1.093.65	277.80	4.937 A		
21,150.00	11,964.00	20,819.94	11,768.00	141.05	140.51	-81.70	-9,241.18	1,349.22	1,371.52	1,092.34	279.18	4.913 A		
21,200.00	11,964.00	20,869.94	11,768.00	141,74	141.21	-81.70 91.70	-9,291.18	1,349.36	1,371.58	1,091.02	280.56	4.889 AI		
21,250.00	11,964.00	20,919.94	11,768.00	142.43	141.90	-81.70	-9,341.18	1,349.49	1,371.64	1,089.70	281.94	4.865 A	en	
21,300.00	11,964.00	20,969.94	11,768.00	143.13	142.60	-81.70	-9,391.18	1,349.63	1,371.70	1,088.38	283.32	4.842 A	lert	
21,350.00	11,964.00	21,019.94	11,768.00	143.82	143.29	-81.70	-9,441.18	1,349.76	1,371.76	1,087.06	284.70	4.818 A		
21,400.00	11,964.00	21,069.94	11,768.00	144.52	143.99	-81.70	-9,491.18	1,349.90	1,371.82	1,085.74	286.08	4.795 A		
21,450.00	11,964.00	21,119.94	11,768.00	145.21	144.69	-81.70	-9,541.18	1,350.04	1,371.88	1,084.42	287.46	4.772 A		
21,500.00	11,964.00	21,169.94	11,768.00	145.91	145.38	-81.70	-9,591.18	1,350.17	1,371.94	1,083.10	288.84	4.750 A		
							•							
21,550.00	11,964.00	21,219.94	11,768.00	146.60	146.08	-81.70	-9,641.18	1,350.31	1,372.00	1,081.78	290.22	4.727 A	lert	

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 733H

Well Error: 0.50 ft
Reference Wellbore Wellbore #1

Reference Wellbore Wellbore #1
Reference Design: Permit Plan 1

Local Co-ordinate Reference:

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

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 De: Survey Prog	•	WD+HDGM	1200-001	E - Lusitan	0 21-34 1	eu Com oz	4H - Wellbore	#I-rellill	riali Z				Offset Site Error: Offset Well Error:	0.00 f 0.50 f
Refer		Offs	et	Semi Major	Axis				Dista	ince			Oliset Well Effor:	0.501
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbor +N/-S (ft)	e Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
21,600.00	11,964.00	21,269.94	11,768.00	147.30	146.78	-81.70	-9,691.18	1,350.44	1,372.06	1,080.45	291.60	4.705 Alert		
21,650.00	11,964.00	21,319.94	11,768.00	147.99	147.47	-81.70	-9,741.18	1,350.58	1,372.12	1,079.13	292.99	4.683 Alert		
21,700.00	11,964.00	21,369.94	11,768.00	148.69	148.17	-81.70	-9,791.18	1,350.71	1,372.18	1,077.81	294.37	4.661 Alert		
21,750.00	11,964.00	21,419.94	11,768.00	149.39	148.87	-81.70	-9,841.18	1,350.85	1,372.24	1,076.48	295.76	4.640 Alert		
21,800.00	11,964.00	21,469.94	11,768.00	150.08	149.57	-81.70	-9,891.18	1,350.98	1,372.30	1,075.16	297.14	4.618 Alert		
21,850.00	11,964.00	21,519.94	11,768.00	150.78	150.26	-81.70	-9,941.18	1,351.12	1,372.36	1,073.83	298.53	4.597 Alert		
21,900.00	11,964.00	21,569.94	11,768.00	151.48	150.96	-81.70	-9,991.18	1,351.26	1,372.42	1,072.51	299.91	4.576 Alert		
21,950.00	11,964.00	21,619.94	11,768.00	152.17	151.66	-81.71	-10,041.18	1,351.39	1,372.48	1,071.18	301.30	4.555 Alert		
22,000.00	11,964.00	21,669.94	11,768.00	152.87	152.36	-81.71	-10,091.18	1,351.53	1,372.54	1,069.85	302.69	4.535 Alert		
22,050.00	11,964.00	21,719.94	11,768.00	153.57	153.06	-81.71	-10,141.18	1,351.66	1,372.60	1,068.52	304.08	4.514 Alert		
22,100.00	11,964.00	21,769.94	11,768.00	154.27	153.76	-81.71	-10,191.18	1,351.80	1,372.66	1,067.20	305.46	4.494 Alert		
22,150.00	11,964.00	21,819.94	11,768.00	154.97	154.46	-81.71	-10,241.18	1,351.93	1,372.72	1,065.87	306.85	4.474 Alert		
22,200.00	11,964.00	21,869.94	11,768.00	155.67	155.16	-81.71	-10,291.18	1,352.07	1,372.78	1,064.54	308.24	4.454 Alert		
22,241.76	11,964.00	21,911.70	11,768.00	156.25	155.74	-81.71	-10,332.94	1,352.18	1,372.83	1,063.43	309.40	4.437 Alert	ES, SF	

WCDSC Permian NM Company:

Eddy County (NAD 83 NM Eastern) Project:

Sec 27-T25S-R31E Reference Site:

0.00 ft Site Error:

Lusitano 27-34 Fed Com 733H Reference Well: 0.50 ft

Well Error: Reference Wellbore Wellbore #1

Reference Design: Permit Plan 1 Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H RKB @ 3359.80ft

TVD Reference: RKB @ 3359.80ft MD Reference:

Grid North Reference:

Minimum Curvature **Survey Calculation Method:**

2.00 sigma Output errors are at

EDM r5000.141_Prod US Database:

Offset TVD Reference: Offset Datum

Offset Des	sian	Sec 27-	T25S-R31	E - Lusitan	o 27-34 F	ed Com 73	4H - Wellbore	#1 - Permit	Plan 1				Offset Site Error:	0.00 ft
Survey Progr	_	WD+HDGM											Offset Well Error:	0.50 ft
Refere		Offs		Semi Major					Dista					
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellborn	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	(ft)	(ft)	(ft)	(ft)	(ft)			
8,300.00	8,298.61	8,402.87	8,388.37	29.55	29.92	96.91	124.30	1,480.45	1,498.00	1,438.79	59.21	25.301		
8,350.00	8,348.59	8,447.05	8,438.19	29.72	30.08	96.90	125.64	1,477.52	1,495.19	1,435.65	59.55	25.110		
8,400.00	8,398.58	8,503.03	8,488.00	29.90	30.28	96.89	126.97	1,474.59	1,492.39	1,432.46	59.93	24.904		
8,450.00	8,448.57	8,546.89	8,537.82	30.08	30.44	96.88	128.31	1,471.66	1,489.58	1,429.32	60.26	24.718		
8,500.00 8,550.00	8,498.56 8,548.55	8,596.81 8,646.73	8,587.64 8,637.45	30.26 30.44	30.63 30.81	96.87 96.86	129.64 130.98	1,468.72 1,465.79	1,486.77 1,483.97	1,426.15 1,422.99	60.62 60.98	24.526 24.336		
6,550.00	0,040.33	0,040.73	0,037.43	30,44	30.01	90.00	130.96	1,405.78	1,403.51	1,422.00	60.56	24.330		
8,600.00	8,598.53	8,703.35	8,687.27	30.62	31.01	96.86	132.32	1,462.86	1,481.16	1,419.80	61.36	24.139		
8,650.00	8,648.52	8,746.57	8,737.08	30.80	31.17	96.85	133.65	1,459.93	1,478.35	1,416.66	61.70	23.962		
8,700.00	8,698.51	8,803.51	8,786.90	30.98	31.38	96.84	134.99	1,456.99	1,475.54	1,413.47	62.08	23.769		
8,750.00 8,800.00	8,748.50 8,798.48	8,846.41 8,896.33	8,836.72 8,886.53	31.16 31.34	31.53 31.72	96.83 96.82	136.33 137.66	1,454.06 1,451.13	1,472.74 1,469.93	1,410.33 1,407.16	62.41 62.77	23.597 23.418		
0,000.00	0,780.40	0,030.33	0,000.55	31.34	31.72	30.02	137.00	1,431.13	1,405.55	1,407.10	02.77	23.410		
8,850.00	8,848.47	8,946.25	8,936.35	31.52	31.90	96.81	139.00	1,448.20	1,467.12	1,403.99	63.13	23.240		
8,900.00	8,898.46	9,003.83	8,986.17	31.70	32.11	96.80	140.33	1,445.27	1,464.32	1,400.80	63.51	23.055		
8,950.00	8,948.45	9,046.10	9,035.98	31.88	32.26	96.79	141.67	1,442.33	1,461.51	1,397.66	63.85	22.891		
9,000.00	8,998.44 9,048.42	9,096.02 9,145.94	9,085.80 9,135.62	32.06 32.24	32.44 32.63	96.78 06.77	143.01	1,439.40	1,458.70 1,455.90	1,394.50	64.20	22.720 22.550		
9,050.00	8,040.42	5, 140.54	5,133.02	32.24	32.03	96.77	144.34	1,436.47	1,433.80	1,391.33	64.56	22.550		
9,100.00	9,098.41	9,204,14	9,185.43	32.42	32.84	96.76	145.68	1,433.54	1,453.09	1,388.14	64.95	22.372		
9,150.00	9,148.40	9,245.78	9,235.25	32.60	32.99	96.75	147.01	1,430.60	1,450.28	1,385.00	65.28	22.217		
9,200.00	9,198.39	9,304.30	9,285.07	32.78	33.20	96.74	148.35	1,427.67	1,447.48	1,381.81	65.67	22.042		
9,250.00	9,248.38	9,345.62	9,334.88	32.95	33.36	96.73	149.69	1,424.74	1,444.67	1,378.67	66.00	21.890		
9,300.00	9,298.36	9,404.46	9,384.70	33.13	33.57	96.72	151.02	1,421.81	1,441.86	1,375.48	68.39	21.719		
9,350.00	9,348.35	9,445.46	9,434.51	33.31	33.72	96.71	152.36	1,418.87	1,439.06	1,372.34	66.71	21.571		
9,400.00	9,398.34	9,504.62	9,484.33	33.49	33.94	96.70	153.69	1,415.94	1,436.25	1,369.14	67.11	21.403		
9,450.00	9,448.33	9,545.30	9,534.15	33.67	34.08	96.69	155.03	1,413.01	1,433.44	1,366.01	67.43	21.258		
9,500.00	9,498.31	9,604.78	9,583.96	33.85	34.30	96.68	156.37	1,410.08	1,430.64	1,362.81	67.82	21.093		
9,550.00	9,548.30	9,645.14	9,633.78	34.03	34.45	96.67	157.70	1,407.15	1,427.83	1,359.68	68.15	20.952		
9,600.00	9,598.29	9,704.94	9,683.60	34.21	34.67	96.66	159.04	1,404.21	1,425.02	1,356.48	68.54	20.790		
9,650.00	9,648.28	9,744.98	9,733.41	34.39	34.81	96.65	160.38	1,401.28	1,422.22	1,353.35	68.87	20.652		
9,700.00	9,698.27	9,805.10	9,783.23	34.57	35.03	96.64	161.71	1,398.35	1,419.41	1,350.15	69.26	20.494		
9,750.00	9,748.25	9,844.82	9,833.05	34.75	35.18	96.63	163.05	1,395.42	1,416.60	1,347.02	69.58	20.359		
9,800.00	9,798.24	9,905.26	9,882.86	34.93	35.40	96.62	164.38	1,392.48	1,413.80	1,343.82	69.98	20.203		
9,850.00	9,848.23	9,944.67	9,932.68	35.11	35.54	96.61	165.72	1,389.55	1,410.99	1,340.69	70.30	20.071		
9,900.00	9,898.22	10,005.41	9,982.50	35.29	35.76	96.60	167.06	1,386.62	1,408.19	1,337.49	70.70	19.918		
9,950.00	9,948.20	10,044.51	10,032.31	35.47	35.91	96.59	168.39	1,383.69	1,405.38	1,334.36	71.02	19.789		
10,000.00	9,998.19 10,048.18	10,105.57	10,082.13 10,131.95	35.65	36.13	96.58	169.73	1,380.75	1,402.57	1,331.16	71.42	19.639		
10,050.00	10,046.16	10,144.35	10,131.83	35.83	36.27	96.57	171.06	1,377.82	1,399.77	1,328.03	71.74	19.513		
10,100.00	10,098.17	10,205.73	10,181.76	36.01	36.50	96.56	172.40	1,374.89	1,396.96	1,324.83	72.14	19.366		
10,150.00	10,148.16	10,244.19	10,231.58	36.18	36.64	96.55	173.74	1,371.96	1,394.16	1,321.70	72.45	19.242		
10,200.00	10,198.14	10,305.89	10,281.39	36.36	36.86	96.54	175.07	1,369.03	1,391.35	1,318.50	72.85	19.098		
10,250.00	10,248.13	10,344.03	10,331.21	36.54	37.00	96.53	176.41	1,366.09	1,388.54	1,315.37	73.17	18.977		
10,300.00	10,298.12	10,406.05	10,381.03	36.72	37.23	96.52	177.75	1,363.16	1,385.74	1,312.17	73.57	18.835		1
10,350.00	10,348.11	10,443.87	10,430.84	36.90	37.37	96.51	179.08	1,360.23	1,382.93	1,309.04	73.89	18.716		
10,400.00	10,398.09	10,506.21	10,480.66	37.08	37.60	96.50	180.42	1,357.30	1,380.13	1,305.84	74.29	18.577		
10,450.00	10,448.08	10,543.71	10,530.48	37.26	37.73	96.49	181.75	1,354.36	1,377.32	1,302.72	74.61	18.461		
10,500.00	10,498.07	10,606.37	10,580.29	37.44	37.96	96.48	183.09	1,351.43	1,374.52	1,299.51	75.01	18.324		
10,550.00	10,548.06	10,643.55	10,630.11	37.62	38.10	96.46	184.43	1,348.50	1,371.71	1,296.39	75.32	18.211		
10,600.00	10,598.05	10,706.53	10,679.93	37.80	38.33	96.45	185.76	1,345.57	1,368.91	1,293.18	75.73	18.076		
10,650.00	10,648.03	10,743.39	10,729.74	37.98	38.46	96.44	187.10	1,342.63	1,366.10	1,290.06	76.04	17.965		
10,700.00	10,698.02	10,806.69	10,779.56	38.16	38.69	96.43	188.43	1,339.70	1,363.29	1,286.85	76.45	17.833		j
10,750.00	10,748.01	10,843.24	10,829.38	38.34	38.83	96.42	189.77	1,336.77	1,360.49	1,283.73	76.76	17,724		
10,800.00	10,798.00	10,893.16	10,879.19	38.52	39.01	96.41	191.11	1,333.84	1,357.68	1,280.57	77.12	17.605		
10,850.00	10,847.99	10,941.47	10,927.41	38.70	39.19	96.40	192.40	1,331.00	1,354.88	1,277.41	77.48	17.488		

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 733H

Well Error: 0.50 ft

Reference Wellbore Wellbore #1 Permit Plan 1 Reference Design:

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

EDM r5000.141_Prod US Database:

Offset TVD Reference: Offset Datum

Offset De	_		-T25S-R3	1E - Lusitan	o 27-34 I	Fed Com 73	4H - Weilbore	#1 - Permit	Plan 1				Offset Site Error:	0.00
urvey Progr Refer		WD+HDGM Offs	et	Semi Major	Axis				Dista	ence			Offset Well Error:	0.50
easured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbo	re Centre	Between	Between	Minimum	Separation	Warning	
Depth (ft)	Depth (ft)	Depth (ft)	Depth (ft)	(ft)	(ft)	Tootface (*)	+N/-S (ft)	+E/-W (ft)	Centres (ft)	Ellipses (ft)	Separation (ft)	Factor		
0,900.00	10,897.97	10,979.26	10,965.13	38.88	39.33	96.39	193.31	1,329.00	1,352.36	1,274.55	77.81	17.381		-
0,950.00	10,947.96	11,017.09	11,002.91	39.06	39.46	96.40	194.07	1,327.33	1,350.29	1,272.15	78.14	17.281		
11,000.00	10,997.95	11,054.93	11,040.73	39.24	39.60	96.38	194.68	1,326.00	1,348.64	1,270.18	78.46	17.189		
11,050.00	11,047.95	11,092.80	11,078.58	39.41	39.73	89.57	195.13	1,325.02	1,347.37	1,268.59	78.78	17.104		
11,100.00	11,097.95	11,130.67	11,116.45	39.59	39.87	89.56	195.42	1,324.37	1,346.52	1,267.43	79.09	17.025		
11,150.00	11,147.95	11,168.56	11,154.34	39.77	40.00	89.55	195.56	1,324.07	1,346.12	1,266.72	79.40	16.954		
11,177.19	11,175.14	11,191.07	11,176.84	39.87	40.08	89.55	195.57	1,324.04	1,346.08	1,266.51	79.57	16.916		
11,200.00	11,197.95	11,213.88	11,199.65	39.95	40.16	89.55	195.57	1,324.04	1,346.08	1,266.35	79.74	16.882		
11,250.00	11,247.95	11,263.88	11,249.65	40.13	40.34	89.55	195.57	1,324.04	1,346.08	1,265.99	80.09	16.807		
11,300.00	11,297.95	11,313.88	11,299.65	40.31	40.51	89.55	195.57	1,324.04	1,346.08	1,265.64	80.45	16.733		
11,350.00	11,347.95	11,363.88	11,349.65	40.49	40.69	89.55	195.57	1,324.04	1,346.08	1,265.28	80.80	16.659 CC		
11,352.89	11,350.84	11,366.77	11,352.54	40.50	40.70	-90.36	195.57	1,324.04	1,346.08	1,265.26	80.82	16.655		
11,400.00	11,397.95	11,413.88	11,399.65	40.67	40.86	-90.37	195.57	1,324.04	1,346.09	1,264.93	81.15	16.587		
11,450.00	11,447.86	11,463.78	11,449.56	40.82	41.04	-90.48	195.57	1,324.04	1,346.11	1,264.62	81.49	16.519		
11,500.00	11,497.33	11,513.26	11,499.03	40.98	41.21	-90.77	195.57	1,324.04	1,346.18	1,264.37	81.82	16.454		
11,550.00	11,546.00	11,563.39	11,549.15	41.13	41.38	-91.21	194.78	1,324.05	1,346.37	1,264.24	82.14	16.392		
11,600.00	11,593.48	11,615.17	11,600.67	41.27	41.55	-91.66	189.73	1,324.06	1,346.66	1,264.21	82.45	16.333		
11,650.00	11,639.43	11,668.06	11,652.59	41.41	41,71	-92.11	179.79	1,324.09	1,347.03	1,264.28	82.75	16.278		
11,700.00	11,683.48	11,722.10	11,704.47	41.54	41.87	-92.54	164.73	1,324.13	1,347.48	1,264.44	83.04	16.226		
11,750.00	11,725.31	11,777.32	11,755.78	41.65	42.02	-92.96	144.38	1,324.18	1,347.99	1,264.67	83.32	16,178		
11,800.00	11,764.60	11,833.73	11,805.92	41.77	42.16	-93.36	118.58	1,324.25	1,348.55	1,264.96	83.59	16.133		
11,850.00	11,801.04	11,891.34	11,854.26	41.88	42.29	-93.73	87.28	1,324.33	1,349.15	1,265.30	83.85	16.091		
11,900.00	11,834.36	11,950.12	11,900.08	42.00	42.41	-94.08	50.50	1,324.43	1,349.75	1,265.66	84.09	16.052		
11,950.00	11,864.31	12,010.03	11,942.66	42.10	42.50	-94.40	8.39	1,324.54	1,350.35	1,266.03	84.32	16.015		
12,000.00	11,890.66	12,070.99	11,981.23	42.21	42.59	-94.68	-38.77	1,324.67	1,350.91	1,266.37	84.54	15.979		
12,050.00	11,913.20	12,132.90	12,015.05	42.32	42.67	-94.91	-90.59	1,324.81	1,351.43	1,266.67	84.76	15.944		
12,100.00	11,931.77	12,195.62	12,043.42	42.42	42.76	-95.11	-146.49	1,324.96	1,351.87	1,266.89	84.98	15.909		
12,150.00	11,946.22	12,258.99	12,065.70	42.52	42.88	-95.25	-205.78	1,325.12	1,352.22	1,267.03	85.20	15.872		
12,200.00	11,956.45	12,322.82	12,081.39	42.62	43.01	-95.34	-267.62	1,325.28	1,352.47	1,267.05	85.42	15.833		
12,250.00	11,962.38	12,386.92	12,090.13	42.73	43.15	-95.37	-331.09	1,325.45	1,352.62	1,266.97	85.65	15.792		
12,300.00	11,964.00	12,447.15	12,092.00	42.82	43.29	-95.36	-391.27	1,325.61	1,352.66	1,266.78	85.88	15.751		
12,350.00	11,964.00	12,502.85	12,092.00	42.94	43.42	-95.36	-441.27	1,325.75	1,352.72	1,266.60	86.12	15.708		
12,400.00	11,964.00	12,547.15	12,092.00	43.05	43.54	-95.36	-491.27	1,325.88	1,352.78	1,266.44	86.34	15.668		
12,450.00	11,964.00	12,602.85	12,092.00	43.19	43.69	-95.36	-541.27	1,326.01	1,352.84	1,266.21	86.62	15.617		
12,500.00	11,964.00	12,647.15	12,092.00	43.32	43.83	-95.38	-591.27	1,326.15	1,352.90	1,266.00	86.90	15.569		
12,550.00	11,964.00	12,702.85	12,092.00	43.48	44.01	-95.36	-641.27	1,326.28	1,352.95	1,265.73	87.23	15.511		
12,600.00	11,964.00	12,747.15	12,092.00	43.64	44.16	-95.36	-691.27	1,326.41	1,353.01	1,265.47	87.54	15.456		
12,650.00	11,964.00	12,802.85	12,092.00	43.82	44.36	-95.36	-741.27	1,326.55	1,353.07	1,265.15	87.92	15.390		
12,700.00	11,964.00	12,847.15	12,092.00	44.00	44.54	-95.36	-791.27	1,326.68	1,353.13	1,264.85	88.28	15.328		
12,750.00	11,964.00		12,092.00	44.21	44.76	-95.36	-841.27	1,326.81	1,353.19	1,264.49	88.70	15.255		
12,800.00	11,964.00	12,947.15	12,092.00	44.41	44.96	-95.36	-891.27	1,326.95	1,353.25	1,264.15	89.10	15.188		
12,850.00	11,964.00	13,002.85	12,092.00	44.64	45.20	-95.36	-941.27	1,327.08	1,353.31	1,263.73	89.57	15.108		
12,900.00	11,964.00	13,047.15	12,092.00	44.87	45.42	-95.35	-991.27	1,327.22	1,353.36	1,263.35	90.01	15.035		
12,950.00	11,964.00	13,102.85	12,092.00	45.11	45.69	-95.35	-1,041.27	1,327.35	1,353.42	1,262.90	90.53	14.950		
13,000.00	11,964.00	13,147.15	12,092.00	45.36	45.92	-95.35	-1,091.27	1,327.48	1,353.48	1,262.48	91.00	14.873		
13,050.00	11,964.00	13,202.85	12,092.00	45.63	46.21	-95.35	-1,141.27	1,327.62	1,353.54	1,261.98	91.56	14.783		
13,100.00	11,964.00	13,247.15	12,092.00	45.90	46.46	-95.35	-1,191.27	1,327.75	1,353.60	1,261.52	92.08	14.700		
13,150.00	11,964.00	13,302.85	12,092.00	46.18	46.46	-95.35 -95.35	-1,191.27 -1,241.27	1,327.75	1,353.66	1,260.98	92.08	14.700		
13,200.00	11,964.00	13,347.15	12,092.00	46.47	47.04	-95.35 -95.35	-1,291.26	1,327.88	1,353.72	1,260.49	93.23	14.520		
13,250.00	11,964.00	13,402.85	12,092.00	46.78	47.37	-95.35	-1,341.26	1,328.15	1,353.72	1,259.91	93.87	14.520		
13,300.00	11,964.00	13,447.15	12,092.00	47.08	47.65	-95.35	-1,391.26	1,328.18	1,353.76	1,259.38	94.46	14.333		
13,350.00	11,964.00	13,497.15	12,092.00	47.41	47.97	-95.35	-1,441.26	1,328.42	1,353.89	1,258.80	95.10	14.237		

Company:

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error: Reference Well: 0.00 ft

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft

Permit Plan 1

Wellbore #1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

TVD Reference: MD Reference:

RKB @ 3359.80ft RKB @ 3359.80ft

North Reference:

Grid

Survey Calculation Method:

Minimum Curvature

Output errors are at

2.00 sigma

Database:

EDM r5000.141_Prod US

Offset TVD Reference:

Offset Datum

Offset De	sign	Sec 27-	-125S-R31	L - Lusitan	io 27-34 l	ed Com 73	4H - Wellbore	#1 - Permi	Plan 1				Offset Site Error:	0.00 f
Survey Prog	ram: 0-M	WD+HDGM											Offset Well Error:	0.50 f
Refer	ence	Offs	et	Semi Major	Axis				Dista	ince				
Measured	Vertical	Measured	Vertical	Reference	Offset	Highside	Offset Wellbor	e Centre	Between	Between	Minimum	Separation	Warning	
Depth	Depth	Depth	Depth			Toolface	+N/-S	+E/-W	Centres	Ellipses	Separation	Factor	•	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(*)	(ft)	(ft)	(ft)	(ft)	(ft)			
13,400.00	11,964.00	13,547.15	12,092.00	47.73	48.30	-95.35	-1,491.26	1,328.55	1,353.95	1,258.20	95.76	14.140		
13,450.00	11,964.00	13,602.85	12,092.00	48.07	48.68	-95.35	-1,541.26	1,328.69	1,354.01	1,257.54	96.47	14.036		
13,500.00	11,964.00	13,647.15	12,092.00	48.42	48.99	-95.35	-1,591.26	1,328.82	1,354.07	1,256.95	97.12	13.942		
13,550.00	11,964.00	13,702.85	12,092.00	48.77	49.38	-95.35	-1,641.26	1,328.95	1,354.13	1,256.26	97.87	13.836		
13,600.00	11,964.00	13,747.15	12,092.00	49.13	49.71	-95.35	-1,691.26	1,329.09	1,354.19	1,255.63	98.56	13.740		
13,650.00	11,964.00	13,802,85	12,092.00	49.51	50.12	-95.35	-1.741.26	1,329.22	1,354,25	1,254,90	99.34	13.632		

Depth	Depth	Depth	Depth	Reference	Onset	Toolface	Offset Wellbon		Control	Between	Minimum	Separation	Warning
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S	+E/-W	Centres (ft)	Ellipses (ft)	Separation	Factor	
""	11.7	17	1.47	11.7	1.47	17	(ft)	(ft)	1117	(11)	(ft)		
13,400.0	00 11,964.00	13,547.15	12,092.00	47.73	48.30	-95.35	-1,491.26	1,328.55	1,353.95	1,258.20	95.76	14.140	
13,450.0	00 11,964.00	13,602.85	12,092.00	48.07	48.68	-95.35	-1,541.26	1,328.69	1,354.01	1,257.54	96.47	14.036	
13,500.0	00 11,964.00	13,647.15	12,092.00	48.42	48.99	-95.35	-1,591.26	1,328.82	1,354.07	1,256.95	97.12	13.942	
13,550.0	00 11,964.00	13,702.85	12,092.00	48.77	49.38	-95.35	-1,641.26	1,328.95	1,354.13	1,256.26	97.87	13.836	
13,600.0	00 11,964.00	13,747.15	12,092.00	49.13	49.71	-95.35	-1,691.26	1,329.09	1,354.19	1,255.63	98.56	13.740	
13,650.0	00 11,964.00	13,802.85	12,092.00	49.51	50.12	-95.35	-1,741.26	1,329.22	1,354.25	1,254.90	99.34	13.632	
1													
13,700.0	00 11,964.00	13,847.15	12,092.00	49.88	50.46	-95.35	-1,791.26	1,329.35	1,354.30	1,254.25	100.05	13.536	
13,750.6	0 11,964.00	13,902.85	12,092.00	50.27	50.88	-95.35	-1,841.26	1,329.49	1,354.36	1,253.49	100.87	13.427	
13,800.6	00 11,964.00	13,947.15	12,092.00	50.66	51.24	-95.35	-1,891.26	1,329.62	1,354.42	1,252.81	101.61	13.329	·
13,850.0	0 11,964.00	14,002.85	12,092.00	51.07	51.68	-95.35	-1,941.26	1,329.75	1,354.48	1,252.02	102.46	13.220	
13,900.0	0 11,964.00	14,047.15	12,092.00	51.47	52.04	-95.35	-1,991.26	1,329.89	1,354.54	1,251.31	103.23	13.122	
1													
13,950.0	00 11,964.00	14,102.85	12,092.00	51.89	52.50	-95.35	-2,041.26	1,330.02	1,354.60	1,250.49	104.10	13.012	
14,000.0	00 11,964.00	14,147.15	12,092.00	52.31	52.88	-95.35	-2,091.26	1,330.16	1,354.66	1,249.76	104.90	12.914	
14,050.0	00 11,964.00	14,202.85	12,092.00	52.74	53.35	-95.35	-2,141.26	1,330.29	1,354.72	1,248.91	105.80	12.804	
14,100.0	0 11,964.00	14,247.15	12,092.00	53.17	53.74	-95.35	-2,191.26	1,330.42	1,354.77	1,248.15	106.62	12.706	
14,150.0	0 11,964.00	14,302.85	12.092.00	53.62	54.23	-95.35	-2,241.26	1,330.56	1,354.83	1,247.28	107.55	12.597	
									,	,		. = . = .	ļ
14,200.0	0 11,964.00	14,347.15	12,092.00	54.06	54.63	-95.35	-2,291.26	1,330.69	1,354.89	1,246.50	108.40	12.500	i
14,250.0	0 11,964.00	14,402.85	12,092.00	54.52	55.13	-95.35	-2,341.26	1,330.82	1,354.95	1,245.60	109.35	12.391	1
14,300.0	0 11,964.00	14,447.15	12,092.00	54.97	55.54	-95.35	-2,391.26	1,330.96	1,355.01	1,244.79	110.22	12.294	
14,350.0	0 11,964.00	14,502.85	12,092.00	55.44	56.06	-95.35	-2,441.26	1,331.09	1,355.07	1,243.87	111.20	12.186	
14,400.0	0 11,964.00	14,547.15	12,092.00	55.91	56.47	-95.35	-2,491.26	1,331.22	1,355.13	1,243.04	112.08	12.090	
									.,				
14,450.0	00 11,964.00	14,602.85	12,092.00	56.39	57.00	-95.35	-2,541.26	1,331.36	1,355.18	1,242.10	113.09	11.983	
14,500.0	0 11,964.00	14,647.15	12,092.00	56.87	57.43	-95.35	-2,591.26	1,331.49	1,355.24	1,241.25	113.99	11.889	+
14,550.0	0 11,964.00	14,702.85	12,092.00	57.36	57.97	-95.35	-2,641.26	1,331.63	1,355.30	1,240.28	115.02	11.783	
14,600.0	0 11,964.00	14,747.15	12,092.00	57.84	58.41	-95.35	-2,691.26	1,331.76	1,355.36	1,239.42	115.94	11.690	
14,650.0	0 11,964.00	14,802.85	12,092.00	58.34	58.96	-95.35	-2,741.26	1,331.89	1,355.42	1,238.43	116.99	11.586	ì
14,700.0	0 11,964.00	14,847.15	12,092.00	58.84	59.40	-95.35	-2,791.26	1,332.03	1,355.48	1,237.55	117.93	11.494	
14,750.0	0 11,964.00	14,902.85	12,092.00	59.35	59.96	-95.35	-2,841.26	1,332.16	1,355.54	1,236.54	119.00	11.391	
14,800.0	0 11,964.00	14,947.15	12,092.00	59.86	60.41	-95.35	-2,891.26	1,332.29	1,355.60	1,235.64	119.96	11.300	
14,850.0	0 11,964.00	15,002.85	12,092.00	60.38	60.99	-95.35	-2,941.26	1,332.43	1,355.65	1,234.61	121.05	11.200	
14,900.0	0 11,964.00	15,047.15	12,092.00	60.89	61.45	-95.35	-2,991.26	1,332.56	1,355.71	1,233.69	122.02	11.110	
İ													
14,950.0	0 11,964.00	15,102.85	12,092.00	61.42	62.03	-95.35	-3,041.26	1,332.69	1,355.77	1,232.65	123.13	11.011	
15,000.0	0 11,964.00	15,147.15	12,092.00	61.94	62.49	-95.35	-3,091.26	1,332.83	1,355.83	1,231.71	124.12	10.924	
15,050.0	0 11,964.00	15,202.85	12,092.00	62.48	63.08	-95.34	-3,141.26	1,332.96	1,355.89	1,230.65	125.24	10.827	
15,100.0		15,247.15	12,092.00	63.01	63.56	-95.34	-3,191.26	1,333.09	1,355.95	1,229.70	126.24	10.741	1
15,150.0	0 11,964.00	15,302.85	12,092.00	63.55	64.16	-95.34	-3,241.26	1,333.23	1,356.01	1,228.63	127.38	10.645	1
1	_												
15,200.0		15,347.15	12,092.00	64.09	64.64	-95.34	-3,291.26	1,333.36	1,356.07	1,227.66	128.40	10.561	ł
15,250.0		15,402.85	12,092.00	64.64	65.24	-95.34	-3,341.26	1,333.50	1,356.12	1,226.57	129.55	10.468	
15,300.0		15,447.15	12,092.00	65.19	65.73	-95.34	-3,391.26	1,333.63	1,356.18	1,225.60	130.59	10.385	i
15,350.0		15,502.85	12,092.00	65.74	66.35	-95.34	-3,441.26	1,333.76	1,356.24	1,224.49	131.75	10.294	l
15,400.0	0 11,964.00	15,547.15	12,092.00	66.30	66.84	-95.34	-3,491.26	1,333.90	1,356.30	1,223.50	132.80	10.213	I
45 :==													į.
15,450.0		15,602.85	12,092.00	66.86	67.46	-95.34	-3,541.26	1,334.03	1,356.36	1,222.38	133.98	10.124	1
15,500.0	0 11,964.00	15,647.15	12,092.00	67.42	67.96	-95.34	-3,591.26	1,334.16	1,356.42	1,221.38	135.04	10.045	1
15,550.0		15,702.85	12,092.00	67.99	68.59	-95.34	-3,641.25	1,334.30	1,356.48	1,220.24	136.23	9.957	i
15,600.0	0 11,964.00	15,747.15	12,092.00	68.56	69.09	-95.34	-3,691.25	1,334.43	1,356.54	1,219.23	137.30	9.880	i
15,650.0	0 11,964.00	15,802.85	12,092.00	69.13	69.73	-95.34	-3,741.25	1,334.56	1,356.59	1,218.08	138.51	9.794	I
													I
15,700.0		15,847.15		69.71	70.24	-95.34	-3,791.25	1,334.70	1,356.65	1,217.06	139.59	9.719	
15,750.0	0 11,964.00	15,902.85	12,092.00	70.29	70.88	-95.34	-3,841.25	1,334.83	1,356.71	1,215.90	140.81	9.635	I
15,800.0	0 11,964.00	15,947.15	12,092.00	70.87	71.39	-95.34	-3,891.25	1,334.97	1,356.77	1,214.87	141.90	9.561	1
15,850.0	0 11,964.00	16,002.85	12,092.00	71.45	72.04	-95.34	-3,941.25	1,335.10	1,356.83	1,213.70	143.13	9.480	I
15,900.0	0 11,964.00	16,047.15	12,092.00	72.03	72.56	-95.34	-3,991.25	1,335.23	1,356.89	1,212.66	144.23	9.408	1
1 .													I
15,950.0	0 11,964.00	16,102.85	12,092.00	72.62	73.21	-95.34	-4,041.25	1,335.37	1,356.95	1,211.47	145.47	9.328	

Company: Project:

WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Reference Site:

Sec 27-T25S-R31E

Site Error:

0.00 ft

Reference Well:

Lusitano 27-34 Fed Com 733H

Well Error: Reference Wellbore Reference Design:

0.50 ft Wellbore #1 Permit Plan 1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H TVD Reference: RKB @ 3359.80ft

MD Reference:

RKB @ 3359.80ft

North Reference:

Grid

Survey Calculation Method:

Minimum Curvature

Output errors are at

2.00 sigma

Database:

EDM r5000.141_Prod US

Offset TVD Reference:

Offset Datum

Offset De	_		T25S-R3	1E - Lusitan	io 27-34 l	Fed Com 734	4H - Wellbore	#1 - Permit	Plan 1				Offset Site Error:	0.00 ft
Survey Prog		WD+HDGM	••	Comi sto!	Aula				BL-+-				Offset Well Error:	0.50 ft
Refer		Offse	et Vertical	Semi Major		Highside	Offset Wellbon	Contro	Dista		Minimum	Consention		
Measured Depth	Vertical Depth	Measured Depth	Depth	Reference	Offset	Toolface	+N/-S	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
16,000.00	11,964.00	16,147.15	12,092.00	73.21	73.74	-95.34	-4,091.25	1,335.50	1,357.01	1,210.42	146.58	9.258		
16,050.00	11,964.00	16,202.85	12,092.00	73.81	74.40	-95.34	-4,141.25	1,335.63	1,357.06	1,209.23	147.83	9.180		
16,100.00	11,964.00	16,247.15	12,092.00	74.40	74.93	-95.34	-4,191.25	1,335.77	1,357.12	1,208.17	148.95	9.111		
16,150.00	11,964.00	16,302.85	12,092.00	75.00	75.59	-95.34	-4,241.25	1,335.90	1,357.18	1,206.97	150.21	9.035		
16,200.00	11,964.00	16,347.15	12,092.00	75.60	76.12	-95.34	-4,291.25	1,336.03	1,357.24	1,205.90	151.34	8.968		
16,250.00	11,964.00	16,402.85	12,092.00	76.21	76.79	-95.34	-4,341.25	1,336.17	1,357.30	1,204.69	152.61	8.894		
16,300.00	11,964.00	16,447.15	12,092.00	76.81	77.33	-95.34	-4,391.25	1,336.30	1,357.36	1,203.61	153.75	8.828		
16,350.00	11,964.00	16,502.85	12.092.00	77.42	78.00	-95.34	-4,441.25	1,336.44	1,357.42	1,202.39	155.03	8.756		
16,400.00	11,964.00	16,547.15	12,092.00	78.03	78.54	-95.34	-4,491.25	1,336.57	1,357.47	1,201.30	156.17	8.692		
16,450.00	11,964.00	16,602.85	12,092.00	78.64	79.22	-95.34	-4,541.25	1,336.70	1,357.53	1,200.08	157.46	8.622		
16,500.00	11,964.00	16,647.15	12,092.00	79.25	79.76	-95.34	-4,591.25	1,336.84	1,357.59	1,198.98	158.61	8.559		
16,550.00	11,964.00	16,702.85	12,092.00	79.86	80.44	-95.34	-4, 6 41.25	1,336.97	1,357.65	1,197.75	159.90	8.490		
16,600.00	11,964.00	16,747.15	12,092.00	80.48	80.99	-95.34	-4,691.25	1,337.10	1,357.71	1,196.65	161.06	8.430		
16,650.00	11,964.00	16,802.85	12,092.00	81.10	81.68	-95.34	-4,741.25	1,337.24	1,357.77	1,195.40	162.37	8.362		
16,700.00	11,964.00	16,847.15	12,092.00	81.72	82.23	-95.34	-4,791.25	1,337.37	1,357.83	1,194.30	163.53	8.303		
16,750.00	11,964.00	16,902.85	12,092.00	82.34	82.92	-95.34	-4,841.25	1,337.50	1,357.89	1,193.04	164.84	8.237		
16,800.00	11,964.00	16,947.15	12,092.00	82.96	83.47	-95.34	-4,891.25	1,337.64	1,357.94	1,191.93	166.01	8.180		
16,850.00	11,964.00	17,002.85	12,092.00	83.59	84.16	-95.34	-4,941.25	1,337.77	1,358.00	1,190.67	167.33	8.116		
16,900.00	11,964.00	17,047.15	12,092.00	84.22	84.72	-95.34	-4,991.25	1,337.91	1,358.06	1,189.55	168.51	8.059		
16,950.00	11,964.00	17,102.85	12,092.00	84.85	85.42	-95.34	-5,041.25	1,338.04	1,358.12	1,188.29	169.83	7.997		
17,000.00	11,964.00	17,147.15	12,092.00	85.48	85.98	-95.34	-5,091.25	1,338.17	1,358.18	1,187.16	171.02	7.942		
17,050.00	11,964.00	17,202.85	12,092.00	86.11	86.68	-95.34	-5,141.25	1,338.31	1,358.24	1,185.89	172.35	7.881		
17,100.00	11,964.00	17,247.15	12,092.00	86.74	87.24	-95.34	-5,191.25	1,338.44	1,358.30	1,184.76	173.54	7.827		
17,150.00	11,964.00	17,302.85	12,092.00	87.38	87.94	-95.34	-5,241.25	1,338.57	1,358.36	1,183.48	174.88	7.768		
17,200.00	11,964.00	17,347.15	12,092.00	88.01	88.51	-95.33	-5,291.25	1,338.71	1,358.41	1,182.34	176.07	7.715		
17,250.00	11,964.00	17,402.85	12,092.00	88.65	89.21	-95.33	-5,341.25	1,338.84	1,358.47	1,181.06	177.41	7.657		
17,300.00	11,964.00	17,447.15	12,092.00	89.29	89.78	-95.33	-5,391.25	1,338.97	1,358.53	1,179.92	178.61	7.606		
17,350.00	11,964.00	17,502.85	12,092.00	89.93	90.49	-95.33	-5,441.25	1,339.11	1,358.59	1,178.63	179.96	7.549		
17,400.00	11,964.00	17,547.15	12,092.00	90.57	91.06	-95.33	-5,491.25	1,339.24	1,358.65	1,177.48	181.17	7.499		
17,450.00	11,964.00	17,602.85	12,092.00	91.21	91.77	-95.33	-5,541.25	1,339.38	1,358.71	1,176.18	182.52	7,444		
17,500.00	11,964.00	17,647.15	12,092.00	91.85	92.34	-95.33	-5,591.25	1,339.51	1,358.77	1,175.03	183.73	7.395		
47.550.00		47 700 05												
17,550.00	11,964.00	17,702.85	12,092.00	92.50	93.06	-95.33	-5,641.25	1,339.64	1,358.83	1,173.73	185.09	7.341		
17,600.00	11,964.00	17,747.15	12,092.00	93.15	93.63	-95.33 95.33	-5,691.25 6.741.26	1,339.78	1,358.88	1,172.58	186.31	7.294		
17,650.00 17,700.00	11,964.00 11,964.00	17,802.85 17,847.15	12,092.00 12,092.00	93.79 94.44	94.35 94.93	-95.33 -95.33	-5,741.25 -5,791.25	1,339.91	1,358.94	1,171.27	187.67 188.89	7.241 7.195		
17,750.00	11,964.00	17,902.85	12,092.00	95.09	94.93 95.65	-95.33 -95.33	-5,791.25 -5,841.25	1,340.04 1,340.18	1,359.00 1,359.06	1,170,11 1,168.80	190.26	7.195 7.143		
11,730.00	11,504.00	11,002.03	12,002.00	55.08	25.05	-20.00	-5,041.25	1,540.10	1,353.00	1,100.00	190.20	7.143		
17,800.00	11,964.00	17,947.15	12,092.00	95.74	96.23	-95.33	-5,891.25	1,340.31	1,359.12	1,167.64	191.48	7.098		
17,850.00	11,964.00	18,002.85	12,092.00	96.40	96.95	-95.33	-5,941.25	1,340.44	1,359.18	1,166.32	192.86	7.048		
17,900.00	11,964.00	18,047.15	12,092.00	97.05	97.53	-95.33	-5,991.25	1,340.58	1,359.24	1,165.15	194.08	7.003		
17,950.00	11,964.00	18,102.85	12,092.00	97.70	98.26	-95.33	-6,041.24	1,340.71	1,359.29	1,163.83	195.46	6.954		
18,000.00	11,964.00	18,147.15	12,092.00	98.36	98.84	-95.33	-6,091.24	1,340.85	1,359.35	1,162.66	196.69	6.911		
10 050 00	11 004 00	19 202 05	12 002 00	00.04	00.67	05.33	6 141 34	1 340 00	1 250 44	1 104 24	100.00	6 002		
18,050.00	11,964.00 11,964.00	18,202.85 18,247.15		99.01	99.57 100.15	-95.33 -95.33	-6,141.24 -6.191.24	1,340.98	1,359.41	1,161.34	198.08	6.863 6.821		
18,100.00 18,150.00	11,964.00	18,302.85	12,092.00 12,092.00	99.67 100.33	100.15	-95.33 -95.33	-6,191.24 -6.241.24	1,341.11	1,359.47	1,160.16 1,158.83	199.31 200.70	6.821 6.774		
18,200.00	11,964.00	18,347.15	12,092.00	100.33	101.46	-95.33 -95.33	-6,241.24 -6,291.24	1,341.25 1,341.38	1,359.53 1,359.59	1,158.83 1,157.65	200.70	6.774 6.733		
18,250.00	11,964.00	18,402.85	12,092.00	100.99	102.20	-95.33 -95.33	-6,291.24 -6,341.24	1,341.51	1,359.59	1,156.32	201.94	6.687		
-0,200.00	,504.00	10,702.03	. 2,002.00	101.03	.02.20	-55.55	.0,041.24	1,041,01	1,300.03	1,100.02	200.00	0.007		
18,300.00	11,964.00	18,447.15	12,092.00	102.31	102.78	-95.33	-6,391.24	1,341.65	1,359.71	1,155.14	204.57	6.647		
18,350.00	11,964.00	18,502.85	12,092.00	102.97	103.52	-95.33	-6.441.24	1,341.78	1,359.76	1,153.80	205.96	6.602		
18,400.00	11,964.00	18,547.15	12,092.00	103.63	104.11	-95.33	-6,491.24	1,341.91	1,359.82	1,152.62	207.21	6.563		
18,450.00	11,964.00	18,602.85	12,092.00	104.30	104.84	-95.33	-6,541.24	1,342.05	1,359.88	1,151.28	208.61	6.519		
18,500.00	11,964.00	18,647.15	12,092.00	104.96	105.43	-95.33	-6,591.24	1,342.18	1,359.94	1,150.09	209.85	6.480		
							_							
18,550.00	11,964.00	18,702.85	12,092.00	105.62	106.17	-95.33	-6,641.24	1,342.32	1,360.00	1,148.74	211.26	6.438		

Company: WCDSC Permian NM

Project: Eddy County (NAD 83 NM Eastern)

Reference Site: Sec 27-T25S-R31E

Site Error: 0.00 ft

Site Erior. 0.00 it

Reference Well: Lusitano 27-34 Fed Com 733H

Well Error: 0.50 ft
Reference Wellbore #1

Reference Design: Permit Plan 1

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

Output errors are at 2.00 sigma

Database: EDM r5000.141_Prod US

Offset TVD Reference: Offset Datum

rvey Prog	ram: 0-M	WD+HDGM											Offset Well Error:	0.5
Refer		Offs	et	Semi Major	Axis				Dista	ince			Shoot trail Error.	0.0
easured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellborn	e Centre +E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
8,600.00	11,964.00	18,747.15	12,092.00	106.29	106.76	-95.33	-6,691.24	1,342.45	1,360.06	1,147.55	212.51	6.400		
8,650.00	11,964.00	18,802.86	12,092.00	106.96	107.50	-95.33	-6,741.24	1,342.58	1,360.12	1,146.21	213.91	6.358		
8,700.00	11,964.00	18,847.15	12,092.00	107.62	108.09	-95.33	-6,791.24	1,342.72	1,360.18	1,145.01	215.17	6.322		
8,750.00	11,964.00	18,902.86	12,092.00	108.29	108.84	-95.33	-6,841.24	1,342.85	1,360.23	1,143.66	216.57	6.281		
8,800.00	11,964.00	18,947.15	12,092.00	108.96	109.43	-95.33	-6,891.24	1,342.98	1,360.29	1,142.46	217.83	6.245		
8,850.00	11,964.00	19,002.86	12,092.00	109.63	110.17	-95.33	-6,941.24	1,343.12	1,360.35	1,141.11	219.24	6.205		
8,900.00	11,964.00	19,047.15	12,092.00	110.30	110.77	-95.33	-6,991.24	1,343.25	1,360.41	1,139.91	220.50	6.170		
8,950.00	11,964.00	19,102.86	12,092.00	110.97	111.51	-95.33	-7,041.24	1,343.38	1,360.47	1,138.55	221.92	6,131		
9,000.00	11,964.00	19,147.15	12,092.00	111.64	112.11	-95.33	-7,091.24	1,343.52	1,360.53	1,137.35	223.18	6.096		
9,050.00	11,964.00	19,202.86	12,092.00	112.32	112.86	-95.33	-7,141.24	1,343.65	1,360.59	1,135.99	224.60	6.058		
9,100.00		19,247.15	12,092.00	112.99	113.45	-95.33	-7,191.24	1,343.79	1,360.65	1,134.78	225.86	6.024		
9,150.00	11,964.00	19,302.86	12,092.00	113.66	114.20	-95.33	-7,241.24	1,343.92	1,360.70	1,133.42	227.28	5.987		
9,200.00		19,347.15	12,092.00	114.34	114.80	-95.33	-7,241.24	1,343.92	1,360.76	1,132.21	228.55	5.954		
9,250.00	11,964.00	19,402.86	12,092.00	115.01	115.55	- 9 5.33	-7,2 5 1.24 -7,341.24	1,344.19	1,360.76	1,130.85	229.97	5.934		
9,300.00	11,964.00	19,447.15	12,092.00	115.69	116.15	-95.33	-7,391.24	1,344.19	1,360.88	1,129.64	231.24	5.885		
9,350.00	11,964.00	19,502.86	12,092.00	116.37	116.90	-95.33 -95.32	-7,351.24 -7,441.24	1,344.45	1,360.94	1,128.27	231.24	5.849		
		10 5 47 45	12.000.00											
9,400.00	11,964.00	19,547.15	12,092.00	117.04	117.50	-95.32	-7,491.24 7,544.24	1,344.59	1,361.00	1,127.06	233.94	5.818		
9,450.00	11,964.00	19,602.86	12,092.00	117.72	118.26	-95.32	-7,541.24	1,344.72	1,361.06	1,125.69	235.37	5.783		
9,500.00	11,964.00	19,647.15	12,092.00	118.40	118.86	-95.32	-7,591.24	1,344.85	1,361.12	1,124.47	236.64	5.752		
9,550.00	11,964.00	19,702.86	12,092.00	119.08	119.61	-95.32	-7,641.24	1,344.99	1,361.17	1,123.10	238.07	5.717		
9,600.00	11,964.00	19,747.15	12,092.00	119.76	120.21	-95.32	-7,691.24	1,345.12	1,361.23	1,121.88	239.35	5.687		
650.00	11,964.00	19,802.86	12,092.00	120.44	120.97	-95.32	-7,741.24	1,345.25	1,361.29	1,120.51	240.78	5.654		
9,700.00	11,964.00	19,847.15	12,092.00	121.12	121.57	-95.32	-7,791,24	1,345.39	1,361.35	1,119,29	242.06	5.624		
9,750.00	11,964.00	19,902.86	12,092.00	121.80	122.33	-95.32	-7,841.24	1,345.52	1,361.41	1,117.91	243.50	5.591		
00.008,6	11,964.00	19,947.15	12,092.00	122.48	122.93	-95.32	-7,891.24	1,345.66	1,361.47	1,116.69	244.78	5.562		
9,850.00	11,964.00	20,002.86	12,092.00	123.16	123.69	-95.32	-7,941.24	1,345.79	1,361.53	1,115.31	246.21	5.530		
9,900.00	11,964.00	20,047.14	12,092.00	123.84	124.30	-95.32	-7,991.24	1,345.92	1,361.58	1,114.09	247.50	5.501		
9,950.00	11,964.00	20,102.86	12,092.00	124.53	125.06	-95.32	-8,041.24	1,346.06	1,361.64	1,112.71	248.93	5.470		
0,000.00	11,964.00	20,147.14	12,092.00	125.21	125.66	-95.32	-8,091.24	1,346.19	1,361.70	1,111.48	250.22	5.442		
0,050.00	11,964.00	20,202.86	12,092.00	125.89	126.42	-95.32	-8,141.24	1,346.32	1,361.76	1,110.10	251.66	5.411		
0,100.00	11,964.00	20,247.14	12,092.00	126.58	127.03	-95.32	-8,191.24	1,346.46	1,361.82	1,108.87	252.95	5.384		
0,150.00	11,964.00	20,302.86	12,092.00	127.26	127.79	-95.32	-8,241.24	1,346.59	1,361.88	1 107 40	254 20	E 252		
,200.00		20,302.80	12,092.00	127.25	128.40	-95.32	-8,291.24 -8,291.24			1,107.49	254.39	5.353		
0,250.00	11,964.00	20,347.14	12,092.00	127.95	128.40	-95.32 -95.32	-8,291.24 -8,341.24	1,346.72 1,346.86	1,361.94 1,362.00	1,106.26 1,104.87	255.68 257.12	5.327 5.297		
0,300.00	11,964.00	20,402.86	12,092.00	129.32	129.16	-95.32 -95.32	-8,341.24 -8,391.23	1,346.86	1,362.00	1,104.87	257.12 258.41	5.297 5.271		
0,350.00	11,964.00	20,447.14	12,092.00	130.01	130.46	-95.32 -95.32	-8,391.23 -8,441.23	1,346.99	1,362.05	1,102.33	259.78	5.243		
	44 004 00													
0,400.00	11,964.00	20,547.14	12,092.00	130.69	131.14	-95.32	-8,491.23	1,347.26	1,362.17	1,101.02	261.15	5.216		
0,450.00	11,964.00	20,602.86	12,092.00	131.38	131.91	-95.32	-8,541.23	1,347.39	1,362.23	1,099.63	262.60	5.187		
0,500.00	11,964.00 11,964.00	20,647.14 20,702.86	12,092.00	132.07	132.52	-95.32 95.32	-8,591.23 8,641.23	1,347.53	1,362.29	1,098.40	263.89	5.162		
	11,964.00	20,702.86	12,092.00	132.76 133.45	133.28 133.89	-95.32 -95.32	-8,641.23 -8,691.23	1,347.66 1,347.79	1,362.35 1,362.41	1,097.00 1,095.77	265.34 266.64	5.134 5.110		
							-,001.20	.,5-11.10	.,502.31	.,000.77	200.04	3.770		
0,650.00		20,802.86	12,092.00	134.13	134.66	-95.32	-8.741.23	1,347.93	1,362.47	1,094.37	268.09	5.082		
0,700.00		20,847.14	12,092.00	134.82	135.27	-95.32	-8,791.23	1,348.06	1,362.52	1,093.14	269.39	5.058		
750.00		20,902.86	12,092.00	135.51	136.04	-95.32	-8,841.23	1,348.19	1,362.58	1,091.74	270.84	5.031		
0.008,0	11,964.00	20,947.14	12,092.00	136.20	136.65	-95.32	-8,891.23	1,348.33	1,362.64	1,090.50	272.14	5.007		
0,850.00	11,964.00	21,002.86	12,092.00	136.90	137.42	-95.32	-8,941.23	1,348.46	1,362.70	1,089.11	273.60	4.981 Al	ert	
0,900.00	11,964.00	21,047.14	12,092.00	137.59	138.03	-95.32	-8.991.23	1,348.60	1,362.76	1,087.87	274.89	4.957 Al	ert	
0,950.00	11,964.00	21,102.86	12.092.00	138.28	138.80	-95.32	-9,041.23	1,348.73	1,362.82	1,086.47	276.35	4.931 Al		
1,000.00	11,964.00	21,147.14	12.092.00	138.97	139.41	-95.32	-9.091.23	1,348.86	1,362.88	1,085.22	277.65	4.909 Al		
,050.00	11.964.00	21,202.86	12,092.00	139.66	140.18	-95.32	-9,141,23	1,349.00	1,362.94	1,083.82	277.03	4.883 Al		
1,100.00	11,964.00	21,247.14	12,092.00	140.35	140.80	-95.32	-9,191.23	1,349.13	1,362.99	1,082.58	280.41	4.861 Al		
,150.00	11,964.00	21,302.86	12,092.00	141.05	141.57	-95.32	-9,241.23	1,349.26	1,363.05	1,081.18	281.87	4.836 Al	ert	

Company: WCDSC Permian NM

Project: Eddy County (NAD 83 NM Eastern)

Reference Site: Sec 27-T25S-R31E

Site Error: 0.00 ft

Lusitano 27-34 Fed Com 733H Reference Well:

Error: 0.50 ft

Weilbore #1 Reference Wellbore Permit Plan 1 Reference Design:

Local Co-ordinate Reference:

Well Lusitano 27-34 Fed Com 733H TVD Reference: RKB @ 3359.80ft

MD Reference: RKB @ 3359.80ft

North Reference: Grid

Minimum Curvature **Survey Calculation Method:**

Output errors are at 2.00 sigma

EDM r5000.141_Prod US Database:

Offset TVD Reference: Offset Datum

Offset De	sign	Sec 27-	-T25S-R31	IE - Lusitar	io 27-34 F	Fed Com 73	4H - Wellbore	#1 - Permit	Plan 1				Offset Site Error:	0.00
urvey Prog		WD+HDGM											Offset Well Error:	0.50
Refer	ence	Offs	et	Semi Major					Dista					
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbor	+E/-W	Between Centres	Between Ellipses	Minimum Separation	Separation Factor	Warning	
(ft)	(ft) 	(ft)	(ft)	(ft)	(ft)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)			
21,200.00	11,964.00	21,347.14	12,092.00	141.74	142.18	-95.32	-9,291.23	1,349.40	1,363.11	1,079.94	283.18	4.814 Alert		
21,250.00	11,964.00	21,402.86	12,092.00	142.43	142.95	-95.32	-9,341.23	1,349.53	1,363.17	1,078.53	284.64	4.789 Alert		
21,300.00	11,964.00	21,447.14	12,092.00	143.13	143.57	-95.32	-9,391.23	1,349.66	1,363.23	1,077.29	285.94	4.768 Alert		
21,350.00	11,964.00	21,502.86	12,092.00	143.82	144.34	-95.32	-9,441.23	1,349.80	1,363.29	1,075.88	287.40	4.743 Alert		
21,400.00	11,964.00	21,547.14	12,092.00	144.52	144.96	-95.32	-9,491.23	1,349.93	1,363.35	1,074.64	288.71	4.722 Alert		
21,450.00	11,964.00	21,602.86	12,092.00	145.21	145.73	-95.32	-9,541.23	1,350.07	1,363.41	1,073.23	290.17	4.699 Alert		
21,500.00	11,964.00	21,647.14	12,092.00	145.91	146.35	-95.32	-9,591.23	1,350.20	1,363.46	1,071.98	291.48	4.678 Alert		
21,550.00	11,964.00	21,702.86	12,092.00	146.60	147.12	-95.31	-9,641.23	1,350.33	1,363.52	1,070.58	292.95	4.655 Alert		
21,600.00	11,964.00	21,747.14	12,092.00	147.30	147.74	-95.31	-9,691.23	1,350.47	1,363.58	1,069.33	294.25	4.634 Alert		
21,650.00	11,964.00	21,802.86	12,092.00	147.99	148.51	-95.31	-9,741.23	1,350.60	1,363.64	1,067.92	295.72	4.611 Alert		
21,700.00	11,964.00	21,847.14	12,092.00	148.69	149.13	-95.31	-9,791.23	1,350.73	1,363.70	1,066.67	297.03	4.591 Alert		
21,750.00	11,964.00	21,902.86	12,092.00	149.39	149.90	-95.31	-9,841.23	1,350.87	1,363.76	1,065.26	298.50	4.569 Alert		
21,800.00	11,964.00	21,947.14	12,092.00	150.08	150.52	-95.31	-9,891.23	1,351.00	1,363.82	1,064.01	299.81	4.549 Alert		
21,850.00	11,964.00	22,002.86	12,092.00	150.78	151.30	-95.31	-9,941.23	1,351.13	1,363.87	1,062.60	301.28	4.527 Alert		
21,900.00	11,964.00	22,047.14	12,092.00	151.48	151.91	-95.31	-9,991.23	1,351.27	1,363.93	1,061.35	302.59	4.508 Aten		
21,950.00	11,964.00	22,102.86	12,092.00	152.17	152.69	-95.31	-10,041.23	1,351.40	1,363.99	1,059.93	304.06	4.486 Alert		
22,000.00	11,964.00	22,147.14	12,092.00	152.87	153.31	-95.31	-10,091.23	1,351.54	1,364.05	1,058.68	305.37	4.467 Alert		
22,050.00	11,964.00	22,197.14	12,092.00	153.57	154.01	-95.31	-10,141.23	1,351.67	1,364.11	1,057.35	306.76	4.447 Alert		
22,100.00	11,964.00	22,247.14	12,092.00	154.27	154.71	-95.31	-10,191.23	1,351.80	1,364.17	1,056.01	308.16	4.427 Alert		
22,150.00	11,964.00	22,302.86	12,092.00	154.97	155.48	-95.31	-10,241.23	1,351.94	1,364.23	1,054.60	309.63	4.406 Alert		
22,200.00	11,964.00	22,347.14	12,092.00	155.67	156.10	-95.31	-10,291.23	1,352.07	1,364.29	1,053.34	310.94	4.388 Alert		
22,241.76	11,964.00	22,388,91	12.092.00	156,25	156.69	-95,31	-10.332.99	1,352,18	1,364,33	1.052.23	312.11	4.371 Alert	. ES. SF	

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 733H

0.50 ft Well Error: Reference Wellbore Wellbore #1 Reference Design:

Permit Plan 1

Local Co-ordinate Reference: Well Lusitano 27-34 Fed Com 733H

TVD Reference: RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method: Minimum Curvature

2.00 sigma Output errors are at

EDM r5000.141_Prod US Database:

Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB @ 3359.80ft

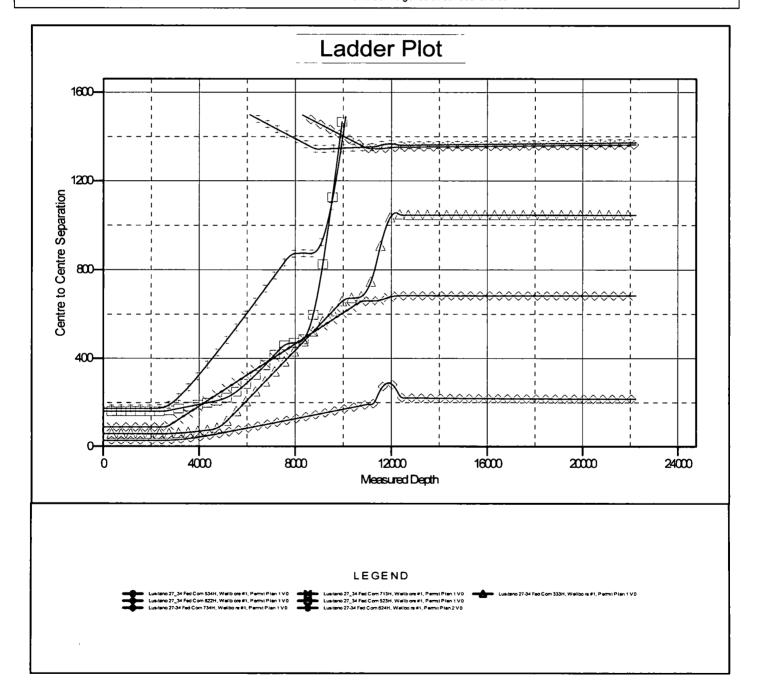
Offset Depths are relative to Offset Datum

Central Meridian is -104,333334

Coordinates are relative to: Lusitano 27-34 Fed Com 733H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: 0.30°



Company: WCDSC Permian NM

Eddy County (NAD 83 NM Eastern) Project:

Sec 27-T25S-R31E Reference Site:

0.00 ft Error:

Lusitano 27-34 Fed Com 733H Reference Well:

Well Error: 0.50 ft Reference Wellbore Wellbore #1

Permit Plan 1 Reference Design:

RKB @ 3359.80ft TVD Reference:

Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft MD Reference:

Grid North Reference:

Local Co-ordinate Reference:

Minimum Curvature **Survey Calculation Method:**

2.00 sigma Output errors are at

Database: EDM r5000.141_Prod US

Offset TVD Reference: Offset Datum

Reference Depths are relative to RKB @ 3359.80ft

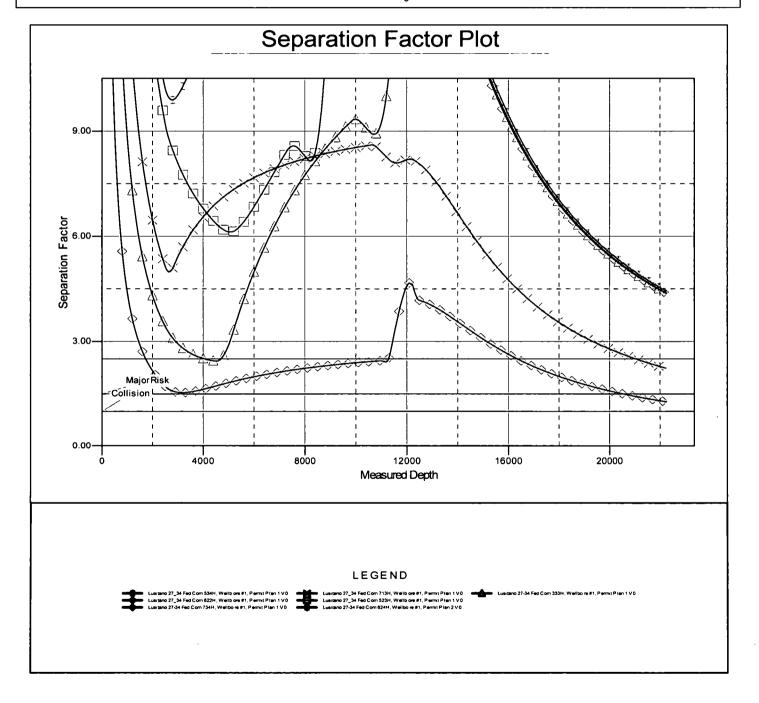
Offset Depths are relative to Offset Datum

Central Meridian is -104.333334

Coordinates are relative to: Lusitano 27-34 Fed Com 733H

Coordinate System is US State Plane 1983, New Mexico Eastern Zone

Grid Convergence at Surface is: 0.30°



WCDSC Permian NM

Eddy County (NAD 83 NM Eastern) Sec 27-T25S-R31E Lusitano 27-34 Fed Com 733H

Wellbore #1

Plan: Permit Plan 1

Standard Planning Report - Geographic

12 September, 2018

Database: Company: EDM r5000.141 Prod US

WCDSC Permian NM

Project:

Eddy County (NAD 83 NM Eastern)

Site:

Sec 27-T25S-R31E

Well:

Lusitano 27-34 Fed Com 733H

Wellbore: Design:

Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference:

RKB @ 3359.80ft

RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

Grid

Survey Calculation Method:

Minimum Curvature

Project

Eddy County (NAD 83 NM Eastern)

Map System:

US State Plane 1983

Geo Datum: Map Zone:

North American Datum 1983 New Mexico Eastern Zone

System Datum:

Mean Sea Level

Site

Sec 27-T25S-R31E

Site Position:

From: Мар

Northing: Easting:

403,674.44 usft 714,373.23 usft

Latitude:

Longitude:

32.108547 -103.774477

Position Uncertainty:

0.00 ft **Slot Radius:** 13-3/16 "

Grid Convergence:

0.30°

Well

Lusitano 27-34 Fed Com 733H

Well Position +N/-S

+E/-W

0.00 ft 0.00 ft

Northing: Easting:

403,449.47 usft 716,044.24 usft

Latitude: Longitude:

32.107905 -103.769084

Position Uncertainty

0.50 ft

Wellhead Elevation:

Ground Level:

3,334.80 ft

Wellbore

Wellbore #1

Magnetics Model Name

Sample Date IGRF2015 9/12/2018 Declination (°) 6.90

Dip Angle (°)

59.91

Field Strength

(nT)

47,721.83283155

Design

Permit Plan 1

Audit Notes:

Version: Vertical Section: Phase:

PROTOTYPE

Tie On Depth:

0.00

Depth From (TVD)

+N/-S (ft)

+E/-W

Direction

(ft) (°) 0.00 0.00 0.00 180.03

Plan Survey Tool Program

Date 9/12/2018

Depth From (ft)

Depth To (ft)

Survey (Wellbore)

Tool Name

Remarks

0.00

22,241.76 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	
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,626.52	1.27	353.22	2,626.51	1.39	-0.16	1.00	1.00	0.00	353.22	
10,958.70	1.27	353.22	10,956.66	184.08	-21.89	0.00	0.00	0.00	0.00	
11,043.05	0.00	0.00	11,041.00	185.00	-22.00	1.50	-1.50	0.00	180.00	
11,393.09	0.00	0.00	11,391.04	185.00	-22.00	0.00	0.00	0.00	0.00	
12,293.09	90.00	179.91	11,964.00	-387.96	-21.14	10.00	10.00	0.00	179.91	PBHL - Lusitano 27-3
22,241.76	90.00	179.91	11,964.00	-10,336.62	-6.29	0.00	0.00	0.00	0.00	PBHL - Lusitano 27-3

Database: Company: Project:

Site:

EDM r5000.141 Prod US WCDSC Permian NM

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

Well:

5.200.00

5,300.00

1.27

1.27

353.22

353.22

5.199.36

5,299.34

57.81

60.00

Lusitano 27-34 Fed Com 733H

Wellbore: Wellbore #1 Local Co-ordinate Reference:

TVD Reference: MD Reference:

North Reference: Survey Calculation Method: Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft RKB @ 3359.80ft

Grid

Minimum Curvature

Design:	Perm	it 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	403,449.47	716,044.24	32.107905	-103.769084
100.00	0.00	0.00	100.00	0.00	0.00	403,449.47	716,044.24	32.107905	-103.769084
200.00	0.00	0.00	200.00	0.00	0.00	403,449.47	716,044.24	32.107905	-103.769084
300.00	0.00	0.00	300.00	0.00	0.00	403,449.47	716,044.24	32.107905	-103.769084
400.00	0.00	0.00	400.00	0.00	0.00	403,449.47	716,044.24	32.107905	-103.769084
500.00	0.00	0.00	500.00	0.00	0.00	403,449.47	716,044.24	32.107905	-103.769084

403,507.28

403,509.47

716.037.36

716.037.10

32.108064

32.108070

-103 769105

-103.769106

-6.87

-7.14

Database: Company: EDM r5000.141_Prod US

WCDSC Permian NM

Project: Site:

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Well: Wellbore: Lusitano 27-34 Fed Com 733H

Wellbore #1

Local Co-ordinate Reference:

TVD Reference:

RKB @ 3359.80ft MD Reference: RKB @ 3359.80ft

North Reference: Grid

Survey Calculation Method:

Minimum Curvature

Well Lusitano 27-34 Fed Com 733H

Design: Permit Plan 1

Measured			Vertical			Map	Мар		
Depth (ft)	Inclination (°)	Azimuth (°)	Depth (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
5,400.00		353.22	5,399.31	62.20	-7.40	403,511,67	716,036.84	32.108076	-103.769
5,500.00		353.22	5,499.29	64.39	-7. 4 0	403,511.86	716,036.58	32.108082	-103.769
5,600.00		353.22	5,599.26	66.58	-7.92	403,516.05	716,036.32	32.108088	-103.769
5,700.00		353.22	5,699.24	68.78	-8.18	403,518.24	716,036.06	32.108094	-103.769
5,800.00		353.22	5,799.22	70.97	-8.44	403,520.44	716,035.80	32.108100	-103.769
5,900.00		353.22	5,899.19	73.16	-8.70	403,520.44	716,035.54	32.108106	-103.769
6,000.00		353.22	5,999.17	75.35	-8.96	403,524.82	716,035.28	32.108112	-103.769
6,100.00		353.22	6,099.14	77.55	-9.22	403,527.01	716,035.20	32.108118	-103.769
6,200.00		353.22	6,199.12	79.74	-9.48	403,529.21	716,033.01	32.108124	-103.769
6,300.00		353.22	6,299.09	81.93	-9.74	403,529.21	716,034.49	32.108130	-103.769
6,400.00		353.22	6,399.07	84.12	- 3 .74 -10.00	403,533.59	716,034.49		
6,500.00		353.22	6,499.05	86.32	-10.00	403,535.78	716,034.23	32.108136	-103.769
6,600.00		353.22	6,599.02	88.51	-10.26			32.108142	-103.769
6,700.00		353.22	6,699.00	90.70	-10.53 -10.79	403,537.98 403,540.17	716,033.71	32.108148	-103.769
6,800.00		353.22					716,033.45	32.108154	-103.769
			6,798.97	92.89	-11.05	403,542.36	716,033.19	32.108160	-103.769
6,900.00		353.22	6,898.95	95.09	-11.31	403,544.55	716,032.93	32.108167	-103.769
7,000.00		353.22	6,998.92	97.28	-11.57	403,546.75	716,032.67	32.108173	-103.769
7,100.00		353.22	7,098.90	99.47	-11.83	403,548.94	716,032.41	32.108179	-103.769
7,200.00		353.22	7,198.87	101.66	-12.09	403,551.13	716,032.15	32.108185	-103.769
7,300.00		353.22	7,298.85	103.86	-12.35	403,553.32	716,031.89	32.108191	-103.769
7,400.00		353.22	7,398.83	106.05	-12.61	403,555.52	716,031.62	32.108197	-103.769
7,500.00		353.22	7,498.80	108.24	-12.87	403,557.71	716,031.36	32.108203	-103.769
7,600.00		353.22	7,598.78	110.43	-13.13	403,559.90	716,031.10	32.108209	-103.769
7,700.00		353.22	7,698.75	112.63	-13.39	403,562.10	716,030.84	32.108215	-103.769
7,800.00		353.22	7,798.73	114.82	-13.65	403,564.29	716,030.58	32.108221	-103.769
7,900.00		353.22	7,898.70	117.01	-13.91	403,566.48	716,030.32	32.108227	-103.769
8,000.00		353.22	7,998.68	119.20	-14.18	403,568.67	716,030.06	32.108233	-103.769
8,100.00		353.22	8,098.66	121.40	-14.44	403,570.87	716,029.80	32.108239	-103.769
8,200.00		353.22	8,198.63	123.59	-14.70	403,573.06	716,029.54	32.108245	-103.769
8,300.00		353.22	8,298.61	125.78	-14.96	403,575.25	716,029.28	32.108251	-103.769
8,400.00		353.22	8,398.58	127.97	-15.22	403,577.44	716,029.02	32.108257	-103.769
8,500.00		353.22	8,498.56	130.17	-15.48	403,579.64	716,028.76	32.108263	-103.769
8,600.00		353.22	8,598.53	132.36	-15.74	403,581.83	716,028.50	32.108269	-103.769
8,700.00		353.22	8,698.51	134.55	-16.00	403,584.02	716,028.24	32.108275	-103.769
8,800.00	1.27	353.22	8,798.48	136.74	-16.26	403,586.21	716,027.97	32.108281	-103.769
8,900.00		353.22	8,898.46	138.94	-16.52	403,588.41	716,027.71	32.108287	-103.769
9,000.00		353.22	8,998.44	141.13	-16.78	403,590.60	716,027.45	32.108293	-103.769
9,100.00		353.22	9,098.41	143.32	-17.04	403,592.79	716,027.19	32.108299	-103.769
9,200.00		353.22	9,198.39	145.51	-17.30	403,594.98	716,026.93	32.108305	-103.769
9,300.00		353.22	9,298.36	147.71	-17.57	403,597.18	716,026.67	32.108311	-103.769
9,400.00		353.22	9,398.34	149.90	-17.83	403,599.37	716,026.41	32.108317	-103.769
9,500.00		353.22	9,498.31	152.09	-18.09	403,601.56	716,026.15	32.108323	-103.769
9,600.00	1.27	353.22	9,598.29	154.28	-18.35	403,603.75	716,025.89	32.108329	-103.769
9,700.00	1.27	353.22	9,698.27	156.48	-18.61	403,605.95	716,025.63	32.108335	-103.769
9,800.00	1.27	353.22	9,798.24	158.67	-18.87	403,608.14	716,025.37	32.108341	-103.769
9,900.00	1.27	353.22	9,898.22	160.86	-19.13	403,610.33	716,025.11	32.108347	-103.769
10,000.00	1.27	353.22	9,998.19	163.06	-19.39	403,612.52	716,024.85	32.108353	-103.769
10,100.00		353.22	10,098.17	165.25	-19.65	403,614.72	716,024.58	32.108359	-103.769
10,200.00		353.22	10,198.14	167.44	-19.91	403,616.91	716,024.32	32.108366	-103.769
10,300.00		353.22	10,298.12	169.63	-20.17	403,619.10	716,024.06	32.108372	-103.769
10,400.00		353.22	10,398.09	171.83	-20.43	403,621.29	716,023.80	32.108378	-103.769
10,500.00		353.22	10,498.07	174.02	-20.69	403,623.49	716,023.54	32.108384	-103.769
10,600.00		353.22	10,598.05	176.21	-20.95	403,625.68	716,023.28	32.108390	-103.769
10,700.00		353.22	10,698.02	178.40	-21.22	403,627.87	716,023.02	32.108396	-103.769
10,800.00		353.22	10,798.00	180.60	-21.48	403,630.06	716,023.02	32.108402	-103.769

Database: Company: Project:

EDM r5000.141_Prod US WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Well: Wellbore:

Site:

Lusitano 27-34 Fed Com 733H

Wellbore #1 Design: Permit Plan 1 Local Co-ordinate Reference:

Survey Calculation Method:

TVD Reference:

MD Reference: North Reference:

RKB @ 3359.80ft RKB @ 3359.80ft

Well Lusitano 27-34 Fed Com 733H

Grid

Minimum Curvature

Planned Surve	<i>'</i>								
Measured Depth (ft)	Inclination	Azimuth	Vertical Depth (ft)	+N/-S	+E/-W	Map Northing (usft)	Map Easting (usft)	Ladibuda	l amaitheada
ļ	(°)	(°)		(ft)	(ft)			Latitude	Longitude
10,900.00		353.22	10,897.97	182.79	-21.74	403,632.26	716,022.50	32.108408	-103.769151
10,958.70		353.22	10,956.66	184.08	-21.89	403,633.54	716,022.35	32.108411	-103.769152
11,000.00		353.22	10,997.95	184.76	-21.97	403,634.23	716,022.26	32.108413	-103.769152
11,043.05		0.00	11,041.00	185.00	-22.00	403,634.47	716,022.24	32.108414	-103.769152
11,100.00		0.00	11,097.95	185.00	-22.00	403,634.47	716,022.24	32.108414	-103.769152
11,200.00		0.00	11,197.95	185.00	-22.00	403,634.47	716,022.24	32.108414	-103.769152
11,300.00 11,393.09		0.00 0.00	11,297.95	185.00 185.00	-22.00 -22.00	403,634.47 403,634.47	716,022.24	32.108414 32.108414	-103.769152
			11,391.04	165.00	-22.00	403,634.47	716,022.24	32.100414	-103.769152
	11393' MD, 50'	•		404.00	22.00	400.004.40	746 000 04	20.400444	400 700450
11,400.00 11,500.00		179.91 179.91	11,397.95 11,497.33	184.96 175.05	-22.00 -21.99	403,634.43 403,624.52	716,022.24 716,022.25	32.108414 32.108386	-103.769152
11,600.00		179.91		148.04	-21.99 -21.94				-103.769152 -103.769152
11,634.23		179.91	11,593.48 11,625.13	135.00	-21. 94 -21.93	403,597.51 403,584.47	716,022.29 716,022.31	32.108312 32.108276	-103.769152
				135.00	-21.93	403,304.47	7 10,022.31	32.100270	-103.769132
11,700.00	11634.23' MD, ⁴ 30.69	179.91	11,683.48	104.75	24.00	402 EE4 22	746 022 26	22 400402	102 760452
11,800.00		179.91		104.75	-21.88 -21.79	403,554.22	716,022.36	32.108193	-103.769153
11,900.00		179.91	11,764.60	46.48 -24.99	-21.79 -21.69	403,495.95	716,022.44 716,022.55	32.108033	-103.769154
12,000.00		179.91	11,834.36 11,890.66	-24.99 -107.48	-21.59 -21.56	403,424.48 403,341.98	716,022.67	32.107837 32.107610	-103.769154 -103.769155
12,100.00		179.91	11,931.77	-107.48	-21.30	403,250.97	716,022.81	32.107360	-103.769157
12,200.00		179.91	11,956.45	-195.36	-21.43	403,154.19	716,022.95	32.107094	-103.769158
12,293.09		179.91	11,964.00	-387.96	-21.14	403,154.19	716,023.09	32.106839	-103.769159
12,300.00		179.91	11,964.00	-394.87	-21.13	403,054.60	716,023.10	32.106820	-103.769159
12,400.00		179.91	11,964.00	-494.87	-20.98	402,954.60	716,023.25	32.106545	-103.769160
12,500.00		179.91	11,964.00	-594.87	-20.84	402,854.60	716,023.40	32.106270	-103.769161
12,600.00		179.91	11,964.00	-694.87	-20.69	402,754.60	716,023.55	32.105995	-103.769163
12,700.00		179.91	11,964.00	-794.87	-20.54	402,654.60	716,023.70	32.105720	-103.769164
12,800.00		179.91	11,964.00	-894.87	-20.39	402,554.60	716,023.85	32.105445	-103.769165
12,900.00		179.91	11,964.00	-994.87	-20.24	402,454.60	716,024.00	32.105171	-103.769166
13,000.00		179.91	11,964.00	-1,094.87	-20.09	402,354.60	716,024.15	32.104896	-103.769167
13,100.00		179.91	11,964.00	-1,194.87	-19.94	402,254.60	716,024.30	32.104621	-103.769169
13,200.00		179.91	11,964.00	-1,294.87	-19.79	402,154.60	716,024.45	32.104346	-103.769170
13,300.00		179.91	11,964.00	-1,394.87	-19.64	402,054.60	716,024.59	32.104071	-103.769171
13,400.00		179.91	11,964.00	-1,494.87	-19.49	401,954.61	716,024.74	32.103796	-103.769172
13,500.00	90.00	179.91	11,964.00	-1,594.87	-19.34	401,854.61	716,024.89	32.103521	-103.769173
13,600.00	90.00	179.91	11,964.00	-1,694.87	-19.19	401,754.61	716,025.04	32.103246	-103.769175
13,700.00	90.00	179.91	11,964.00	-1,794.87	-19.04	401,654.61	716,025.19	32.102971	-103.769176
13,800.00	90.00	179.91	11,964.00	-1,894.87	-18.89	401,554.61	716,025.34	32.102697	-103.769177
13,900.00	90.00	179.91	11,964.00	-1,994.87	-18.75	401,454.61	716,025.49	32.102422	-103.769178
14,000.00		179.91	11,964.00	-2,094.87	-18.60	401,354.61	716,025.64	32.102147	-103.769179
14,100.00		179.91	11,964.00	-2,194.87	-18.45	401,254.61	716,025.79	32.101872	-103.769181
14,200.00		179.91	11,964.00	-2,294.87	-18.30	401,154.61	716,025.94	32.101597	-103.769182
14,300.00		179.91	11,964.00	-2,394.87	-18.15	401,054.61	716,026.09	32.101322	-103.769183
14,400.00	90.00	179.91	11,964.00	-2,494.87	-18.00	400,954.61	716,026.24	32.101047	-103.769184
14,500.00		179.91	11,964.00	-2,594.87	-17.85	400,854.61	716,026.39	32.100772	-103.769185
14,600.00		179.91	11,964.00	-2,694.87	-17.70	400,754.61	716,026.54	32.100498	-103.769187
14,700.00		179.91	11,964.00	-2,794.87	-17.55	400,654.61	716,026.69	32.100223	-103.769188
14,800.00		179.91	11,964.00	-2,894.87	-17.40	400,554.61	716,026.83	32.099948	-103.769189
14,900.00		179.91	11,964.00	-2,994.87	-17.25	400,454.61	716,026.98	32.099673	-103.769190
15,000.00		179.91	11,964.00	-3,094.87	-17.10	400,354.61	716,027.13	32.099398	-103.769191
15,100.00		179.91	11,964.00	-3,194.86	-16.95	400,254.61	716,027.28	32.099123	-103.769193
15,200.00		179.91	11,964.00	-3,294.86	-16.80	400,154.61	716,027.43	32.098848	-103.769194
15,300.00		179.91	11,964.00	-3,394.86	-16.65	400,054.61	716,027.58	32.098573	-103.769195
15,400.00		179.91	11,964.00	-3,494.86	-16.51	399,954.61	716,027.73	32.098298	-103.769196
15,500.00	90.00	179.91	11,964.00	-3,594.86	-16.36	399,854.61	716,027.88	32.098024	-103.769198

Database: Company:

Project:

Design:

EDM r5000.141_Prod US WCDSC Permian NM

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Well: Wellbore: Lusitano 27-34 Fed Com 733H

Wellbore #1

Local Co-ordinate Reference:

TVD Reference:

MD Reference:

North Reference: Survey Calculation Method: Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft

RKB @ 3359.80ft Grid

Minimum Curvature

Planned Survey

Permit Plan 1

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	179.91	11,964.00	-3,694.86	-16.21	399,754.61	716,028.03	32.097749	-103.769199
15,700.00	90.00	179.91	11,964.00	-3,794.86	-16.21	399,654.61	716,028.18	32.097474	-103.769200
15,700.00	90.00	179.91	11,964.00	-3,794.86	-15.91	399,554.61	716,028.33	32.097199	-103.769201
15,800.00	90.00	179.91	11,964.00	-3,094.86 -3,994.86	-15.91 -15.76	399,454.61	716,028.48	32.096924	-103.769207
16,000.00	90.00	179.91	11,964.00	-3,994.86 -4,094.86	-15.76	399,354.61	716,028.63	32.096649	-103.769204
16,100.00	90.00	179.91	11,964.00	-4,094.86 -4,194.86	-15.46	399,254.61	·	32.096374	-103.769204
	90.00	179.91		-			716,028.78		9
16,200.00 16,300.00	90.00	179.91	11,964.00 11,964.00	-4,294.86 -4,394.86	-15.31 -15.16	399,154.61 399,054.61	716,028.92 716,029.07	32.096099 32.095825	-103.769206 -103.769207
16,400.00	90.00	179.91	11,964.00	-4,494.86	-15.10	398,954.61	716,029.07	32.095550	-103.769207
16,500.00	90.00	179.91	11,964.00	-4,494.86 -4,594.86	-14.86	398,854.61	716,029.22	32.095275	-103.769210
16,600.00	90.00	179.91	11,964.00	-4,694.86	-14.00 -14.71	398,754.62	716,029.52	32.095000	-103.769211
16,700.00	90.00	179.91	11,964.00	-4,794.86		398,654.62	716,029.67		· ·
16,700.00	90.00	179.91	11,964.00	-4,794.86 -4,894.86	-14.56 -14.42	•		32.094725	-103.769212 i
16,900.00	90.00	179.91	11,964.00	-4,094.86 -4,994.86	-14.42 -14.27	398,554.62 398,454.62	716,029.82 716,029.97	32.094450 32.094175	-103.769213
17,000.00	90.00	179.91	11,964.00	-5,094.86	-14.27 -14.12	398,354.62	716,030.12	32.093900	-103.769214 - -103.769216 -
17,000.00	90.00	179.91	11,964.00	-5,0 94 .86	-14.12 -13.97	398,254.62	716,030.12		
17,100.00	90.00	179.91	11,964.00	-5,194.86 -5,294.86	-13.87	398,154.62	716,030.27	32.093625 32.093351	-103.769217 -103.769218
17,200.00	90.00	179.91	11,964.00	-5,294.86 -5,394.86	-13.67	398,054.62	716,030.42	32.093076	-103.769219
17,300.00	90.00	179.91	11,964.00	-5,394.86 -5,494.86	-13.52	397,954.62	716,030.37	32.092801	-103.769219
17,500.00	90.00	179.91	11,964.00	-5, 494 .86	-13.32	397,854.62	716,030.72	32.092526	-103.769222
17,500.00	90.00	179.91	11,964.00	-5,594.86 -5,694.86	-13.37 -13.22	397,754.62			
17,700.00	90.00	179.91	11,964.00	-5,794.86	-13.22 -13.07	•	716,031.02 716,031.16	32.092251 32.091976	-103.769223 -103.769224
17,700.00	90.00	179.91				397,654.62			· ·
	90.00		11,964.00	-5,894.86 5,004.86	-12.92 42.77	397,554.62	716,031.31	32.091701	-103.769225
17,900.00		179.91	11,964.00	-5,994.86 6,004.86	-12.77 12.62	397,454.62	716,031.46	32.091426	-103.769226
18,000.00 18,100.00	90.00 90.00	179.91 179.91	11,964.00 11,964.00	-6,094.86 -6,194.86	-12.62 -12.47	397,354.62	716,031.61	32.091151	-103.769228
	90.00					397,254.62	716,031.76	32.090877	-103.769229
18,200.00	90.00	179.91	11,964.00	-6,294.86	-12.32	397,154.62 397,054.62	716,031.91	32.090602	-103.769230
18,300.00		179.91	11,964.00	-6,394.86	-12.18 12.03		716,032.06	32.090327	-103.769231
18,400.00	90.00 90.00	179.91	11,964.00	-6,494.86	-12.03	396,954.62	716,032.21	32.090052	-103.769233
18,500.00		179.91	11,964.00	-6,594.86 6,604.86	-11.88 44.73	396,854.62	716,032.36	32.089777	-103.769234
18,600.00	90.00	179.91	11,964.00	-6,694.86	-11.73	396,754.62	716,032.51	32.089502	-103.769235
18,700.00	90.00	179.91	11,964.00	-6,794.86	-11.58	396,654.62	716,032.66	32.089227	-103.769236
18,800.00 18,900.00	90.00 90.00	179.91 179.91	11,964.00 11,964.00	-6,894.86 -6,994.86	-11.43 -11.28	396,554.62 396,454.62	716,032.81 716,032.96	32.088952 32.088678	-103.769237
19,000.00	90.00	179.91	11,964.00	-0,994.86 -7,094.86	-11.20	396,354.62	716,032.90	32.088403	-103.769239 -103.769240
19,100.00	90.00	179.91	11,964.00	-7,094.86 -7,194.86	-10.98	396,254.62	716,033.11	32.088128	
19,200.00	90.00	179.91	11,964.00	-7,194.86 -7,294.86	-10.83	396,154.62	716,033.40	32.087853	-103.769241 -103.769242
19,300.00	90.00	179.91	11,964.00	-7,294.86	-10.68	396,054.62	716,033.55	32.087578	-103.769243
19,400.00	90.00	179.91	11,964.00	-7,394.86 -7,494.86	-10.53	395,954.62	716,033.70	32.087303	-103.769245
19,500.00	90.00	179.91	11,964.00	-7,594.86	-10.38	395,854.62	716,033.85	32.087028	-103.769246
19,600.00	90.00	179.91	11,964.00	-7,694.86	-10.23	395,754.62	716,034.00	32.086753	-103.769247
19,700.00	90.00	179.91	11,964.00	-7,794.86	-10.09	395,654.62	716,034.15	32.086478	-103.769248
19,800.00	90.00	179.91	11,964.00	-7,894.86	-9.94	395,554.62	716,034.30	32.086204	-103.769249
19,900.00	90.00	179.91	11,964.00	-7,994.86	-9.79	395,454.63	716,034.45	32.085929	-103.769251
20,000.00	90.00	179.91	11,964.00	-8,094.86	-9.64	395,354.63	716,034.60	32.085654	-103.769251
20,100.00	90.00	179.91	11,964.00		-9.49		716,034.75		
20,100.00	90.00	179.91	11,964.00	-8,194.86 -8,294.86	-9.49 -9.34	395,254.63 395,154.63		32.085379 32.085104	-103.769253 -103.769254
20,200.00	90.00			-8,294.86 -8,394.86			716,034.90	32.085104	
	90.00	179.91	11,964.00		-9.19 - 9.04	395,054.63	716,035.05	32.084829	-103.769255
20,400.00		179.91	11,964.00	-8,494.86 8,504.86	-9.04	394,954.63	716,035.20	32.084554	-103.769257
20,500.00	90.00	179.91	11,964.00	-8,594.86 8,604.86	-8.89 9.74	394,854.63	716,035.35	32.084279	-103.769258
20,600.00	90.00	179.91	11,964.00	-8,694.86	-8.74	394,754.63	716,035.49	32.084004	-103.769259
20,700.00	90.00	179.91	11,964.00	-8,794.86	-8.59	394,654.63	716,035.64	32.083730	-103.769260
20,800.00	90.00	179.91	11,964.00	-8,894.86	-8.44	394,554.63	716,035.79	32.083455	-103.769261
20,900.00	90.00	179.91	11,964.00	-8,994.86 9,094.86	-8.29	394,454.63	716,035.94	32.083180	-103.769263

90.00

179.91

11,964.00

-9,094.86

394,354.63

716,036.09

-103.769264

32.082905

Database: Company: EDM r5000.141_Prod US WCDSC Permian NM

Project: Site:

Design:

Eddy County (NAD 83 NM Eastern)

Sec 27-T25S-R31E

Well: Wellbore: Lusitano 27-34 Fed Com 733H

Wellbore #1 Permit Plan 1 Local Co-ordinate Reference:

TVD Reference: MD Reference:

North Reference: **Survey Calculation Method:** Well Lusitano 27-34 Fed Com 733H

RKB @ 3359.80ft RKB @ 3359.80ft

Grid

Minimum Curvature

Planned	Survey
---------	--------

Measured			Vertical			Map	Мар		
Depth (ft)	Inclination (°)	Azimuth (°)	Depth (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
21,100.00	90.00	179.91	11,964.00	-9,194.86	-7.99	394,254.63	716,036.24	32.082630	-103.769265
21,200.00	90.00	179.91	11,964.00	-9,294.86	-7.85	394,154.63	716,036.39	32.082355	-103.769266
21,300.00	90.00	179.91	11,964.00	-9,394.86	-7.70	394,054.63	716,036.54	32.082080	-103.769268
21,400.00	90.00	179.91	11,964.00	-9,494.86	-7.55	393,954.63	716,036.69	32.081805	-103.769269
21,500.00	90.00	179.91	11,964.00	-9,594.86	-7.40	393,854.63	716,036.84	32.081531	-103.769270
21,600.00	90.00	179.91	11,964.00	-9,694.86	-7.25	393,754.63	716,036.99	32.081256	-103.769271
21,700.00	90.00	179.91	11,964.00	-9,794.86	-7.10	393,654.63	716,037.14	32.080981	-103.769272
21,800.00	90.00	179.91	11,964.00	-9,894.86	-6.95	393,554.63	716,037.29	32.080706	-103.769274
21,900.00	90.00	179.91	11,964.00	-9,994.86	-6.80	393,454.63	716,037.44	32.080431	-103.769275
22,000.00	90.00	179.91	11,964.00	-10,094.86	-6.65	393,354.63	716,037.59	32.080156	-103.769276
22,100.00	90.00	179.91	11,964.00	-10,194.86	-6.50	393,254.63	716,037.73	32.079881	-103.769277
22,161.76	90.00	179.91	11,964.00	-10,256.62	-6.41	393,192.87	716,037.83	32.079711	-103.769278
LTP @ 2	2162' MD, 100	' FSL, 1650' F	WL				*		
22,200.00	90.00	179.91	11,964.00	-10,294.86	-6.35	393,154.63	716,037.88	32.079606	-103.769278
22,241.76	90.00	179.91	11,964.00	-10,336.62	-6.29	393,112.87	716,037.95	32.079492	-103.769279

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL - Lusitano 27-34 F	0.00	0.00	0.00	-10,336.62	-6.29	393,112.87	716,037.95	32.079492	-103.769279

- plan misses target center by 10336.62ft at 0.00ft MD (0.00 TVD, 0.00 N, 0.00 E) - Point

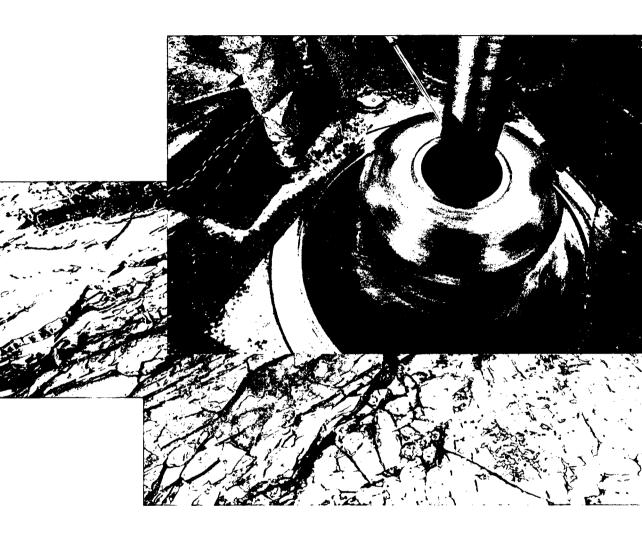
Plan Annota	Plan Annotations									
	Measured	Vertical	Local Coordinates							
	Depth	Depth	+N/-S	+E/-W						
	(ft)	(ft)	(ft)	(ft)	Comment					
	11,393.09	11,391.04	185.00	-22.00	KOP @ 11393' MD, 50' FNL, 1650' FWL					
1	11,634.23	11,625.13	135.00	-21.93	FTP @ 11634.23' MD, 100' FNL, 1650' FWL					
1	22,161.76	11,964.00	-10,256.62	-6.41	LTP @ 22162' MD, 100' FSL, 1650' FWL					
	22,241.76	11,964.00	-10,336.62	-6.29	PBHL; 20' FSL, 1650' FWL					

Devon Energy -2000 -1600 -1200 -800 -400 WELL DETAILS: Lusitano 27-34 Fed Com 733H RKB @ 3359.80ft 3334.80 400 Lusitano 27-34 Fed Com 733H Northing 403449.47 Easting 716044.24 Longitude -103.769084 Latittude 32.107905 FTP @ 11634.23" ND, 100" FNL; 1850" FWL 100' FNL Perf. Line SECTION DETAILS Permit Plan 1 VSect Annotation 0.00 0.00 -1.39 -184.06 -184.99 -184.99 -184.99 KOP @ 11393' MD, 50' FNL, 1650' FWL +N/-S 0.00 0.00 1.39 184.08 185.00 185.00 -387.96 -10336.62 TVD 0.00 2500.00 2626.51 10956.66 11041.00 11391.04 11964.00 11964.00 Azi 0.00 0.00 353.22 353.22 0.00 0.00 179.91 179.91 Dleg 0.00 0.00 1.00 0.00 1.50 0.00 10.00 0.00 0.00 0.00 1.27 1.27 0.00 0.00 90.00 90.00 +E/-W 0.00 0.00 -0.16 -21.89 -22.00 -22.00 -21.14 -6.29 400 0.00 2500.00 2626.52 10958.70 11043.05 11393.09 12293.09 22241.76 -1200 10336.62 PBHL; 20' FSL, 1650' FWL 1600 -2000 2000 devon -2800 2800 3200 3600 3600 Sec. 27-25S-31E 8 2 Vertical 2 -6000 6000 6400 6800 6800 7200 -7600 7600 8006 8400 8400 8800 Sec. 34-25S-31E -9200 -9600 9600 10000 LTP @ 22162' MD, 100' FSL, 1650' FWL 100' FSL Perf. Line -10400 10400 PBHL; 20' FSL, 1650' FWL -10800 10800 11200 KOP @ 11393' MD. 50' FNL. 1650' FWL FTP @ 11634.23' MD. 100' FNL, 1650' FWL LTP @ 22162' MD, 100' FSL, 1650' FWL 11600 PBHL: 20' FSL_ 1650' FWL 12000 400 800 1200 1600 2000 2400 2800 3200 3600 4000 4400 4800 5200 5600 6000 6400 6800 7200 7600 8000 8400 8800 9200 9600 10000 10400 10800

Vertical Section at 180.03* (400 ft/in)



Commitment Runs Deep



Design Plan Operation and Maintenance Plan Closure Plan

SENM - Closed Loop Systems June 2010

I. Design Plan

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

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

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

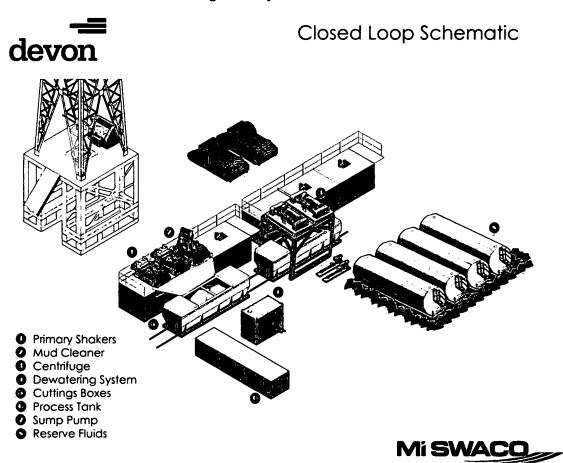
Prior to installing a closed-loop system on site, the topsoil, if present, will be stripped and stockpiled for use as the final cover or fill at the time of closure.

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

II. Operations and Maintenance Plan

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

III. Closure Plan

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

Metal One Corp.			FLUSHMAX	-111	Page	44-0	
24.10			FEOSITIVIAX-III		Date	25-Jan-17	
Metal O ne		ne	Connection Data	3 Sheet		k 1 -	
					Rev.	ev. N - 1	
			Geometry	<u>Imperi</u>	<u>al</u>	<u>S.I.</u>	
			Pipe Body				
			Grade	P110		P110	
			Pipe OD (D)	7 5/8	in	193.68	mm
FL	USHMA	X-III	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				
4	1 1		Box OD (W)	7.625	in	193.68	mm
	17/	1	PIN ID	6.875	in	174.63	mm
			Make up Loss	3.040	in	77.22	mm
	1 \$\	Box critical area	Box Critical Area	4.424	in ²	2854	mm²
			Joint load efficiency	60	%	60	%
	1 / 1		Thread Taper		1 / 16 (3/4" per ft)		
			Number of Threads		5 TPI		
 Make	[\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	d	Charles Windship				
up		Pin critical area	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimizer	9,470 ed Minimum Y um Internal Yie	psi IELD Stren		
up loss	33333	critical	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimo	9,470 ed Minimum Y um Internal Yie for Connect	psi IELD Strendld Pressur	65.31 ogth of Pipe boe e of Pipe bod	MPa ody
up	27.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.7.	critical	M.I.Y.P. Note S.M.Y.S.= Specifi M.I.Y.P. = Minimi	9,470 ed Minimum Y um Internal Yie for Connect	psi psi IELD Strereld Pressurent	65.31 igth of Pipe bo e of Pipe bod	MPa ody
up		critical	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimum Performance Properties Min. Compression Yield	9,470 ed Minimum Y um Internal Yie for Connect 563 kips	psi psi IELD Strented Pressure psi psi psi psi psi psi psi psi psi psi psi psi psi psi psi	65.31 ogth of Pipe boe e of Pipe bod	MPa ody
up		critical	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimum Performance Properties Min. Compression Yield External Pressure	9,470 ed Minimum Y um Internal Yie for Connect 563 kips	psi psi lELD Strengled Pressuration con	65.31 e of Pipe bod of S.M.Y.S.)	MPa ody v
up		critical area	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimum Performance Properties Min. Compression Yield	9,470 ed Minimum Y um Internal Yie for Connect 563 kips	psi IELD Strended Pressuration	65.31 e of Pipe bod of S.M.Y.S.)	MPa ody v
up	\$ 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	critical area	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimum Performance Properties Min. Compression Yield External Pressure	9,470 ed Minimum Y um Internal Yie for Connect 563 kips	psi psi lELD Strengled Pressuration con	65.31 e of Pipe bod of S.M.Y.S.)	MPa ody v
up		critical area	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimit M.I.Y.P. = Minimi	9,470 ed Minimum Y um Internal Yie for Connect 563 kips	psi psi lELD Strengled Pressuration con	65.31 e of Pipe bod of S.M.Y.S.)	MPa ody v
up		critical area	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimoder Min. Compression Yield External Pressure Recommended Torque	9,470 ed Minimum Y um Internal Yie for Connect 563 kips	psi IELD Strender Pressure ion	65.31 e of Pipe bod of S.M.Y.S.)	MPa ody v
up		critical area	M.I.Y.P. Note S.M.Y.S.= Specific M.I.Y.P. = Minimit M.I.Y.P. = Minimi	9,470 ed Minimum Y um Internal Yie for Connect 563 kips	psi IELD Strender Pressure Ion 100% of	ogth of Pipe bode of Pipe bode of S.M.Y.S.) Collapse S	MPa ody v

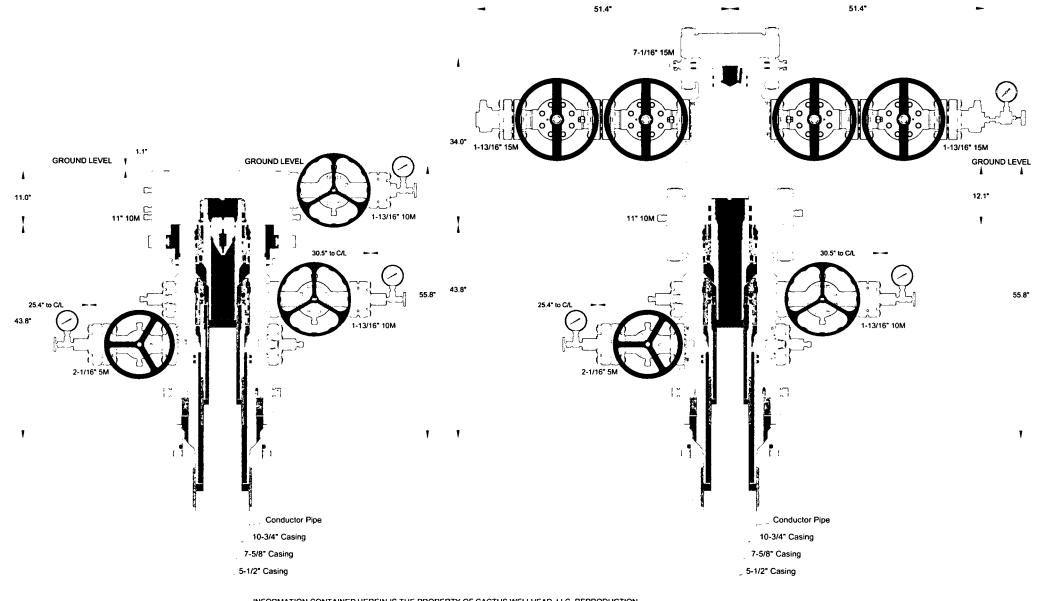
Legal Notice

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.

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

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.mtlo.co.jp/mo-con/ images/top/WebsiteTerms Active 20333287 1.pdf the contents of which are incorporated by reference into this Connection Data Sheet.



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

CACTUS WELLHEAD LLC

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

ALL DIMENSIONS APPROXIMATE

DEVON ENERGY CORPORATION

DLE 20NOV18

ODE0001804



Quotation

ODESSA WAREHOUSE 8001 GROENING STREET ODESSA TX 79765 Phone: 432-653-0306 Quote Number: ODE0001804

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

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

DELAWARE BASIN

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

QUOTATION SUMMARY:

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

CACTUS CONTACT: SCOTT NORDQUIST MOBILE: 832.803.5055

EMAIL: scott.nordquist@cactuswellhead.com

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



Quotation

ODESSA WAREHOUSE 8001 GROENING STREET ODESSA TX 79765 Phone: 432-653-0306 Quote Number: ODE0001804

Date:

10/19/2018

Valid For 30 Days

Page 2 of 8

		Quantity	Price	Ext Price			
	MBU-T-CFL-R ASSEMBLY						
	125867	1.00	9,775.00	9,775.0			
	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 103030	1.00	1,735.00	1,735.0			
	FLG,THD,11 10M W/17.375-2 STUB ACME-2G L.H. THD,4130 75K & I/T -75 DEG F,PSL2		,	•			
	101970	1.00	1,500.00	1,500.0			
	LANDING RING,CW,CTF,16 CSG X 20 OD X 15.25 ID,W/1/2-13UNC-2B LIFT HOLE		,	,			
	117696	1.00	7,691.00	7,691.0			
	CSGHGR,CW,MBU-T-CFL-R,10-3/4,10-3/4 (45.5#) BC PIN BTM X 11.250-4 STUB ACME-2G L TOP,9.945 MIN BORE,4140 110K,6A-U-AA-1-2	EFT HAND PI	Ň	·			
	125819	0.00	7,691.00	0.0			
	CSGHGR,CW,MBU-T-CFL-R,10-3/4,10-3/4 (45.5#) BC PIN BTM X 11.250-4 STUB ACME-2G L TOP,9.945 MIN BORE,4130 75K,6A-PU-DD-NL-1-2	EFT HAND PI	٧				
	VR2	1.00	30.00	30.0			
	VR PLUG,CW,1-1/2 (1.900) SHARP VEE X 1-1/4 HEX,API 6A-DD-NL						
	610003N	1.00	759.00	759.0			
	VLV,CW1,2-1/16 3/5M FE AA/DD-NL (API 6A LU AA/DD-NL PSL1 PR2) NON-MONOGRAMM	MED					
	200002	2.00	73.60	147.2			
	FLG,COMP,CW,2-1/16 5M X 2 LP,6A-KU-EE-NL-1						
	BP2T	2.00	25.04	50.0			
	BULL PLUG,CW,2 LP X 1/2 LP,API 6A DD-NL						
	FTG1	1.00	6.85	6.8			
	FTG,GRS,VENTED CAP,1/2 NPT,ALLOY NON-NACE						
	R24	3.00	5.48	16.4			
	RING GASKET,R24,2-1/16 3/5M						
2	780067	8.00	2.35	18.8			
	STUD,ALL-THD W/2 NUTS,BLK,7/8-9UNC X 6-1/2,A193 GR B7/A194 GR 2H,NO PLATING						
	NVA	1.00	47.25	47.2			
	NEEDLE VALVE,MFA,1/2 10M						
	PG5M	1.00	47.88	47.8			
	PRESSURE GAUGE,5M,4-1/2 FACE,LIQUID FILLED,1/2 NPT						
	VR1	1.00	39.12	39.			
	VR PLUG,CW,1-1/4 (1.660) LP X 1-1/4 HEX,API 6A-DD-NL						
	FTG1	1.00	6.85	6.8			
	FTG,GRS,VENTED CAP,1/2 NPT,ALLOY NON-NACE						
	107412	1.00	1,950.00	1,950.0			
	VI V CW \$B100 1.13/16 10M FE BB/FE 0.5 (ADI 6A LII BB/FE 0.5 DSI 2 DD2) ODO TDIM ADI		•	•			

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



RENTAL TOOLS INCLUDE THE FOLLOWING ITEMS:

Quotation

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

Quote Number: ODE0001804

10/19/2018 Date:

Valid For 30 Days

		Friorie: 432-033-0300		•	Page 3 of 8		
			Quantity	Price	Ext Price		
.8	200010		2.00	74.33	148.66		
	FLG,COMP,1-	13/16 10M X 2 LP,5000 PSI MAX WP,4130 60K,6A-KU-EE-NL-1					
9	BX151		3.00	6.26	18.78		
	RING GASKE	T,BX151,1-13/16 10/15/20M					
0	780080		8.00	1.96	15.68		
	STUD,ALL-TI	HD W/2 NUTS,BLK,3/4-10UNC X 5-1/2,A193 GR B7/A194 GR 2H,NO PLATING					
1	BP2T		2.00	25.04	50.08		
	BULL PLUG,	CW,2 LP X 1/2 LP,API 6A DD-NL					
2	NVA		1.00	47.25	47.25		
	NEEDLE VAL	.VE,MFA,1/2 10M					
3	PG5M		1.00	47.88	47.88		
	PRESSURE G	AUGE,5M,4-1/2 FACE,LIQUID FILLED,1/2 NPT					
					24,148.80		
	CASING HANGERS & PACKOFFS						
24	120272		1.00	5,955.00	5,955.00		
	CSGHGR,CW,MBU-LR2-TP6,FLUTED,11 X 7-5/8 (29.7#) BC PIN BTM X 7.750-4 STUB ACME-2G RIGHT HAND BOX						
25	TOP,6A-U-AA 108908T	·-1-1	1.00	3,600.00	3,600.00		
5		V,MBU-LR,MANDREL,11 10M NOM,W/7.500-4 STUB ACME-2G LH BOX TOP,A			3,000.00		
	NECK,6A-U-A						
6	121451		1.00	6,876.00	6,876.00		
	CSGHGR,CW,MBU-LR-UPR-TP8,SN,FLUTED,7-5/8,11 X 5-1/2 (20#) VAM TOP HT PIN BTM X 6.125 4 STUB ACME-2G RIGHT HAND BOX TOP,W/5 HBPV THD,SPEC FOR ROTATING CASING STRING,,6A-U-AA-1-2						
27	120079	SIT HAND BOX TOF, W/5 HBFV THD, SI ECT OR ROTATING CASING STRING	,,0A-0-AA-1-2 1.00	1,800.00	1,800.00		
	PACKOFF,CW,CTF-MBU-3T,11,A/F 7.75 SEAL PREP,W/8.750-4 STUB ACME-2G LH BOX TOP,10000 PSI MAX						
_		DING ON 45 DEG SHOULDER ON HANGER,6A-U-AA-2-2					
8	BPV5T	WAY AMOUNTED A ARICA MONOCRAM	0.00	2,950.00	0.00		
	BPV,H,5 ONE	BPV,H,5 ONE WAY,4130,HYDRO TESTED & API 6A MONOGRAM					
	NOTE:						
		ALE ITEM; PRICE NOT INCLUDED IN TOTAL ENTAL RATE = \$90.00 PER DAY					
	OI HONAL K	ENTAL RATE - \$70.00 FER DAT			18,231.00		
	RENTAL T	ools					
9	RNM	Rental Charge Minimum	1.00	4,075.00	4,075.00		
	MBU-T RENTAL TOOLS = \$4,075.00 PER WELL FOR THE FIRST 45 DAYS; \$220.00 PER DAY THEREAFTER.						
	DENTAL TOOLS INCLUDE THE FOLLOWING ITTING						

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



Quotation

ODESSA WAREHOUSE 8001 GROENING STREET ODESSA TX 79765 Phone: 432-653-0306 Quote Number: ODE0001804

Date: 10/19/2018

Valid For 30 Days

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.



80K,6A-U-DD-NL-2-2 (REF115873)

Quotation

ODESSA WAREHOUSE 8001 GROENING STREET ODESSA TX 79765 Phone: 432-653-0306 Quote Number: ODE0001804

Date:

10/19/2018

Valid For 30 Days

Page 5 of 8

				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 TI	HD,5.13 MIN BC	RE &	
22	17-4PH LDS,34.0 LG,RND BAR,6A-PU-EE-0,5-1-2	4.00	2.015.00	12.060.00
32	104700 VLV,DSG-22,1-13/16 15M FE EE-0,5 (6A PU EE-0,5 PSL3 PR1),QPQ TRIM	4.00	3,015.00	12,060.00
11	100203	2.00	550.00	1 100 00
33	ADPT,TS,FH,1-13/16 15M X 2 FIG 1502 X 9/16 AUTOCLAVE,NON-NACE (INCLUDES SEAI	2.00	550.00	1,100.00
24		,		24.55
34	100048 ETC CRE VENTED CAR LO NET 4140, FOR WELL COTTOURS NIGHT COATING NACE K	1.00	34.55	34.55
	FTG,GRS,VENTED CAP,1/2 NPT,4140 -50F W/ELECTROLESS NICKEL COATING NACE,K-X-750 SPRING	MONEL BALL,	INCONEL	
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	3		
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,6	A-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, 10		•	



Quotation

ODESSA WAREHOUSE 8001 GROENING STREET 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

NOTE: MUST USE RX RING GASKET

0.00

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

For Acceptance of this Quotation Please Contact Ph: 713-626-8800 sales@cactuswellhead.com Mati: Labor: 70,623.00 0.00

Misc:

4,075.00 0.00

Sales Tax:

....

Total:

74,698.00



Quotation

ODESSA WAREHOUSE 8001 GROENING STREET ODESSA TX 79765 Phone: 432-653-0306 Quote Number: ODE0001804

Date: 10/19/2018

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. <u>Pricing.</u> 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. <u>Terms of Payment.</u> 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 (15%) 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 Wartanty. 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 MAY OFFER TECHNICAL ADVICE OR ASSISTANCE WITH REGARD TO THE PRODUCTS AND SERVICES BASED ON LABORATORY ANDOR FIELD EXPRESENDE 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 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 (transportation, redesign, dismantling, disposal of material and installation are not included and shall be borne and paid for by Customer (disposal of material and installation are not included and shall be borne and paid for by Customer (disposal of material and installation are not included and shall be borne and paid for by Customer (disposal of material and installation are not included and shall be borne and paid for by Customer (disposal of material and installation are not included and shall be borne and paid for by Customer (disposal of material and installation are not included and shall be borne and paid for by Customer (disposal of material and installation are not included and shall be borne and paid for by Customer (disposal of material and installation and installation are not included and shall be borne and paid for by Customer (disposal of material and installation and installation and installation and installation are not included and shall be borne and paid for by Customer (disposal of material and installation and installation and installation and installation and installation are not included and shall be borne and paid for by Custome
- 6. <u>Inspection</u>. 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 also provide a waiver of subrogation rights in favor of the Company (and such of its affiliates as it shall designate) including their officers, directors, members, shareholders, employees, agents and representatives. The provisions of this Section 6 shall apply and the obligation to maintain insurance of each party in the coverages and amounts set forth herein shall remain in force regardless and independent of the validity or enforce ability of the Indemnity provisions of Section 7, below, the obligation to obtain insurance is a separate and independent obligation. If the Insurance required herein is more or less than allowed by prevailing law, the Indemnity obligations in Section 7 below shall be effective only to the maximum extent permitted under applicable law.
- 8. <u>Indemnification</u>. 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. <u>Customer Indemnity Obligations</u>. 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, indemnity, 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 indemnification shall be in proportion to its allocable share of such negligence.
- D. <u>Pollution</u>. Company agrees that it shall be totally responsible for, and shall protect, defend and indemnify. Customer for all losses, damages, claims, demands, costs, charges, and other expenses, including attorneys' fees, for any and all waste and/or hazardous substances which are in Company Group's exclusive possession and control and directly associated with Company Group's equipment and facilities, EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF CUSTOMER GROUP. Customer shall assume all responsibility for, including control and removal of, and shall protect, defend and indemnify Company Group from and against all Claims arising directly or indirectly from all other pollution or contamination which may occur during the conduct of operations hereunder, including, but not limited to, that which may result from fire, blowout, cratering, seepage or any other uncontrolled flow of oil, gas, water or other substance, EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED BY OR CONTRIBUTED TO BY THE NEGLIGENCE OF COMPANY GROUP.
- E. Wild Well. Customer shall release Company Group of any liability for, and shall protect, defend and indemnify Company Group for any damages, expenses. losses, fines, penalties, costs, expert fees and attorneys' fees arising out of a fire, blow out, cratering, seepage or wild well, including regaining control thereof, debris removal and property restoration and remediation. THIS INDEMNITY APPLIES EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.
- F. <u>Underground Damage.</u> Customer shall release Company Group of any liability for, and shall protect, defend and indemnify Company Group from and against any and all claims, liability and expenses resulting from operations related to the work under this agreement on account of injury to, destruction of, or loss or impairment of any property right in or to oil, gas or other mineral substance or water, if at the time of the act or omission causing such injury, destruction, loss or impairment said substance and not been reduced to physical possession above the surface of the earth, and for any loss or damage to any formation, strata, or reservoir beneath the surface of the earth. THIS INDEMNITY APPLIES EVEN IF THE LOSSES, DAMAGES, CLAIMS, DEMANDS, COSTS, FEES, AND EXPENSES ARE CAUSED NEGLIGENCE (WHETHER SOLE, JOINT OR CONCURRENT, ACTIVE OR PASSIVE, ORDINARY OR GROSS) STRICT LIABILITY, OR ANY OTHER LEGAL FAULT OR RESPONSIBILITY OF ANY MEMBER OF COMPANY GROUP.
- G. <u>Compliance With Laws, Rules And Regulations</u>. 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.
- 1. If a claim is asserted against one of the parties to this agreement which may give rise to a claim for indemnity against the other party hereto, the party against whom the claim is first asserted must notify the potential indemnitor in writing and give the potential indemnitor the right to defend or assist in the defense of the claim.
- 7. Risk Of Loss. a.Title and risk of loss shall pass to Customer upon delivery as specified in Article 9. Customer's receipt of any material delivered hereunder shall be an unqualified acceptance of, and a waiver by Customer of any and all claims with respect to, such material unless Customer gives Company written notice of claim within thirty (30) days after such receipt. Notwithstanding the foregoing, installation or use of materials or equipment shall unequivocally constitute irrevocable acceptance of said materials. Customer assumes all risk and liability for the results obtained by the use of any material or products delivered



Quotation

ODESSA WAREHOUSE 8001 GROENING STREET ODESSA TX 79765 Phone: 432-653-0306 Quote Number: ODE0001804

Date: 10/19/2018

Valid For 30 Days

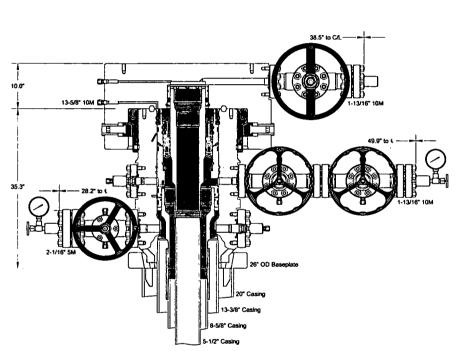
Page 8 of 8

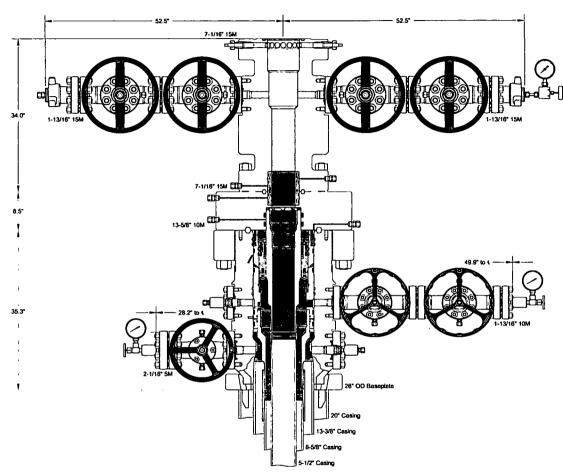
hereunder in work performed by on behalf of Customer or in combination with other substances or products. No claim of any kind, whether as to material delivered or for non-delivery of material, and whether or not based on negligence, shall be greater in amount than the purchase price of the material 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. <u>Termination.</u> 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. <u>Delivery.</u> 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 turnished 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, essentially respected to 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. <u>Delays.</u> 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. <u>Limitation Of Damages</u>. 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), inclinect, 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 OR 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 WILLIFUL 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, coverants 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 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. <u>Taxes</u>. 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. <u>Deceptive Trade Practices</u>. 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 Walver. 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. Choles 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
- 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. <u>Authority.</u> 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. <u>Force Maleure.</u> 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 result thereof.
- 21. <u>Confidentiality</u>. Customer acknowledges the highly secret and valuable nature of all proprietary inventions, methods, processes, designs, know-how, and trade secrets embodied in the Company's equipment, products and services and its components (hereinafter referred to as "Confidential Data"). Accordingly, Customer agrees not to disclose or use any Confidential Data. Customer further agrees to take any and all necessary precautions to prevent disclosure of the Confidential Data associated with the Company's equipment, products and services and components thereof to persons other than those employees of Customer for whom such disclosure is necessary for performance of the work hereunder.
- 22. Compliance. Customer expressly agrees to comply with and abide by, all of the laws of the United States and of the State of Texas, including, but not limited to, OSHA. EPA and all rules and regulations now existing or that may be hereafter promulgated under and in accordance with any such law or laws, and hereby agrees to indemnify and hold Company harmless from any and all claims, demands, or damages incurred by Company arising from Customer's failure to comply with all laws and governmental regulations. The indemnities in this paragraph shall be in addition to any other indemnity obligations between Customer and Company, including any other indemnity obligations contained herein.





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

ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC

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

DEVON ENERGY CORPORATION DELAWARE BASIN

_	DRAWN	DLE	01NOV18
	APPRV		
	DRAWING NO	HBE000	00013

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

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

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

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

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

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

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

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.

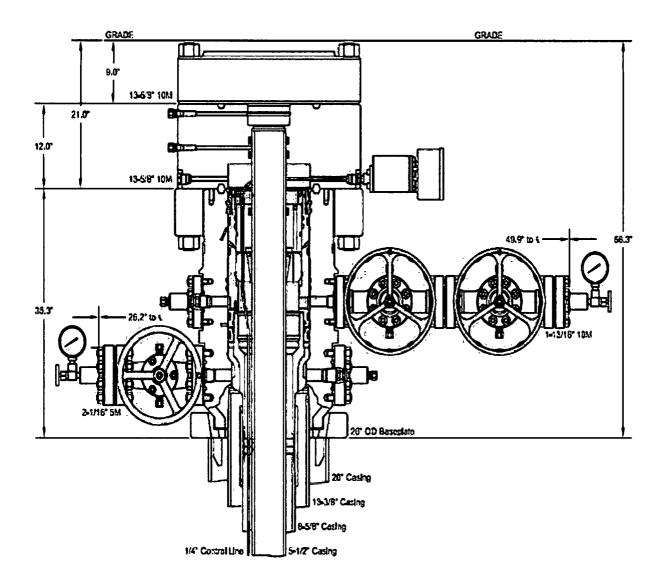
- Wellhead will be installed by wellhead representatives.
- If the welding is performed by a third party, the wellhead representative will monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
- Wellhead representative will install the test plug for the initial 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 a 10M system will be installed and tested, with 5M annular being tested to 100% of rated working pressure.

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

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



Geologic Formations

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

Basin

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

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

1. Casing Program (Primary Design)

. Casin	5 1 10510	(2	ary Desig	••,					
Hole	Casing Interval		Csg.	Wt	Grade	Conn	Min SF	Min SF	Min SF
Size	From	To	Size	(PPF)	Grade Com		Collapse	Burst	Tension
14.75"	0	928	10.75"	40.5	J-55	STC	1.125	1.25	1.6
9.875"	0	11393	7.625" 29.7		P110	втс	1.125	1.25	1.6
8.75"	11393	12293	7.625"	29.7	1110	Flushmax III	1.123	1.25	1.6
6.75"	0	TD	5.5"	20	P110	Vam SG	1.125	1.25	1.6
	-	•		BLM	Minimum !	Safety Factor	1.125	1.00	1.6 Dry 1.8 Wet

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

Casing Program (Alternate Design)

Hole	Casing Interval		Csg.	Wt.	Grade	Conn	Min SF	Min SF	Min SF			
Size	From	To	Size	(PPF)	Grade	Com	Collapse	Burst Tension	Tension			
17.5"	0	928	13.375"	48	H-40	STC	1.125	1.25	1.6			
10.625"	0	5000	9 (35"	22	DILIOFO	ВТС	1 125	1.25	1.6			
9.875"	5000	12293	8.625"	32 F	32	32	32 P110E	P110EC	VAM FJL	1.125	1.25	1.6
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?	
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	

2. Cementing Program (Primary Design)

Casing	# Sks	тос	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	599	Surf	13.2	1.33	Lead: Class C Cement + additives

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

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

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

Cementing Program (Alternate Design)

Casing	# Sks	TOC	Wt. (lb/gal)	Yld (ft3/sack)	Slurry Description
Surface	768	Surf	13.2	1.33	Lead: Class C Cement + additives
7 . 1	1318	Surf	9	3.31	Lead: Class C Cement + additives
Int 1	834	4000' above shoe	13.2	1.33	Tail: Class H / C + additives
Int 1 Two Stage w DV @ ~4500	660	Surf	9	3.31	1 st stage Lead: Class C Cement + additives
	55	500' above shoe	13.2	1.33	1 st stage Tail: Class H / C + additives

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

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

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

3. Pressure Control Equipment (Three String Design)

BOP installed and tested before drilling which hole?	Size?	Min. Required WP	Туре		~	Tested to:
			An	nular	X	50% of rated working pressure
Int 1	13-5/8"	5M	Blin	d Ram	X	
1111 1	13-3/6	3101	Pipe	e Ram		5M
			Double Ram		X	3101
			Other*			
	13-5/8"	10M	Annu	lar (5M)	X	100% of rated working pressure
			Blin	Blind Ram		
Production			Pipe Ram			
			Double Ram		X	10 M
			Other *			
			Annular			
			Blin	Blind Ram		
			Pipe Ram			

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

4. Mud Program (3 String Design)

Do	epth	Tema	Weight	Vis	Water Loss	
From	To	Туре	(ppg)	VIS	water Loss	
0	928	FW Gel	8.5 - 9	28-34	N/C	
928	12293	DBE / Cut Brine	9 - 10	28-34	N/C	
12293	TD	OBM	10-10.5	28-34	N/C	

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

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

6. Logging and Testing Procedures

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

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

7. Drilling Conditions

Condition	Specify what type and where?			
BH Pressure at deepest TVD	6532 psi			
Abnormal Temperature	No			

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

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

N H2S is present

Y	H2S Plan attached

8. Other facets of operation

Is this a walking operation? Potentially

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

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

Will be pre-setting casing? Potentially

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

Attachments						
<u>X</u>	Directional Plan					
	Other, describe					

Devon Energy Annular Preventer Summary

1. Component and Preventer Compatibility Table

Production casing

ALL

Open-hole

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

Component **OD** Preventer **RWP** 4.5" Drillpipe Fixed lower 4.5" 10M Upper 4.5-7" VBR **HWDP** 4.5" Fixed lower 4.5" 10M Upper 4.5-7" VBR 4.75" Drill collars and MWD tools Upper 4.5-7" VBR 10M Mud Motor 4.75" Upper 4.5-7" VBR 10M

5.5"

0-13-5/8"

Upper 4.5-7" VBR

Annular

Blind Rams

10M

5M

10M

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

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

2. Well Control Procedures

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

General Procedure While Drilling

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

Devon Energy Annular Preventer Summary

General Procedure While Tripping

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

General Procedure While Running Casing

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

General Procedure With No Pipe In Hole (Open Hole)

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

Devon Energy Annular Preventer Summary

General Procedures While Pulling BHA thru Stack

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



Fluid Technology

ContiTech Beattle Corp. Website: www.contitechbeattle.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/darifications 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 Beattle Corp

ContiTech Beattle Corp, 11535 Brittmoore Park Drive, Houston, TX 77041 Phone: +1 (832) 327-0141 Fax: +1 (832) 327-0148 www.contitechbeattle.com



PHOENIX

QUALITY DOCUMENT

PHOENIX RUBBER INDUSTRIAL LTD.

6728 Szeged, Budapesti út 10. Hungery • H-6701 Szeged, P. O. Box 152 none: (3662) 566-737 • Fax: (3662) 568-738

SALES & MARKETING: H-1092 Budapest, Ráday u. 42-44. Hungary • H-1440 Budapest, P. O. Box 26 Phone: (361) 456-4200 • Fax: (361) 217-2972, 456-4273 • www.taurusemerga.hu

QUAL INSPECTION	ITY CONTR		ATE	CERT.	N°: !	552	
PURCHASER:	Phoenix Beat	tie Co.		P.O. Nº	1519F	A-871	
PHOENIX RUBBER order No.	170466	HOSE TYPE:	3" ID	Ch	oke and Kill I	Hose	
HOSE SERIAL N°	34128	NOMINAL / AC	TUAL LENGT	н:	11,43 m		
W.P. 68,96 MPa 1	0000 psi	T.P. 103,4	MPa 15	000 psi	Duration:	60	min.
Pressure test with water at ambient temperature ↑ 10 mm = 10 Min. → 10 mm = 25 MPa		achment. (1	page)				the cap is a co
→ 10 mm = 25 MPa		COUPLI	vgs				1,435p. .±1
Туре		Serial N°		Quality		Heat N°	
3" coupling with	72	· : · · ·		AISI 4130		C7626	
4 1/16" Flange end				AISI 4130	,	47357	
				:			
All metal parts are flawless			API Spec Temperat	ure rate:"			
WE CERTIFY THAT THE ABOVE PRESSURE TESTED AS ABOVE	HOSE HAS BEEN WITH SATISFACT	MANUFACTURI ORY RESULT.	ED IN ACCORI	DANCE WITH	I THE TERMS O	f the orde	ER AND
Date: 29. April. 2002.	Inspector		Quality Co	In CHOI	ENIX RUBE dustrial Ltd. Inspection a		in

GN -0.000 PC 14.00

GN -0.000 PC 14.00

GN -0.000 PC 13.40

GN -0.000 PC 13.40

GN -0.000 PC 13.40

GN -0.000 PC 13.20

GN -0.

VERIFIED TRUE CO. PHOENIX RUBBER & C.



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



APD ID: 10400033922

Submission Date: 09/19/2018

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP

Well Name: LUSITANO 27-34 FED COM

Well Number: 733H

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_733H_Ex_Access_Rd_20180910085426.pdf

Existing Road Purpose: ACCESS

Row(s) Exist? NO

ROW ID(s)

ID:

Do the existing roads need to be improved? NO

Existing Road Improvement Description:

Existing Road Improvement Attachment:

Section 2 - New or Reconstructed Access Roads

Will new roads be needed? YES

New Road Map:

Lusitano_27_34_Fed_Com_733H_Access_Rds_20180910085515.pdf

New road type: COLLECTOR, RESOURCE

Length: 9442

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:

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

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_733H_1mile_Map_20180910085539.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 3 (also know as Cotton Draw Unit 27-34 CTB 3).

Section 5 - Location and Types of Water Supply

Water Source Table

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

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_733H_Wtr_Xfr_Map_20180911092404.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:

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

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_733H_Caliche_Pit_20180910085642.pdf

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: DRILL CUTTINGS

Amount of waste: 1255

harrels

Waste disposal frequency: Daily

Safe containment description: N/A

Safe containment attachment:

Waste disposal type: HAUL TO COMMERCIAL Disposal location ownership: COMMERCIAL

FACILITY

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 containment attachment:

Waste disposal type: HAUL TO COMMERCIAL

Disposal location ownership: COMMERCIAL

FACILITY

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 containment attachment:

Waste disposal type: OFF-LEASE INJECTION Disposal location ownership: PRIVATE

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

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 containment 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

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

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_733H_Rig_Layout_20180911043403.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: 3.

Recontouring attachment:

Lusitano_27_34_Fed_Com_733H_Reclamation_20180910085754.pdf

Drainage/Erosion control construction: All areas disturbed shall be reclaimed as early and as nearly as practicable to their original condition or their final land use and shall be maintained to control dust and minimize erosion to the extent practicable **Drainage/Erosion control reclamation:** Topsoils and subsoils shall be replaced to their original relative positions and contoured so as to achieve erosion control, long-term stability and preservation of surface water flow patterns. The disturbed area then shall be reseeded in the first favorable growing season.

Well pad proposed disturbance

(acres): 5.62

Road proposed disturbance (acres):

6.502

Powerline proposed disturbance

(acres): 0.621

Pipeline proposed disturbance

(acres): 0.185

Other proposed disturbance (acres):

4.219

Total proposed disturbance: 17.147

Well pad interim reclamation (acres):

1.921

Road interim reclamation (acres): 0

Powerline interim reclamation (acres):

U

Pipeline interim reclamation (acres): 0

Other interim reclamation (acres): 0

Total interim reclamation: 1.921

Well pad long term disturbance

(acres): 3.699

Road long term disturbance (acres):

6.502

Powerline long term disturbance

(acres): 0.621

Pipeline long term disturbance

(acres): 0.185

Other long term disturbance (acres):

4.219

Total long term disturbance: 15.226

Disturbance Comments:

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

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

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

Existing Vegetation at the well pad:

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP Well Name: LUSITANO 27-34 FED COM Well Number: 733H **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: Total pounds/Acre: Seed Summary

Seed Type

Pounds/Acre

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

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:

Well Name: LUSITANO 27-34 FED COM	Well Number: 733H
Other Local Office:	
USFS Region:	
USFS Forest/Grassland:	USFS Ranger District:
Disturbance type: EXISTING ACCESS ROAD	
Describe:	
Surface Owner: BUREAU OF LAND MANAGEMENT	
Other surface owner description:	
BIA Local Office:	
BOR Local Office:	
COE Local Office:	: .
DOD Local Office:	
NPS Local Office:	
State Local Office:	
Military Local Office:	
USFWS Local Office:	
Other Local Office:	
USFS Region:	
USFS Forest/Grassland:	USFS Ranger District:
Disturbance type: WELL PAD	
Describe:	
Surface Owner: BUREAU OF LAND MANAGEMENT	
Other surface owner description:	
BIA Local Office:	
BOR Local Office:	
COE Local Office:	
DOD Local Office:	
NPS Local Office:	

Operator Name: DEVON ENERGY PRODUCTION COMPANY LP		
Well Name: LUSITANO 27-34 FED COM	Well Number: 733H	
State Local Office:		
Military Local Office:		
JSFWS Local Office:		
Other Local Office:		
JSFS Region:		
JSFS Forest/Grassland:	USFS Ranger District:	
Disturbance type: PIPELINE		
Describe:	:	·.
Surface Owner: BUREAU OF LAND MANAGEMENT		
Other surface owner description:		
BIA Local Office:	:	
BOR Local Office:		
COE Local Office:		
OOD Local Office:		
IPS Local Office:		
state Local Office:		
filitary Local Office:		
ISFWS Local Office:		
Other Local Office:		
JSFS Region:		
ISFS Forest/Grassland:	USFS Ranger District:	
··		
Section 12 - Other Information		
Right of Way needed? NO	Use APD as ROW?	
ROW Type(s):		

ROW Applications

Well Name: LUSITANO 27-34 FED COM Well Number: 733H

SUPO Additional Information: Gas & Water Battery Connect CTB Electric Flowline

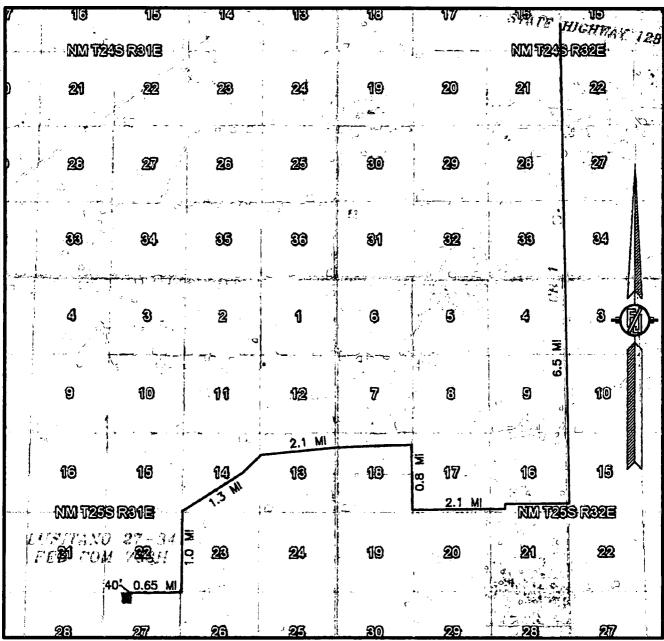
Use a previously conducted onsite? YES

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

Other SUPO Attachment

Lusitano_27_34_Fed_Com_733H_Gas_Wtr_Battery_Connect_20180910085917.pdf
Lusitano_27_34_Fed_Com_733H_CDU_27_34_CTB_3_20180910085940.pdf
Lusitano_27_34_Fed_Com_733H_Electric_20180910090023.pdf
Lusitano_27_34_Fed_Com_733H_Flowline_20180910090042.pdf





NOT TO SCALE AERIAL PHOTO: GOOGLE EARTH NOVEMBER 2017 DEVON ENERGY PRODUCTION COMPANY, L.P.

LUSITANO 27-34 FED COM 733H

LOCATED 235 FT. FROM THE NORTH LINE
AND 1672 FT. FROM THE WEST LINE OF

SECTION 27, TOWNSHIP 25 SOUTH,

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

EDDY COUNTY, STATE OF NEW MEXICO

DDY COUNTY, STATE OF NEW MEXICO LAND STATUS: BLM

AUGUST 1, 2018

SURVEY NO. 6430

MADRON SURVEYING, INC. 301 SOUTH CARLSBAD, NEW MEXICO

ACCESS ROAD PLAT ACCESS ROAD TO THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H) 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 1, 2018 N21'37'35'W 48.29 FT 23 22 N89"49'25"E N89'49'25"E 2658.24 FT 2658.24 FT 26 25 27 (TIE) 45.00 FT EXISTING 20'
CALICHE LEASE RD 1 2 2643. SEC 26 00+0 T.25S. + R.31E BC 1939 27 36^{8C} 1939 S89°47'30"W 2667.72 FT S89'39'26"W 2666.80 FT 35 35 SEE NEXT SHEET (2-4) FOR DESCRIPTION 1000 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. = 1000 **GENERAL NOTES** 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT. IN WITHERS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD, 2.) BASIS OF BEARING AND DISTANCE IS NMSP NEW MEXICO DAY OF EAST (NAD83) MODIFIED TO SURFACE MADRON SURVEYING, INC COORDINATES. NAD 83 (FEET) AND NAVD 88 301 SOUTH CANAL (FEET) COORDINATE SYSTEMS USED IN THE CARLSBAD, NEW MEXICO 88220 ŠURVÉY. Phone (575) 234-3341 SHEET: 1-4 SURVEY NO. 6430 NEW MEXICO *MADRON SURVEYING*

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H)

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 1. 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:

SOUTHWEST 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 NOO'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

301 SQT

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 SURVEYIN

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 WINESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD.

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

SURVEY NO. 6430

NEW MEXICO

ACCESS ROAD PLAT ACCESS ROAD TO THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H) DEVON ENERGY PRODUCTION COMPANY, L.P. CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING SECTION 27, TOWNSHIP 25 SOUTH, RANCE 31 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO AUGUST 1, 2018 23 22 21 N89'39'25"E BC 1839 N89'38'30"E 2653.78 FT 2652.26 FT 1939 BC 1939 NW ROAD S00 21 04 E 27 26 28 589'39'25'W 1385.67, FT 589'38'30 2653.49 40.04 (TIE) 45.00 FT (TIE) N63'11'06"W NE ROAD 1467.94 FT ı٤ 18 LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H) SECTION SE E 500°01 \$ **5** 5 SEC 27 돐 T. 25S., R. 31E. Фвс 1839 BC 1839 E 2648.28 NW ACCESS RD. (TIE) NW RD. BEGIN STA 0+00 BEGIN NW ACCESS RD. STA 39+97.3 SW ACCESS RD. N88 24 00 W 1327.01 FT STA 0140.0 END NW ACCESS RD. (TIE) NW RD. END (TIE) NE RD. BEGIN N86'40'28'W N86"15"00"E NE ACCESS RD. 1328.98 FT 757.26 FT STA 0+00 BEGIN NE ACCESS RD. STA 34+27.2 SW ACCESS RD. (TIE) NE RD. END N83°14'38"E 760.68 FT STA D+40.0 END NE ACCESS RD. 27 1 26 28 1 27 35^{BC 1939} BC 1939 S89"35'41"W 2660.37 FT S89"34"05"W 2657.26 FT 33. SEE NEXT SHEET (4-4) FOR DESCRIPTION 1000 SURVEYOR CERTIFICATE Scale: 1" = 1000 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 BELLEF, AND THAT THIS SURVEY AND PLAT MEET THE MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF NEW MEXICO.

IN WITNESS WHEREA THIS CERTIFICATE IS EXECUTED AT CARLSBAD, **GENERAL NOTES** 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT. 2.) BASIS OF BEARING AND DISTANCE IS NMSP NEW MENCO, THIS DAY_OF **WUGUST** EAST (NAD83) MODIFIED TO SURFACE 12797 COORDINATES. NAD 83 (FEET) AND NAVD 88 MADRON SURVEYING, INC. 301 SOÙTH CANÁL (FEET) COORDINATE SYSTEMS USED IN THE CARLSBAD, NEW MEXICO 88220 **SURVÉY.** Phone (575) 234-3341 SHEET: 3-4 SURVEY NO. 6430 *MADRON SURVEYING* ZCARLSBAD, NEW MEXICO

ACCESS ROAD PLAT

ACCESS ROAD TO THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H)

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 1, 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:

SOUTHWEST 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 NOO'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 SB9'39'25"W A DISTANCE OF 1385.67 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED; THENCE SOC'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 1326.17 LF. 80.37 RODS NE/4 NW/4 0.913 ACRES NW/4 NW/4 728.83 LF. 44.17 RODS 0.502 ACRES

NORTHEAST 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

NORTHWEST 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

SOI SOUTH CHANGE

CENERAL 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 ŠURVĖY.

SHEET: 4-4

MADRON SURVEYING

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

IN WITNESS WHEREOS, THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEXICO, TRISCAS DAY OF

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

SURVEY NO. 6430

ÁRLSBAD NEW MEXICO

ACCESS ROAD PLAT (AA000055110)
SOUTH ACCESS ROAD TO THE COTTON DRAW UNIT 27-34 PAD 3 & TO THE
COTTON DRAW UNIT 27-34 CTB 3 DEVON ENERGY PRODUCTION COMPANY, L.P. CENTERLINE SURVEY OF AN ACCESS ROAD CROSSING SECTION 26, TOWNSHIP 25 SOUTH, RANGE 31 EAST, N.M.P.M. EDDY COUNTY, STATE OF NEW MEXICO MAY 10, 2016 22 N89'49'25"E N89'49'25"E 2658.24 FT 2658.24 FT 25 27 (TIE) (TIE) 1114.97 FT NO1'15'59'W 1115.09 FT EXISTING 20' CALICHE LEASE RD. 8 SEC 26 T.25S. + R.31E 26 | 25 36^{BC 1939} S89°47'30"W 2667.72 FT S89'39'26"W 2666.80 FT 35 35 SEE NEXT SHEET (2-6) FOR DESCRIPTION 1000 SURVEYOR CERTIFICATE Scale: 1" = 1000 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 GERTIFICATE IS EXECUTED AT CARLSBAD, GENERAL NOTES 1.) THE INTENT OF THIS ROUTE SURVEY IS TO ACQUIRE AN EASEMENT. 2.) BASIS OF BEARING IS NMSP EAST (NAD83) NEW MEXICO, THIS MÓDIFIED TO SURFACE COORDINATES. NAD 83 (FEET) AND NAVD 88 (FEET) COORDINATE MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220 SYSTEMS USED IN THE SURVEY. Phone (575) 234-3341 SHEET: 1-6 SURVEY NO. 4666 MADRON SURVEYING, /INC. 301 SOUTH CA

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

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 NO1'15'59"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 NO0'01'16"E, A DISTANCE OF 1114.97 FEET;

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

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

SURVEYOR CERTIFICATE

NOT SOUTH CAN

(575) 234-3344

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 Systéms used in the survey.

SHEET: 2-6

MADRON SURVEYING.

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 GENERAL OF NEW MEXICO.

IN WITNESS WHEREOF, THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

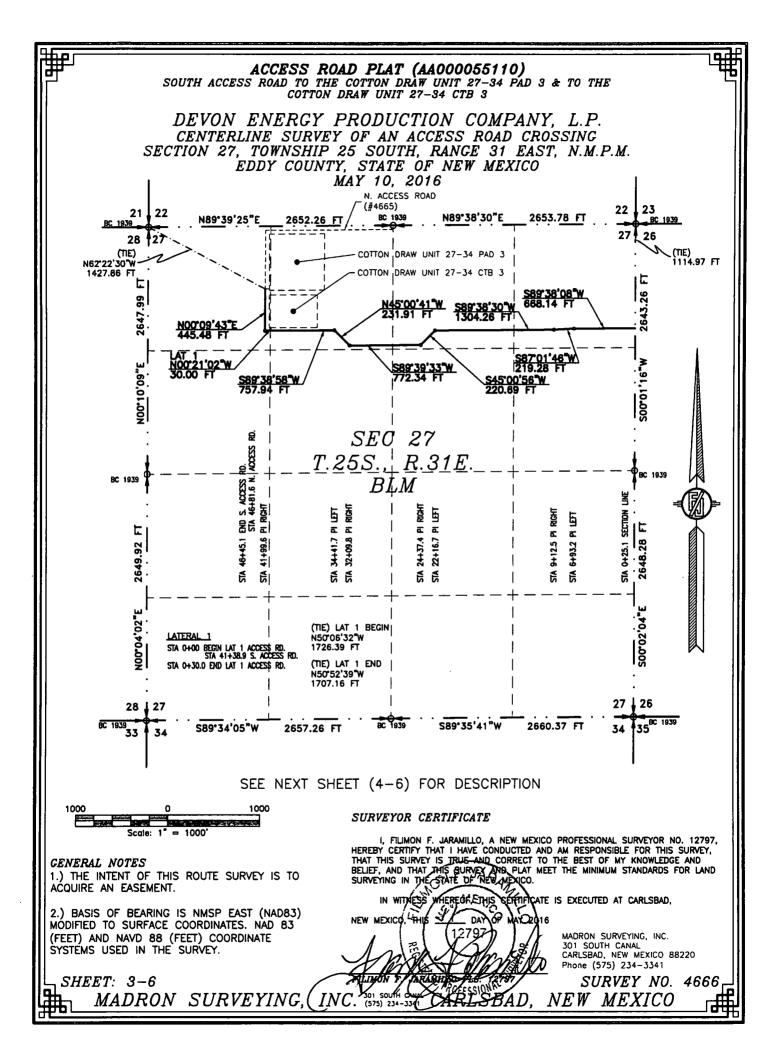
DAY OF THAY 20 NEW MEXICO, THI

CARLSBAD.

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

SURVEY NO. 4666

NEW MEXICO



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

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

DESCRIPTION

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

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 NOO'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 \$45'00'56"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 NOO'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 NW/4 NW/4

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 NOO'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

SURVEYOR CERTIFICATE

GENERAL NOTES

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

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

SHEET: 4-6

MADRON SURVEYING

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

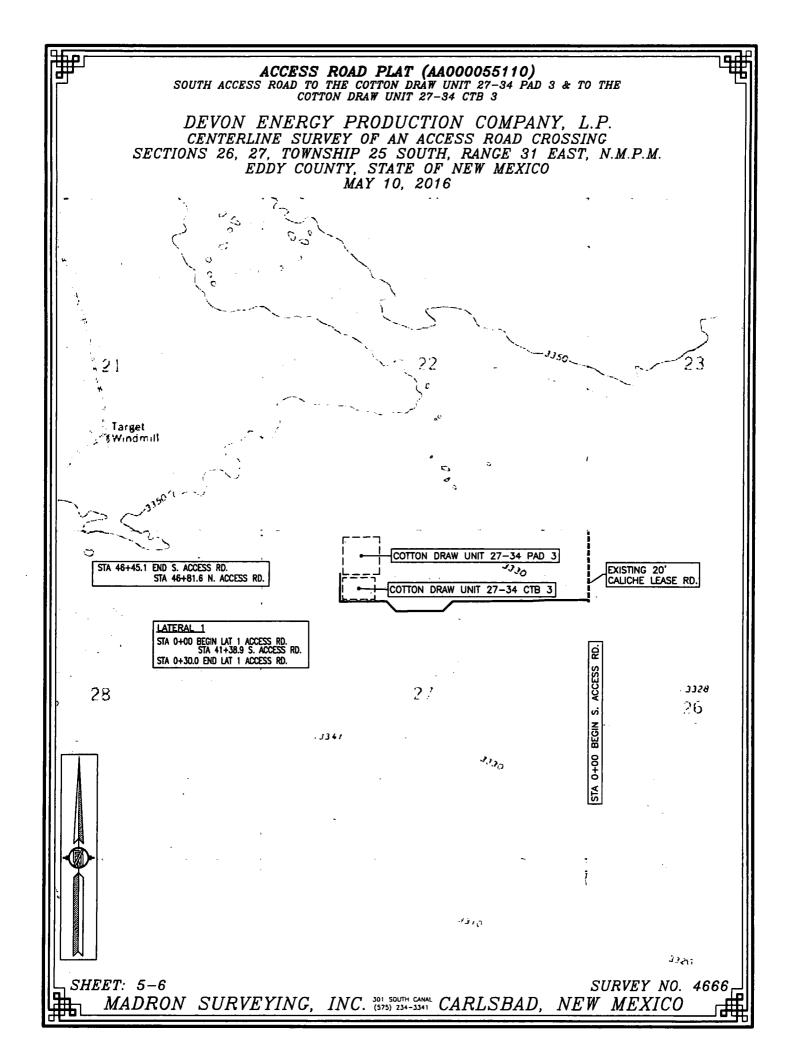
IN WITNESS WHEREOF THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

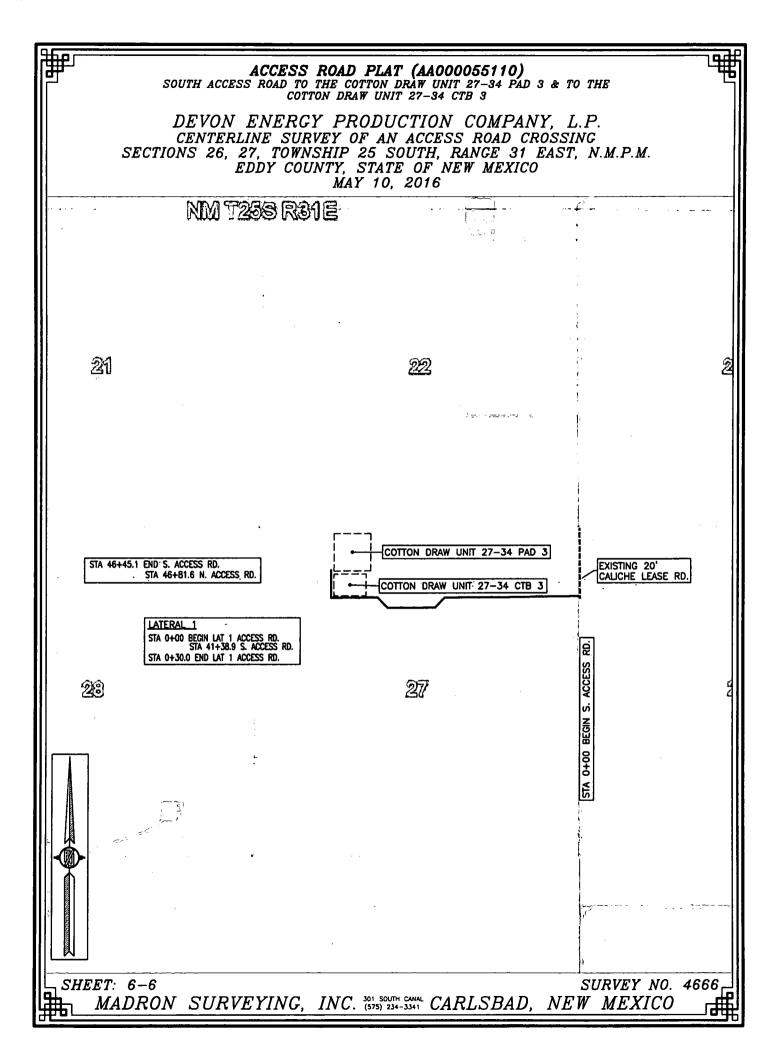
NEW MEXICO THIS DAY OF MAY 2016

NEW MEXICO THIS

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

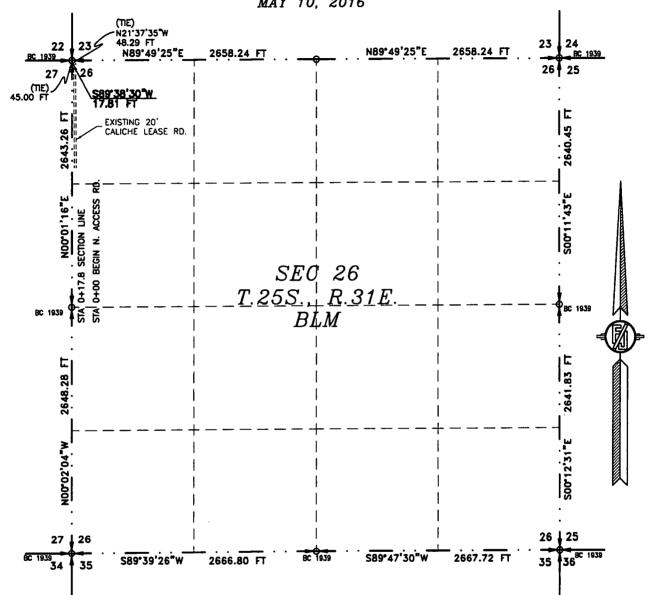
SURVEY NO. 4666





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

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



SEE NEXT SHEET (2-6) FOR DESCRIPTION

'INC:



GENERAL NOTES

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

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

SHEET: 1-6

MADRON SURVEYING,

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.

HEREOFI ETHIS CERTIFICATE IS EXECUTED AT CARLSBAD.

CARLSBAD

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

SURVEY NO. 4665

NEW MEXICO

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

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

DESCRIPTION

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

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

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 NOO'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

INC. 30 SOUTH CANAL (\$75) 234-3541

GENERAL NOTES

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

SHEET: 2-6

MADRON SURVEYING.

I, FILIMON F. JARAMILLO, A NEW MEXICO PROFESSIONAL SURVEYOR NO. 12797. HEREBY CERTIFY THAT I HAVE CONDUCTED AND AM RESPONSIBLE FOR THIS SURVEY IN 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.

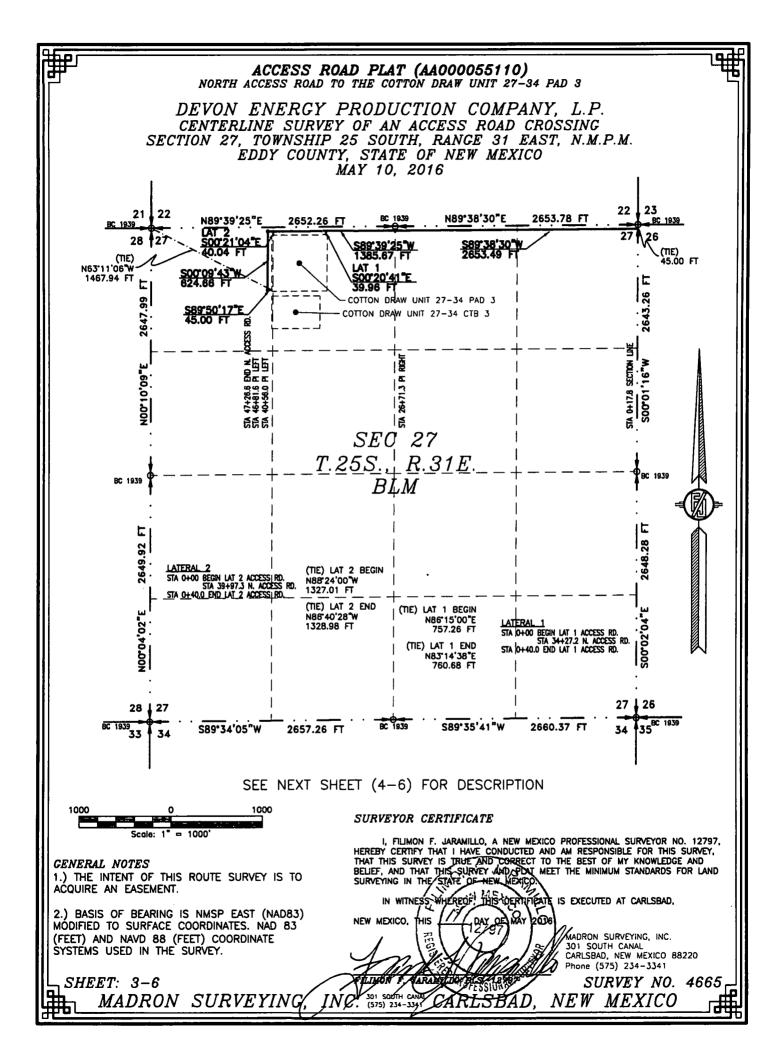
HEROF THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEW MEXICO

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

SURVEY NO. 4665

CARLSBAD *NEW MEXICO*



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

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

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 NOO'01'16"E, A DISTANCE OF 45.00

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 LF. 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 NB6'15'00"E, A DISTANCE OF

THENCE SOO"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

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:

INC. 301 SOUTH SWALLS

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

SURVEYOR CERTIFICATE

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 SYSTÉMS USED IN THE SURVEY.

SHEET: 4-6

MADRON SURVEYING,

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.

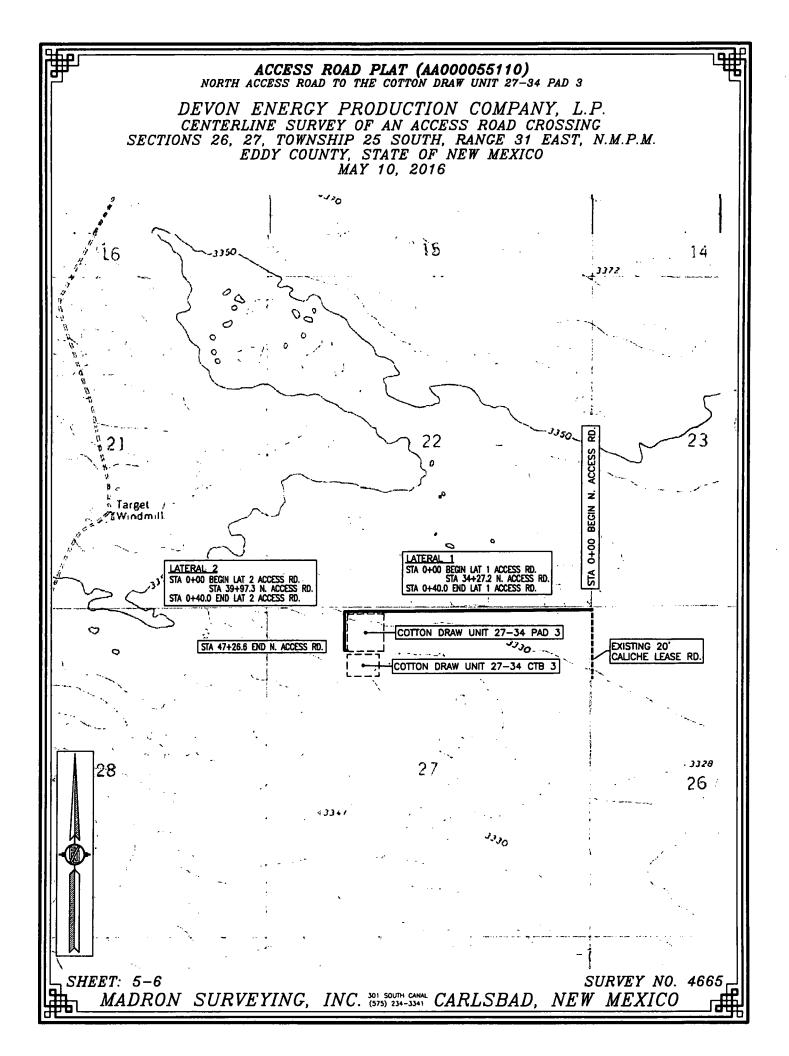
IN WITNESS WHEREOF THIS SER SERTIFICATE IS EXECUTED AT CARLSBAD,

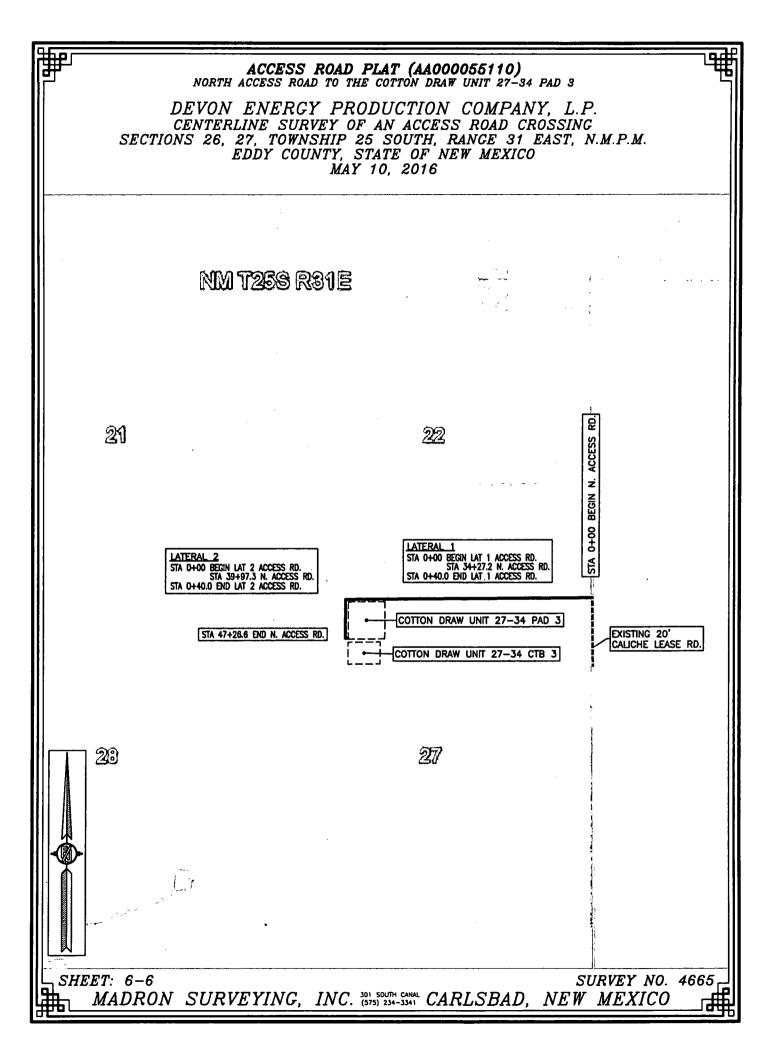
NEW MEXICO, THIS NO

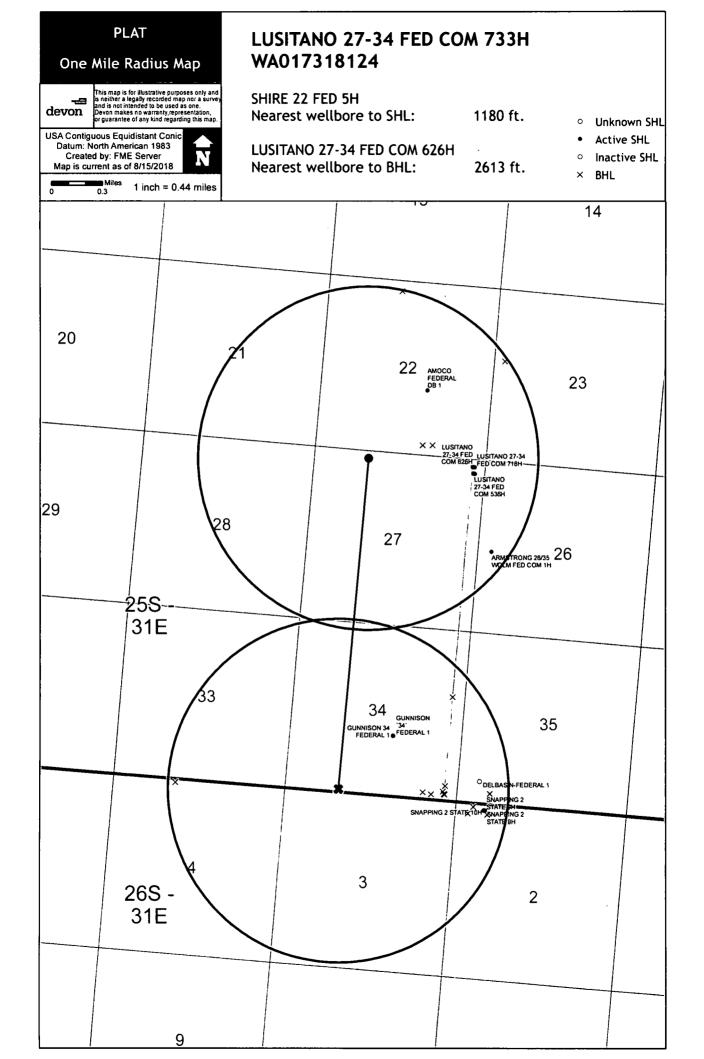
MADRON SURVEYING, INC. 301 SOUTH CANAL CARLSBAD, NEW MEXICO 88220 Phone (575) 234-3341

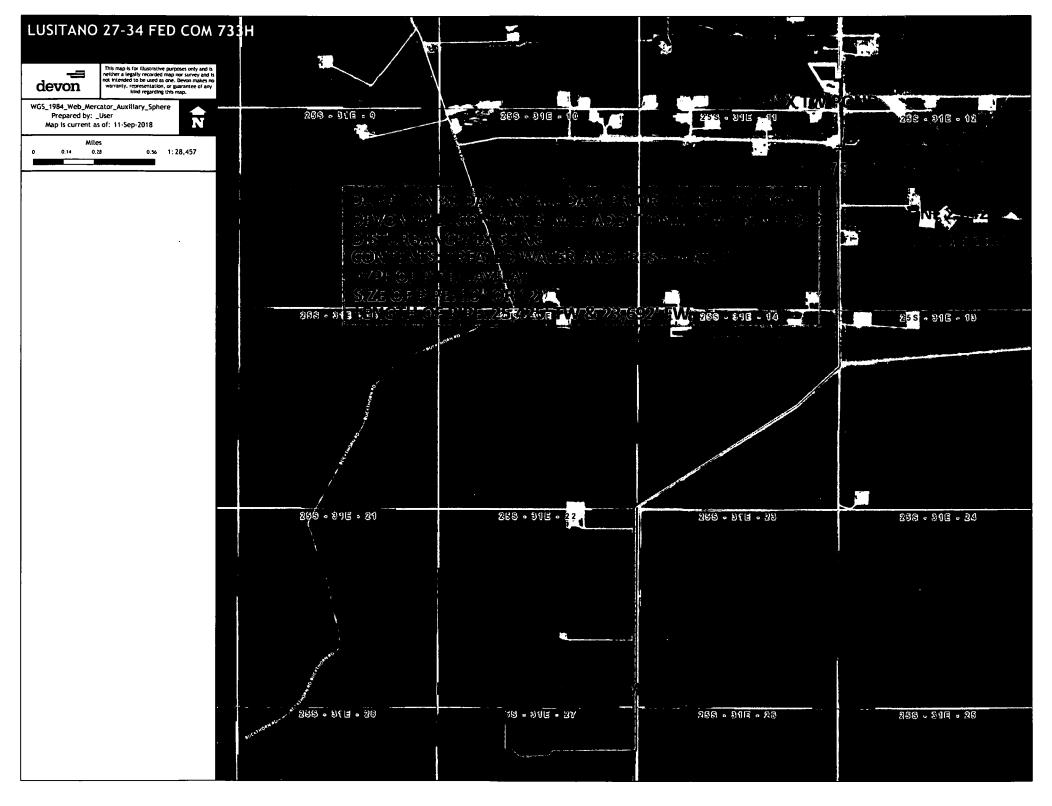
SURVEY NO. 4665

NEW MEXICO

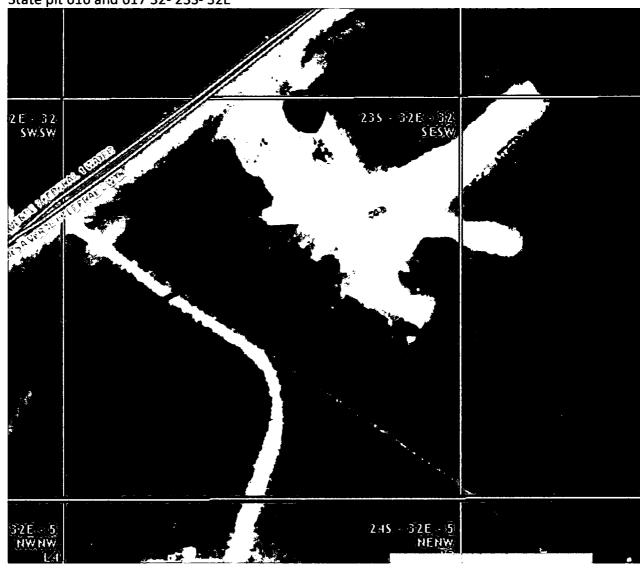






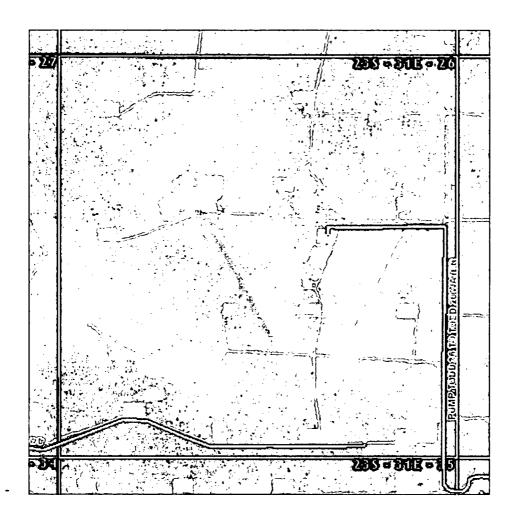


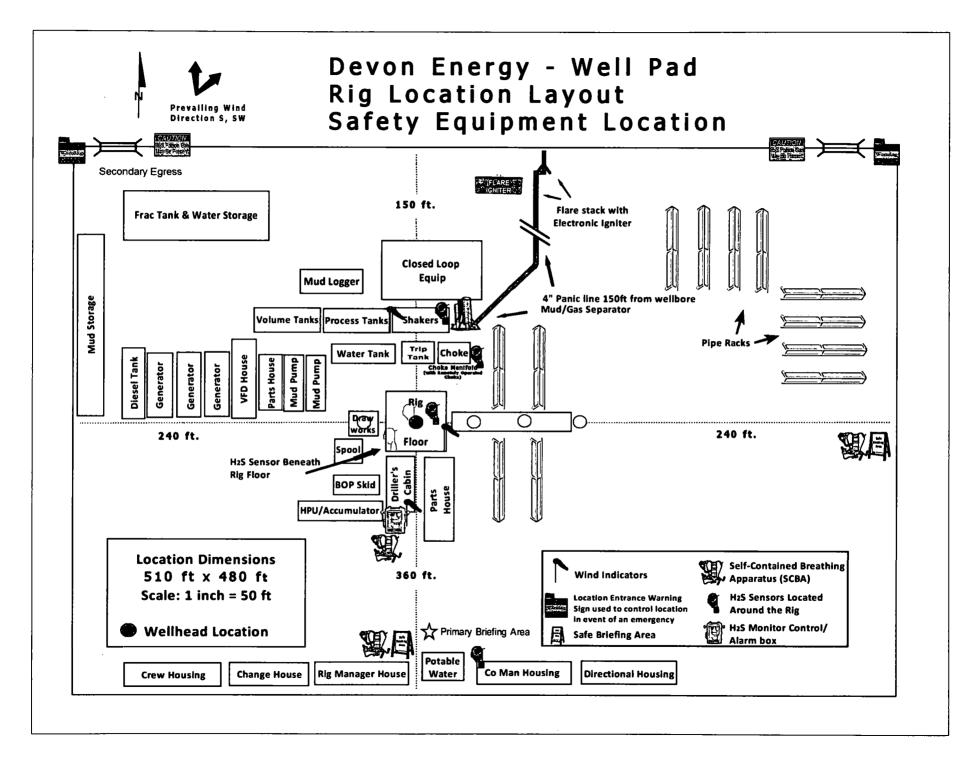
State pit 616 and 617 32- 23S- 32E

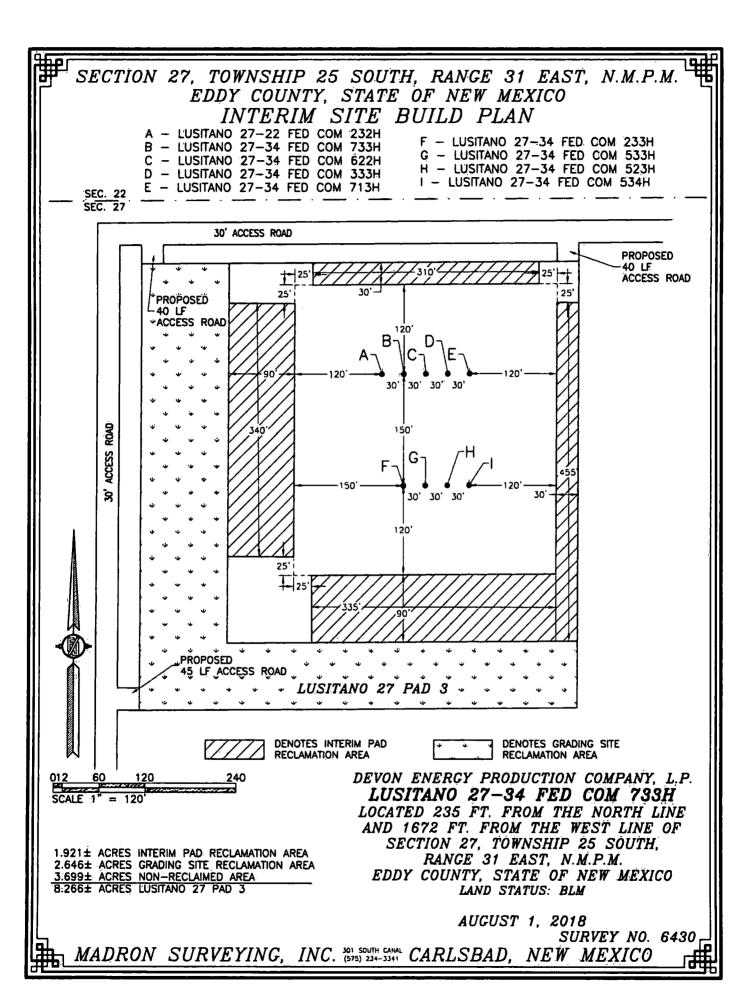


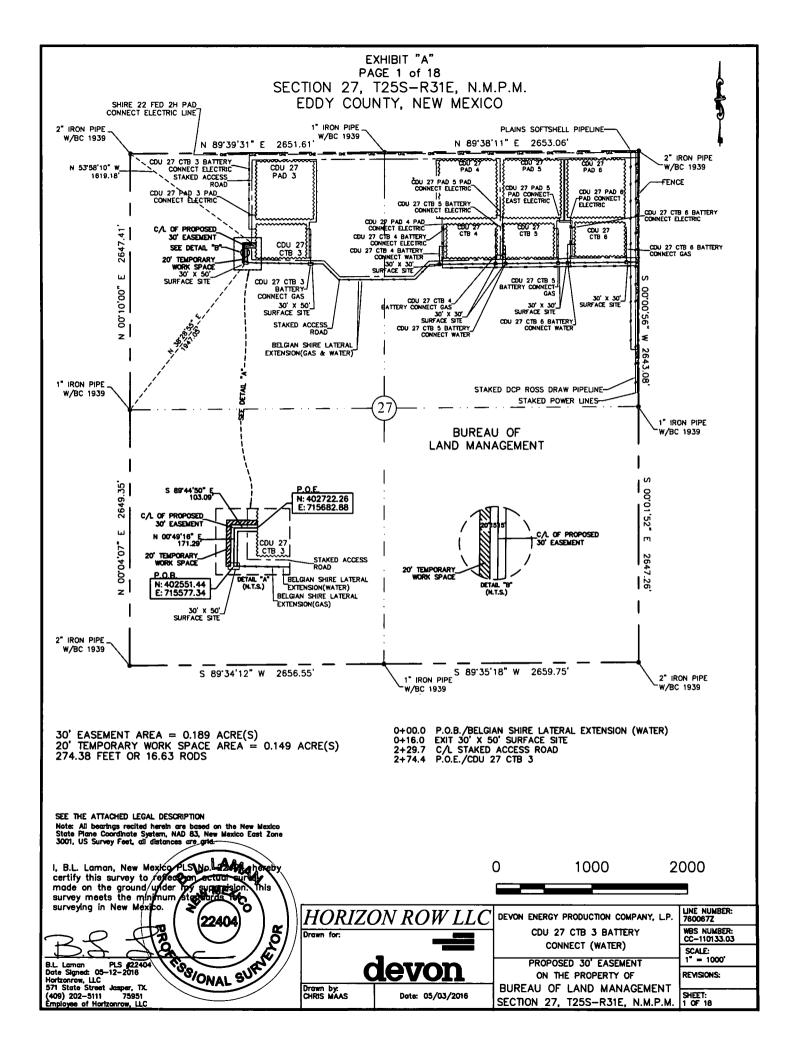
Fed pit 25- 23S- 31E











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 ½) 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:

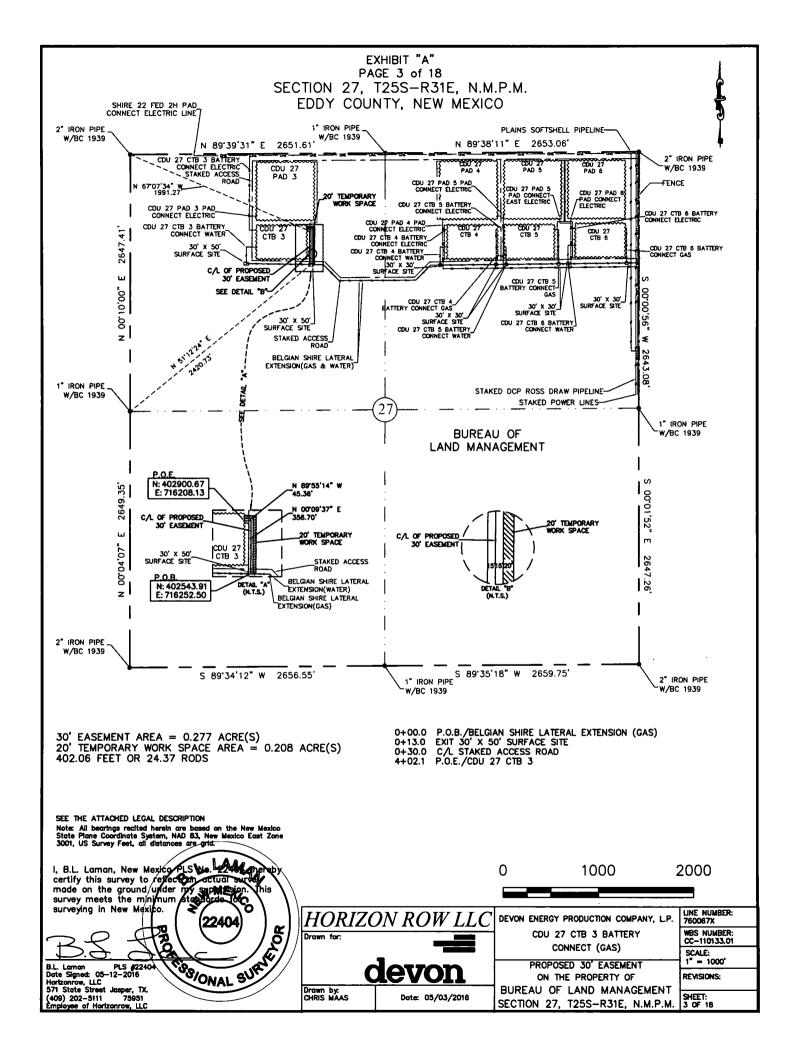
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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



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:

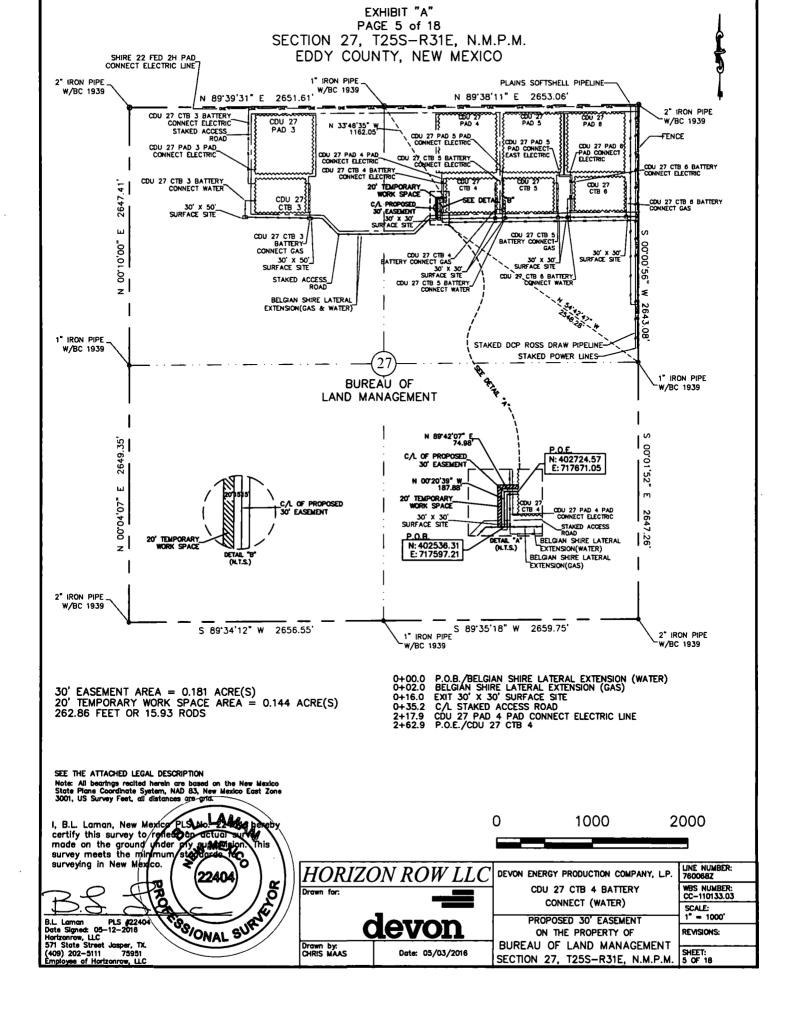
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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 224

Date Signed: 05/12/2016 Horizon Row, LLC

571 State Street, Jasper, TX (409) 202-5111 75951



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 ½) 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:

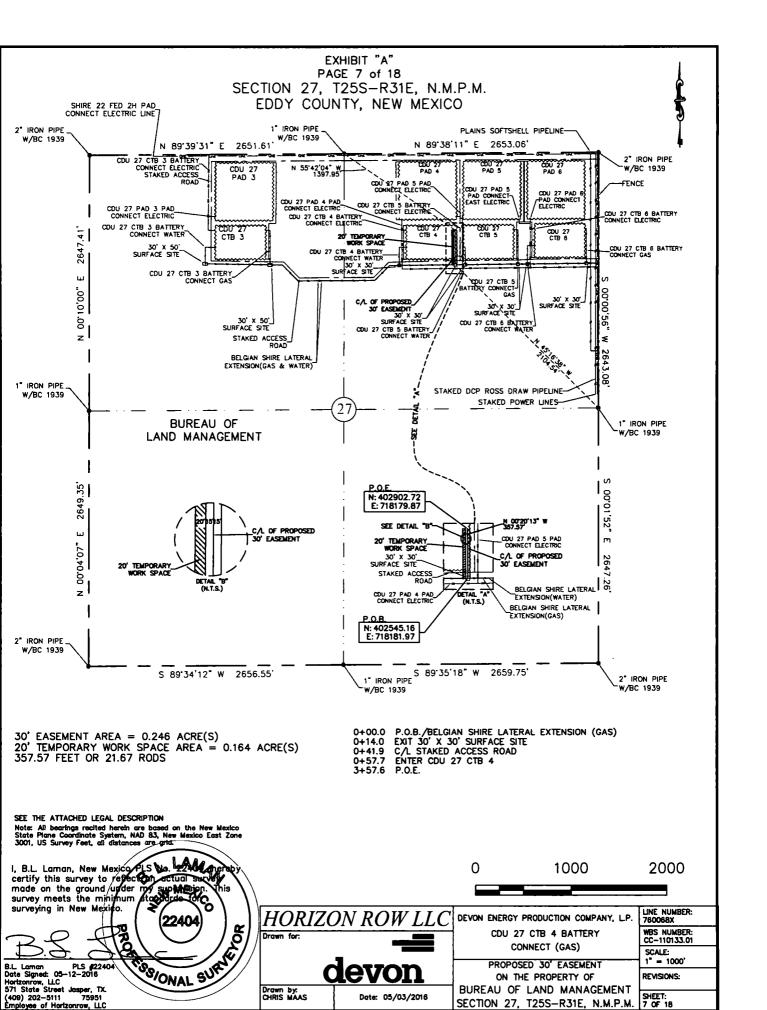
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

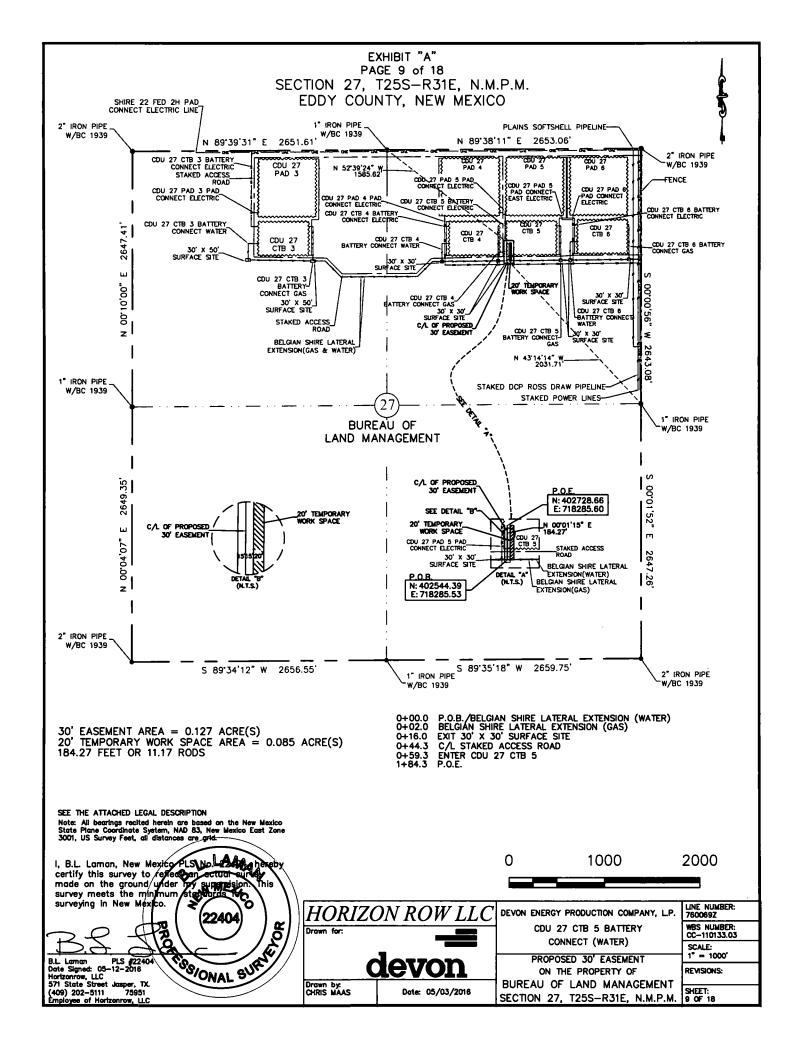
I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 22404 Date Signed: 05/12/2016

Horizon Row, LLC

571 State Street, Jasper, TX (409) 202-5111 75951





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 ½) 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:

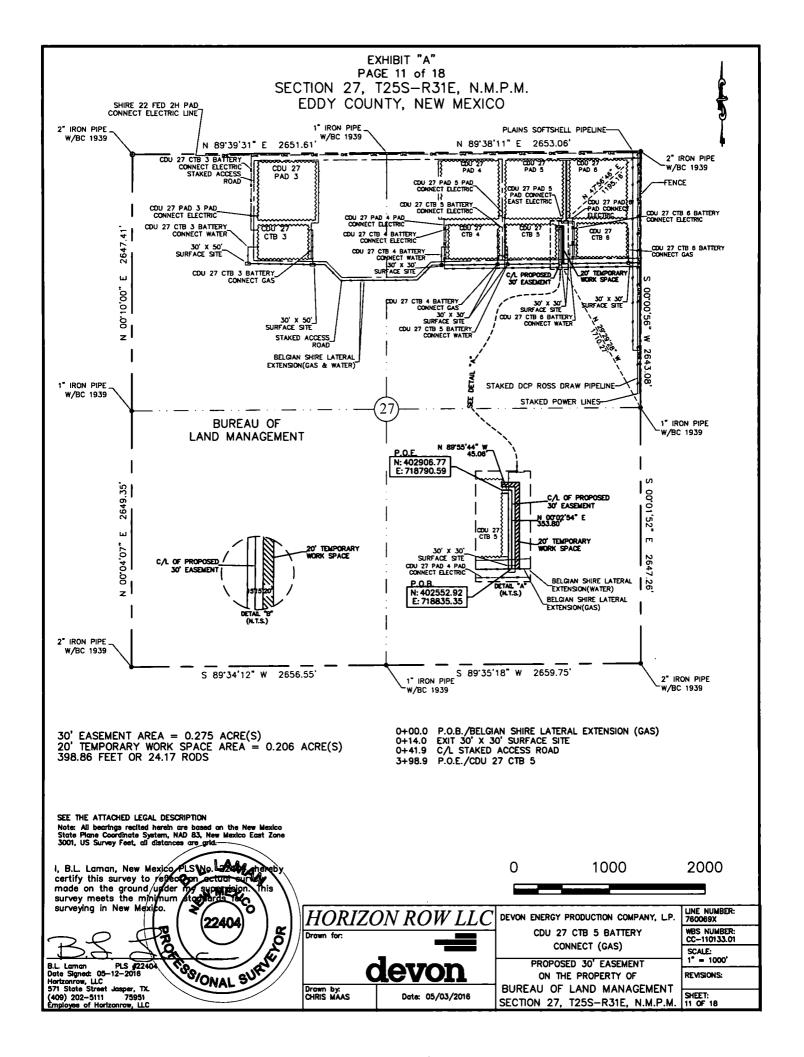
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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



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:

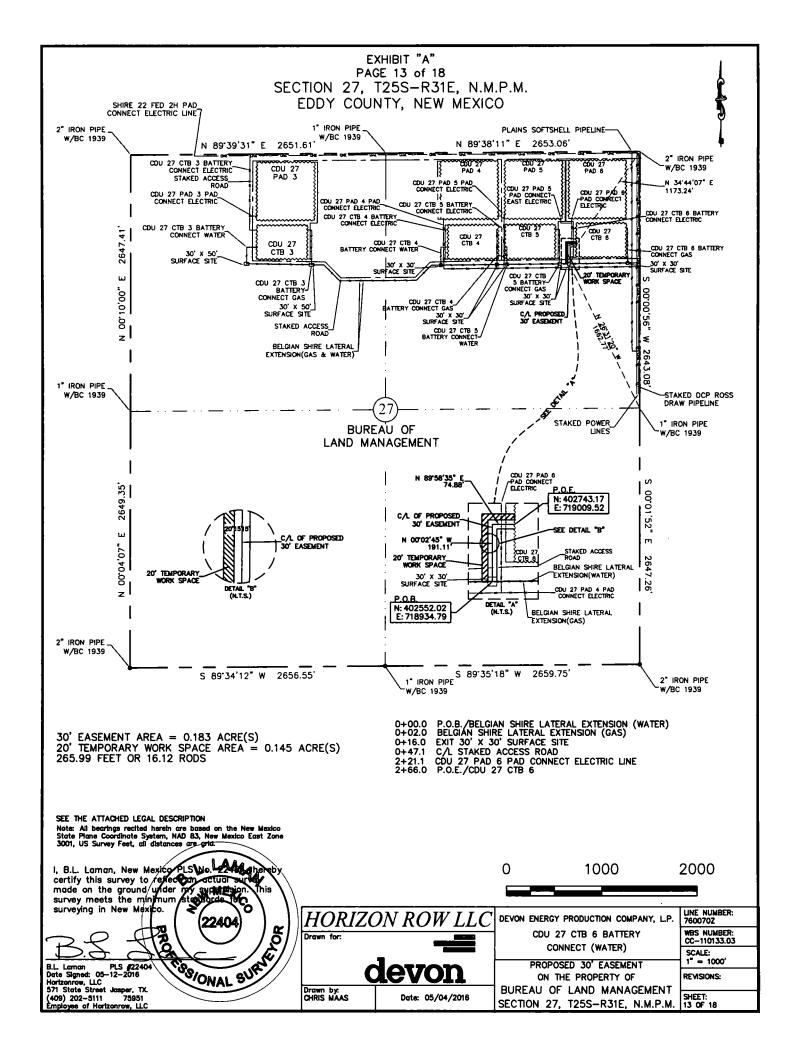
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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



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.

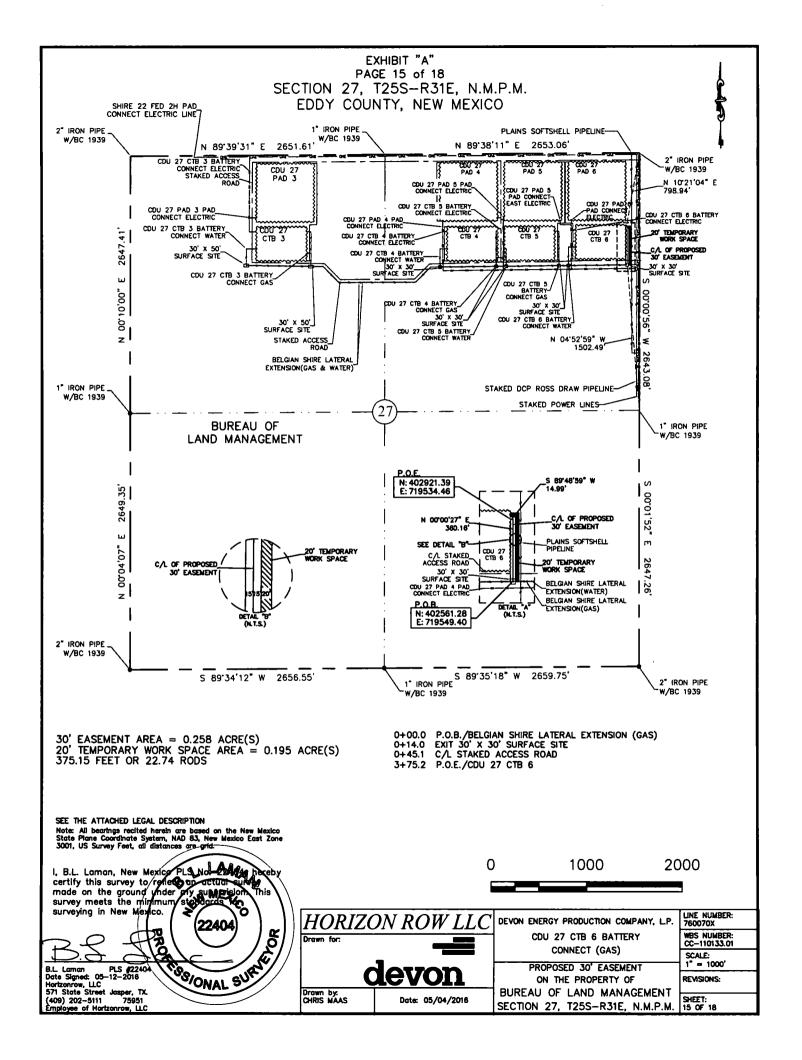
B.L. Laman PLS 22404

Date Signed: 05/12/2016 Horizon Row, LLC

571 State Street, Jasper, TX (409) 202-5111 75951

Employee of Horizon Row, LLC

PROTEIN METICO OF THIS SONAL SURVIVO



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:

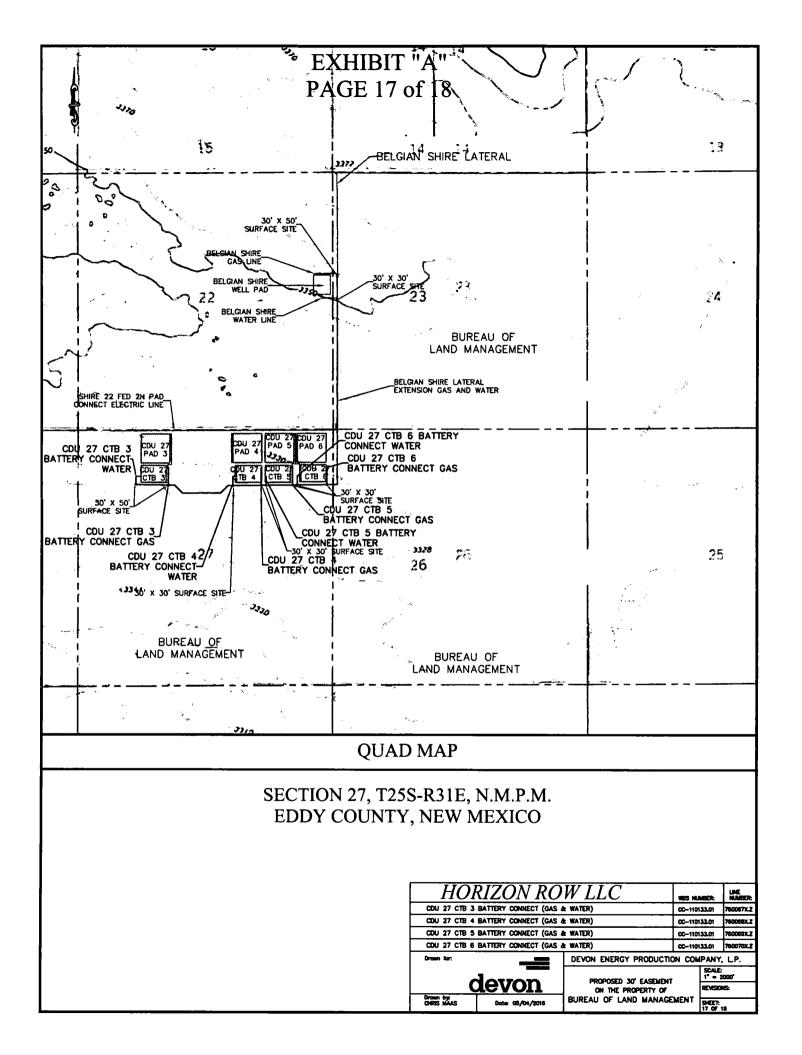
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

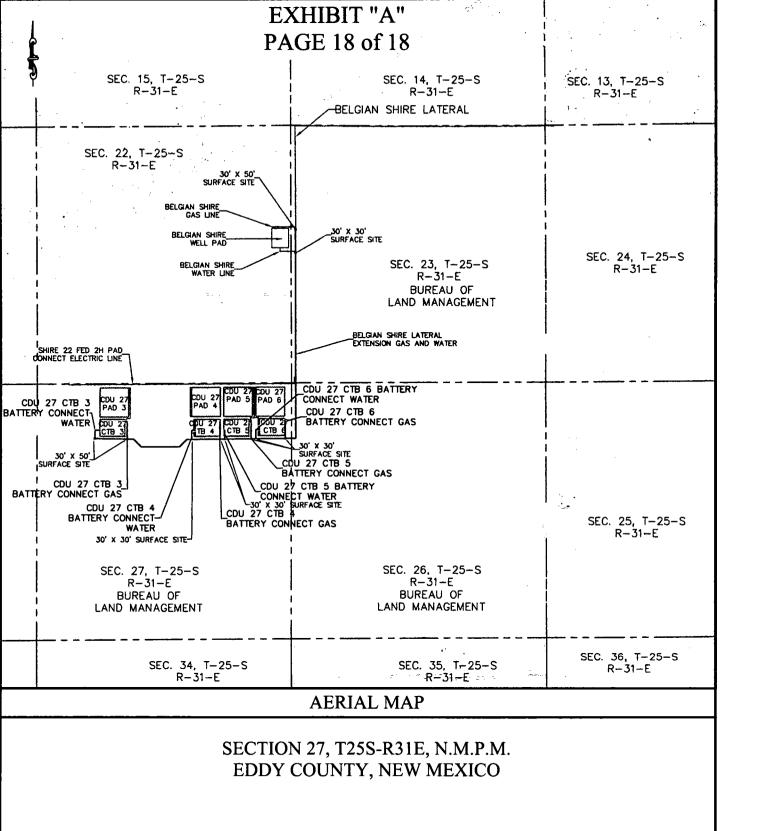
I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman PLS 224

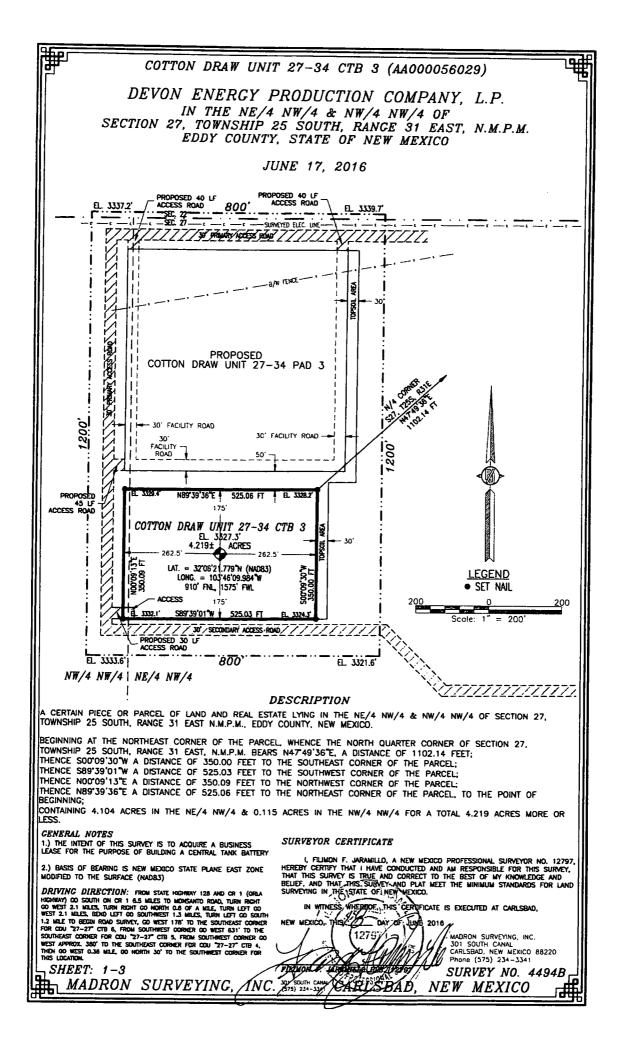
Date Signed: 05/12/2016 Horizon Row, LLC

571 State Street, Jasper, TX (409) 202-5111 7595





	HOI	RIZON RO	WLLC	WES NU	MBDR:	LIME MANBER:
	CDU 27 CTB 3 BATTERY CONNECT (GAS & WATER)			00-110133.01		760067X.Z
	COU 27 CTB 4 BATTERY CONNECT (GAS & WATER)				33.01	760068X.Z
	CDU 27 CTB 5 BATTERY CONNECT (GAS & WATER) CDU 27 CTB 6 BATTERY CONNECT (GAS & WATER)			00-110133.01		760069X.Z
				00-110133.01		760070X.Z
	Drawn for:		DEVON ENERGY PRODUCTION COMPANY, L.P.			
	2		PROPOSED 30' EASEMENT	SCALE 1° =		
	devon		ON THE PROPERTY OF		REVISIONS:	
	Drown by: CHRIS MAAS	Date: 05/04/2016	BUREAU OF LAND MANAGEMENT		SHEET: 18 OF 18	



COTTON DRAW UNIT 27-34 CTB 3 (AA000056029)

DEVON ENERGY PRODUCTION COMPANY, L.P.

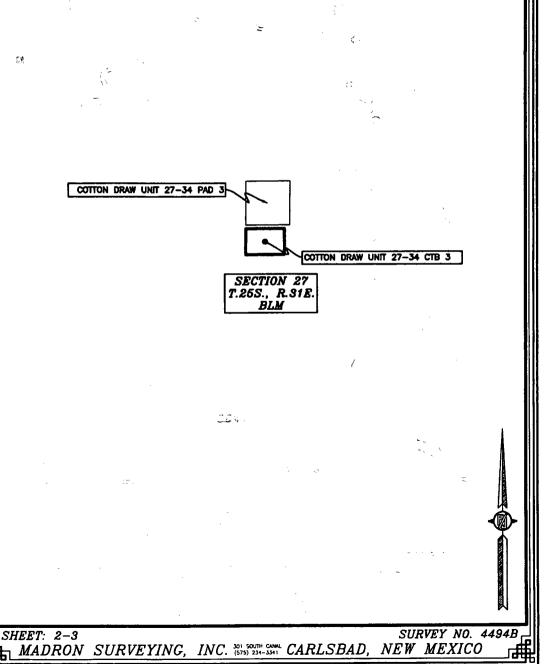
IN THE NE/4 NW/4 & NW/4 NW/4 OF

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 27-34 CTB 3 (AA000056029)

DEVON ENERGY PRODUCTION COMPANY, L.P.

IN THE NE/4 NW/4 & NW/4 NW/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

.

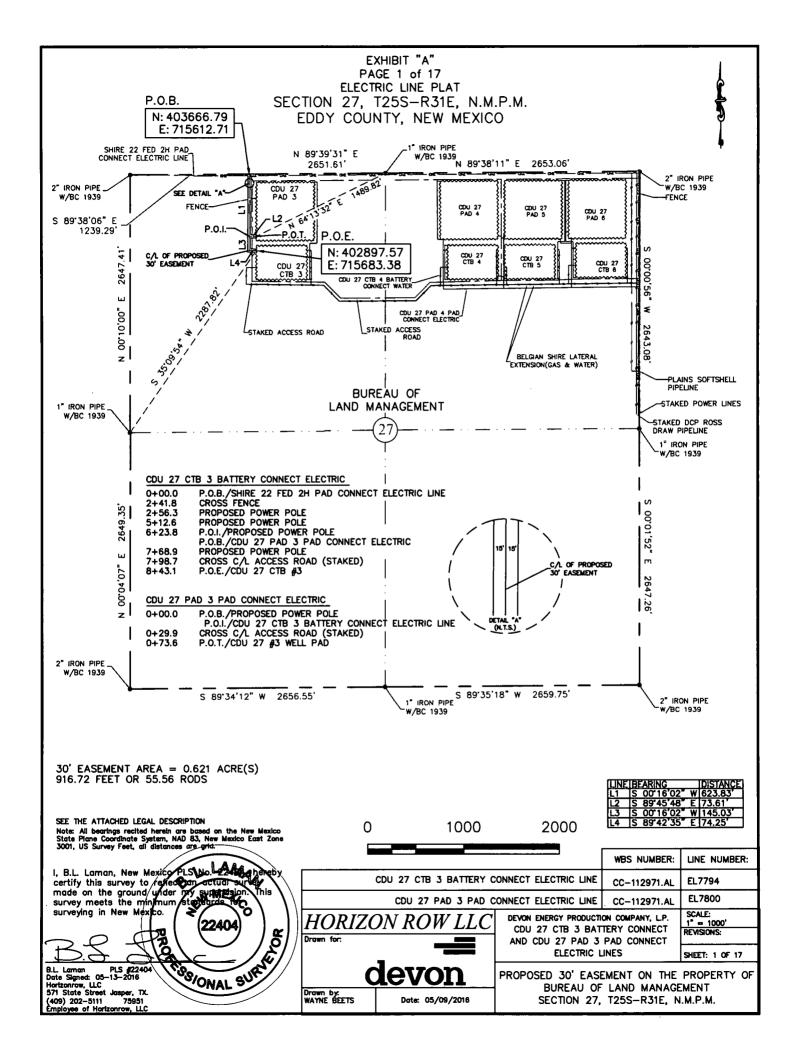
22

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

COTTON DRAW UNIT 27-34 PAD 3

27

SHEET: 3-3
SURVEY NO. 4494B
MADRON SURVEYING, INC. 101 SOUTH CANNAL CARLSBAD, 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 or the left side of the survey centerline described below, being out of the northwest quarter (NW 1/4) 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.

PROTEIN ONAL SUP

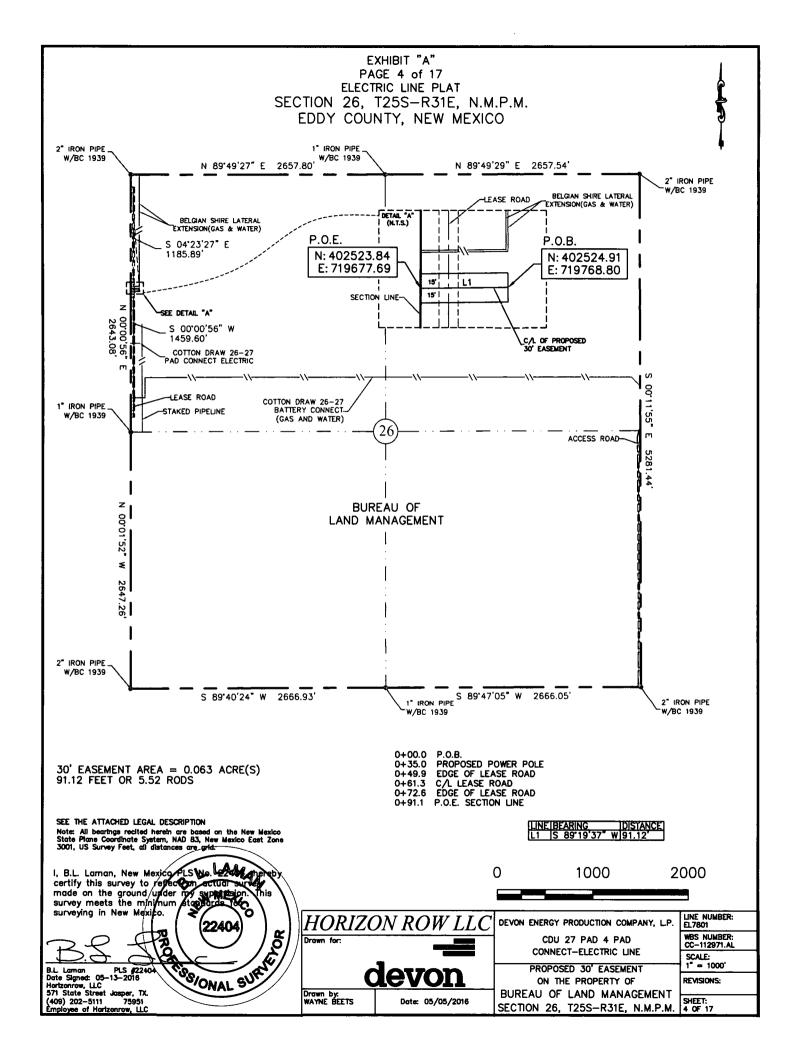
B.L. Laman

PLS 22404

Date Signed: 05/13/2016 Horizon Row, LLC

571 State Street, Jasper, TX

(402) 202-5111 75951



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 ½) 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.

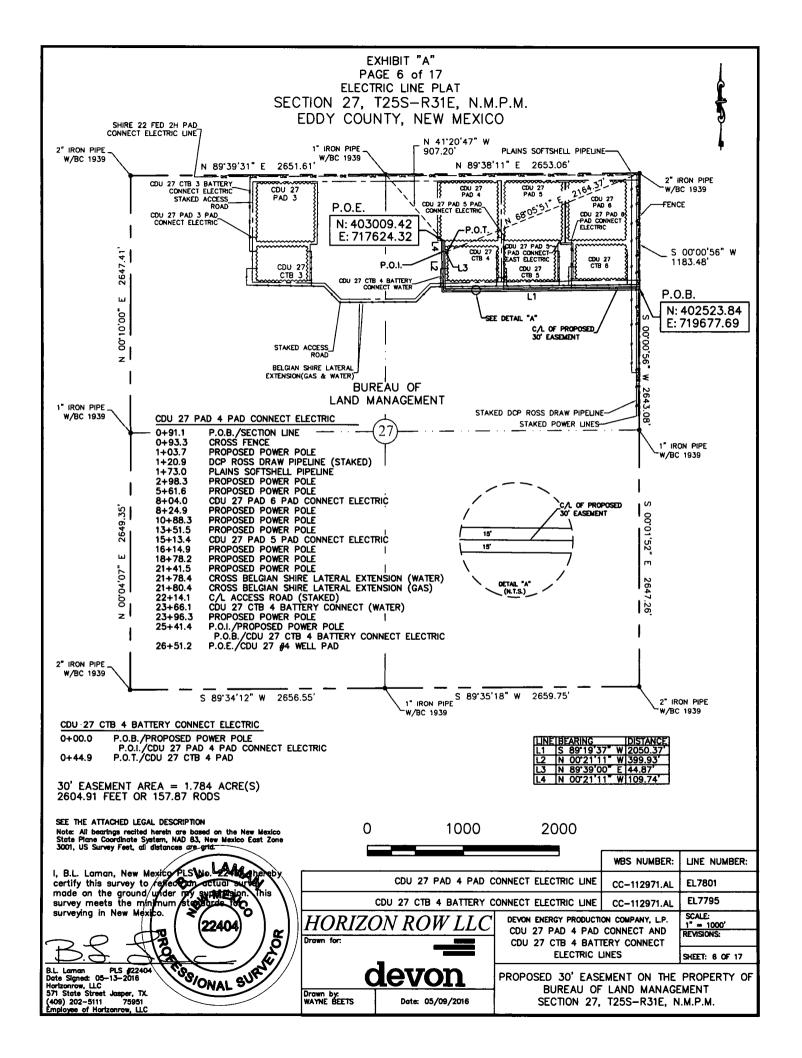
B.L. Laman

PLS 22404

Date Signed: 05/13/2016 Horizon Row, LLC

571 State Street, Jasper, TX

(402) 202-5111 75951



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.

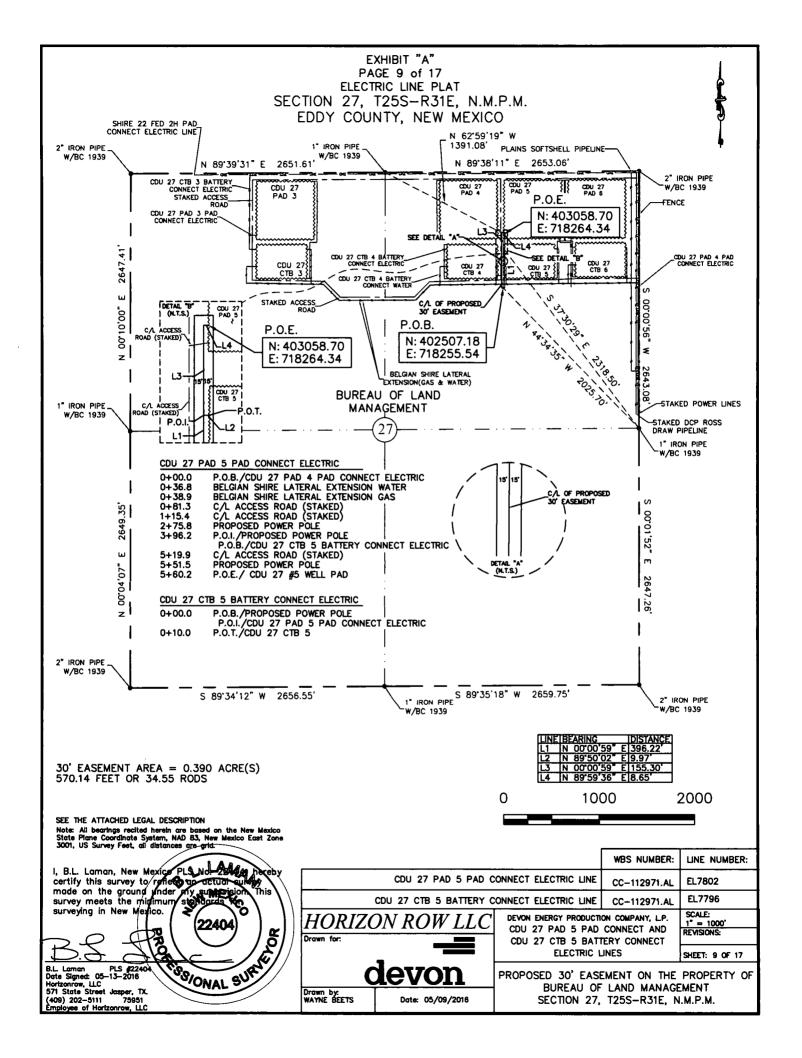
B.L. Laman

PLS 22404

Date Signed: 05/13/2016 Horizon Row, LLC

571 State Street, Jasper, TX

(402) 202-5111 75951 Employee of Horizon Row, LLC



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 1/4) 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.

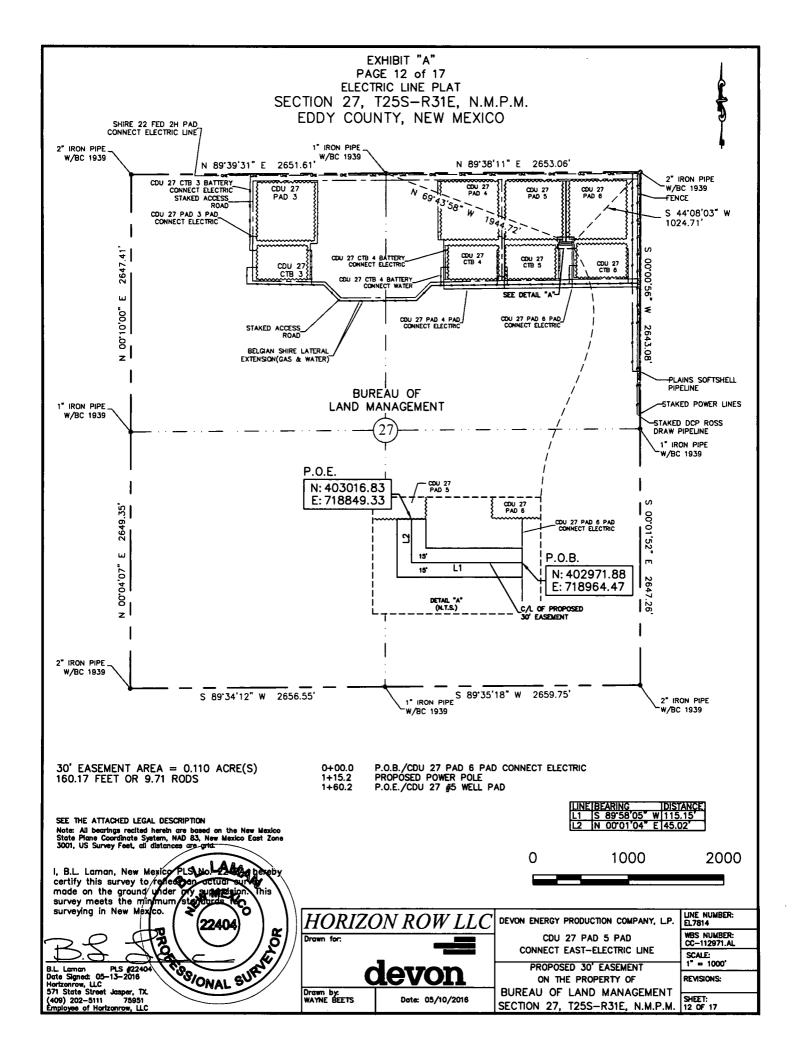
I, B.L. Laman, New Mexico PLS No. 22404, hereby certify this survey to reflect an actual survey made on the ground under my supervision. This survey meets the minimum standards for surveying in New Mexico.

B.L. Laman

PLS 22404

Date Signed: 05/13/2016 Horizon Row, LLC

571 State Street, Jasper, TX (402) 202-5111 75951



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 ½) 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:

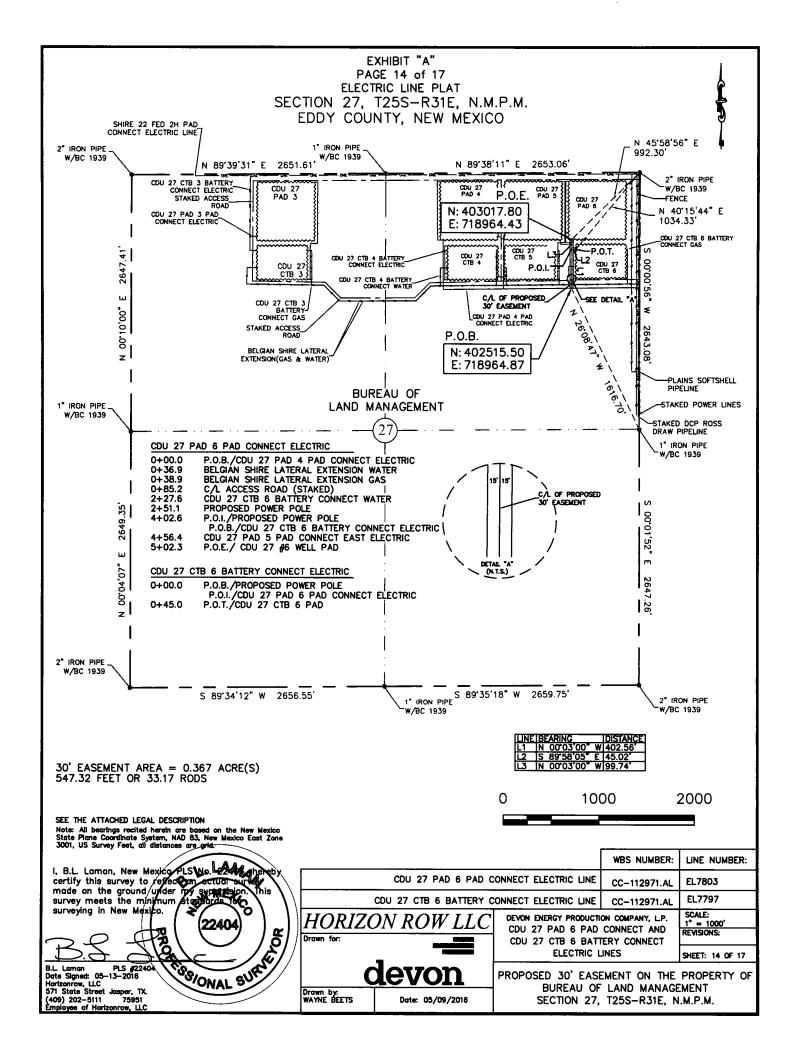
Bearings, distances and coordinates shown herein are based on New Mexico State Plane Coordinate System, NAD 83, East Zone 3001, US Survey Feet, all distances are grid.

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 22

Date Signed: 05/13/2016 Horizon Row, LLC

571 State Street, Jasper, TX (402) 202-5111 75951



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

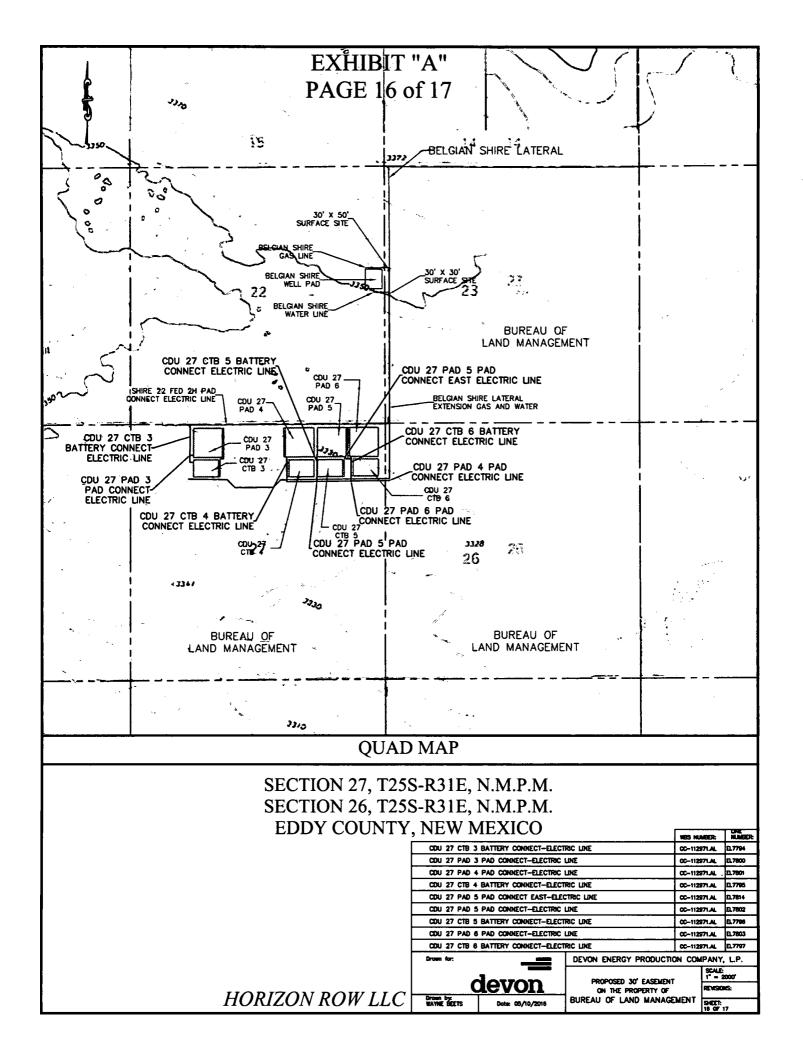
PLS 22404

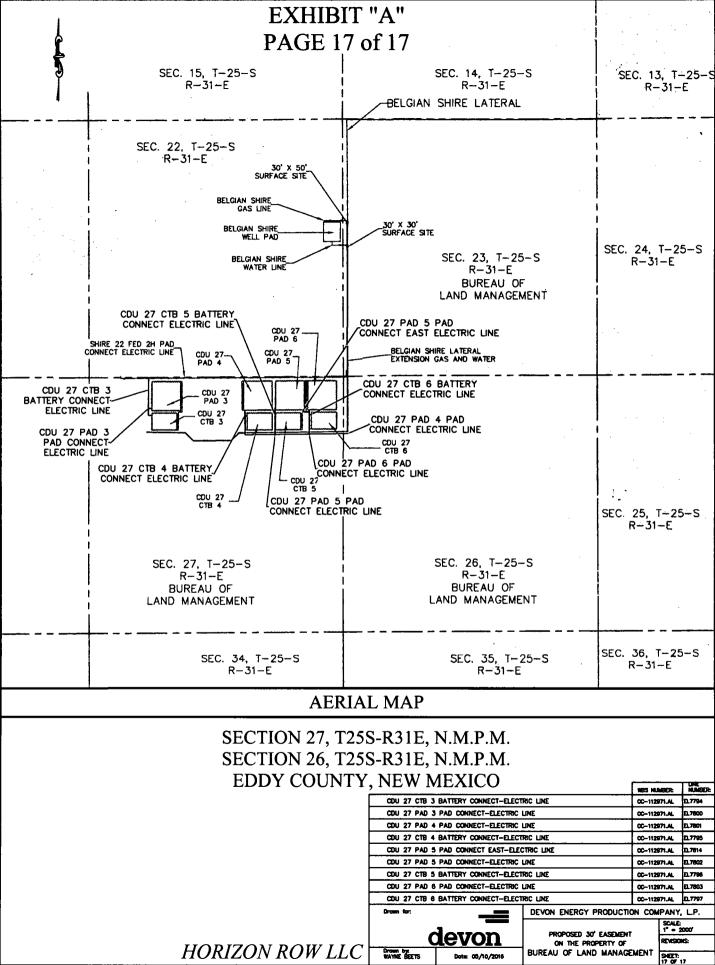
Date Signed: 05/13/2016 Horizon Row, LLC

571 State Street, Jasper, TX

(402) 202-5111

75951





FLOWLINE PLAT NINE 8" BURIED COMPOSITE FLOWLINES AND ONE 8" GAS LIFT LINE FROM THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H) TO THE LUSITANO 27 CTB 3 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 (TIE) AUGUST 24, 2018 N52'39'00"E 988.68 FT 23 22 21 N89'39'25"E 2652.26 FT N89'38'30"E 2653.78 FT 27 26 LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, (TIE) N67'21'39 W 1882.46 FT 622H, 333H, 713H, 233H, 533H, 523H, 534H) E STA 0+00 B.O.L. STA 1+05.0 PI RIGHT STA 2+33.7 PI LEFT S00°12'03"W 104-99 FT STA 2+68.7 E.O.L. LUSITANO 27 CTB 3 SEC 27 T.25S., R.31E. BLM BC 1939 BC 1939 27 🌡 26 28 35^{8C 1939} S89°35'41"W 2660.37 FT S89"34"05"W 2657.26 FT SEE NEXT SHEET (2-4) FOR DESCRIPTION 1000 SURVEYOR CERTIFICATE = 1000 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 AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT ITHIS 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, 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 MADRON SURVEYING, INC. COORDINATES. NAD 83 (FEET) AND NAVD 88 301 SOUTH CANAL (FEET) COORDINATE SYSTEMS USED IN THE CARLSBAD, NEW MEXICO 88220 SURVÉY. Phone (575) 234-3341 SHEET: 1-4SURVEY NO. 6504 *MADRON SURVEYING. NEW MEXICO* CARLSBAD.

FLOWLINE PLAT

NINE 8" BURIED COMPOSITE FLOWLINES AND ONE 8" CAS LIFT LINE FROM THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H) TO THE LUSITANO 27 CTB 3

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 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 N52'39'00"E, A DISTANCE OF 988 68 FFFT:

THENCE SOO'12'03"W A DISTANCE OF 104.99 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED; THENCE S89'37'05'W A DISTANCE OF 128.73 FEET TO AN ANGLE POINT OF THE LINE HEREIN DESCRIBED; THENCE S00'20'16"E A DISTANCE OF 34:94 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 N67'21'39"W, A DISTANCE OF 1882.46 FEET;

SAID STRIP OF LAND BEING 268.66 FEET OR 16.28 RODS IN LENGTH, CONTAINING 0.185 ACRES MORE OR LESS AND BEING ALLOCATED BY FORTIES AS FOLLOWS:

NE/4 NW/4 268.66 L.F. 16.28 RODS 0.185 ACRES

SURVEYOR CERTIFICATE

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.

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 CERTIFIC

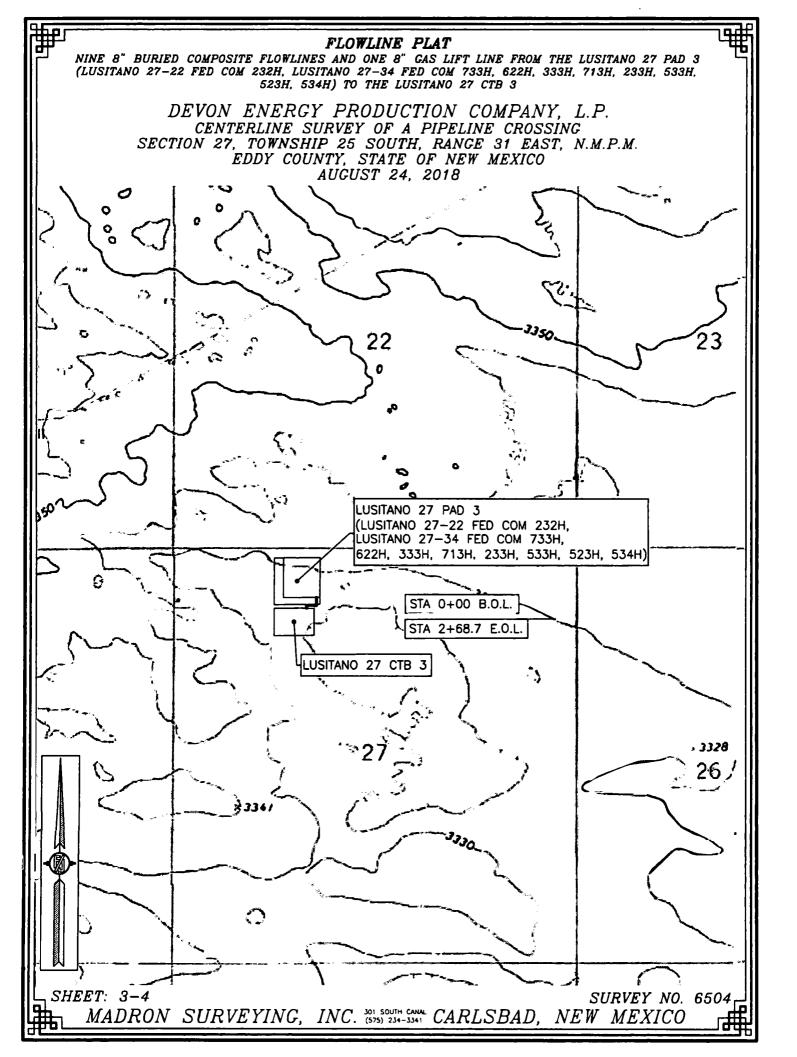
WHEREOF. THIS CERTIFICATE IS EXECUTED AT CARLSBAD,

NEW MEXICO, THIS AUGUST .2018

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

SURVEY NO. 6504

INC. (575) 23-43341 CARILS BAD



FLOWLINE PLAT

NINE 8" BURIED COMPOSITE FLOWLINES AND ONE 8" GAS LIFT LINE FROM THE LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H, 622H, 333H, 713H, 233H, 533H, 523H, 534H) TO THE LUSITANO 27 CTB 3

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

LUSITANO 27 PAD 3 (LUSITANO 27-22 FED COM 232H, LUSITANO 27-34 FED COM 733H,

622H, 333H, 713H, 233H, 533H, 523H, 534H)

LUSITANO 27 CTB 3

STA 0+00 B.O.L.

STA 2+68.7 E.O.L.

27



BUREAU OF LAND MANAGEMENT



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:

Lined pit PWD on or off channel:

Lined pit PWD discharge volume (bbl/day):

Lined pit specifications:

Pit liner description:

Pit liner manufacturers information:

Precipitated solids disposal:

Decribe precipitated solids disposal:

Precipitated solids disposal permit:

Lined pit precipitated solids disposal schedule:

Lined pit precipitated solids disposal schedule attachment:

Lined pit reclamation description:

Lined pit reclamation attachment:

Leak detection system description:

Leak detection system attachment:

Lined pit Monitor description:

Lined pit Monitor attachment:

Lined pit: do you have a reclamation bond for the pit?

Is the reclamation bond a rider under the BLM bond?

Lined pit bond number:

Lined pit bond amount:

Additional bond information attachment:

PWD disturbance (acres):

Section 3 - Unlined Pits

Would you like to utilize Unlined Pit PWD options? NO

Produced Water Disposal (PWD) Location:	
PWD surface owner:	PWD disturbance (acres):
Unlined pit PWD on or off channel:	
Unlined pit PWD discharge volume (bbl/day):	
Unlined pit specifications:	
Precipitated solids disposal:	
Decribe precipitated solids disposal:	
Precipitated solids disposal permit:	
Unlined pit precipitated solids disposal schedule:	
Unlined pit precipitated solids disposal schedule attachment:	
Unlined pit reclamation description:	
Unlined pit reclamation attachment:	
Unlined pit Monitor description:	
Unlined pit Monitor attachment:	
Do you propose to put the produced water to beneficial use?	
Beneficial use user confirmation:	
Estimated depth of the shallowest aquifer (feet):	
Does the produced water have an annual average Total Disso that of the existing water to be protected?	Ived Solids (TDS) concentration equal to or less than
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 well mineral owner:

Injection PWD discharge volume (bbl/day):

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

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: